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REPORT

on

Industrial Control Panels certified for Canada

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DESCRIPTION

PRODUCT COVERED:

USL, CNL - Enclosures for Industrial Control Panels, sheet metal enclosures Series SR2, SRX.

GENERAL:

Series SR2, SRX metal enclosures, with single door, are intended for indoor use, to provide a degree of protection to personnel against incidental contact with the enclosed equipment and to provide a degree protection against falling dirt.

Series SR2, SRX metal enclosures, with single door, are intended for indoor use, primarily to provide a degree of protection against dust, falling dirt and dripping non-corrosive liquids.

Series SR2, SRX metal enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against falling dirt, rain, sleet, snow and damage from external ice formation.

Series SR2, SRX metal enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against falling dirt, rain, sleet, snow, window dust, splashing water and hose-directed water; and damage from external ice formation.

*Series SRX metal enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against falling dirt, rain, sleet, snow, window dust, splashing water and hose-directed water, and corrosion; and damage from external ice formation.

ENVIRONMENTAL RATING:

Enclosures Series	Door(s)	Type
SR2	Single	1, 3R , 12
SRX	Single	1, 3R, 4, 4X, 12

MAXIMUM ENCLOSURE SIZES:

Enclosure Series	Height (mm)	Width (mm)	Depth (mm)	Door(s)
SR2	1200	800	300	1
SRX	1200	800	300	1
SRX with observation window	1000	800	300	1

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Products designated USL have been investigated using requirements contained in United States Standards UL 508A, the Standard for Industrial Control Panels, 1st Edition.

Products designated CNL have been investigated using requirements contained in Canadian National Standards C22.2 No. 14, the Standard for Industrial Control Equipment, 11th Edition.

MARKING:

Each enclosure shall be marked with the Listee's name, or trademark (if authorized on the Section General), and series designation. If the front is shipped separately from the body of the enclosure, then both the front and the body shall bear this marking.

If an enclosure is not shipped complete such as multi-door enclosure, the parts of the enclosure shall be marked with the following marking on each section, "Section ___ of ___, see instruction for interconnections" or equivalent wording, so that they can be readily assembled. An enclosure is intended to be constructed as described in this report.

An enclosure shall be marked with a type number, "Type 1 Enclosure", "Type 12 Enclosure", "**Type 3R Enclosure**", "**Type 4 Enclosure**", "**Type 4X Enclosure**", indicating the external conditions for which it is acceptable.

Type 1: Indoor use primarily to provide a degree of protection against limited amounts of falling dirt.

Type 12: Indoor use primarily to provide a degree of protection against circulating dust, falling dirt, and dripping non-corrosive liquids. The marking may be on the inside or outside surface but shall be visible after installation. Enclosures marked with a Type 12 may also be marked "driptight". An enclosure maintains the type number only if it is provided with all parts which maintain the environmental integrity. This enclosures marked "Type 12" includes both single and multi-doors enclosures.

Type 3R: Outdoor use primarily to provide a degree of protection against rain, sleet, and damage from external ice formation. The marking may be on the inside or outside surface but shall be visible after installation. Enclosures marked with a Type 3R may also be marked "rainproof". An enclosure maintains the type number only if it is provided with all parts which maintain the environmental integrity.

Type 4: Indoor and outdoor use to provide a degree of protection against falling dirt, rain, sleet, snow, windblown dust, splashing water, and hose-directed water; and that will be undamaged by the external formation of ice on the enclosure. Enclosures marked with a Type 4 may also be marked "Raintight", "Watertight". An enclosure maintains the type number only if it is provided with all parts which maintain the environmental integrity. This enclosures marked "Type 4" includes single door enclosures.

Type 4X: Indoor and outdoor use to provide a degree of protection against falling dirt, rain, sleet, snow, windblown dust, splashing water, hose-directed water, corrosion and will be undamaged by the external formation of ice on the enclosure. Enclosures marked with a Type 4X may also be marked "Raintight", "Watertight" and "Corrosion Resistant". An enclosure maintains the type number only if it is provided with all parts which maintain the environmental integrity. This enclosure marked "Type 4X" includes single door enclosures.

