PS/PM Ultraswitch™ Switchbox

PMENIM0008-05 - 10/26

USER INSTRUCTIONS

Installation | Operation | Maintenance

pmvautomation.com

Contents

1. General information....3

2. Safety instructions....4
   - 2.1 General safety information 4
   - 2.2 Personnel qualification 4
   - 2.3 Signal words 5
   - 2.4 General hazards 5
   - 2.5 Explosion protection 6
   - 2.6 Special conditions for safe use 7
   - 2.7 Residual risks 7
   - 2.8 Modifications and spare parts 7
   - 2.9 Disposal 7

3. Unpacking....8

4. Certificates....9

5. Specifications....10
   - 5.1 Technical data 10
   - 5.2 Materials of construction 10
   - 5.3 Product label 10
   - 5.4 PS/PM Ultraswitch order code 11

6. Installation....12
   - 6.1 Wiring instructions 13

7. Switches (certified)....15
   - 7.1 ATEX Ex eb mb certificate information 15
   - 7.2 Installation in hazardous locations 15
   - 7.3 Adjusting limit switches 15
   - 7.4 Cam fine adjustment 16
   - 7.5 Adjusting UltraDome position indicator 16
   - 7.6 Calibrating 4–20 mA transmitter 17
   - 7.7 Switch option specifications 18
   - 7.8 Analog feedback option specifications 19

8. Dimensions....20

9. Spare parts....21

10. Appendix 1 Control drawing IEC/ATEX....22

11. Appendix 2 Control drawing US and Canada installations....23

12. Contact information....24

1. General information

PS/PM Ultraswitch enclosures provide local and remote position indication for automated valves. They generally feature a visual black-and-yellow or red-and-green indicator for intuitive local position determination. The PS/PM Ultraswitch is available with a number of limit switch options for remote indication, in a variety of electrical applications. They may also be used as a junction box for direct installation of solenoid valves.

Note: *Only qualified technicians (according to IEC 60079 series of standards) are allowed to work with certified products.*

2. Safety instructions

2.1 General safety information

This manual contains information that is essential for safe installation, operation, adjustment, maintenance, and decommissioning.

Failure to follow these instructions can result in:

- Serious personal injury or death.
- Damage to equipment or the installation.
- Loss of certification or functional safety (SIL).

Read and understand this chapter **before any work is carried out.**

2.1.1 Intended use

The products are intended to:

- Indicate valve or actuator position locally and/or remotely.
- Provide switching or feedback signals for control systems.
- Be mounted on pneumatic actuators using standardized interfaces.
- Be used outdoors.
- Be used at altitudes up to 2,000 m (6,500 ft) above sea level.
- Be used in wet locations.

Use only within the limits specified in the technical data.

Any other use is considered misuse.

2.2 Personnel qualification

Only **qualified personnel** are permitted to work on these products.

Qualified personnel are persons who:

- Are trained in industrial instrumentation or pneumatics.
- Are familiar with electrical safety and explosion protection (if applicable).
- Use personal protective equipment (PPE), such as clothing, safety glasses, and gloves when performing installation or service.
- Have read and understood this manual.

For hazardous-area installations, personnel must be qualified in accordance with the applicable IEC 60079 standards, including the latest editions of EN IEC 60079-14, -17, -18, and -19, as well as applicable national requirements and standards (NEC—US, CEC—Canada).

2.3 Signal words

The following signal words are used in this manual:

Signal word	Meaning
DANGER	Will result in death or serious injury
WARNING	Could result in death or serious injury
CAUTION	May result in minor or moderate injury
NOTICE	Risk of equipment damage or malfunction
NOTE	Additional helpful information

2.4 General hazards

WARNING! – Unexpected actuator movement

Actuator movement may occur during installation, configuration, or adjustment.

- Isolate the actuator from the control system.
- Secure the actuator in a safe position.
- Prevent unintentional pressurization.

WARNING! – Electrical hazard

Hazardous voltage may be present.

- Switch off and secure the power supply before opening the enclosure.
- Verify absence of voltage before working on terminals.
- Wear appropriate personal protective equipment.

WARNING! – Pneumatic energy (if applicable)

Pressurized air may cause injury.

- Depressurize all pneumatic connections before maintenance.
- Wear appropriate personal protective equipment.

2.5 Explosion protection

WARNING! – Explosion hazard

Failure to comply can cause ignition of an explosive atmosphere.

2.5.1 All explosion protection concepts

- All grounding and bonding installation requirements must comply with the applicable hazardous-area standards for the environment and application in which the device is installed.
- Prevent electrostatic charging (clean with damp cloth only). Risk of propagating discharges.
- Do not open the enclosure while energized.
- To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.

2.5.2 Explosion-proof Ex d IEC 60079-1

- Do not open when an explosive atmosphere may be present.
- Live work permitted.
- Flameproof joints must not be repaired or modified. Contact the manufacturer for consultation.
- Use only approved, appropriately rated cable entries, glands and sealing methods.
- Substitution of components may impair explosion protection.
- Any unused conduit entry must have a suitably rated blanking element.

2.5.3 Intrinsic safety Ex i IEC 60079-11

- Connect only to certified intrinsically safe circuits.
- Ui, Ii, Pi, Ci, Li must be matched with associated apparatus.
- Substitution of components may impair intrinsic safety.
- Live work permitted if connected to certified intrinsically safe circuits.

2.5.4 Non-incendive CSA C22.2 No. 213-17 ANSI/UL 121201:2017

- Live work permitted.
- Equipment is suitable for use in Zone 2 hazardous areas only.
- Do not connect or disconnect when energized in a hazardous area.
- Substitution of components may impair explosion protection.
- Explosion protection is based on normal operation only.
- Use only approved, appropriately rated cable entries, glands and sealing methods.

