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/// MPD53 Microprocessor pH/Redox Monitor



- Simple Intuitive Programming
- IP66 Panel or Surface Mount Options
- Large Backlit Multifunction Display
- Differential Input for Excellent Noise Rejection
- Accepts pH Glass or Antimony and Redox Electrodes.
- Up to Four Relay Outputs
- Dose Alarm Timer Prevents Overdosing.
- On/Off, Time & Pulse Proportional Control Options
- 2 x Isolated fully Configurable 0/4-20 mA Outputs
- On-Line HELP with Text Error Messages
- 18-36 v Supply Option
- Automatic sensor cleaning

Programming Made Easy

The large backlit multi-function display guides the operator effortlessly through the structured programming procedure, reducing the need to refer to the operator manual.

An initial configuration has been preprogrammed into the MPD53, minimising the number of parameters that will actually need to be changed for most users.

The MPD53 has been designed with two levels of programme complexity to cater for both novice and experienced instrument operators.

In the Basic set-up mode, only a few settings are required to configure and run the instrument. These are the sensor type, setpoint modes and values, and temperature compensation.

In the Advanced set-up mode, all the options and functions, which you would normally associate with a high-end, multi-range pH controller, together with some new innovative options, can be configured.

On-line HELP facilities consist of a series of text error messages which are displayed when programming is incorrect, or if a sensor is not reading a sensible value for the instrument setup.

A further enhancement is multi-level security, where day to day operator access can be limited to viewing data and settings only, while allowing full access to the instrument programmer.

Configuration data can be saved in one of two independent back-up locations, which can be used for fast reconfiguration, emergency restoration of settings, recovery after tampering by unauthorised operators, etc.

One Instrument for all Applications

By providing the user with the flexibility to select either glass or antimony pH sensors - Redox input and operating with either single ended or differential inputs, means a single instrument may be used for the majority of pH and Redox applications.

A universal power supply allows a single connection to any supply between 85 to 250v AC/DC. An option for low voltage operation between 18-36v AC/DC is also available. Temperature compensator selection of Pt100, Pt1000 or 3K ohm Balco thermistor allows the instrument to be used with almost any pH sensor system.

Multilingual text displays can be selected with a choice of English, French, Spanish and Italian languages. Flexible Control & Alarm Configuration Up to 4 relay outputs offer on/

off control with variable hysteresis and time delays if required. A dose alarm timer can be used to prevent overdosing under fault conditions. Should a dose relay be energised for longer than a preset time then the timer will operate and prevent further dosing.

New features include time and pulse proportional relay operation, which can be used in applications where overshoot or undershoot have been a problem, or to directly drive a diaphragm pump where previously a separate drive module was necessary.

The 4th relay can also be programmed to energise on a variety of different functions including errors, instrument status, e.g. off-line or calibrate mode, or if a dose alarm time has been exceeded.

Current Output

Up to 2 industry standard, isolated outputs provide retransmission of the measurement as 0/4-20 mA signals. These can be configured as pH, Redox or temperature. These also are expandable & can be offset anywhere in the chosen measurement range.

Calibration

Both measurement inputs and current output can be individually calibrated from the front panel. An off-line facility allows the instrument to be adjusted without disturbing external processes.

Off-Line & Sensor Cleaning

For applications, which require automatic sensor cleaning, either set point relays or the current output can be configured as a clean initiator.

The clean duration, recovery time and interval period are all programmable. During the clean and recovery periods it is possible for the instrument to go off-line and hold the current outputs and disable the control relays. The clean cycle and off-line mode may also be initialised remotely via separate digital switch inputs.