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MARKING (CONT'D):

Any environmental type enclosure intended for use with conduit hubs, closure plates and/or other field installed equipment (such as push-button, door latches, and the like), but shipped from the factory without them, shall be marked or provided with instructions that identifies the type of the equipment that shall be used to maintain the environmental type designation of the enclosure.

Any marking that is required to be permanent shall be molded, die-stamped, paint-stenciled, stamped or etched metal that is permanently secured, or indelibly stamped lettering on a pressure-sensitive label secured by adhesive.

The Marking and Labeling shall be R/C Marking and Labeling Systems (PGDQ2) or Printing Materials (PGJI2). The marking labels are outdoor or indoor type.

Following marking need not be permanent and could be provided on instruction sheet:

For Canadian specification required by clauses 4.2.5.11 and consequently 5.42, Equipment shall be marked with the following or equivalent wording:

"WARNING: When mounting on or over a combustible surface, a floor plate of at least 1.43 mm galvanized or 1.6 mm uncoated steel extended at least 150 mm beyond the equipment on all sides must be installed."

CONSTRUCTION DETAILS:

Products covered by this report shall comply with applicable component, construction rating and marking requirements contained in UL508A, the Standard for Industrial Control Panels, and any additional information provided in this Procedure.

Some details of construction are covered in the following photographs and accompanying descriptive pages.

***Corrosion Protection - It is provided for all ferrous metal parts as follow:**

- Enclosures rated Type **3R**, 4, 4X **shall be** made of stainless steel AISI 304 and AISI 316 or sheet steel painted with R/C Coatings, Organic, For Steel Enclosure of Outdoor Use Air Conditioning or Electrical Equipment (D70V2) cat. no. INTERPON 700 epoxy/polyester hybrid manufactured by AKZO NOBEL INDUSTRIAL PAINTS S L.

- **Enclosures rated Type 12 only can be made of sheet steel enameled or painted with any painting.**

GASKETS:

Foam - Sonderhoff "Fermapor K31"

Closed cell - Pigomma S.P.A. "AEROSTOP/A"

Door notch gasket - Comelast "SP-LCS/TN"

Door keylatch gasket - Caleppiovinil "CALEPPIO PRINT310"

Lifting eye gasket - Etaplast "RONDELLA GOLFARE"

Open Cell Polyurethane - R/C Gasket and Seal Materials, Gasket and Seals (JMLU2) manufactured by Poly Tec Srl, No. Polytix 30.11+Polyprom 02.

R/C (JMLU2) Gasket and Seals, manufactured by Exachem, Type EXAPUR T100/EXAFLEX HD 100.

Observation windows - Temperate glass, 4 mm thick fixed with Adhesive Sikaflex -260 N manufactured by Sika Schweiz AG. See Ills. 5 and 6 for more details.

CONSTRUCTION DETAILS (CONT'D):

Thickness - Minimum thickness of sheet metal enclosure, carbon or stainless steel (from UL Standard UL508A Industrial Control Equipment Table 63.1)

