



MS-PS-IS 48 Series
Limit Switch Box with Mechanical Switches
and Proximity Sensors

INSTALLATION & OPERATION MANUAL
rev. September 2014

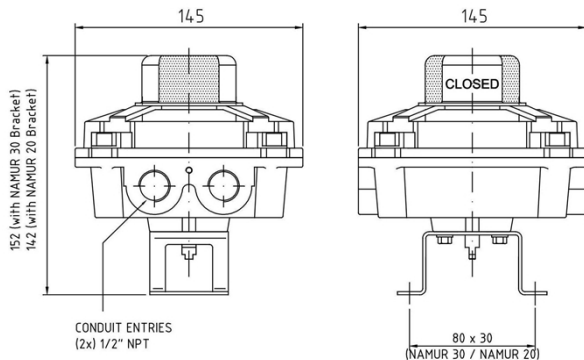
1. WARNINGS AND IMPORTANT NOTICES

Please read the following instructions before carrying out any operation on the box. Damage caused from the non-observance of these instructions are not covered by the warranty. This document must be kept in a dry place and kept available for use.

- *Wiring to or from this device, which enters or leaves the system enclosure, must utilize wiring methods suitable for Class I, Division 2 (or Division 1) hazardous locations, as appropriate for the installation.*
- *Enclosure environmental ratings are achieved when conduit entries are torqued to at least 90.4 Nm (800 lbs/inch) and fasteners (Class A2-50) to 40 Nm (354*

- *Installation and maintenance of the box must be performed by qualified personnel only.*
- *Before carrying installation, maintenance, or any inspection on the box, always make sure no hazardous atmosphere is present in the work area and power supply is shut off.*
- *To prevent ignition of hazardous atmospheres, always tighten the cover and verify ground connections before activating the electrical circuits.*
- *Supply voltage and other conditions of use must conform to external label data.*
- *If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection provided by the equipment is not compromised (Aggressive substances: acidic liquids or gases that may attack metals or solvents that may affect polymeric materials).*

2. DIMENSIONS



3. INSTALLATION

- Hold the unit above the mounting surface in the orientation in which you intend to mount.

- If needed, rotate the shaft to align with the actuator pinion. Engage the shaft in the pinion coupler.
- Use caution not to allow undue axial (thrust) load on the shaft.
- Tighten the bracket onto the actuator with the four M5x10 screws provided.

4. ELECTRICAL WIRING

Electrical connections must be done drawing the cables inside the switch box through the external glands.

- Unscrew main fasteners (the four captive screws) to remove the upper cover. Raise up the cover carefully to avoid damages of the internal electrical parts.
- Draw the cables in through the gland(s).
- Connect cables in the terminal-block according to the wiring diagrams here shown. Use adequate tools and screw drivers. Please pay attention to avoid fluids or other substances getting in touch with any electronic part.
- Verify cam positions and, if needed, adjust them as shown in §5.
- Before reassembling the upper cover please make sure that the O-Ring is correctly seated in the groove and that there are no other obstructions which could compromise perfect tightness of cover.
- Reassemble the cover and tighten the main fasteners.

5. CAM ADJUSTMENT

Cam position must be verified during the installation procedure. Usually, cam adjustment after first setup is no longer necessary.

To adjust the internal cams, follow these steps:

Open the box:

- Unscrew main fasteners (the four captive screws) to remove the upper cover. Raise the cover carefully to avoid damage to the internal electrical parts.

Box with 2 mechanical switches/sensors:

- Turn the box stem to the "open" condition;
- Push the upper cam (green) down, gently compressing the spring between the two cams and disengaging it from the cam holder with the spline; while keeping it compressed, turn the cam until the switch is activated. Release the cam; the spring between the two cams will ensure the re-engagement onto the cam holder;
- Turn the box stem to the "closed" condition;
- Pull the lower cam (red) up, gently compressing the spring between the two cams and disengaging it from the cam holder with the spline; while keeping it compressed, turn the cam until the switch is activated. Release the cam; the spring between the two cams will ensure the re-engagement onto the cam holder.

