

MXL-INST-PULSE
Rev 6
06/2022

MX Series Pulser Options (Standard & DIN)

INSTRUCTION MANUAL



**Standard Pulse Cap
fitted to meter**



**DIN Pulse Cap
fitted to meter**

To the Owner

This manual contains connection and operating instructions for a selection of Pulse output options.

Please read and retain this instruction manual to assist you in the operation and maintenance of these products.

In addition Macnaught offer a comprehensive set of online support materials to compliment this instruction manual. You can access the website by scanning the QR code or visiting the Macnaught website www.macnaughtflowmeasurement.com.au



Types of Switches	
Reed Switch	Page # 3
Hall Effect Switch	Page # 3
Technical Specifications for Reed & Hall Switch	Page # 3
Available Configurations for Standard, Industrial and DIN Pulse Caps	Page # 3
Circuit Diagram for Pulse Caps	Page # 4
Standard Pulse Cap	
Description & Wiring Instructions	Page # 6
Ordering Code	Page # 7
Assembly & Disassembly	Page # 8
Cable Specifications	Page # 8
DIN Pulse Cap	
Description	Page # 10
Ordering Code	Page # 11
Accessories	Page # 11
Connector Details	Page # 12

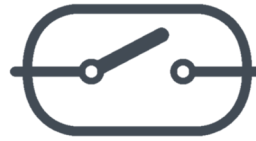
Types of Switches



Note !

Reed Switch: Reed Switch is a 2-wire device which triggers by magnet inside the rotors as they spin. To maximise the life of the reed switch, the pulse board comes equipped with a 1k8Ω current limiting resistor in series.

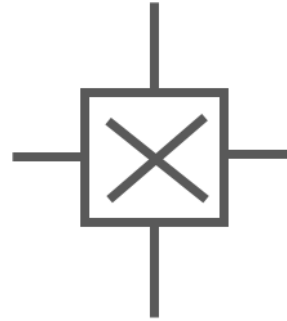
Reed Switch



Note !

Hall Effect Switch: Hall Effect switch is a 3-wire device which triggers by south pole of the magnet inside the rotors as they spin. This switch is NPN type. The switch circuit is equipped with a 4k7Ω pull-up resistor between signal and supply.

Hall Effect Switch



Technical Specifications for Reed & Hall Switches

Output Signals	Standard Pulse Meter		2 x Digital (Square Wave)
Reed Switch (Mechanical Sensor)	Current	Maximum	500mA
	Voltage	Maximum	30V DC
	Contact Rating	Maximum ¹	10W
Hall Effect Switch (Electronic Sensor)	Maximum Supply Current		7.5mA
	Maximum Output Current		25mA
	Operating Voltage		4.5V to 24V DC
	Output Type		Open-Collector NPN

¹.Contact rating maximum is 10W. Neither current nor voltage maximums should be exceeded in achieving this.

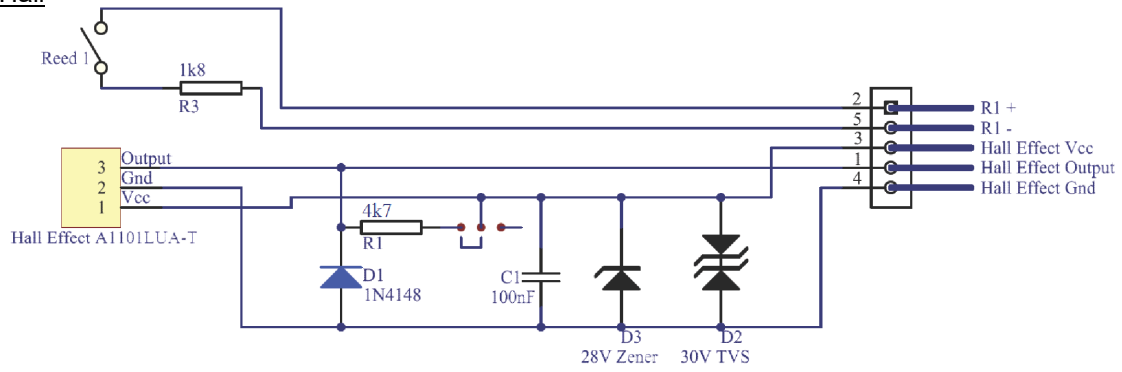
Available Configurations for Standard and DIN Pulse Caps

