

## Overview

The M90 Series of instruments has been developed as a cost effective modular signal conditioning system that can be customised to suit a wide variety of measurement and control applications. The IP65 rated enclosure allows the M90 to be used in hostile as well as control room environments.

The use of analogue signal processing techniques has the user benefit of high noise immunity and zero electromagnetic emissions, together with the ease of set up and versatility normally only associated with digital based systems.

The optional digital display may be simply scaled in engineering units without the use of any special tools or calibration equipment.

All instrument types have a 4-20mA signal output as standard. This output signal may be factory or customer reconfigured to provide other voltage or current outputs.



## Features

- Direct Interface to Ashdown Transducers
- Modular Design
- A complete System Solution
- IP65 ABS Enclosure
- Transmitter Power Supply as Standard

## Input Card Options

### Single Channel

Single channel input, which can be configured as 0-5V, 1-5V, 0-10mA, 0-20mA or 4-20mA input

### Dual Channel

Two independent signal inputs, each of which can be configured for Voltage or Current input as specified above for the single channel input card. The card may be factory configured for either signal addition or subtraction.

### Ashdown (LVDT) Transducer

This card provides excitation and demodulation for all Ashdown 'R' Series differential pressure, pressure and level transducers. channel flow measurement.

## Applications

- Transmitter with Indication and Control
- Pump Control
- Flow Indication and Totalization
- Level Control

## Special Function Options

### High/Low Alarm Functions

This option provides either two simple alarm trips or window alarm functions for pump control functions. The alarm functions may be configured to any of the available functions by link selection on the alarm PCB.

### Flow Totalization

A flow totalization function may be specified to provide front panel indication of total flow and a pulse output for connection to an external counter. The calibration of the totalizer option automatically follows any changes in display calibration should these be undertaken after factory calibration. The totalizer time base or scale divisor may also be simply reconfigured should this be required without the use of any special tools or calibration equipment.

# M90

## IP65 Protected Transmitter/Indicator

### Specification

#### Signal Input Options:

##### Single and Dual Channel Cards

###### Current Ranges

0-10mA, 470R nominal input impedance.

0-20mA, 250R nominal input impedance.

4-20mA, 250R nominal input impedance.

###### Voltage Ranges

0-5Vdc & 1-5Vdc 100K nom input impedance.

#### LVDT Conditioning Card

2kHz nominal constant current excitation with phase sensitive demodulation of the quadrature signal from the transducer.

Full thermal, scaling and linearity characterisation of the sensor is provided.

#### Temperature Limits

Operating: -10°C to +50°C.

Storage: -20°C to +60°C

#### Power Supply

Link selectable, nominal 120Vac or 240Vac, 50/60Hz protected by a PCB mounted fuse. Input is filtered to minimise mains noise and RFI.

#### Power Supply Voltage Dependency

The instrument calibration is effected by less than  $\pm 0.5\%$  FSD for supply variations of -15% to +5% on nominal operating voltage.

#### Power Output

Nominal 24Vdc rated @ 100mA maximum protected by a PCB mounted fuse for two wire transmitter supply.

#### Enclosure

170mm high x 135mm wide x 85mm deep plastic enclosure for face mounting. The enclosure is fitted with M20 plastic cable glands and a transducer venting point (if required).

#### Digital Display Option

3½ digit high brightness 14mm LED display 1999 max scale length.

##### Display Scaling

Display FSD Adjustment: Auto calibrating over the range 80 to 1999 with selectable decimal point.

Zero Adjustment: Auto calibrating over the range  $\pm 100$ .

### M90 Series Product Order Code

M90	Tranmitter/Indicator
<b>Power Supply and Display Options</b>	
<b>Power Supply    Display</b>	
OY	220/240Vac    Not Fitted
OX	110/120Vac    Not Fitted
OZ	24Vdc nom    Not Fitted
DY	220/240Vac    3½ digit LED
DX	110/120Vac    3½ digit LED
DZ	24Vdc nom    3½ digit LED **
<b>Input Card Type</b>	
AM	Single channel, voltage or current inputs
BM	Dual, Addition, voltage or current inputs
CM	Dual, Subtraction, voltage or current inputs
NM	Ashdown R Type transducer conditioning
<b>Input Card Linearization Options</b>	
0	No linearization option fitted
<b>Special Function 1</b>	
OO	None
FO	Totalizer pulse output & 6 digit LCD counter
EO	Totalizer with pulse output only
<b>Special Function 2</b>	
-OO	None
-AM	Alarm card with two independant trip points
** Consult factory for availability on these options	

### Totalizer Option

Calibration: The totalizer is self calibrating over the full calibration range of the digital indicator.

Time Base: User selectable in seconds, minutes or hours.

Count Divisor: The totalizer may be set to increment on the display units, tens, hundreds or thousands digit.

### Alarm Option

Set point: -10% to +110% nominal of full scale by means of a single turn 270° rotation potentiometer, each alarm set point may be viewed on the instrument digital indicator.

Alarm Configuration: Each trip may be configured as either high or low alarm, failsafe or non-failsafe operation by a programming socket on the alarm PCB. High and low alarm operation may be programmed to provide pump control function.

Relay Switch Rating: Single pole changeover contact for each trip point rated at 1000VA @ 250Vac.



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