

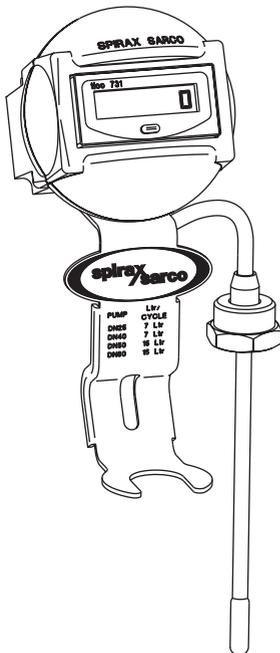
## EPM1 and EPM2

### Electronic Pump Monitors

#### Installation and Maintenance Instructions

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1. Safety information
2. General product information
3. Operation
4. Installation (EPM1 and EPM2)
5. Wiring
6. Maintenance

# 1. Safety information

Safe operation of the unit can only be guaranteed if it is properly installed, commissioned and maintained by a qualified person in compliance with the operating instructions. General installation and safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment must also be complied with.

## Isolation

Consider whether closing isolating valves will put any other part of the system or personnel at risk. Dangers might include; isolation of vents and protective devices or alarms. Ensure isolation valves are turned off in a gradual way to avoid system shocks.



**Caution or Warning**

### Pressure

Before attempting any maintenance consider what is or may have been in the pump body. Ensure that any pressure is isolated and safely vented to atmospheric pressure before attempting to maintain the product. Do not assume that the system is depressurised even when a pressure gauge indicates zero.



### Temperature

Allow time for temperature to normalise after isolation to avoid the danger of burns and consider whether protective clothing (including safety glasses) is required.

## Disposal

There are no hazardous materials used in the construction of this product, but any unwanted material should be recycled or disposed of in an environmentally friendly manner. Never dispose of old batteries (within EPM1 counter display module, item 2) in such a way that it will be incinerated. Batteries may explode if exposed to fire.

## 2. General product information

### 2.1 Description

The Spirax Sarco electronic pump monitor (EPM) is designed to monitor the operational status or meter the fluid output of positive displacement MFP14 pumps. Suitable for all applications it will reliably operate under all pressure conditions giving trouble-free operation - no moving parts, or ongoing maintenance. The EPM can work on both open vented or closed sealed systems, and is available in two options:

**EPM1** - A simple stand alone unit with an 8 digit local readout, which is powered by a 7 year 1.5 V lithium battery. This version also has a lockable reset function providing a useful anti-tamper facility.

**EPM2** - A version suitable for coupling to a remote counter /building energy management system (BEMS) up to a maximum of 48 V.

### 2.2 Limiting conditions

| Model | Ambient air temperature range |                    | Pumped fluid maximum temperature limit |            |
|-------|-------------------------------|--------------------|--|------------|
| EPM1  | -10 °C to +50 °C              | (14 °F to 122 °F)  | 198 °C                                 | (388.4 °F) |
| EPM2  | -40 °C to +85 °C              | (-40 °F to 185 °F) |  |            |

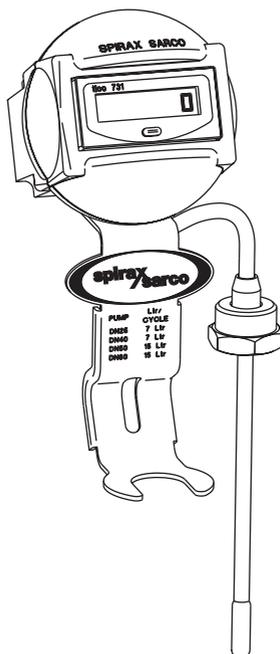


Fig. 1

## 2.3 Materials

| No. | Part                     | Material        |                                      |
|-----|--------------------------|-----------------|--------------------------------------|
| 1   | Enclosure                | Acetal          |                                      |
| 2   | Digital counter (casing) | Makrolon        |                                      |
| 3   | Bracket                  | Stainless steel | BS 1449 304 S15                      |
| 4   | Gland                    | Nickel plated   |                                      |
| 5   | Sensor (switch)          | Precious metal  | 48 V $\approx$ , 1 A, 12 W (maximum) |
| 22  | Actuator                 | Alnico          |                                      |