2.5.5 Encapsulation Ex mb IEC 60079-18

- Damage to encapsulation. Do not use the equipment if the encapsulation is damaged. Cracks, voids, or degradation of the encapsulating compound may impair explosion protection. Equipment is suitable for use in Zone 2 hazardous areas only.

- Do not modify or repair encapsulated parts. Encapsulated parts are not repairable. Replace the complete unit if damaged. Unauthorized modification may invalidate certification and compromise safety.
- Electrical overload! For Ex mb equipment, protection must remain effective even in fault condition.
- Unauthorized modification may invalidate certification and compromise safety.

2.6 Special conditions for safe use

For certified versions:

- Maintain specified fastener torque and clearances.
  Tighten lid screws to 10 Nm (88.5 lb-in).
- Ensure correct grounding and bonding.
- Use only manufacturer-approved accessories and spare parts.

Non-approved components may invalidate certification.

2.7 Residual risks

Residual risks may remain despite correct installation and use.

The system integrator and end user shall:

- Inspect periodically for degradation. Replace parts if degradation is found.
- Perform a system-level risk assessment.
- Implement additional protective measures if required.

2.8 Modifications and spare parts

WARNING – Loss of safety and certification

- Do not modify the product including label and markings.
- Do not drill, machine, or alter the enclosure.
- Use original or approved spare parts only.

Unauthorized modifications may lead to unsafe operation.

2.9 Disposal

Dispose of products and components in accordance with:

- Local environmental regulations
- Electrical and electronic waste legislation

3. Unpacking

Report transport damage to the carrier immediately. In case of discrepancies, contact your nearest PMV location.

4. Certificates

For details and the latest editions of certificates, see pmvautomation.com.

Model Code Position HH	*EX- Marking*	*Certification Code*
14	General Purpose	PMV EU DoC
15	EX II 1G Ex ia IIC T4/T5/T6	DNV 25 ATEX 29564X
21	Ex ia IIC T4/T5/T6	IECEx DNV 25.0003X
22	EX II 2 G Ex e mb IIC T5/T6	DNV 24 ATEX 76931X
27	cCSAus I.S. Intrinsically Safe Class I Division 1 Group A B C D, T6...T4, Class II Division 1 Group E F G T6, Class III Division 1 T6 Class I Zn. 0 AEx ia IIC T6...T4 Ga Ex ia IIC T6...T4 Ga Zn 20 AEx ia IIIC T6...T4 Ga Ex ia IIIC T6...T4 Ga	CSA 13CA2461403X.
27	cFMus IS INTRINSIC SAFETY Div. 1, Group A-G,T4-T6	FM 0003043047 FM 0003047442
28	cCSAus NI Non-Incendive Class I Division 2 Group A B C D T6, Class II Division 2 Group F, G, Class III T6	CSA 13CA2461403X.
28	cFMus NI NON INCENDIVE Class I Division 2 Group A B C D T6 Class II Division 2 Group F G T6 Class III Division 1 & 2	FM 0003047442C FM 0003043047

All certificates and other valid documents are available for download at pmvautomation.com.

5. Specifications

5.1 Technical data

Ingress protection	IP66 & Type 4X	Weight	1 kg / 2.2 lbs

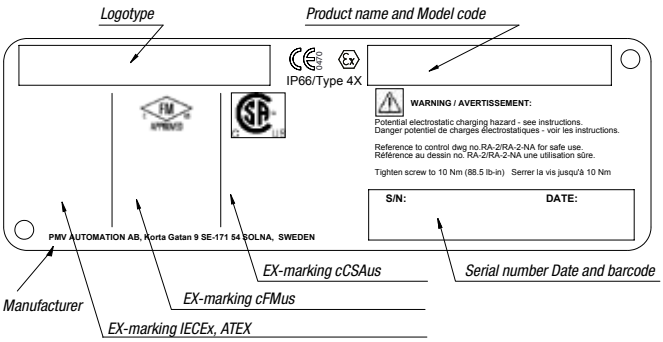
5.2 Materials of construction

Part	Material
Housing/cover	PA6/PA66 Nylon 25–33% glass-filled engineered resin
Shaft	Stainless steel
Cams/splines	Nylon
Terminal block	Nylon – Buchanan TBS series
Internal brackets	Stainless steel or plated steel
All internal fasteners	Stainless steel or plated steel
All external fasteners	Stainless steel
All molded-in fasteners	Anodized aluminum
UltraDome™	Polycarbonate
Rotor	Polycarbonate

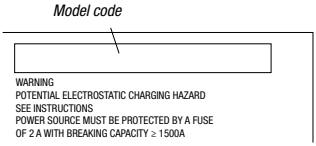
Note: If the equipment is likely to come in contact with aggressive substances, it is the responsibility of the user to take suitable precautions to prevent it from being adversely affected, thus ensuring that the type of protection provided by the equipment is not compromised.

5.3 Product label

Ex markings see table in chapter 4.



