

TỔNG CÔNG TY ĐIỆN LỰC - TKV
CÔNG TY NHIỆT ĐIỆN NA DƯƠNG - TKV

Số: *943* /NDND-KHĐTVT

V/v Mời báo giá lập dự toán và KHL CNCC
Đơn hàng: Cung cấp thiết bị điện và điện đo lường
điều khiển C&I các loại phục vụ sửa chữa thường
xuyên năm 2027

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc

Lạng Sơn, ngày 18 tháng 8 năm 2026

Kính gửi: Các nhà cung cấp có quan tâm

Trước tiên, Công ty Nhiệt điện Na Dương - TKV xin gửi lời chào trân trọng và cảm ơn sự hợp tác tới Quý đơn vị trong thời gian vừa qua.

Công ty Nhiệt điện Na Dương - TKV kính mời Quý đơn vị tham gia báo giá lập dự toán mua sắm vật tư, hàng hoá với các yêu cầu như sau:

I. Yêu cầu đối với vật tư, hàng hoá:

1. Danh mục; đặc tính, thông số kỹ thuật; số lượng vật tư, hàng hoá:
chi tiết theo Danh mục vật tư, hàng hoá đề nghị báo giá đính kèm.

2. Yêu cầu về tính hợp lệ; đặc tính, thông số kỹ thuật của vật tư, hàng hoá:

- Vật tư, hàng hoá báo giá phải có đầy đủ thông tin của vật tư, hàng hoá, bao gồm: tên vật tư, hàng hoá; ký mã hiệu; quy cách, đặc tính, thông số kỹ thuật; đơn vị tính; số lượng; nhà sản xuất và xuất xứ của vật tư, hàng hoá; thời gian bảo hành; địa điểm và tiến độ giao hàng;

- Nhà cung cấp có thể báo giá một phần hoặc toàn bộ khối lượng theo yêu cầu của văn bản mời báo giá.

II. Yêu cầu đối với báo giá:

1. Yêu cầu về tính hợp lệ của báo giá:

Báo giá của Quý đơn vị được đánh giá là hợp lệ khi có đủ các thông tin, tài liệu và đáp ứng các yêu cầu sau:

- Bản chào giá do đại diện hợp pháp của nhà cung cấp ký tên và đóng dấu. Trường hợp ký thay thì người ký thay phải được ủy quyền của đại diện hợp pháp của nhà cung cấp (*kèm theo giấy uỷ quyền, quyết định giao nhiệm vụ hoặc văn bản tương đương khác*).

- Cung cấp kèm theo báo giá 01 bản sao Giấy chứng nhận đăng ký kinh doanh/Giấy chứng nhận đăng ký doanh nghiệp/Giấy chứng nhận đầu tư và Giấy phép kinh doanh đối với các vật tư kinh doanh có điều kiện (nếu có);

- Báo giá phải có hiệu lực tối thiểu 60 ngày kể từ ngày hết hạn nộp báo giá theo quy định của văn bản mời báo giá.

2. Yêu cầu về các điều khoản thương mại:

- Đơn giá, tổng giá trị phải được chào bằng VNĐ và được hiểu là giá giao tại kho bên mua đã bao gồm các loại thuế, phí và lệ phí (nếu có) theo quy định



của Nhà nước (thể hiện rõ thuế suất thuế GTGT cho vật tư, hàng hoá báo giá);

- Địa điểm giao hàng: kho vật tư của Công ty Nhiệt điện Na Dương - TKV (Địa chỉ: khu 4, xã Na Dương, tỉnh Lạng Sơn).

III. Thời gian và địa chỉ nhận báo giá:

- Thời gian nhận báo giá: trước 14 giờ 30 phút ngày 28 tháng 8 năm 2026.

- Địa chỉ nhận báo giá: Công ty Nhiệt điện Na Dương - TKV (Địa chỉ: Khu 4, xã Na Dương, tỉnh Lạng Sơn; Điện thoại: 02053.844.263; Fax: 02053.844.132; E-mail: naduong@vinacominpowers.vn và E-mail: naduongtpc@gmail.com).

(Đối với các hồ sơ báo giá được gửi thông qua fax và e-mail thì đề nghị Quý đơn vị cung cấp bản gốc hồ sơ báo giá cho chúng tôi qua dịch vụ chuyển phát hoặc nộp trực tiếp theo địa chỉ nêu trên).

* Trường hợp trong báo giá của các nhà cung cấp thiếu các thông tin (hoặc thông tin cung cấp không rõ ràng) theo yêu cầu tại mục I và mục II của văn bản này, để có cơ sở xem xét báo giá của các nhà cung cấp, Công ty Nhiệt điện Na Dương - TKV có thể yêu cầu các nhà cung cấp làm rõ, bổ sung các thông tin cần thiết.

Công ty Nhiệt điện Na Dương - TKV rất mong nhận được sự hợp tác và hỗ trợ từ Quý đơn vị. 

Trân trọng.

Nơi nhận: 

- Website TKV: vinacominpowers.vn (để đăng tải);
- Website ĐLTKV: dienluockv.vn (để đăng tải);
- Giám đốc (e-copy, để b/c);
- Các PGĐ, KTT (e-copy, để ph/h);
- Tổ tư vấn (e-copy, để t/h);
- Lưu: TCHC, KHĐT-VT, NQ.

**KT. GIÁM ĐỐC
PHÓ GIÁM ĐỐC**



Trần Việt Anh

DANH MỤC VẬT TƯ, HÀNG HOÁ ĐỀ NGHỊ BẢO GIÁ
(Kèm theo Văn bản số **943** /NĐND-KHĐTĐVT ngày **18** tháng **8** năm 2026)

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
1	Công tắc hành trình	Model: 1LS1-J Hãng sản xuất: YAMATAKE Tài liệu kỹ thuật kèm theo	cái	8 ✓							
2	cảm biến mức	Mã hiệu: RP20A/A/B hoặc SE120B Hãng sản xuất: finetek Tài liệu kỹ thuật kèm theo	cái	2							
3	Gia nhiệt sứ lọc bụi	Model: J05Z007-03, 1.25kW; Hãng sản xuất : ZKM Tài liệu kỹ thuật kèm theo	cái	2							*
4	Khởi động từ	Loại: 700DC-M220* Cuộn hút 220VDC, tiếp điểm 2NC+2NO Hãng sản xuất ALLEN-BRADLEY; Tài liệu kỹ thuật kèm theo	Cái	2 ✓							*
5	Tiếp điểm phụ	Loại: 195-MA22 Tiếp điểm 2NO+2NC Hãng sản xuất ALLEN-BRADLEY; Tài liệu kỹ thuật kèm theo	Cái	2 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
6	Khởi động từ	Loại: 100-C16D*10, cuộn hút 220VDC (bao gồm 3 tiếp điểm chính, 1 tiếp điểm phụ NO); Hãng sản xuất ALLEN-BRADLEY; <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
7	Role thời gian	Loại: AA9906.82/200; thời gian cài: 0,15-3s; nguồn 220VDC; Hãng sản xuất: E. Dold & Söhne GmbH & Co. KG <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
8	Khởi động từ	Model: 100-C12D*01 cuộn hút 220VDC Hãng sản xuất ALLEN-BRADLEY; <i>Tài liệu kỹ thuật kèm theo</i>	Cái	5 ✓							*
9	Rơ le nhiệt	Model: AB 193-T1AB40 dải 2.9-4A Hãng sản xuất ALLEN-BRADLEY <i>Tài liệu kỹ thuật kèm theo</i>	Cái	3 ✓							*
10	cầu dao tự động (Aptomat) - MCCB	Model: 5SY6110-7; 230VAC, 10A, 1P, 2NC; <i>Tài liệu kỹ thuật kèm theo</i> Hãng sản xuất Siemens	Cái	2 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiền độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
11	cầu dao tự động (Aptomat) - MCCB	Model: 5SY5210-7; 220VDC, 10A, 2P, 2NC Hãng sản xuất Siemens <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
12	cầu dao tự động (Aptomat) - MCCB	Model: 5SY6210-7; 230VAC, 10A, 2P, 2NC Hãng sản xuất Siemens <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
13	cầu dao tự động (Aptomat) - MCCB	Model: 5SY6310-7; 110VAC, 10A, 3P, 2NC Hãng sản xuất Siemens <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
14	Bộ chuyển đổi dòng điện	Model: M2CE-5A-X/N-X ;Input: 0-5A; Output: 4-20mA; Nguồn: 220VDC Hãng sản xuất MG <i>Tài liệu kỹ thuật kèm theo</i>	Bộ	2 ✓							*
15	Bộ chuyển đổi điện áp	Model: M2PE-XA-X/N-X; Input: 0-110VAC; Output: 4-20mA; Nguồn: 220VDC Hãng sản xuất MG	Bộ	2 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiền độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
		Tài liệu kỹ thuật kèm theo									
16	Bộ chuyển đổi công suất	Model: LWT-41AO-X-X; Input: CT: 5A; VT: 110VAC, Output: 4-20mA; Power: 220VDC; Hãng sản xuất MG Tài liệu kỹ thuật kèm theo	Bộ	2 ✓							*
17	Khởi động từ (Contactor)	Model: SH04.22 hoặc CA3KN22MD Cuộn hút: 220VDC; Tiếp điểm: 2NO+2NC Hãng sản xuất Schneider Tài liệu kỹ thuật kèm theo	Cái	3 ✓							*
18	Khởi động từ (Contactor)	Model: SH04.22 hoặc CA3KN22BD Cuộn hút: 24VDC; Tiếp điểm: 2NO+2NC Hãng sản xuất Schneider Tài liệu kỹ thuật kèm theo	Cái	3 ✓							*
19	Khởi động từ (Contactor)	Mã hiệu: SH04.40 hoặc CA3KN40MD; - tiếp điểm 4NO; - nguồn cho cuộn hút 220VDC; Hãng sản xuất Schneider Tài liệu kỹ thuật kèm theo	Cái	3 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
20	Khởi động từ (Contactor)	Mã hiệu: SH04.40 hoặc CA3KN40BD; - tiếp điểm 4NO; - nguồn cho cuộn hút 24VDC; Hãng sản xuất Schneider <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
21	Khởi động từ (Contactor)	Mã hiệu: SH04.31 hoặc CA3KN31MD; - tiếp điểm 3NO+1NC; - Nguồn cho cuộn hút: 220VDC; Hãng sản xuất Schneider <i>Tài liệu kỹ thuật kèm theo</i>	Cái	3 ✓							*
22	Khởi động từ (Contactor)	Mã hiệu: SH04.31 hoặc CA3KN31BD; - tiếp điểm 3NO+1NC; - Nguồn cho cuộn hút: 24VDC; Hãng sản xuất Schneider <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
23	Biến tần	Model: CIMR-VT2A0020BAA 3.7kW 3 Pha Hãng sản xuất Yaskawa <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2							*
24	Khởi động từ -	SC-N12 cuộn hút 220VAC	Cái	2 ✓							*

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
	Contacto 3 pha 350A	Hãng sản xuất Fuji <i>Tài liệu kỹ thuật kèm theo</i>									
25	Khởi động từ - Contactor 3 pha 220A	SC-N10 cuộn hút 220VAC Hãng sản xuất Fuji <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
26	Khởi động từ - Contactor 3 pha 150A	SC-N7 cuộn hút 220VAC Hãng sản xuất Fuji <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
27	Khởi động từ - Contactor 3 pha 125A	SC-N6 cuộn hút 220VAC Hãng sản xuất Fuji <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
28	Khởi động từ - Contactor 3 pha 65A	SC-N3 cuộn hút 220VAC Hãng sản xuất Fuji <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
29	Khởi động từ - Contactor 3 pha 40A	SC-N2 cuộn hút 220VAC Hãng sản xuất Fuji <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
30	Khởi động từ - Contactor 3 pha	SC-N1 cuộn hút 220VAC Hãng sản xuất Fuji	Cái	1 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
	32A										
31	Khởi động từ - Contactor 3 pha 22A	SC-5-1 cuộn hút 220VAC Hãng sản xuất Fuji <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
32	Khởi động từ - Contactor 3 pha 9A	SC-03 cuộn hút 220VAC Hãng sản xuất Fuji <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
33	Khởi động từ - Contactor 3 pha bao gồm cả tiếp điểm phụ	A-210-30-11, coil: 400VAC (Bao gồm tiếp điểm phụ) Hãng sản xuất ABB <i>Tài liệu kỹ thuật kèm theo</i>	Cái	3 ✓							*
34	Rơ le nhiệt 45-65A	TR-On (45-65A) Hãng sản xuất Fuji <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
35	Rơ le nhiệt 34-50 A	TR-ON (34-50A) Hãng sản xuất Fuji <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
36	Rơ le nhiệt	TR-ON (2,8-4,2A) Hãng sản xuất Fuji	Cái	2 ✓							*

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
		Tài liệu kỹ thuật kèm theo									
37	Rơ le nhiệt	TR-ON (9-13A) Hãng sản xuất Fuji Tài liệu kỹ thuật kèm theo	Cái	1 ✓							*
38	Rơ le nhiệt	TR-ON (12-18A) Hãng sản xuất Fuji Tài liệu kỹ thuật kèm theo	Cái	1 ✓							*
39	Rơ le nhiệt	TR-ON (0,95-1,45A) Hãng sản xuất Fuji Tài liệu kỹ thuật kèm theo	Cái	2 ✓							*
40	Role trung gian	Mã hiệu: MKS2P-I Loại 8 chân; coil 24VDC; Hãng sản xuất Omron Tài liệu kỹ thuật kèm theo	cái	5 ✓							*
41	Bộ nguồn	Mã hiệu MPS IV Series (bao gồm phụ kiện lắp đặt, kết nối đồng bộ tương thích với hệ thống DCS hiện hữu) - Hãng sản xuất: ABB - Điện áp đầu vào định mức: 110 đến 240VAC	Cái	1 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
		- Dải tần số AC: 47 đến 63 Hz - Dải điện áp đầu vào DC: 102 đến 370VDC - Hiệu suất: >= 80% khi tải đầy - Hệ số công suất: Hiệu chỉnh chủ động đến mức tối thiểu 0,90 - Điều kiện (hoạt động): -20°C đến +70°C, >50°C giảm định mức tuyến tính xuống 70°C @ 50% tải bình thường, Độ ẩm tương đối: 5 đến 95% không ngưng tụ. <i>Tài liệu kỹ thuật kèm theo</i>									
42	bộ đổi nguồn	Model: LRS-350-24 INPUT: 200-240VAC/4.0A.OUTPUT: 24VDC/14.6A. Hãng sản xuất : MEAN WELL <i>Tài liệu kỹ thuật kèm theo</i>	Cái	4 ✓							*
43	Cảm biến áp suất	Mã hiệu: EST330F Input: 0-10bar; Output: 4-20mA; G 1/2" Hãng sản xuất : Eastsensor <i>Tài liệu kỹ thuật kèm theo</i>	Cái	4 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
44	Cuộn hút van ba ngã	Mã hiệu: TH2408-220VAC điện áp 220Vac Hãng sản xuất : SMC <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2							*
45	Van điện từ-solennoi	Mã hiệu: VFS3120-4G-03 điện áp 220VAC; 5 cổng kết nối 3/8" Hãng sản xuất : SMC <i>Tài liệu kỹ thuật kèm theo</i>	Cái	8 ✓							*
46	Cảm biến tốc độ loại 2 dây- Motion detector	Mã hiệu: XSA-V11801TF Nguồn nuôi 24-210VDC; Đầu ra :1NC; Hãng sản xuất Schneider <i>Tài liệu kỹ thuật kèm theo</i>	Cái	6 ✓							*
47	Switch báo mức kiểu quay (bao gồm mặt bích)	Mã hiệu: SEX50000- ABBACA807C0250 L=250mm; Điện áp: 220VAC Hãng sản xuất FineTek <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
48	Van điện từ-solennoi	Mã hiệu: AG41-02-2-02E- AC220VAC 3 cổng kết nối ren 1/4"; Cuộn hút	Cái	2 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
		220VAC; Hãng sản xuất CKD <i>Tài liệu kỹ thuật kèm theo</i>									
49	Báo mức Hopper	Mã hiệu: ALN-113-1H Nguồn cấp 220VAC; Tiếp điểm 1NO, 1NC; Chiều dài: 650mm; mặt bích 10k; Hãng sản xuất Kansai <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
50	Van điện từ	Mã hiệu: RCAC25T4012 + Pilot RCA3PV-220V Port size: 1"; Cuộn hút: 220VAC; Hãng sản xuất: Goyen <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
51	Main điều khiển	Mã hiệu: STR-10-AC bao gồm 10 đầu ra Role 220VAC, 5A; Hãng sản xuất : Titan <i>Tài liệu kỹ thuật kèm theo</i>	Cái	3 ✓							*
52	Van điện từ	Mã hiệu: RCAC20T4012 + Pilot RCA3PV-220V Port size: 3/4"; Cuộn hút: 220VAC	Cái	10 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
	yamari	870; 100 " Hãng sản xuất: Yamari Industries Tài liệu kỹ thuật kèm theo									
58	Cảm biến nhiệt độ	Model : K(S)/4.8/ 310S/JIS1; L: 1991 Hãng sản xuất: Yamari Industries Tài liệu kỹ thuật kèm theo	Cái	2							*
59	bộ định vị van thông minh- Smart Positioner loại Rotary 2 hành trình (bao gồm chân đế)	Type: MP100 Mã hiệu: MP16214-SR/M0; - tín hiệu vào 4~20mA DC; - tín hiệu ra 4~20mA DC; - Áp suất khí nguồn cấp: 0.14 ~ 0.70 Mpa; Hãng sản xuất: 3S Tài liệu kỹ thuật kèm theo	Cái	1 ✓							*
60	bộ định vị van thông minh- Smart Positioner loại Rotary 1 hành trình (bao gồm chân đế)	Type: MP100 Mã hiệu: MP16114-SR/M0; - tín hiệu vào 4~20mA DC; - tín hiệu ra 4~20mA DC; - Áp suất khí nguồn cấp: 0.14 ~ 0.70 Mpa; Hãng sản xuất: 3S	Cái	1 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
		<i>Tài liệu kỹ thuật kèm theo</i>									
61	bộ định vị van thông minh- Smart Positioner loại line 2 hàn trình (bao gồm chân đế)	Type: MP100 Mã hiệu: MP16214-SL/M0; - tín hiệu vào 4~20mA DC; - tín hiệu ra 4~20mA DC; - Áp suất khí nguồn cấp: 0.14 ~ 0.70 Mpa; Hãng sản xuất: 3S <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
62	bộ định vị van thông minh- Smart Positioner loại line 1 hàn trình (bao gồm chân đế)	Type: MP100 Mã hiệu: MP16114-SL/M0; - tín hiệu vào 4~20mA DC; - tín hiệu ra 4~20mA DC; - Áp suất khí nguồn cấp: 0.14 ~ 0.70 Mpa; Hãng sản xuất: 3S <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
63	Rơ le tăng áp- Booster Relay	Mã hiệu: SMC IL100 kết nối RC 1/4"; Input Press: 0.7MPa; Output press: 0.7Mpa Hãng sản xuất: SMC	Cái	2 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
		<i>Tài liệu kỹ thuật kèm theo</i>									
64	Van khoá- Lock valve	Mã hiệu: CL-523H kết nối 1/4"; max press: 800kPa; set press: 100-600kPa Hãng sản xuất: Koso <i>Tài liệu kỹ thuật kèm theo</i>	Cái	2 ✓							*
65	Van khoá- Lock valve	Mã hiệu: CL-420 kết nối 1/4"; max press: 800kPa; set press: 100-600kPa Hãng sản xuất: Koso <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
66	Bộ đặt áp- Air Set	Mã hiệu: PRF 408-R kết nối 1/4"; output max: 800kPa Hãng sản xuất: Koso <i>Tài liệu kỹ thuật kèm theo</i>	Cái	6 ✓							*
67	Bộ đặt áp- Air set	Mã hiệu: PRF 318-R Air connection: Supply max: 9.9 bar; Output max: 8bar; Hãng sản xuất: SMC <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
68	Bộ lọc điều chỉnh - Air Set	Mã hiệu: AW411-03BG hoặc AW40-04BG-2 Kết nối ren 1/2"; Set prees: 0,05-0,7Mpa Hãng sản xuất: SMC Tài liệu kỹ thuật kèm theo	Cái	1 ✓							*
69	Bộ điều chỉnh áp lực khí - Air set	Mã hiệu: 78-40 W/gauge ; Part 200622097-999-0000 + 200822827-999-0000; kết nối ren 1/4"; input press max: 1,5Mpa; output press: 35-700kPa Hãng sản xuất: Baker Hughes (Masoneilan) Tài liệu kỹ thuật kèm theo	Cái	1 ✓							*
70	Rơ le tăng áp- Booster relay	Mã hiệu: BR400; Part: 204500390-999-0000 kết nối 1/2"; Max press: 1Mpa Hãng sản xuất: Baker Hughes (Masoneilan) Tài liệu kỹ thuật kèm theo	Cái	2 ✓							*
71	Van chuyển đổi - Tranfer valve	Mã hiệu: 78-80H; Part: 204500898-999-0000	Cái	1 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
		kết nối 1/2'; Max press: 1Mpa; Set press: 100-700kPa Hãng sản xuất: Baker Hughes (Masoneilan) <i>Tài liệu kỹ thuật kèm theo</i>									
72	Van chuyển đổi - Look up valve	Mã hiệu: 08-80H; Part: 204500896-999-0000 kết nối 1/2'; Max press: 1Mpa; Set press: 100-700kPa Hãng sản xuất: Baker Hughes (Masoneilan) <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
73	bộ truyền tín hiệu - Transmitter đo áp lực	Model: JTD920A-2E1B2-X2AD1-T1U2; range: -500 ÷ 500 mmH2O Actual scale:-500 ÷ 500 mmH2O (Cài đặt theo thông số của bên A) Hãng sản xuất: yamatake <i>Tài liệu kỹ thuật kèm theo</i>	Cái	1 ✓							*
74	bộ truyền tín hiệu - Transmitter đo áp lực	Model: EJA430-DBS4B-32DD/D4 Scale: 0-10kg/cm2 Liner Range: 0-10kg/cm2	Cái	1 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
		(Cài đặt theo thông số của bên A) Hãng sản xuất: Yokogawa Tài liệu kỹ thuật kèm theo									
75	bộ truyền tín hiệu - Transmitter đo áp lực	yokogawa; Model: EJA430-DBS4B-32DD/D4 Scale: 0-40kg/cm2 Liner Range: 0-40kg/cm2 (Cài đặt theo thông số của bên A) Hãng sản xuất: Yokogawa Tài liệu kỹ thuật kèm theo	Cái	1 ✓							*
76	bộ truyền tín hiệu - Transmitter đo lưu lượng	Model: EJA110-DHS4B-24DD/D4 Scale: 0-250 T/h Linear Range: 0-6000 mmH2O (Cài đặt theo thông số của bên A) Hãng sản xuất: Yokogawa Tài liệu kỹ thuật kèm theo	Cái	1 ✓							*
77	bộ truyền tín hiệu - Transmitter đo mức	Model:EJA110-DLS4B-32DD/ Scale: -100-500 mmH2O Linear Range: -100-500mm H2O (Cài đặt theo thông số của bên A) Hãng sản xuất: Yokogawa	Cái	1 ✓							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
		<i>Tài liệu kỹ thuật kèm theo</i>									
78	Bình mẫu hỗn hợp khí NO, SO ₂ , CO, CO ₂ .	Nox 900 ppm m + Carbon monoxide 1500 ppm m + Carbon dioxide 6% mole + Nitric oxide 900 ppm m + Sulfur dioxide 600 ppm m + Nitrogen 93.7% mole Dung tích 47L Hãng sản xuất : Huate gas hoặc tương đương	Bình	1							*
79	bình khí mẫu N ₂ 5% oxy	Oxygen 5% mole + Nitrogen 95% mole Dung tích 10L Hãng sản xuất : Huate gas hoặc tương đương	Bình	1							*
80	Bình khí chuẩn	Bình khí chuẩn 1% oxy Hãng sản xuất : Huate gas hoặc tương đương	Bình	1							*
81	Đầu đo khí oxy đuôi lò - Zirconia Oxygen Detector	Mã hiệu: ZR22G-150-S-Z-E-R-P-E-A/C/CV/F1/SCT loại Zirconia; chiều dài 1,5m Hãng sản xuất: Yokogawa	Bộ	1							*

Stt	Tên vật tư, hàng hoá	Thông số kỹ thuật ⁽¹⁾	Đơn vị	Số lượng	Tiến độ giao hàng ⁽²⁾	Thời gian bảo hành ⁽³⁾	Đơn giá trước thuế (đồng/đvt)	Thành tiền trước thuế (đồng)	Thuế suất (%)	Thành tiền sau thuế (đồng)	Ghi chú
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(5)*(8)	(10)	(11)=(9)* [1+(10)/100]	(12)
		Tài liệu kỹ thuật kèm theo									
82	Báo mức	Mã hiệu: TLX 200AP Phạm vi đo: 20m; - Nguồn cấp 220VAC; - Tín hiệu ra: 4-20mA Hãng sản xuất: Towa Seiden Tài liệu kỹ thuật kèm theo	Bộ	1							*
83	Tấm thông gió (Màng sục khí)	ADAERATOR IL 60542 Hãng sản xuất: Conveyor Components Company Tài liệu kỹ thuật kèm theo	Cái	16							*
86	Soneloi khí điều khiển	Model: Burkert 6519 Hãng sản xuất: Burkert Tài liệu kỹ thuật kèm theo	cái	3							*

*** Lưu ý:**

(1) Thông số kỹ thuật:

- Đối với các vật tư hàng hoá được đánh dấu (*) tại cột (12) trong bảng trên: Đề nghị nhà cung cấp chào đúng chủng loại vật tư, hàng hoá được chọn làm chỉ dẫn về đặc tính, thông số kỹ thuật tại cột (3) trong bảng trên. Trường hợp vật tư, hàng hoá được chọn làm chỉ dẫn về đặc tính, thông số kỹ thuật nêu trên không còn sản xuất hoặc nhà sản xuất đã thay thế bằng chủng loại

khác (mã hiệu khác) thì nhà cung cấp có thể đề xuất sang vật tư, hàng hoá tương đương khác và phải cung cấp các tài liệu để chứng minh vật tư, hàng hoá được chọn làm chỉ dẫn về đặc tính, thông số kỹ thuật nêu trên không còn sản xuất hoặc nhà sản xuất đã thay thế bằng chủng loại khác và vật tư, hàng hoá do nhà cung cấp đề xuất là tương đương về **“đặc tính, thông số kỹ thuật; tính năng sử dụng; tiêu chuẩn công nghệ”** với vật tư, hàng hoá được chọn làm chỉ dẫn về đặc tính, thông số kỹ thuật nêu trên. Nếu nhà cung cấp không cung cấp tài liệu theo yêu cầu nêu trên thì đơn giá do nhà cung cấp chào cho mục vật tư, hàng hoá đó sẽ được đánh giá là **không đáp ứng yêu cầu kỹ thuật** và đơn giá do nhà cung cấp chào cho mục vật tư, hàng hoá đó sẽ **không được xem xét** khi đánh giá.

+ Trường hợp nhà cung cấp phát hiện thông số kỹ thuật được yêu cầu tại cột (3) trong bảng trên không chính xác, đề nghị nhà cung cấp chuẩn xác lại giúp thông số kỹ thuật và cung cấp các tài liệu để chứng minh thông số kỹ thuật do nhà cung cấp điều chỉnh lại là chính xác.

+ Đối với tên hàng hoá được yêu cầu tại cột (2) trong bảng trên nhà cung cấp chuẩn xác lại tên hàng hoá trên nguyên tắc **tên gọi Tiếng Việt trước – tên gọi Tiếng Anh sau** nhằm để đảm bảo thống nhất tên gọi của hàng hoá và **đảm bảo nguyên tắc kế toán**.

- *Tất cả các vật tư hàng hóa nêu tại bảng trên là những vật tư thay thế vào thiết bị hiện có của Bên mời chào giá. Do đó, việc NCC đề xuất thay đổi loại hàng hóa tương đương phải thể hiện đầy đủ các thông số kỹ thuật nhằm đảm bảo hàng hóa tương đương do NCC đề xuất lắp đặt phù hợp và vận hành đồng bộ với hệ thống sẵn có của Bên mời chào giá.* Trường hợp nhà cung cấp đề xuất cung cấp hàng hóa khác hàng hóa được chọn làm chỉ dẫn về quy cách, đặc tính kỹ thuật tại cột “Quy cách, đặc tính kỹ thuật” thì nhà cung cấp phải cung cấp các tài liệu bao gồm:

+ Catalogue, tài liệu kỹ thuật của hàng hóa do nhà cung cấp đề xuất cung cấp (*catalogue, tài liệu kỹ thuật phải là tài liệu được phát hành bởi hãng sản xuất/nhà sản xuất của hàng hóa do nhà cung cấp đề xuất cung cấp*); catalogue, tài liệu kỹ thuật phải có đầy đủ thông tin về thông số kỹ thuật của hàng hóa do nhà cung cấp đề xuất cung cấp;

+ Tài liệu chứng minh hàng hóa do nhà cung cấp đề xuất cung cấp tương đương về quy cách, đặc tính kỹ thuật (đặc tính kỹ thuật, tính năng sử dụng, thiết kế công nghệ, tiêu chuẩn công nghệ) với hàng hóa được chọn làm chỉ dẫn về quy cách, đặc tính kỹ thuật tại cột “Quy cách, đặc tính kỹ thuật” (*kèm theo bảng so sánh các thông số kỹ thuật chính giữa hàng hóa nhà cung cấp đề xuất cung cấp với hàng hóa được bên mời cung cấp chỉ dẫn tại cột “Quy cách, đặc tính kỹ thuật” để chứng minh sự tương đương về quy cách, đặc tính kỹ thuật*).

(Trường hợp nhà cung cấp không cung cấp các tài liệu theo quy định (hoặc không bổ sung được khi bên mời nhà cung cấp yêu cầu) thì hàng hóa tương ứng do nhà cung cấp đề xuất được đánh giá là **không đáp ứng yêu cầu** về quy cách, đặc tính kỹ thuật và sẽ **không được xem xét** về đơn giá cho mục vật tư, hàng hoá đó).

- Trường hợp Nhà cung cấp không chào hoặc không thể hiện các thông số kỹ thuật của hàng hoá thì hàng hoá sẽ được đánh giá là **không đáp ứng yêu cầu kỹ thuật** và đơn giá do nhà cung cấp chào cho mục vật tư, hàng hoá đó sẽ **không được xem xét khi đánh giá**.

(2) *Tiến độ giao hàng*: Đề nghị nhà cung cấp chào tiến độ giao hàng là số ngày kể từ ngày nhận được thông báo cấp hàng;

(3) *Thời gian bảo hành*: Thời gian bảo hành tại cột (7) trong bảng trên là thời gian bảo hành được yêu cầu, đề nghị nhà cung cấp chào thời gian bảo hành là số tháng kể từ ngày kiểm nghiệm vật tư, hàng hoá (*đơn giá của vật tư, hàng hoá do nhà cung cấp chào chỉ được xem xét nếu có thời gian bảo hành đáp ứng yêu cầu tại cột (7) trong bảng trên*).

LS Series

General Purpose Compact Type Limit Switches

FEATURES

General Purpose Type Limit Switches with Robust Structure in an Extensive Range of Models for Use in a Wide Range of Applications.

- EN standard approval acquired.
- 2-circuit double break type basic switch built into robust aluminum die-cast case.
- Oil-, water- and dust-proof structure. (protection class IP67)
- Wide range of options available.
With neon lamp, with LED lamp, built-in gold-plated contacts, double seal type, corrosion-resistant type, heat-resistant type, cold-resistant type, spatter-guarded type, connector type, etc..
- With operation position setting indication. (roller lever and roller plunger types)
- UL/CSA approved product.



LIST OF MODELS

Model \ Appearance		Roller lever	Plunger	Side roller plunger	Roller plunger	Fork lever lock	Non-directional operating rod lever	Reference page for individual specifications
		 1LS Series	 2LS Series	 3LS Series	 5LS Series	 6LS Series	 8LS Series	
General purpose type	□LS□-J	○	○	○	○	○	○	2
Spatter-guarded type	□LS□□-JW□	○	-	-	○	-	-	28
Ultra long life type	1LS-J7□□	○	-	-	-	-	-	35
Harsh environment resistance for outdoor	1LS-J8□□	○	-	-	-	-	-	44

STANDARD, GENERAL PURPOSE COMPACT TYPE

Most General Model of **LS Compact Type** Limit Switches Used in a Wide Range of Applications.

- Wide range of models includes standard, high sensitivity, high overtravel, T.T.90°, light operation and lock operation types.
- Wide range of actuator types.
- Various international standards acquired.
(UL/CSA, EN 60947-5-1, etc.)
- CE marking compatible product with ground lead.



ORDER GUIDE (basic catalog listing)

- Switch body (Contact your agent for model Nos. not listed in the following table:)

Actuator		Operating characteristics			Options			
		O.F.(max.) (operating force)	P.T.(max.) (pretravel)	T.T.(min.) (total travel)	Basic catalog listing	With LED lamp 12 to 125Vac/dc EC	With neon lamp 100/ 200Vac E	Double seal S
Roller lever		13.4N	Standard 20°	Standard travel 50°	1LS1-J	1LS1-JEC	1LS1-JE	1LS1-JS
			High sensi- tivity model 5°	Standard travel 35°	1LS19-J	1LS19-JEC	1LS19-JE	1LS19-JS
		8.9N	Standard 20°	High over- travel 75°	1LS-J500	1LS-J500EC	1LS-J500E	1LS-J500S
			High sensi- tivity model 10°	High over- travel 72°	1LS-J550	1LS-J550EC	1LS-J550E	1LS-J550S
			Standard 30°	High over- travel 90°	1LS-J50	1LS-J50EC	1LS-J50E	1LS-J50S
Adjustable roller lever: Note 1		13.4N	Standard 20°	Standard travel 50°	1LS3-J	1LS3-JEC	1LS3-JE	1LS3-JS
			Standard 20°	High over- travel 75°	1LS-J503	1LS-J503EC	1LS-J503E	1LS-J503S
			High sensi- tivity model 10°	High over- travel 72°	1LS-J553	1LS-J553EC	1LS-J553E	1LS-J553S
Light operation rod lever Note 2		1.4N	Standard 20°	Standard travel 50°	1LS10-J	1LS10-JEC	1LS10-JE	1LS10-JS
Lever-less type		13.4N	Standard 20°	Standard travel 50°	1LS2-J	1LS2-JEC	1LS2-JE	1LS2-JS
			High sensi- tivity model 5°	Standard travel 35°	1LS9-J	1LS9-JEC	-	-
		8.9N	Standard 20°	High over- travel 75°	1LS-J501	1LS-J501EC	1LS-J501E	1LS-J501S
			High sensi- tivity model 10°	High over- travel 72°	1LS-J551	1LS-J551EC	1LS-J551E	1LS-J551S
			Standard 30°	High over- travel 90°	1LS-J51	1LS-J51EC	1LS-J51E	1LS-J51S
		1.4N	Standard 20°	Standard travel 50°	1LS23-J	-	1LS23-JE	-

Note 1: Operation characteristics are values when the lever length is adjusted to 38.1mm.

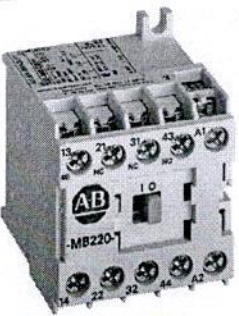
Note 2: Operation characteristics are values when the lever length is adjusted to 141.2mm.

Bulletin 700-M

Industrial Relays

Product Selection

AC Control Relays (700-M) and Control Relays with Bifurcated Contacts (700-MB)①

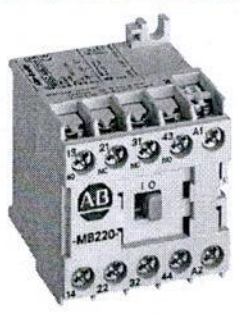
	Contact Configuration		Pkg. Qty. ①	Cat. No. ② ③
	N.O.	N.C.		
	2	2	1	700-M220③S
	3	1	1	700-M310③S
	4	—	1	700-M400③S
	2	2	1	700-MB220③S
	3	1	1	700-MB310③S
	4	—	1	700-MB400③S

③ AC Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a voltage suffix code from the table below to complete the Cat. No. Example: Cat. No. 700-MB400③S becomes Cat. No. 700-MB400A24S. For other voltages, consult your local Allen-Bradley Sales Office.

Voltage	24	48	100	110...120	220...230	230...240	380	440	440...480
50 Hz	A24	A48	A1	—	A2	—	A3	A4	—
60 Hz	A24	A48	—	A1	—	A2	A3	—	A4

DC Control Relays (700DC-M) and Control Relays with Bifurcated Contacts (700DC-MB) ①

	Contact Configuration		Pkg. Qty. ①	Cat. No. ②
	N.O.	N.C.		
	2	2	1	700DC-M220③S
	3	1	1	700DC-M310③S
	4	—	1	700DC-M400③S
	2	2	1	700DC-MB220③S
	3	1	1	700DC-MB310③S
	4	—	1	700DC-MB400③S

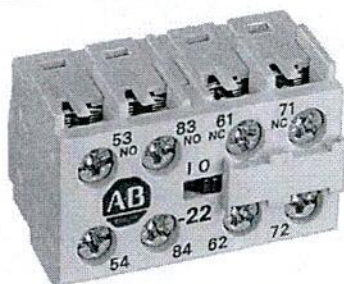
③ DC Voltage Suffix Code

The Cat. No. as listed is incomplete. Select a voltage suffix code from the table below to complete the Cat. No. Example: Cat. No. 700DC-MB400③S becomes Cat. No. 700DC-MB400Z24S. To order a relay with a diode surge suppressor, in a 24V DC coil, change the letter "Z" to "D". Example: Cat. No. 700DC-MB220Z24 becomes Cat. No. 700DC-MB220D24 (coil tab is green for diode.)

Voltage	12	24	24 with Diode	48	80	110	125	220
DC	Z12	Z24	D24③	Z48	Z80	Z11	Z3	Z2

- ① 10-packs can be ordered for the following voltage codes: A1, A2, A24, Z24, D24. To order a 10-pack, specify quantity in multiples of 10 and drop the final "S" from the catalog number.
- ② To determine whether a 700DC-M relay has a diode, check the voltage label above the A1 terminal. A green background indicated that the relay has a built-in diode; a white background indicates that there is no diode.
- ③ Positively Guided Contacts — Summary:
700-M, 700-MB, 700DC-M, and 700DC-MB relays are positively guided for 4 main poles. Restrictions apply when using auxiliary contacts.
- ④ All Cat. Nos. are factory stocked.

Auxiliary Contact Adder Decks



For Use with 700-MB Relays

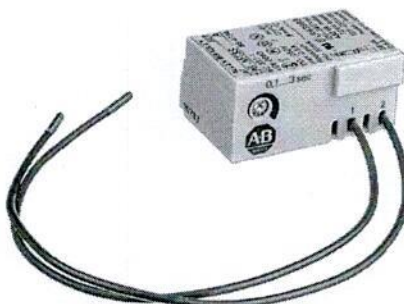
Contact Configuration	Pkg. Qty.	Cat. No. ①
1 N.O.-1 N.C.	10	195-MA11
2 N.O.	10	195-MA20
2 N.C.	10	195-MA02
2 N.O.-2 N.C.	10	195-MA22
4 N.O.	10	195-MA40
1 N.O.-3 N.C.	10	195-MA13
4 N.C.	10	195-MA04

Surge Suppressors



Description		Pkg. Qty.	Cat. No. ①
R-C Suppressor	24...48V AC	10	199-MSMA48
	110...280V AC	10	199-MSMA1
MOV Suppressor	12...55V AC	10	199-MSMV1
	56...136V AC	10	199-MSMV2
	137...277V AC	10	199-MSMV3
Diode Suppressor	12...250V DC	10	199-MSMD1

Timers



Description		Pkg. Qty.	Cat. No. ①
Solid State Timing Element 110...250V 50/60 Hz, DC	0.1...3 s On-Delay	10	196-MT3S
	1...30 s On-Delay	10	196-MT30S
Star-Delta Timer 1...30 s The Star (K3) contactor is energized for the time setting and de-energized. Then after 90 ± 30 ms the Delta (K2) contactor is energized.	220...250V 50/60Hz	10	196-MTSDA2
	110...120V 50/60 Hz	10	196-MTSDA1
35 mm DIN Rail Mounting Adapter For Above Timers		10	196-MTM

①All Cat. Nos. are factory stocked.

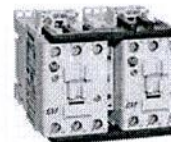
100-C/104-C, 100S-C/104S-C Contactors

Product Selection—100-C/104-C Contactors

- Compact sizes from 4...55 kW/5...75 Hp (9...97 A)
- Common accessories for all contactor sizes
- Front and side mounting of auxiliary contacts
- Electronic and pneumatic timing modules
- Space-saving coil-mounted control modules
- Reversible coil terminations (line or load side)
- All devices can be attached to 35 mm DIN mounting Rail
- Environmentally friendly materials



100-C Contactor



104-C Reversing Contactor

The Bulletin 100-C/104-C IEC contactor family, along with a wide range of common accessories and Bulletin 193 solid-state overload relays, provides the most compact and flexible starter component system available.

3-Pole AC- and DC-operated Contactors

Rated Operational Current I_e [A]		Ratings for switching AC motors - AC-2, AC-3, AC-4										Auxiliary Contacts		Cat. No.
		3-phase kW (50 Hz)				Hp (60 Hz)								
		230V	400/415V	500V	690V	1-Phase		3-Phase						
115V	230V					200V	230V	460V	575V	N.O.	N.C.			
40 °C (104 °F)														
AC-3	AC-1													
9	32	3	4	4	4	1/2	1-1/2	2	2	5	7-1/2	1	0	100-C09⊗10
												0	1	100-C09⊗01 ⁽¹⁾
12	32	4	5.5	5.5	5.5	1/2	2	3	3	7-1/2	10	1	0	100-C12⊗10
												0	1	100-C12⊗01 ⁽¹⁾
16	32	5.5	7.5	7.5	7.5	1	3	5	5	10	15	1	0	100-C16⊗10
												0	1	100-C16⊗01 ⁽¹⁾
23	32	7.5	11	13	10	2	3	5	7-1/2	15	15	1	0	100-C23⊗10
												0	1	100-C23⊗01 ⁽¹⁾
30	65	10	15	15	15	2	5	7-1/2	10	20	25	0	0	100-C30⊗00
												1	0	100-C30⊗10
												0	1	100-C30⊗01 ⁽²⁾
37	65	11	18.5/20	20	18.5	3	5	10	10	25	30	0	0	100-C37⊗00
												1	0	100-C37⊗10
												0	1	100-C37⊗01 ⁽²⁾
43	85	13	22	25	22	3	7-1/2	10	15	30	30	0	0	100-C43⊗00
												1	0	100-C43⊗10
												0	1	100-C43⊗01 ⁽²⁾
55	85	15	30	30	30	5	10	15	20	40	40	0	0	100-C55⊗00
												1	0	100-C55⊗10
												0	1	100-C55⊗01 ⁽²⁾
60	100	18.5	32	37	32	5	10	15	20	40	50	0	0	100-C60⊗00
												1	0	100-C60⊗10
												0	1	100-C60⊗01 ⁽²⁾
72	100	22	40	45	40	5	15	20	25	50	60	0	0	100-C72⊗00
												1	0	100-C72⊗10
												0	1	100-C72⊗01 ⁽²⁾
85	100	25	45	55	45	7-1/2	15	25	30	60	60	0	0	100-C85⊗00
												1	0	100-C85⊗10
												0	1	100-C85⊗01 ⁽²⁾
97	130	30	55	55	55	10	20	30	30	75	75	0	0	100-C97⊗00
												1	0	100-C97⊗10
												0	1	100-C97⊗01 ⁽²⁾

(1) N.C. auxiliary contact meets mechanically linked performance per IEC 60947-5-1, Annex L.

(2) N.C. auxiliary contact meets mirror contact performance per IEC 60947-4-1, Annex F.

⊗ Coil voltage code and terminal position—see page 19

4-Pole AC- and DC-Operated Contactors

Rated Operational Current I_n [A]		Ratings for switching AC motors - AC-2, AC-3										Contact Configuration, Main Poles		Cat. No.
		3-phase kW (50 Hz) ⁽¹⁾				Hp (60 Hz)								
						1-Phase		3-Phase ⁽¹⁾						
40 °C (104 °F)		230V	400/415V	500V	690V	115V	230V	200V	230V	460V	575V			
AC-3	AC-1					115V	230V	200V	230V	460V	575V	N.O.	N.C.	
9	32	3	4	4	4	1/2	1-1/2	2	2	5	7-1/2	4	0	100-C090400
												3	1	100-C090300
												2	2	100-C090200
12	32	4	5.5	5.5	5.5	1/2	2	3	3	7-1/2	10	4	0	100-C120400
												3	1	100-C120300
												2	2	100-C120200
16	32	5.5	7.5	7.5	7.5	1	3	5	5	10	10	4	0	100-C160400
												3	1	100-C160300
												2	2	100-C160200
23	32	7.5	11	13	10	2	3	5	7-1/2	15	15	4	0	100-C230400
												3	1	100-C230300
												2	2	100-C230200
37	75	11	18.5/20	20	18.5	3	5	10	10	25	30	4	0	100-C400400
												2	2	100-C400200
85	130	25	45	55	45	7-1/2	15	25	30	60	50	4	0	100-C900400
												2	2	100-C900200

(1) Three-phase ratings apply only to contactors with at least three N.O. power poles.

⊗ Coil voltage code and terminal position— see page 19.

