## MULTI-PARAMETER Controller and Analyzer



# SHARK-120 / SHARK-240

**SUMMARY**
SHARK is designed to be the most *flexible, easy to use*, and *easy to see* multi-parameter analyzer/controller on the market.

**FOUR MEASURING PARAMETERS**
Select the parameter you wish to measure from the easy-to-use LCD menu on the inside front cover. Choose Conductivity, pH, ORP or Flow.

**NO EXTRA CARDS / OPTIONS REQUIRED**
Each SHARK comes complete. There are no extra costs associated with buying boards for different applications, or buying components to achieve NEMA 4X.

**UNIVERSAL MOUNTING**
Universal mounting kit is included for surface, panel and pipe-mount applications. The 1/4 DIN enclosure makes panel-mount cutouts and engineering simple.

**SNAP-ON TERMINAL CONNECTORS**
Wiring is easy with removable / snap-on terminal connectors.

**DISPLAYS & MENUS**
There are two displays on SHARK. A bright LED numeric display with bar graph on the outside front panel, and a 2-line, 16-character LCD display on the inside. The LED readout on the outside panel can be seen several yards away. The distinctive, color-coded bar graph will immediately indicate if you are within the process parameters that you set (green), if the control relays are on (yellow) and if you are in alarm condition (red). This makes diagnosing pump and alarm malfunctions easy. All configuration and control functions are performed on the LCD menu on the inside front panel.

**CALIBRATION**
Calibration is performed easily from the front panel. Temperature (where applicable) is also checked from the front. Since this routine maintenance does not require opening the front panel to access the main menu on the inside, configuration settings cannot be adjusted by mistake. Process and temperature (where applicable) calibration can also be performed from the LCD menu, where calibration data (slope, temperature and efficiency) are displayed. pH can be calibrated using Manual or Auto Calibration methods. Calibration data can be recalled, indicating calibration mode, accepted buffer values, actual sensor input signals, calibration temperature and more.

**ANALOG OUTPUTS**
SHARK provides two isolated, independent and scalable 4-20 mA outputs.

**RELAYS WITH CYCLE TIMERS**
The instrument also provides control of external devices using its two independent control relays. A third relay is pre-set to act as an alarm relay, but can be used as a process control relay. It has both high and low on setpoints with adjustable off setpoints. Factory set for bidirectional control, both control relays can be set for either a rising or falling process, with easily programmed on setpoints and off setpoints. Each control relay has a built-in independent cycle timer, with field-set on and off times. This feature enables tighter control of batch processes by eliminating chemical overshoot.

**ENCLOSURE**
SHARK is packaged in a rugged NEMA 4X polycarbonate enclosure making it ideally suited for heavy-duty applications such as industrial wastewater neutralization, municipal water and wastewater, pulp and paper, and process control.