Box with 4 mechanical switches/sensors:

- Turn the box stem to the "open" condition;
- Operate the upper green pair of cams as in the case of 2 mechanical switches, that is: push the first green upper cam down and pull the second green cam up, gently compressing the spring between the two cams, and turn them until the switch is activated;
- Turn the box stem to the "closed" condition;
- Repeat the above step with the two lower red cams.

Close the box:

- Before assembling the upper cover please make sure that the O-ring is properly seated in the groove and there are no other obstructions which could compromise the perfect tightness of cover.
- Reassemble the cover and tighten the main fasteners.

Note: each line on the splines adjusts ~4°.

6. MAINTENANCE

No maintenance is required. Regular checks as part of routine inspections are recommended, to inspect wear of internal O-rings and bearings and to verify the cam settings.

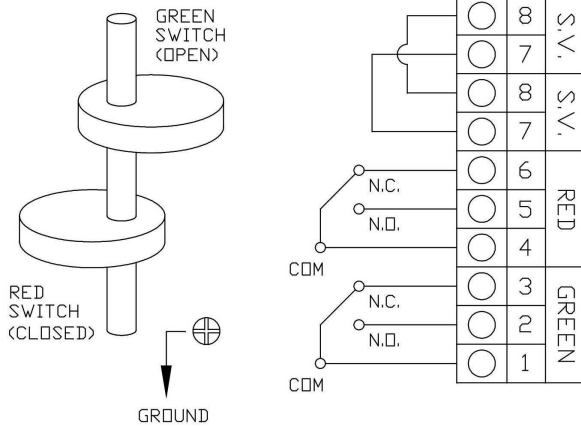
7. CONFIGURATION AND WIRING DIAGRAMS

Various types of indicators and brackets are available. For a list of enclosed switches/sensors and related wiring diagrams, please refer to following lines.

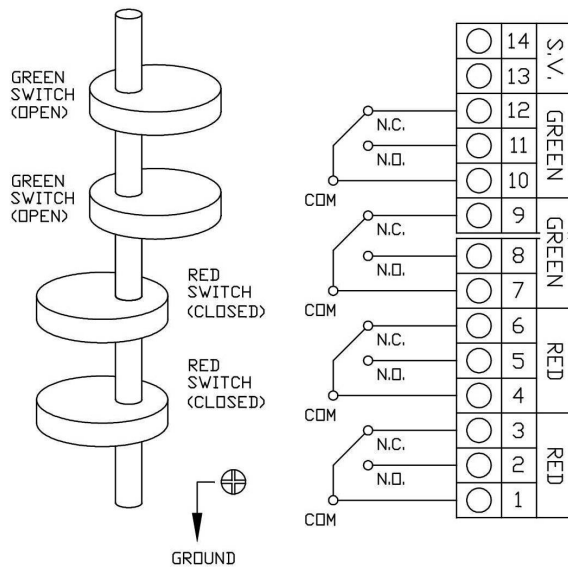
MS48: 2x or 4x Mechanical switches

Type	Switch / Sensor	Ratings	Mark	Wiring
2 SPDT	Cherry D449 Omron D3V11	max 250 VAC/10A max 30VDC/6A	A	1
2 SPDT Gold pl.	Honeywell V7	125 VAC/ 100 mA	A	1
4 SPDT (2 DPDT)	Cherry D449 Omron D3V11	max 250 VAC/10A max 30VDC/6A	A	2

1) Two micro switches SPDT, mechanical or magnetic.