Reversing AC- and DC-Operated Contactors

Rated Operational Current I_e [A]		Ratings for switching AC motors - AC-2, AC-3, AC-4										Auxiliary Contacts per Contactor		Cat. No.	
		3-phase kW (50 Hz)				Hp (60 Hz)									
		230V	400/415V	500V	690V	1-Phase		3-Phase							
AC-3	AC-1					115V	230V	200V	230V	460V	575V	N.O.	N.C. (1)		
40 °C (104 °F)		3	4	4	4	1/2	1-1/2	2	2	5	7-1/2	1	1	104-C09022	
9		32	4	5.5	5.5	1	2	3	3	7-1/2	10	1	1	104-C12022	
12		32	5.5	7.5	7.5	1	3	5	5	10	15	1	1	104-C16022	
16		32	7.5	11	13	2	3	5	7-1/2	15	20	1	1	104-C23022	
23		32	7.5	15	15	2	5	7-1/2	10	20	25	0	1	104-C30002	
30		65	10	18.5/20	20	18.5	3	5	10	10	25	30	1	1	104-C30022
37		65	11	20	18.5	3	5	10	10	25	30	0	1	104-C37002	
43		85	13	22	25	22	3	7.5	10	15	30	30	1	1	104-C37022
43		85	13	22	25	22	3	7.5	10	15	30	30	0	1	104-C43002
55		85	15	30	30	30	5	10	15	20	40	40	1	1	104-C43022
55		85	15	30	30	30	5	10	15	20	40	40	0	1	104-C55002
60		100	18.5	32	37	32	5	10	15	20	40	50	1	1	104-C55022
60		100	18.5	32	37	32	5	10	15	20	40	50	0	1	104-C60002
72		100	22	40	45	40	5	15	20	25	50	60	1	1	104-C60022
72		100	22	40	45	40	5	15	20	25	50	60	0	1	104-C72002
85		100	25	45	55	45	7-1/2	15	25	30	60	60	1	1	104-C72022
85		100	25	45	55	45	7-1/2	15	25	30	60	60	0	1	104-C85002
97		130	30	55	55	55	10	15	30	30	75	75	1	1	104-C85022
97		130	30	55	55	55	10	15	30	30	75	75	0	1	104-C97002
													1	1	104-C97022

(1) The N.C. auxiliary contact is supplied as part of the mechanical/electrical interlock.

⊗ Coil voltage code and terminal position— see page 19.

Coil Voltage Codes

The Cat. No. as listed is incomplete. Select a coil voltage code from the table below to complete the Cat. No. Example: 120V, 60 Hz: Cat. No. 100-C09 $\otimes$ 10 becomes Cat. No.100-C09D10.

AC Voltages [V]	24	110	120	200... 220	208... 240	230	240	277	400... 415	440	480
50 Hz	—	D	—	L	—	—	T	—	G	B	—
60 Hz	—	—	D	—	L	—	—	T	—	G	B
50/60 Hz	KJ	—	—	—	—	KF	—	—	—	—	—

DC Voltages [V]		12	24	36...48	48...72	72	110	110...125	220	220...250
100-C09...C55	Electronic with Integrated Diode	EQ	EJ	EW	EY	—	—	ED	—	EA
100-C60...C97	with Integrated Diode	—	DJ	—	—	DG	DD	—	DA	—

Coil Terminal Position

All contactors are delivered with the coil terminals located on the line side.

For load-side coil terminations, insert a "U" prior to the coil voltage code. Ordering example: Cat. No. 100-C09UD10.



Cat. No.100-C09 $\otimes$ 10 Line Side



Cat. No.100-C09U $\otimes$ 10 Load Side

M6 + M8

Assignment of Contacts

Table valid for: AC / DC = 0.85...1.1 x U_s, T_{amb} = -25 °C...+60 °C (-13...140 °F), normal position (horizontal rail mounting)

Device Combinations in Accordance with IEC 60947-1 / -4-1

Auxiliary Contact Blocks		100-C Contactors (AC and DC Control)						
Circuit Diagram	Control	100-C09_⊗10 100-C12_⊗10 100-C16_⊗10 100-C23_⊗10	100-C09_⊗01 100-C12_⊗01 100-C16_⊗01 100-C23_⊗01	100-C30_⊗00 100-C37_⊗00 100-C43_⊗00 100-C55_⊗00 100-C60_⊗00 100-C72_⊗00 100-C85_⊗00 100-C97_⊗00	100-C09_⊗400 100-C12_⊗400 100-C16_⊗400 100-C23_⊗400 100-C40_⊗400 100-C90_⊗400	100-C09_⊗300 100-C12_⊗300 100-C16_⊗300 100-C23_⊗300	100-C09_⊗200 100-C12_⊗200 100-C16_⊗200 100-C23_⊗200 100-C40_⊗200 100-C90_⊗200	
Side Mounting ⁽¹⁾								
100-SB01		AC/DC	10 + 01 = 11	01 + 01 = 02 ⁽²⁾	00 + 01 = 01	00 + 01 = 01	00 + 01 = 01	00 + 01 = 01
100-SB10		AC/DC	10 + 10 = 20 ⁽²⁾	01 + 10 = 11	00 + 10 = 10	00 + 10 = 10	00 + 10 = 10	00 + 10 = 10
100-SB02		AC/DC	10 + 02 = 12 ⁽²⁾	—	00 + 02 = 02	00 + 02 = 02	00 + 02 = 02	00 + 02 = 02
100-SB11		AC/DC	10 + 11 = 21 ⁽²⁾	01 + 11 = 12 ⁽²⁾	00 + 11 = 11	00 + 11 = 11	00 + 11 = 11	00 + 11 = 11
100-SB20		AC/DC	10 + 20 = 30 ⁽²⁾	01 + 20 = 21 ⁽²⁾	00 + 20 = 20	00 + 20 = 20	00 + 20 = 20	00 + 20 = 20
100-SBL11 ⁽³⁾		AC/DC	10 + L11 = L21 ⁽²⁾	01 + L11 = L12 ⁽²⁾	00 + L11 = L11	00 + L11 = L11	00 + L11 = L11	00 + L11 = L11

(1) Up to 8 auxiliary contacts possible: contactor + front mounted (AC max. 4 N.C. / DC max. 4 N.C.), side mounted (AC max. 2 N.O. / DC max. 2 N.O. and max. 2 N.C.).

(2) Double numbering: because of double numbering only left-side mounting is recommended.

(3) Early make and/or late break.

Timer, On-delay

AA 9906/200

The timer MK 9906 and AA 9906/200 can be used to switch devices and controls with an adjustable on delay. With these timer the start behaviour of machine parts e. g. the starting of motors can be influenced. The delay time can be easily adjusted via a stepless time setting. With its 2 changeover contacts, the MK 9906 is also available with an instantaneous contact.

Features

- . Power ON-delay relay according to EN 61812-1
- . Time delay of 0.05 s ... 60 min
- . Repeat accuracy $\leq \pm 0.5 \%$
- . Adjustable on absolute scale
- . MK 9906 as a 2-voltage version
- . AA 9906/200 with wide input range AC/DC 24 ... 240 V
- . Available with instantaneous contact
- . LED indicators for operation and contact position
- . Controllable by proximity sensors
- . 2 changeover contacts
- . MK 9906: width 22.5 mm
- AA 9906/200: width 45 mm

Technical specifications

Width: 45mm

Enclosure design: Switch cabinet

Output contacts: 2 C/O contacts

Nominal voltage: AC/DC

Time function(s): On-delay

Type: AA 9906/200

Time range: 0,05 s - 60 min

Manufacturer: E. Dold & Söhne GmbH & Co. KG

Type: AA9906.82/200 AC/DC24-240V 5-100S

Art. No.: 0035946



193T1AB40

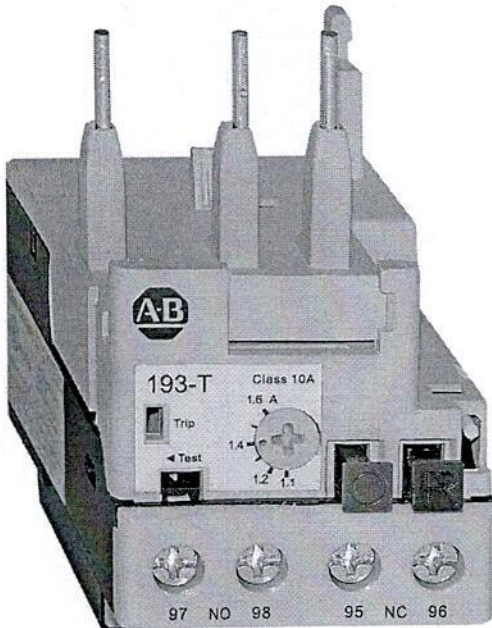
Allen-Bradley 193T Overload Thermal 2.9 to 4A for 100C 9 and 23A



M 9
MOTOR PROTECTION



Allen-Bradley



Component type	Thermal overload relay
Range	193-T
Model	N/A
Product status	Existing

The Allen-Bradley Bulletin 193-T1 IEC Bimetallic Overload Relays are motor protectors for IEC applications. Designed for use with Bulletin 100-C Contactors and Bulletin 104-C Reversing Contactors and feature adjustable trip settings, a manual reset button, and a differential mechanism for sensitivity to phase-loss conditions.

ELECTRICAL

Adjustable current range	2.9-4 A
Release class	CLASS 10 A
Max. rated operation voltage Ue	690 V
Number of auxiliary contacts as normally closed contact	1
Number of auxiliary contacts as normally open contact	1
Reset function automatic	Yes
Reset function push-button	Yes
Type of electrical connection of main circuit	Screw connection

CONSTRUCTION

Mounting method	Direct attachment
-----------------	-------------------

DIMENSIONS

Height	75.5 mm
Width	45 mm
Depth	63.5 mm
Weight	0.12 kg



Miniature circuit breaker 230/400 V 6kA, 1-pole, C, 10A, D=70 mm

Model	
product brand name	SENTRON
product designation	Miniature circuit breaker
General technical data	
number of poles	1
design of pole	1P
tripping characteristic class	C
mechanical service life (operating cycles) typical	10 000
overvoltage category	III
degree of pollution	3
Voltage	
type of voltage of the operating voltage	AC
insulation voltage (Ui)	
• with single-phase operation at AC rated value	440 V
• with multi-phase operation at AC rated value	440 V
supply voltage with single-phase operation at AC rated value	230 V
operational current	
• at 40 °C rated value	9.39 A
• at 50 °C rated value	8.74 A
• at 55 °C rated value	8.4 A
• at AC rated value	10 A
Supply voltage	
supply voltage	
• at AC	400 V
• at DC rated value	60 V
value range of the supply voltage frequency	50/60 Hz
operating voltage at DC rated value maximum	72 V
Protection class	
protection class IP	IP20, with connected conductors
Breaking Capacity	
switching capacity current	
• at DC according to IEC 60947-2 rated value	15 kA
• according to EN 60898 rated value	6 kA
• according to IEC 60947-2 rated value	15 kA
energy limitation class	3
Dissipation	
power loss [W] for rated value of the current at AC in hot operating state per pole	1.1 W
suitability for operation	Infrastructure / Industry

M10

Product details	
product feature touch protection	Yes
product component	
• combined terminal top	Yes
• combined terminal bottom	Yes
• neutral conductor switching	No
product feature	
• properties for main switches in accordance with EN 60204-1	Yes
• halogen-free	Yes
• sealable	Yes
• silicon-free	Yes
product extension installable supplementary devices	Yes
Product function	
set values setting current (li) for I-tripping	8
reference value setting current (li) for I-tripping	x In
Short circuit	
short-circuit current breaking capacity (Icn)	
• at AC according to UL 1077 and CSA C22.2 No.235	5 kA
Connections	
connectable conductor cross-section solid	
• minimum	0.75 mm ²
• maximum	35 mm ²
connectable conductor cross-section stranded	
• minimum	0.75 mm ²
• maximum	35 mm ²
connectable conductor cross-section finely stranded with core end processing	
• minimum	0.75 mm ²
• maximum	25 mm ²
AWG number as coded connectable conductor cross section	
• minimum	18
• maximum	4
tightening torque [lbf-in] with screw-type terminals	
• minimum	22 lbf-in
• maximum	31 lbf-in
tightening torque with screw-type terminals	
• minimum	2.5 N-m
• maximum	3.5 N-m
position of power supply cord	Any
Mechanical Design	
height	90 mm
width	18 mm
depth	76 mm
installation depth	70 mm
number of modular width units	1
fastening method	Quick assembly system
mounting position	any
net weight	149 g
Environmental conditions	
standard	IEC / EN 60898-1, IEC / EN 60947-2 / UL1077
vibration resistance according to IEC 60068-2-6	±1mm at 5 to 25Hz; 50m/s ² at 25 to 150Hz
ambient temperature during operation	
• minimum	-25 °C
• maximum	55 °C
ambient temperature during storage	
• minimum	-40 °C
• maximum	75 °C
number of test cycles for environmental testing according to IEC 60068-2-30	6



Circuit breaker Universal current 440 V DC 400 V AC 10kA, 2-pole, C, 10 A

Model	
product brand name	SENTRON
product designation	Miniature circuit breaker
General technical data	
number of poles	2
design of pole	2P
tripping characteristic class	C
mechanical service life (operating cycles) typical	10 000
overvoltage category	III
degree of pollution	3
Voltage	
type of voltage of the operating voltage	AC/DC
insulation voltage (Ui)	
• at DC rated value	250 V
• with single-phase operation at AC rated value	440 V
• with multi-phase operation at AC rated value	440 V
operational current	
• at 40 °C rated value	9.39 A
• at 50 °C rated value	8.74 A
• at 55 °C rated value	8.4 A
• at 60 °C rated value	8.04 A
• at AC rated value	10 A
Supply voltage	
supply voltage	
• at AC	400 V
• at DC rated value	440 V
value range of the supply voltage frequency	50/60 Hz
operating voltage at DC rated value maximum	500 V
Protection class	
protection class IP	IP20, with connected conductors
Breaking Capacity	
switching capacity current	
• at DC according to IEC 60947-2 rated value	15 kA
• according to EN 60898 rated value	10 kA
energy limitation class	3
Dissipation	
power loss [W] for rated value of the current at AC in hot operating state per pole	1.1 W
suitability for operation	Infrastructure / Industry / Mobility
Product details	

product feature touch protection	Yes
product component	
• combined terminal top	Yes
• combined terminal bottom	Yes
• neutral conductor switching	No
product feature	
• properties for main switches in accordance with EN 60204-1	Yes
• halogen-free	Yes
• sealable	Yes
• silicon-free	Yes
product extension installable supplementary devices	Yes
Short circuit	
short-circuit current breaking capacity (I_{cn})	
• at DC according to EN 60898-2	10 kA
Connections	
connectable conductor cross-section solid	
• minimum	0.75 mm ²
• maximum	35 mm ²
connectable conductor cross-section stranded	
• minimum	0.75 mm ²
• maximum	35 mm ²
connectable conductor cross-section finely stranded with core end processing	
• minimum	0.75 mm ²
• maximum	25 mm ²
AWG number as coded connectable conductor cross section	
• minimum	18
• maximum	4
tightening torque [lbf·in] with screw-type terminals	
• minimum	22 lbf·in
• maximum	31 lbf·in
tightening torque with screw-type terminals	
• minimum	2.5 N·m
• maximum	3.5 N·m
position of power supply cord	AC as required, observe DC polarity
Mechanical Design	
height	90 mm
width	36 mm
depth	76 mm
installation depth	70 mm
number of modular width units	2
fastening method	Quick assembly system
mounting position	any
net weight	305 g
Environmental conditions	
standard	IEC / EN 60898-2, UL1077
vibration resistance according to IEC 60068-2-6	±1mm at 5 to 25Hz; 50m/s ² at 25 to 150Hz
ambient temperature during operation	
• minimum	-40 °C
• maximum	70 °C
ambient temperature during storage	
• minimum	-40 °C
• maximum	75 °C
number of test cycles for environmental testing according to IEC 60068-2-30	6
Approvals Certificates	
General Product Approval	



Miniature circuit breaker 400 V 6kA, 2-pole, C, 10A, D=70 mm

Model	
product brand name	SENTRON
product designation	Miniature circuit breaker
General technical data	
number of poles	2
design of pole	2P
tripping characteristic class	C
mechanical service life (operating cycles) typical	10 000
overvoltage category	III
degree of pollution	3
Voltage	
type of voltage of the operating voltage	AC
insulation voltage (Ui)	
• with single-phase operation at AC rated value	440 V
• with multi-phase operation at AC rated value	440 V
supply voltage with single-phase operation at AC rated value	230 V
operational current	
• at 40 °C rated value	9.39 A
• at 50 °C rated value	8.74 A
• at 55 °C rated value	8.4 A
• at AC rated value	10 A
Supply voltage	
supply voltage	
• at AC	400 V
• at DC rated value	60 V
value range of the supply voltage frequency	50/60 Hz
operating voltage at DC rated value maximum	72 V
Protection class	
protection class IP	IP20, with connected conductors
Breaking Capacity	
switching capacity current	
• at DC according to IEC 60947-2 rated value	15 kA
• according to EN 60898 rated value	6 kA
• according to IEC 60947-2 rated value	15 kA
energy limitation class	3
Dissipation	
power loss [W] for rated value of the current at AC in hot operating state per pole	1.1 W
suitability for operation	Infrastructure / Industry

M 12

Product details	
product feature touch protection	Yes
product component	
• combined terminal top	Yes
• combined terminal bottom	Yes
• neutral conductor switching	No
product feature	
• properties for main switches in accordance with EN 60204-1	Yes
• halogen-free	Yes
• sealable	Yes
• silicon-free	Yes
product extension installable supplementary devices	Yes
Product function	
set values setting current (Ii) for I-tripping	8
reference value setting current (Ii) for I-tripping	x I _n
Short circuit	
short-circuit current breaking capacity (I _{cn})	
• at AC according to UL 1077 and CSA C22.2 No.235	5 kA
Connections	
connectable conductor cross-section solid	
• minimum	0.75 mm ²
• maximum	35 mm ²
connectable conductor cross-section stranded	
• minimum	0.75 mm ²
• maximum	35 mm ²
connectable conductor cross-section finely stranded with core end processing	
• minimum	0.75 mm ²
• maximum	25 mm ²
AWG number as coded connectable conductor cross section	
• minimum	18
• maximum	4
tightening torque [lbf-in] with screw-type terminals	
• minimum	22 lbf-in
• maximum	31 lbf-in
tightening torque with screw-type terminals	
• minimum	2.5 N·m
• maximum	3.5 N·m
position of power supply cord	Any
Mechanical Design	
height	90 mm
width	36 mm
depth	76 mm
installation depth	70 mm
number of modular width units	2
fastening method	Quick assembly system
mounting position	any
net weight	302 g
Environmental conditions	
standard	IEC / EN 60898-1, IEC / EN 60947-2 / UL1077
vibration resistance according to IEC 60068-2-6	±1mm at 5 to 25Hz; 50m/s ² at 25 to 150Hz
ambient temperature during operation	
• minimum	-25 °C
• maximum	55 °C
ambient temperature during storage	
• minimum	-40 °C
• maximum	75 °C
number of test cycles for environmental testing according to IEC 60068-2-30	6

M13

SIEMENS

Data sheet

5SY6310-7



Miniature circuit breaker 400 V 6kA, 3-pole, C, 10A, D=70 mm

Model	
product brand name	SENTRON
product designation	Miniature circuit breaker
General technical data	
number of poles	3
design of pole	3P
tripping characteristic class	C
mechanical service life (operating cycles) typical	10 000
overvoltage category	III
degree of pollution	3
Voltage	
type of voltage of the operating voltage	AC
insulation voltage (Ui)	440 V
- with single-phase operation at AC rated value - with multi-phase operation at AC rated value	440 V
supply voltage with single-phase operation at AC rated value	230 V
operational current	9.39 A
- at 40 °C rated value - at 50 °C rated value - at 55 °C rated value - at AC rated value	8.74 A 8.4 A 10 A
Supply voltage	
supply voltage	400 V
- at AC - at DC rated value	60 V
value range of the supply voltage frequency	50/60 Hz
operating voltage at DC rated value maximum	72 V
Protection class	
protection class IP	IP20, with connected conductors
Breaking Capacity	
switching capacity current	15 kA
- at DC according to IEC 60947-2 rated value - according to EN 60898 rated value - according to IEC 60947-2 rated value	6 kA 15 kA
energy limitation class	3
Dissipation	
power loss [W] for rated value of the current at AC in hot operating state per pole	1.1 W
suitability for operation	Infrastructure / Industry

M13

Product details	
product feature touch protection	Yes
product component	
• combined terminal top	Yes
• combined terminal bottom	Yes
• neutral conductor switching	No
product feature	
• properties for main switches in accordance with EN 60204-1	Yes
• halogen-free	Yes
• sealable	Yes
• silicon-free	Yes
product extension installable supplementary devices	Yes
Product function	
set values setting current (Ii) for I-tripping	8
reference value setting current (Ii) for I-tripping	x In
Short circuit	
short-circuit current breaking capacity (Icn)	
• at AC according to UL 1077 and CSA C22.2 No.235	5 kA
Connections	
connectable conductor cross-section solid	
• minimum	0.75 mm ²
• maximum	35 mm ²
connectable conductor cross-section stranded	
• minimum	0.75 mm ²
• maximum	35 mm ²
connectable conductor cross-section finely stranded with core end processing	
• minimum	0.75 mm ²
• maximum	25 mm ²
AWG number as coded connectable conductor cross section	
• minimum	18
• maximum	4
tightening torque [lbf·in] with screw-type terminals	
• minimum	22 lbf·in
• maximum	31 lbf·in
tightening torque with screw-type terminals	
• minimum	2.5 N·m
• maximum	3.5 N·m
position of power supply cord	Any
Mechanical Design	
height	90 mm
width	54 mm
depth	76 mm
installation depth	70 mm
number of modular width units	3
fastening method	Quick assembly system
mounting position	any
net weight	453 g
Environmental conditions	
standard	IEC / EN 60898-1, IEC / EN 60947-2 / UL1077
vibration resistance according to IEC 60068-2-6	±1mm at 5 to 25Hz; 50m/s ² at 25 to 150Hz
ambient temperature during operation	
• minimum	-25 °C
• maximum	55 °C
ambient temperature during storage	
• minimum	-40 °C
• maximum	75 °C
number of test cycles for environmental testing according to IEC 60068-2-30	6

Super-mini Signal Conditioners Mini-M Series

CT TRANSMITTER

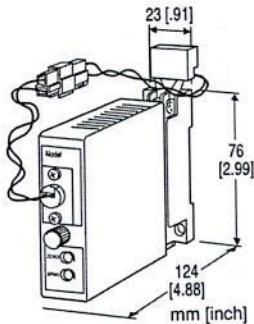
(RMS sensing)

Functions & Features

- Converts alternating current from a current transformer into a standard process signal
- Minimum ripple
- Rerouted input signal does not pass through the base socket in order to protect it from melting caused by rush current of a motor
- CT Protector provided for open-circuit protection

Typical Applications

- Centralized monitoring and control of motors, pumps or heaters by DCS
- Monitoring power line and power supply current



MODEL: M2CE-[1][2]-[3][4]

ORDERING INFORMATION

- Code number: M2CE-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4].
(e.g. M2CE-5A-M2/CE/Q)
- Special output range (For codes Z & 0)
- Specify the specification for option code /Q
(e.g. /C01/S01)

[1] INPUT

Current

- 1: 0 - 1 A AC
- 5: 0 - 5 A AC

[2] OUTPUT

Current

- A: 4 - 20 mA DC (Load resistance 750 Ω max.)
- B: 2 - 10 mA DC (Load resistance 1500 Ω max.)
- C: 1 - 5 mA DC (Load resistance 3000 Ω max.)

- D: 0 - 20 mA DC (Load resistance 750 Ω max.)
- E: 0 - 16 mA DC (Load resistance 900 Ω max.)
- F: 0 - 10 mA DC (Load resistance 1500 Ω max.)
- G: 0 - 1 mA DC (Load resistance 15 k Ω max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

- 1: 0 - 10 mV DC (Load resistance 10 k Ω min.)
- 2: 0 - 100 mV DC (Load resistance 100 k Ω min.)
- 3: 0 - 1 V DC (Load resistance 1000 Ω min.)
- 4: 0 - 10 V DC (Load resistance 10 k Ω min.)
- 5: 0 - 5 V DC (Load resistance 5000 Ω min.)
- 6: 1 - 5 V DC (Load resistance 5000 Ω min.)
- 4W: -10 - +10 V DC (Load resistance 10 k Ω min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

[3] POWER INPUT

AC Power

M: 85 - 264 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)

(Select '/N' for 'Standards & Approvals' code.)

M2: 100 - 240 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)

(90 - 264 V for UL)

DC Power

R: 24 V DC

(Operational voltage range 24 V $\pm$ 10 %, ripple 10 %p-p max.)

R2: 11 - 27 V DC

(Operational voltage range 11 - 27 V, ripple 10 %p-p max.)

(Select '/N' for 'Standards & Approvals' code.)

P: 110 V DC

(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)
(110 V $\pm$ 10 % for UL)

[4] OPTIONS (multiple selections)

Standards & Approvals (must be specified)

/N: Without CE, UKCA or UL

/CE: CE marking

/UK: CE, UKCA marking

/UL: UL approval, CE marking

Other Options

blank: none

/Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating (UL not available)

/C04: Polyolefin coating (UL not available)

TERMINAL SCREW MATERIAL

/S01: Stainless steel (UL not available)

GENERAL SPECIFICATIONS

Construction: Plug-in
 Connection: M3 screw terminals (torque 0.8 N·m)
 Screw terminal: Chromated steel (standard) or stainless steel
 Housing material: Flame-resistant resin (black)
 Isolation: Input to output to power
 Input waveform
 RMS sensing: Up to 15 % of 3rd harmonic content
 Overrange output: 0 to 120 % at 1 - 5 V
 Zero adjustment: -5 to +5 % (front)
 Span adjustment: 95 to 105 % (front)

INPUT SPECIFICATIONS

Frequency: 50 or 60 Hz
 Input burden:
 ≤ 0.1 VA (input 0 - 1 A)
 ≤ 0.5 VA (input 0 - 5 A)
 Overload capacity: 500 % of rating for 5 sec., 120 % continuous
 Operational range: 0 - 120 % of rating

OUTPUT SPECIFICATIONS

■ DC Current: 0 - 20 mA DC
 Minimum span: 1 mA
 Offset: Max. 1.5 times span
 Load resistance: Output drive 15 V max.
 ■ DC Voltage: 0 - 12 V DC
 Minimum span: 5 mV
 Offset: Max. 1.5 times span
 Load resistance: Output drive 1 mA max.; at ≥ 0.5 V

INSTALLATION

Power Consumption
 •AC:
 Approx. 3 VA at 100 V
 Approx. 4 VA at 200 V
 Approx. 5 VA at 264 V
 •DC: Approx. 3 W
 Operating temperature: -5 to +55°C (23 to 131°F)
 Operating humidity: 30 to 90 %RH (non-condensing)
 Mounting: Surface or DIN rail
 Weight: 150 g (0.33 lb)

PERFORMANCE in percentage of span

Accuracy: ±0.3 %
 Temp. coefficient: ±0.015 %/°C (±0.008 %/°F)
 Response time: ≤ 0.5 sec. (0 - 90 %)
 Ripple: 0.5 %p-p max. (100/120 Hz)
 Line voltage effect: ±0.1 % over voltage range

Insulation resistance: ≥ 100 MΩ with 500 V DC
 Dielectric strength: 2000 V AC @1 minute (input to output to power to ground)

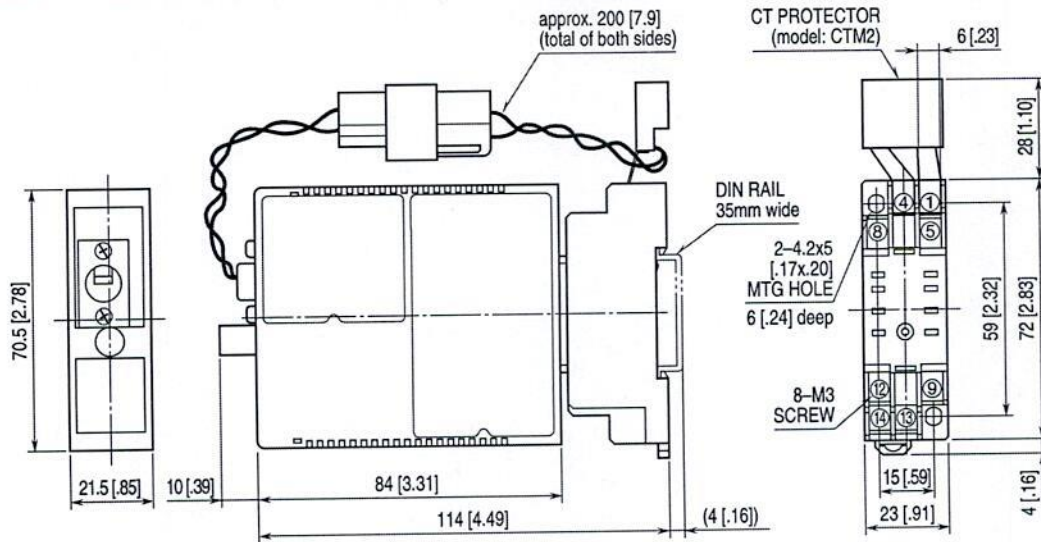
STANDARDS & APPROVALS

EU conformity:
 EMC Directive
 EMI EN 61000-6-4
 EMS EN 61000-6-2
 Low Voltage Directive
 EN 61010-1
 Installation Category II
 Pollution Degree 2
 Input or output to power: Reinforced insulation (300 V)
 Input to output: Basic insulation (300 V)
 RoHS Directive
 UK conformity (UKCA):
 The UK legislations and designated standards are equivalent to the applicable EU directives.
 (Refer to our website for more information about the legislations and designated standards.)
 Approval:
 UL/C-UL nonincendive Class I, Division 2,
 Groups A, B, C, and D
 (UL 121201, CAN/CSA-C22.2 No.213-17)
 UL/C-UL general safety requirements
 (UL 61010-1, CAN/CSA-C22.2 No.61010-1-12)

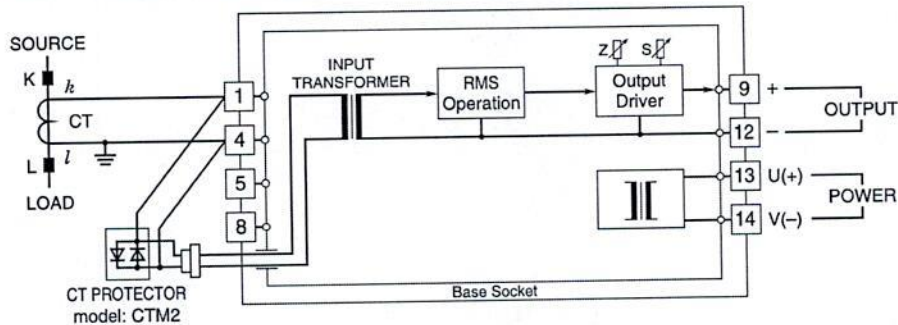
M14

MODEL: M2CE

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.

M15

MODEL: M2PE

Super-mini Signal Conditioners Mini-M Series

PT TRANSMITTER

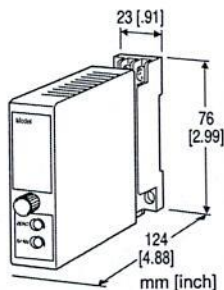
(RMS sensing)

Functions & Features

- Converts an alternating voltage input from a potential (voltage) transformer into a standard process signal
- RMS sensing
- Minimum ripple

Typical Applications

- Centralized monitoring and control of power line and power supply voltage measured at switch boards
- Monitoring abnormal voltage drops for detecting overload



MODEL: M2PE-[1][2]-[3][4]

ORDERING INFORMATION

- Code number: M2PE-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4].
(e.g. M2PE-1A-M2/CE/Q)
- Special output range (For codes Z & 0)
- Specify the specification for option code /Q
(e.g. /C01/S01)

[1] INPUT

Voltage

- 1: 0 - 110 V AC
- 5: 0 - 150 V AC

[2] OUTPUT

Current

- A: 4 - 20 mA DC (Load resistance 750 Ω max.)
- B: 2 - 10 mA DC (Load resistance 1500 Ω max.)
- C: 1 - 5 mA DC (Load resistance 3000 Ω max.)
- D: 0 - 20 mA DC (Load resistance 750 Ω max.)
- E: 0 - 16 mA DC (Load resistance 900 Ω max.)
- F: 0 - 10 mA DC (Load resistance 1500 Ω max.)

G: 0 - 1 mA DC (Load resistance 15 k Ω max.)

Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

- 1: 0 - 10 mV DC (Load resistance 10 k Ω min.)
- 2: 0 - 100 mV DC (Load resistance 100 k Ω min.)
- 3: 0 - 1 V DC (Load resistance 1000 Ω min.)
- 4: 0 - 10 V DC (Load resistance 10 k Ω min.)
- 5: 0 - 5 V DC (Load resistance 5000 Ω min.)
- 6: 1 - 5 V DC (Load resistance 5000 Ω min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

[3] POWER INPUT

AC Power

M: 85 - 264 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)

(Select '/N' for 'Standards & Approvals' code.)

M2: 100 - 240 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)

(90 - 264 V for UL)

DC Power

R: 24 V DC

(Operational voltage range 24 V $\pm$ 10 %, ripple 10 %p-p max.)

R2: 11 - 27 V DC

(Operational voltage range 11 - 27 V, ripple 10 %p-p max.)

(Select '/N' for 'Standards & Approvals' code.)

P: 110 V DC

(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)
(110 V $\pm$ 10 % for UL)

[4] OPTIONS (multiple selections)

Standards & Approvals (must be specified)

/N: Without CE or UL

/CE: CE marking

/UL: UL approval, CE marking

Other Options

blank: none

/Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating (UL not available)

/C04: Polyolefin coating (UL not available)

TERMINAL SCREW MATERIAL

/S01: Stainless steel (UL not available)

GENERAL SPECIFICATIONS

Construction: Plug-in
Connection: M3 screw terminals (torque 0.8 N·m)
Screw terminal: Chromated steel (standard) or stainless steel
Housing material: Flame-resistant resin (black)
Isolation: Input to output to power
Input waveform
RMS sensing: Up to 15 % of 3rd harmonic content
Overrange output: 0 to 120 % at 1 - 5 V
Zero adjustment: -5 to +5 % (front)
Span adjustment: 95 to 105 % (front)

INPUT SPECIFICATIONS

Frequency: 50 or 60 Hz
Input burden: 0.5 VA max.
Overload capacity: 200 % of rating for 1 minute, 120 % continuous
Operational range: 0 - 120 % of rating

OUTPUT SPECIFICATIONS

■ **DC Current:** 0 - 20 mA DC
Minimum span: 1 mA
Offset: Max. 1.5 times span
Load resistance: Output drive 15 V max.
 ■ **DC Voltage:** 0 - 12 V DC
Minimum span: 5 mV
Offset: Max. 1.5 times span
Load resistance: Output drive 1 mA max.; at ≥ 0.5 V

INSTALLATION

Power Consumption
 • **AC:**
 Approx. 3 VA at 100 V
 Approx. 4 VA at 200 V
 Approx. 5 VA at 264 V
 • **DC:** Approx. 3 W
Operating temperature: -5 to +55°C (23 to 131°F)
Operating humidity: 30 to 90 %RH (non-condensing)
Mounting: Surface or DIN rail
Weight: 150 g (0.33 lb)

PERFORMANCE in percentage of span

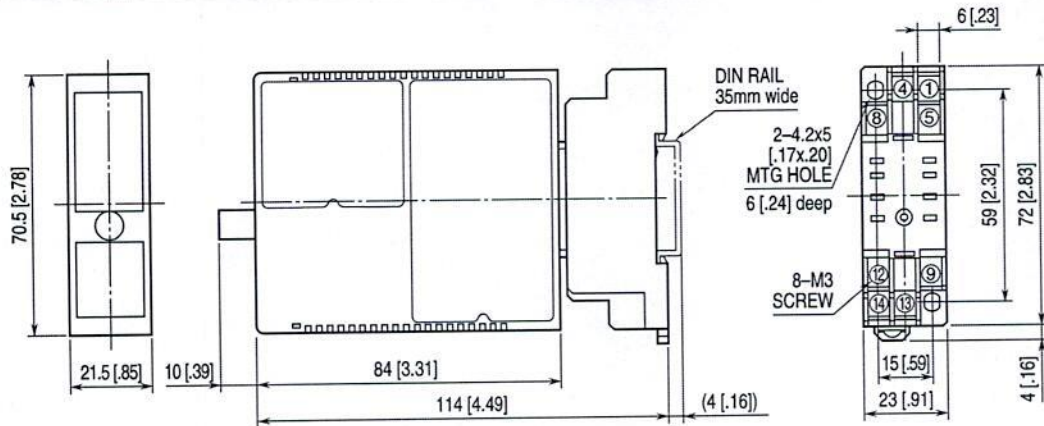
Accuracy: ± 0.4 %
Temp. coefficient: ± 0.02 %/°C (± 0.01 %/°F)
Response time: ≤ 0.5 sec. (0 - 90 %)
Ripple: 0.5 %p-p max. (100/120 Hz)
Line voltage effect: ± 0.1 % over voltage range
Insulation resistance: ≥ 100 M Ω with 500 V DC
Dielectric strength: 2000 V AC @1 minute (input to output to power to ground)

STANDARDS & APPROVALS

EU conformity:
 EMC Directive
 EMI EN 61000-6-4
 EMS EN 61000-6-2
 Low Voltage Directive
 EN 61010-1
 Measurement Category II (input)
 Installation Category II (power)
 Pollution Degree 2
 Input or output to power: Reinforced insulation (300 V)
 Input to output: Basic insulation (300 V)
 RoHS Directive
Approval:
 UL/C-UL nonincendive Class I, Division 2,
 Groups A, B, C, and D
 (UL 121201, CAN/CSA-C22.2 No.213-17)
 UL/C-UL general safety requirements
 (UL 61010-1, CAN/CSA-C22.2 No.61010-1-12)

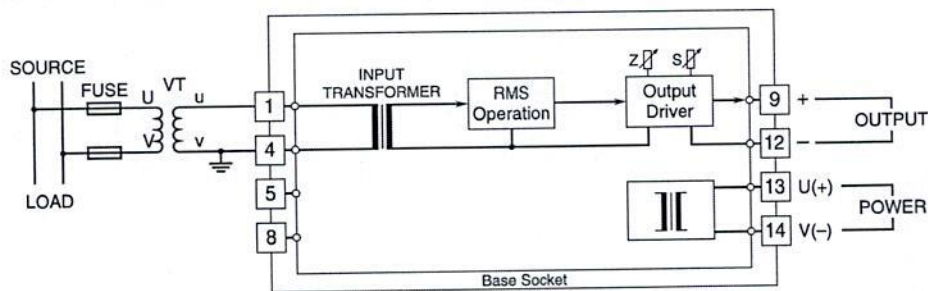
MODEL: M2PE

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



• When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Specifications are subject to change without notice.

Power Transducer Series L-UNIT

WATT TRANSDUCER

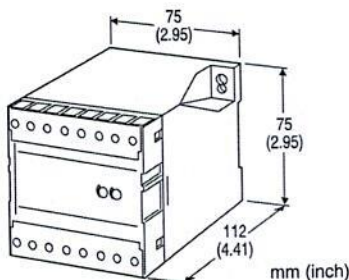
(with pulse output)

Functions & Features

- Providing a DC output signal and pulse totalizer signal in proportion to AC active power
- Convenient pulse unit output (Wh $\times 10^3$)
- Measuring bidirectional power flow
- DC output containing little ripple is ideal for computer input
- "Time division multiplication" method accepts distorted waveforms
- Isolation up to 2000 V AC
- High-density mounting

Typical Applications

- Centralized monitoring and control of power management system in a manufacturing facility or building
- SCR - Silicon Controlled Rectifier



MODEL: LWT-[1][2][3][4]-[5][6]

ORDERING INFORMATION

- Code number: LWT-[1][2][3][4]-[5][6]
Specify a code from below for each of [1] through [6].
(e.g. LWT-11A2-C/B/Q)
- Specify the specification for option code /Q
(e.g. /C01/S01)
- Calibration range (e.g. -750 - +750 W)
- VT ratio, CT ratio (e.g. VT 3300/110 V, CT 250/5 A)
- Special DC output range (For codes Z & 0)
- Pulse output (e.g. 6.666 Wh/pulse)

How To Determine Pulse Unit

[example]

3-phase / 3-wire, VT 3300/110 V, CT 250/5 A,
calibration range 750 W

- From Pulse Unit 10 [kWh/pulse]
10 [kWh/pulse] / (3300/110) $\times$ (250/5)

$$= 6.666 \times 10^{-3} \text{ [kWh/pulse]}$$

$$= 6.666 \text{ [Wh/pulse]}$$

- From Pulse Rate 150 [pulses/kWh]

$$1 / 150 \text{ [pulses/kWh]}$$

$$= 6.666 \times 10^{-3} \text{ [kWh/pulse]}$$

$$= 6.666 \text{ [Wh/pulse]}$$

- From Frequency 0.03125 Hz (at 100 %)

$$750 \text{ [W]} / 0.03125 \text{ [H]} \times 3600 \text{ [s]}$$

$$= 6.666 \text{ [Wh/pulse]}$$

[1] CONFIGURATION

- 1: 3-phase / 3-wire
- 2: Single-phase / 2-wire
- 3: Single-phase / 3-wire
- 4: 3-phase / 4-wire

[2] INPUT (unbalanced load)

- 1: 110 V / 5 A AC
- 2: 110 V / 1 A AC
- 3: 220 V / 1 A AC
- 4: 220 V / 5 A AC
- 5: 220 V / 380 V / 1 A AC (3-phase / 4-wire)
- 6: 220 V / 380 V / 5 A AC (3-phase / 4-wire)
- 7: 110 V / 190 V / 1 A AC (3-phase / 4-wire)
- 8: 110 V / 190 V / 5 A AC (3-phase / 4-wire)
- A: 100 V / 200 V / 1 A AC (single-phase / 3-wire)
- B: 100 V / 200 V / 5 A AC (single-phase / 3-wire)

[3] DC OUTPUT

Current

- A: 4 - 20 mA DC (Load resistance 600 Ω max.)
- B: 2 - 10 mA DC (Load resistance 1200 Ω max.)
- C: 1 - 5 mA DC (Load resistance 2400 Ω max.)
- D: 0 - 20 mA DC (Load resistance 600 Ω max.)
- E: 0 - 16 mA DC (Load resistance 750 Ω max.)
- F: 0 - 10 mA DC (Load resistance 1200 Ω max.)
- G: 0 - 1 mA DC (Load resistance 12 k Ω max.)
- J: 0 - 5 mA DC (Load resistance 2400 Ω max.)
- FW: -10 - +10 mA DC (Load resistance 1000 Ω max.)
- GW: -1 - +1 mA DC (Load resistance 10 k Ω max.)
- JW: -5 - +5 mA DC (Load resistance 2000 Ω max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

- 1: 0 - 10 mV DC (Load resistance 10 k Ω min.)
- 2: 0 - 100 mV DC (Load resistance 100 k Ω min.)
- 3: 0 - 1 V DC (Load resistance 1000 Ω min.)
- 4: 0 - 10 V DC (Load resistance 10 k Ω min.)
- 5: 0 - 5 V DC (Load resistance 5000 Ω min.)
- 6: 1 - 5 V DC (Load resistance 5000 Ω min.)
- 1W: -10 - +10 mV DC (Load resistance 10 k Ω min.)
- 2W: -100 - +100 mV DC (Load resistance 100 k Ω min.)

MODEL: LWT

3W: -1 ~ +1 V DC (Load resistance 1000 Ω min.)
 4W: -10 ~ +10 V DC (Load resistance 10 kΩ min.)
 5W: -5 ~ +5 V DC (Load resistance 5000 Ω min.)
 0: Specify voltage (See OUTPUT SPECIFICATIONS)

[4] PULSE OUTPUT (open collector)

0: None
 1: 2.777 Hz at 100 % input
 2: Specify pulse unit (within 0.006 ~ 3.12 Hz)

[5] AUXILIARY POWER SUPPLY

AC Power
 B: 100 V AC
 C: 110 V AC
 D: 115 V AC
 F: 120 V AC
 G: 200 V AC
 H: 220 V AC
 J: 240 V AC
 DC Power
 R: 24 V DC
 V: 48 V DC
 P: 110 V DC

[6] OPTIONS (multiple selections)

Optional Process
 blank: None
 /B: Bonding
 Other Options
 blank: none
 /Q: Option other than the above (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)
 /C01: Silicone coating
 /C02: Polyurethane coating
 /C03: Rubber coating
 TERMINAL SCREW MATERIAL
 /S01: Stainless steel

GENERAL SPECIFICATIONS

Construction: Stand-alone; terminal access at the front
Connection: M3.5 screw terminals (torque 0.8 N·m)
Screw terminal: Nickel-plated steel (standard) or stainless steel
Housing material: Flame-resistant resin (black)
Isolation: Voltage input to current input to DC output to pulse output to auxiliary power
Computation: Time division multiplication
Overrange output: Approx. -10 ~ +120 % at 1 ~ 5 V

Zero adjustment(DC output): -5 to +5 % (front)
 Span adjustment(DC output): 95 to +105 % (front)

INPUT SPECIFICATIONS

Frequency: 50 or 60 Hz

• Voltage Input

Operational range: 0 ~ 120 % of rating

Overload capacity: 150 % of rating for 10 sec., 120 % continuous

• Current Input

Operational range: 0 ~ 120 % of rating

Overload capacity: 1000 % of rating for 3 sec., 200 % for 10 sec., 120% continuous

■ How to determine Wattage Range

Calibration Range [W] = Measuring Wattage ÷ ((VT Ratio) × (CT Ratio))

Check that the required calibration range is within the available range in the table. Specify this range when ordering.

[Example]

3-phase / 3-wire, measuring wattage 750 kW,
 VT 3300/110 V, CT 250/5 A

$750 \times 10^3 [W] \div ((3300 \div 110) \times (250 \div 5)) = 500 [W]$

■ INPUT RANGE

• 3-phase / 3-wire

INPUT	STD.RANGE	AVAILABLE RANGE	BURDEN (VA)	
			VOLT.	CURR.
110V/1A	±200 W	±100 ~ ±240 W	0.2	0.1/ph
110V/5A	±1000 W	±500 ~ ±1200 W	/phase	0.5/ph
220V/1A	±400 W	±200 ~ ±480 W	0.4	0.1/ph
220V/5A	±2000 W	±1000 ~ ±2400 W	/phase	0.5/ph

• Single-phase / 2-wire

INPUT	STD.RANGE	AVAILABLE RANGE	BURDEN (VA)	
			VOLT.	CURR.
110V/1A	±100 W	±50 ~ ±120 W	0.2	0.1
110V/5A	±500 W	±250 ~ ±600 W		0.5
220V/1A	±200 W	±100 ~ ±240 W	0.4	0.1
220V/5A	±1000 W	±500 ~ ±1200 W		0.5

• Single-phase / 3-wire

INPUT	STD.RANGE	AVAILABLE RANGE	BURDEN (VA)	
			VOLT.	CURR.
200V/1A	±200 W	±100 ~ ±240 W	0.2	0.1/ph
200V/5A	±1000 W	±500 ~ ±1200 W	/phase	0.5/ph

MODEL: LWT

INPUT RANGE

• 3-phase / 4-wire

INPUT	STD. RANGE	AVAILABLE RANGE	BURDEN (VA)	
			VOLT.	CURR.
$\frac{110V}{\sqrt{3}}/1A$	±200 W	±100 – ±240 W	0.1 /phase	0.1 /phase
$\frac{110V}{\sqrt{3}}/5A$	±1000 W	±500 – ±1200 W		0.5 /phase
$\frac{190V}{\sqrt{3}}/1A$	±350 W	±175 – ±420 W	0.2 /phase	0.1 /phase
$\frac{190V}{\sqrt{3}}/5A$	±1750 W	±875 – ±2100 W		0.5 /phase
$\frac{220V}{\sqrt{3}}/1A$	±400 W	±200 – ±480 W	0.3 /phase	0.1 /phase
$\frac{220V}{\sqrt{3}}/5A$	±2000 W	±1000 – ±2400 W		0.5 /phase
$\frac{380V}{\sqrt{3}}/1A$	±700 W	±350 – ±840 W	0.4 /phase	0.1 /phase
$\frac{380V}{\sqrt{3}}/5A$	±3500 W	±1750 – ±4200 W		0.5 /phase

OUTPUT SPECIFICATIONS

DC Output

• DC Current: -10 - + 20 mA DC

Span: Min. 1 mA, max. 20 mA

Offset: Max. 1.5 times span

Load resistance: Output drive 12 V maximum; 10 V for [±] output

• DC Voltage: -10 - +12 V DC

Minimum span: 5 mV

Offset: Max. 1.5 times span

Load resistance: Output drive 1 mA max. at ≥ 0.5 V

■ Pulse output: Open collector; 0 Hz at 0 W

(cutout at approx. 0.5 - 1.0 %)

Rating: 35 V DC @ 100 mA

ON voltage: ≤ 1 V at 100 mA

ON duration: Max. 0.5 sec., min. approx. 50 msec.