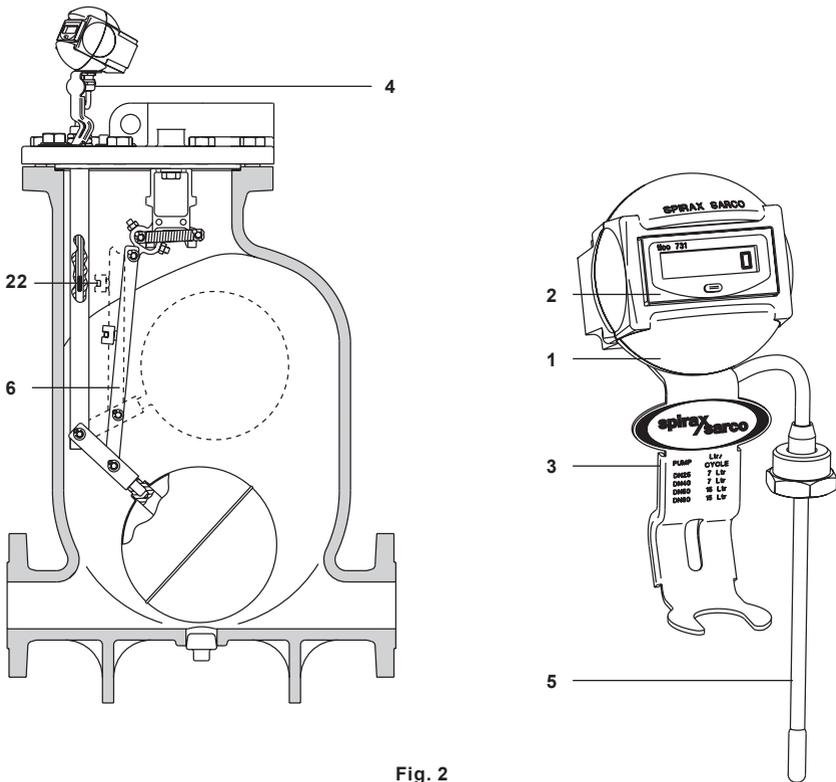


Fig. 2

## 2.4 Dimensions (approximate) in mm

| A   | B   | C   |
|-----|-----|-----|
| Ø70 | 100 | 150 |

## 2.5 Weights (approximate) in kg

| EPM1  | EPM2  |
|-------|-------|
| 0.195 | 0.174 |

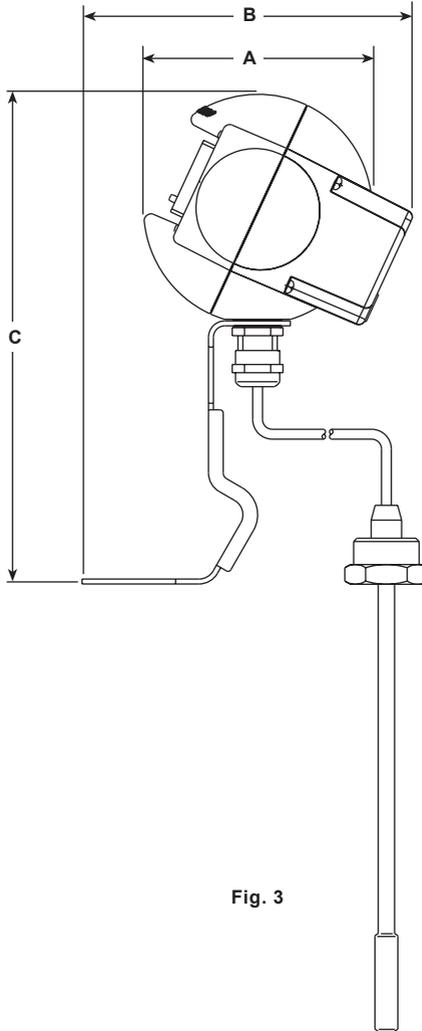


Fig. 3

# 3. Operation

**EPM1** contains a digital counter connected to a sensor (item 5) which is located in the MFP14. An actuator (item 22) is mounted to the connector rod (item 6, see Fig. 4). As the condensate level varies within the MFP14, the actuator sweeps past the sensor causing the counter display to index.