Type label for ATEX Ex eb mb Cert. code 22



5.4 PS/PM Ultraswitch order code

A. Brand sticker	P	PMV
B. Shaft	N	NAMUR VDI/VDE 3845
	D	Double D ¼ in
C. Connections (cable entry)	PS	Engineered Resin Housing ½ NPT
	PM	Engineered Resin Housing M20 × 1.5
	PN	Engineered Resin Housing ¾ NPT
	PG	Engineered Resin Housing M25 × 1.5
D. Number of cable entries	1	1 conduit
	2	2 conduits
	3	3 conduits
E. Indicator option	1	Flat cover without indicator
	U	Standard UltraDome red/green
	C	90° 3-way UltraDome
	D	180° 3-way UltraDome
	E	180° 3-way Centre-blocked UltraDome
	F	120° Thru/Divert UltraDome
	H	Black/Yellow UltraDome
	K	Ektar UltraDome (red/green)
	R	Reverse UltraDome (red=open / green=closed)
	X	180° 3-way UltraDome (white/blue)
F. Switch quantity	0	No switches
	2	2 switches
	4	4 switches
G. Switch options		See page with switch options
H. Certificate	14	General Purpose
	15	ATEX II 1G Ex ia IIC T4/T5/T6
	21	IEC Ex ia IIC T4/T5/T6
	22	ATEX II 2 G Ex eb mb IIC T5/T6
	27	FM IS, CSA IS, Cl. I Div. 1 Grp. A, B, C, D; T6... T4 Cl II, Div 1, Grp E, F, G T6, Cl III, Div 1, T6
	28	FM NI, CSA NI, Cl. I Div. 2 Grp. A, B, C, D, T6, ...T4, Cl II Div 2 Grp F G T6, Cl III T6
	33	Inmetro Ex ia IIC T4/T5/T6
I. Analog output	0	None
	T	4–20 mA transmitter
	D	180° 4–20 mA transmitter
	A	0-1K Ohm Potentiometer
J. Wiring options	0	None
	4	Weidmüller special AKZ 2,5
	H	Heavy Duty Terminal Block
K. Minimum extra terminals	2	2 Open Terminal Locations (Standard)
	4	4 Open Terminal Locations (2 SPST switches)
	6	6 Open Terminal Locations (2 SPDT switches)
	8	8 Open Terminal Locations (2 or 4 SPST switches)
L. Special options	0	None
	V	Viton O-rings

6. Installation

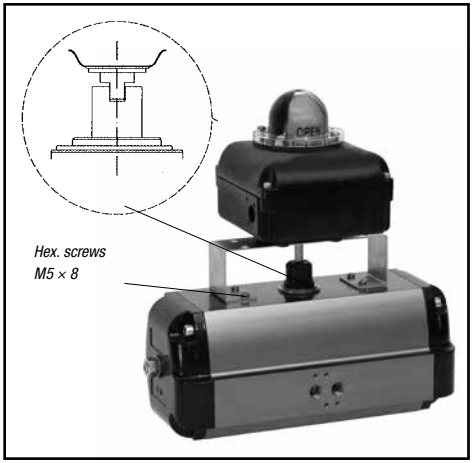
The PS/PM Ultraswitch may be installed to valves or valve actuators with a variety of mounting hardware.

For best results, specify the NAMUR shaft option and NAMUR mounting hardware when installing on a NAMUR-compliant actuator. These options allow direct coupling to actuators without couplings, reducing dead band.

Simply bolt the bracket to the actuator and the PS/PM Ultraswitch to the bracket, leaving the bolts finger-tight.

For NAMUR applications the PS/PM Ultraswitch switch shaft features an integral alignment pin. This pin must engage the tapped hole in the actuator shaft.

For non-NAMUR applications, make sure to properly install a coupler between the PS/PM Ultraswitch and actuator. Once the PS/PM Ultraswitch is installed with fasteners loosely tightened, stroke the actuator two or three times to align the bracket. Then tighten all fasteners.



PS/PM switch mounted on rotary actuator

PS/PM switch mounted on linear actuator

Ambient temperature operating conditions

The PS/PM Ultraswitch switchbox is tested and operational within the following temperature range:

-40–180 °F
-40–80 °C

Special conditions for safe use

The rotary limit switchbox is marked with the following warning marking:
“WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS”.

The total electrical ratings must not exceed the values indicated in this schedule.

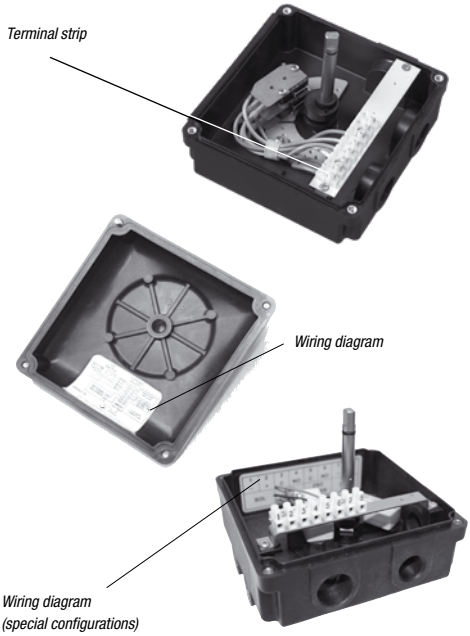
For the configurator order-code breakdown, see section 5.4.

6.1 Wiring instructions

- Perform all wiring according to the wiring diagram found on the label in the switch cover (see picture) and instructions given below.
- Make sure that the ground wire is correctly connected.
- Seal unused entries with proper and suitable conduit plugs.
- Choose wires with an insulation rating greater than +80 °C.
- The PS/PM Ultraswitch enclosures feature pre-wired switches. All user connections are made at a numbered terminal strip. Both external bonding and internal grounding locations have been provided for use in installation. A wiring diagram is located inside the cover and indicates which terminal numbers correspond to switch contacts: normally open, normally closed, common, etc. Simply follow the wiring diagram and applicable electrical code to connect switches to your system.

For field wiring: ensure that any excess wire lengths or loops are routed away from any moving parts and are short enough, or secured to ensure a 1/4 in clearance between the wire and the inside surface of the switchbox cover.

Note: for all magnetically tripped proximity switches, the top switch (top and third switches for 4-switch versions) should only be used to indicate the clockwise position: the bottom switch (second and fourth switches for 4-switch versions) should only be used to indicate the counter-clockwise position. Any deviation from these settings may result in erratic indication.



Solenoids may also be wired through the PS/PM Ultraswitch enclosure. At least two auxiliary terminals are included as standard.