Frequency range:

0 - 2.777 Hz (0 - 100 %) standard; 0 - 0.006 Hz through 3.12 Hz is possible.

• 2.777 Hz at 100 % Input

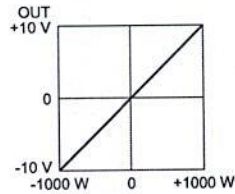
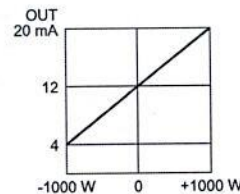
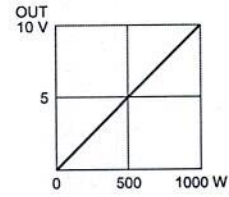
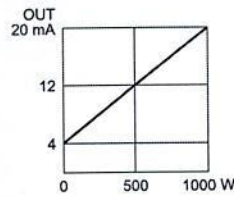
[example] 1000 W calibration range

$2.777 \text{ [Hz]} \times 3600 \text{ [s]} / 1 \text{ [kW]} = 10000 \text{ [pulses/kWh]}$

• Specified Pulse Unit: Refers to how much electrical energy (kWh) consumption at the primary of the VT and CT corresponds to the single output pulse per hour from the transducer.

Output Frequency [Hz] = Calibration Range [kW] × VT Ratio × CT Ratio / Pulse Unit [kWh/pulse] × 3600 [s]

OPERATION DIAGRAM (example)



INSTALLATION

Auxiliary power supply

• AC: Operational voltage range: rating -15/+10 %, 50/60 Hz, approx. 2 VA

• DC: Operational voltage range: rating ±10 %, or 85 - 150 V for 110 V rating, ripple 10 %p-p max., approx. 2 W (18 mA at 110 V)

Operating temperature: -10 to +55°C (14 to 131°F)

Operating humidity: 30 to 85 %RH (non-condensing)

Mounting: Surface or DIN rail

Weight: 450 g (0.99 lb)

PERFORMANCE in percentage of span

Accuracy: ±0.5 % (at 23°C ±10°C or 73.4°F ±18°F, 45 - 65 Hz)

Response time: ≤ 2 sec. (0 - 100 % ±1 %)

Ripple: 0.5 %p-p max. (The output ripple may increase when there is great difference between the frequencies of input signal and power supply)

Line voltage effect: ±0.1 % over voltage range

Insulation resistance: ≥ 100 MΩ with 500 V DC

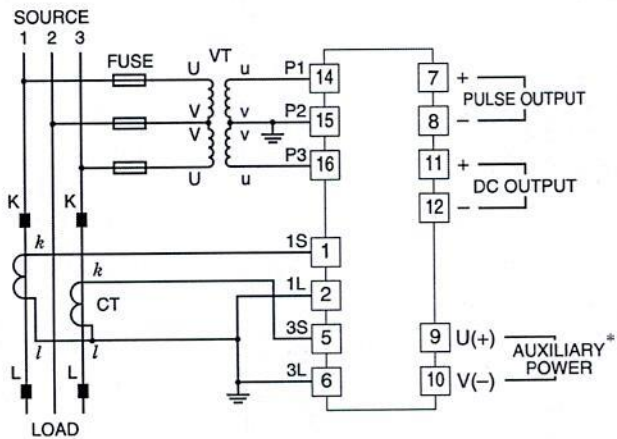
Dielectric strength: 2000 V AC @ 1 minute

(voltage input to current input to DC output to pulse output to auxiliary power to ground)

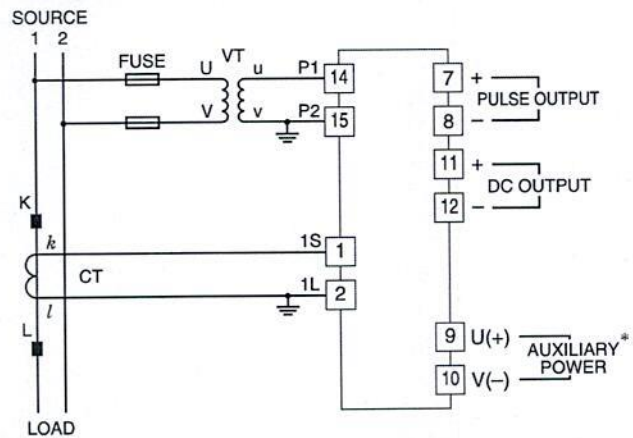
Impulse withstand voltage: 1.2 / 50 μsec., ±5 kV (input to output or ground)

CONNECTION DIAGRAM

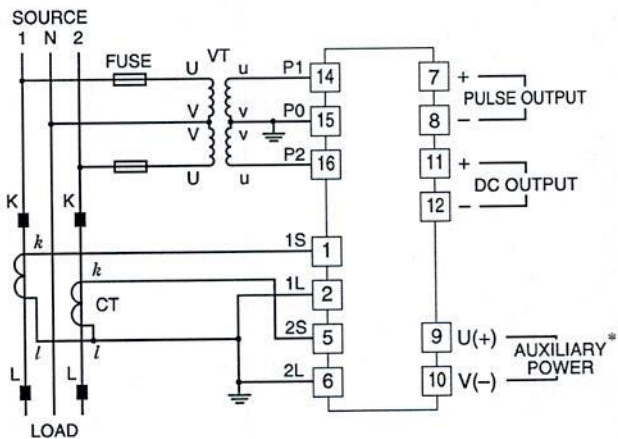
■ 3-PHASE/3-WIRE



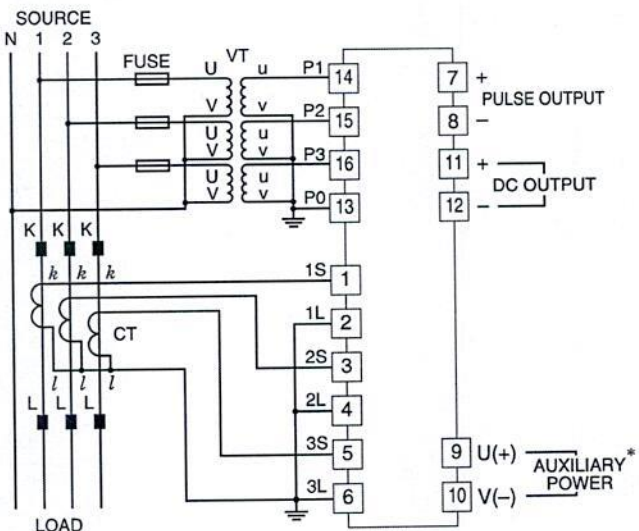
■ SINGLE-PHASE/2-WIRE



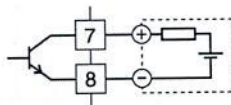
■ SINGLE-PHASE/3-WIRE



■ 3-PHASE/4-WIRE



Pulse Output Connection Example
■ Open Collector

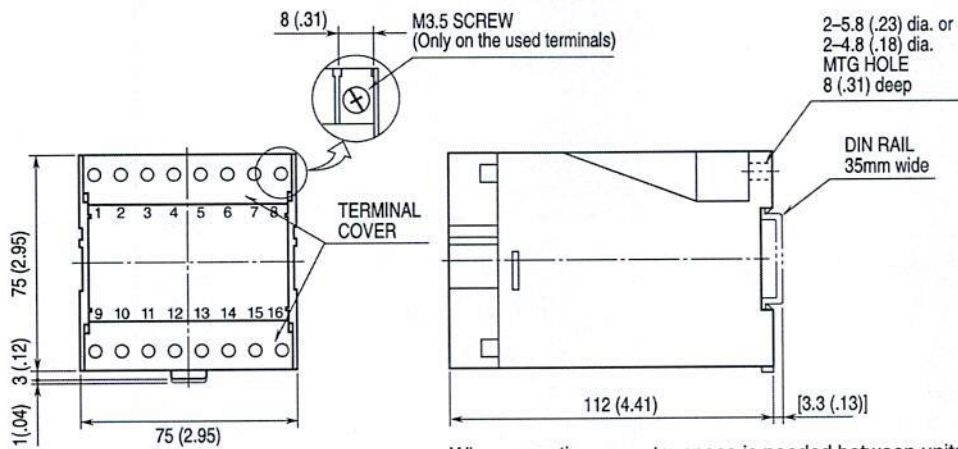


*The transducer can be powered from the input voltage when the voltage is sufficiently stable and meets within the range of auxiliary power supply of the unit specified in the data sheet/instruction manual.

M16

MODEL: LWT

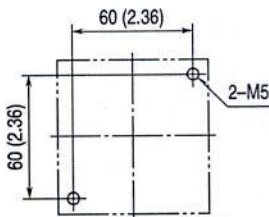
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



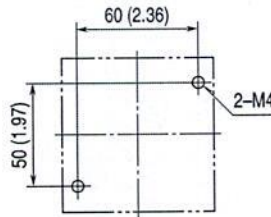
•When mounting, no extra space is needed between units.

MOUNTING REQUIREMENTS unit: mm [inch]

■ M5 SCREWS



■ M4 SCREWS



EXPLANATIONS OF TERMS

• Bonding

An silicone adhesive reinforces the part, which is sensitive to vibration, on PWB. The improvement of vibration performance is not assured.



Specifications are subject to change without notice.



Product datasheet

Specifications



control relay, TeSys K,
4P(2NO+2NC), 690V, 220V DC
standard coil

CA3KN22MD

M17

Main

Range	TeSys
product name	TeSys CAK
Product or component type	Control relay
Device short name	CA3K
Contactor application	Control circuit
Utilisation category	DC-13 AC-15
Pole contact composition	2 NO + 2 NC
[Ue] rated operational voltage	$\leq 690 \text{ V } \leq 400 \text{ Hz}$
Control circuit type	DC standard
[Uc] control circuit voltage	220 V DC

Complementary

[Ith] conventional free air thermal current	10 A (at 50 °C)
Irms rated making capacity	110 A conforming to IEC 60947
Associated fuse rating	10 A gG conforming to IEC 60947 10 A gG conforming to VDE 0660
[Ui] rated insulation voltage	690 V conforming to IEC 60947 750 V conforming to VDE 0110 group C 690 V conforming to BS 5424 600 V conforming to CSA C22.2 No 14
Mounting support	Plate Rail
Connections - terminals	Screw clamp terminals 1 cable(s) 1.5...4 mm ² solid Screw clamp terminals 2 cable(s) 1.5...4 mm ² solid Screw clamp terminals 1 cable(s) 0.75...4 mm ² flexible with cable end Screw clamp terminals 2 cable(s) 0.75...4 mm ² flexible without cable end Screw clamp terminals 1 cable(s) 0.34...1.5 mm ² flexible with cable end Screw clamp terminals 2 cable(s) 0.34...1.5 mm ² flexible without cable end
Tightening torque	1.3 N.m - on screw clamp terminals - with screwdriver flat Ø 6 mm 1.3 N.m - on screw clamp terminals - with screwdriver Philips No 26 mm 1.3 N.m - on screw clamp terminals - with screwdriver pozidriv No 2
Control circuit voltage limits	Operational: 0.8...1.15 Uc (at <50 °C) Drop-out: 0.1...0.75 Uc (at <50 °C)
Operating time	10 ms coil de-energisation and NO opening 30...40 ms coil energisation and NO closing 15 ms coil de-energisation and NC closing 25...35 ms coil energisation and NC opening
Mechanical durability	20 Mcycles

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications.

M17

Maximum operating rate	10000 cyc/h
Immunity to microbreaks	2 ms
Inrush power in W	3 W (at 20 °C)
Hold-in power consumption in W	3 W at 20 °C
Heat dissipation	3 W
Minimum switching voltage	17 V
Minimum switching current	5 mA
Non overlap distance	0.5 mm
Insulation resistance	> 10 MOhm
Height	58 mm
Width	45 mm
Depth	57 mm
Product weight	0.225 kg

Environment

Standards	EN/IEC 60947-4-1 GB/T 14048.4 UL 60947-4-1 CSA C22.2 No 60947-4-1 JIS C8201-4-1
Product certifications	CB Scheme CCC UL CSA EAC CE UKCA
IP degree of protection	IP2X
Protective treatment	TC conforming to IEC 60068
Ambient air temperature for operation	-25...50 °C
Ambient air temperature for storage	-50...80 °C
Operating altitude	2000 m without derating
Flame retardance	V1 conforming to UL 94 Requirement 2 conforming to NF F 16-101 Requirement 2 conforming to NF F 16-102
Mechanical robustness	Vibrations contactor open: 2 Gn, 5...300 Hz conforming to IEC 60068-2-6 Vibrations contactor closed: 4 Gn, 5...300 Hz conforming to IEC 60068-2-6 Shocks contactor open: 10 Gn for 11 ms conforming to IEC 60068-2-27 Shocks contactor closed: 15 Gn for 11 ms conforming to IEC 60068-2-27

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	4.8 cm
Package 1 Width	6.2 cm
Package 1 Length	6.5 cm
Package 1 Weight	209.0 g
Unit Type of Package 2	S02

Product data sheet

Specifications

M18



Control relay, TeSys K, 2 NO + 2 NC, It or eq to 690V, 24VDC standard coil

CA3KN22BD

Product availability: Stock - Normally stocked in distribution facility

Price*: 50.20 USD

Main

Range	TeSys
product name	TeSys CAK
Product or Component Type	Control relay
Device short name	CA3K
Contactor application	Control circuit
Utilisation category	AC-15 DC-13
Pole contact composition	2 NO + 2 NC
[Ue] rated operational voltage	<= 690 V <= 400 Hz
Control circuit type	DC standard
[Uc] control circuit voltage	24 V DC

Complementary

[Ith] conventional free air thermal current	10 A (at 122 °F (50 °C))
Irms rated making capacity	110 A IEC 60947
Associated fuse rating	10 A gG conforming to IEC 60947 10 A gG conforming to VDE 0660
[Ui] rated insulation voltage	690 V IEC 60947 750 V VDE 0110 group C 690 V BS 5424 600 V CSA C22.2 No 14
Mounting Support	Rail Plate
Connections - terminals	screw clamp terminals 1 0.002...0.006 in ² (1.5...4 mm ²)solid screw clamp terminals 2 0.002...0.006 in ² (1.5...4 mm ²)solid screw clamp terminals 1 0.001...0.006 in ² (0.75...4 mm ²)flexible with cable end screw clamp terminals 2 0.001...0.006 in ² (0.75...4 mm ²)flexible without cable end screw clamp terminals 1 0.0005...0.002 in ² (0.34...1.5 mm ²)flexible with cable end screw clamp terminals 2 0.0005...0.002 in ² (0.34...1.5 mm ²)flexible without cable end
Tightening torque	11.5 lbf.in (1.3 N.m) screw clamp terminals flat Ø 6 mm 11.5 lbf.in (1.3 N.m) screw clamp terminals Philips No 2 0.2 in (6 mm)
Control circuit voltage limits	Operational: 0.8...1.15 Uc (at <122 °F (50 °C)) Drop-out: 0.1...0.75 Uc (at <122 °F (50 °C))
Operating time	10 ms coil de-energisation and NO opening 30...40 ms coil energisation and NO closing 15 ms coil de-energisation and NC closing 25...35 ms coil energisation and NC opening

Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

M18

Mechanical durability	20 Mcycles
Maximum operating rate	10000 cyc/h
Immunity to microbreaks	2 ms
Inrush power in W	3 W 68 °F (20 °C))
Hold-in power consumption in W	3 W 68 °F (20 °C)
Heat dissipation	3 W
Minimum switching voltage	17 V
Minimum switching current	5 mA
Non overlap distance	0.02 in (0.5 mm)
Insulation resistance	> 10 MOhm
Height	2.3 in (58 mm)
Width	1.8 in (45 mm)
Depth	2.2 in (57 mm)
Product Weight	0.496 lb(US) (0.225 kg)

Environment

Standards	EN/IEC 60947-4-1 GB/T 14048.4 UL 60947-4-1 CSA C22.2 No 60947-4-1 JIS C8201-4-1
Product Certifications	CB Scheme CCC UL CSA EAC CE UKCA
IP degree of protection	IP2X
Protective treatment	TC IEC 60068
Ambient air temperature for operation	-13...122 °F (-25...50 °C)
Ambient Air Temperature for Storage	-58...176 °F (-50...80 °C)
Operating altitude	6561.68 ft (2000 m) without derating
Flame retardance	V1 conforming to UL 94 Requirement 2 conforming to NF F 16-101 Requirement 2 conforming to NF F 16-102
Mechanical robustness	Vibrations contactor open2 Gn, 5...300 Hz IEC 60068-2-6 Vibrations contactor closed4 Gn, 5...300 Hz IEC 60068-2-6 Shocks contactor open10 Gn for 11 ms IEC 60068-2-27 Shocks contactor closed15 Gn for 11 ms IEC 60068-2-27

Ordering and shipping details

Category	US10I1222371
Discount Schedule	0I12
GTIN	3389110500172
Returnability	Yes
Country of origin	FR

Packing Units

Product datasheet

Specifications

M 13



control relay, TeSys K, 4P(4NO),
690V, 220V DC standard coil

CA3KN40MD

Main

Range	TeSys
product name	TeSys CAK
Product or component type	Control relay
Device short name	CA3K
Contactor application	Control circuit
Utilisation category	AC-15 DC-13
Pole contact composition	4 NO
[Ue] rated operational voltage	$\leq 690 \text{ V} \leq 400 \text{ Hz}$
Control circuit type	DC standard
[Uc] control circuit voltage	220 V DC

Complementary

[Ith] conventional free air thermal current	10 A (at 50 °C)
Irms rated making capacity	110 A conforming to IEC 60947
Associated fuse rating	10 A gG conforming to IEC 60947 10 A gG conforming to VDE 0660
[Ui] rated insulation voltage	690 V conforming to IEC 60947 750 V conforming to VDE 0110 group C 690 V conforming to BS 5424 600 V conforming to CSA C22.2 No 14
Mounting support	Rail Plate
Connections - terminals	Screw clamp terminals 1 cable(s) 1.5...4 mm ² solid Screw clamp terminals 2 cable(s) 1.5...4 mm ² solid Screw clamp terminals 1 cable(s) 0.75...4 mm ² flexible with cable end Screw clamp terminals 2 cable(s) 0.75...4 mm ² flexible without cable end Screw clamp terminals 1 cable(s) 0.34...1.5 mm ² flexible with cable end Screw clamp terminals 2 cable(s) 0.34...1.5 mm ² flexible without cable end
Tightening torque	1.3 N.m - on screw clamp terminals - with screwdriver flat Ø 6 mm 1.3 N.m - on screw clamp terminals - with screwdriver Philips No 26 mm 1.3 N.m - on screw clamp terminals - with screwdriver pozidriv No 2
Control circuit voltage limits	Operational: 0.8...1.15 U _c (at <50 °C) Drop-out: 0.1...0.75 U _c (at <50 °C)
Operating time	10 ms coil de-energisation and NO opening 30...40 ms coil energisation and NO closing
Mechanical durability	20 Mcycles
Maximum operating rate	10000 cyc/h

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

M19

Immunity to microbreaks	2 ms
Inrush power in W	3 W (at 20 °C)
Hold-in power consumption in W	3 W at 20 °C
Heat dissipation	3 W
Minimum switching voltage	17 V
Minimum switching current	5 mA
Non overlap distance	0.5 mm
Insulation resistance	> 10 MOhm
Height	58 mm
Width	45 mm
Depth	57 mm
Product weight	0.225 kg

Environment

Standards	EN/IEC 60947-4-1 GB/T 14048.4 UL 60947-4-1 CSA C22.2 No 60947-4-1 JIS C8201-4-1
Product certifications	CB Scheme CCC UL CSA EAC CE UKCA
IP degree of protection	IP2X
Protective treatment	TC conforming to IEC 60068
Ambient air temperature for operation	-25...50 °C
Ambient air temperature for storage	-50...80 °C
Operating altitude	2000 m without derating
Flame retardance	V1 conforming to UL 94 Requirement 2 conforming to NF F 16-101 Requirement 2 conforming to NF F 16-102
Mechanical robustness	Vibrations contactor open: 2 Gn, 5...300 Hz conforming to IEC 60068-2-6 Vibrations contactor closed: 4 Gn, 5...300 Hz conforming to IEC 60068-2-6 Shocks contactor open: 10 Gn for 11 ms conforming to IEC 60068-2-27 Shocks contactor closed: 15 Gn for 11 ms conforming to IEC 60068-2-27

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	4.500 cm
Package 1 Width	6.000 cm
Package 1 Length	6.500 cm
Package 1 Weight	211.000 g
Unit Type of Package 2	S02
Number of Units in Package 2	40

Product data sheet

Specifications

M 20



Control relay, TeSys K, 4 NO, It or eq to 690V, 24VDC standard coil

CA3KN40BD

Product availability: Stock - Normally stocked in distribution facility

Price*: 50.20 USD

Main

Range	TeSys
product name	TeSys CAK
Product or Component Type	Control relay
Device short name	CA3K
Contactor application	Control circuit
Utilisation category	AC-15 DC-13
Pole contact composition	4 NO
[Ue] rated operational voltage	$\leq 690 \text{ V} \leq 400 \text{ Hz}$
Control circuit type	DC standard
[Uc] control circuit voltage	24 V DC

Complementary

[Ith] conventional free air thermal current	10 A (at 122 °F (50 °C))
Irms rated making capacity	110 A IEC 60947
Associated fuse rating	10 A gG conforming to IEC 60947 10 A gG conforming to VDE 0660
[Ui] rated insulation voltage	690 V IEC 60947 750 V VDE 0110 group C 690 V BS 5424 600 V CSA C22.2 No 14
Mounting Support	Plate Rail
Connections - terminals	screw clamp terminals 1 0.002...0.006 in ² (1.5...4 mm ²)solid screw clamp terminals 2 0.002...0.006 in ² (1.5...4 mm ²)solid screw clamp terminals 1 0.001...0.006 in ² (0.75...4 mm ²)flexible with cable end screw clamp terminals 2 0.001...0.006 in ² (0.75...4 mm ²)flexible without cable end screw clamp terminals 1 0.0005...0.002 in ² (0.34...1.5 mm ²)flexible with cable end screw clamp terminals 2 0.0005...0.002 in ² (0.34...1.5 mm ²)flexible without cable end
Tightening torque	11.5 lbf.in (1.3 N.m) screw clamp terminals flat Ø 6 mm 11.5 lbf.in (1.3 N.m) screw clamp terminals Philips No 2 0.2 in (6 mm) 11.5 lbf.in (1.3 N.m) screw clamp terminals pozidriv No 2
Control circuit voltage limits	Operational: 0.8...1.15 Uc (at <122 °F (50 °C)) Drop-out: 0.1...0.75 Uc (at <122 °F (50 °C))
Operating time	10 ms coil de-energisation and NO opening 30...40 ms coil energisation and NO closing
Mechanical durability	20 Mcycles
Maximum operating rate	10000 cyc/h

Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

M20

Immunity to microbreaks	2 ms
Inrush power in W	3 W 68 °F (20 °C))
Hold-in power consumption in W	3 W 68 °F (20 °C)
Heat dissipation	3 W
Minimum switching voltage	17 V
Minimum switching current	5 mA
Non overlap distance	0.02 in (0.5 mm)
Insulation resistance	> 10 MOhm
Height	2.3 in (58 mm)
Width	1.8 in (45 mm)
Depth	2.2 in (57 mm)
Product Weight	0.496 lb(US) (0.225 kg)

Environment

Standards	EN/IEC 60947-4-1 GB/T 14048.4 UL 60947-4-1 CSA C22.2 No 60947-4-1 JIS C8201-4-1
Product Certifications	CB Scheme CCC UL CSA EAC CE UKCA
IP degree of protection	IP2X
Protective treatment	TC IEC 60068
Ambient air temperature for operation	-13...122 °F (-25...50 °C)
Ambient Air Temperature for Storage	-58...176 °F (-50...80 °C)
Operating altitude	6561.68 ft (2000 m) without derating
Flame retardance	V1 conforming to UL 94 Requirement 2 conforming to NF F 16-101 Requirement 2 conforming to NF F 16-102
Mechanical robustness	Vibrations contactor open2 Gn, 5...300 Hz IEC 60068-2-6 Vibrations contactor closed4 Gn, 5...300 Hz IEC 60068-2-6 Shocks contactor open10 Gn for 11 ms IEC 60068-2-27 Shocks contactor closed15 Gn for 11 ms IEC 60068-2-27

Ordering and shipping details

Category	US10I1222371
Discount Schedule	0I12
GTIN	3389110500219
Returnability	Yes
Country of origin	SG

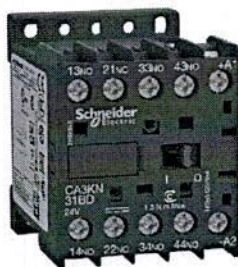
Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1

Product datasheet

Specifications

M21



control relay, TeSys K,
4P(3NO+1NC), 690V, 220V DC
standard coil

CA3KN31MD

Main

Range	TeSys
product name	TeSys CAK
Product or component type	Control relay
Device short name	CA3K
Contactor application	Control circuit
Utilisation category	DC-13 AC-15
Pole contact composition	3 NO + 1 NC
[Ue] rated operational voltage	<= 690 V <= 400 Hz
Control circuit type	DC standard
[Uc] control circuit voltage	220 V DC

Complementary

[Ith] conventional free air thermal current	10 A (at 50 °C)
Irms rated making capacity	110 A conforming to IEC 60947
Associated fuse rating	10 A gG conforming to IEC 60947 10 A gG conforming to VDE 0660
[Ui] rated insulation voltage	690 V conforming to IEC 60947 750 V conforming to VDE 0110 group C 690 V conforming to BS 5424 600 V conforming to CSA C22.2 No 14
Mounting support	Plate Rail
Connections - terminals	Screw clamp terminals 1 cable(s) 1.5...4 mm ² solid Screw clamp terminals 2 cable(s) 1.5...4 mm ² solid Screw clamp terminals 1 cable(s) 0.75...4 mm ² flexible with cable end Screw clamp terminals 2 cable(s) 0.75...4 mm ² flexible without cable end Screw clamp terminals 1 cable(s) 0.34...1.5 mm ² flexible with cable end Screw clamp terminals 2 cable(s) 0.34...1.5 mm ² flexible without cable end
Tightening torque	1.3 N.m - on screw clamp terminals - with screwdriver flat Ø 6 mm 1.3 N.m - on screw clamp terminals - with screwdriver Philips No 26 mm 1.3 N.m - on screw clamp terminals - with screwdriver pozidriv No 2
Control circuit voltage limits	Operational: 0.8...1.15 Uc (at <50 °C) Drop-out: 0.1...0.75 Uc (at <50 °C)
Operating time	10 ms coil de-energisation and NO opening 30...40 ms coil energisation and NO closing 15 ms coil de-energisation and NC closing 25...35 ms coil energisation and NC opening
Mechanical durability	20 Mcycles

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

M27

Maximum operating rate	10000 cyc/h
Immunity to microbreaks	2 ms
Inrush power in W	3 W (at 20 °C)
Hold-in power consumption in W	3 W at 20 °C
Heat dissipation	3 W
Minimum switching voltage	17 V
Minimum switching current	5 mA
Non overlap distance	0.5 mm
Insulation resistance	> 10 MOhm
Height	58 mm
Width	45 mm
Depth	57 mm
Product weight	0.225 kg

Environment

Standards	EN/IEC 60947-4-1 GB/T 14048.4 UL 60947-4-1 CSA C22.2 No 60947-4-1 JIS C8201-4-1
Product certifications	CB Scheme CCC UL CSA EAC CE UKCA
IP degree of protection	IP2X
Protective treatment	TC conforming to IEC 60068
Ambient air temperature for operation	-25...50 °C
Ambient air temperature for storage	-50...80 °C
Operating altitude	2000 m without derating
Flame retardance	V1 conforming to UL 94 Requirement 2 conforming to NF F 16-101 Requirement 2 conforming to NF F 16-102
Mechanical robustness	Vibrations contactor open: 2 Gn, 5...300 Hz conforming to IEC 60068-2-6 Vibrations contactor closed: 4 Gn, 5...300 Hz conforming to IEC 60068-2-6 Shocks contactor open: 10 Gn for 11 ms conforming to IEC 60068-2-27 Shocks contactor closed: 15 Gn for 11 ms conforming to IEC 60068-2-27

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	5.000 cm
Package 1 Width	6.000 cm
Package 1 Length	6.500 cm
Package 1 Weight	211.400 g
Unit Type of Package 2	S02

Product data sheet

Specifications



Control relay, TeSys K, 3 NO + 1 NC, It or eq to 690V, 24VDC standard coil

CA3KN31BD

Product availability: Stock - Normally stocked in distribution facility

Price*: 50.20 USD

Main

Range	TeSys
product name	TeSys CAK
Product or Component Type	Control relay
Device short name	CA3K
Contactor application	Control circuit
Utilisation category	AC-15 DC-13
Pole contact composition	3 NO + 1 NC
[Ue] rated operational voltage	<= 690 V <= 400 Hz
Control circuit type	DC standard
[Uc] control circuit voltage	24 V DC

Complementary

[Ith] conventional free air thermal current	10 A (at 122 °F (50 °C))
Irms rated making capacity	110 A IEC 60947
Associated fuse rating	10 A gG conforming to IEC 60947 10 A gG conforming to VDE 0660
[Ui] rated insulation voltage	690 V IEC 60947 750 V VDE 0110 group C 690 V BS 5424 600 V CSA C22.2 No 14
Mounting Support	Rail Plate
Connections - terminals	screw clamp terminals 1 0.002...0.006 in ² (1.5...4 mm ²)solid screw clamp terminals 2 0.002...0.006 in ² (1.5...4 mm ²)solid screw clamp terminals 1 0.001...0.006 in ² (0.75...4 mm ²)flexible with cable end screw clamp terminals 2 0.001...0.006 in ² (0.75...4 mm ²)flexible without cable end screw clamp terminals 1 0.0005...0.002 in ² (0.34...1.5 mm ²)flexible with cable end screw clamp terminals 2 0.0005...0.002 in ² (0.34...1.5 mm ²)flexible without cable end
Tightening torque	11.5 lbf.in (1.3 N.m) screw clamp terminals flat Ø 6 mm 11.5 lbf.in (1.3 N.m) screw clamp terminals Philips No 2 0.2 in (6 mm) 11.5 lbf.in (1.3 N.m) screw clamp terminals pozidriv No 2
Control circuit voltage limits	Operational: 0.8...1.15 Uc (at <122 °F (50 °C)) Drop-out: 0.1...0.75 Uc (at <122 °F (50 °C))
Operating time	10 ms coil de-energisation and NO opening 30...40 ms coil energisation and NO closing 15 ms coil de-energisation and NC closing 25...35 ms coil energisation and NC opening

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M22

Mechanical durability	20 Mcycles
Maximum operating rate	10000 cyc/h
Immunity to microbreaks	2 ms
Inrush power in W	3 W 68 °F (20 °C))
Hold-in power consumption in W	3 W 68 °F (20 °C)
Heat dissipation	3 W
Minimum switching voltage	17 V
Minimum switching current	5 mA
Non overlap distance	0.02 in (0.5 mm)
Insulation resistance	> 10 MOhm
Height	2.3 in (58 mm)
Width	1.8 in (45 mm)
Depth	2.2 in (57 mm)
Product Weight	0.496 lb(US) (0.225 kg)

Environment

Standards	EN/IEC 60947-4-1 GB/T 14048.4 UL 60947-4-1 CSA C22.2 No 60947-4-1 JIS C8201-4-1
Product Certifications	CB Scheme CCC UL CSA EAC CE UKCA
IP degree of protection	IP2X
Protective treatment	TC IEC 60068
Ambient air temperature for operation	-13...122 °F (-25...50 °C)
Ambient Air Temperature for Storage	-58...176 °F (-50...80 °C)
Operating altitude	6561.68 ft (2000 m) without derating
Flame retardance	V1 conforming to UL 94 Requirement 2 conforming to NF F 16-101 Requirement 2 conforming to NF F 16-102
Mechanical robustness	Vibrations contactor open2 Gn, 5...300 Hz IEC 60068-2-6 Vibrations contactor closed4 Gn, 5...300 Hz IEC 60068-2-6 Shocks contactor open10 Gn for 11 ms IEC 60068-2-27 Shocks contactor closed15 Gn for 11 ms IEC 60068-2-27

Ordering and shipping details

Category	US10I1222371
Discount Schedule	0I12
GTIN	3389110500196
Returnability	Yes
Country of origin	FR

Packing Units

424 → 32

Magnetic Contactors and Starters

SC and SW series

Specifications

■ Ratings

Conforming to IEC 60947-4-1, EN 60947-4-1, VDE 0660

Contactor Type	Starter Type	Max. motor capacity (kW)				Rated operational current (A)				Thermal current (A) *1
		200V 240V	380V 440V	500V 550V	600V 660V	200V 240V	380V 440V	500V 550V	600V 660V	
SC-03	SW-03/3H	2.5	4	4	4	11	9	7	5	20
SC-0	SW-0/3H	3.5	5.5	5.5	5.5	13	12	9	7	20
SC-05	SW-05/3H	3.5	5.5	5.5	5.5	13	12	9	7	20
SC-4-0	SW-4-0/3H	4.5	7.5	7.5	7.5	18	16	13	9	25
SC-4-1	SW-4-1/3H	5.5	11	11	7.5	22	22	17	9	32
SC-5-1	SW-5-1/3H	5.5	11	11	7.5	22	22	17	9	32
SC-N1	SW-N1/3H	7.5	15	15	11	32	32	24	15	50
SC-N2	SW-N2/3H	11	18.5	18.5	15	40	40	29	19	60
SC-N2S	SW-N2S/3H	15	22	25	22	50	50	38	26	80
SC-N3	SW-N3/3H	18.5	30	37	30	65	65	60	38	100
SC-N4	SW-N4/3H	22	40	37	37	80	80	60	44	135
SC-N5	SW-N5/3H	30	55	55	55	105	105	85	64	150
SC-N6	SW-N6/3H	37	60	60	60	125	125	90	72	150
SC-N7	SW-N7/3H	45	75	75	90	150	150	120	103	200
SC-N8	SW-N8/3H	55	90	130	132	180	180	180	150	260
SC-N10	SW-N10/3H	65	110	132	132	220	220	200	150	260
SC-N11	SW-N11/3H	90	160	160	200	300	300	230	230	350
SC-N12	SW-N12/3H	120	220	250	300	400	400	360	360	450
SC-N14	SW-N14/3H	180	315	400	480	600	600	600	600	660
SC-N16	—	220	440	500	500	800	800	720	630	800

Note: *1 The values are applied to contactors.

■ Making and breaking capacities

Utilization category	Typical applications	IEC 60947-4-1, EN 60947-4-1, VDE 0660, JIS C 8201-4-1					
		Making and breaking			Making		
		Ic/Ie	Ur/Ue	cosφ or L/R	I/Ie	U/Ue	cosφ or L/R
AC-1	Non-inductive or slightly inductive loads, resistance furnaces	1.5	1.05	0.8	1.5	1.05	0.8
AC-2	Slip-ring motors: Starting, switching off	4.0	1.05	0.65	4.0	1.05	0.65
AC-3	Squirrel-cage motors: Starting, switching off during running	8.0	1.05	0.45	10	1.05	0.45
	Ie 100A Ie > 100A	8.0	1.05	0.35	10	1.05	0.35
AC-4	Squirrel-cage motors: Starting, plugging, inching	10	1.05	0.45	12	1.05	0.45
	Ie 100A Ie > 100A	10	1.05	0.35	12	1.05	0.35
AC-5a	Switching of electric discharge lamp controls	3.0	1.05	0.45	3.0	1.05	0.45
AC-5b	Switching of incandescent lamps	1.5	1.05	*	1.5	1.05	*

Note: *Test to be carried out with an incandescent lamp load.

Ie: Rated operational current

Ue: Rated operational voltage

I: Current made

U: Voltage before make

Ur: Recovery voltage

Ic: Current broken

■ Auxiliary contact ratings

Conforming to IEC 60947-5-1, EN 60947-5-1, VDE 0660

Type	Continuous current (A)	Make and break capacity at AC (A)	Rated operational current (A)			DC Voltage (V)			Minimum voltage and current
			AC Voltage (V)	AC-15 (Ind.load)	AC-12 (Res.load)	DC Voltage (V)	DC-13 (Ind.load)	DC-12 (Res.load)	
SC-03 to SC-N12	10	60	100-120	6	10	24	3	5	5V 3mA
		30	200-240	3	8	48	1.5	3	
		15	380-440	1.5	5	110	0.55	2.5	
		12	500-600	1.2	5	220	0.27	1	
SC-N14 to SC-16N	10	60	100-120	6	10	24	5	10	24V 10mA
		30	200-240	3	8	48	1.5	5	
		15	380-440	1.5	5	110	0.55	2.5	
		12	500-600	1.2	5	220	0.27	1	

M29 → 52

Magnetic Contactors and Starters SC and SW series Specifications

01

■ Inching and plugging operations (Conforming to IEC 60947-4-1)

In applications where inching and plugging operations are included the contact wear will be increased. Therefore, it is necessary to select ones having larger frame sizes than in standard applications so as to minimize the needs of maintenance and replacement.

Voltage	Motor ratings Capacity (kW)	Full load current (A)	50% inching operation Electrical durability 100,000 operations	500,000 operations
200V 240V	0.2 0.4 0.75 1.5	1.8 3.2 4.8 8.0	SC-03 SC-03 SC-03 SC-03	SC-03 SC-03 SC-0, 05 SC-4-1, 5-1
	2.2 3.7 5.5 7.5	11.1 17.4 26 34	SC-4-0 SC-4-1, 5-1 SC-N1 SC-N2	SC-N1 SC-N2 SC-N3 SC-N5
	11 15 18.5 22	48 65 79 93	SC-N2S SC-N4 SC-N5 SC-N6	SC-N7 SC-N8 SC-N10 SC-N11
	30 37 45 55 75	124 152 180 220 300	SC-N7 SC-N8 SC-N10 SC-N11 SC-N14	SC-N14 SC-N14 — — —
380V 440V	0.75 1.5 2.2 3.7	2.4 4.0 5.6 8.7	SC-03 SC-03 SC-03 SC-03	SC-03 SC-03 SC-4-0 SC-4-1, 5-1
	5.5 7.5 11 15	13 17 24 32.5	SC-4-0 SC-4-1, 5-1 SC-N1 SC-N2	SC-N1 SC-N2S SC-N3 SC-N5
	18.5 22 30 37	39.5 46.5 62 76	SC-N2S SC-N3 SC-N4 SC-N5	SC-N6 SC-N7 SC-N8 SC-N10
	45 55 75 90	90 110 150 180	SC-N6 SC-N8 SC-N10 SC-N11	SC-N11 SC-N12 SC-N14 —
	110 132 150 160	220 264 300 320	SC-N12 SC-N14 SC-N14 SC-N14	— — — —

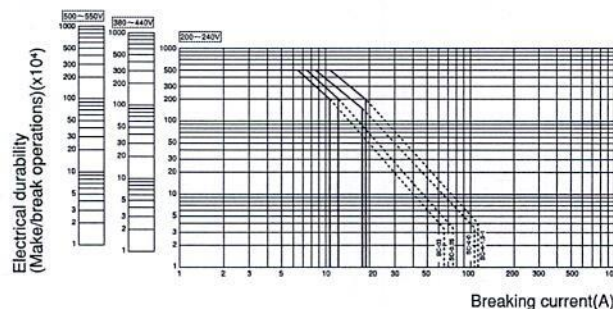
Notes: 1. Inching % = $\frac{\text{No. of inching operations}}{\text{Total No. of switching operations}} \times 100\%$

2. Light inching: 50%
Printing machine and similar equipment
Heavy inching: 75 – 100%
Machine tool, hoist and similar equipment (In cases when there are frequent on/off operations involving starting rush current).

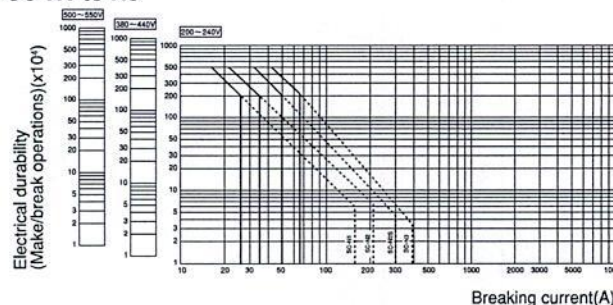
■ Standard conditions for operation in service

- Temperature range:
Operating: -5°C to +40°C
(-5°C to +55°C inside panel box)
Storage: -40°C to +65°C
- Humidity: 45 to 85% RH
- Vibration: 10 to 55Hz, 15m/s²
- Shock: 50m/s²
- Altitude: 2000m (6600ft) or lower
- IP40

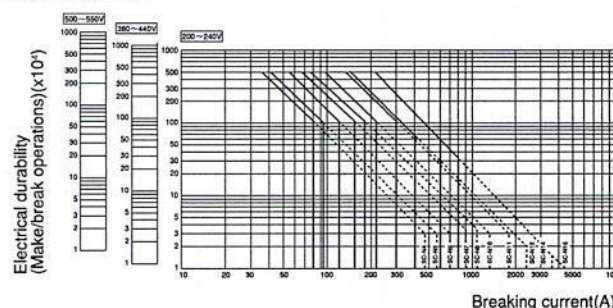
■ Breaking current and electrical durability SC-03 to 5-1



SC-N1 to N3

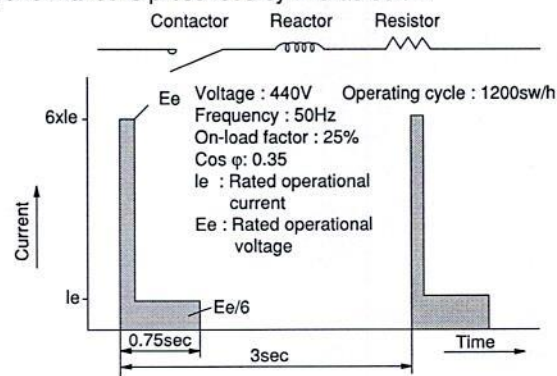


SC-N4 to N16



■ Testing method—Category AC-3

The method of determining the life expectancy and performance is prescribed by IEC as below.



A current equal to six times that of the rated operational current of the starter is applied to the terminals the switch is closed and the current immediately reduced to the rated operational current and then interrupted.

M24 → 32

Magnetic Contactors and Starters SC and SW series Specifications

■ Performance data

Frame size	Making capacity I _{le}	Breaking capacity I _{le}	Operating cycles per hour	Voltage	Durability (operations) Electrical * Mechanical
03, 0, 05	12	10	1,800	200/240V AC 380/440V AC	2 million 10 million
4-0	12	10	1,800	200/240V AC 380/440V AC	1.5 million 10 million
4-1, 5-1	12	10	1,800	200/240V AC 380/440V AC	2 million 10 million
N1 to N3	12	10	1,200	200/240V AC 380/440V AC	2 million 10 million (N1, N2) 5 million (N2S, N3)
N4 to N11	12	10	1,200	200/240V AC 380/440V AC	1 million 5 million
N12, N14	12	10	1,200	200/240V AC 380/440V AC	500,000 5 million
N16	12	10	1,200	200/240V AC 380/440V AC	250,000 2.5 million

I_e: Rated operational current.

I: Making or breaking current

* For details, refer to page 01/29

■ Coil voltage

● Frame size 03 to N4

Frame size	Coil operating voltage and frequency (AC)	Order voltage	Coil voltage code	Identification by coil color	Wiring
03	24V 50Hz/24-26V 60Hz	AC24V	E	White	
0	48V 50Hz/48-52V 60Hz	AC48V	F	White	
05	100V 50Hz/100-110V 60Hz	AC100V	1	Green (Standard voltage)	
4-0	100-110V 50Hz/110-120V 60Hz	AC110V	H	White	
4-1	110-120V 50Hz/120-130V 60Hz	AC120V	K	White	
5-1	200V 50Hz/200-220V 60Hz	AC200V	2	Yellow (Standard voltage)	
N1	200-220V 50Hz/220-240V 60Hz	AC220V	M	White	
N2	220-240V 50Hz/240-260V 60Hz	AC240V	P	White	
N2S	346-380V 50Hz/380-420V 60Hz	AC380V	S	White	
N3	380-400V 50Hz/400-440V 60Hz	AC400V	4	Purple (Standard voltage)	
N4	415-440V 50Hz/440-480V 60Hz	AC440V	T	White	
	480-500V 50Hz/500-550V 60Hz	AC500V	5	White	

Notes: • Other voltages are available in 24 to 600V ranges on request.

• For frame size N1/SE to N4/SE, 24V to 250V AC (24V to 240V DC) is available.

• Use the coil voltage code, not specifying your actual voltage when ordering. Contactors with coil voltage range which corresponds to the voltage code you specified will be shipped from factory.

The above coil operating voltage and frequency (not voltage code) are shown on the products.

● Frame size N5 to N16

Frame size	Coil operating voltage and frequency	Order voltage	Coil voltage code	Identification by coil color	Wiring
	AC DC				
N5	24-25V 50/60Hz 24V	AC24V *3	E	White	
N6	48-50V 50/60Hz 48V	AC48V *3	F	White	
N7	100-127V 50/60Hz 100-120V *1	AC100V	1	Green (Standard voltage)	
N8					
N10	200-250V 50/60Hz 200-240V *2	AC200V	2	Yellow (Standard voltage)	
N11	265-347V 50/60Hz -	AC300V	3	White	
N12	380-450V 50/60Hz -	AC400V	4	Purple (Standard voltage)	
N14	460-575V 50/60Hz -	AC500V	5	White	
N16					

Notes: • The coils are AC/DC common use (rated voltage 200V or less)

• Standard rated voltages are 100V, 200V and 400V.