The Below 3 configurations are available with Standard and DIN pulse caps

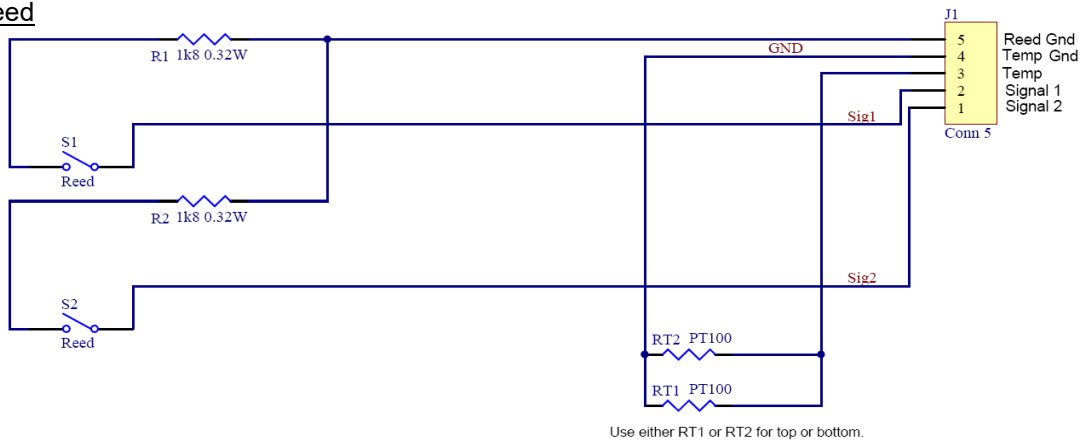
- **Configuration 1** Reed and Hall Effect Sensors
- **Configuration 2** Dual Hall Effect Sensors
- **Configuration 3** Dual reed switches