A ground screw is also included. Simply wire the solenoid to auxiliary terminals, then connect power leads to the opposite terminal side. Be sure to properly ground the solenoid at provided ground terminal.

PS/PM Ultraswitch series enclosures include two 1/2 in NPT conduit entries and the PM Series includes two M20 × 1.5 conduit entries.

CAUTION!

- Proper and suitable conduit plugs must be installed in unused conduit entries before taking the unit into service.
- Installation must comply with the National Electrical Code, local codes, applicable certificates, and the manufacturer's instructions. Environmental seals must be used to protect ingress of water through the conduits.
- Electrostatic buildup prevention for safe use: The enclosure of the PS/PM Ultraswitch switchbox is made of PA6/PA66 and any impact or friction caused by external objects shall be avoided in the application to prevent electrostatic buildup.

7. Switches (certified)

CAUTION!

Substitution of components may impair suitability for hazardous (classified) locations. Do not disconnect equipment unless area is known to be non-hazardous. To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing, or read, understand and adhere to the manufacturer's live maintenance procedures.

7.1 ATEX Ex eb mb certificate information

Model code:

xxxxxxxPP-22-xxxx or xxxxxxLx2xxxxx: 60 V DC 2 A 100 VA
xxxxxxxPT-22-xxxx or xxxxxxHx2xxxxx: 24 VDC 0.5 A 10 VA
DNV 25 ATEX 29564X
IECEx Certificate of Conformity: IECEx DNV 25.0003X 001
Ex II 2G
Ex eb mb IIC T5 (T6) Gb
T5: –40 °C ≤ Ta ≤ +80 °C; T6: –40 °C ≤ Ta ≤ +60 °C.

Power source must be protected by a fuse of 2 A with a breaking capacity of ≥ 1,500 A. For ATEX and IECEx installations an appropriately rated gland is required. Any unused conduit entry must have a suitable rated blanking element.

7.2 Installation in hazardous locations

Refer to control drawing RA-2 (see Appendix 1).

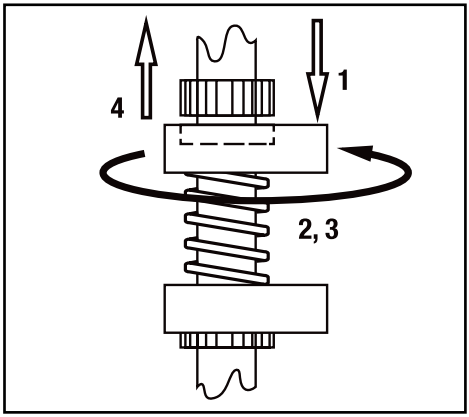
For the US and Canada, refer to control drawing RA-2-NA (see Appendix 2).

7.3 Adjusting limit switches

Ultraswitch enclosures feature Quick-Set™ cams which are used to trip the limit switches. These cams are easily adjusted without tools.

Caution: Disconnect power before removing cover when installed in hazardous locations.

Remove cover and set aside. Rotate actuator/valve to full clockwise (CW) position. Adjust cam(s) associated with CW as follows:



Cam adjustment

1. Push or pull cam against spring to disengage it from splines.
2. Rotate cam CW breaking contact with switch (or moving magnet away from switch).
3. Continue rotating cam CW just until switch trips.
4. Release cam and reengage it with splines.

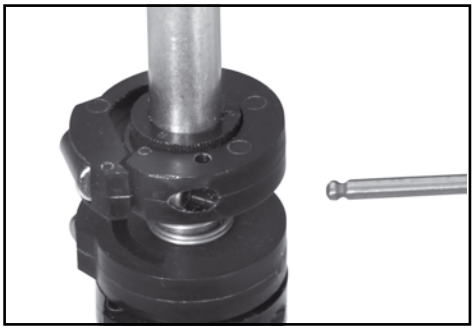
Rotate actuator/valve to full counter-clockwise (CCW) position. Adjust cam(s) associated with CCW as described in steps 1 through 4, except rotate cam(s) CCW.

Note: factory setting is:
Top switch = CW (closed)
Second switch = CCW (open)
Third switch = CW
Fourth switch = CCW

7.4 Cam fine adjustment

Some cams have a fine adjustment available. These cams will have a small screw embedded into the side of the cam.

Adjusting this screw clockwise or counter-clockwise will deform the cam, changing the trip point slightly.

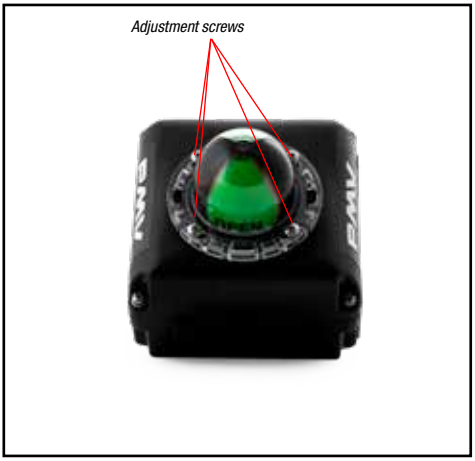


Cam fine adjustment

7.5 Adjusting UltraDome position indicator

UltraDome visual indicators are easily adjusted to match the dome's clear windows to the rotor's colored sections. The dome is secured to the PS/PM Ultraswitch housing with screws mounted through slotted holes. The slotted holes allow approximately 20° adjustment of the dome.

In addition, the dome can be completely removed and reoriented in 45° and 90° increments. The rotor may be reoriented with respect to the shaft by removing the shaft coupler and rotating 90° before reinstalling. This may be necessary to obtain the correct orientation of windows in a multi-way application.



7.6 Calibrating 4–20 mA transmitter

Setting direct/reverse action: A dip-switch setting controls the direction of increasing travel. For 4 mA in the full clockwise position, select “D”; for 4 mA in the full counter-clockwise position, select “R”.