Specification

Measurement input	Single ended or differential with solution ground.	Current Output	Each selectable 0 - 20 mA or 4 - 20 mA into 750 ohms max., fully isolated to 2kV. Expandable up to 5 % of any operating range (pH, mV, °C) and offset anywhere in that range. Can be configured as a clean output with the signal switched between 0 to 20 mA.
pH	Separate glass and reference electrode pair. Separate antimony and reference electrode pair. Combination electrode.	Operator adjustment (current output)	± 1 mA zero and ± 1 mA span for remote monitor calibration.
Redox	Separate metal and reference electrode pair. Combination electrode. Other manufacturers sensors can be accommodated.	Set Points and Control Relays (2 standard 4 optional)	Fully adjustable setpoints (pH, mV, °C) with volt free contacts for each relay. Rated at 5A 30V DC / 5A 250V AC (noninductive). Red LED's indicate relay energised.
Ranges of Measurement	0.00 to 14.00 pH -1999mV to +1999mV -50 °C to +300 °C (-58 °F to 572 °F) .	Operating Modes (Control Relays 1, 2, 3 & 4)	Configure High, Low, Band or Latch trigger conditions with, On/Off, Time proportioning, Pulse proportioning and Clean modes selectable for each relay. Adjustable delay timers up to 10:00 mm:ss and hysteresis in the On/Off mode. Adjustable dose alarm timer up to 15:00 mm:ss in all modes Adjustable cycle time, and proportional band in the proportional modes. Adjustable duration, recovery and interval periods in the clean mode.
Accuracy	0.05 pH. 3 mV.		
Linearity	0.1 % of range.		
Repeatability	0.1 % of range.		
Operator adjustment Slope	pH 60 – 120%, Antimony 60 –120 %, Redox 100%.		
Offset	pH 3 – 11 pH, Antimony -4 to +4 pH, Redox -400 to +400 mv.		
Temperature Sensor	Pt 100, Pt 1000 RTD or 3K Balco thermistor. Up to 100 metres of 4-wire cable. Temperature sensor can be mounted in the pH sensor or separately.		
Temperature Accuracy	0.2 °C (When using 4 wire Pt1000).		
Operator Adjustment (Temperature)	± 20 °C or ± 32 °F.		
Temperature Compensation Type	Automatic or Manual -10°C to +130°C.		
Off-line facility (for Calibration and Commissioning)	The relays are de-energised and the current output is held at the last on-line value. Can be initiated remotely by a contact closure.		
Ambient Operating Temperature	-20 °C to +50 °C (-4 °F to 122 °F) for full specification		
Ambient Temperature Variation	0.01% of range / °C (typical)		
Display (optional 1 or 2 outputs)	Custom backlit LCD module. 4 character (& sign) 7 segment (20 mm high) for measured value; 2x3 dot matrix for unit's indication; and 1x16 dot matrix for information and programming.		



Specifications Continued

Operating modes (Alarm Relay 4)	This relay can be set to energise on any of the following instrument conditions:- Sensor alarm, Dose Alarm, Calibration, Off Line, and Any Error.	Panel-mount Housing	ABS plastic rated IP66 to the front when installed in a panel.
Switches	Four tactile-feedback push buttons.	Panel-mount Weight	Less than 0.6 Kg (instrument only).
EMC : Immunity	BS EN 50082-2:1995	Panel-mount Dimensions	96 x 96 x 140 mm (H x W x D) including connectors. Cut out 92 x 92 mm
EMC : Emissions	BS EN 50081-1:1994.	Surface-mount Housing	Expanded polyurethane foam rated IP66.
LVD : Safety Standard	BS EN 61010-1:1993.	Surface-mount Weight	Less than 1.5 Kg (instrument only).
Power Supply	Universal 85 – 250v AC/DC 10W max.	Surface-mount Dimensions	305mm x 200mm x 82mm (H x W x D) excluding mounting brackets.
Optional	18 – 36v AC/DC 15W max.		

Type No	Part No	Description
MPD53P	2061	IP66 96 x 96 Panel mounted pH/Redox monitor, with 2 relay outputs.
MPD53S	2062	IP66 Surface/field mounted pH/Redox monitor, with 2 relay outputs.
MPD53PI	2063	IP66 96 x 96 Panel mounted pH/Redox monitor, with 2 relay outputs & a single 4 -20mA current output.
MPD53SI	2064	IP66 Surface/field mounted pH/Redox monitor, with 2 relay outputs & a single 4 -20mA current output.
MPD53P2	2065	IP66 96 x 96 Panel mounted pH/Redox monitor, with 4 relay outputs & 2 x 4 -20mA current outputs.
MPD53S2	2068	IP66 Surface/field mounted pH/Redox monitor with 4 relay outputs & 2 x 4 -20mA current outputs.
MPD53PI	2074	IP66 96 x 96 Panel mounted pH/Redox monitor, with 2 relay outputs & a single 4 -20mA current output. 18-36v Supply.
MPD53SI	2075	IP66 Surface/field mounted pH/Redox monitor, with 2 relay outputs & a single 4 -20mA current output. 18-36v Supply.
MPD53P2	2076	IP66 96 x 96 Panel mounted pH/Redox monitor with 4 relay outputs & 2 x 4 -20mA current outputs. 18-36v Supply.
MPD53S2	2077	IP66 Surface/field mounted pH/Redox monitor with 4 relay outputs & 2 x 4 -20mA current outputs. 18-36v Supply.