Circuit Diagrams for Available Configurations

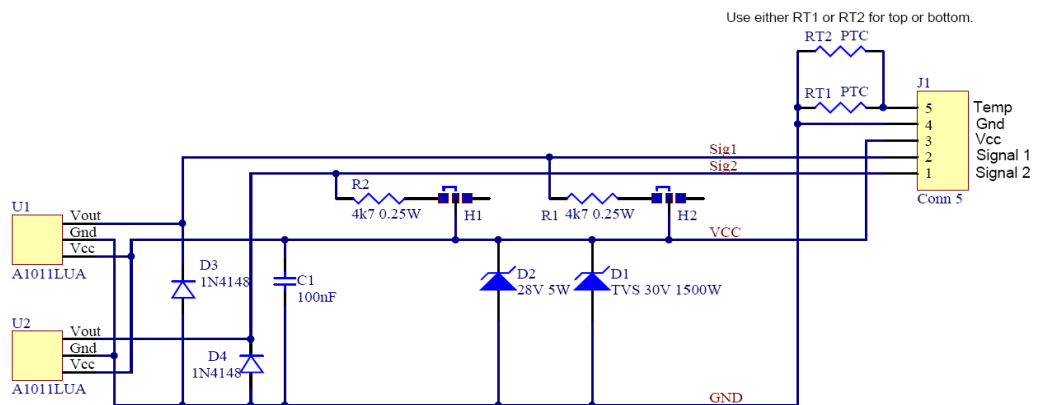
Reed/ Hall



Reed/ Reed



Hall/ Hall



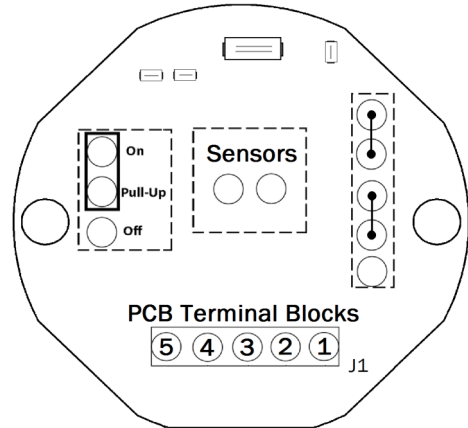
Standard Pulse Cap

Standard Pulse Cap incorporates the M-LOCK (1/4" turn) mounting system. The housing is made up of polypropylene with PCB fitted inside.

Standard Pulse Cap



PCB



Terminal	Wire Colour	MXD-A (Reed/Hall)		MXD-I (Reed/Reed)	
1	White	Hall		Reed 2	
2	Yellow/Brown	Reed		Reed 1	
3	Red	Hall	+	N/C	
4	Black	Hall		N/C	
5	Green	Reed	-	Reed 1 and 2	-

Terminal	Wire Colour	MXD-J * (Hall/Hall)		MXD-K ** (Double pulse)	
1	White	Hall 2		Hall	
2	Yellow/Brown	Hall 1		N/C	
3	Red	Hall 1 and 2	+	Hall	+
4	Black	Hall 1 and 2		Hall	
5	Green	N/C		N/C	

Legends:

- Reed: Reed Switch
- Hall: Hall Effect sensor
- Reed Switch common
- Signal output
- + Power supply for Hall

- Ground
- N/C: No connection
- Local display is connected to Reed1
- Terminal 1 is the right most terminal



- Standard Pulse Cap Temperature (-40 °C -120 °C)
 - IP 67

Ordering Code				
MXD	MX Series Cap			
	-	Separator		
		A	1 x reed and 1 x Hall Effect Sensors	
		I	2 x Reed Sensors	
		J	2 x Hall Effect Sensors	
		K	High Resolution Sensor	
		S	Sub-Assembly kit	
Example	MXD	-	A	S
Example	MXD	-	J	S



* MXD-JS generate Quadrature Pulse Output

Note !



** MXD-KS has one hall effect high resolution sensor.

Note !

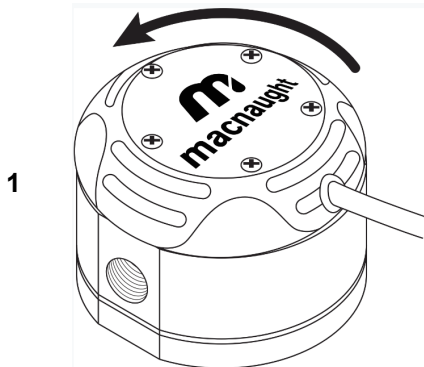
Standard Pulse Cap Part Numbers	
MXD-AS	MXD-JS
MXD-IS	MXD-KS

Illustration

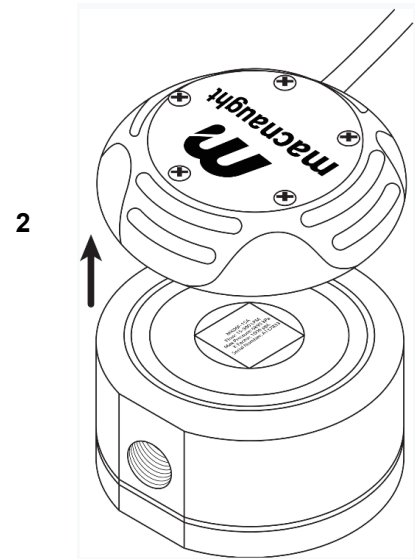
Standard Pulse Cap fitted to 1" meter



1. Rotate the pulse cap 90° anticlockwise to disassemble
2. Pull the cap away from body



Place pulse cap onto the body and rotate 90° clockwise to reassemble



No Tool required to assemble/disassemble

Cable Specifications for Standard Pulse Cap

Minimal cable specification recommended for wire:

- 5 core, 24 AWG each
- drain wire AND shielding/ copper braiding
- Temperature rating: -20 - 80 °C
- Voltage rating: 300 V



- Maximum cable length should not exceed 60 metres.
- If cable is extended and/or longer than 10m, it is highly recommended to use 24V power supply for Hall Switch and reed switch.