Adjusting zero/span:

1. Attach a DC mA meter to +/- terminals.
2. Operate valve/switchbox to position corresponding to 4 mA.
3. Adjust feedback board zero trim pot to yield 4 mA. (Turning CW increases value, turning CCW decreases value).
4. Operate valve/switchbox to position corresponding to 20 mA feedback.
5. Adjust feedback board span trim pot to yield 20 mA. (Turning CW increases value, turning CCW decreases value).
6. The zero and span adjustments are interactive. Repeat steps 1 through 5 as necessary.

Note: If transmitter adjustment gets difficult (i.e., trim pots do not have desired effect) start over by “centering” the trim pots. This is accomplished by turning in one direction for 20 turns and reversing direction for 10 turns.

7.7 Switch option specifications

Code	Switch option	Manufacturer	Part number	Load capacity
00	No switches (empty housing)			
F1		IFM	IN5129	10–36 VDC 3-wire (H=14 only)
F3		IFM	IF5250	10–36 VDC NC PNP, 150 mA, 3-wire NC
F5		IFM	IF6001	18–32 VDC, NO PNP, 150 mA at 50 °C
F6		IFM	IF6034	10–36 VDC, NO PNP, 150 mA, stainless steel
F7		IFM	IN0074	20–250 AC/DC, NO, 350 mA/100 mA
F8		IFM	IN0081	20–250 AC/DC, NO, 350 mA/100 mA w/LED (H=14 only)
FB		IFM	IF5249	10–36 VDC NO PNP, 150 mA, 3-wire NO
FC		IFM	IF5718	10–36 VDC NO PNP/NPN, 150 mA, plastic
FZ	AS-I Bus Card		31 VDC 28 mA	
M1	SPDT Mechanical	Honeywell MicroSwitch	V7-1C13D8-201	15.1 A (1/2 HP) at 125/250 VAC; 0.25 A at 125 VDC; 1/4 A at 250 VDC; 5 A at 120 VAC
M3	DPDT Mechanical	Cherry	E19-00A	15 A, 125/250 VAC 3/5 HP
MA	3-Position	Honeywell Control	V7-1C13D8-201 MicroSwitch	15.1 A (1/2 HP) at 125 VAC; 0.25 A at 125 VDC; 1/4 A at 250 VDC; 5 A at 120 VAC
MB	DPDT Mechanical	Licon	22-104	10 A (1/2 HP) at 125 VAC
MC	SPDT Mechanical	Honeywell	V7-1C13D8-201 250°F MicroSwitch	15.1 A (1/2 HP) at 125 VAC; 0.25 A at 125 VDC; 1/4 A at 250 VDC; 5 A at 120 VAC
MD	3-Pos. Control w/ Indication (DA)	Licon	22-104	10 A (1/2 HP) at 125 VAC
MG	SPDT Gold Mechanical	Honeywell MicroSwitch	V7-1D19D8-201	1 A at 125 VAC / 50 mA at 24 VDC
MS	3-Pos. Control w/ Indication (SR)	Licon	22-104	10 A (1/2 HP) at 125 VAC
N1		Pepperl+Fuchs	NJ4-12GM40-E	
N2		Pepperl+Fuchs	NJ2-12GK-N	
N3		Pepperl+Fuchs	SJ3,5-S1N	
N4		Pepperl+Fuchs	NJ2-12GK-SN	
N5		Pepperl+Fuchs	NJ4-12GK40-E	
N6		Pepperl+Fuchs	NJ4-12GK40-E1	
N7		Pepperl+Fuchs	NBB2-V3-E0	
N8	Solid-state proximity	Pepperl+Fuchs	NJ2-V3-N	NAMUR sensor output / 5–25 VDC supply
N9	Solid-state proximity	Pepperl+Fuchs	NBB3-V3-Z4	NPN sourcing / 100 mA max. current / 5–60 VDC.
NA		Pepperl+Fuchs	NBN4-12GM40-E2	
NB		Pepperl+Fuchs	NJ2-12GM-N	
NC		Pepperl+Fuchs	NJ4-12GM-N	
ND		Pepperl+Fuchs	NCB2-12GM40-Z1	
NE		Pepperl+Fuchs	NCB2-12GM35-N0	
NF			NCN4-12GM35-N0	
NG			NJ5-11-N-G	
NH			NCB4-12GM40-N0	

7.7 Switch option specifications (continued)

Code	Switch option	Manufacturer	Part number	Load capacity
NJ	Efector type		IN-2002-ABOA	(Non-certified option)
NK			NCN4-12GM40-Z0	
NL			NCB2-V3-N0	
NM			NJ2-11-SN-G	
NN			NBB2-V3-E2	
NP	Solid-state proximity	Pepperl+Fuchs	SJ3.5-N	
NQ	Solid-state proximity	Pepperl+Fuchs	NJ4-12GK-N	
NR	Solid-state proximity	Pepperl+Fuchs	NJ4-12GM40-E1	NPN Sinking / 200 mA max. Current / 10–60 VDC
NS	Solid-state proximity	Pepperl+Fuchs	NJ4-12GM40-E2	PNP Sourcing / 200 mA max. Current / 10–60 VDC
NT	Solid-state proximity	Pepperl+Fuchs	NJ4-12GK40-E2	NPN Sourcing / 200 mA max. Current / 10–60 VDC
NV	Solid-state proximity	Pepperl+Fuchs	NJ2-11-N-G	NAMUR sensor output / 5–25 VDC supply
NW	Solid-state proximity	Pepperl+Fuchs	SJ3,5-SN	NAMUR sensor output / 5–25 VDC supply
NX			NBB2-V3-E3	
NY	Solid-state proximity	Pepperl+Fuchs	NJ4-12GK-SN	NAMUR sensor output / 5–25 VDC supply
P4	SPST Proximity	Aleph	PS-6132	0.35 A at 140 VAC / 0.25 A at 200 VDC (50 W max.)
P5	SPDT Proximity	Hamlin	59135-030	0.25 A at 120 VAC / 0.25 A at 28 VDC (3 W max.)
PE	Sabre™ IV SPDT Proximity	PMV	PRS-30m	1 A at 120 VAC/DC (25 W max.)
PP	Phazer™ IV SPDT Proximity	PMV	PRS-20	3 A at 240 VAC / 2 A at 24 VDC (100 W max.)
PT	Phazer BRS™ IV SPST Proximity	PMV	PRS-10m	0.5 A at 240 VAC / 0.3 A at 115 VDC
R1		Pepperl+Fuchs	NBB3-V3-Z4-3G-3D	