Other voltages are available in 24V to 575V AC (24V to 240V DC) in frame size N5 to N12, also available in 100V to 575V AC (100V to 240V DC) in frame size N14 to N16.

• Use the coil voltage code, not specifying your actual voltage when ordering. Contactors with coil voltage range which corresponds to the voltage code you specified will be shipped from factory.

The above coil operating voltage and frequency (not voltage code) are shown on the products.

*1 The coil voltage from a DC power supply with single phase full-wave rectification will be 100 to 110 V.

*2 The coil voltage from a DC power supply with single phase full-wave rectification will be 200 to 220 V.

*3 The coil voltage 24V and 48V are not available in frame size N14 to N16.

M24-532

Magnetic Contactors and Starters

SC and SW series

Specifications

01

■ Coil characteristics

● Frame size 03 to N4

Frame size	Power consumption		Watt loss (W)		Pick-up voltage (V)		Drop-out voltage (V)		Operating time (ms)	
	Inrush (VA)	Sealed (VA)	200V 50Hz	220V 60Hz	200V 50Hz	220V 60Hz	200V 50Hz	220V 60Hz	Coil ON→ Contact ON	Coil OFF→ Contact OFF
03	95	9	2.7	2.8	105-125	116-136	70-98	80-110	9-20	5-16
0	95	9	2.7	2.8	105-125	116-136	70-98	80-110	9-20	5-16
05	95	9	2.7	2.8	105-125	116-136	70-98	80-110	9-20	5-16
4-0	95	9	2.7	2.8	118-136	130-146	75-106	88-120	9-20	5-16
4-1	95	9	2.7	2.8	118-136	130-146	75-106	88-120	9-20	5-16
5-1	95	9	2.7	2.8	118-136	130-146	75-106	88-120	9-20	5-16
N1	135	12.7	3.6	3.8	110-130	120-140	75-105	85-115	10-17	6-17
N2	135	12.7	3.6	3.8	110-130	120-140	75-105	85-115	10-17	6-17
N2S	190	13.4	4.5	5	115-135	130-150	85-110	100-125	10-18	8-18
N3	190	13.4	4.5	5	115-135	130-150	85-110	100-125	10-18	8-18
N4	210	14.4	4.8	5.3	120-140	135-155	70-95	95-120	16-23	7-17

Note: Coil ratings 200V 50Hz, 200 to 220V 60Hz. Operating time is based on 200V 50Hz.

● Frame size N5 to N16, N1/SE to N4/SE (contactor only)

AC operating

Frame size	Power consumption		Watt loss (W)		Pick-up voltage (V) 200V 50/60Hz	Drop-out voltage (V) 200V 50/60Hz	Operating time (ms)	
	Inrush (VA)	Sealed (VA)	200V 50Hz	220V 60Hz			Coil ON→ Contact ON	Coil OFF→ Contact OFF
N5	95	4.6	3.2	3.6	140-150	60-100	39-45	27-33
N6	230	5.8	3.4	3.7	140-150	60-100	31-37	30-36
N7	230	5.8	3.4	3.7	140-150	60-100	31-37	30-36
N8	255	6.2	4.7	5.2	140-150	60-100	38-44	31-37
N10	255	6.2	4.7	5.2	140-150	60-100	38-44	31-37
N11	320	6.5	5.6	6	140-150	60-100	43-49	41-47
N12	320	6.5	5.6	6	140-150	60-100	43-49	41-47
N14	460	11	7.8	8.6	140-160	60-100	69-75	56-62
N16	460	11	7.8	8.6	140-160	60-100	69-75	56-62
N1/SE	130	4.2	2.8	3.2	140-150	60-100	21-27	18-24
N2/SE	130	4.2	2.8	3.2	140-150	60-100	21-27	18-24
N2S/SE	160	4.3	2.9	3.3	140-150	60-100	24-30	24-32
N3/SE	160	4.3	2.9	3.3	140-150	60-100	24-30	24-32
N4/SE	95	4.6	3.2	3.6	140-150	60-100	39-45	26-33

Note: Coil ratings 200 to 250V 50/60Hz, 200 to 220V DC. Operating time is based on 200V 50/60Hz.

DC operating

Frame size	Power consumption		Time constant (ms) Sealed	Pick-up voltage (V) 200V DC	Drop-out voltage (V) 200V DC	Operating time (ms)	
	Inrush (W)	Sealed (W)				Coil ON→ Contact ON	Coil OFF→ Contact OFF
N5	110	3	1	140-160	40-100	35-41	26-32
N6	275	4	1	140-160	40-100	28-34	27-33
N7	275	4	1	140-160	40-100	28-34	27-33
N8	300	4.5	1	140-160	40-100	33-39	31-37
N10	300	4.5	1	140-160	40-100	33-39	31-37
N11	410	4.6	1	140-160	40-100	38-44	41-47
N12	410	4.6	1	140-160	40-100	38-44	41-47
N14	500	8.8	1	140-160	40-100	64-70	52-57
N16	500	8.8	1	140-160	40-100	64-70	52-57

Note: Coil ratings 200 to 250V 50/60Hz, 200 to 220V DC. Operating time is based on 200V DC.

Magnetic Contactors and Starters

SC and SW series

Specifications

DC applications of magnetic contactors

Description

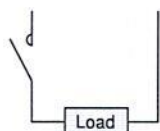
FUJI magnetic contactors in the SC series are normally used in AC circuit applications. However, they may also be used in DC circuits, and in this case their contacts must be connected in series as shown in the diagram.

When used in this manner they will be found to be more economical than using contactors exclusively designed for DC applications. Coils are available for both AC and DC.

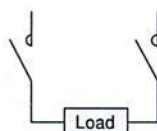
If the following ratings are observed the equipment will have an electrical durability of approx. 500,000 operations.

Wiring connection

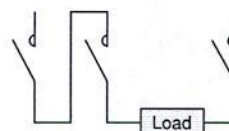
Contacts must be connected in series when the contactors are used in DC applications.



Series contact 1



Series contact 2



Series contact 3

Ratings

Type	No. of contacts connected in series	Rated operational current (A)							
		Class DC-1 (JEM1038) (Resistive, L/R ≤ 1ms.)				Class DC2, 4, (JEM1038) (DC motor, L/R ≤ 15ms.)			
		24V	48V	110V	220V	24V	48V	110V	220V
SC-03	1	13	13	10	1.2	6	3	2	0.35
	2	13	13	10	6	12	6	4	1.2
	3	15	15	15	15	15	10	8	4
SC-0	1	13	13	10	1.2	6	3	2	0.35
	2	13	13	10	6	12	6	4	1.2
	3	15	15	15	15	15	10	8	4
SC-05	1	13	13	10	1.2	6	3	2	0.35
	2	13	13	10	6	12	6	4	1.2
	3	15	15	15	15	15	10	8	4
SC-4-0	1	16	13	10	1.5	8	6	2	0.35
	2	16	16	12	8	16	12	6	1.5
	3	18	18	18	15	18	18	12	6
SC-4-1	1	20	15	12	2	10	8	3	0.35
	2	20	20	15	10	20	15	8	2
	3	22	22	20	15	22	22	15	8
SC-5-1	1	20	15	12	2	10	8	3	0.35
	2	20	20	15	10	20	15	8	2
	3	22	22	20	15	22	22	15	8
SC-N1	1	25	25	15	2	15	8	3	0.35
	2	25	25	25	20	25	15	8	2
	3	35	35	30	25	35	25	20	8
SC-N2	1	30	30	20	2	20	15	4	0.35
	2	30	30	30	20	30	20	15	3
	3	45	45	40	35	35	30	30	8
SC-N2S	2	60	60	40	20	60	30	20	3.5
	3	60	60	60	40	60	60	60	13
SC-N3	2	80	80	50	20	80	40	20	4
	3	80	80	80	60	80	80	80	20
SC-N4	2	80	80	50	20	80	40	20	4
	3	80	80	80	60	80	80	80	20
SC-N5	2	120	120	80	40	120	80	40	15
	3	120	120	120	120	120	120	120	80
SC-N6	2	120	120	80	40	120	80	40	15
	3	120	120	120	120	120	120	120	80
SC-N7	2	160	160	100	80	160	120	80	40
	3	160	160	160	160	160	160	160	160
SC-N8	2	200	200	160	160	200	160	120	60
	3	200	200	200	200	200	200	200	200
SC-N10	2	200	200	160	160	200	160	120	60
	3	200	200	200	200	200	200	200	200
SC-N11	2	300	300	200	200	300	200	160	80
	3	300	300	300	300	300	300	300	300
SC-N12	2	400	400	330	300	400	300	200	100
	3	400	400	400	400	400	400	400	400
SC-N14	2	600	500	420	300	—	—	—	—
	3	600	600	600	420	—	—	—	—

M33

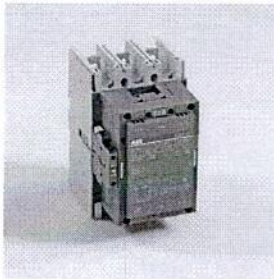


PRODUCT-DETAILS

A210-30-11-80

A210-30-11 220-230V 50Hz / 230-240V 60Hz

Contactor



General Information

Extended Product Type	A210-30-11-80
Product ID	1SFL511001R8011
EAN	7320500203323
Catalog Description	A210-30-11 220-230V 50Hz / 230-240V 60Hz Contactor
Long Description	A 3-phase Contactor suitable for various applications such as Motor starting, Isolation, Bypass and Distribution application up to max 690 V. Operated with control voltage, versions from 24....690 AC, 50 and 60 Hz

Classifications

Object Classification Code	Q
ETIM 4	EC000066 - Magnet contactor, AC-switching
ETIM 5	EC000066 - Magnet contactor, AC-switching
ETIM 6	EC000066 - Power contactor, AC switching
ETIM 7	EC000066 - Power contactor, AC switching
UNSPSC	39121529
IDEA Granular Category Code (IGCC)	4755 >> Contactors
E-Number (Norway)	4115176
E-Number (Sweden)	3227874

Container Information

Package Level 1 Units	box 1 piece
Package Level 1 Width	203 mm
Package Level 1 Depth / Length	245 mm
Package Level 1 Height	188 mm
Package Level 1 Gross Weight	6.1 kg
Package Level 1 EAN	7320500203323

Certificates and Declarations (Document Number)

BV Certificate	09826/C0 BV
CCC Certificate	CQC_2008010304279325
Declaration of Conformity - CE	2CMT2015-005436
DNV Certificate	DNV_E-12191
Environmental Information	1SFC101003D0201
GL Certificate	GL_15529-00HH
Instructions and Manuals	1SFC380003-89
LOVAG Certificate	IT99036
LR Certificate	LR_12-70003
RINA Certificate	ELE060313XG/001
RMRS Certificate	RMRS_12-03683-315
RoHS Information	2CMT2015-005436

Technical UL/CSA

Maximum Operating Voltage UL/CSA	Main Circuit 600 V
General Use Rating UL/CSA	(600 V AC) 300 A
Horsepower Rating UL/CSA	(200 V AC) Three Phase 60 hp (208 V AC) Three Phase 60 hp (220 ... 240 V AC) Three Phase 75 hp (440 ... 480 V AC) Three Phase 150 hp (550 ... 600 V AC) Three Phase 200 hp

Environmental

Ambient Air Temperature	Close to Contactor for Storage -40 ... +70 °C Close to Contactor Fitted with Thermal O/L Relay (0.85 ... 1.1 Uc) -25 ... +50 °C Close to Contactor without Thermal O/L Relay (0.85 ... 1.1 Uc) -40 ... +70 °C
Maximum Operating Altitude Permissible	3000 m
Resistance to Shock acc. to IEC 60068-2-27	Shock Direction: A 5 K40 Shock Direction: B1 5 K40 Shock Direction: B2 5 K40 Shock Direction: C1 5 K40 Shock Direction: C2 5 K40
RoHS Status	Following EU Directive 2011/65/EU

Technical

Number of Main Contacts NO	3
Number of Main Contacts NC	0
Number of Auxiliary Contacts NO	1
Number of Auxiliary Contacts NC	1
Rated Operational Voltage	Main Circuit 690 V
Rated Frequency (f)	Main Circuit 50/60 Hz
Conventional Free-air Thermal Current (I_{th})	acc. to IEC 60947-4-1, Open Contactors q = 40 °C 350 A
Rated Operational Current AC-1 (I_e)	(690 V) 40 °C 350 A (690 V) 55 °C 300 A (690 V) 70 °C 240 A
Rated Operational Current AC-3 (I_e)	(220 / 230 / 240 V) 55 °C 210 A (380 / 400 V) 55 °C 210 A (415 V) 55 °C 210 A (440 V) 55 °C 210 A (500 V) 55 °C 210 A (690 V) 55 °C 210 A
Rated Operational Power AC-3 (P_e)	(220 / 230 / 240 V) 59 KWT (380 / 400 V) 110 KWT (415 V) 110 KWT (440 V) 110 KWT (500 V) 132 KWT (690 V) 160 KWT
Rated Breaking Capacity AC-3 acc. to IEC 60947-4-1	8 x I_e AC-3
Rated Making Capacity AC-3 acc. to IEC 60947-4-1	10 x I_e AC-3
Short-Circuit Protective Devices	gG Type Fuses 400 A
Rated Short-time Withstand Current (I_{cw})	at 40 °C Ambient Temp, in Free Air, from a Cold State 10 s 1700 A at 40 °C Ambient Temp, in Free Air, from a Cold State 15 min 400 A at 40 °C Ambient Temp, in Free Air, from a Cold State 1 min 1000 A at 40 °C Ambient Temp, in Free Air, from a Cold State 1 s 2500 A at 40 °C Ambient Temp, in Free Air, from a Cold State 30 s 1200 A
Maximum Breaking Capacity	cos phi=0.45 (cos phi=0.35 for $I_e > 100$ A) at 440 V 2200 A cos phi=0.45 (cos phi=0.35 for $I_e > 100$ A) at 690 V 2000 A
Maximum Electrical Switching Frequency	AC-1 300 cycles per hour AC-2 / AC-4 150 cycles per hour AC-3 300 cycles per hour
Rated Operational Current DC-1 (I_e)	(110 V) 2 Poles in Series, 40 °C 350 A (220 V) 3 Poles in Series, 40 °C 350 A
Rated Operational Current DC-3 (I_e)	(110 V) 2 Poles in Series, 40 °C 350 A (220 V) 3 Poles in Series, 40 °C 350 A
Rated Operational Current DC-5 (I_e)	(110 V) 2 Poles in Series, 40 °C 350 A (220 V) 3 Poles in Series, 40 °C 350 A
Rated Insulation Voltage (U_i)	acc. to UL/CSA 600 V acc. to IEC 60947-4-1 and VDE 0110 (Gr. C) 1000 V
Rated Impulse Withstand Voltage (U_{imp})	Main Circuit 8 kV

M33

A210-30-11-80

4

Mechanical Durability	5 million
Maximum Mechanical Switching Frequency	3600 cycles per hour
Coil Operating Limits	(acc. to IEC 60947-4-1) 0.85 x U _c Min. ... 1.1 x U _c Max. (at $\theta \leq 70^\circ\text{C}$)
Rated Control Circuit Voltage (U _c)	50 Hz 220 ... 230 V 60 Hz 230 ... 240 V
Coil Consumption	Holding at Max. Rated Control Circuit Voltage 50 Hz 60 V·A Holding at Max. Rated Control Circuit Voltage 60 Hz 65 V·A Pull-in at Max. Rated Control Circuit Voltage 50 Hz 1350 V·A Pull-in at Max. Rated Control Circuit Voltage 60 Hz 1550 V·A
Operate Time	Between Coil De-energization and NC Contact Closing 7 ... 13 ms Between Coil De-energization and NO Contact Opening 10 ... 16 ms Between Coil Energization and NC Contact Opening 12 ... 30 ms Between Coil Energization and NO Contact Closing 17 ... 35 ms
Connecting Capacity Main Circuit	Bar 32 mm Rigid Al-Cable 2 x 95 ... 120 mm ² Rigid Cu-Cable 16 ... 240 mm ²
Connecting Capacity Auxiliary Circuit	Flexible with Ferrule 2x 0.75 ... 2.5 Flexible with Insulated Ferrule 1x 0.75 ... 2.5 Flexible 2x0.75 ... 2.5 mm ² Solid 2 x 1 ... 4 mm ² Stranded 2 x 1 ... 4 mm ²
Degree of Protection	acc. to IEC 60529, IEC 60947-1, EN 60529 Coil Terminals IP20 acc. to IEC 60529, IEC 60947-1, EN 60529 Main Terminals IP00
Connecting Terminals (delivered in open position) Main Poles	Flat type c/w screws and bolts
Terminal Type	Main Circuit: Bars

Dimensions

Product Net Width	140 mm
Product Net Depth / Length	180.5 mm
Product Net Height	227 mm
Product Net Weight	5.4 kg

Popular Downloads

Data Sheet, Technical Information	1SBC100192C0206
Instructions and Manuals	1SFC380003-89
Dimension Diagram	53540930-2

Ordering

Minimum Order Quantity	1 piece
Customs Tariff Number	85364900
Replacement Product ID (NEW)	1SFL527002R1311

Thermal Overload Relays

TR series

General information

Standard type thermal overload relays

■ Description

- Highly reliable thermal overload relays

FUJI thermal overload relays are designed to provide overload protection to meet the thermal characteristics of low voltage induction motors.

Adjustable thermal overload relays give motors positive overcurrent protection. The starter contacts cannot be held closing under overload conditions.

However, once the bimetal element has cooled, the reset button can be depressed and the motor can be restarted in the normal manner.

Ordinarily this reset is carried out manually but the starter can be changed over to 'automatic reset' by means of a screw-driver.

- FUJI thermal overload relay is subjected to stringent testing in the factory to check performance and actual values are calibrated with the markings on the adjustable dial. Consequently, they provide a positive protection.

Relays are also provided with ambient temperature compensators, so that their performance will be maintained in spite of temperature changes. The ambient temperature is regulated for 20°C.

- The heater elements are available for either 2- or 3-pole use.

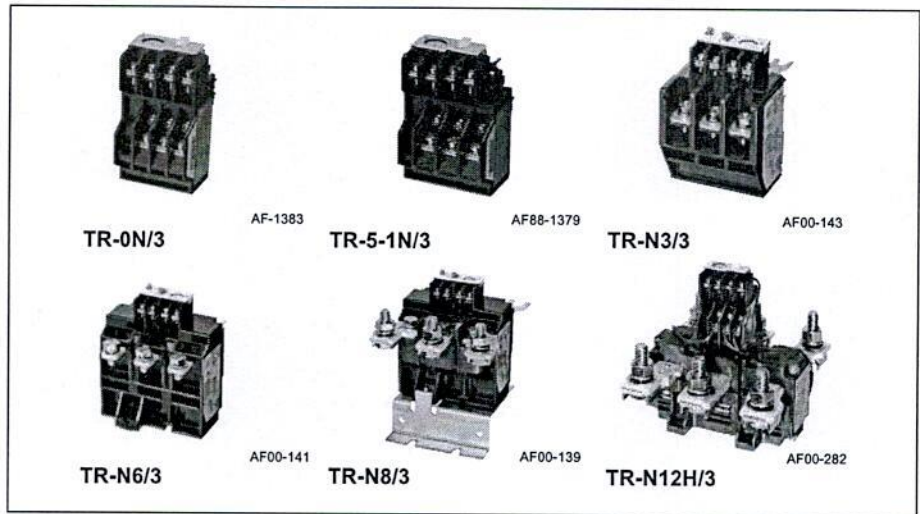
Long time operating type

In the case of loads having large inertia moments such as blowers, winders or centrifuges the starting time is extended.

This will cause the standard-type thermal overload relay to operate during starting so isolating the motor. If necessary FUJI will supply thermal relays with saturable reactors. (Time-delay type).

Quick operating type overload relays

The windings of submersible pump and compressor motors normally have a smaller overload capacity than those of standard motors, since they are generally cooled by the water and other medium being pumped. Q type overload relays will operate more quickly than the standard type in the face of a locked rotor current.



■ Features

- Isolated NO and NC contacts can be used with different potentials.
- Gold-flashed silver contact assures high contact reliability (TR-0N/3 to N14/3).
- Stable operating characteristics protect motors from burnout due to overload or locked rotor currents.
- Easy setting of current value with a calibrated dial.
- Both manual and auto reset available. A manual trip button is provided to facilitate sequence testing.
- Mechanical trip indication
- Trip-free mechanism is provided.
- Reset release button and trip indicator are optional accessories.

■ Warning

All FUJI thermal overload relays have been tested and calibrated at the factory.

They should not be tampered with or stripped down at the job site since this would affect their accuracy. A special feature of the FUJI starter series is the ease by which the relay current ratings can be varied to match the requirements of the load.

The changeover is effected by simply turning a dial to the new value required. The range of adjustment is approximately 100%–125%–150% and details are given overleaf.

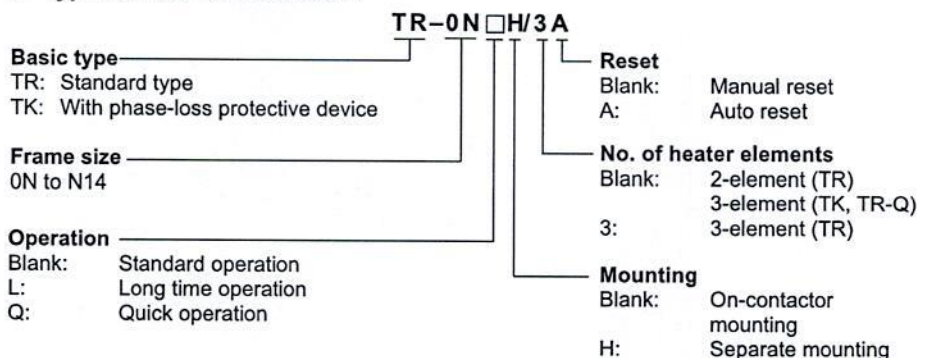
■ Ordering information

Specify the following:

- Ordering code
- Setting range code

See page 01/89.

■ Type number nomenclature



M34 → 39

Thermal Overload Relays TR series

■ Ordering code system

T R 2 0 B N W — T A
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① Product category

Description	Code
Thermal overload relay	T

② Series category

Description	Code
TR-N□ series	R

③④ Frame size

Frame size	Code	
	③	④
0N	1	3
5-1N	2	0
N2	3	5
N3	6	5
N5	9	3
N6	1	C
N7	1	F
N8	1	J
N10	2	C
N12	4	A
N14	6	A

⑤ Index

Type	Code
TR-0N, 5-1N	Blank
TR-N2 to N14	B

⑥ Version

Description	No. of element	Code
Standard	2 3	N D
Long time operation	2 3	L F
Quick operation	3	S
With phase-loss	3	E

⑦ Mounting

Description	Code
On-contactor mounting	W
Separate mounting	H

⑧ Reset

Description	Code
Manual reset	Blank
Auto reset	A

⑧ Thermal overload relay ampere setting range

Ampere setting range (A)	Code
0.1 — 0.15	A
0.13 — 0.2	B
0.15 — 0.24	C
0.2 — 0.3	D
0.24 — 0.36	E
0.3 — 0.45	F
0.36 — 0.54	G
0.48 — 0.72	H
0.64 — 0.96	J
0.8 — 1.2	K
0.95 — 1.45	L
1.4 — 2.2	M
1.7 — 2.6	N
2.2 — 3.4	P
2.8 — 4.2	R
4 — 6	S
5 — 8	T
6 — 9	U
7 — 11	V
9 — 13	W
12 — 18	X
16 — 22	Q
18 — 26	B
24 — 36	E
28 — 40	F
32 — 42	I
34 — 50	G
45 — 65	J
48 — 68	O
53 — 80	L
65 — 95	M
85 — 105	I
85 — 125	N
110 — 160	P
125 — 185	R
160 — 240	S
200 — 300	T
240 — 360	U
300 — 450	V
400 — 600	W

Ordering example

① Thermal overload relay T
 ② TR-□N series R
 ③④ Frame size: 5-1N 20
 ⑤ Index Blank
 ⑥ Standard type, 3-element D
 ⑦ On-contactor mounting W
 ⑧ Ampere setting range 4-6A S
 ⑨ Auto reset A

TR20DW-SA

① Thermal overload relay T
 ② TR-N□ series R
 ③④ Frame size: N3 65
 ⑤ Index B
 ⑥ With phase-loss protection E
 ⑦ On-contactor mounting W
 ⑧ Ampere setting range 24-36A E
 ⑨ Manual reset Blank

TR65BEW-E

Thermal Overload Relays TR series

M34 → 39

■ Features

● Manual trip

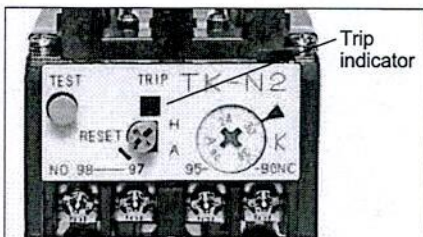
These relays can be manually tripped for sequence inspection by pressing manual trip bar (TR-0N/3, TR-5-1N/3). A sequence inspection will be performed when the test button is pulled out. When the test button is pressed in, only the NC contact will turn OFF. The original status will be restored when the test button is then released. (TR-N2/3 to N8/3)

● Trip-free mechanism

Even if the reset button is carelessly pressed, this relay trips without trouble (Trip-free mechanism).

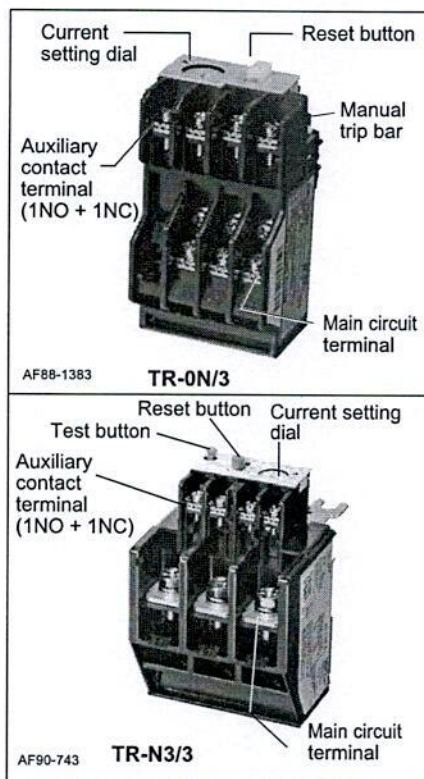
● Easy visual checking of operating status

Trip indicator and manual trip bar permit visual check of tripping status.



● Dial ampere setting

The setting dial uses a RC (Rated Current) marking which is set to the motor full load current.



■ Versatile optional accessories

Trip indicator

AF00-291



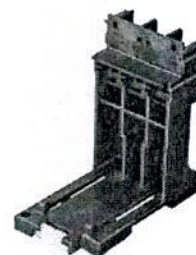
Reset release

AF00-585



Base unit for separate mounting

AF00-159



■ Optional accessories

Description		Type	Ordering code	Used with thermal overload relay
Reset release You can reset these relays remotely on the front panels of switchboards.	Lead length 300 mm	SZ-R1 SZ-R2 SZ-R3	TZ1R1	TR-0N/3, TR-5-1N/3, TK-0N, TK-5-1N
	500 mm		TZ1R2	
	700 mm		TZ1R3	TR-N10 to N14, TK-N10 to N14
Trip indicator	Lead length 300 mm	SZ-R4 SZ-R5 SZ-R6	TZ2R4	TR-N2/3 to N8/3, TK-N2 to N8
	500 mm		TZ2R5	
	700 mm		TZ2R6	
Easier checking of trip status	100-110V AC 50/60Hz	SZ-L100 SZ-L200	TZ1L100	TR-0N/3, TR-5-1N/3, TK-0N, TK-5-1N
	200-220V AC 50/60Hz		TZ1L200	
Dial cover For protection against the current setting being changed in error	100-110V AC 50/60Hz	SZ-L100N2 SZ-L200N2	TZ2L100N2	TR-N2/3 to N8/3, TK-N2 to N8
	200-220V AC 50/60Hz		TZ2L200N2	
Base unit for separate mounting The unit can be screw-mounted and rail-mounted.		SZ-DA	SZ1DA	TR-0N/3, TR-5-1N/3, TK-0N, TK-5-1N
		SZ-HB	TZ1HB	TR-0N/3, TK-0N
		SZ-HC	TZ1HC	TR-5-1N/3, TK-5-1N
		SZ-HD	TZ2HD	TR-N2/3, TK-N2
Terminal cover		SZ-HE	TZ2HE	TR-N3/3, TK-N3
		SZ-T10	SZ1T10	Base unit for separate mounting SZ-HB
		SZ-T11	SZ1T11	Base unit for separate mounting SZ-HC
		SZ-T14	SZ2T14	For separate mounting TR-N2H/3, TK-N2H
		SZ-T15	SZ2T15	For separate mounting TR-N3H/3, TK-N3H
		SZ-RN6T	SZ2RN6T	For separate mounting TR-N6H/3, TK-N6H
		SZ-T12	TZ1T12	TR-0N/3, TK-0N
		SZ-T13	TZ1T13	TR-5-1N/3, TK-5-1N
		SZ-T16	SZ2T16	TR-N2/3, TK-N2
		SZ-T17	SZ2T17	TR-N3/3, TK-N2

Thermal Overload Relays

TR series

Standard type

■ Selection guide/Standard type

On-contactor mounting	3-element	TR-0N/3 (TR13DW) TR-0N (TR13NW)		TR-5-1N/3 (TR20DW) TR-5-1N (TR20NW)		TR-N2/3 (TR35BDW) TR-N2 (TR35BNW)		TR-N3/3 (TR65BDW) TR-N3 (TR65BNW)	
Separate mounting	3-element	TR-0NH/3 (TR13DH)		TR-5-1NH/3 (TR20DH)		TR-N2H/3 (TR35BDH)		TR-N3H/3 (TR65BDH)	
	2-element	TR-0NH (TR13NH)		TR-5-1NH (TR20NH)		TR-N2H (TR35BNH)		TR-N3H (TR65BNW)	
Contactor to be combined		SC-03	SC-0 SC-05	SC-4-0	SC-4-1 SC-5-1	SC-N1	SC-N2	SC-N2S	SC-N3
Ampere setting range (A)	Code	A	0.1 – 0.15	0.1 – 0.15	0.1 – 0.15	0.1 – 0.15			
		B	0.13 – 0.2	0.13 – 0.2	0.13 – 0.2	0.13 – 0.2			
		C	0.15 – 0.24	0.15 – 0.24	0.15 – 0.24	0.15 – 0.24			
		D	0.2 – 0.3	0.2 – 0.3	0.2 – 0.3	0.2 – 0.3			
		E	0.24 – 0.36	0.24 – 0.36	0.24 – 0.36	0.24 – 0.36			
		F	0.3 – 0.45	0.3 – 0.45	0.3 – 0.45	0.3 – 0.45			
		G	0.36 – 0.54	0.36 – 0.54	0.36 – 0.54	0.36 – 0.54			
		H	0.48 – 0.72	0.48 – 0.72	0.48 – 0.72	0.48 – 0.72			
		J	0.64 – 0.96	0.64 – 0.96	0.64 – 0.96	0.64 – 0.96			
		K	0.8 – 1.2	0.8 – 1.2	0.8 – 1.2	0.8 – 1.2			
Specify the setting range code when ordering.		L	0.95 – 1.45	0.95 – 1.45	0.95 – 1.45	0.95 – 1.45			
		M	1.4 – 2.2	1.4 – 2.2	1.4 – 2.2	1.4 – 2.2			
		N	1.7 – 2.6	1.7 – 2.6	1.7 – 2.6	1.7 – 2.6			
		P	2.2 – 3.4	2.2 – 3.4	2.2 – 3.4	2.2 – 3.4			
		R	2.8 – 4.2	2.8 – 4.2	2.8 – 4.2	2.8 – 4.2			
		S	4 – 6	4 – 6	4 – 6	4 – 6	4 – 6	4 – 6	
		T	5 – 8	5 – 8	5 – 8	5 – 8	5 – 8	5 – 8	
		U	6 – 9	6 – 9	6 – 9	6 – 9	6 – 9	6 – 9	
		V	7 – 11	7 – 11	7 – 11	7 – 11	7 – 11	7 – 11	7 – 11
		W		9 – 13	9 – 13	9 – 13	9 – 13	9 – 13	9 – 13
		X			12 – 18	12 – 18	12 – 18	12 – 18	12 – 18
		Q				16 – 22			
		B					18 – 26	18 – 26	18 – 26
		E					24 – 36	24 – 36	24 – 36
		F							28 – 40
	I						32 – 42		
	G							34 – 50	
	J							45 – 65	
	O							48 – 68	
	L							53 – 80*	
	M							65 – 95*	
	I							85 – 105*	

On-contactor mounting	3-element	TR-N5/3 (TR80BDW)		TR-N6/3 (TR1CBDW)	TR-N7/3 (TR1FBDW)	TR-N8/3 (TR1JBDW)	TR-N10/3 (TR2CBDW)	TR-N12/3 (TR4ABDW)	TR-N14/3 (TR8ABDW)		
	2-element	TR-N5 (TR80BNW)		TR-N6 (TR1CBNW)	TR-N7 (TR1FBNW)	TR-N8 (TR1JBNW)	TR-N10 (TR2CBNW)	TR-N12 (TR4ABNW)	TR-N14 (TR8ABNW)		
Separate mounting	3-element	—		TR-N6H/3 (TR1CBDW)	—	—	TR-N10H/3 (TR2CBDH)	TR-N12H/3 (TR4ABDH)		TR-N14H/3 (TR8ABDH)	
	2-element	—		TR-N6H (TR1CBNW)	—	—	TR-N10H (TR2CBNH)	TR-N12H (TR4ABNH)		TR-N14H (TR8ABNH)	
Contactor to be combined		SC-N4	SC-N5A	SC-N6	SC-N7	SC-N8	SC-N10	SC-N11	SC-N12	SC-N14	
Ampere setting range (A)	Code	B	18 – 26	18 – 26							
		E	24 – 36	24 – 36							
		F	28 – 40	28 – 40							
		G	34 – 50	34 – 50							
		J	45 – 65	45 – 65	45 – 65	45 – 65					
		L	53 – 80	53 – 80	53 – 80	53 – 80					
		M		65 – 95	65 – 95	65 – 95	65 – 95				
		I		85 – 105							
		N			85 – 125	85 – 125	85 – 125	85 – 125			
		P			110 – 160*	110 – 160	110 – 160	110 – 160	110 – 160	110 – 160	
		R					125 – 185	125 – 185	125 – 185	125 – 185	
		S						160 – 240	160 – 240	160 – 240	
		T							200 – 300	200 – 300	
		U								240 – 360	240 – 360
		V								300 – 450	300 – 450
		W									400 – 600

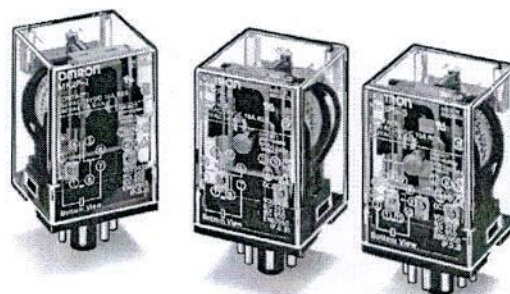
- Notes: • TR-N10/3 to N14/3 types are provided with CTs.
 • Max. setting ranges of these starters are as shown in the table on the right.
 • When ordering the thermal overload relays for starter use, select the applicable setting range.
 (): Basic ordering code (When ordering phase-loss protective type, enter the version code E instead of D)
 *: Separate mounting only

Motor starter	Maximum applicable heater range (A)	
	200-240V	380-440V
SW-03/3H	7-11	6-9
SW-4-0/3H	12-18	12-18
SW-N1/3H	24-36	24-36
SW-N2S/3H	34-50	34-50
SW-N4/3H	53-80	53-80
SW-N6/3H	85-125	85-125

General-purpose Relay MK-I/-S

Exceptionally Reliable General-purpose Relay Features Mechanical Indicator/Push Button

- Breaks relatively large load currents despite small size.
- Long life (minimum 100,000 electrical operations) assured by silver contacts.
- Built-in operation indicator (Mechanical, LED), push button, diode surge suppression, varistor surge suppression.
- Standard models are UL, CSA, SEV, DEMKO, NEMKO, SEMKO, TÜV (IEC), and VDE.
- Conforming to CENELEC standards.



Model Number Structure

Model Number Legend

Standard Models

MK -

1 2 3 4 5 6

- | | | |
|--|---|--|
| <p>1. Contact Form
2: DPDT
3: 3PDT</p> <p>2. Cover
P: Dust cover</p> | <p>3. Internal Connection Construction
Blank: Standard
2 or 5: Non-standard connection
(Refer to <i>Terminal Arrangement/Internal Connections</i>)</p> <p>4. Mechanical Indicator Push Button
S: Mechanical indicator and push button
I: Mechanical indicator</p> | <p>5. Approved Standards
Blank: UL, CSA, DEMKO, NEMKO
SEMKO, SEV, TÜV
VD: VDE</p> <p>6. Rated Voltage
(Refer to <i>Coil Ratings</i>)</p> |
|--|---|--|

Special Accessories

MK -

1 2 3 4 5 6 7 8

- | | | |
|---|---|--|
| <p>1. Contact Form
2: DPDT
3: 3PDT</p> <p>2. Cover
P: Dust cover</p> <p>3. Classification
N: LED indicator
D: Diode
V: Varistor
ND: LED indicator and diode
NV: LED indicator and varistor</p> | <p>4. Coil Polarity
Blank: Standard
1: Reverse
(Refer to <i>Terminal Arrangement/Internal Connections</i>)</p> <p>5. Internal Connection Construction
Blank: Standard
2 or 5: Non-standard connection
(Refer to <i>Terminal Arrangement/Internal Connections</i>)</p> | <p>6. Mechanical Indicator Push Button
S: Mechanical indicator and push button
I: Mechanical indicator</p> <p>7. Approved Standards
Blank: UL and CSA only
VD: VDE (N and D models only)</p> <p>8. Rated Voltage
(Refer to <i>Coil Ratings</i>)</p> |
|---|---|--|

Ordering Information

List of Models

Type	Terminal	Contact form	Internal connection (see note 3)	With mechanical indicator	With mechanical indicator and pushbutton	Coil ratings	Approved standards
Standard	Plug-in	DPDT	Standard	MK2P-I	MK2P-S	AC (∧), DC (≡)	UL, CSA, SEV, DEMKO, NEMKO, SEMKO, TÜV
			Non-standard	MK2P2-I	MK2P2-S		
		3PDT	Standard	MK3P-I	MK3P-S		
			Non-standard	MK3P2-I MK3P5-I	MK3P2-S MK3P5-S		
LED Indicator (see note 2)		DPDT	Standard	MK2PN□-I	MK2PN□-S	AC (∧), DC (≡)	UL, CSA
			Non-standard	MK2PN□-2-I	MK2PN□-2-S		
		3PDT	Standard	MK3PN□-I	MK3PN□-S		
			Non-standard	MK3PN□-2-I MK3PN□-5-I	MK3PN□-2-S MK3PN□-5-S		
Diode (see note 2)		DPDT	Standard	MK2PD□-I	MK2PD□-S	DC (≡)	UL, CSA
			Non-standard	MK2PD□-2-I	MK2PD□-2-S		
		3PDT	Standard	MK3PD□-I	MK3PD□-S		
			Non-standard	MK3PD□-2-I MK3PD□-5-I	MK3PD□-2-S MK3PD□-5-S		
Varistor		DPDT	Standard	MK2PV-I	MK2PV-S	AC (∧)	UL, CSA
			Non-standard	MK2PV-2-I	MK2PV-2-S		
		3PDT	Standard	MK3PV-I	MK3PV-S		
			Non-standard	MK3PV-2-I MK3PV-5-I	MK3PV-2-S MK3PV-5-S		
VDE approved		DPDT	Standard	MK2P-I-VD	MK2P-S-VD	AC (∧), DC (≡)	UL, CSA, SEV, DEMKO, NEMKO, SEMKO, TÜV, VDE
			Non-standard	MK2P2-I-VD	MK2P2-S-VD		
		3PDT	Standard	MK3P-I-VD	MK3P-S-VD		
			Non-standard	MK3P2-I-VD MK3P5-I-VD	MK3P2-S-VD MK3P5-S-VD		
LED Indicator VDE approved		DPDT	Standard	MK2PN-I-VD	MK2PN-S-VD	AC (∧), DC (…)	UL, CSA, VDE
			Non-standard	MK2PN-2-I-VD	MK2PN-2-S-VD		
		3PDT	Standard	MK3PN-I-VD	MK3PN-S-VD		
			Non-standard	MK3PN-2-I-VD MK3PN-5-I-VD	MK3PN-2-S-VD MK3PN-5-S-VD		
Diode VDE approved		DPDT	Standard	MK2PD-I-VD	MK2PD-S-VD	DC (…)	UL, CSA, VDE
			Non-standard	MK2PD-2-I-VD	MK2PD-2-S-VD		
		3PDT	Standard	MK3PD-I-VD	MK3PD-S-VD		
			Non-standard	MK3PD-2-I-VD MK3PD-5-I-VD	MK3PD-2-S-VD MK3PD-5-S-VD		

Note: 1. When ordering, add the rated voltage to the model number. Rated voltages are given in the coil ratings table in *Specifications*.

Example: MK3P5-S 230 VAC

Rated voltage

2. This DC coil comes in two types: standard coil polarity and reversed coil polarity. Refer to *Terminal Arrangement/Internal Connections*.

Example: MK2PN1-I 24 VDC

Reverse polarity

3. Refer to *Terminal Arrangement/Internal Connections* for non-standard internal connection.

4. The gold plating thickness depends on the request.

Example: MK3P-I AP3 24 VAC

Gold plating thickness: 3 μm

Accessories (Order Separately)

Item	Model
Track-mounted Socket	8-pin type PF083A-E
	11-pin type PF113A-E
Hold-down Clip	PFC-A1

Specifications

■ Coil Ratings

UL, CSA, DEMKO, NEMKO, SEMKO, SEV, TÜV

Rated voltage		Rated current		Coil resistance	Must operate voltage	Must release voltage	Max. voltage	Power consumption
		60 Hz	50 Hz					
AC (~)	6 V	360 mA	404 mA	3.9 Ω	80% max. of rated voltage	30% min. of rated voltage	90% to 110% of rated voltage	Approx. 2.3 VA (at 60 Hz) Approx. 2.7 VA (at 50 Hz)
	12 V	180 mA	202 mA	16.9 Ω				
	24 V	88.0 mA	98.0 mA	62.0 Ω				
	50 V	39.0 mA	46.3 mA	330 Ω				
	100 V	24.8 mA	28.4 mA	1,010 Ω				
	110 V	21.0 mA	24.7 mA	1,240 Ω				
	120 V	18.0 mA	20.2 mA	1,520 Ω				
	200 V	12.1 mA	14.2 mA	4,520 Ω				
	220 V	11.0 mA	12.9 mA	5,130 Ω				
	230 V	10.5 mA	12.3 mA	6,170 Ω				
240 V	9.2 mA	10.3 mA	6,450 Ω					
DC (—)	6 V	255 mA		23.5 Ω	15% min. of rated voltage	15% min. of rated voltage	Approx. 1.5 W	
	12 V	126 mA		95 Ω				
	24 V	56 mA		430 Ω				
	48 V	29.5 mA		1,630 Ω				
	100 V	14.7 mA		6,800 Ω				
	110 V	15.1 mA		7,300 Ω				

VDE

Rated voltage		Rated current		Coil resistance	Must operate voltage	Must release voltage	Max. voltage	Power consumption
		50 Hz	60 Hz					
AC (~)	6 V	380 mA	325 mA	4.4 Ω	80% max. of rated voltage	30% min. of rated voltage	90% to 110% of rated voltage	Approx. 2.0 VA (at 60 Hz) Approx. 2.4 VA (at 50 Hz)
	12 V	175 mA	145 mA	19.0 Ω				
	24 V	91.0 mA	76.5 mA	70.7 Ω				
	50 V	42.0 mA	36.0 mA	330 Ω				
	100 V	24.0 mA	20.5 mA	1,150 Ω				
	110 V	21.5 mA	18.0 mA	1,400 Ω				
	120 V	20.0 mA	17.0 mA	1,600 Ω				
	200 V	11.2 mA	9.4 mA	5,110 Ω				
	220 V	10.2 mA	8.7 mA	5,800 Ω				
	230 V	9.6 mA	8.1 mA	6,990 Ω				
240 V	9.4 mA	7.9 mA	7,400 Ω					
DC (—)	6 V	225 mA		26.7 Ω	15% min. of rated voltage			Approx. 1.3 W
	12 V	116 mA		107 Ω				
	24 V	56.0 mA		440 Ω				
	48 V	29.0 mA		1,660 Ω				
	100 V	13.1 mA		7,660 Ω				
	110 V	12.5 mA		8,720 Ω				

- Note:**
1. The rated current and coil resistance are measured at a coil temperature of 23°C with tolerances of +15%/-20% for AC rated current and ±15% for DC coil resistance.
 2. Performance characteristic data are measured at a coil temperature of 23°C.
 3. ~ indicates AC and — indicates DC (IEC417 publications).
 4. For 200 VDC applications, a 100-VDC Relay is supplied with a fixed 6.8 kΩ, 30 W resistor. Be sure to connect the resistor in series with the coil.
 5. For models with the LED indicator built in, add an LED current of approximately 0 through 5 mA to the rated current.

■ Contact Ratings

Load	Resistive load ($\cos\phi = 1$)	Inductive load ($\cos\phi = 0.4$)
Contact mechanism	Single	
Contact material	Ag	
Rated load	10 A at 250 VAC 10A at 28 VDC	7 A at 250 VAC
Rated carry current	10 A	
Max. switching voltage	250 VAC, 250 VDC	
Max. switching current	10 A	
Max. switching power	2,500 VA, 280 W	1,750 VA

■ Characteristics

Contact resistance	50 mΩ max.
Operate time	AC: 20 ms max. DC: 30 ms max.
Release time	20 ms max.
Max. operating frequency	Mechanical: 18,000 operations/hr Electrical: 1,800 operations/hr (under rated load)
Insulation resistance	100 MΩ min. (at 500 VDC)
Dielectric strength	2,500 VAC, 50/60 Hz for 1 min between coil and contacts; 1,000 VAC, 50/60 Hz for 1 min between contacts of same polarity, terminals of the same polarity; 2,500 VAC, 50/60 Hz for 1 min between current-carrying parts, non-current-carrying parts, and terminals of opposite polarity
Vibration resistance	Destruction: 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude) Malfunction: 10 to 55 to 10 Hz, 0.5-mm single amplitude (1.0-mm double amplitude)
Shock resistance	Destruction: 1,000 m/s ² (approx. 100G) Malfunction: 100 m/s ² (approx. 10G);
Endurance	Mechanical: 10,000,000 operations min. (at operating frequency of 18,000 operations/hour) Electrical: Refer to <i>Engineering Data</i> .
Error rate (reference value)	10 mA at 1 VDC
Ambient temperature	Operating: -10°C to 40°C (with no icing or condensation)
Ambient humidity	Operating: 5% to 85%
Weight	Approx. 85 g

Note: The data shown are initial values.