DIN Pulse Cap

DIN Pulse Module incorporates the M-LOCK (¼ turn) mounting system. It provides a locking facility for added security against unauthorised removal. A locking screw is supplied with DIN pulse cap to accomplish the job by fitting module to the flow meter using M-lock feature and replacing the existing screw with locking screw.

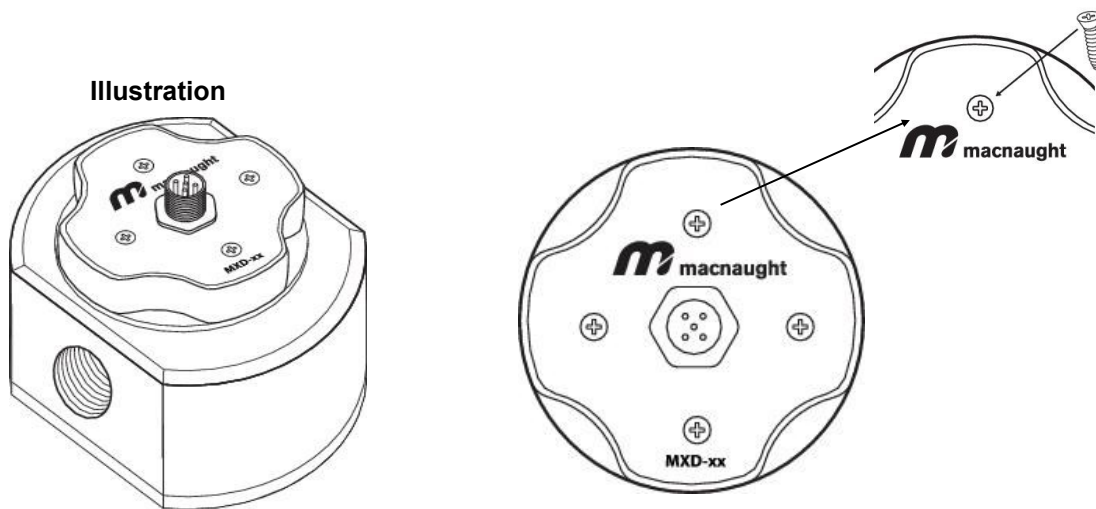


Note ! During initial installation of the locking screw, the screw **will need to pierce** the bottom of the pulser.

This will enable the screw to 'lock' into the plastic cam that is fixed to the flow meter.

The available options are:

- DIN Module with 1 x Reed and 1 x Hall effect sensor (**MXD-RH**)
- DIN Module with Dual Hall Effect sensors (**MXD-HH**)
- DIN Module with Dual Reed Switches (**MXD-RR**)



Note ! - DIN Pulse Cap Temperature (-25 °C -120 °C)

- IP 67

Ordering Code			
	MXD	MX Series Cap	
		- Separator	
		RH	1 x reed and 1 x Hall Effect Sensors
		RR	2 x Reed Sensors
		HH	2 x Hall Effect Sensors
Example	MXD	-	RH
Example	MXD	-	HH

DIN Connector Pulse Module Part Numbers
MXD-RH
MXD-RR
MXD-HH

The DIN Pulse Modules accommodates the choice of either a field mountable connector facility, or a fixed (M12) connection cable.