7.8 Analog feedback option specifications

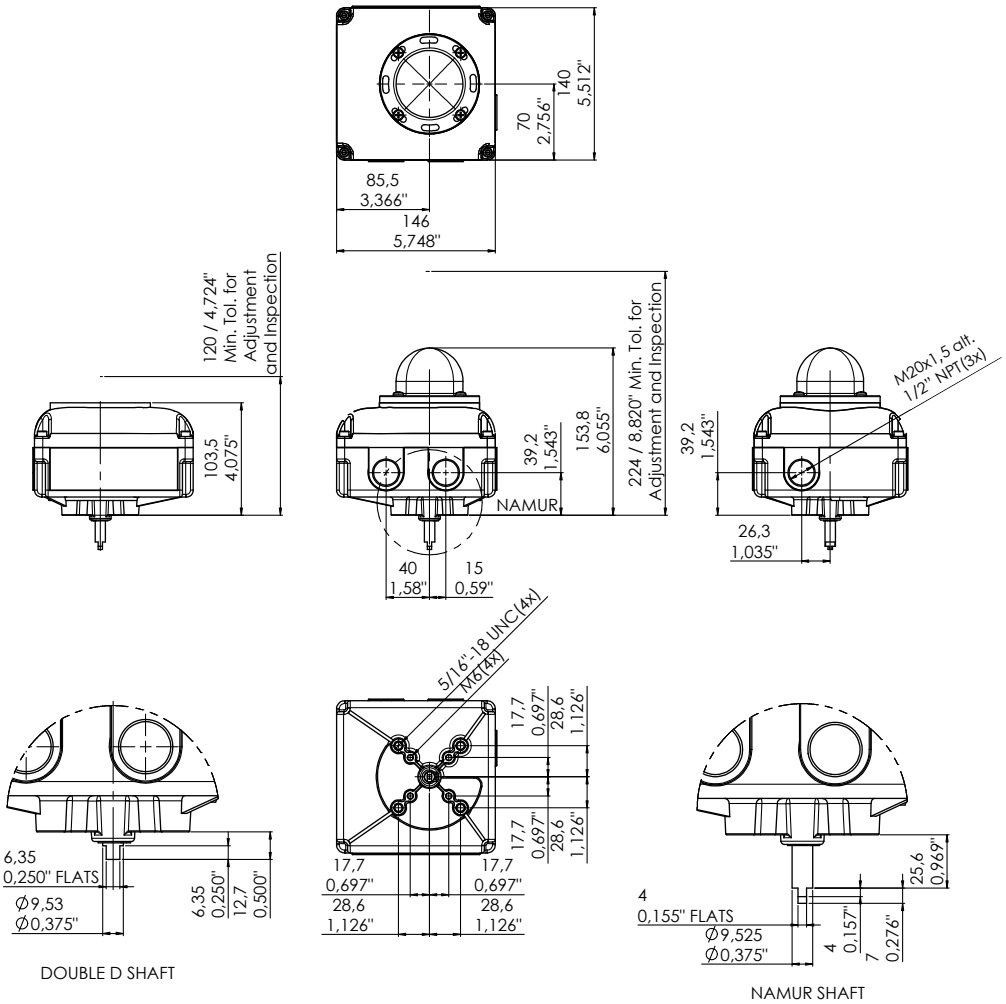
Options T, D, 4–20 mA transmitter

Voltage supply: 6–30 VDC
Impedance: 300 Ohms at 20 mA

Option A – Potentiometer output
Maximum load: 1 watt

Enclosure ratings
Type 4X
IP66/67

8. Dimensions



9. Spare parts

Pos	Part no.	Description
1	31529	Dome spare-part set, complete Red/green
1	34895	Dome spare-part set, complete Black/yellow

10. Appendix 1 Control drawing IEC/ATEX

This document must not be copied without our written permission and the contents there of must not be imparted to a third party nor be used for any unauthorized purpose. Contravention will be prosecuted

Table 1 ⑨ *Temperatures in Celsius* ⑨

	Manufacturer	Types	Type	U_i (V)	I_i (mA)	P_i (mW)	C_i (pF)	L_i (µH)	T4 (°C)	T5 (°C)	T6 (°C)	ATEX	IECEx
1				30	100	750	0	0	85	70	40	x	x
2				30	100	750	0	0	85	70	40	x	x
3				30	100	750	0	0	85	70	40	x	x
4				30	100	750	0	0	85	70	40	x	x
5				30	100	750	0	0	85	70	40	x	x
6				30	100	750	0	0	85	70	40	x	x
7				30	100	750	0	0	85	70	40	x	x
8				30	100	750	0	0	85	70	40	x	x

Legend
1 Inductive switch
N Natural switch
P Proximity switch
M Mechanical

Note
1 IEC/EN EN 60 060 000
2 IEC/EN PTB 11 000 01X
3 IEC/EX PTB 11 000 01X
4 IEC/EX PTB 11 000 01X
5 IEC/EX PTB 11 000 01X
6 IEC/EX PTB 11 000 01X
7 IEC/EX ITS 11 ECP 01X
8 IEC/EX ITS 11 ECP 01X

BVS 04 ATEX E 153 X
PTB 00 ATEX 2033 X
PTB 00 ATEX 2033 X
PTB 00 ATEX 2033 X
PTB 99 ATEX 2219 X
DEKRA 03 ATEX 0144 X

⑩

ATEX: II 1 G Ex ia IIC T4/T5/T6 Ga

IECEx Ex ia IIC T4/T5/T6 Ga

The equipment shall withstand dielectric strength test according to IEC/EN 60079-11 clause 6.2.13. Reference to IEC 61010-1:2010 ed 3 Appendix F.3. Routine test main circuit. Equipment will be tested at 840V a.c. or 1200V d.c. acc. to. comb routine UTV-SR-PSPM-001.

