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/// **MED53**

**Microprocessor Electrodeless Conductivity Monitor**



**Features**

- Simple Intuitive Programming
- IP66 Panel or Surface Mount Options
- Large Backlit Multifunction Display
- Able to Display Conductivity, Solution Concentration & Temperature
- Auto Range, Remote Range or Single Range
- Custom Range Facility
- 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
- 18-36v AC/DC Option

## **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 handbook.

An initial configuration has been pre-programmed into the MED53, minimising the number of parameters that will actually need to be changed

or most users. The MED53 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 (or cell constant), display (operating) range, set point modes and values, temperature compensation and current output range (as required).

In the Advanced set-up mode, all the options and functions, which you would normally associate with a high-end, multi-range conductivity 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 set-up.

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**

Covering a wide range of conductivity measurement, from water to solution concentration measurements, the MED53, can be configured to display the readings in conductivity, or % concentration. Preset curves are stored in the instrument for common acids, alkalis or salinity and there is also the facility to programme a custom curve into the instrument. It can be set for single range, auto range or remote ranging via an external switch, allowing automatic selection between different chemicals.

A universal power supply allows a single connection to any supply between 80 to 264v, AC or DC. An option for low voltage operation between 18-36v AC or DC is also available.

Adjustable temperature compensator selection of Pt100 or Pt1000 allows the instrument to be used with any LTH Electrodeless conductivity sensor.

Multilingual text displays can be selected with a choice of English, French, Spanish and Italian.

## **Flexible Control & Alarm Configuration**

Up to 3 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 the 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.

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

## **Current Outputs**

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

## **Calibration**

Both measurement inputs and current outputs can be individually calibrated from the front panel. For applications requiring accurate measurements it is possible to calibrate the instrument and sensor to either a standard solution or a titrated solution concentration. An off-line facility allows the instrument to be adjusted without disturbing external processes.

## **Temperature Compensation**

Automatic temperature compensation can be applied to the measurement using an adjustable linear slope. In the solution concentration mode the correct solution slope is automatically set by the instrument. For applications where temperature compensation is not required it can be switched out.

Alternatively a manual temperature can be entered, if required

### **Specification Measurement Input**

ECS20, ECS40 electrodeless conductivity sensor.

### **Range of Measurement**

0 to 999.9  $\mu$ S/cm, 9.999 mS/cm, 99.99 mS/cm, 999.9 mS/cm.

0 to 16.00% NaOH

0 to 30.00% NaCl

0 to 15.00% HCl

0 to 25.00% H<sub>2</sub>SO<sub>4</sub>

0 to 25.00% HNO<sub>3</sub>

0 to 25.00% H<sub>3</sub>PO<sub>4</sub>

0 to 41.00 ppt Salinity

0 to 99.9% Custom from 2 to 9 points can be entered.

### **Accuracy**

±1%.

### **Linearity**

±0.1% of range.

### **Repeatability**

±0.1% of range.

### **Operator Adjustment (Conductivity and Solution Concentration)**

Solution ±20% offset.

Conductivity ±10% slope.

### **Temperature Sensor**

PT100 or PT1000 RTD input.

Up to 100 metres of 4 wire cable.

Temperature sensor can be mounted in the sensor or separately.

### **Temperature Measurement Range**

50°C to +300°C.

### **Temperature Accuracy**

±0.2°C

(When using a 4 wire PT1000).

### **Operator Adjustment (Temperature)**

±20°C, or ±32°F.

### **Temperature Compensation Type**

Automatic or manual 0 to 100°C, base 20 or 25°C (conductivity only), slope 0 to 9.9%/°C.

### **Digital Inputs**

3 Digital inputs (Contact closure) for remote selection of measurement range.

### **Off-Line Facility**

#### **(for calibration & commissioning)**

The relays are de-energised and the current outputs are held at the last on line value

### **Ambient Operating Temperature**

-20°C to +50°C (-4°F to +122°F) for full specification.

### **Ambient Temperature**

±0.01% of range/°C (typical).

### **Variation Display**

Custom back-lit LCD module. 4 digit + sign main display, 3x2 characters for units indication, and 16 characters for information and programming.