Protect your lifecycle investment

Modular Power System (MPS)

Highlighting ABB's commitment to evolution, ABB is pleased to offer the Modular Power System IV (MPS IV) as an upgrade solution for Harmony Rack Process Control Units. This offer provides attractive pricing to customers who have power systems approaching, or that have reached, their end-of-life status or for those who are considering upgrades.

Modular Power System IV (MPS IV)

Released in 2017, MPS IV power systems are recommended for customers to upgrade from MPS I, MPS II and MPS III. +5Vdc and +/- 15Vdc power supplies will change to Classic life cycle phase in 2026. Power system upgrades require a cabinet power shutdown.

Features of MPS IV:

- Provides +5 Vdc, +15 Vdc, -15 Vdc, 24 Vdc, as well as 48 Vdc and 125 Vdc operating voltages for communications, controllers, I/O modules, and field devices.
- Designed to operate with 2N power redundancy with advanced monitoring and bumpless switchover.
- Flexible, compact design for custom installations.
- Scalable with individual power modules for required voltage levels.
- Monitoring functions with optional latching PFI.
- Input power options for 110 / 240 VAC or 110 / 220 Vdc input power with no switches or jumpers to set.

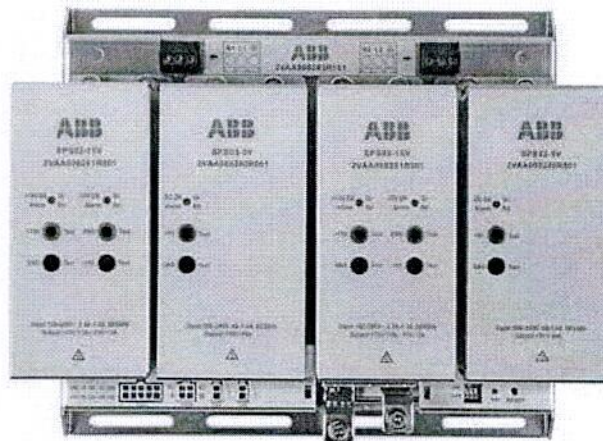


ABB Document Number: CA-LO-MPSIV-2025

ABB document number: CA-ES-MP-SIV-2025
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Typical MPSIV Power System upgrades would include the following components (2025-MPSIV-01):

Article Number	Quantity	Description
2VAA008280R001	2	SPS03-5V Power Supply, 5Vdc, 60A
2VAA008281R001	2	SPS03-15V Power Supply, +15Vdc@3A / -15Vdc@3A
2VAA008278R001	4	SPS01 Power Supply, 24Vdc, 10A
2VAA008282R101	1	BP01-L Left Base to support two SPS01 or SPS02
2VAA008282R301	1	BP01-R Right Base to support two SPS01 or SPS02
2VAA008283R101	1	BP03 Base to support two SPS03-5V and two SPS03-15V
2VAA008284R101	1	BP-K01-AA Base Plate for AC/AC input power

48 Vdc Output Power Requirements will need the following added:

Article Number	Quantity	Description
2VAA008279R001	2	SPS02 Power Supply, 48Vdc, 5A
2VAA008282R101	1	BP01-M Middle Base to support two SPS02

125 Vdc Output Power Requirements will need the following added:

Article Number	Quantity	Description
8VZZ001720Z0001	2	SPS04 Power Supply, 125Vdc, 2.3A
2VAA008283R101	1	BP04 Base to support two SPS04

MPS IV Pricing

Catalog Number	Description	List Price (CAD)	Loyalty Offer Price ² (CAD)
2025-MPSIV-01 ¹	Typical MPSIV Power System	\$ 49,150	\$ 32,500
2025-MPSIV-01-PRD ¹	Typical MPSIV Power System with Parts Returned Discount ³	\$ 49,150	\$ 29,700
SPS02	Power Supply Module, 48VDC @ 5A	\$ 2,637	\$ 1,846
SPS04	Power Supply Module, 125VDC @ 2.3A	\$ 10,373	\$ 7,261
BP01-M	Middle Base Supports two SPS01 or SPS02	\$ 754	\$ 528
BP04	BP04 Base to support two SPS04	\$ 4,584	\$ 3,209
Services ⁴	Service for Installation/Commissioning or Drawing updates	Please contact ABB	Please contact ABB

Notes:

- 2025-MPSIV-01 and 2025-MPSIV-01-PRD kits do not include DC Bus Bar, IEMMU21 / IEMMU22's or PHARPSFAN03000 which may be reused unless required or recommended to add or change. Pricing will be provided separately where applicable.
- Discount is applicable to customers with an active and valid ABB Care Agreement or customers that will join ABB Care at the same time of, or prior to, equipment purchase.
- Product Return Discount (PRD) - ABB will accept purchase orders based on the "PRD Price" provided that critical replaced equipment is returned to ABB within 90 days of upgrade completion, or no more than 120 days from delivery of components to customer. ABB will notify the customer of the specific items to be returned based on power systems removed. If parts are not returned the customer will be invoiced the difference between the applicable Sell Prices and the PRD Prices. Shipping is the responsibility of the customer.
- Field labor is not included. Upon request, ABB can provide pricing for installation services. Updating existing cabinet arrangements or drawings is not included. Upon request, ABB can provide services and pricing to update drawings.

Offer valid until November 30, 2025 in Canada only.

Confidentiality:

- The information contained in this proposal is proprietary to ABB Inc. and may not be disclosed to any third party or company without the written consent of ABB Inc.

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350W Single Output Switching Power Supply

S-350 series



Features :

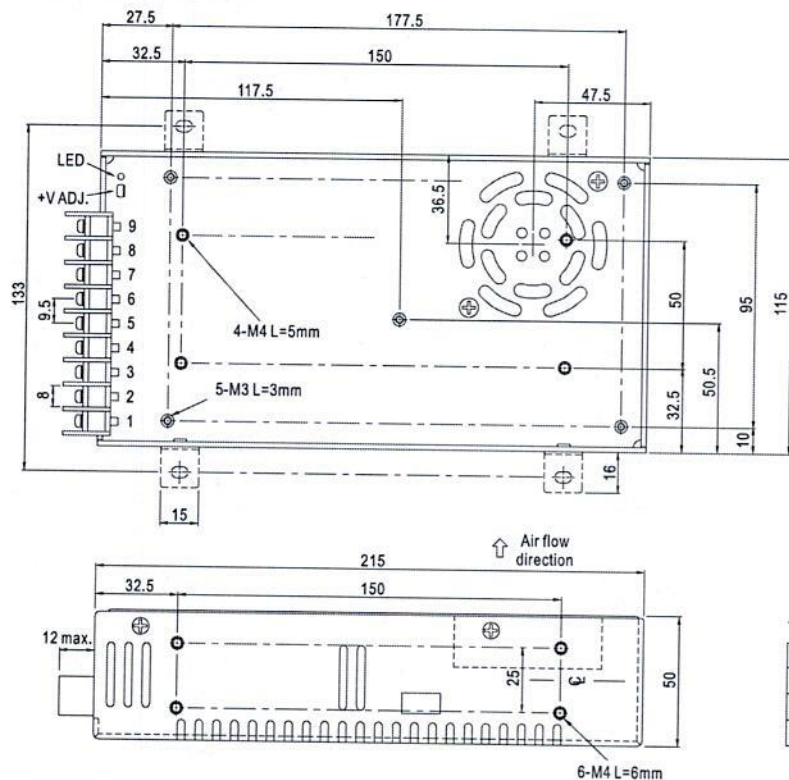
- AC input range selectable by switch
- Protections: Short circuit / Overload / Over voltage
- Forced air cooling by built-in DC fan
- PWM control and regulated
- Built-in cooling Fan ON-OFF control
- 100% full load burn-in test
- Fixed switching frequency at 25KHz
- Low cost
- 1 year warranty

SPECIFICATION

MODEL		S-350-5	S-350-7.5	S-350-12	S-350-13.5	S-350-15	S-350-24	S-350-27	S-350-36	S-350-48
OUTPUT	DC VOLTAGE	5V	7.5V	12V	13.5V	15V	24V	27V	36V	48V
	RATED CURRENT	50A	40A	29A	25.8A	23.2A	14.6A	13A	9.7A	7.3A
	CURRENT RANGE	0 ~ 50A	0 ~ 40A	0 ~ 29A	0 ~ 25.8A	0 ~ 23.2A	0 ~ 14.6A	0 ~ 13A	0 ~ 9.7A	0 ~ 7.3A
	RATED POWER	250W	300W	348W	348.3W	348W	350.4W	351W	349.2W	350.4W
	RIPPLE & NOISE (max.) Note.2	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	200mVp-p	240mVp-p	240mVp-p
	VOLTAGE ADJ. RANGE	4.5 ~ 5.6V	6 ~ 9V	10 ~ 13.2V	12 ~ 15V	13.5 ~ 18V	20 ~ 26.4V	26 ~ 32V	32~40V	41 ~ 56V
	VOLTAGE TOLERANCE Note.3	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	200ms, 50ms at full load								
HOLD UP TIME (Typ.)	20ms at full load									
INPUT	VOLTAGE RANGE	90 ~ 132VAC / 180 ~ 264VAC by switch 254 ~ 370VDC								
	FREQUENCY RANGE	47 ~ 63Hz								
	EFFICIENCY (Typ.)	73%	76%	74%	79%	78%	81%	82%	83%	83%
	AC CURRENT (Typ.)	6.5A/115VAC 4A/230VAC								
	INRUSH CURRENT (Typ.)	50A/115VAC 50A/230VAC								
	LEAKAGE CURRENT	<3.5mA / 240VAC								
PROTECTION	OVERLOAD	105 ~ 135% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed								
	OVER VOLTAGE	5.75 ~ 6.75V	9.4 ~ 10.9V	13.8 ~ 16.2V	15.5 ~ 18.2V	18 ~ 21V	27.6 ~ 32.4V	33.7 ~ 39.2V	40.5~46.5V	57.6 ~ 67.2V
FUNCTION	FAN ON/OFF CONTROL	RTH3≥50℃ FAN ON, ≤45℃ FAN OFF, ≥80℃ output shutdown (5 ~ 7.5V) RTH3≥55℃ FAN ON, ≤50℃ FAN OFF, ≥85℃ output shutdown (12 ~ 48V)								
ENVIRONMENT	WORKING TEMP.	-10 ~ +60℃ (Refer to "Derating Curve")								
	WORKING HUMIDITY	20 ~ 90% RH non-condensing								
	STORAGE TEMP., HUMIDITY	-20 ~ +85℃, 10 ~ 95% RH								
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)								
SAFETY	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes								
	WITHSTAND VOLTAGE	I/P-O/P:1.5KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC								
OTHERS	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃ / 70% RH								
	MTBF	234.3K hrs min. MIL-HDBK-217F (25℃)								
	DIMENSION	215*115*50mm (L*W*H)								
NOTE	PACKING	1.07Kg; 12pcs/13.5Kg/0.92CUFT								
	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation.									

■ Mechanical Specification

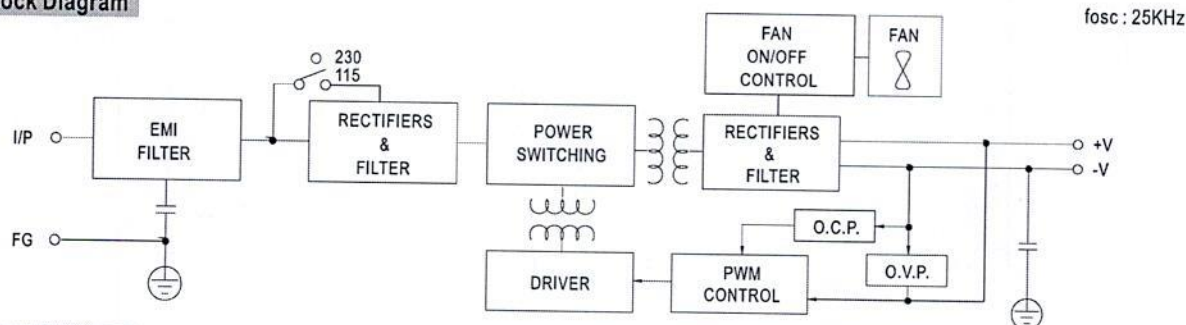
Case No. 912C Unit:mm



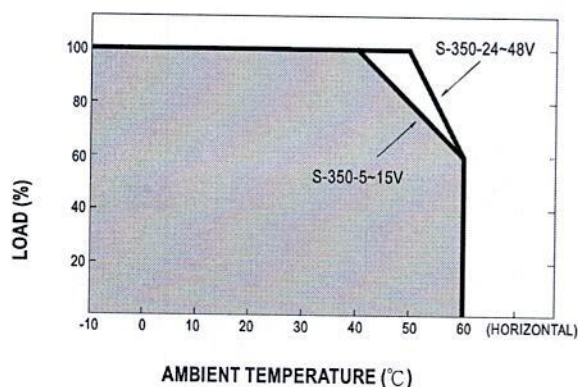
Terminal Pin No. Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/L	4~6	DC OUTPUT -V
2	AC/N	7~9	DC OUTPUT +V
3	FG $\perp$		

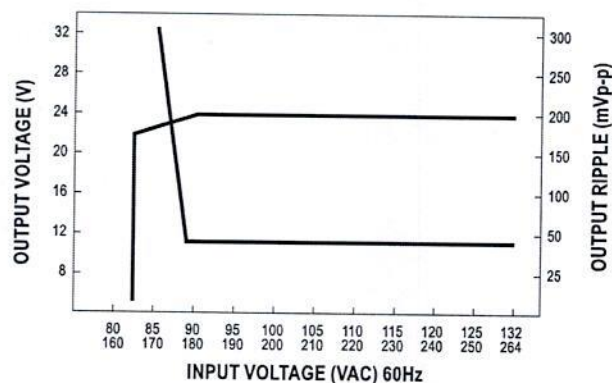
■ Block Diagram



■ Derating Curve



■ Static Characteristics (24V)



M43

EST330F Flush Diaphragm Pressure Transmitters

- ✓ Accuracy: $\pm 0.5\% \text{F.S}$
- ✓ OEM, Un-standard order available
- ✓ Can install display screen: 4LCD
- ✓ Zero position and full scale can adjusted
- ✓ Kinds of pressure range and signal output
- ✓ Kinds of connection and pressure port
- ✓ Non-polarity two wires output

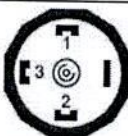
Applications

Fuel station | Gas dispenser | Food process | Hygiene Industry | Pressure instrument | medical | biological products

Product Introduction

EST330F Flush Diaphragm Pressure Transmitter is designed to be installed in a series of hazardous situation and is ideal for use in food, beverage sanitary, medical process and industrial applications where the media is either viscous, contains particulates or solids, which may probably cause the clog or foul.

Electrical Connections and Dimensional drawings

DIN 43650 C		Cable outlet	
	U+ / I+ = 1		U+ / I+ = Red
	U- / I- = 2		U- / I- = Black
	S+ = 3		S+ = Green / Blue
	Shield = 4 / Housing		Shield = Housing / Yellow

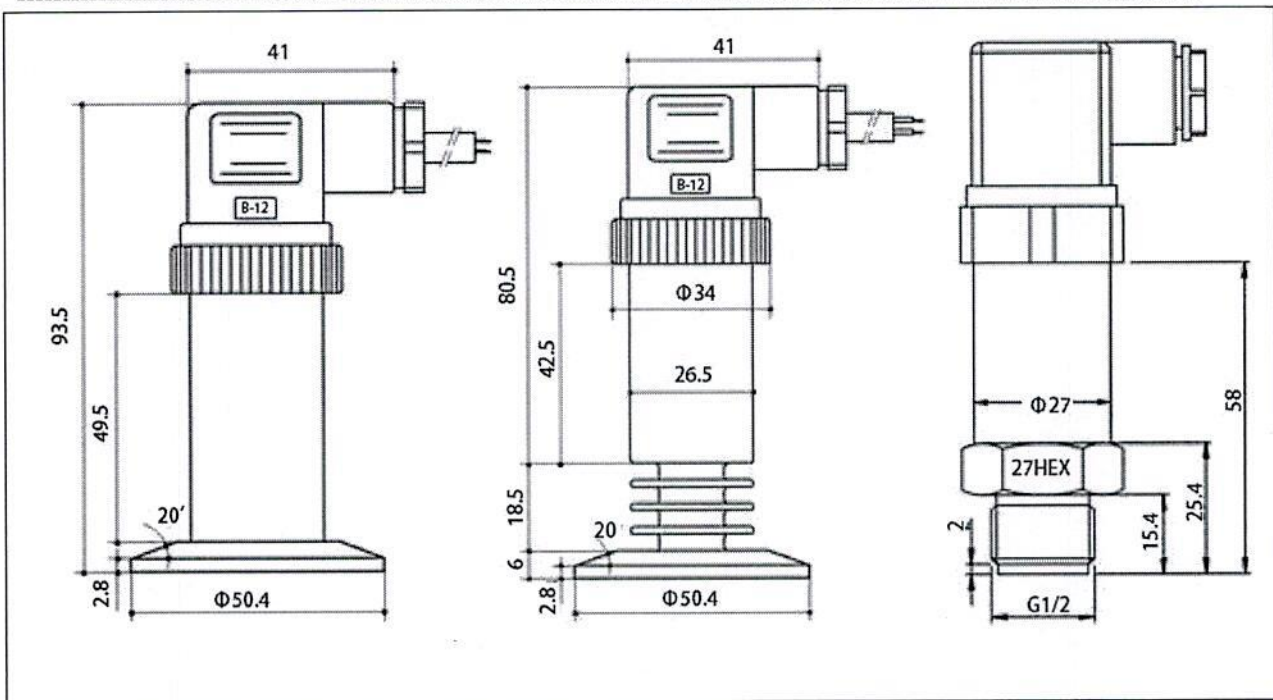


03
G T
T B
JNG
TON
LYO
CTC
VG-

N43

EST330F GID-3-EV01

Measuring your business 



Specifications

Measuring Range	0~35kPa...3.5MPa	Temp.coefficient of span	±0.02%FS/°C(typ.) ±0.03%FS/°C(max.)		
Overload pressure	1.5 times of rated pressure or 110MPa(min. value is valid)	Compensated temperature	-10~+70°C		
Pressure type	Gauge (G), Absolute (A), Sealed gauge (S)	Operating temperature	-20°C~80°C		
Accuracy	±0.25%F.S / ±0.5%F.S	Storage temperature range	-40°C~120°C		
Stability	≤0.3%FS/year	Insulating resistance	≥100MΩ@100Vdc		
Working temperature	-20~85°C, (-40~150°C with radiator)	Pressure connection	M20x1.5, G1/2 (customer request)		
Temp.coefficient of zero	±0.02%FS/°C(typ.) ; ±0.03%FS/°C(max.)	Electrical connection	DIN43650		
Diaphragm material	SS316L	Medium compatibility	All corrosive medium compatible with 1Cr18Ni9Ti		
Response time(10%~90%)	≤10ms	Ingress protection	IP65		
Electrical parameters	Two wire	Three wire			
Output Signal	4~20mA	0~5V	1~5V	0~10V	
Power supply	8~30Vdc	8~24Vdc	8~24Vdc	11~30Vdc	
Load resistance	R≤(U-15)/0.02 (for 4/20mA)	R>100kΩ(for voltage output)			
1MPa=10bar; 1bar≈14.5PSI; 1PSI=6.8965kPa; 1kgf/cm2=1atm; 1atm≈98kPa					

1MPa=10bar; 1bar≈14.5PSI; 1PSI=6.8965kPa; 1kgf/cm2=1atm; 1atm≈98kPa

M43

EST330F GID-3-EV01

Measuring your business 

Ordering Procedure

EST	Piezoresistive Pressure Transmitter									
	Code	Model								
	330F	Flush diaphragm								
	330FTC	Tri-Clamp open face flush diaphragm								
	Cod	Span								
	1	0~35kPa...3.5MPa								
	Code	Output Type								
	A	4~20mA								
	V	0~5V								
	V05	1~5V								
	V210	0~10V								
	Code	Precision								
	0.25	±0.25%F.S								
	0.5	±0.5%F.S								
	Code	Power Supply								
	DC83	8~30Vdc								
	DC82	8~24Vdc								
	DC11	11~30Vdc								
	Code	Process connection								
	M	M20 x 1.5								
	G2	G1/2								
	Code	Electrical Connections								
	D	DIN43650-C								
	C	Cable Electrical Connection								
	Code	Cable length XXm=... m								
	Code	Packing								
	Bb	Bubble bag								
	Foa	Plastics foam								
EST	330F	1	A	0.25	DC83	M	C	1.5	Bb	

5 Port Pilot Operated Solenoid Valve Metal Seal, Body Ported

VFS3000 Series



How to Order

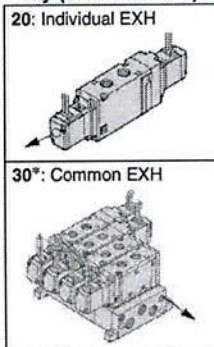
VFS3 1 20 - 1 G - 02 - - -

Symbol

- 1: 2 position single (A4 2(B) (R1)(P)(R2))
- 2: position double (A4 2(B) (R1)(P)(R2))
- 3: position closed center (A4 2(B) (R1)(P)(R2))
- 4: position exhaust center (A4 2(B) (R1)(P)(R2))
- 5: position pressure center (A4 2(B) (R1)(P)(R2))

* Reverse pressure: Can be used by external pilot specifications.

Body (Pilot exhaust)



* Manifold only

Pilot type

NII	Internal pilot
R*	External pilot

* Semi-standard: It will be an individual external pilot.
(External pilot port: Body side. For 30 type, common external pilot (on manifold side).)

Port size

02	1/4
03	3/8

Manual override

NII: Non-locking push type (Flush)	A*: Non-locking push type (Extended)	B*: Locking type (Tool required)
------------------------------------	--------------------------------------	----------------------------------

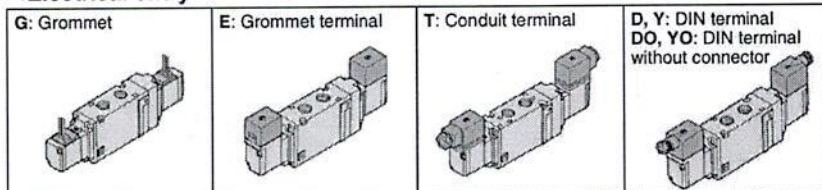
* Semi-standard

Light/Surge voltage suppressor

NII	None
Z	With light/surge voltage suppressor
S*	With surge voltage suppressor

* Grommet type is available only w/ surge voltage suppressor, not w/ indicator light.

Electrical entry



Coil rated voltage

1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3*	110 to 120 VAC (50/60 Hz)
4*	220 VAC (50/60 Hz)
5	24 VDC
6*	12 VDC
7*	240 VAC (50/60 Hz)

* Semi-standard

For other rated voltages, please consult with SMC.

Note) No mounting bolts and gaskets are supplied with the valve single unit.

How to Order Pilot Valve Assembly

SF4- 1 DZ - 21

Coil rated voltage

1	100 VAC, 50/60 Hz
2	200 VAC, 50/60 Hz
3*	110 to 120 VAC (50/60 Hz)
4*	220 VAC, 50/60 Hz
5	24 VDC
6*	12 VDC
7*	240 VAC, 50/60 Hz

* Semi-standard
For other rated voltages, please consult with SMC.

Electrical entry, Light/Surge voltage suppressor

G	Grommet
GS	Grommet with surge voltage suppressor
D	DIN terminal
DZ*	DIN terminal with light/surge voltage suppressor
DO*	DIN terminal **
DOZ*	DIN terminal with light/surge voltage suppressor **
Y*	DIN terminal
YZ*	DIN terminal with light/surge voltage suppressor
YO*	DIN terminal **
YOZ*	DIN terminal with light/surge voltage suppressor **
T	Conduit terminal
TZ	Conduit terminal with light/surge voltage suppressor
E	Grommet terminal
EZ	Grommet terminal with light/surge voltage suppressor

Manual override

NII	Non-locking push type (Flush)
A	Non-locking push type (Extended)
B*	Locking type (Tool required)

* Semi-standard

Applicable model

14	A side pilot operator for VFS3 ₁ 20	Individual pilot exhaust
15	B side pilot operator for VFS3220	
16	B side pilot operator for VFS3 ₂ 30	
17	A side pilot operator for VFS3 ₃ 30	Common pilot exhaust
18	B side pilot operator for VFS3230	
19	B side pilot operator for VFS3 ₃ 30	

* Y: Conforming to DIN43650B standard
** DIN connector is not attached.



Product data sheet

Characteristics

XSAV11801TF

Inductive proximity sensors XS, Rotation monitoring, M30, Sn10mm, 6...150c/mn, 24...240VAC/DC, cable 2 m



Main

Range of Product	Telemecanique Inductive proximity sensors XS
Series name	Application
Product or Component Type	Sensor
Sensor Type	Inductive proximity sensor
Device Application	Rotation monitoring
Sensor name	XSA
Sensor design	Cylindrical M30
Size	81 mm
Body type	Fixed
Detector flush mounting acceptance	Flush mountable
Material	Metal
Enclosure Material	Nickel Plated Brass
Type of output signal	Discrete
Wiring Technique	2-wire
[Sn] nominal sensing distance	0.39 in (10 mm)
Discrete output function	1 NC
Output circuit type	AC/DC
Electrical connection	Cable
Cable length	6.56 ft (2 m)
[Us] rated supply voltage	24...210 V DC 24...240 V AC 50/60 Hz
Switching capacity in mA	5...200 mA DC 5...350 mA AC
IP degree of protection	IP67 conforming to IEC 60529

Complementary

Thread type	M30 x 1.5
Detection face	Frontal
Front material	PPS
Sensing range	> 0.31...0.59 in (> 8...15 mm)
Adjustable frequency range	6...150 cyc/mn
Operating zone	0.00...0.31 in (0...8 mm)
Differential travel	3...15% of Fr
Repeat accuracy	3% of Sr
Cable composition	2 x 0.34 mm ²
Wire insulation material	PvR
Status LED	Output state 1 LED red)
Supply voltage limits	20...264 V AC/DC
Maximum residual current	1.5 mA open state
Switching frequency	<= 100 Hz
Maximum voltage drop	<5.7 V closed)
Run-up delay at power-up	9 s standard
Marking	CE

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric Industries SAS nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein.

M46

Threaded length	2.64 in (67 mm)
Length	3.19 in (81 mm)
Net Weight	0.66 lb(US) (0.3 kg)

Environment

Product Certifications	UL CCC CSA
Ambient Air Temperature for Operation	-40...158 °F (-40...70 °C)
Ambient Air Temperature for Storage	-40...185 °F (-40...85 °C)

Ordering and shipping details

Category	22486-SENSORS, PROXIMITY
Discount Schedule	DS2
GTIN	3389110132724
Returnability	Yes
Country of origin	FR

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	5.20 in (13.2 cm)
Package 1 Width	3.70 in (9.4 cm)
Package 1 Length	1.65 in (4.2 cm)
Package 1 Weight	7.97 oz (226.0 g)
Unit Type of Package 2	S02
Number of Units in Package 2	22
Package 2 Height	5.91 in (15.0 cm)
Package 2 Width	11.81 in (30.0 cm)
Package 2 Length	15.75 in (40.0 cm)
Package 2 Weight	11.64 lb(US) (5.279 kg)

Offer Sustainability

Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including: Diisononyl phthalate (DINP), which is known to the State of California to cause cancer, and Diisodecyl phthalate (DIDP), which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov
REACH Regulation	 REACH Declaration
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope)  EU RoHS Declaration
Mercury free	Yes
RoHS exemption information	 Yes
Environmental Disclosure	 Product Environmental Profile
Circularity Profile	 End Of Life Information

Contractual warranty

Warranty	18 months
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STANDARD TYPE

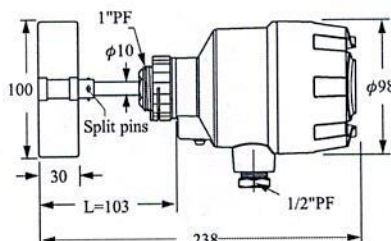
- **Power source** : (A)110Vac,(B)220Vac,(C)240Vac, (D)24Vac, 50/60Hz (E)24Vdc
- **Power consumption** : 3W
- **Contact capacity** : SPDT, 5A/250Vac
- **Rotary speed** : 1 R.P.M.
- **Insulation test voltage** : 2500V
- **Connection** : 1"PF screw or JIS 2-1/2" x 5kg/cm flange
- **Protection/ material** : IP65 / ADC-12
- **Conduit** : 1/2"PF
- **Material density** : 0.5 g/cm³

SCREW TYPE

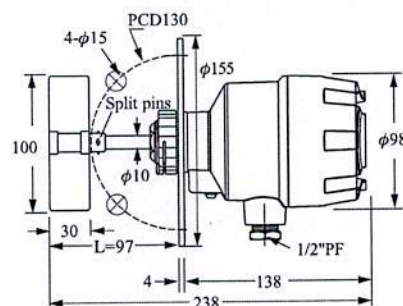
SE110 Series

- Horizontal mounting
- Operation Temperature (-20°C ~ 70°C)
- Weight: 1.2 kg

SE110 Series



SE111 Series



FLANGE TYPE

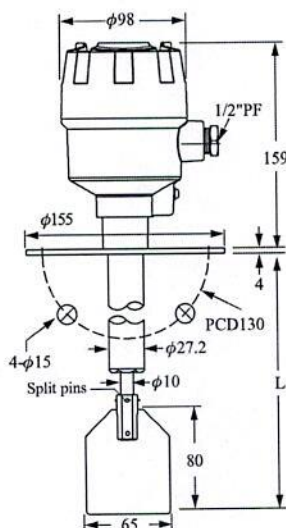
SE111Series

- Horizontal mounting
- Operation Temperature (-20°C ~ 70°C)
- Weight: 1.7 kg

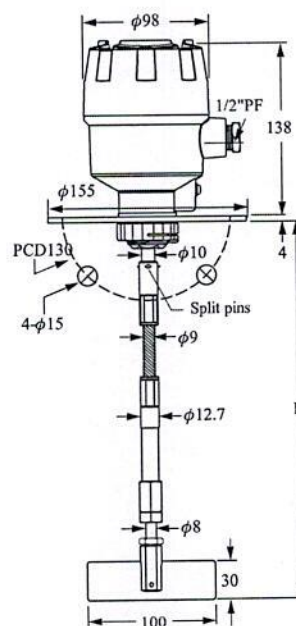
SHAFT PROTECTIVE TUBE TYPE

SE120 Series

- Horizontal /Vertical mounting
- Operation Temperature (-20°C ~ 70°C)
- Weight: 1.2 kg
- Standard Length:
 - L-250mm (2.2 kg)
 - L-500mm (2.5 kg)
 - L-750mm (2.8 kg)
- Customized lengths available



SE130 Series



SHAFT LENGTH ADJUSTABLE TYPE

SE130 Series

- Vertical mounting
- Operation Temperature (-20°C ~ 70°C)
- Standard Length:
 - L- 460~630mm (2.5 kg)
 - L- 650~1000mm (2.8 kg)
 - L- 750~1200mm (3.0 kg)
- Customized lengths available

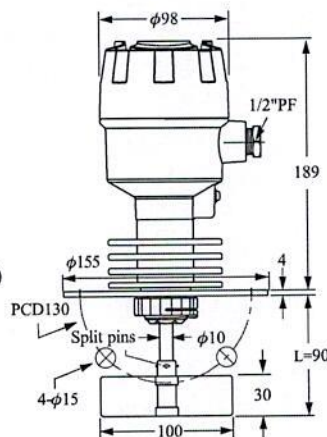
STANDARD TYPE

HI-TEMP TYPE

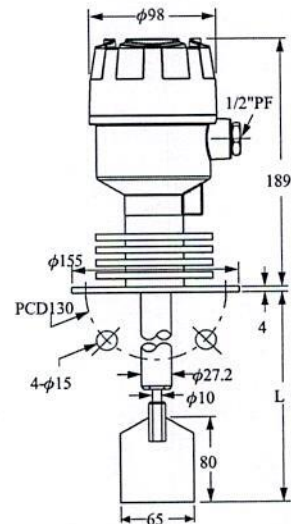
SE140 Series

- Horizontal mounting
- Temp. (-20°C ~ 200°C)
- Weight: 2.1 kg

SE140 Series



SE141 Series



HI-TEMP TYPE

PROTECTIVE TUBE TYPE

SE141 Series

- Horizontal /Vertical mounting
- Operation Temperature (-20°C ~ 200°C)
- Standard Length (option):
 - L--250mm (2.6 kg)
 - L--500mm (2.9 kg)
 - L--750mm (3.2 kg)
- Special length is made by order

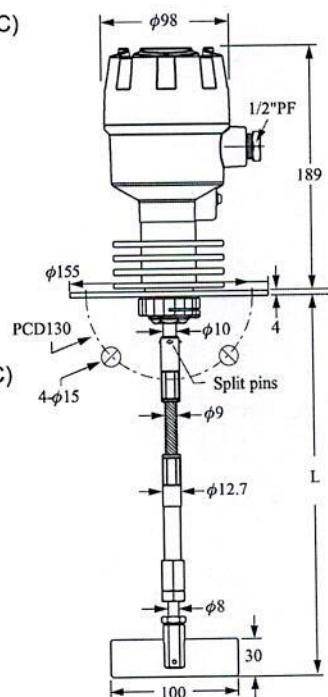
HI-TEMP SHAFT

LENGTH ADJUSTABLE TYPE

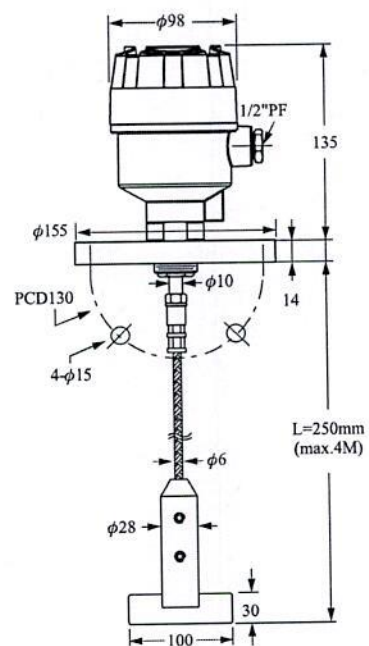
SE146 Series

- Vertical mounting
- Operation Temperature (-20°C ~ 200°C)
- Standard Length (option):
 - L-- 450~630mm (3 kg)
 - L-- 650~1000mm (3.3 kg)
 - L-- 750~1200mm (3.5 kg)
- Special length is made by order

SE146 Series



SE160 Series



CABLE WIRE TYPE

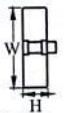
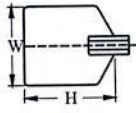
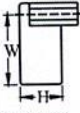
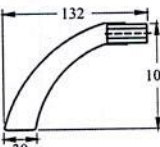
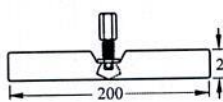
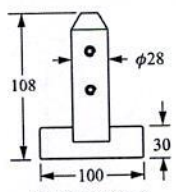
SE160 Series

- Vertical mounting
- Operation Temperature (-20°C ~ 70°C)
- Standard Length (option):
 - L-- 450mm (2.5 kg)
 - L-- 650mm (2.8 kg)
 - L-- 750mm (3 kg)
- Special length is made by order

MODEL NUMBER / ORDER CODE COMPARISON TABLE

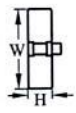
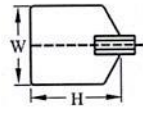
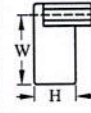
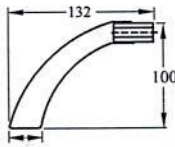
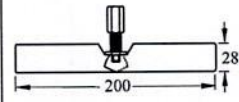
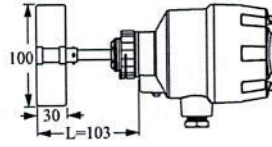
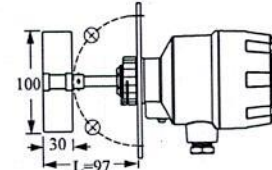
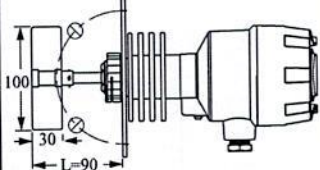
Model Number	Order Code
SE110	SEX50000-AA
SE111	
SE120	SEX50000-AB
SE130	SEX50000-AC
SE140	SEX50200-AA
SE141	SEX50200-AB
SE146	SEX50200-AC
SE160	SEX50000-AD

New / Old paddle model comparison table

New	Figure	Dimension(WxH)	Old
B	 Rectangular shaped type	100x30	A
C	 Shovel shaped type	65x80	B
D		65x120	C
E		80x80	D
F	 Rectangular type, one sided	50x30	E
G	 Scimitar shaped type	132x100	F
H	 Hinged type	200x28	J
K	 Weights type	100x108	X

M47

PROBE LENGTH LIST FOR STANDARD TYPE (WITH DIFFERENT PADDLES)

						
Rectangular shaped type 100x30	Shovel shaped type			Rectangular type, one sided 50x30	Scimitar shaped type 132x100	Hinged type 200x28
	65x80	65x120	80x80			
SE110 	L=155	L=195	L=155	L=107	L=195	L=127
SE111 	L=149	L=189	L=149	L=101	L=189	L=121
SE140 	L=142	L=182	L=142	L=94	L=182	L=114

M47

ORDER INFORMATION

SEX 5 ⁰⁵ ⁰⁶ 0 0 - A ¹⁰ ¹¹ ¹² ¹³ ¹⁴ ¹⁵ ¹⁶ ¹⁷ ¹⁸ ¹⁹ ²⁰ ²¹ ²²

⑤⑥ Model

- 00: Standard
- 02: Hi-temperature

⑩ Construction

- A: General type
- B: Shaft protective tube type
- C: Shaft length adjustable type
- D: Cable wire type

⑪ Power supply

- A: AC110V
- B: AC220V
- C: AC240V
- D: AC24V
- E: DC24V

Connection

⑫⑬

- Flange item
- AK: JIS-FF
- AN: ANSI-RF
- AS: DIN-FF
- BC: Standard thin flange
(Suitable for 2-1/2" dimension)

⑭⑮

- A8: 1"
- B1: 1-1/2"
- B2: 2"
- B4: 2-1/2"

⑯⑰

- 01: PT male
- 03: PF male
- 07: NPT male
- 39: 5 kg/cm²x4T(Thin flange)
- 40: 5 kg/cm²
- 42: 10 kg/cm²
- 48: 150 Lbs
- 49: 300 Lbs
- 57: PN10
- 58: PN16

- Thread item
- AA: JIS
- AC: ANSI

⑱ Paddle model

- A: None
- B: 100x30(WxH)
- C: 65x80(WxH)
- F: 50x30(WxH)
- G: Scimitar type 132x100(WxH)
- H: Folding type 200x28(WxH)
- K: 100x108(WxH)(Cable wire type only)

⑲⑳㉑㉒ Length

Code	Length range
0001~4000	0001~4000mm

M 48



Direct acting 3-port solenoid valve, single unit
General purpose

AG31/AG41 Series

- Universal
- Port size: Rc1/8, Rc1/4, Rc3/8



Refer to the Ending for details.



EXA

FWD

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/

AD

APK/

ADK

DryAir

EX-

XPLNprf

XPLNprf

HVB/

HVL

S&B/

NAB

LAD/

NAD

Water-

Rela

NP/NAP/

NVP

SNP

CHB/G

MXB/G

Other

valves

SWD/

MWD

DustCoil

CVE/

CVSE

CCH/

CPE/D

LifeSci

Gas-

Combust

Auto-

Water

Outdoor

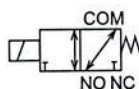
SpecFld

Custom

Ending

JIS symbol

- AG31/41: Universal



Common specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Standard specifications		Optional specifications	
Working fluid	Air/low vacuum [1.33 x 10 ⁵ Pa (abs)]/water/kerosene/oil (50 mm ² /s or less)		Hot water	Steam
Working pressure differential MPa	0 to 1 (refer to max. working pressure differential in individual specifications.)			
Max. working pressure MPa	1 (≈150 psi, 10 bar)			
Proof pressure (water pressure) MPa	25 (≈3700 psi, 250 bar)			
Fluid temperature (*1) °C	-10 (14°F) to 60 (140°F)		-10 (14°F) to 90 (194°F)	-10 (14°F) to 184 (363.2°F)
Ambient temperature °C	-20 (-4°F) to 60 (140°F)		-20 (-4°F) to 100 (212°F)	
Thermal class	Class 130 (B)		Class 180 (H)	
Atmosphere	Place free of corrosive gas and explosive gas			
Valve structure	Direct acting poppet structure			
Valve seat leakage cm ³ /min(ANR)	0.2 or less (air)			300 or less (air)
Mounting orientation	Unrestricted			
Body/seal material	Copper alloy/nitrile rubber		Copper alloy/EPM rubber	Copper alloy/PTFE

*1 : No freezing.

Individual specifications

1 MPa ≈ 145.0 psi, 1 MPa = 10 bar

Item	Port size	Orifice size (mm)		Max. working pressure differential (MPa)							Rated voltage	Apparent power (VA)				Power consumption (W)		Weight (kg)
				Air		Water(hot)/Kerosene		Oil (50 mm ² /s)		Steam		When holding		When starting		AC	DC	
		TOP	BODY	AC	DC	AC	DC	AC	DC	AC		50 Hz	60 Hz	50 Hz	60 Hz	50/60 Hz		
AG31-01-1	Rc1/8	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6(0.5)	0.7	100 VAC 50/60 Hz *7	14	11	20	16	6/4.2	11 (8.1)	0.36
		2.0	2.0	0.4	0.4(0.35)	0.4	0.4	0.25	0.2(0.15)	0.4								
	Rc1/4	1.5	1.5	0.7	0.7	0.7	0.7	0.6	0.6(0.5)	0.7	200 VAC 50/60 Hz *7	22	17	35	27	8.3/6.2	11 (10.4)	0.45
		2.0	2.0	0.4	0.4(0.35)	0.4	0.4	0.25	0.2(0.15)	0.4								
AG41-02-1	Rc1/4	2.0	2.0	1.0	0.7(0.45)	1.0	0.7	0.4	0.3(0.25)	1.0	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)	0.45
		2.3	2.3	0.7	0.4(0.35)	0.7	0.4	0.25	0.15(0.1)	0.7								
	Rc3/8	2.0	2.0	1.0	0.7(0.45)	1.0	0.7	0.4	0.3(0.25)	1.0	12 VDC 24 VDC 48 VDC 100 VDC	22	17	35	27	8.3/6.2	11 (10.4)	0.45
		2.3	2.3	0.7	0.4(0.35)	0.7	0.4	0.25	0.15(0.1)	0.7								

*1 : The model numbers above are for the basic port size (Rc) and orifice size. Refer to How to order for other combinations.

*2 : Refer to DC column for the max. working pressure differential of coil with diode.

*3 : The voltage fluctuation range must be within ±10% of the rated voltage.

*4 : Values shown in () are for the DC voltage with DIN terminal box, indicating the max. working pressure differential when pressurized from the NO port.

*5 : When using in a continuously energized state, use fluoro rubber seal.

*6 : NO port pressurization is not possible for PTFE seal.

*7 : The 100 VAC (50/60 Hz) can be used with 110 VAC (60 Hz). The 200 VAC (50/60 Hz) can be used with 220 VAC (60 Hz). However, this does not apply to coil housings 5A/5M/5N/5I/5J.

Optional specifications (fluid temperature, ambient temperature, valve seat leakage)

Sealant	Fluoro rubber		Ethylene propylene rubber		PTFE	
Coil (thermal class)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)	Class 130 (B)	Class 180 (H)
Fluid temperature (*1) °C	-10 to 60	-10 to 90	0 to 60 (*3)	0 to 90 (*3)	-10 to 60	-10 to 184
Ambient temperature °C	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)	-20 to 60	-20 to 100 (*2)
Valve seat leakage cm ³ /min(ANR)	0.2 or less (air)				300 or less (air)	

*1 : No freezing.

*2 : -20 to 80°C when coil housing is HP terminal box with lamp.

*3 : The lowest temperature is 0°C since the fluid is water.

Flow characteristics

Model No.	Port size	Orifice size (mm)		Flow characteristics					
		TOP	BODY	C[dm ³ /(s·bar)]		b		Cv	
				TOP	BODY	TOP	BODY	TOP	BODY
AG31-01-1	Rc1/8	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-01-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-1	Rc1/4	1.5	1.5	0.29	0.29	0.64	0.53	0.09	0.09
-02-2		2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
AG41-02-1	Rc1/4	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-02-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19
-03-1	Rc3/8	2.0	2.0	0.53	0.53	0.54	0.52	0.15	0.15
-03-2		2.3	2.3	0.74	0.74	0.66	0.53	0.19	0.19

*1 : Effective cross-sectional area S and sonic conductance C are converted as $S \approx 5.0 \times C$.

EXA

FWD

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/AD

APK/ADK

DryAir

EX-XPLNprf

XPLNprf

HVB/HVL

SDB/NAB

LAD/NAD

Water-Rela

NP/NAP/NVP

SNP

CHB/G

MXB/G

Other valves

SWD/MWD

DustColl

CVE/CVSE

CCH/CPE/D

LifeSci

Gas-Combus

Auto-Water

Outdoor

SpecFld

Custom

Ending

AG31/41 Series

448

EXA

FWD

HNB/G

USB/G

FAB/G

FGB/G

FVB

FWB/G

FHB

FLB

AB

AG

AP/AD

APK/ADK

DryAir

EX-XPLNprf

XPLNprf

HVB/HVL

S⁺B/NAB

LAD/NAD

Water-Rela

NP/NAP/NVP

SNP

CHB/G

MXB/G

Other valves

SWD/MWD

DustColl

CVE/CVSE

CCH/CPE/D

LifeSci

Gas-Combus

Auto-Water

Outdoor

SpecFld

Custom

Ending

How to order

AG31-02-2-B3AABGS-AC100V

AG41

Model No.