Special conditions for safe use
The PS/PM Switch Box is marked with the following warning marking: "WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD - SEE INSTRUCTIONS"
A capacitance of approx. 5pF can build up on the stainless-steel marking plate. The total electrical ratings must not exceed the values indicated in this document.
For nomenclature breakdown please see the model code.

⑧

NOTE
- Certification informs of switches are available in switch approvals document PSPM-switch_approvals-rev1-260505-PJA.
- Documents referred in relation with PT (PRS-10 / PRS-10m) are not intrinsically safe component certificates.

⑩

Switches (1 through 4 quantity)

HAZARDOUS AREA — UNCLASSIFIED AREA

Switch (UI, II, PI, CI and LI According to Table 1) → Safety Barrier

Third wire optional for 3/PDT switches

Or for three wire inductive switches

HAZARDOUS AREA — UNCLASSIFIED AREA

Switch (UI, II, PI CI and LI According to Table 1) → Safety Barrier

+VA

Standard model code guide

Add to the first code

Model code alternative "N" guide

Add to Certification code

Scheduled drawing
"No modification allowed without reference to the Notified Body"

REVISIONS				
REV.	DESCRIPTION	DATE	SIGNATURE	
3	Re-drawn	2012-11-30	BPW	
4	Accessories and Dimensions updated	2013-12-04	BPW	
4	ATEX Certificate number updated	2014-01-13	BPW	
5	IECEx updated	2013-02-11	BPW	
1	Text change note amended	2013-07-01	PJA	
2	Revised EAC marking information	2013-10-08	PJA	
3	Revised EAC marking information	2013-03-14	PJA	
10	Reference to PT switches include safety specific documents, deleted reference to PRS-10 / PRS-10m	3/6/2024	PJA	

DESCRIPTION	Control drawing	MATERIAL	—	DIMENSION	—	PROJECTION	ATEX, IECEx
MOD. TOL.	—	UNSPECIFIED TOLERANCES ACCORDING TO	—	SURFACE	—	WEIGHT	—
PMV Switchboxes PS/PM							
PMV Automation AB						DRAWING NO.	REV.
KORTA GATAN 9 SE-171 54 SOLNA SWEDEN – Tel:+46(0)8 555 108 00 – www.pmv.nu						MRN 1	9
						SCALE	—
						DATE	121203
						RA—2	

11. Appendix 2 Control drawing US and Canada installations

This document must not be copied without our written permission and the contents there of must not be imparted to a third party nor be used for any unauthorized purpose. Contravention will be prosecuted

Table 1

REVISIONS			
REV.	DESCRIPTION	DATE	SIGNATURE
2	Added switchbox code 7 (US1J1QS)	2024-12-12	P.J.A
1	Added switchbox code 6 (US1J1QS)	2024-02-16	P.J.A
0	First release	2023-11-15	P.J.A

WARNINGS/AVERTISSEMENT :

Substitution of components may impair intrinsic safety and suitability for Div. 2 locations.
Do not disconnect equipment unless area is known to be non-hazardous.
To prevent ignition in hazardous locations, disconnect power before servicing or remove assembly to non-hazardous location before servicing.
Potential electrostatic charging hazard- see instructions.
La substitution de composants peut compromettre la sécurité intrinsèque et l'aptitude à la Div. 2.
Pour éviter l'inflammation d'atmosphères inflammables ou combustibles, débrancher l'alimentation avant l'entretien ou, le déplacer vers un emplacement non dangereux.
Danger potentiel de charges électrostatiques- voir les instructions

Caution/ Attention:
Bonding between conduit and connections is not automatic and must be provided as part of installation.
Prévoir une liaison entre le conduit et connexions n'est pas automatique et doit être fournie dans le cadre de l'installation.

③ **Intrinsically Safe - Code 27**
For division 1 installations:
Class I, Division 1, Group A,B,C,D T6 - T4
Class II, Division 1, Group E, F,G T6
Class III, Division 1 T6 - T4
Class I Zone 0 AEx ia IIC T6 - T4 Ga
Ex ia IIC T6 - T4 Ga
For entity concept:
Intrinsic safe for Class I
Division 1, Group A,B,C,D T6 - T4
Class II, Division 1,Group E,F,G T6

INSTALLATION NOTES:
- Control equipment connected to the associated apparatus shall not use or generate more than 250Vrms or Vdc.
- Associated apparatus manufacturer's installations drawing shall be followed when installing this equipment.
- If more than one conduit is used, make sure that they are bonded together acc. to NEC article 250.100.

The intrinsically safety entity concept:
Allows the interconnection of two intrinsically safe devices FM approved with entity parameters not specifically examined in combination as a system when U_o or V_{oc} or $V_t \leq V_{max}$, I_o or I_{sc} or $I_t \leq I_{max}$, $P_o \leq P_i$, C_a or $C_o \geq C_i + C_{cable}$, L_a or $L_o \geq L_i + L_{cable}$.