### **Current Output**

#### **(optional 1 or 2 outputs)**

Each selectable 0-20mA or 4-20mA, fully isolated to 2kV. (750 Ohm Max. load). Expandable up to 5% of any operating range (mS, %, °C) and offset anywhere in that range.

### **Operator Adjustment (Current)**

+1mA zero and ±1mA span for remote monitor calibration.

### **Set points and Control Relays**

#### **(2 standard 4 optional)**

Fully configurable set points (mS, %, °C) with volt free contacts for each relays.

Rated at 5A 30V DC / 5A 250 V AC (non-inductive). Red LEDs indicate relay energised.

### **Operating Modes**

#### **(Control Relays 1, 2 & 3)**

On/Off, Time Proportioning, Pulse Proportioning, and Band modes selectable for each relay.

Adjustable delay timer up to 10:00 mm:ss in the On/Off mode.

Hysteresis 0 to 9.9% 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.

### **Operating Modes (Alarm Relay 4)**

The relay can be set to energise on any of the following instrument conditions:-

Sensor alarm, Dose Alarm, Calibration, Off Line, Any Error.

### **Switches**

Four tactile-feedback push buttons.

### **EMC: Immunity**

BS EN 50082-2:1995.

### **EMC: Emissions**

BS EN 50081-1:1994

### **LVD: Safety Standard**

BS EN 61010-1:1993.

### **Power Supply**

Universal 85 – 265v AC or DC, 10W max.

Low voltage Option 18 – 36v AC or DC, 15W max.

### **Panel-Mount Housing**

ABS plastic rated IP66 to the front when installed in a panel.

### **Panel-Mount Weight**

Less than 600 grams (instrument only).

### **Panel-Mount dimensions**

96 x 96 x 140 mm (H, W, D) including connectors.

### **Surface-Mount Housing**

Expanded polyurethane foam rated IP66.

### **Surface-Mount Weight**

Less than 1.5Kg (instrument only).

### **Surface-Mount Dimensions**

305 x 200 x 82 mm (H, W, D) excluding mounting brackets.



## Order Codes

<b>Type No</b>	<b>Part No</b>	<b>Description</b>
<b>MED53P</b>	<b>1188</b>	IP66 96x96 panel mounted microprocessor Electrodeless conductivity/ solution concentration monitor with 2 relay outputs.
<b>MED53S</b>	<b>1189</b>	IP66 surface mounted microprocessor Electrodeless conductivity/ solution concentration monitor with 2 relay outputs
<b>MED53PI</b>	<b>1190</b>	IP66 96x96 panel mounted microprocessor Electrodeless conductivity/ solution concentration monitor with 2 relays & single 4-20 mA current output.
<b>MED53SI</b>	<b>1191</b>	IP66 surface mounted microprocessor Electrodeless conductivity/ solution concentration monitor with 2 relays & single 4-20 mA current output.
<b>MED53P2</b>	<b>1192</b>	IP66 96x96 panel mounted microprocessor Electrodeless conductivity/ solution concentration monitor with 3 set points, 1 alarm relay & 2 x 4-20 mA current outputs.
<b>MED53S2</b>	<b>1193</b>	IP66 surface mounted microprocessor Electrodeless conductivity/ solution concentration monitor with 3 set points, 1 alarm relay & 2 x 4-20 mA current outputs.
<b>MED53PI</b>	<b>1212</b>	IP66 96x96 panel mounted microprocessor Electrodeless conductivity/ solution concentration monitor with 2 relays & single 4-20 mA current output. 18-36v supply.
<b>MED53SI</b>	<b>1213</b>	IP66 surface mounted microprocessor Electrodeless conductivity/ solution concentration monitor with 2 relays & single 4-20 mA current output. 18-36v supply.
<b>MED53P2</b>	<b>1216</b>	IP66 96x96 panel mounted microprocessor Electrodeless conductivity/ solution concentration monitor with 3 set points, 1 alarm relay & 2 x 4-20 mA current outputs. 18-36v supply.
<b>MED53S2</b>	<b>1217</b>	IP66 surface mounted microprocessor Electrodeless conductivity/ solution concentration monitor with 3 set points, 1 alarm relay & 2 x 4-20 mA current outputs. 18-36v supply.