A Port size

B Orifice size

C Body/sealant combination

*1
*2
*3
*4
*5

D Coil housing
E Manual override (locking)
F Mounting plate
G Other options
H With surge suppressor
I Rated voltage

Model No.

AG31 AG41

Code	Description	Code	Description	Code	Description		
A Port size							
01	Rc1/8	1G	G1/8	1N	1/8NPT	●	
02	Rc1/4	2G	G1/4	2N	1/4NPT	●	●
03	Rc3/8	3G	G3/8	3N	3/8NPT		●
B Orifice size							
AG31			AG41				
	TOP	BODY	TOP	BODY			
1	ø1.5	ø1.5	ø2.0	ø2.0		●	●
2	ø2.0	ø2.0	ø2.3	ø2.3		●	●
C Body/sealant combination							
Blank	Std.	Body	Seal	Treatment	Remarks		
B		Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
C		Copper alloy	Fluoro rubber	-	Air/low vacuum/kerosene (up to 90°C *2)	●	●
V		Copper alloy	PTFE	-	Steam (up to 184°C *2)	●	●
D		Copper alloy	Fluoro rubber	Vacuum inspection	Low vacuum	●	●
E		Stainless steel	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
F		Stainless steel	Fluoro rubber	-	Air/low vacuum/kerosene (up to 90°C *2)	●	●
W		Stainless steel	PTFE	-	Steam (up to 184°C *2)	●	●
H		Stainless steel	Fluoro rubber	Vacuum inspection	Low vacuum	●	●
J		Copper alloy	Nitrile rubber	-	Air/water/low vacuum/kerosene (up to 60°C)	●	●
K		Copper alloy	Fluoro rubber	-	Air/low vacuum/kerosene (up to 90°C *2)	●	●
P		Copper alloy	PTFE	-	Steam (up to 184°C *2)	●	●
L		Copper alloy	Ethylene propylene rubber	-	Hot water (up to 90°C *2)	●	●
M		Stainless steel	Nitrile rubber	Oil-prohibited	Air/water/low vacuum/kerosene (up to 60°C)	●	●
N		Stainless steel	Fluoro rubber	Oil-prohibited	Air/low vacuum/kerosene (up to 90°C *2)	●	●
R		Stainless steel	PTFE	Oil-prohibited	Steam (up to 184°C *2)	●	●
		Stainless steel	Ethylene propylene rubber	Oil-prohibited	Hot water (up to 90°C *2)	●	●

Refer to Intro Page 39 for reference on material combinations.

D to I

Refer to page 193 for details on the coil housing, other options and voltage, etc.

The combinations indicated with ● in the above table are available.

[Example of model No. 1]

AG31-02-1-AC100V

Model : AG31

A Port size : Rc1/4

B Orifice size : TOP-ø1.5, BODY-ø1.5

C Body/sealant combination

: Body - copper alloy, sealant - nitrile rubber

D Coil housing : Grommet lead wire

E to I : None

I Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

[Example of model No. 2]

AG41-03-2-000ABS-AC100V

Model : AG41

A Port size : Rc3/8

B Orifice size : TOP-ø2.3, BODY-ø2.3

C Body/sealant : Body - copper alloy/sealant - nitrile rubber

D Coil housing : Grommet lead wire

E Manual override (locking) : Selected

F Mounting plate : With mounting plate

G Other options : None

H Surge suppressor : With surge suppressor

I Rated voltage : 100 VAC 50/60 Hz, 110 VAC 60 Hz

⚠ Precautions for model No. selection

Notes for C

*1 : Leave blank for standard. However, to select options in D, E, F, G or H, indicate 0 for Item C.

*2 : When Item C 4A/4M/4N is selected.

*3 : The ethylene propylene rubber seal combination (Item C P/R) cannot be used with air. (Compressed air contains oil, and ethylene propylene rubber is not oil-resistant.)

*4 : For option codes V and W, vacuum is inspected at "leakage rate: 1.33 x 10⁻⁴ Pa·m³/s or less".

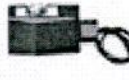
*5 : For PTFE seal, O-ring material of socket will be FKM.

For Items ④ to ⑪, the combinations indicated with codes are available.
Note that if options for Items ⑤ to ⑧ are not required, they should be left blank.

D Coil housing			E	F	G Other options				H	I Rated voltage		
Description			Manual override (Locking)	Mounting plate	Cable gland (marine cable gland)		Conduit (conduit piping)		With surge suppressor	Description		
					A-15a	A-15b	A-15c	CTC 19	G 1/2			
Blank	Std.	Grommet lead wire	A	B					S	100 VAC, 200 VAC		
2E		With DIN terminal box (G1/2)								100 VAC, 200 VAC		
2G		With DIN terminal box (Pg11)								12 VDC, 24 VDC, 48 VDC, 100 VDC		
2H		DIN terminal box with small lamp (Pg11)								100 VAC, 200 VAC, 24 VDC		
3A	Option	Open Frame	A	B	D	E	F	G	H	S	100 VAC, 200 VAC	
3M											Lead wire (IP65 or equivalent)	12 VDC, 24 VDC, 48 VDC, 100 VDC
3N											With HP terminal box(G1/2)	100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
3I											HP terminal box with lamp (G1/2)	100 VAC, 200 VAC, 12 VDC, 24 VDC, 48 VDC, 100 VDC
3J											HP term box (IP65, equiv) (G1/2)	100 VAC, 200 VAC, 12 VDC, 24 VDC, 100 VDC
4A	Option	Open Frame (Thermal class 180 (H))	A	B	D	E	F	G	H	S	100 VAC, 200 VAC	
4M												Lead wire
4N												With HP terminal box(G1/2)
5A	Option	Open Frame (diode integrated)	A	B	D	E	F	G	H		100 VAC, 200 VAC	
5M												Lead wire (IP65 or equivalent)
5N												With HP terminal box(G1/2)
5I												HP terminal box with lamp (G1/2)
5J												

Refer to the following cautions for Items ④ to ⑪.

Blank		● Grommet lead wire 300 mm
2E 2G 2H		● DIN terminal box
3A 4A 5A		● Open frame ● Lead wire 300mm ● 4A (Thermal class 180 (H)) ● 5A (diode integrated)
3M 3N 4M 4N 5M 5N		● Open frame HP terminal box ● 4M, 4N (Thermal class 180 (H)) ● 5M, 5N (diode integrated)
3I 3J 5I 5J		● Open frame HP terminal box (IP65 or equivalent) ● 5I, 5J (diode integrated)

G H		● Conduit ● G(CTC19) ● H(G1/2)
--------	--	--------------------------------------

Precautions for model No. selection

Notes for ④

- *6 : Leave blank for the standard coil housing. However, to select options in ⑤, ⑥, ⑦ or ⑧, indicate 00 for Item ④.
- *7 : Coils for 5A/5M/5N/5I/5J have a diode to convert AC to DC voltage.
- *8 : A DC coil for steam is available for AG41. Contact CKD for more information.

Notes for ⑤ to ⑧

- *9 : When Item ⑤ is C, F, K, N, V or W, the manual override (Item ⑤ A) is not available.
- *10 : For Item ⑥, select an option from D, E, F, G and H.
- *11 : The surge suppressor is attached with the lead wire coil. When selecting a coil with a terminal box, the surge suppressor is mounted in the terminal box.
- *12 : As standard, the surge suppressor is built into the coil with diode and the 24 VDC coil (Item ④ 2H), so the surge suppressor S cannot be selected.
- *13 : Tropicalization (rust-proof coating) is available as a measure against rust. Contact CKD for more information. Note that tropicalization is not available when the manual override option (A) is selected.

Notes for ⑨

- *14 : 100 VAC coil is compatible with 100 VAC 50/60 Hz and 110 VAC 60 Hz, and 200 VAC coil is compatible with 200 VAC 50/60 Hz and 220 VAC 60 Hz. However, coils for Item ④ 5A/5M/5N/5I/5J can be used with 100 VAC 50/60 Hz and 200 VAC 50/60 Hz only.
- *15 : For voltages other than above, contact CKD.
- *16 : The lead wire is available in the standard 300 mm length, and 500 mm, 1000 mm, 2000 mm and 3000 mm lengths. Contact CKD for more information.

Refer to page 148 for coil selection.

EXA
FWD
HNB/G
USB/G
FAB/G
FGB/G
FVB
FWB/G
FHB
FLB
AB
AG
AP/AD
APK/ADK
DryAir
EX-XPLNprf
XPLNprf
HVB/HVL
SDB/NAB
LAD/NAD
Water-Rela
NP/NAPI/NVP
SNP
CHB/G
MXB/G
Other valves
SWD/MWD
DustColl
CVE/CVSE
CCH/CPE/D
LifeSci
Gas-Combus
Auto-Water
Outdoor
SpecFld
Custom
Ending

M49

Type Designation

ALN-□□□-□□□

- H. Heat-resisting Specification**
Blank. Standard
H. Heat-resistant
- Vibration proof**
Blank. Standard
M. Amplifier, molding
- Class of Sensitivity**
1. High Sensitivity
2. Standard Sensitivity
3. Low Sensitivity
4. Ultra Low Sensitivity
- Length of Detection Electrode**
1. Up to 250mm
2. 251 ~ 500mm
3. 501 ~ 1000mm
4. 1001 ~ 2000mm
5. Others
- Eletrode type**
1. Uncovered rod shape
2. Coating Rod Shape
3. Flat
4. Wire
5. Others
- Instrument construction**
1. Electrode-Amplifier Built-in Type
2. Remote Type(Amplifier for Indoor use)
3. Remote Type(Amplifier for Outdoor use)

ST8□-□□□-□□□

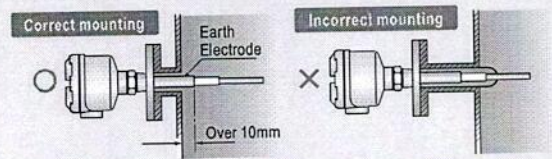
- H. Heat-resisting Specification**
Blank. Standard
H. Heat-resistant
- Sensitivity class**
1. High sensitivity
2. Standard sensitivity
3. Low sensitivity
4. Ultralow sensitivity
- Length of the detecting electrode**
1. Up to 250mm
2. 251 ~ 500mm
3. 501 ~ 1000mm
4. 1001 ~ 2000mm
5. 2001 ~ 4000mm (20000mm)
() Is for wire electrode only
- Electrode type**
1. Bare Rod Shape
2. Coating Rod Shape
3. Flat
4. Wire
5. Pipeline
6. Coating Pipeline
- Instrument construction**
1. Electrode-Amplifier Built-in Type
2. Remote Type
3. Remote Type (small sensor head)
4. Remote Type (cable straight out)
- Model code**
ST81 (ia3nG1)
ST82 (ia3nG2)
ST85 (ia3nG5)

Sensitivity

Model	Class	Dielectric Constant
ALN ST8□-□□□-1□	High sensitivity (0.5 ~ 20PF)	1.5 ~ 7
ALN ST8□-□□□-2□	Standard sensitivity (2 ~ 50PF)	7 ~ 80
ALN ST8□-□□□-3□	Low sensitivity (20 ~ 1,000PF)	Over 70
ALN ST8□-□□□-4□	Ultra low sensitivity (5 ~ 35Ω)	Resistance value 5 ~ 35Ω

Instruction On mounting

Earth electrode must be protruded at least 10mm, inside the tank if the buildup is heavy then more than 50mm.



Please provide us with the following information when inquiring and ordering

- Name of material to be measured []
- Dielectric constant, conductivity []
- Material [Liquid • Powder (Granularity) • Slurry (cp)]
- Tendency to buildup [Yes • No]
- Corrosive [Yes • No]
- Tank Materials []
- Agitator etc. [Yes • No]
- Service Temperature [°C]
- Service Pressure [Pa]
- Detection Point [Upper • Lower • etc]
- Mounting [Vertical • Horizontal • Tilt • etc]
- Process Connection [Flange • Screwed • etc]
- Height of Standpipe [mm]
- Electrode Length [mm]

Line of business

- Rotary Paddle Type Level Switch
- Vibration Type Level Switch
- Swing Type Level Switch
- Acoustic Level Switch
- Capacitance Type Level Switch
- Capacitive Proximity Sensor
- Capacitance Type Level Indicator
- Diaphragm Type Level Switch
- Tilt Switch
- Leak Type Level Switch
- Microwave Switch
- Sounding Bob Type Level Indicator
- Flow Switch
- Conductance Type Level Switch
- Float Switch
- Float Type Level Indicator
- Ultrasonic Type Level Indicator
- Equipments For Conveyor Lines
- Dust Monitor System
- Zirconia Oxygen Analyzer
- Laser Type Level Indicator
- RADAR Type Level Indicator
- Ultrasonic Flow meter

*Please be sure to read USER'S GUIDE, Installation & Operation Instructions before using the instrument.
*The specifications herein may be subject to change without advance notice.

General Manufacturer of Level Controllers for Powder, Granules, and Liquid

KANSAI Automation Co., Ltd.

Headquarters :
2-14, Togano-cho, Kita-ku, Osaka 530-0056, Japan
TEL. 81-6-6312-2071 FAX. 81-6-6314-0848
e-mail: info@kansai-automation.co.jp

<http://www.kansai-automation.co.jp>

Tokyo Branch: 1-29-6, Hamamatsu-cho, Minato-ku, Tokyo 105-0013, Japan
TEL. 81-3-5777-6931 FAX. 81-3-5777-6933

Nagoya Office: 3-10-17, Uchiyama, Chigusa-ku, Nagoya 464-0075, Japan
TEL. 81-52-741-2432 FAX. 81-52-741-1588

Hiroshima Office: 13-11, Noborimachi, Naka-ku, Hiroshima 730-0016, Japan
TEL. 81-82-222-1555 FAX. 81-82-222-1556

Kyushu Office: 1-1-21, Komemachi, Kokura Kita-ku, Kitakyushu 802-0003, Japan
TEL. 81-93-511-4741 FAX. 81-93-511-4580

Agent



M 50

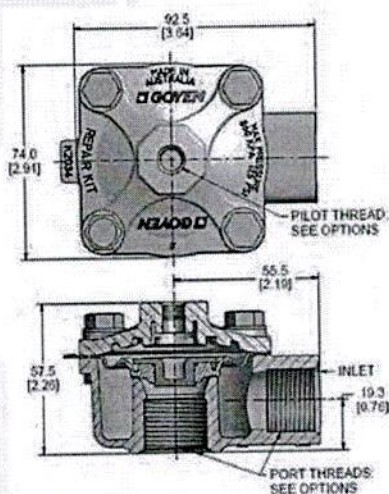
GOYEN - T SERIES THREADED VALVES

PRODUCT LEAFLET

RCAC20T4 - REVERSE PULSE JET VALVES



DIMENSIONS IN MM (AND INCHES)



DESCRIPTION

High-performance diaphragm valve with threaded ports. Equipped with 'Shockwave' springless diaphragm. The 4 series valves are available as remote pilot valves and may be converted to an integral pilot using either the RCA3DM or RCA3PV screw-in pilots. Outlet is at 90° to inlet.

SUITABLE FOR

Dust collector applications, in particular for reverse pulse jet filter cleaning and its variations, including bag filters, cartridge filters and envelope filters, ceramic filters and sintered metal fibre filters.

CONSTRUCTION

Body: Aluminium (diecast)
Screws: 304 Stainless steel
Diaphragm: Proprietary highperformance engineering thermoplastic Elastomer or Viton

OPERATION

Recommended on-time range: 50 to 500 ms
Recommended time between pulses: 1 minute or greater

MAINTENANCE

Before conducting any maintenance activity on the system ensure that components are fully isolated from pressure and power supplies. Pressure and power should not be reapplied until the valve has been fully assembled.

Diaphragm and pilot inspection should be conducted annually.

APPROVALS

The RCAC20T4 meets the requirements of the European Low Voltage Directive 2006/95/EC, when fitted with the RCA3PV pilot.

Please Note: We recommend using Schedule 40 pipe. Thickness OD is as shown below.

SIZE	OD MM	OD INCHES
3/4"	26.67	1.05

WEIGHTS

VALVE	KG (LB)
RCAC20T4	0.31 (0.68)

MAINTENANCE KITS

MODEL	SHOCKWAVE	VITON
DIAPHRAGM KIT		
RCAC20T4	K2034	K2033

PRODUCT CHARACTERISTICS AND PERFORMANCE

NOMINAL PORT SIZE MM (INCH)	NUMBER OF DIAPHRAGMS	FLOW		PRESSURE RANGE KPA (PSI)	TEMPERATURE RANGE °C °(F)	
		KV	CV		SHOCKWAVE	VITON
20 (3/4)	1	14	17	30(5) to 860(125)	-40(-40) to 82(179.6)	-29(-20.2) to 232(449.6)

EXAMPLES

RCAC20T4012
3/4" RC threaded valve with 1/8" RC pilot port thread, Shockwave diaphragm.

Note:
1/8 Pilot available in NPT, RC and G Thread.
1/4 Pilot is only available in G Thread.

ORDER CODE

RCAC20T4	0	1	2
Pilot size			
0=1/8"			
1=1/4"			
Diaphragm material			
1=Viton			
2=Shockwave			
Thread type			
0=NPT			
1=RC			
2=G			

M51

GENERAL DESCRIPTION:

Titan's sequential digital timer is designed to provide change of frequency and duration to control the pilot solenoid valve which clean pulse in a reverse jet pulse dust collector. The digital timer may be used in any application devices where sequential timing is required

Digital timer STR-10 allows adjustment "on time", "off time", the total number of outputs and the number of blowdown cycles required. It is ease of setting and checking.

The STR-10 digital timer is designed with free power ideal to allow input wide range of power AC 85~ 265V, 47~ 63 and it is equipped with integral surge suppression on power input and all solenoid loads are protected by against voltage spikes to avoid noising other electrical equipment.

FEATURES:

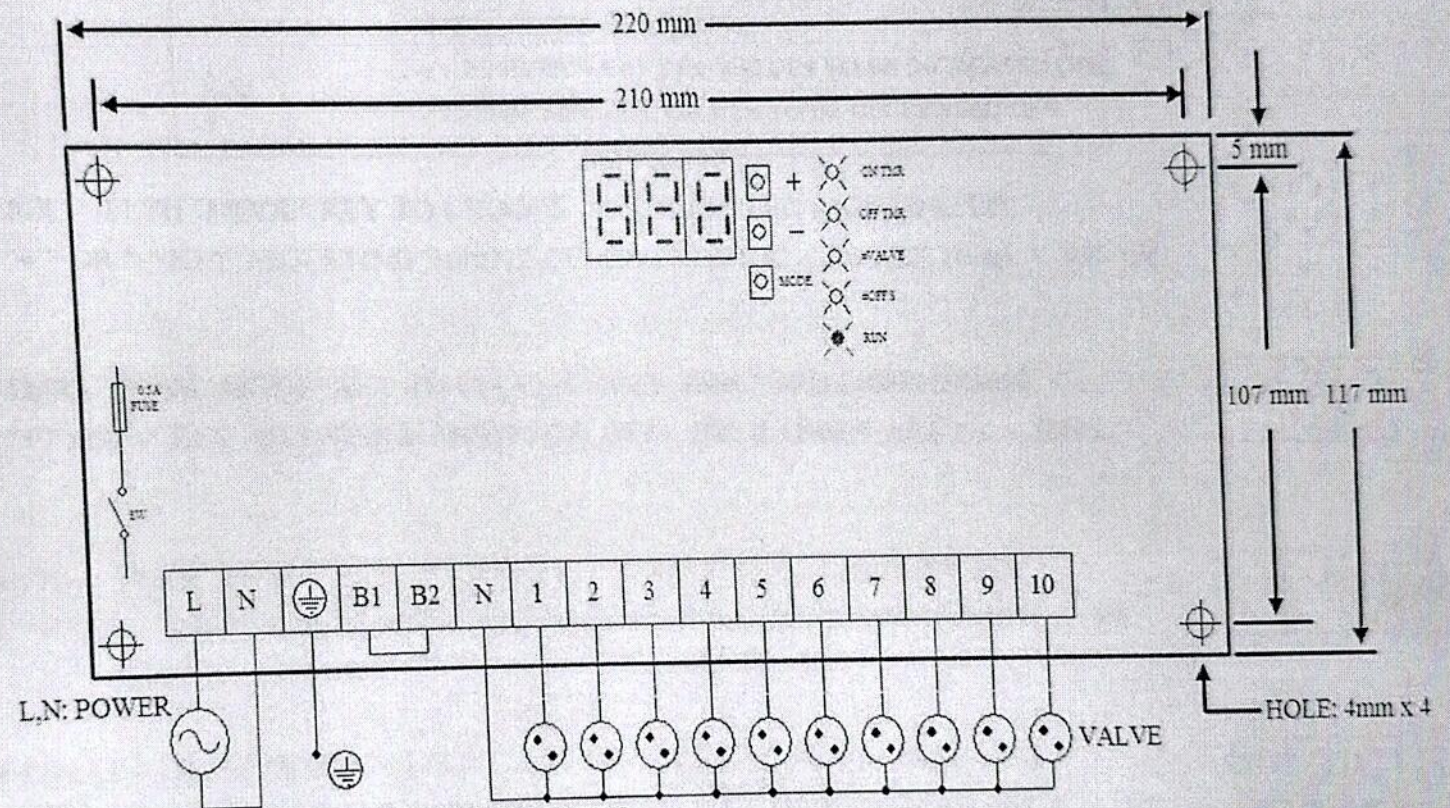
- Microprocessor controlled.
- Digital display for ease of setting and operation.
- Avoid to noise other electrical equipment with surge suppressors.
- Automatic blowdown which allows the timer to complete up to 25 cycles after broken between on B1 and B2.
- Wide range of power input.

It is strong recommended that digital timer be mounted in an enclosure with an environmental protection rating of IP65(NEMA 4) or better, so that extend life of digital timer.

SPECIFICATION:

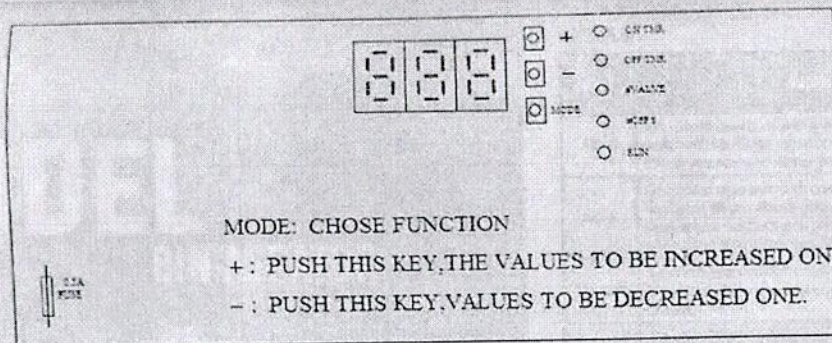
- Power rating: AC 85 ~ 265V , 0.17A , 47 ~ 63Hz,
- Load voltage: Matched to power
- Load current: 1) AC1: 7A , AC250V
2) AC3: 2A , AC250V
- Fuse: 0.5A GL AC250V
- ON TIME: 10 ~ 999 milliseconds , adjustable unit:1 ms/ Step
- OFF TIME: 1~999 seconds , adjustable unit:1 SEC./Step
- #VALVE: No. of output 0 ~ 10
- #OFF'S: No. of blowdown cycle (RECYCLE) 0 ~ 25
- Operation temperature: - 40°C ~ +60°C
- Timing accuracy: $\pm 0.5\%$
- B1,B2 rating: DC 24V , 10mA °
- Load output indicators: Red LED
- Setting display: Three by 7 segment LED display
- Dimensions: 220 mm x 117 mm x 33 mm

DIMENSION



- L,N: POWER AC 85 ~ 265V
0.17A , 47~63Hz
- EARTH TERMINAL, PLEASE WIRED TO EARTH.
- B1,B2: REMOTE TERMINAL DC24V, 10mA
- N: COMMON TERMINAL OF LOAD, IT'S SAME AS N TERMINAL OF POWER.
- 1~10: LOAD TERMINAL , OUTPUT RATING
AC3: 2A 250VAC
AC1: 7A 250VAC

PARAMETER SETTINGS



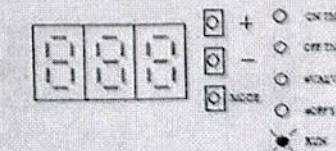
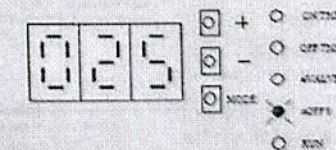
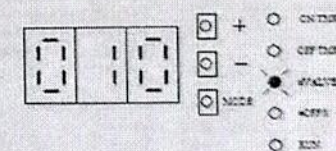
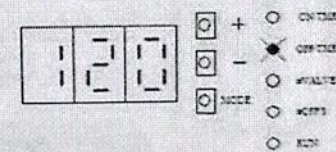
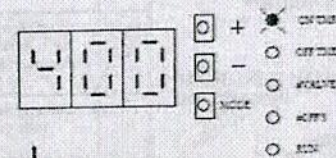
STEP1 : SETTING ON TMR - PUSH "MODE" KEY TO CHOOSE "ON TMR " LED LIGHTING UP,
THEN PUSHED "+" OR "-" KEY ADJUSTING TIMING OF ON . THE RANGES ARE 10 ms ~ 999 ms.

STEP2 : SETTING OFF TMR - PUSH "MODE" KEY TO CHOOSE "OFF TMR " LED LIGHTING UP,
THEN PUSHED "+" OR "-" KEY ADJUSTING TIMING OF OFF . THE RANGES ARE 1 s ~ 999 s.

STEP3 : SETTING #VALVE - PUSH "MODE" KEY TO CHOOSE "#VALVE " LED LIGHTING UP,
THEN PUSHED "+" OR "-" KEY ADJUSTING AMOUNT OF VALVE . THE RANGES ARE 1 ~ 10.

STEP4 : SETTING OFF CYCLE - PUSH "MODE" KEY TO CHOOSE "#OFF'S " LED LIGHTING UP,
THEN PUSHED "+" OR "-" KEY ADJUSTING TIMES OF OFF CYCLE . THE RANGES ARE 0 ~ 25.

STEP5 : END SETTING - PUSH "MODE" KEY TO CHOOSE "RUN" LED LIGHTING UP TO END SETTING.



M52

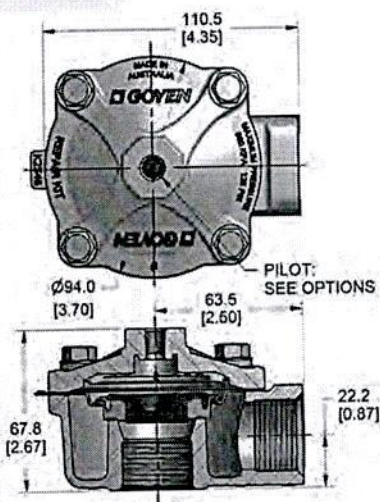
GOYEN - T SERIES THREADED VALVES

PRODUCT LEAFLET

RCAC25T4 - REVERSE PULSE JET VALVES



DIMENSIONS IN MM (AND INCHES)



DESCRIPTION

High-performance diaphragm valve with threaded ports. Equipped with 'Shockwave' springless diaphragm. The 4 series valves are available as remote pilot valves and may be converted to integral pilot using either the RCA3DM or RCA3PV screw-in pilots. Outlet is at 90° to inlet.

SUITABLE FOR

Dust collector applications, in particular for reverse pulse jet filter cleaning and its variations, including bag filters, cartridge filters and envelope filters, ceramic filters and sintered metal fibre filters.

CONSTRUCTION

Body: Aluminium (diecast)
Screws: 304 Stainless steel
Diaphragm: Proprietary highperformance engineering thermoplastic Elastomer or Viton

OPERATION

Recommended on-time range: 50 to 500 ms
Recommended time between pulses: 1 minute or greater

MAINTENANCE

Before conducting any maintenance activity on the system ensure that components are fully isolated from pressure and power supplies. Pressure and power should not be reapplied until the valve has been fully assembled.

Diaphragm and pilot inspection should be conducted annually.

APPROVALS

The RCAC25T4 meets the requirements of the European Low Voltage Directive 2006/95/EC, when fitted with the RCA3PV pilot.

Please Note: We recommend using Schedule 40 pipe. Thickness OD is as shown below.

SIZE	OD MM	OD INCHES
1"	33.4	1.315

WEIGHTS

VALVE	KG (LB)
RCAC25T4	0.56 [1.23]

MAINTENANCE KITS

MODEL	SHOCKWAVE	VITON
DIAPHRAGM KIT		
RCAC25T4	K2546	K2551

PRODUCT CHARACTERISTICS AND PERFORMANCE

NOMINAL PORT SIZE MM (INCH)	NUMBER OF DIAPHRAGMS	FLOW		PRESSURE RANGE KPA (PSI)	TEMPERATURE RANGE °C °(F)	
		KV	CV		SHOCKWAVE	VITON
25 [1]	1	24	27	30[5] to 860[125]	-40[-40] to 82[179.6]	-29[-20.2] to 232[449.6]

EXAMPLES

RCAC25T4012
1" RC threaded port valve with 1/8" RC pilot port threads, Shockwave diaphragm.

Note:
1/8 Pilot available in NPT, RC and G Thread.
1/4 Pilot is only available in G Thread.

ORDER CODE

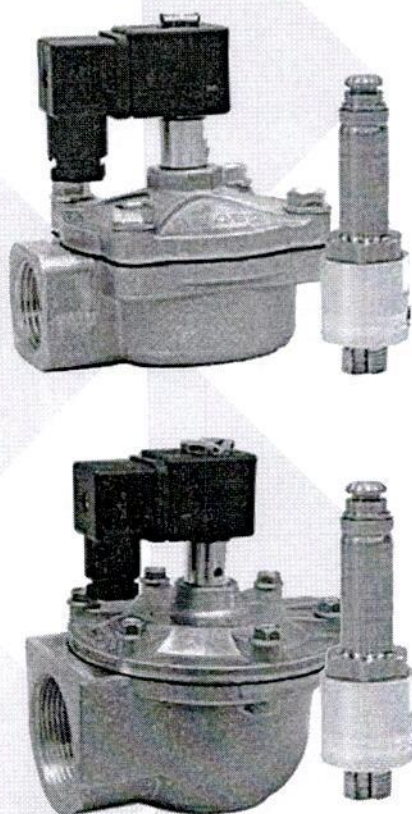
RCAC25T4	0	1	2
Pilot size			
0=1/8"			
1=1/4"			
Diaphragm material			
1=Viton			
2=Shockwave			
Thread type			
0=NPT			
1=RC			
2=G			

M53

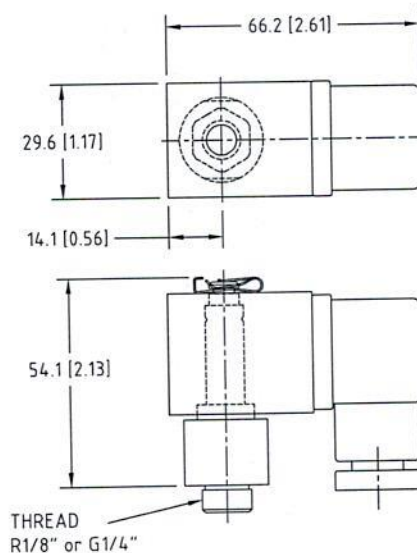
GOYEN - RCA3 SOLENOID PILOT VALVES

PRODUCT LEAFLET

RCA3PV/3PV2 - PILOT VALVE



DIMENSIONS IN MM (AND INCHES)



FOR INTEGRAL PILOT (CA) APPLICATIONS

The RCA3PV pilot is another option for integral pilot (CA) applications. The RCA3PV pilot is a screw-in pilot available in 1/8" and 1/4" port sizing.

RCA3DM and RCA3PV are suitable piloting options for all 4 Series valves and the RCA35T diaphragm valve.

COIL CONSTRUCTION

Encapsulation: Nylon
Insulation class: H /180°C
IP Rating: IP65
Rating: Non-continuous use only
Clip: Mild steel (mechanically plated)

OPERATION

Recommended on time range: 50-500 ms
Recommended time between pulses:
1 minute or greater

APPROVALS

- CE - LV (2006/95/EC) - ROHS (2002/95/CE)

SPARE PARTS

No pilot valve overhaul kits are available for the RCA3PV pilot; however, coil kits are available as listed below:

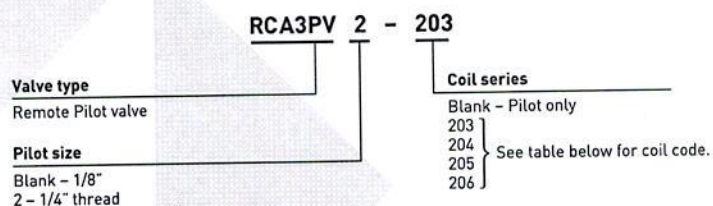
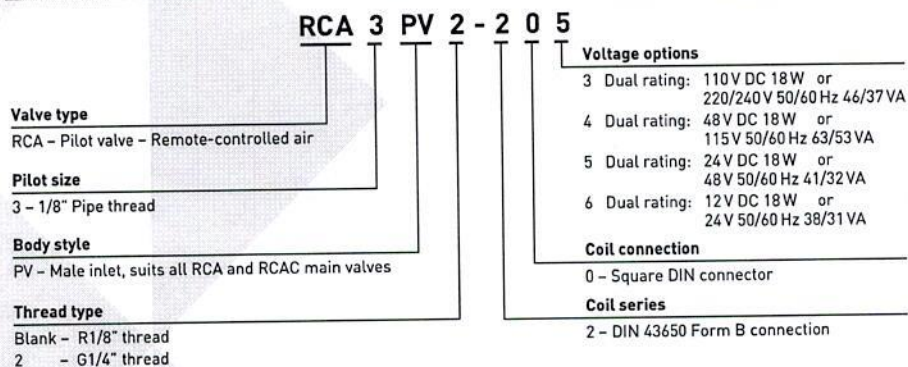
- K0203 - Dual rating: 110 V DC 18 W or 220/240 V 50/60 Hz - kit includes coil, stabilus clip and washer.
- K0204 - Dual rating: 48 V DC 18 W or 115 V 50/60 Hz - kit includes coil, stabilus clip and washer.
- K0205 - Dual rating: 24 V DC 18 W or 48 V 50/60 Hz - kit includes coil, stabilus clip and washer.
- K0206 - Dual rating: 12 V DC 18 W or 24 V 50/60 Hz - kit includes coil, stabilus clip and washer.

M53

GOYEN - RCA3 SOLENOID PILOT VALVES

PRODUCT LEAFLET

RCA3PV/3PV2 - HOW TO ORDER



PRODUCT PERFORMANCE

FLOW	MAXIMUM WORKING PRESSURE	MINIMUM WORKING PRESSURE	TEMPERATURE MIN.	TEMPERATURE MAX.	FLUID MEDIA
0.28 Cv/0.24 Kv	860 kPa/125 psi	0 kPa/0 psi	-40°C/-40°F	82°C/180°F	Air or inert gas

ELECTRICAL CHARACTERISTICS

DIN SOCKET CONNECTOR	Pg9 connection (cable entry)
DIN SOCKET SPECIFICATION	EN175301 - 803 (previously DIN 43650A) / A/ISO 4400
DIN SOCKET OPTIONAL	94/9/CE ATEX II 3GD T6
ISOLATION CLASS DIN SOCKET	VDE 0110 - 1/89
DIN SOCKET PROTECTION	IP65 EN60529

MODEL	TYPE	CONNECTION TYPE	PROTECTION CLASS	VOLTAGE	POWER	COLOUR
206	SB4	DIN 43650A	IP65	12 V DC (max. +10% supply)	18 W	Black
205	SB4	DIN 43650A	IP65	24 V DC (max. +10% supply)	18 W	Black
204	SB4	DIN 43650A	IP65	48 V DC (max. +10% supply)	18 W	Black
203	SB4	DIN 43650A	IP65	110 V DC (max. +10% supply)	18 W	Black
206	SB4	DIN 43650A	IP65	24 V 50/60 Hz (max. +10% supply)	38/31 VA	Black
205	SB4	DIN 43650A	IP65	48 V 50/60 Hz (max. +10% supply)	41/32 VA	Black
204	SB4	DIN 43650A	IP65	110/127 V 50/60 Hz (max. +10% supply)	63/53 VA	Black
203	SB4	DIN 43650A	IP65	220/240 V 50/60 Hz (max. +10% supply)	46/37 VA	Black

UB2

Capacity : 5,10,20,30,50,100,200,300kg



ビーム型ロードセルの改良型で、特に小容量型の300kg以下に特化したロードセルです。

小型用のPL-MLC型、楕棒併用型の各種台秤用として広く採用されています。

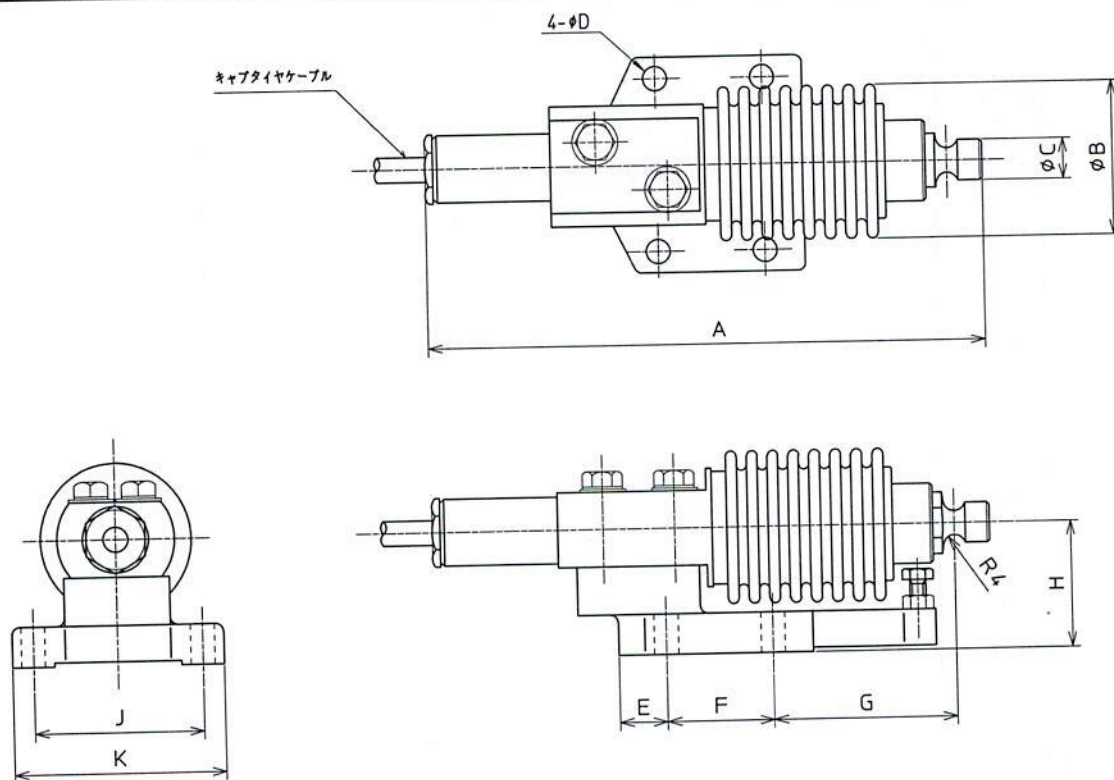
UB2

SPECIFICATIONS			ACCURACY CLASS
PERFORMANCE			U級(V級)
定格荷重出力	Rated Output (R.O.)	mV/V	2.0 ※
直線性 (ヒステリシスを含む)	Linearity including hysteresis	% of R.O.	±0.02 (±0.03)
繰返し性	Repeatability	% of R.O.	±0.01 (±0.015)
クリープ (30 分値)	Creep	% of R.O.	±0.02 (±0.03)
クリープ回復性	Recovery	% of R.O.	±0.02 (±0.03)
ELECTRICAL			
推奨印加電圧	Recommended excitation voltage	V AC or DC	10
最大印加電圧	Maximum excitation voltage	V AC or DC	15
零バランス	Zero balance	% of R.O.	± 1
入力端子間抵抗	Input terminal resistance	Ohms	350 ± 5
出力端子間抵抗	Output terminal resistance	Ohms	351 ± 3
ケーブル長さ	Cable length	m	2
絶縁抵抗	Insulation resistance	Ohms	5000M
TEMPERATURE			
補償温度範囲	Compensated temperature range	℃	-10 ~ +60
許容温度範囲	Safe temperature range	℃	-30 ~ +80
出力の温度特性	Temperature effect on load	% of Reading/10℃	±0.01 (±0.015)
零点の温度特性	Temperature effect on zero balance	% of R.O./5℃	±0.01 (±0.015)
ADVERSE LOAD RATING			
許容過負荷	Safe overload	% of Rated Capacity	150
限界過負荷	Ultimate overload	% of Rated Capacity	300

※出力校正 : 5,10kg...±0.03mV/V、20kg...±0.015mV/V、30~300kg...±0.006mV/V

M54

寸法図 DIMENSIONS



単位: mm

	A	B	C	D	E	F	G	H	J	K	WT (kg)
5,10,20kg	170	41	10	7	7	35	90	35	45	60	1
30,50kg	208	57	15	9	18	40	68	47	64	80	1.8
100,200,300kg	208	57	15	9	18	40	68	52	64	80	1.8

結線図 ELECTORICAL TERMINATION



ケーブル仕上外径: φ9.2mm

UB2

M55

Belt Weighing

Belt scales

Milltronics MSI and MMI

Selection and ordering data

Article No.

Article No.