The non-incendive field wiring concept:
Allows the interconnection of non-incendive field wiring apparatus with associated non-incendive field wiring apparatus when U_o or V_{oc} or $V_t \leq V_{max}$, I_o or I_{sc} or $I_t \leq I_{max}$, $P_o \leq P_i$, C_a or $C_o \geq C_i + C_{cable}$, L_a or $L_o \geq L_i + L_{cable}$.

Non-incendive - Code 28
For division 2 installations:
Class I, Division 2 Group A,B,C,D T6...T4, Class II, Division 2 Group E,F,G, Class III T6...T4
FM Only
Non-incendive for Class I , Class I, Division 2 Group A,B,C,D T3, Class II, Division 2 Group E,F,G, Class III T3

③ **For division 1 installations:**
- The configurations of associated apparatus shall be FM approved under entity concept.
- Division 1 installations should be in accord ance with ANSI/ISA RP12.06.01 "Installation of intrinsically safe system for hazardous (classified) locations" and the national electrical code (ANSI/NFPA 70).

For division 2 installations:
Using the non-incendive field wiring concept, the associated apparatus shall be FM approved under entity concept or non-incendive field wiring concept.
With associated apparatus approved under entity concept, the control drawing for entity concept must be followed.
With associated apparatus approved for non-incendive field wiring concept, the control drawing for non-incendive field wiring concept is required to be FM approved under entity concept or non-incendive field wiring concept.
If the associated apparatus is approved under entity concept, the control drawing for entity concept must be followed.
If the associated apparatus is approved for non-incendive field wiring concept, the control drawing for non-incendive field wiring concept is required to be FM approved under entity concept or non-incendive field wiring concept.
Installation of non-incendive field wiring apparatus with associated apparatus approved under entity concept is permitted provided the criteria listed below are met:
$V_{max} \geq U_i$, $I_{max} \geq I_i$
C_a or $C_o \geq C_i + C_{cable}$
L_a or $L_o \geq L_i + L_{cable}$
$P_o \leq P_i$
For intrinsically safe apparatus, V_{oc} or $V_t \leq V_{max}$, I_{sc} or $I_t \leq I_{max}$
For simple apparatus, V_{oc} or $V_t \leq V_i$, I_{sc} or $I_t \leq I_i$
For associated apparatus, V_{oc} or $V_t \leq V_{max}$, I_{sc} or $I_t \leq I_{max}$
Installation should be in accordance with ANSI/ISA RP12.06.01 "Installation of intrinsically safe systems for hazardous (classified) locations" and the National Electrical Code (ANSI/NFPA 70).
Dust-ignitionproof enclosure not required.

* PP switch only to be used in N.I. for division 2
**R5 Only to be used in I.S. not applicable for N.I.

switches (1 through 4 quantity)

HAZARDOUS AREA | UNCLASSIFIED AREA

Switch (Ui, Ii, Pi and Li According to Table 1) → Safety Barrier

Third wire optional for SPDT switches

Or for three wire inductive switches

HAZARDOUS AREA | UNCLASSIFIED AREA

Switch (Ui, Ii, Pi and Li According to Table 1) → Safety Barrier

③

ATEX II 1G Ex ia IIC T4/T5/T6 Ga
IECEx Ex ia IIC T4/T5/T6 Ga

- The equipment shall withstand dielectric strength test according to IEC EN 60079-11 clause 6.2.13. Reference to IEC 61010-1:2010 ed 3 Appendix F.3 Routine test matrix column 2 equipment will be tested at 1910 a.c. or 1200 V d.c. acc. to control routine UTV-SR-PSPM-001

NOTE
Based on RA-2 rev7.
This variant of RA-2 sums the information related to CSA / FM certification

Scheduled drawing
Not to be used for "certified items"

COOPERATION				MATERIAL	FINISH/MARK
Control Drawing			-		CSA, FM
HOLE TOL	UNDIMENSIONED TOLERANCES ACCORDING TO		SURFACE	PROJ. ACCORDING TO EN	
-	-				
	PMV Switchboxes PS/PM			DRAWN	P.J.A
				SCALE	3
				DATE	2024-02-16
				DRAWING NO.	251125
PMV Automation AB					RA-2-NA
KORTA GATAN 5 SE-171 54 SOLNA SWEDEN. Tfn +46(0)8 555 190 00 - www.pmv.eu					

PMENIM0008-05 - 10/26

PMV products, when properly selected, installed, operated, and maintained are designed to perform their intended function safely and reliably throughout their service life. Because PMV products may be used in a wide range of industrial applications and operating conditions, it is not possible to provide specific information and warnings for every conceivable use. The purchaser and user are therefore responsible for ensuring the proper selection, sizing, installation, operation, maintenance, and safe use of the product for the intended application. Purchasers and users should carefully read and understand all instructions supplied with the product and ensure that personnel are appropriately trained. The information and specifications contained in this publication are believed to be accurate at the time of publication and are provided for informational purposes only. They should not be considered certified, guaranteed, or warranted as to their completeness, accuracy, or suitability for any particular purpose. Nothing contained herein shall be construed as creating any express or implied warranty or guarantee regarding the product or its performance. PMV continually improves and updates its products. Accordingly, specifications, dimensions, materials, and other information contained in this publication are subject to change without notice. For additional information regarding PMV products, services, or technical support, please contact your local PMV representative or visit pmvautomation.com

© October 2026, PMV Automation AB, Solna, Sweden

PMV Automation US, LLC
4430-C Greens Road, Suite 600
Houston, TX 77032
USA
Phone: +1 281-671-9201
E-mail: info@pmvautomation.com

PMV Automation AB
Korta Gatan 9
SE-171 54 SOLNA
SWEDEN
Phone: +46 (0)8-555 106 00
E-mail: info@pmvautomation.com

PMV Automation develops, manufactures, and markets industrial valve positioners and switchboxes worldwide.

pmvautomation.com