

# RM4-PH Process Unit DIN Rail Mounted

Input from any standard pH electrode or amplifier or ORP (Redox) electrode.

Functions as:  
Display/Alarm/Controller/Transmitter/  
PLC & Computer Interface



## Description

Model RM4-PH is a DIN rail mounted process unit which can function as an indicator/alarm/controller/transmitter/computer interface.

The RM4-PH accepts its input from any conventional pH electrode or pH unity gain amplifier or ORP (Redox) electrode. The RM4's useful uncalibrate mode returns the calibration back to that of an ideal electrode. This feature is useful when the electrode is replaced and "on the spot" recalibration is inconvenient. A versatile input which accepts standard temperature sensors is provided for automatic temperature compensation. All function settings and calibration scaling is carried out via the instrument's pushbuttons.

Two alarm relays and a 24V transmitter supply are provided as standard. The alarm relays can be set to operate as either standard alarm relays (from pH, ORP or temperature reading) or PI control (pulse width or frequency) operation. Combinations of optional outputs including extra relays, analog retransmission or serial communications (ASCII or Modbus RTU protocol) can also be provided. The optional analog output can be configured for retransmission or PI control. A dual analog option allows both pH and temperature to be retransmitted as separate signals.

The RM4 has a programmable display brightness function, this allows the unit to be operated with low display brightness to reduce the instrument power consumption and to improve readability in darker areas.

The programmable digital filter improves stability by smoothing out short term interference in many applications this can allow stable readings from cables of up to 15metres in length. An external input is configurable to perform one of various functions e.g. Two level brightness switching, peak hold, display hold, max/min memory, setpoint only access or security lockout.

Electrical isolation between power supply, input signals and retransmission eliminates grounding and common mode voltage problems. This isolation feature makes the RM4 ideal for interfacing to PLCs, computers and other data acquisition equipment.

## Features

- Pushbutton calibration and setup
- Automatic temperature compensation
- Display can be toggled to show temperature when a temperature sensor input is used
- Isolation between input signals, output, power supply
- Rugged construction
- Remote input to perform special functions e.g. max/min, peak/display hold, security lockout
- 5 digit LED display and relay/alarm status indication
- 240V, 110V, 48V, 42V, 32V, 24V AC, 12 to 48V DC or 50 to 110V DC operation (factory configured)
- Digital filter, improves stability
- 24VDC transmitter supply, unregulated
- Two alarm/control relay outputs (5A) standard configurable for pH/ORP and temperature alarm or PI (pulse width or frequency) control
- Programmable display brightness reduces power consumption and controls glare in low brightness areas
- Auto dim feature conserves power
- Rugged aluminium DIN rail mount housing
- 2 year guarantee

## Options

- Isolated analog output 4-20mA, 0-1V or 0-10V (configurable as retransmission or PI control). A dual analog output option allows combinations of PI control, temperature, pH and ORP outputs
- Additional relays in combination with analog or transmitter/amplifier supply outputs
- Isolated & regulated 12VDC @ 50mA or 24VDC @ 25mA (link selectable)
- Isolated RS232, RS422 or RS485 serial comms. with choice of ASCII or Modbus RTU protocol
- Combined analog 4-20mA and RS485 serial outputs

# SPECIFICATIONS

Specifications are subject to change without notice

## TECHNICAL SPECIFICATIONS

Input: pH electrode where  $E_o = 7$  or from electronic buffer amplifier or standard platinum Redox electrode

Temperature input: Pt100, Pt1000, 3K $\Omega$  Balco or LM335 temperature sensor or manual input

Input resistance:  $> 10^{10}\Omega$

Accuracy: 0.2% of full scale (pH & Redox)

ADC Resolution: 1 in 20,000

Sample Rate: 1 per sec

Conversion: Dual Slope ADC

Microprocessor: MC68HC11 HCMOS

Ambient Temp: -10 to 60°C

Humidity: 5 to 95% non condensing

Display: LED 5 digit 7.6mm + alarm annunciator LEDs

Power Supply: 240V, 110V, 48V, 42V, 32V, 24VAC  
12 to 48V DC or 50 to 110V DC operation (factory configured)

Power Consumption: AC supply 6VA max, DC supply less than 6W (depends on load & options)

Output (standard): 2 x relays, form A rated 5A resistive 240VAC

Relay Action: Programmable N.O. or N.C.

## OUTPUT OPTIONS (see order code for valid combinations)

Third relay: Rated 0.5A resistive at 30VAC or DC, form C if no other options fitted, otherwise form A

Fourth relay: Rated 0.5A resistive at 30VAC or DC, form A

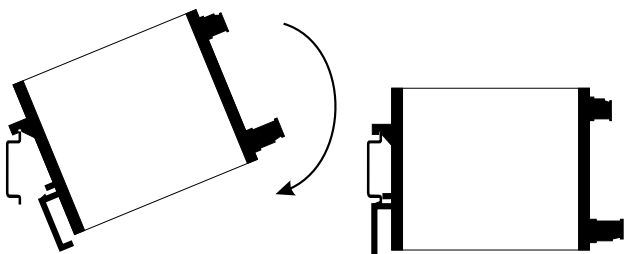
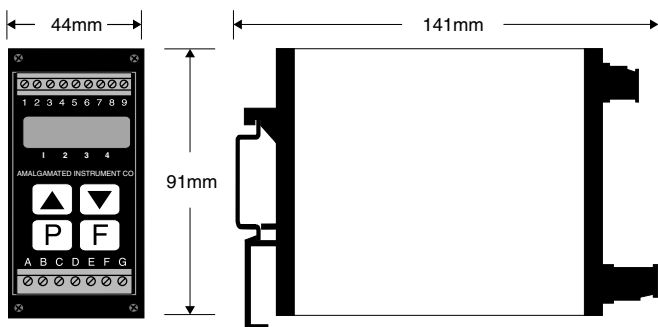
Transmitter/amplifier supply: Isolated & regulated 12VDC @ 50mA or 24VDC @ 25mA (link selectable)