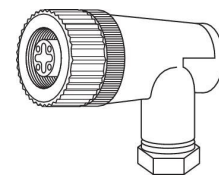
- M12 DIN plug and socket complete with 5 core cable.
- Field attachable socket with 5 position screw terminals

M12 DIN cable

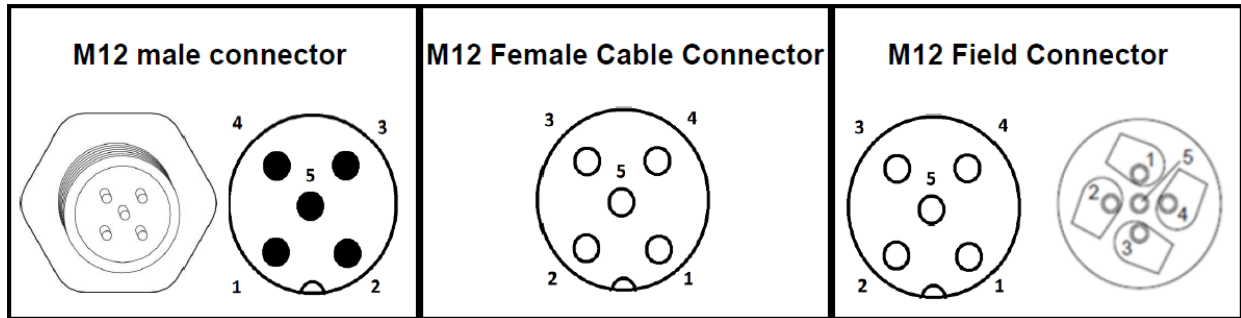


Cable Length	Part Number
1.5 Meters	MXD-C1.5
5 Meters	MXD-C5
10 Meters	MXD-C10

Field attachable socket/connector



Part number: **MXD-CF**



	Cable Colour	Reed / Hall Module	Dual Reed Module	Dual Hall Module
1	Brown	HE Supply (VCC)	N/A	HE Supply (VCC)
2	White	HE Signal (V out)	Reed Signal 1	HE Signal 1 (V out)
3	Blue	HE Ground	Reed Ground 1	HE Ground
4	Black	Reed (Signal)	Reed Signal 2	HE Signal 2 (V out)
5	Green-Yellow	Reed (Ground)	Reed Ground 2	N/A

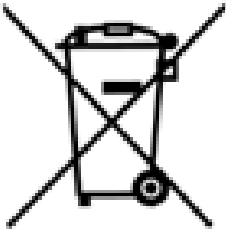
M12 DIN Female Cable Connector

General	
Connector	M12 (right angle)
Standards / regulations	IEC 61076-2-101
Technical Specifications (Plug and socket)	
Number of positions	5
Protection	IP67
Material of body	TPU (thermoplastic polyurethane)
Rated voltage / current	60v / 4A
Contact resistance	Max 5 mΩ
Ambient temperature (plug and socket)	-25°C - 90°C
Technical Specifications (cable)	
Core Number	5 core
Core colours	brown, white, blue, black, green-yellow
Cable material	PUR (polyurethane)
Conductor cross section	5 x 0.34mm ² (signal lines)
Rated voltage / current	60v / 4A
Ambient Temperature (operation)	-25°C - 80°C (cable, fixed installation)
Cable resistant to	acids, alkaline solutions and salt water

M12 Field Connector

General	
Connector	M12
Standards / regulations	IEC 61076-2-101
Technical Specifications	
Number of positions	5
Protection	IP67
Conductor cross section	0.25mm ² - 0.75mm ²
Material of body	PTB
Sealing material	NBR (nitrile rubber)
Ambient temperature	-25°C - 85°C (plug and socket)
Rated voltage / current	60v / 4A

WEEE Directive - Waste Electrical and Electronic Equipment



The WEEE Directive requires the recycling of waste electrical and electronic equipment in the European Union.

Whilst the WEEE Directive does not apply to some of Macnaught's products, we support its policy and ask you to be aware of how to dispose of this product.

The crossed out wheeled bin symbol illustrated and found on our products signifies that this product should not be disposed of in general waste or landfill.

Please contact your local dealer national distributor or Macnaught Technical Services for information on product disposal.



Macnaught Americas
614 South Ware Boulevard
Tampa Florida USA, 33619

T: +1813 628 5506
E: info@macnaughtusa.com
W: www.macnaughtusa.com