2) Four micro switches SPDT (2 DPDT), mechanical

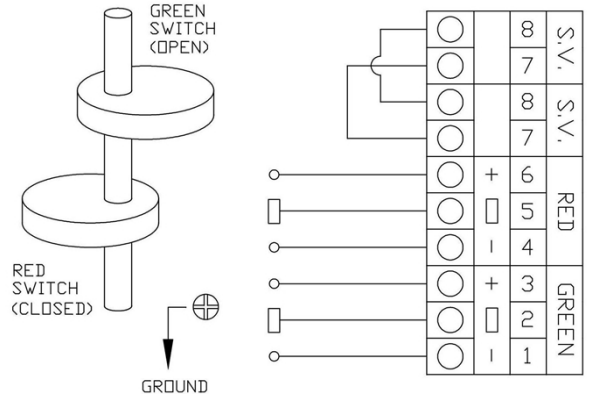


IS48: 2x Proximity sensors, 2 wires and 3 wires

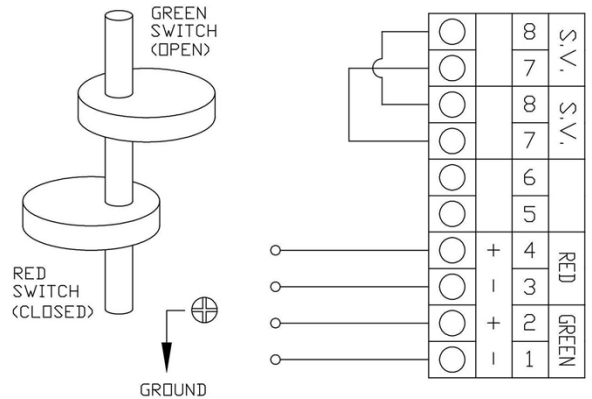
Type	Switch / Sensor	Ratings	Mark	Wiring
B	IFM IS5001	10-36 VDC & 200 mA	A, B	3
G	PF NBB2 V3 E2	10-30 VDC & 100 mA	A, B	3
L	PF NBB2-V3-E0	10-30 VDC & 100 mA	A, B	3
K	PF NBB2-V3-E3	10-30 VDC & 100 mA	A, B	3
D	IFM IS5026	5-36 VDC & 200 mA	A, B	4
A	IFM NS5002	Nom. 8.2 VDC; 30 mA Supply 7.5-30 VDC	A, B	4
F	PF NJ2 V3 N	8.2V, 3 mA	A, B	4
H	PF NBB3 V3 Z4	5-60 V; 4-100 mA	A, B	4

N	PF NCB2 V3 N0	8.2V, 3 mA	A, B	4
P	IFM IS0004	20-140 VAC; 10-140 VDC & 200 mA	A, B	4

3) Three wires proximity



4) Two wires proximity



PS48: 2x Magnetic Switches

Type	Switch / Sensor	Ratings	Mark	Wiring
M	STEM E530 with HSR 834	240 VAC/DC; 0.4A 33.3 VDC; 3A	A, B	1
0	Hamlin 59140	175 VDC/250 mA 120 VAC/250 mA	A, B	1

8. DECLARATION OF CONFORMITY

The listed products have been deemed to be designed and manufactured in accordance with the relevant sections of the NEC and CNEC [National Electrical Code (USA) and Canadian National Electrical Code (Canada)] by CSA International. Evaluations and testing were conducted against UL, CSA, and ANSI/ISA standards as detailed on the relevant Certificate of Compliance.

CSA Master Contract Number 218481

The product(s) bear the following marking (*):

Marking "A"	Marking "B"
Class I, Div 1, Groups C, D Class II, Div 1, Groups E, F, G Class III Temp Code T4A Ex d IIB T5 Gb; Ex tb IIIC T108°C Db	Class I, Div 2, Groups A, B, C, D Class II, Div 1, Groups E, F, G Class III Temp Code T4A Ex d IIB T5 Gc; Ex tb IIIC T108°C Db

(*). Depending on switch configuration; see external label or "Mark" column in §7 tables.

Manufactured under the trade name "Max Air Technology" by:

Emme technology S.r.l.

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