Switched voltage: 24VDC output (common to input ground but isolated from supply) to be used for open collector or solid state relay driver

Analog retransmission: Isolated 4-20mA. 0-1V or 0-10V link selectable. 12 bit

Serial communications: Isolated RS232, RS485 or RS422 factory configured

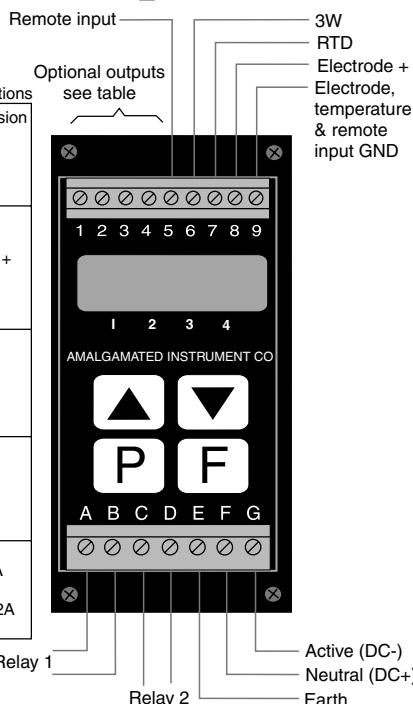
## DIMENSIONS AND INSTALLATION DETAILS



## ELECTRICAL CONNECTIONS

Common optional output connections

Third relay + analog retransmission	1 Relay 3
	2 Relay 3
	3 Analog retransmission +
	4 Analog retransmission -
Transmitter supply + analog retransmission	1 Transmitter supply 12/24VDC +
	2 Transmitter supply GND
	3 Analog retransmission +
	4 Analog retransmission -
Third relay only (Form C)	1 Not used
	2 Relay 3 N/C
	3 Relay 3 N/O
	4 Relay 3 COM
Third and fourth relays	1 Relay 4
	2 Relay 4
	3 Relay 3
	4 Relay 3
Serial communications	1 RS232 Rx or RS485/RS422 A
	2 RS232 Tx or RS485/RS422 B
	3 RS232/RS485 GND or RS422A
	4 RS422 B



## PHYSICAL CHARACTERISTICS

Case size: 44mm x 91mm x 141mm

Connections: Plug in screw terminals. Max 2.5mm<sup>2</sup> wire (relays and supply), 1.5mm<sup>2</sup> wire for input and options

Weight: 500 gms basic model, 550 gms with option card.

## ORDER CODE

RM4-PH-     - 5 E -

POWER SUPPLY

RM4-PH-     - 5 E

240 VAC	.....	<input type="text"/> 2 <input type="text"/> 4 <input type="text"/> 0
110 VAC	.....	<input type="text"/> 1 <input type="text"/> 1 <input type="text"/> 0
48 VAC	.....	<input type="text"/> 4 <input type="text"/> 8
42 VAC	.....	<input type="text"/> 4 <input type="text"/> 2
32 VAC	.....	<input type="text"/> 3 <input type="text"/> 2
24 VAC	.....	<input type="text"/> 2 <input type="text"/> 4
12 to 48 VDC	.....	<input type="text"/> D <input type="text"/> C
50 to 110 VDC	.....	<input type="text"/> D <input type="text"/> C <input type="text"/> H

DISPLAY TYPE (ALL MODELS ARE TYPE 5E)

RM4-PH-     - 5 E -

5 DIGIT LED + KEYPAD + STATUS LEDs ..... 5 E

OUTPUT OPTIONS

THIRD RELAY (FORM A)	.....	<input type="text"/> R
THIRD AND FOURTH RELAY	.....	<input type="text"/> R <input type="text"/> R
THIRD AND FOURTH SETPOINTS 24VDC	.....	<input type="text"/> S <input type="text"/> S
THIRD RELAY PLUS TRANSMITTER SUPPLY	.....	<input type="text"/> R <input type="text"/> E
TRANSMITTER SUPPLY	.....	<input type="text"/> E
ANALOG RETRANSMISSION (12 BIT)	.....	<input type="text"/> A
DUAL ANALOG RETRANSMISSION (12 BIT)	.....	<input type="text"/> A <input type="text"/> A
ANALOG PLUS TRANSMITTER/AMP. SUPPLY	.....	<input type="text"/> A <input type="text"/> E
ANALOG (12 BIT) PLUS 3RD RELAY	.....	<input type="text"/> A <input type="text"/> R
RS232 COMMUNICATIONS - ISOLATED	.....	<input type="text"/> 2 <input type="text"/> 3 <input type="text"/> 2
RS422 COMMUNICATIONS - ISOLATED	.....	<input type="text"/> 4 <input type="text"/> 2 <input type="text"/> 2
RS485 COMMUNICATIONS - ISOLATED	.....	<input type="text"/> 4 <input type="text"/> 8 <input type="text"/> 5
ANALOG RETRANSMISSION (12 BIT) PLUS RS485 COMMUNICATIONS	.....	<input type="text"/> A <input type="text"/> 4 <input type="text"/> 8 <input type="text"/> 5