Spare parts

Flat bar/MWL retrofit kit

7MH7723-1FW

Conduit replacement kit

7MH7723-1NA

FDA conduit replacement kit

7MH7723-1QL

MWL calibration weight support brackets
galvanized

7MH7723-1JT

Stainless steel load cells

Standard load cell with 304 (1.4301) stainless steel cover

25 lb (11.3 kg)

A5E35801457

50 lb (22.7 kg)

PBD-23900246

100 lb (45.4 kg)

PBD-23900247

250 lb (113.4 kg)

PBD-23900248

500 lb (226.8 kg)

PBD-23900249

750 lb (340.2 kg)

PBD-23900250

1 000 lb (453.6 kg)

PBD-23900251

1 250 lb (567 kg)

A5E02235671

1 500 lb (680.4 kg)

A5E02239623

2 000 lb (907.2 kg)

A5E35801460

25 lb (11.3 kg), NTEP, OIML/MID

A5E35801462

50 lb (22.7 kg), NTEP, OIML/MID

A5E03324790

100 lb (45.4 kg), NTEP, OIML/MID

PBD-23900261

250 lb (113.4 kg), NTEP, OIML/MID

PBD-23900262

500 lb (226.8 kg), NTEP, OIML/MID

PBD-23900263

750 lb (340.2 kg), NTEP, OIML/MID

PBD-23900264

1 000 lb (453.6 kg), NTEP, OIML/MID

PBD-23900265

1 250 lb (567 kg), NTEP, OIML/MID

A5E02235672

1 500 lb (680.4 kg), NTEP, OIML/MID

A5E02239620

2 000 lb (907.2 kg), NTEP, OIML/MID

A5E35801463

Load cell with 316 (1.4401) stainless steel cover

25 lb (11.3 kg)

PBD-25851-A8H53

50 lb (22.7 kg)

PBD-25851-A0H53

100 lb (45.4 kg)

PBD-25851-A1H53

250 lb (113.4 kg)

PBD-25851-A2H53

500 lb (226.8 kg)

PBD-25851-A3H53

750 lb (340.2 kg)

PBD-25851-A4H53

1 000 lb (453.6 kg)

PBD-25851-A5H53

1 250 lb (567 kg)

PBD-25851-A6H53

1 500 lb (680.4 kg)

PBD-25851-A7H53

2 000 lb (907.2 kg)

PBD-25851-A9H53

100 lb (45.4 kg), NTEP, OIML/MID

PBD-25851-B1H53

250 lb (113.4 kg), NTEP, OIML/MID

PBD-25851-B2H53

500 lb (226.8 kg), NTEP, OIML/MID

PBD-25851-B3H53

750 lb (340.2 kg), NTEP, OIML/MID

PBD-25851-B4H53

1 000 lb (453.6 kg), NTEP, OIML/MID

PBD-25851-B5H53

Load cell, high temperature up to 175 °C (347 °F)

25 lb (11.3 kg)

PBD-25851-A8T50

50 lb (22.7 kg)

PBD-25851-A0T50

100 lb (45.4 kg)

PBD-25851-A1T50

250 lb (113.4 kg)

PBD-25851-A2T50

500 lb (226.8 kg)

PBD-25851-A3T50

750 lb (340.2 kg)

PBD-25851-A4T50

1 000 lb (453.6 kg)

PBD-25851-A5T50

1 250 lb (567 kg)

PBD-25851-A6T50

1 500 lb (680.4 kg)

PBD-25851-A7T50

2 000 lb (907.2 kg)

PBD-25851-A9T50

Load cell, high temperature up to 175 °C (347 °F) with 316 (1.4401) stainless steel cover

25 lb (11.3 kg)

PBD-25851-A8TH

50 lb (22.7 kg)

PBD-25851-A0TH

100 lb (45.4 kg)

PBD-25851-A1TH

250 lb (113.4 kg)

PBD-25851-A2TH

500 lb (226.8 kg)

PBD-25851-A3TH

750 lb (340.2 kg)

PBD-25851-A4TH

1 000 lb (453.6 kg)

PBD-25851-A5TH

1 250 lb (567 kg)

PBD-25851-A6TH

1 500 lb (680.4 kg)

PBD-25851-A7TH

2 000 lb (907.2 kg)

PBH-25851-A9TH

Load cell with 15 m (49.2 ft) cable length

25 lb (11.3 kg)

PBD-25851-A8A08

50 lb (22.7 kg)

PBD-25851-A0A08

100 lb (45.4 kg)

PBD-25851-A1A08

250 lb (113.4 kg)

PBD-25851-A2A08

500 lb (226.8 kg)

PBD-25851-A3A08

750 lb (340.2 kg)

PBD-25851-A4A08

1 000 lb (453.6 kg)

PBD-25851-A5A08

1 250 lb (567 kg)

PBD-25851-A6A08

1 500 lb (680.4 kg)

PBD-25851-A7A08

2 000 lb (907.2 kg)

PBD-25851-A9A08

100 lb (45.4 kg), NTEP, OIML/MID

PBD-25851-B1A08

250 lb (113.4 kg), NTEP, OIML/MID

PBD-25851-B2A08

500 lb (226.8 kg), NTEP, OIML/MID

PBD-25851-B3A08

750 lb (340.2 kg), NTEP, OIML/MID

PBD-25851-B4A08

1 000 lb (45.4 kg), NTEP, OIML/MID

PBD-25851-B5A08

Load cell with 15 m (49.2 ft) cable length and 316 (1.4401) stainless steel cover

25 lb (11.3 kg)

PBD-25851-A8AH

50 lb (22.7 kg)

PBD-25851-A0AH

100 lb (45.4 kg)

PBD-25851-A1AH

250 lb (113.4 kg)

PBD-25851-A2AH

500 lb (226.8 kg)

PBD-25851-A3AH

750 lb (340.2 kg)

PBD-25851-A4AH

1 000 lb (453.6 kg)

PBD-25851-A5AH

1156

SL

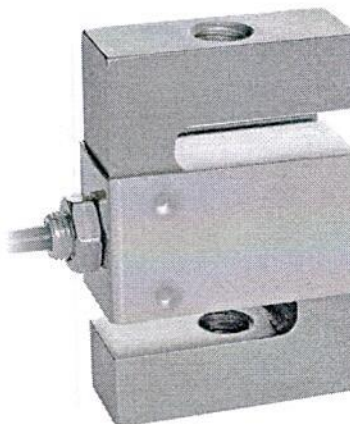
TENSION (COMPRESSION) LOAD CELLS

LAUMAS®



Capacity from 25 kg to 2500 kg

- AISI 4340 NICKEL PLATED STEEL
- COMBINED ERROR $\leq \pm 0.02\%$ (0.017% C4)
- IP67 PROTECTION RATING



CAPACITY	kg	ACCURACY CLASS			NET WEIGHT (kg)
		C3	C4		
25		—	—	—	0.4
100		•	•	•	0.6
200		•	•	—	0.6
300		•	•	—	0.6
500		•	•	•	0.7
1000		•	•	•	0.9
2500		•	•	•	1.6

ON REQUEST

CERTIFICATIONS



OIML R60 C3



Complies with the Eurasian Customs Union regulations



Equivalent of the CE marking for the United Kingdom

CERTIFICATIONS ON REQUEST

Calibration report

LAT Accredia calibration certificate ISO 376 or ASTM E74 for capacities from 1000 kg to 10000 kg



ATEX (zone 2-22)



ATEX/IECEx (zone 1-21)



OIML R60 C4



Complies with the Eurasian Customs Union regulations for use in potentially explosive atmospheres



FM HazLoc - Complies with the United States and Canada regulations for use in potentially explosive atmospheres



Complies with Chinese market regulations for use in potentially explosive atmospheres



NTEP - Complies with United States regulations for legal for trade use

SL

TENSION (COMPRESSION) LOAD CELLS

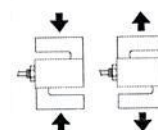
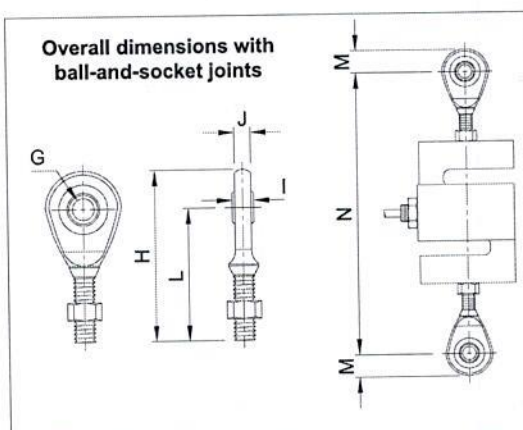
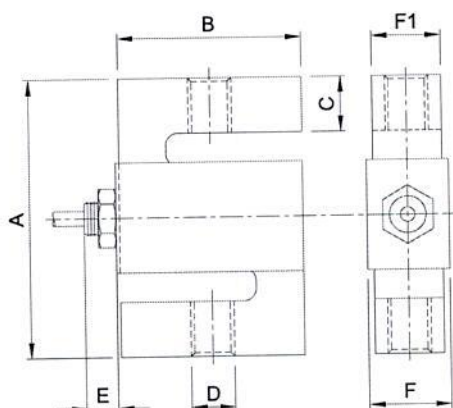
LAUMAS®

COMPLEMENTARY ACCESSORIES

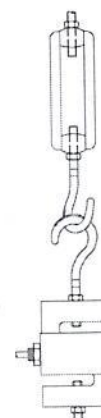


DESCRIPTION	DIMENSIONS	LOAD CELL CAPACITY	CODE
Ball-and-socket joint with nut:			
stainless steel	M12x1.75 M20x1.5	200-1000 kg 2500 kg	EM-INOX
galvanized C40 steel	M8x1.25 M10x1.5 M12x1.75 M20x1.5	25 kg 100 kg 200-1000 kg 2500 kg	EM

DIMENSIONS (mm)



Example of application
on the tension bar
mechanical scale



	A	B	C	D	E	F	F1	G	H	I	J	L	M	N (≈)
25 kg	76.2	50.8	15.7	M8x1.25	10	14.5	12.7	Ø8	54	8	6.5	42.5	11.5	129
100 kg	76.2	50.8	15.3	M10x1.5	9	22.4	19	Ø10	62.5	9	7.5	48.5	14	142
200 kg					8									
300 kg	76.2	50.8	14.4	M12x1.75	9	22.4	19	Ø12	71	10	8.5	54.5	16.5	154
500 kg					9									
1000 kg	76.2	50.8	12.5	M12x1.75	10	28.9	25.4	Ø12	71	10	8.5	54.5	16.5	159
2500 kg	101.6	76.2	20	M20x1.5	6	28.9	25.4	Ø20	104.5	16	13.5	77.5	27	217

M56

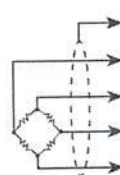
SL**TENSION (COMPRESSION) LOAD CELLS****LAUMAS®****TECHNICAL FEATURES**

Material	AISI 4340 nickel plated steel		
OIML R60 Accuracy class • Verification intervals	-	C3 • 3000	C4 • 4000
Nominal load (E max)	25 kg	100 - 200 - 300 kg 500 - 1000 - 2500 kg	100 - 200 - 300 kg 500 - 1000 - 2500 kg
Minimum verification interval (V min)	-	E max / 10000 E max / 15000	E max / 20000
Combined error	≤ ±0.02%	≤ ±0.02%	≤ ±0.017%
Protection rating	IP67		

Rated output	2 mV/V ±0.2%	Input resistance	350 Ω ±3.5
Temperature effect on zero	0.0015% °C	Output resistance	350 Ω ±3.5
Temperature effect on span	0.0017% °C	Zero balance	±1%
Compensated temperature range	-10 °C / +40 °C	Insulation resistance	>5000 MΩ
Operating temperature range	-35 °C / +65 °C	Safe overload (% of full scale)	150%
Creep at nominal load in 30 minutes	0.03%	Ultimate overload (% of full scale)	300%
Max supply voltage without damage	18 V	Deflection at nominal load	0.4 mm

ELECTRICAL CONNECTIONS

Cable length	5 m (25 - 300 kg); 10 m (500 - 2500 kg)
Cable diameter	5 mm
Cores	4 x 0.24 mm ²



SHIELD	
+ SIGNAL	GREEN
+ EXCITATION	RED
- SIGNAL	WHITE
- EXCITATION	BLACK

The Company reserves the right to make changes to the technical data, drawings and images without notice.



Smart Positioner MP100

Features

Auto-Tuning function
LCD and Buttons for no-communicator operation
Setting available in Explosive Environment
Lightning Arrester Equipped
17 points Custom-setting Flow Characteristics
Analogue Feedback & HART Communication
Function (Option)



Specifications

Items	Specification
Input Signal	4~20 mA (Minimum range: 4 mA) / Minimum Operating: 3.8 mA *1 (Voltage Across Terminals: 10.5 V Typ.)
Supply Air Pressure	0.14~0.70 MPa
Stroke / Angle	Linear: 10~100 mm Rotary: Lever Angle 40~100 deg.
Air Connection	Standard: Rc 1/4 (Rc 1/8 for Gauges) Option: 1/4 NPT (1/8 NPT for Gauges)
Electric Connection	Standard: G 1/2 (Except for NEPSI Certification) Option: 1/2 NPT or M20x1.5 (Except for TIIS Certification)
Enclosure Protection	IP66 (IEC 60529: 1989 / AMD2: 2013)
Housing Construction	Standard: non-Explosion Proof Option: Flameproof Ex d IIC T6
Ambient Temperature	Standard: -20~80°C Flameproof: -20~60°C
Flow Characteristics	Linear / Eq % / Quick Open / Custom Setting (17 points)
Manual Operation	A/M Switch (Only in Single Acting)
Mass	Approx. 3.8 kg
Housing Material	Aluminium Die-casting

*1 Whenever input current falls below this value, the positioner goes stand-by. Setting needs at least 4 mA input.

* Supply air should be dry (dew point under than -30°C) and clean.

* Air filter (smaller than 5µm) shall be placed just preceding of supply port.

* Precision regulators are recommended for smart positioners.

Options

Function	Items	Specification
Analogue Feedback Function	Output Signal	DC 4~20 mA (Invertible)
	Input Voltage	Standard: 12~36 V DC Flameproof: 12~24 V DC
	Accuracy	±1.0 % to recognised value
Communication Function	HART Communication	HART7

* Whenever input current falls below 3.8 mA, the output current goes stand-by.

Performances

Items	Single Action	Double Action
Linearity	±1.0% F.S. *1	
Hysteresis	1.0% F.S. *1	
Air Consumption	SUP 0.14 MPa: 3.0 Nl/min	SUP 0.40 MPa: 10 Nl/min
	SUP 0.40 MPa: 6.5 Nl/min Output Pressure 50%	Output Pressure 75%
Maximum Airflow Capacity	SUP 0.14 MPa: 90 Nl/min	SUP 0.40 MPa: 200 Nl/min
	SUP 0.40 MPa: 200 Nl/min	
Surge Immunity (Lightning Protection)	IEC6100-4-5 Level 2 (1.0 kV ±10%) *2	

* Actual performance depends on each actuator.

*1: At sensor angle range 90 deg.

*2: Temporary malfunction may be occurred at surging but automatically recovers.

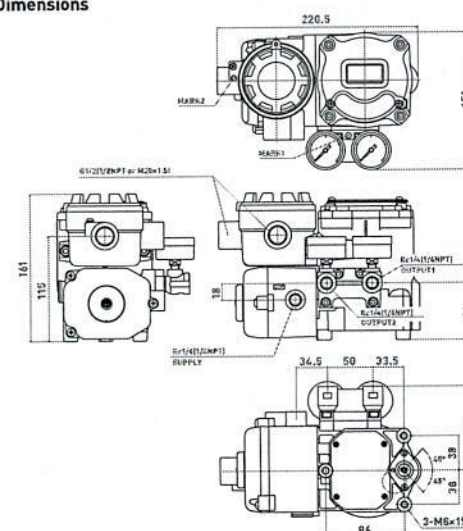
Notation Table

1	2	3a	3b	3c	4	5	6
MP1							

	Items	Specification	Notation
1	Series	Smart Positioner MP100	MP1
2	Housing Construction	Standard (Non-Explosion Proof)	0
		Flameproof Ex d IIC T6	6
3a	Air Connection	Single Acting Rc 1/4 (Gauge Rc 1/8)	1
		Double Acting Rc 1/4 (Gauge Rc 1/8)	2
		Single Acting 1/4 NPT (Gauge 1/8 NPT)	3
		Double Acting 1/4 NPT (Gauge 1/8 NPT)	4
3b	Electric Connection	G 1/2 (Not available for NEPSI Certification)	1
		1/2 NPT	2
		M20 x 1.5 (Not available for TIIS Certification)	3
3c	Options	None	1
		HART function	3
		Feedback + HART function	4
4	Ambient Temperature	Standard: -20~80°C	S
	Flameproof: -20~60°C		
5	Actuator	Linear	L
		Rotary	R
6	Pressure Gauges	0.2MPa, 0.4MPa, 1.0MPa	M2, M4, M0
		200kPa, 400kPa, 1000kPa	K2, K4, K0
		30psi, 60psi, 150psi	P2, P4, P0 *1
		2bar, 4bar, 10bar	B2, B4, B0

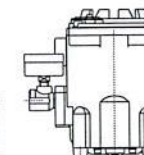
*1 No domestic sales in Japan due to Non-SI unit.

Dimensions



Air connections

Supply	Output	Gauge	MARK1
Rc 1/4	Rc 1/4	Rc 1/8	A
1/4 NPT	1/4 NPT	1/8 NPT	B
Rc 1/4	Rc 1/4	1/8 NPT	C



Electric Connections

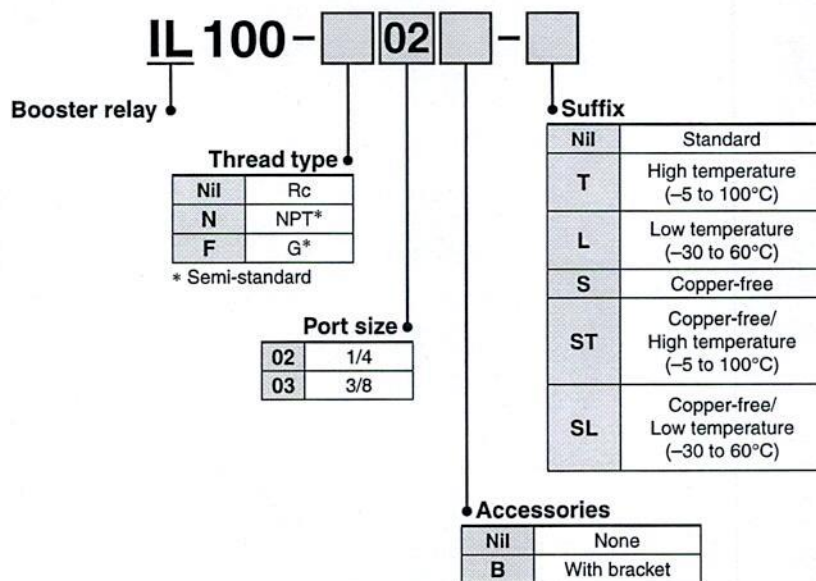
Cable Entry Conduit	MARK 2
G1/2	G
1/2 NPT	N
M20x1.5	M

Booster Relay

Series IL100

- Used when the piping distance between instrumentation and operational area is long, or when operational area has large capacity.
- Can help accelerate actuation speed considerably.

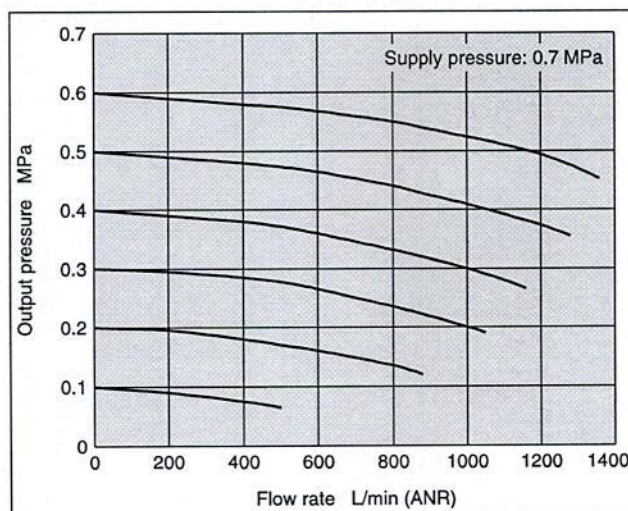
How to Order



Standard Specifications

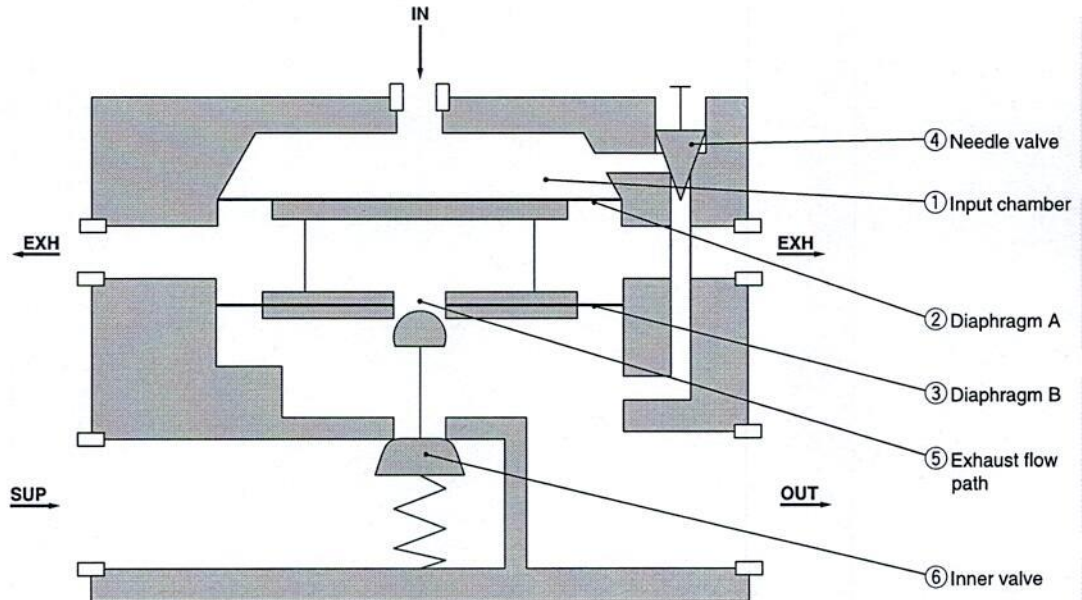
Supply pressure	Max. 1.0 MPa
Input pressure	Max. 0.7 MPa
Output pressure	Max. 0.7 MPa
Pressure ratio	1 : 1
Air consumption	3 L/min (ANR) or less (OUT = 0.5 MPa)
Linearity	Within ±1%
Hysteresis	Within 1%
Ambient and fluid temperature	-5 to 60°C
Port size	1/4, 3/8
Weight	0.56 kg

Flow-rate Characteristics



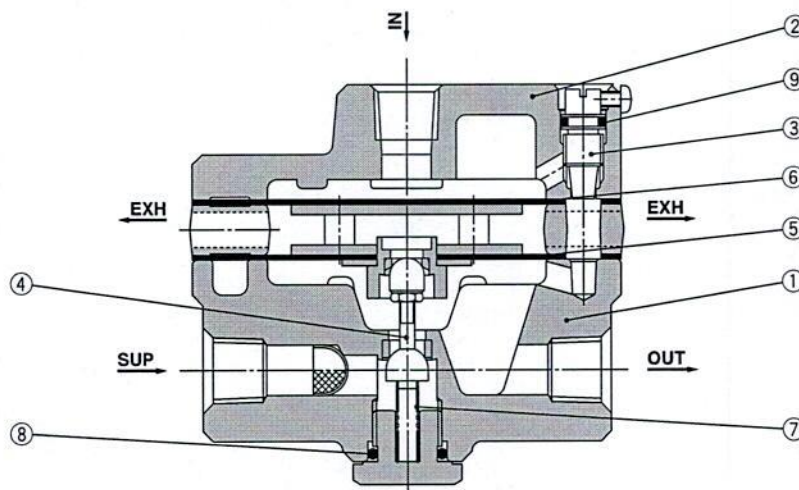
Principle of Operation

IL100



Signal pressure enters the input chamber ① and diaphragm A ② and exerts a downward force on diaphragm B ③. When the force of the input chamber ① exceeds the force of diaphragm B ③, inner valve ⑥ is inserted allowing air flow out the secondary supply port. On signal pressure exhaust the supply valve closes and exhaust flow path ⑤ is opened to allow vent of the secondary air supply to atmosphere. Input and output ports are connected by a needle valve ④. Adjustment ensures that exact equalization occurs between the signal and output supply. The above function allows a low volume signal to provide high volume output with pressure ratio remaining (1:1) for signal to output.

Construction



Component Parts

No.	Description	Material	Note
1	Valve	Aluminum alloy	Silver baking finish
2	Cover	Aluminum alloy	Silver baking finish
3	Throttle valve	Stainless steel	
4	Inner valve	Stainless steel	
5	Diaphragm assembly	Aluminum alloy/NBR/Resin	Chromated
6	Diaphragm	NBR	
7	Valve spring	Stainless steel	
8	O-ring	NBR	
9	O-ring	NBR	

Replacement Parts

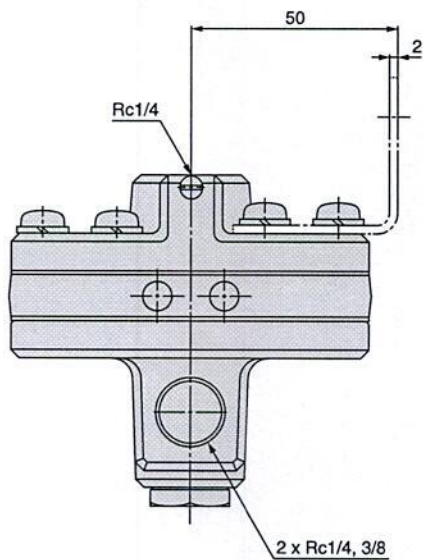
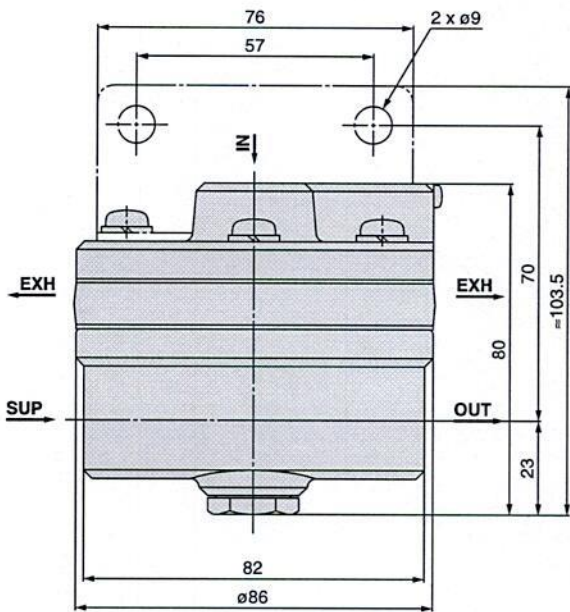
Model	Order no.	Contents
IL100	KT-IL100	Set of left nos. ⑤, ⑥, ⑦, ⑧, ⑨

M63

Series **IL100**

Dimensions

IL100

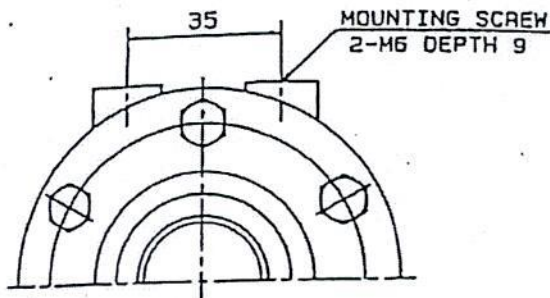


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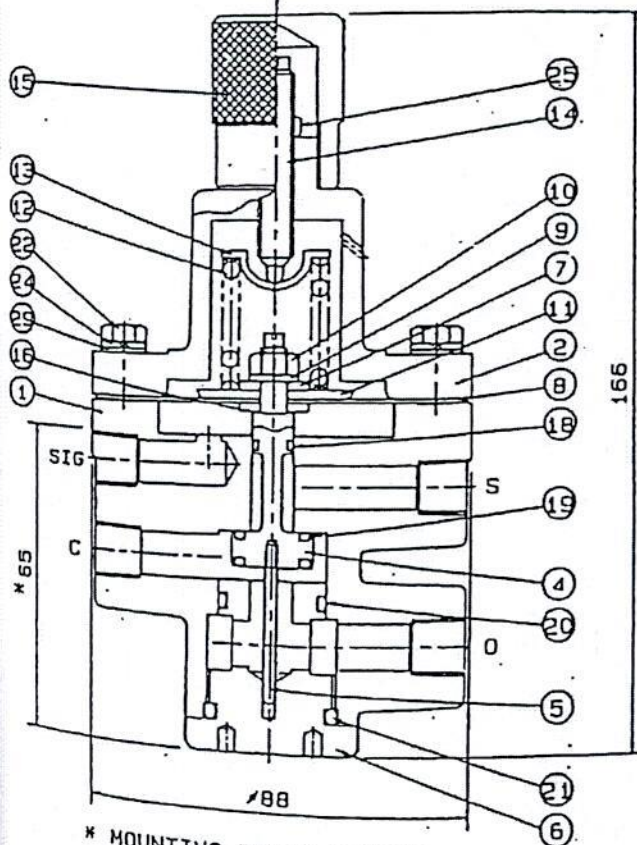
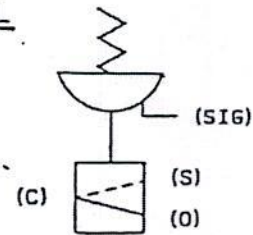
MAIN LOCK VALVE CL-500

SPECIFICATION

CAT.No.	TYPE	CON.	SET RANGE	MAX.WORKING PRESS.
CL-523H	3WAY	Rc1/4	98~588 KPA (1.0~6.0Kg/cm ²)	784 KPA (8.0Kg/cm ²)
CL-523L	3WAY	Rc1/4	19.6~196 KPA (0.2~2.0Kg/cm ²)	392 KPA (4.0Kg/cm ²)



SYMBOL



* MOUNTING SCREW HEIGHT
WEIGHT : 1.3Kg

No.	PARTS NAME	Q'TY	MATERIAL
1	BODY	1	AC 4C
2	COVER	1	FC 25
4	PORT	1	SUS304
5	GUIDE PIN	1	SUS304
6	BOTTOM COVER	1	A5056
7	COLLAR	2	C3602
8	DIAPHRAGM	1	NEOPRENE
9	SPRING WASHER	1	SUS304
10	NUT	1	SUS304
11	RANGE PLATE	1	SPC (CM)
12	SPRING	1	SWP (CM)
13	SPRING SEAT	1	SPC (CM)
14	SET SCREW	1	SUS304
15	CAP	1	A5056
16	GASKET	1	V.1500
18	O-RING	1	NBR
19	O-RING	2	NBR
20	O-RING	1	NBR
21	O-RING	1	NBR
22	BOLT	6	SUS304
24	SPRING WASHER	6	SUS304
25	LOCK NUT	1	SUS304
29	WASHER	6	SUS304

CM: Chromate

NOTE:

AMBIENT TEMP. -5~60°C

DATE 11/16/09
APPD BY [Signature]
CHKD BY [Signature]
DSGND BY [Signature]

3rd angle projection

DRAWING No.

E-CL-500

REV.

C

KOSO

A4

ED-01A

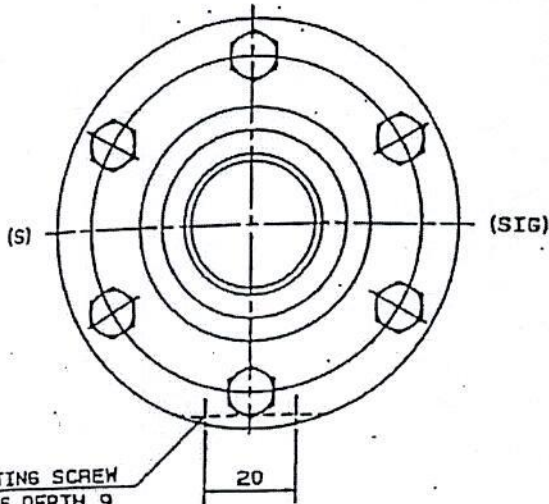
PILOT LOCK VALVE

M65

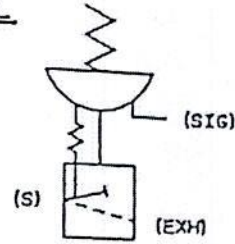
P.7

SPECIFICATION

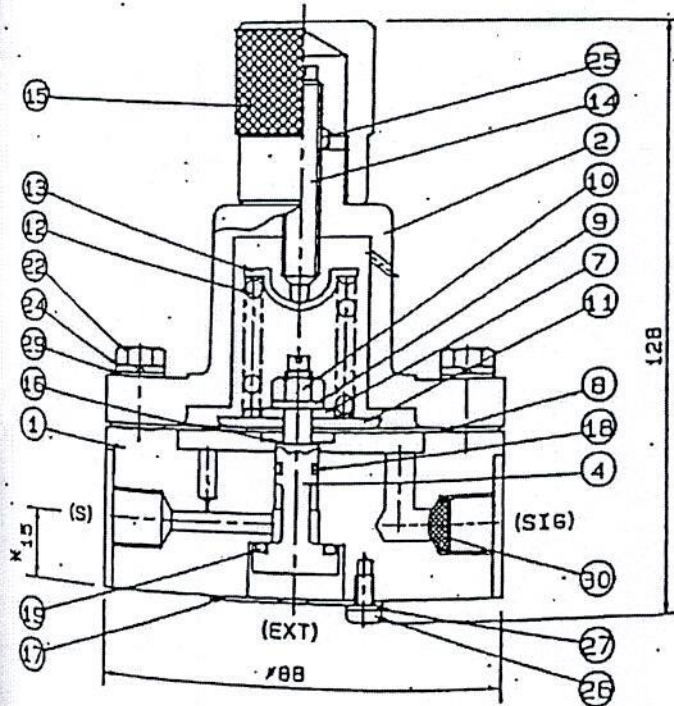
CAT.No.	CON.	SET RANGE	MAX. WORKING PRESS.
CL-420	Rc1/4	1.0~8.0Kg/cm ² (98~588 KPA)	8.0Kg/cm ² (784 KPA)



SYMBOL



MOUNTING SCREW
2-M6 DEPTH 9



No.	PARTS NAME	Q'TY	MATERIAL
1	BODY	1	A5056
2	COVER	1	FC 25
4	PORT	1	SUS304
7	COLLAR	2	C3602
8	DIAPHRAGM	1	NEOPRENE
9	SPRING WASHER	1	SUS304
10	NUT	1	SUS304
11	RANGE PLATE	1	SPC (CH)
12	SPRING	1	SWP (CH)
13	SPRING SEAT	1	SPC (CH)
14	SET SCREW	1	SUS304
15	CAP	1	A5056
16	GASKET	1	V.1500
17	BOTTOM COVER	1	SS41 (CH)
18	O-RING	1	NBR
19	O-RING	1	NBR
22	BOLT	6	SUS304
24	SPRING WASHER	6	SUS304
25	LOCK NUT	1	SUS304
26	SCREW	4	SUS304
27	SPRING WASHER	4	SUS304
29	WASHER	6	SUS304
30	FILTER	1	SUS304 (100 μ)

CM: Chromate

NOTE: * MOUNTING SCREW HEIGHT
HEIGHT : 1.3Kg

AMBIENT TEMP. -5~60°C

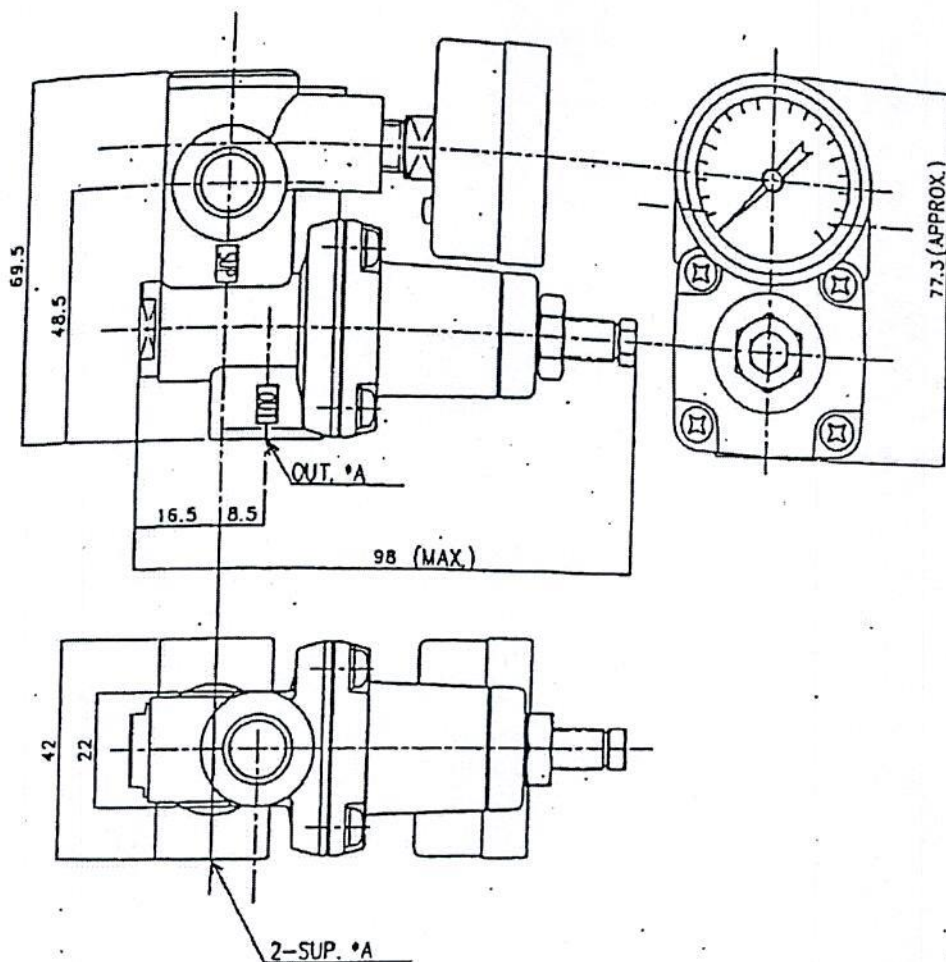
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APPRO BY	[Signature]
CHKD BY	[Signature]
DSGND BY	[Signature]

3rd angle projection

DRAWING No.	E-CL-420
REV.	C
KOSO	
A3 — E D-01A	

FILTER REGULATOR

M66



MODEL PRF40 ☐ ☐
*1 *2

*1	GAUGE TYPE			
☐ 2	☐ 2 kgf/cm ²	☐ 200 kPa	☐ 2 bar	☐ 30 psi
☐ 4	☐ 4 kgf/cm ²	☐ 400 kPa	☐ 4 bar	☐ 60 psi
☒ 8	☒ 10 kgf/cm ²	☒ 1000 kPa	☐ 10 bar	☐ 160 psi

*2	AMBIENT TEMP.
☒	-20 ~ 80°C <STANDARD>
☐ L	-50 ~ 60°C <LOW TEMP.>

*A CONNECTION				
DESCRIPTION	UNIT	☒ kgf/cm ²	☐ kPa, psi	☐ SPECIAL
*A AIR CONNECTION		☒ kPa	☐ bar	
		Rc 1/4"	1/4" NPT	

Rc=PT

APPROX. WEIGHT: 0.26kg
FILTER: 5μm

NOTE:

REV. B: FILTER: 5μm 記 8/22/2000

DATE	Aug 22, '2000
APPD BY	<i>[Signature]</i>
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3rd angle projection	

DRAWING No.	
E-PRF400	
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KOSO	
A1	

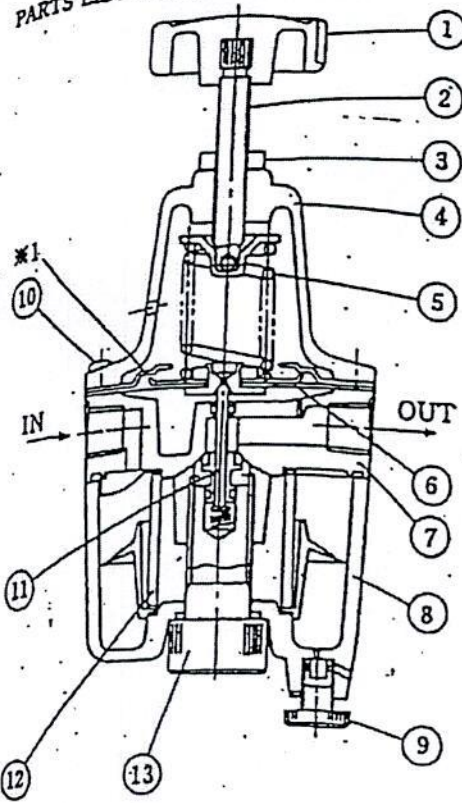
AIR SET

PARTS LIST & ASSEMBLY

M65

P.6

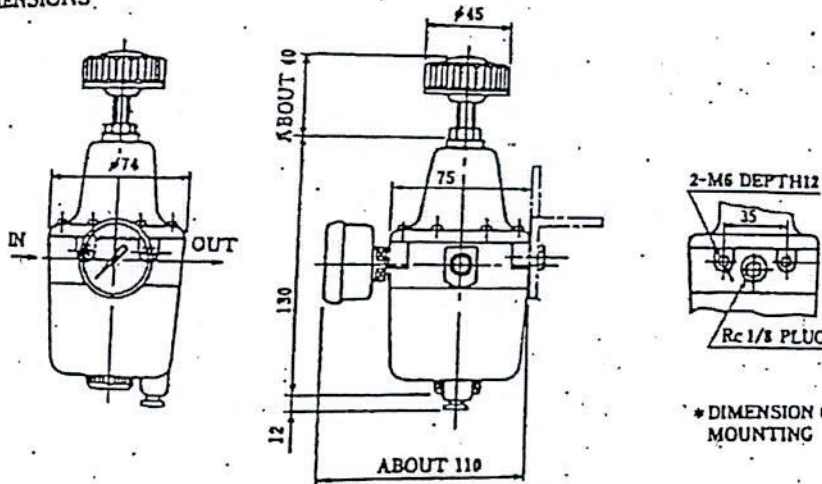
360/



No.	NAME	QTY	MATERIAL
1	ADJUSTING HANDLE	1	UREA
2	ADJUSTING SCREW	1	SUS 304
3	LOCK NUT	1	C3601
4	BONNET	1	ZDC 2
5	SPRING	1	SWPB UNI CHROME PL
6	DIAPHRAGM ASSY	1	NEOPRENE
7	BODY	1	ZDC 2
8	HOUSING	1	ZDC 2
9	DRAIN VALVE ASSY	1	AS052/NEOPRENE
10	SCREWS	8	SUS 304
11	PORT ASSY	1	SUS 304 C3601 NEOPRENE
12	FILTER	1	Polypropylene nonwoven fabric (5μm)
13	BOLT	1	SCM-3 Cr-PL

*1: STOPPER/SPCD UNI CHROME PL (ONLY PRF-304)

DIMENSIONS



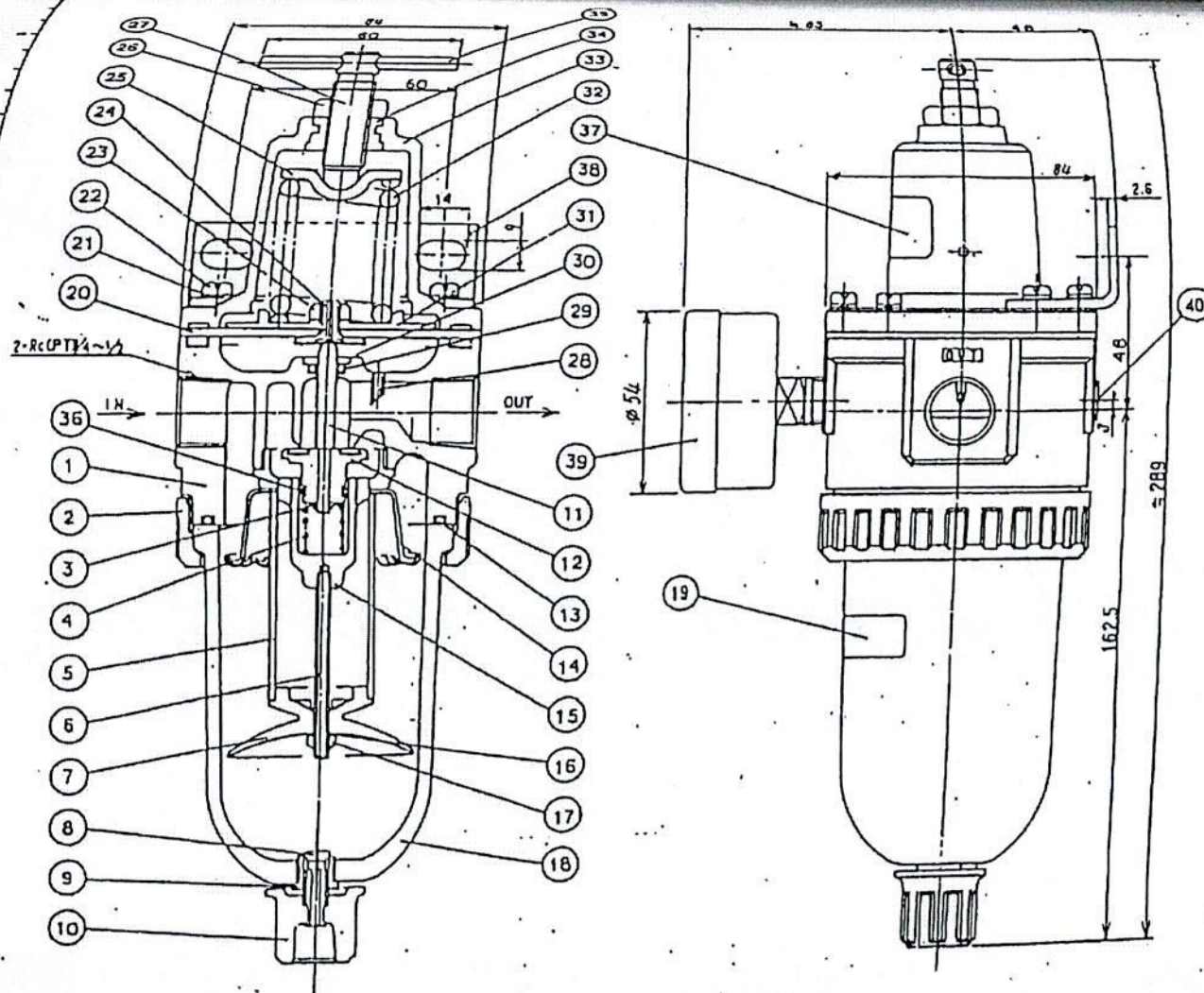
UNIT: mm

SPECIFICATION	MODEL	☐ PRF302	☐ PRF304	☒ PRF308
SUPPLY MAX.		☒ 3 kg/cm ² /990Kpa	☐ 140psi/990Kpa	☐ 9.9bar
OUTPUT MAX.		☐ 2 kg/cm ² /200kpa ☐ 30psi/200kpa ☐ 2 bar	☐ 4 kg/cm ² /400kpa ☐ 60psi/400kpa ☐ 4 bar	☒ 3 kg/cm ² /800kpa ☐ 120psi/800kpa ☐ 8 bar
AIR CONNECTION		☒ Rc1/4 ☐ 1/4 NPT		
AMBIENT TEMP.		-10 ~ 80°C		
APPROX. WEIGHT		1.2kg		

* Rc=PT

DATE	4-28-1993	DRAWING No.	
APPD BY	[Signature]	E-PRF-300	
CHKD BY	[Signature]	REV	KOSO
DSGND BY	[Signature]	A	
3rd angle projection		— A2 —	

M68



PARTS LIST					
JUNIOR 1000-100					

Model 78 Air Filter Regulators

Product Description

The 78 Series pressure regulators are compact, lightweight, high-performance pressure reducing valves. They are used primarily for supplying a stable source of air to process control equipment such as current to pneumatic transducers and control valve positioners.

Principle of Operation

Rotation of the pressure setting knob compresses the range spring against the diaphragm plate, opening the main supply valve. As the outlet pressure increases, it flows through the aspirator and acts on the lower side of the diaphragm, causing it to move upward until it balances the force of the range spring. This balanced condition maintains constant output pressure, with changes in supply pressure and output load. If the output pressure rises above the set pressure, the relief valve opens and bleeds the excess pressure to atmosphere.

Should dirt or other foreign substance lodge under the inlet valve seat resulting in increased outlet pressure, the additional pressure exerted on the diaphragm will cause the relief valve to open, relieving the excess air through the relief valve seat and spring case vent to atmosphere.

Numbering System

Model No.	Pressure Range	Description
78-4	5-40 psi (35-280 kPa), (0.35-2.8 bar)	Air Loading with Relief and Filter
78-40	5-100 psi (35-700 kPa), (0.35-7 bar)	Air Loading with Relief and Filter

General Data

Inlet Pressure Rating	210 psi (1.5 Mpa, 15 bar) maximum
Pressure Set Range	5-4 psi (35-280 kPa, 0.35-2.8 bar) 5-100 psi (35-700 kPa, 0.35-7 bar)
Connection	1/4 NPT or Rc
Rated C _v	0.25
Filter Element	Sintered Porous Polyethylene (5μ)
Ambient Temperature Range	-40°C to +83°C (-40°F to +182°F)
Low Temperature Range	-50°C to +60°C (-58°F to 140°F)
High Temperature Range	0°C to 100°C (32°F to 212°F)
Air Consumption	0.004 scfm (100 sccm)
Weight	1 lb. (0.45 kg)
Materials of Construction	See the corresponding list below

Features and Benefits

- Excellent pressure regulation.
- Lock screw ensures output pressure remains at desired value.
- Small size and light weight allows the regulator to be nipple mounted in most installations, eliminating the need for a mounting bracket. A mounting bracket is available if required.
- Two pressure gauge ports allow installation of gauge on either side for flexibility when mounting.
- Soft seat plug on main valve provides positive shutoff.
- Sintered polyethylene filters provide 5 micron filtration rating.
- Stainless steel drain.
- Corrosion resistant finish and stainless assembly hardware permit use in corrosive environments.

Certifications

- . Azerbaijan (AzSERTCENTER)
 - . Armenia
 - . Belarus
 - . Kazakhstan
 - . Russian Federation (CU-TR Ex)
 - . Uzbekistan (UZSTANDART)
- and is also ATEX compliant.