**EPM2** works in a similar fashion except that the induced pulse in the sensor is passed to an external source.

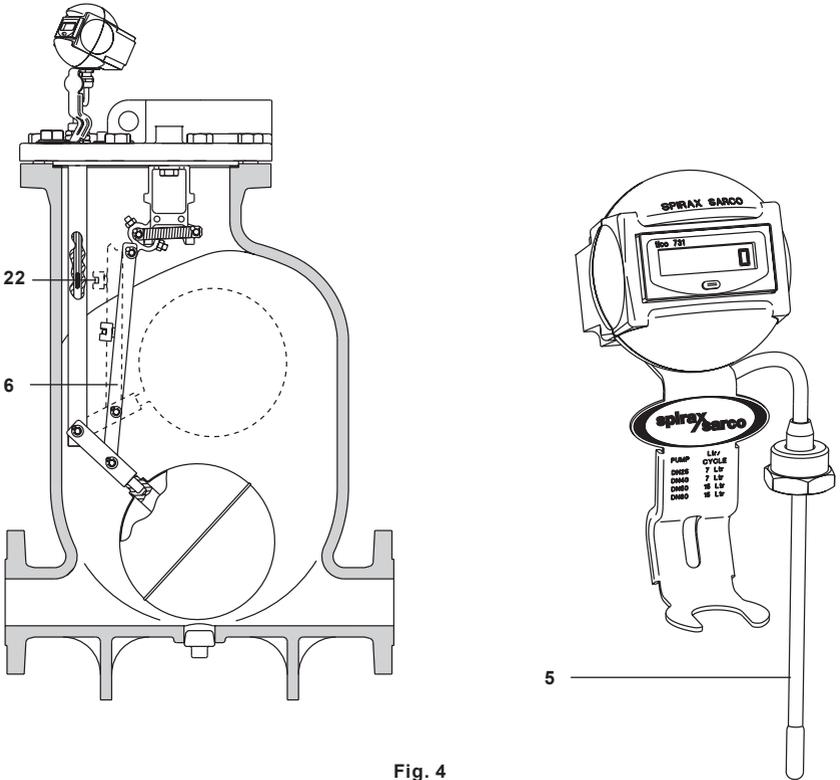


Fig. 4

## 4. Installation (EPM1 and EPM2)



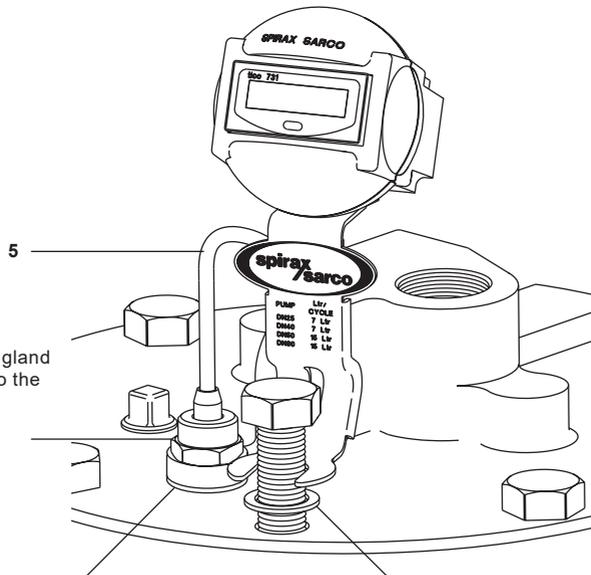
### Important - safety note

Before any installation or maintenance procedure, ensure that all steam or condensate lines are isolated. Ensure any residual internal pressure in the product or connecting lines is carefully relieved. Also ensure any hot parts have cooled to prevent risk of injury from burns. Always wear appropriate safety clothing before carrying out any installation or maintenance work. Always handle with care.