TABLE I

Without supporting frame (a)		With supporting frame or equivalent reinforcement (a)		Minimum required Thickness, in
Maximum width (b)	Maximum length (c)	Maximum width (b)	Maximum length (c)	
inches (cm)	inches (cm)	inches (cm)	inches (cm)	inches (mm)
4.0 (10.2)	Not limited	6.25 (15.9)	Not limited	0.020 (0.51)
4.75 (12.1)	5.75 (14.6)	6.75 (17.1)	8.25 (21.0)	
6.0 (15.2)	Not limited	9.5 (24.1)	Not limited	0.026 (0.66)
7.0 (17.8)	8.75 (22.2)	10.0 (25.4)	12.5 (31.8)	
8.0 (20.3)	Not limited	12.0 (30.5)	Not limited	0.032 (0.81)
9.0 (22.9)	11.5 (29.2)	13.0 (33.0)	16.0 (40.6)	
12.5 (31.8)	Not limited	19.5 (49.5)	Not limited	0.042 (1.07)
14.0 (35.6)	18.0 (45.7)	21.0 (53.3)	25.0 (63.5)	
18.0 (45.7)	Not limited	27.0 (68.6)	Not limited	0.053 (1.35)
20.0 (50.8)	25.0 (63.5)	29.0 (73.7)	36.0 (91.4)	
22.0 (55.9)	Not limited	33.0 (83.8)	Not limited	0.060 (1.52)
25.0 (63.5)	31.0 (78.7)	35.0 (88.9)	43.0 (109.2)	
25.0 (63.5)	Not limited	39.0 (99.1)	Not limited	0.067 (1.70)
29.0 (73.7)	36.0 (91.4)	41.0 (104.1)	51.0 (129.5)	
33.0 (83.8)	Not limited	51.0 (129.5)	Not limited	0.080 (2.03)
38.0 (96.5)	47.0 (119.4)	54.0 (137.2)	66.0 (167.6)	
42.0 (106.7)	Not limited	64.0 (162.6)	Not limited	0.093 (2.36)
47.0 (119.4)	59.0 (149.9)	68.0 (172.7)	84.0 (213.4)	
52.0 (132.1)	Not limited	80.0 (203.2)	Not limited	0.108 (2.74)
60.0 (152.4)	74.0 (188.0)	84.0 (213.4)	103.0 (261.6)	
63.0 (160.0)	Not limited	97.0 (246.4)	Not limited	0.123 (3.12)
73.0 (185.4)	90.0 (228.6)	103.0 (261.6)	127.0 (322.6)	
(a) See 63.1.4				
(b) The width is the smaller dimension of a rectangular piece of sheet metal that is part of an enclosure. Adjacent surfaces of an enclosure other than the cover shall comply with 63.1.5 and 63.1.6 or be made of a single sheet.				
(c) Not limited applies only when the edge of the surface is flanged at least 1/2 inch (12.7 mm) or fastened to adjacent surfaces not routinely removed in use.				

Minimum thickness of sheet metal for doors and covers steel surface-mounted enclosure may be less than specified in the above Table I if provided with reinforcing bars.

CONSTRUCTION DETAILS (CONT'D):

Hinge – Steel zinc plated, painted steel or Stainless Steel AISI 304 or AISI 316, riveted to the enclosure. At least two hinges shall be provided for each door. Hinges shall be spaced as specified in Table II (from UL Standard 50 Industrial Control Equipment Table 22.1). The spacing between hinges is to be measured between centres of the hinges; the spacing between a hinge and the end of a door or cover is to be measured from the edge of the hinge.

Table II

Maximum hinge spacing for metallic enclosures

From Each End of Door or Cover (mm)	Between Hinge Centers (mm)
102	914
152 (a)	914
254 (b)	914
229	914
305	1016

(a) Hinges may be spaced 152 mm from the end of a door or a cover may not more than 1.14 m long on the hinged side.

(b) Hinges may be spaced 254 mm from the end of a door or a cover having three hinges.

SR2 ENCLOSURES

FIG. 1

General - Refer to Illustrations 1 and 2 for technical details, shape and dimensions. Series SR2 represents series SRX (Figs. 2, 3, 4, 5, 6).

- *1. Enclosure - **made of steel, see construction details for corrosion protection requirements.** 1.5 mm thick, front provided with a 25.0 mm flange around opening. All seams are continuous welded.
- *2. Door - **made of steel, see construction details for corrosion protection requirements.** 1.5 mm thick, front provided with a 25.0 mm flange around opening. All seams are continuous welded.
- 3. Gland Plate - Two provided. 20/10 gauge painted steel. The gland plates are fixed in through a foamed gasket by six screws (nut/washer type). See Ill. 3 for details.
- *4. Cover - **made of steel, see construction details for corrosion protection requirements.** 1.5 mm thick, flanged 25.0 mm on all sides.
- 5. Hinge - Two provided. Max 186 mm from top or bottom of cover. Refer to construction details.
- 6. Latch - One provided on enclosures 500 mm or less in height. Located not more than 250 mm from top or bottom of cover. Two provided on enclosure covers over 500 mm. Located not more than 200 mm from top or bottom of enclosure.
- 7. Gasket - Foamed, **see construction details for reference.** Provided on cover. Cooperates with flange around opening.
- 8. Plug - molded of R/C (QMFZ2/8) Technyl A 205F(r4) manufactured by Rhodia Engineering Plastics. See Ill. 4 for details and dimensions.
- 9. Observation Windows (optional only for series SRX) - See construction general.