M6

Cut-away View

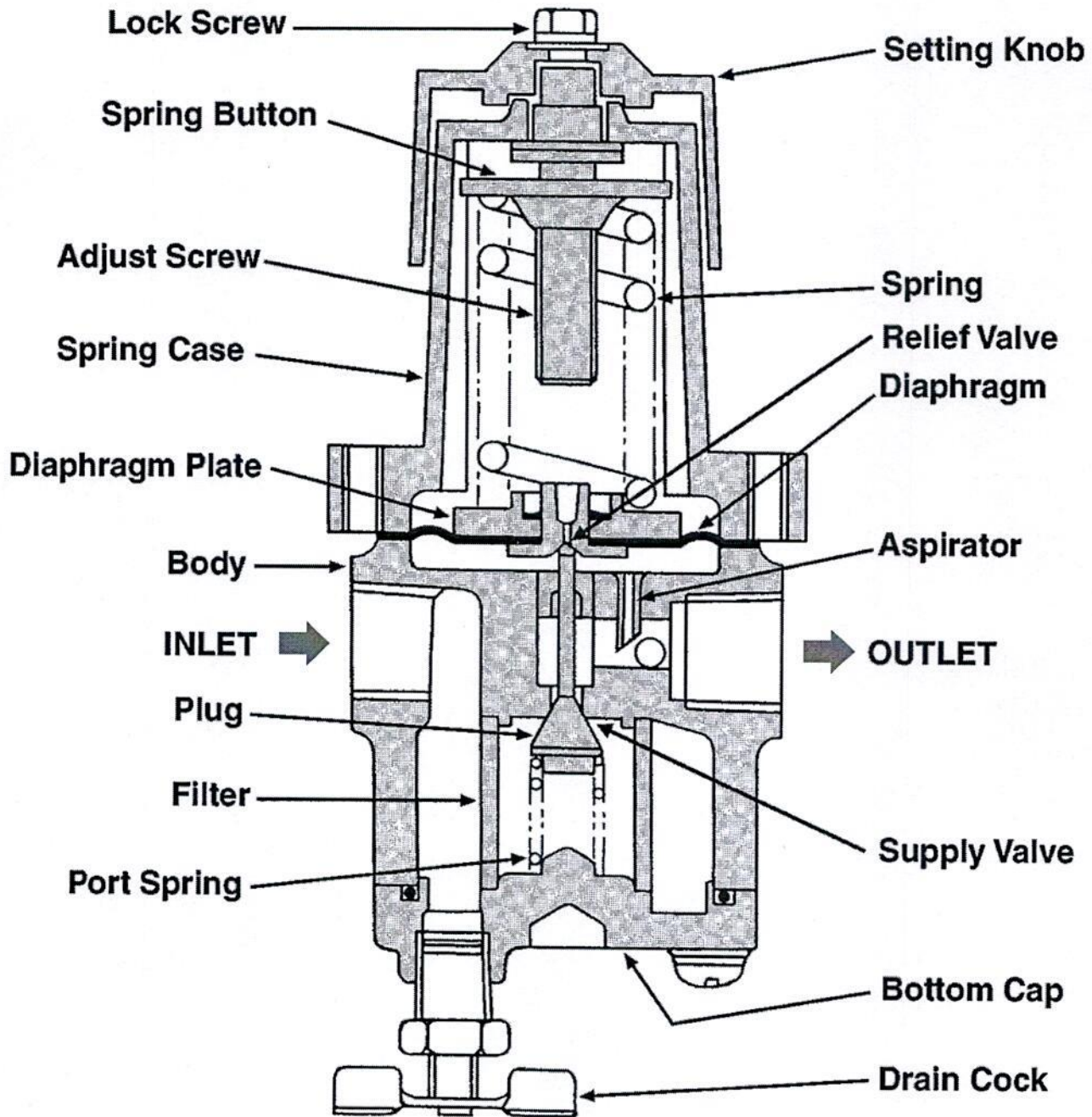


Figure 1

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Materials of Construction

No.	Part	Standard Material
1	Body	Aluminum Die Casting
2	Spring Casting	Aluminum Die Casting
3	Bottom Cap	Aluminum Die Casting
4	Setting Knob	VALOX™ 420
5	Lock Screw	Stainless Steel
6	Adjusting Screw	Stainless Steel
7	Spacer	VALOX 420
8	Spring Button	Zn-Cr Plated Carbon Steel
9	Spring	Coated Spring Steel
10	Diaphragm¹	NBR
15	Plug Guide	VALOX 420
16 •	Plug	Neoprene/416 Stainless Steel
17 •	Filter	Sintered Polyethylene
18 •	Port Spring	Stainless Steel
19 •	O-Ring	NBR
-		
21	Drain Cock	Stainless Steel
22	Screw	Stainless Steel
23	Pipe Plug	Chrome Molybdenum Steel
24	Aspirator	VALOX 420
25	Nameplate	Aluminum

• Recommended Spare Parts

Weights

Ounces	Grams
14	400

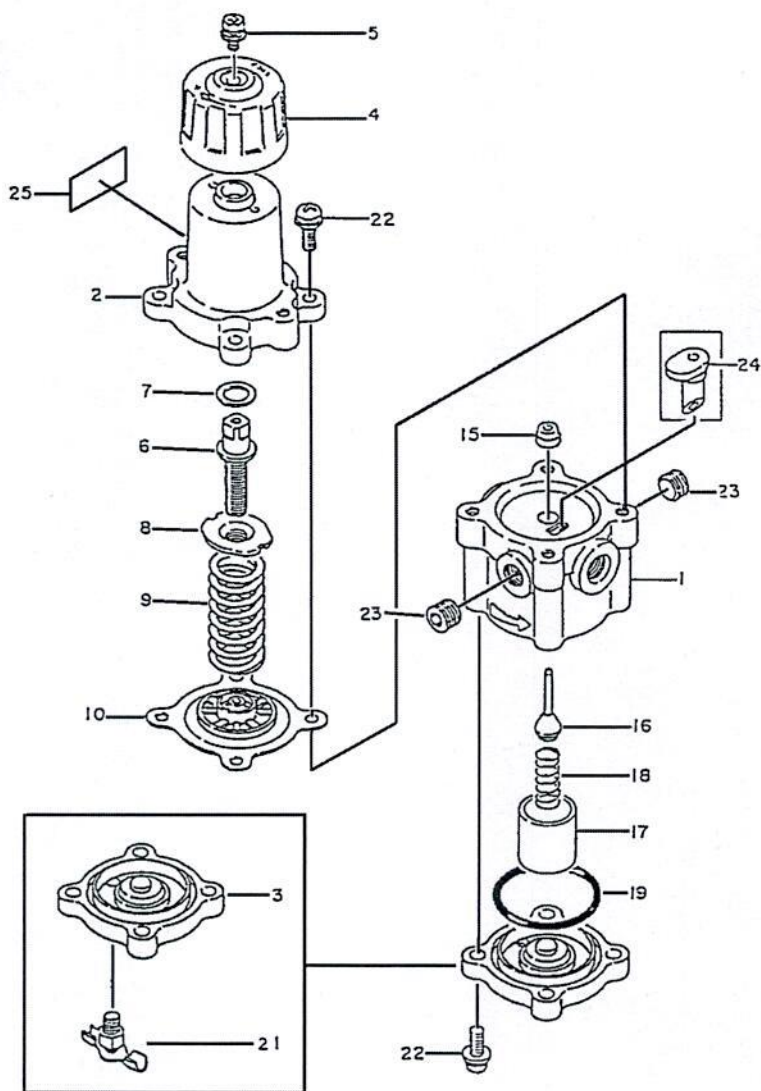


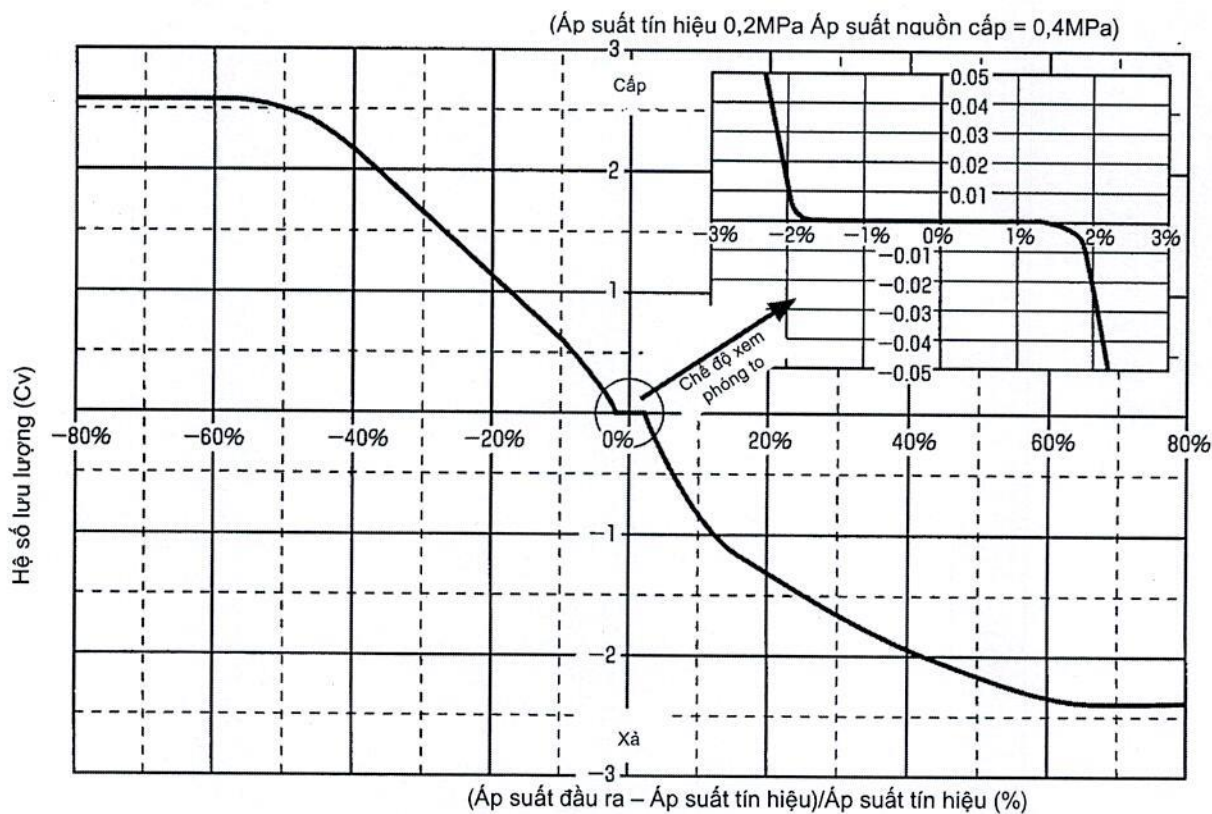
Figure 2

Thông số kỹ thuật

Các tính năng	Thông số kỹ thuật
Cv tối đa (cấp)	1.2 (BR200) và 2.6 (BR400)
Cv tối đa (xả)	1.2 (BR200) và 2.4 (BR400)
Áp suất tín hiệu tối đa	150 psi (10,3 bar)
Giới hạn nhiệt độ vận hành	-30°C đến +83°C (-22°F đến +181°F) Nhiệt độ thấp: -55°C đến +60°C (-67°F đến +140°F) Nhiệt độ cao: 0°C đến +100°C (32°F đến +212°F)
Tỷ lệ đầu vào/đầu ra	1:1
Kết nối nguồn cấp và đầu ra	1/4" NPT hoặc Rc (BR200) và 1/2" NPT hoặc Rc (BR400)
Kết nối tín hiệu	1/4" NPT hoặc Rc
Trọng lượng trung bình	0,7 kg (1,5 lbs) đối với BR200 và 1,4 kg (3 lbs) đối với BR400

Bảng 1 - Thông số kỹ thuật

Đặc điểm lưu lượng

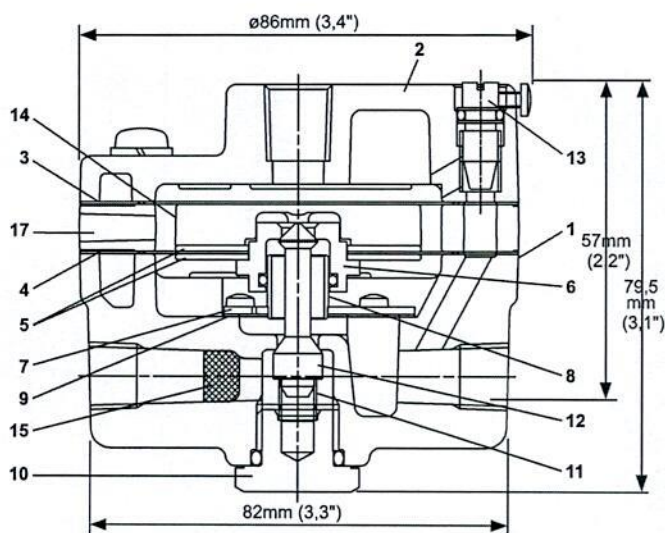


Bảng 2 - Đặc điểm lưu lượng

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Vật liệu xây dựng và kích thước

Model BR200

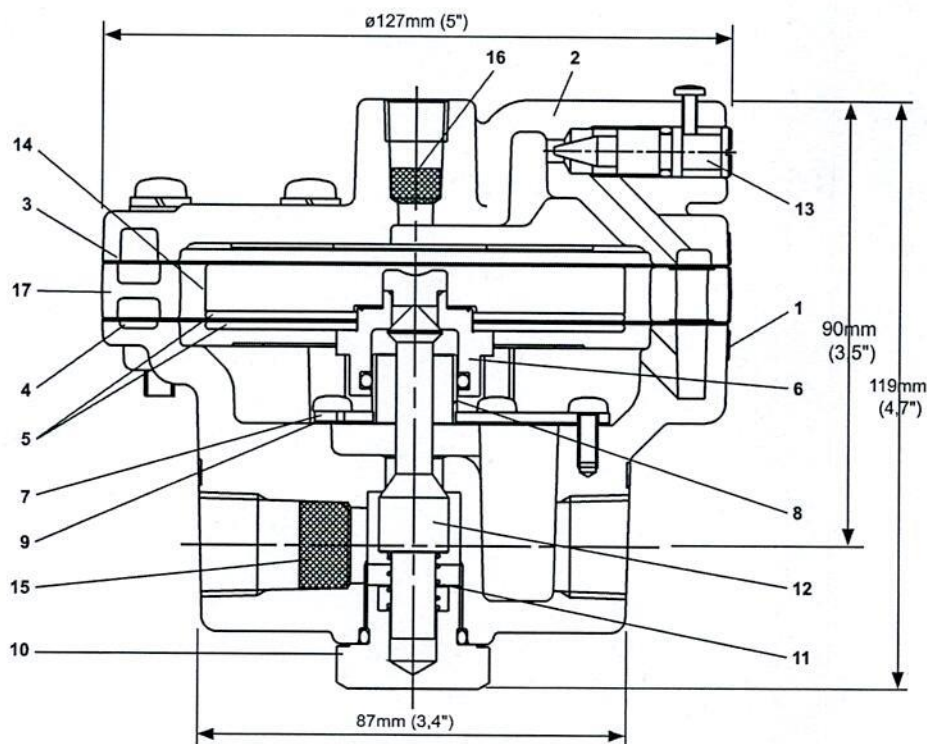


Hình 5 - Cấu tạo và Kích thước BR200

Số	Bộ phận	Vật liệu tiêu chuẩn
1	Thân	Hợp kim nhôm đúc
2	Vỏ	Hợp kim nhôm đúc
3	Màng ngăn trên	Chloroprene/Polyester
4	Màng ngăn dưới	Chloroprene/Polyester
5	Tấm màng ngăn dưới	Tấm hợp kim nhôm
6	Đế xả	Hợp kim đồng
7	Tấm bịt kín	Thép không gỉ Austenitic
8	Dẫn hướng phốt xả	Hợp kim đồng
9	Phốt mặt bích	Cao su tổng hợp chịu dầu/sợi vô cơ
10	Chụp nút	Hợp kim đồng
11	Lò xo cuộn	Thép không gỉ Austenitic
12	Nút	Thép không gỉ Austenitic
13	Nút van điều áp	Thép không gỉ Austenitic
14	Pít-tông	Polyester nhiệt dẻo gia cường sợi thủy tinh
15	Bộ lọc nguồn cấp	Thép không gỉ Austenitic
16	Bộ lọc tín hiệu	Thép không gỉ Austenitic
17	Vòng xả	Hợp kim nhôm đúc

Lưu ý: model BR400 làm bằng thép không gỉ dành cho hàng hải các ứng dụng ngoài khơi.

Model BR400



Hình 6 - Cấu tạo và Kích thước BR400

M71 + 72

1. Overview

The **Model 78-80H** is a transfer valve combining a pilot valve of the floating ball type and three-port valve into one unit and is a high-capacity three-way transfer valve of a set pressure regulating type. The other **model 08-80H**, is the same as the 78-80H except that a pilot valve is not combined and is the so-called three-way transfer valve. If several 78-80Hs are needed, one 78-80H can be installed, connecting 08-80Hs to it by mating the pilot outlet pressure ("SIG.OUT") on the 78-80H to "SIG" on the 08-80H to simplify piping and achieve transfer.

The structures of these models are shown on pages 8 and 9.

2. Specifications

Item		Standard	Option
Maximum Operating Pressure	Body	1.72 MPa	—
	Signal	1.03 MPa	—
Set Pressure		100~700 kPa	—
Hysteresis		34 kPa or less	—
Cv Value	IN→OUT	4.5	—
	OUT→EXH.	5.0	—
Connection	IN, OUT, EXH. Ports	Rc1/2	NPT1/2
	SIGNAL Port	Rc1/4	NPT1/4
Operating Temperature Range		-30~+83°C	0~100°C
Housing Material		Aluminum Alloy	316L Stainless Steel ⁽¹⁾

1. When the housing material is 316L stainless steels, the connections are NPT.

3. Certifications

This instrument is certified in:

- Azerbaijan (AzSERTCENTER)
- Armenia
- Belarus
- Kazakhstan
- Russian Federation (CU-TR Ex)
- Uzbekistan (UZSTANDART)
- China (China Ex)
- and is also **ATEX compliant**.

4. Numbering System

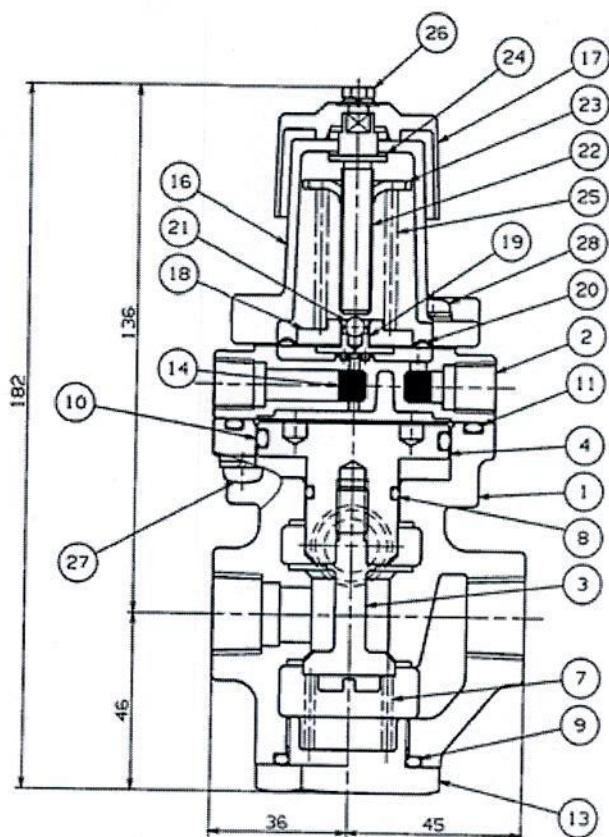
1 st	2 nd	3 rd	4 th	5 th	Suffix A	Suffix B
	8	8	0	H		

1 st - 4 th		5 th		Suffix A		Suffix B	
Product		Capacity				Housing Material	
78-80	Set Pressure Regulating Three-Way Transfer Valve	H	High Capacity	Blank	-30~83°C	Blank	Aluminum Alloy
08-80	Three-Way Transfer Valve			-H	0~100°C	-316L	316L Stainless Steel ⁽¹⁾

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7. Maintenance

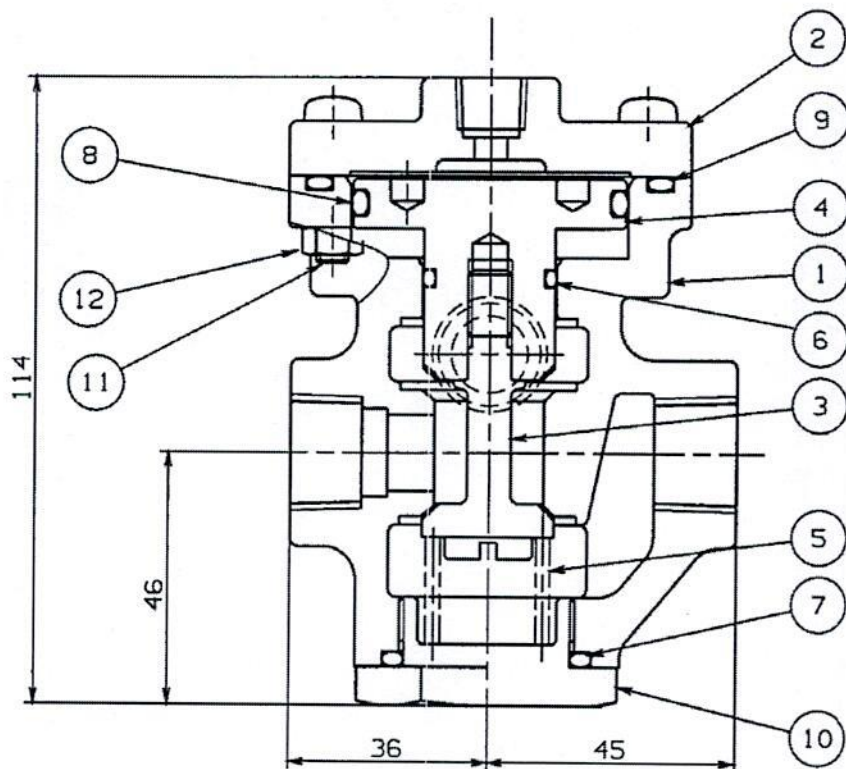
Rubber is used in various parts of the transfer valve. Periodical exchange of this rubber every five years is recommended. Your valve will be checked and repaired at our factory if a check or a repair becomes necessary. Contact our agent or sales office for a check or a repair.



Transfer Valve Model 78-80H
Sectional Drawing
(Standard Specifications)

Part N°	Part Name	Material	Qty
1	Body	AC 4B-F CHROMATE	1
2	Housing	ADC 12/CHROMATE	1
3	Plug	SUS303/NBR	1
4	Piston	A2017BE-T6 CHROMATE/NBR	1
7	Spring	SUS304-WPB	1
8	O-Ring	NBR	1
9	O-Ring	NBR	1
10	O-Ring	NBR	1
11	O-Ring	NBR	1
13	Bottom Cap	SUS303	1
14	Filter	SUS304	2
16	Spring Case	ADC12/CHROMATE	1
17	Adjust Knob	VALOX420	1
18	Diaphragm Plate	SUS303	1
19	Exhaust Orifice	SUS303	1
20	Diaphragm	NBR/DUCRON	1
21	Ball	SUS440C	1
22	Adjust Screw	SUS303	1
23	Spring Button	SPCC-SD Za-C PLATE	1
24	Spacer	VALOX420	1
25	Spring	SWP B	1
26	Lock Screw	SUS304	1
27	Screw	SUS304	4
28	Screw	SUS304	4

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Transfer Valve Model 08-80S

Sectional Drawing

(Standard Specifications)

Part N°	Part Name	Material	Qty
1	Body	AC2A-F CHROMATE	1
2	Head Cap	AC2A-F CHROMATE	1
3	Plug	SUS303/NBR	1
4	Piston	A2017BE-T6 CHROMATE/NBR	1
5	Spring	SUS304-WPB	1
6	O-Ring	NBR	1
7	O-Ring	NBR	1
8	O-Ring	NBR	1
9	O-Ring	NBR	1
10	Bottom Cap	SUS303	1
11	Screw	SUS304	4
12	Nut	SUS304	4

Model	Pressure range / style		Service (Fill fluid)	Process connection
JTD920A	0.75 to 100 kPa (75 to 10160 mmH ₂ O)	Medium differential pressure	Regular service (Silicon oil)	Rc1/2, 1/2NPT, Rc1/4, NPT1/4
JTD930A	35 to 700 kPa (0.35 to 7 kgf/cm ²)	High differential pressure		
JTD960A	0.25 to 14 MPa (2.5 to 140 kgf/cm ²)	Super high differential pressure		

U.S. M.S.C.

9: When meterbody cover material is PVC, manifold valve (model MVG) and/or Integral orifice (model KEE) can not be combined with.

Options 2

XX	No options
A1	Adapter flange for corrosion-resistant application (316L SST or Tantalum for the wetted parts of centerbody)
A2	External Zero adjustment *2 *4
A4	Lightning arrestor *4
A5	Long vent/drain plugs
B7	For mounting a high load resistance smart meter *4 *11
C1	Color: Red (Munsell 5R4/13)
C2	Color: Yellow (Munsell 2.5Y8/16))
C3	Color: Blue (Munsell 7.5BG7/2)
C7	Process connection; reverse
D1	Water free finish (including oil free finish)
E6	Water free finish (including oil free finish) High Grade
D2	Oil free finish *12
G1	One elbow (left)
G2	One elbow (right)
G3	2 elbows
J8	Special burn-out feature (3.2 mA) *4 *13
K9	Output saturation point changeable
L1	Fieldbus communication stack BASIC class
P1	Process connection: Top
P2	Process connection: Bottom
T1	Test report
T2	Material certificate *14
T5	Strength calculation sheet *15
T6	Withstand pressure and Airtight test *16
T8	Traceability certificate
U2	Non-SI unit conformance

- Note 2: Digital output (DE protocol) can not be combined with an External zero adjustment function.
- 4: This can not be combined with FOUNDATIONTM Fieldbus.
- 11: This can not be combined with TIS intrinsically safe, code K in Options 1.
- 12: When the fill fluid is for oxygen or chlorine service, there is no need to select.
- 13: "Lower limit of output at abnormal condition" - code D must be selected for Options 1 "V", Burnout feature.
- 14: Available only for material of wetted part.
- 15: Specify design pressure and design temperature.
- 16: Specify required test pressures (up to the max. working pressure).

■ MODEL AND SUFFIX CODES

Model	Suffix Codes	Description
EJA430E		Gauge pressure transmitter
Output signal	-D -J -F -G -Q	4 to 20 mA DC with digital communication (BRAIN protocol) 4 to 20 mA DC with digital communication (HART 5/HART 7 protocol)*1 Digital communication (FOUNDATION Fieldbus protocol, refer to GS 01C31T02-01EN) Digital communication (PROFIBUS PA protocol, refer to GS 01C31T04-01EN) Low Power, 1 to 5 V DC with digital communication (HART 7 protocol)
Measurement span (capsule)	H A B	5 to 500 kPa (20 to 2000 inH ₂ O) 0.03 to 3.5 MPa (4.3 to 500 psi) 0.14 to 16 MPa (20 to 2300 psi)
Wetted parts material *2	☐	Refer to "Wetted Parts Material" Table.
Process connections See the table in the next page for the codes for a diaphragm seal system.	0 1 2 3 4 5	without process connector (Rc1/4 female on the cover flanges) with Rc1/4 female process connector with Rc1/2 female process connector with 1/4 NPT female process connector with 1/2 NPT female process connector without process connector (1/4 NPT female on the cover flanges)
Bolts and nuts materia	J G C	B7 carbon steel 316L SST 660 SST
Installation	-3 -7 -8 -9 -B -U	Vertical piping, right side high pressure, and process connection down side Vertical piping, left side high pressure, and process connection down side Horizontal piping and right side high pressure Horizontal piping and left side high pressure Bottom Process Connection, left side high pressure*3 Universal flange*3
Amplifier housing	1 3 2	Cast aluminum alloy Cast aluminum alloy with corrosion resistance properties *4 ASTM CF-8M stainless steel *5
Electrical connection	0 2 4 5 7 9 A C D	G1/2 female, one electrical connection without blind plugs 1/2 NPT female, two electrical connections without blind plugs M20 female, two electrical connections without blind plugs G1/2 female, two electrical connections and a blind plug *6 1/2 NPT female, two electrical connections and a blind plug *6 M20 female, two electrical connections and a blind plug *6 G1/2 female, two electrical connections and a 316 SST blind plug 1/2 NPT female, two electrical connections and a 316 SST blind plug M20 female, two electrical connections and a 316 SST blind plug
Integral indicator	D E N	Digital indicator*7 Digital indicator with the range setting switch (push button)*8 (None)
Mounting bracket	B D J K M P N	304 SST 2-inch pipe mounting, flat type (for horizontal piping) 304 SST 2-inch pipe mounting, L type (for vertical piping) 316 SST 2-inch pipe mounting, flat type (for horizontal piping) 316 SST 2-inch pipe mounting, L type (for vertical piping) 316 SST 2-inch pipe mounting (for bottom process connection type) 316 SST 2-inch pipe mounting, position adjustable L type (for vertical piping)*9 (None)
Optional Codes	☐	Optional specification

The "►" marks indicate the most typical selection for each specification.

*1: HART 5 or HART 7 is selectable. Specify upon ordering.

*2: △ Users must consider the characteristics of selected wetted parts material and the influence of process fluids. The use of inappropriate materials can result in the leakage of corrosive process fluids and cause injury to personnel and/or damage to plant facilities. It is also possible that the diaphragm itself can be damaged and that material from the broken diaphragm and the fill fluid can contaminate the user's process fluids.
Be very careful with highly corrosive process fluids such as hydrochloric acid, sulfuric acid, hydrogen sulfide, sodium hypochlorite, and high-temperature steam (150°C [302°F] or above). Contact Yokogawa for detailed information of the wetted parts material.

*3: Applicable only for Wetted parts material code S.

*4: Not applicable for electrical connection code 0, 5, 7, 9 and A.

*5: Not applicable for electrical connection code 0, 5, 7 and 9.

*6: Material of a blind plug; aluminum alloy for code 5 and 9, and SUS304 for code 7.

*7: Not applicable for output signal code G.

*8: Not applicable for output signal code F.

*9: For position adjustable bracket, refer to SD 01C25B14-01EN.

Table. Wetted Parts Materials

Wetted parts material code	Cover flange and process connector	Capsule	Capsule gasket	Vent/Drain plug
S #	ASTM CF-8M *1*8	Hastelloy C-276 *2 (Diaphragm) F316L SST, 316L SST (Others)	Teflon-coated 316L SST	316 SST
L #	ASTM CF-3M *7*8	Hastelloy C-276 *2 (Diaphragm) F316L SST, 316L SST (Others)	Teflon-coated 316L SST	316L SST
H #	ASTM CF-8M *1*8	Hastelloy C-276 *2	PTFE Teflon	316 SST
M #	ASTM CF-8M *1*8	Monel	PTFE Teflon	316 SST
T	ASTM CF-8M *1*8	Tantalum	PTFE Teflon	316 SST
A #	Hastelloy C-276 equivalent *3	Hastelloy C-276 *2	PTFE Teflon	Hastelloy C-276 *2
D	Hastelloy C-276 equivalent *3	Tantalum	PTFE Teflon	Hastelloy C-276 *2
B #	Monel equivalent *4	Monel	PTFE Teflon	Monel
W #	Super Duplex SST equivalent *5	Hastelloy C-276 *2	PTFE Teflon	Super Duplex SST *6

*1: Cast version of 316 SST. Equivalent to SCS14A.

*2: Hastelloy C-276 or ASTM N10276.

*3: Indicated material is equivalent to ASTM CW-12MW.

*4: Indicated material is equivalent to ASTM M35-2.

*5: Indicated material is equivalent to ASTM A995 Grade5A.

*6: ASTM S32750 or EN 10272 1.4410.

*7: Cast version of 316L SST. Equivalent to SCS16A.

*8: Intergranular corrosion test passed according to ASTM A262 Practice E.

The '#' marks indicate the construction materials conform to NACE material recommendations per MR0175/ISO 15156.

Please refer to the latest standards for details. Selected materials also conform to NACE MR0103.

[Process Connections Code for Diaphragm Seal System]

The table below shows the codes dedicated for the combination with a diaphragm seal system. They are only available when the transmitter is ordered in combination with a diaphragm seal system. Please also refer to GS 01C25W01-01EN.

Process Connections Code	High Pressure Side	Low Pressure Side
B	With C80F□, C82F□ or C70S□ diaphragm seal	Open to atmosphere
G	With C80F□ or C82F□ diaphragm seal for high vacuum use	Open to atmosphere

80F□, C82F□, and C70S□ stands for C80FW or C80FE remote mount flanged diaphragm seal, C82FA inner diaphragm adapter connection seal, C82FD inner diaphragm flanged seal, and C70SW or C70SE remote mount hygienic diaphragm seal respectively.

■ MODEL AND SUFFIX CODES

Model	Suffix Codes	Description
EJA110E		Differential pressure transmitter
Output signal	-D -J -F -G -Q	4 to 20 mA DC with digital communication (BRAIN protocol) 4 to 20 mA DC with digital communication (HART 5/HART 7 protocol)*1 Digital communication (FOUNDATION Fieldbus protocol, refer to GS 01C31T02-01EN) Digital communication (PROFIBUS PA protocol, refer to GS 01C31T04-01EN) Low Power, 1 to 5 V DC with digital communication (HART 7 protocol)
Measurement span (capsule)	F L M H V	0.5 to 5 kPa (2.0 to 20 inH ₂ O) (For Wetted parts material code S) 0.5 to 10 kPa (2.0 to 40 inH ₂ O) (For Wetted parts material code M, H, T, A, D, B and W) 1 to 100 kPa (4 to 400 inH ₂ O) 5 to 500 kPa (20 to 2000 inH ₂ O) 0.14 to 14 MPa (20 to 2000 psi)
Wetted parts material *2	☐	Refer to "Wetted Parts Material" Table.
Process connections See the table in the next page for the codes for a diaphragm seal system.	0 1 2 3 4 5	without process connector (Rc1/4 female on the cover flanges) with Rc1/4 female process connector with Rc1/2 female process connector with 1/4 NPT female process connector with 1/2 NPT female process connector without process connector (1/4 NPT female on the cover flanges)
Bolts and nuts material	J G C	B7 carbon steel 316L SST 660 SST
Installation	-7 -8 -9 -B -U	Vertical piping, left side high pressure, and process connection downside Horizontal piping and right side high pressure Horizontal piping and left side high pressure Bottom Process Connection, left side high pressure*3 Universal flange*3
Amplifier housing	1 3 2	Cast aluminum alloy Cast aluminum alloy with corrosion resistance properties*5 ASTM CF-8M stainless steel*6
Electrical connection	0 2 4 5 7 9 A C D	G1/2 female, one electrical connection without blind plugs 1/2 NPT female, two electrical connections without blind plugs M20 female, two electrical connections without blind plugs G1/2 female, two electrical connections and a blind plug*7 1/2 NPT female, two electrical connections and a blind plug*7 M20 female, two electrical connections and a blind plug*7 G1/2 female, two electrical connections and a SUS316 blind plug 1/2 NPT female, two electrical connections and a SUS316 blind plug M20 female, two electrical connections and a SUS316 blind plug
Integral indicator	D E N	Digital indicator*8 Digital indicator with the range setting switch (push button)*9 None
Mounting bracket	B D J K M P N	304 SST 2-inch pipe mounting, flat type (for horizontal piping) 304 SST 2-inch pipe mounting, L type (for vertical piping) 316 SST 2-inch pipe mounting, flat type (for horizontal piping) 316 SST 2-inch pipe mounting, L type (for vertical piping) 316 SST 2-inch pipe mounting (for bottom process connection type) 316 SST 2-inch pipe mounting, position adjustable L type (for vertical piping)*10 None
Optional Codes		☐ / Optional specification

The "►" marks indicate the most typical selection for each specification.

*1: HART 5 or HART 7 is selectable. Specify upon ordering.

*2: △ Users must consider the characteristics of selected wetted parts material and the influence of process fluids. The use of inappropriate materials can result in the leakage of corrosive process fluids and cause injury to personnel and/or damage to plant facilities. It is also possible that the diaphragm itself can be damaged and that material from the broken diaphragm and the fill fluid can contaminate the user's process fluids.
Be very careful with highly corrosive process fluids such as hydrochloric acid, sulfuric acid, hydrogen sulfide, sodium hypochlorite, and high-temperature steam (150°C [302°F] or above). Contact Yokogawa for detailed information of the wetted parts material.

*3: Only applicable for Wetted parts material code S.

*4: Not applicable for measurement span code F.

*5: Not applicable for electrical connection code 0, 5, 7, 9 and A.

*6: Not applicable for electrical connection code 0, 5, 7 and 9.

*7: Material of a blind plug; aluminum alloy for code 5 and 9, and SUS304 for code 7.

*8: Not applicable for output signal code G.

*9: Not applicable for output signal code F.

*10: For position adjustable bracket, refer to SD 01C25B14-01EN.

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Table. Wetted Parts Materials

Wetted parts material code	Cover flange and process connector	Capsule	Capsule gasket	Vent/Drain plug
S #	ASTM CF-8M *1*8	Hastelloy C-276 *2 (Diaphragm) F316L SST, 316L SST (Others)	Teflon-coated 316L SST	316 SST
L #	ASTM CF-3M *7*8	Hastelloy C-276 *2 (Diaphragm) F316L SST, 316L SST (Others)	Teflon-coated 316L SST	316L SST
H #	ASTM CF-8M *1*8	Hastelloy C-276 *2	PTFE Teflon	316 SST
M #	ASTM CF-8M *1*8	Monel	PTFE Teflon	316 SST
T	ASTM CF-8M *1*8	Tantalum	PTFE Teflon	316 SST
A #	Hastelloy C-276 equivalent *3	Hastelloy C-276 *2	PTFE Teflon	Hastelloy C-276 *2
D	Hastelloy C-276 equivalent *3	Tantalum	PTFE Teflon	Hastelloy C-276 *2
B #	Monel equivalent *4	Monel	PTFE Teflon	Monel
W #	Super Duplex SST equivalent *5	Hastelloy C-276 *2	PTFE Teflon	Super Duplex SST *6

*1: Cast version of 316 SST. Equivalent to SCS14A.

*2: Hastelloy C-276 or ASTM N10276.

*3: Indicated material is equivalent to ASTM CW-12MW.

*4: Indicated material is equivalent to ASTM M35-2.

*5: Indicated material is equivalent to ASTM A995 Grade5A.

*6: ASTM S32750 or EN 10272 1.4410.

*7: Cast version of 316L SST. Equivalent to SCS16A.

*8: Intergranular corrosion test passed according to ASTM A262 Practice E.

The '#' marks indicate the construction materials conform to NACE material recommendations per MR0175/ISO15156.

Please refer to the latest standards for details. Selected materials also conform to NACE MR0103.

[Process Connections Code for Diaphragm Seal System]

The table below shows the codes dedicated for the combination with a diaphragm seal system. They are only available when the transmitter is ordered in combination with a diaphragm seal system. Please also refer to GS 01C25W01-01EN.

Process Connections Code	High Pressure Side	Low Pressure Side
B	With C80F□, C81F□, C82F□ or C70S□ diaphragm seal	With C80F□, C81F□, C82F□ or C70S□ diaphragm seal
C	With C80F□, C82F□ or C70S□ diaphragm seal	Rc 1/4 female on the cover flange
D	With C80F□, C82F□ or C70S□ diaphragm seal	1/4 NPT female on the cover flange
E	Rc 1/4 female on the cover flange	With C80F□, C82F□ or C70S□ diaphragm seal
F	1/4 NPT female on the cover flange	With C80F□, C82F□ or C70S□ diaphragm seal
G	With C80F□, C81F□ or C82F□ diaphragm seal for high vacuum use	With C80F□, C81F□ or C82F□ diaphragm seal for high vacuum use
Q	With C20F□ or C30S□ direct mount seal	Rc 1/4 female on the cover flange
R	With C20F□ or C30S□ direct mount seal	1/4 NPT female on the cover flange
P	With C20F□ or C30S□ direct mount seal	With C80F□ or C70S□ diaphragm seal
T	With C20F□ direct mount seal	With C80F□ compensation capillary system diaphragm seal

C80F□, C81F□, C82F□, C20F□, C70S□ and C30S□ stand for C80FW or C80FE remote mount flanged diaphragm seal, C81FA or C82FA inner diaphragm adapter connection seal, C81FD or C82FD inner diaphragm flanged seal, C20FW or C20FE direct mount seal, C70SW or C70SE remote mount hygienic diaphragm seal, and C30SW or C30SE direct mount hygienic seal respectively.

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4. Specifications

Type		TLX-120AP1	TLX-200AP
Measurement range		0–12 m	0–20 m
Measurement method		Pulse method	
Measurement scale		Wire rope Φ 2mm, SUS304	
Motor		Single-phase 20 W reversible (50/60Hz), Electromagnetic brake type	
Output	Current output	4–20 mA DC, resistance load 350 Ω or less	
	Pulse output	NPN open-collector output	
	Start output	Maximum 40 mA (30 A) or less, residual voltage 1 V or less	
	Output during measurement	Contact a, AC250V/5A, DC30V/5A (resistance load)	
	Abnormality output	Contact a, AC250V/5A, DC30V/5A (resistance load)	
Input		Non-voltage contact signal (start input)	
Measurement resolution		10 cm	
Accuracy		10 cm	1% of F.S.
Indicator lamp		Power supply (yellow), operation (with a two-color LED, measuring: green, abnormality: red)	
Weight elevating speed		About 13 m/min	
Timer function		3 min, 5 min, 10 min, 15 min, 20 min, 30 min, 60 min, 2 h, and 3 h (3 min cannot be selected with TLX-200AP))	
Power supply voltage		AC100V or AC200V, 50/60Hz	
Power consumption		70 VA	
Flange size		5K100A (SS400)	
Ambient temperature during use		-10°C to +50°C (no freezing allowed)	
Materials used (main)		Body, flange	SS400
		Cover	SS400
		Wire	SUS304
		Drum	Cast aluminum
		Weight (standard)	SS41
Painting color		Munsell 10YR7.5/14	
Weight		31 kg	

Caution: Specify AC100V or AC200V for the power supply voltage.

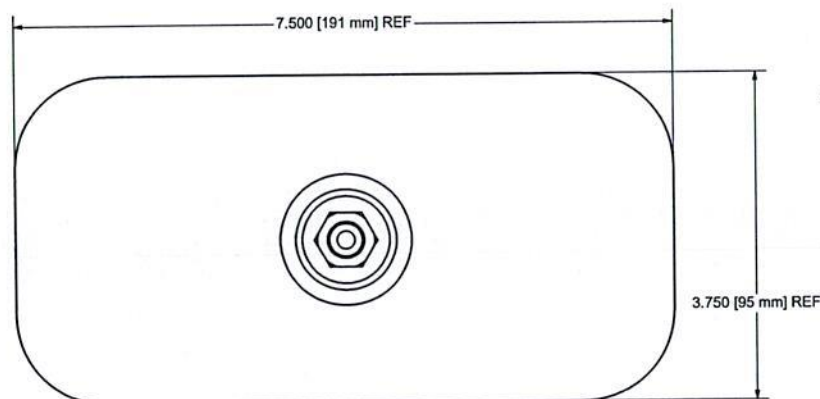
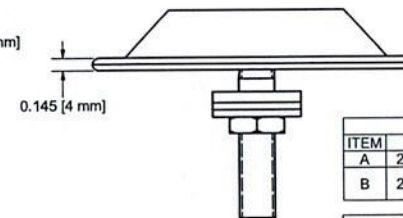
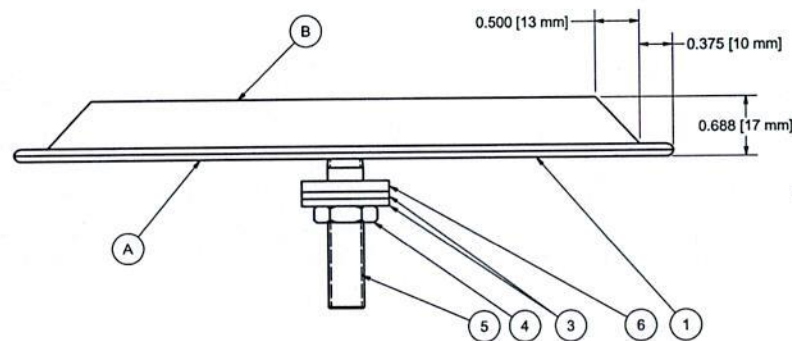
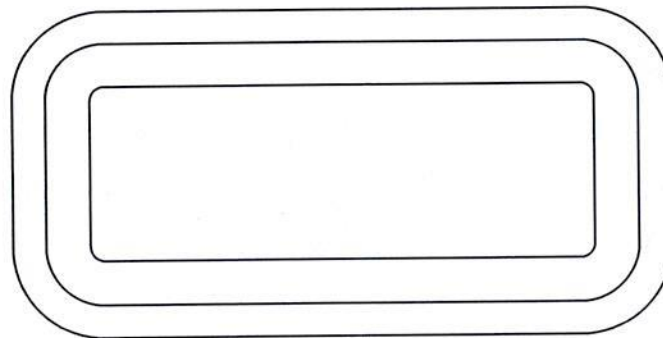
*Special specifications conform to documents accompanying the product.

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REV	ECO	DESCRIPTION	DATE	BY	APP
B	3281	REDRAW, CHANGE WASHER	8/6/2009	GL	JK

NOTES:

DIFFUSER EDGES MUST BE HELD BY BODY CRIMPING OPERATION TO PREVENT ANY DIFFUSER MOVEMENT IN AERATOR BODY.



SUB ASSEMBLY COMPONENTS: 20160058				
ITEM	PART	DWG	DESCRIPTION	QTY
A	20160041	B0160018	BODY BRACKET WELDMENT STN. STL	1
B	20160045	B0160023	FIBERGLASS STAINLESS STEEL DIFFUSER	1

SUB ASSEMBLY COMPONENTS: 20160057				
ITEM	PART	DWG	DESCRIPTION	QTY
A	20160041	B0160018	BODY BRACKET WELDMENT STN. STL	1
B	20160044	B0160023	COTTON STAINLESS STEEL DIFFUSER	1

PARTS LIST				
ITEM	PART#	DWG	DESCRIPTION	QTY
1	20160058		OPTIONAL: FS AERATOR - BODY & DIFFUSER - CLOSED - SST W/ FIBERGLASS	1
2	20160057		CS AERATOR - BODY & DIFFUSER - CLOSED - SST W/COTTON	1
3	AD-9S		Stainless steel spacer washer	2
4	AD-16	A0160017	Nickel plated locknut.	1
5	AD-15	A0160016	Nickel plated tank nipple.	1
6	AD-10	A0160004	1/8" neoprene gasket.	1

MODEL AD-SSC: COTTON CLOTH DIFFUSER
MODEL AD-SSF: FIBERGLASS CLOTH DIFFUSER

HARDWARE PACKAGED UN-ASSEMBLED.

DRAWN RM	8/22/1983	 Conveyor Components Company 130 Seltzer Road Crosswell, Michigan, U.S.A., 48422	
CHECKED JK	8/6/2009		
APPROVED CLO	8/24/1983	AERATOR FINAL ASSEMBLY: AD-SSC / AD-SSF	
PART		Drawing is computer generated, and print might not be to scale	
THIS PRINT IS PROPERTY OF CONVEYOR COMPONENTS CO., AND MAY NOT BE USED IN WHOLE OR PART WITHOUT WRITTEN PERMISSION.		SIZE C	DWG NO C0160006.dwg
		SCALE	REV B