### 4.1 Installation:

- Remove the pillar cap marked EPM from the MFP14 cover. Note: the EPM cannot be fitted to an MFP14 which does not have this pillar cap. Consult Spirax Sarco if necessary as the pump will need upgrading.
- Insert the sensor (5) into the pillar ensuring the spigot on the sensor gland aligns and fits within the recess on the top of the pillar.
- Take out one of the cover bolts, nearest the EPM pillar. Position the EPM mounting bracket crows foot under the cover bolt, ensuring the M16 washer (supplied) is under the crows foot, and retighten the bolt to 121 - 134 N m (89 - 98.5 lbf ft).
- Tighten the gland nut securing the sensor to 4 - 6 N m (3 - 4.5 lbf ft).

Fig. 5



Tighten the sensor gland nut onto the pillar to the following torque:  
4 - 6 N m  
(3 - 4.5 lbf ft).

**Do not** attempt to disturb the shrouded nut.

**Important:** Ensure that the washer is mounted between the EPM bracket and the MFP14 cover as shown and retighten the bolt to 121 to 134 N m (89 - 98.5 lbf ft).

# 5. Wiring

## 5.1 EPM1 - fitted with counter as standard

There is no wiring to be considered with the EPM1.

## 5.2 EPM2 – connection to remote readout

Connect the IP65 connector plug terminals (supplied with the EPM2) to the remote readout or counting device as detailed below.

EPM2 Rear connector terminals.

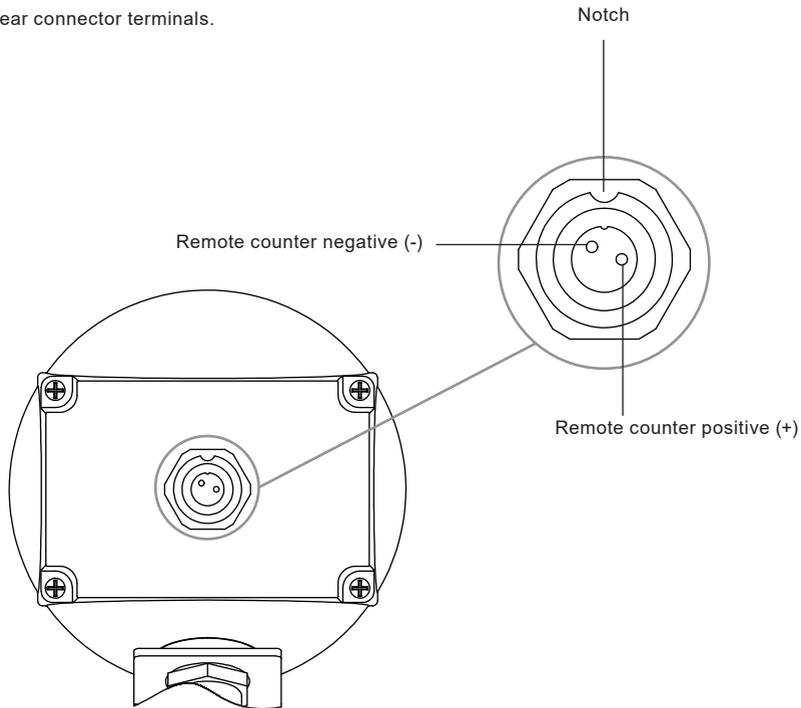


Fig. 6

The output terminals are driven from an Optically Isolated Solid State Relay with voltage free contacts. The electrical circuit of the output drive is as follows.

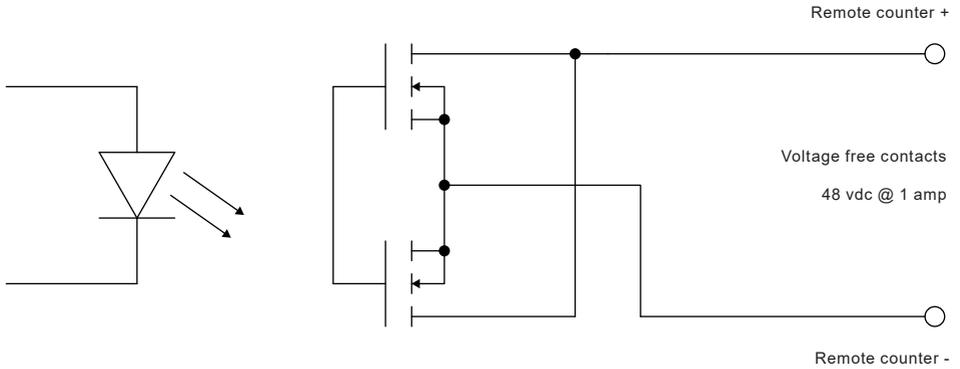


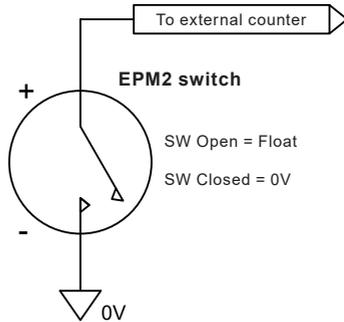
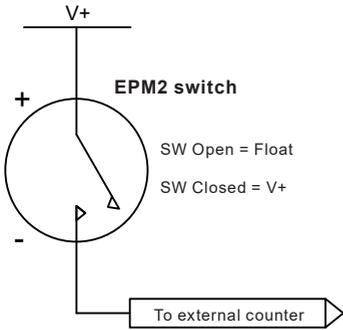
Fig. 6

**Notes:**

1. Solid state relay output for direct current (dc) only. Do not apply ac current.
2. Note polarity of output contacts.
3. Voltage free output contacts are rated at 48V, 1A maximum. Exceeding these ratings could damage the product.
4. Output pulse is delayed from reed switch closure by 9.5 seconds.  
Output contact closure width is 150 m/s (0.15 sec) to conserve battery life.

# Example output node configurations

## Floating node:



## Pull up/Pull down node:

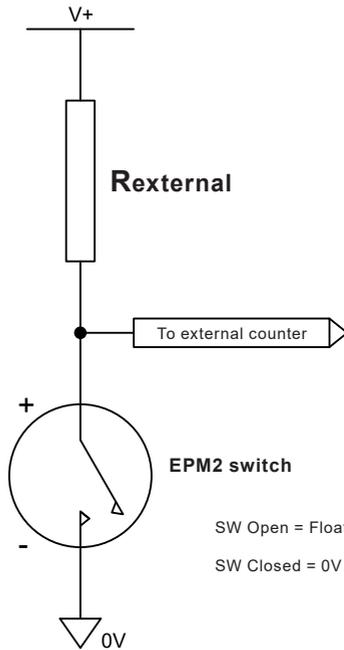
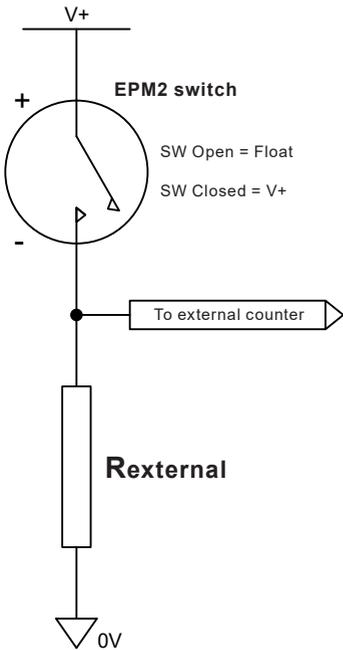


Fig. 7

# 6. Maintenance



## Important - safety note

Before any installation or maintenance procedure, ensure that all steam or condensate lines are isolated. Ensure any residual internal pressure in the product or connecting lines is carefully relieved. Also ensure any hot parts have cooled to prevent risk of injury from burns. Always wear appropriate safety clothing before carrying out any installation or maintenance work. Always handle with care.

## 6.1 General information

Periodically check the tightness of the cover bolt, glands and clamps. For EPM1, check that the 7 year lithium battery has not expired, by referring to the date code on the counter casing.

**Example:**        0    11  
                      YR / MONTH = NOV 2000

The reset and reset-locking facility should be checked for chosen operation.  
There are no user replaceable parts or servicing requirements for the EPM2.

## 6.2 Spare parts

There are no spare parts available for the EPM1 or EPM2.