## MULTI-PARAMETER Controller and Analyzer - Technical Data

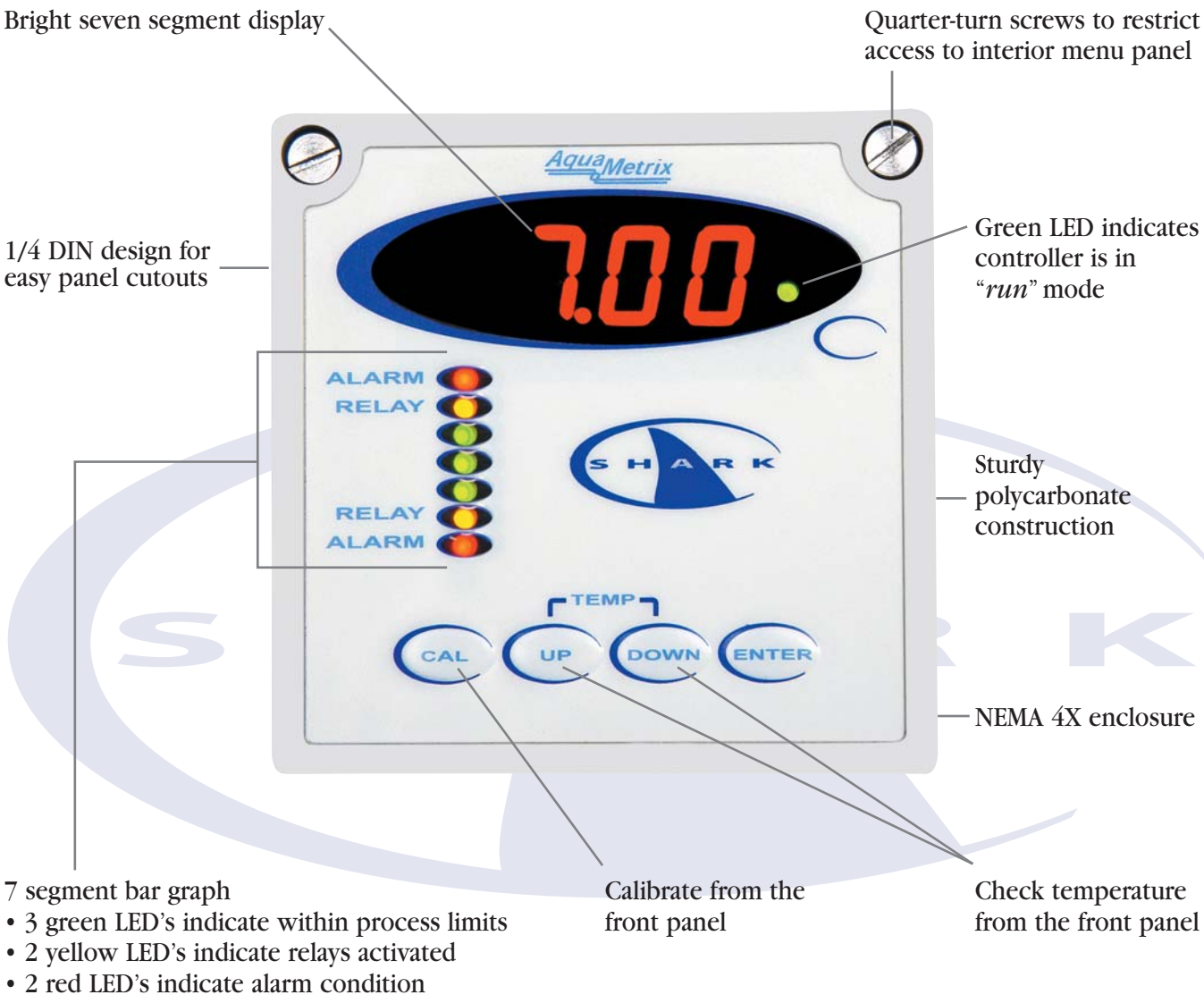
| | pH | ORP | Conductivity | Flow |
|---|---|---|---|---|
| **Display** | Front Panel: 4 x 7 segment 1/2" LED display, 1 LED indicator 0n-line,7 LED Bar Graph<br>Inside Panel: 2 x 16 alpha-numeric LCD display | | | |
| **Power Requirements** | 120Vac 50/60Hz (less than 12VA) or 240Vac 50/60Hz (less than 12VA) | | | |
| **Measuring Range** | pH: 0.01 to 14.00<br>Temp: 0 to 100°C or 32° to +212°F | ORP: -1999 to +1999mV<br>Temp: 0 to 100°C or 32° to +212°F | uS/cm: 0 to 2.000, 0 to 20.00, 0 to 200.0, 0 to 2000<br>mS/cm: 0 to 20.00, 0 to 200.0<br>MΩ/cm: 0 to 19.99<br>Temp: 0 to 100°C or 32° to +212°F | Flow: 0 to 9999 with selectable flow rate units<br>Volume: 0 to 9999 with Auto Range<br>Flow rate units: Gallons (GP), Cubic Feet (CF), Liters (LP), Cubic Meters (CM), custom by entering factor related to Gallons<br>Time units: Seconds (S), Minutes (M), Hours (H) |
| **Temperature Compensation** | Automatic or Manual<br>0 to 100°C (32° to +212°F) | Not required | Automatic or Manual<br>User selectable temperature compensation slope 0.0 to 10.0%/°C.<br>0 to 100°C (32° to +212°F) | Not required |
| **Temperature Unit** | °C or °F | | | Not required |
| **Temperature Sensor** | User selectable: 300Ω NTC Thermistor, 3000Ω NTC Thermistor or Pt. 1000 RTD | | | Not required |
| **Calibration Modes** | Auto-Calibration<br>Manual Calibration<br>Temperature Calibration | Manual Calibration<br>Temperature Calibration | Dry Calibration<br>Sample Calibration<br>Temperature Calibration | K factor Input |
| **Ambient Conditions** | Temperature: -20°C to +60°C or -4°F to +140°F Humidity: 0 to 90% RH (non-condensing) | | | |
| **Menu Access Front Panel** | Auto-Calibration, Manual Calibration, Temperature Display | Manual-Calibration, Temperature Display | Manual Calibration<br>Temperature Display | Not available |
| **Menu Access Inside Panel** | Full Access to all parameters of operations menu | | | |
| **Sensor to SHARK Distance** | Differential Sensor: 3000 ft<br>Combination Sensor: 10 ft | | 300 ft | 2000 ft |
| **Relay Outputs** | Two Control Relays, 10A / NO, 5A / NC @ 240VAC or 28VDC.<br>Mode: Process control, Adjustable parameters: process direction, (rising or falling) on-set-point, off set-point, (0 to 100% of full scale), cycle timer (on / off, 0 to 600 seconds), failsafe (on / off). | | | |
| | One Alarm Relay, 10A / NO, 5A / NC @ 240VAC or 28VDC.<br>Mode: High / Low Alarm, Adjustable parameters: Low on / Low off set-point (0 to 100% of full scale, low on must be less than low off), High On / High Off set-point (0 to 100% of full scale, High on must be greater than High off). | | | |
| **Analog Outputs** | 4 to 20mA Channel 1<br>Isolated Output, Range expand 0 - 100% of full scale (min segment 10% of full scale), max. load 800Ω | | | |
| | 4 to 20mA Channel 2<br>Isolated Output, Range expand 0 - 100% of full scale (min segment 10% of full scale), max. load 800Ω<br>Can be set to track temperature if sensor is equipped with a temperature sensor | | | |
| **Memory Back-up** | All user settings are retained indefinitely in memory (EEPROM) | | | |
| **Mechanical** | Enclosure: NEMA 4X, 1/4 DIN, polycarbonate enclosure with four 1/2" conduit holes | | | |
| | Mounting: Universal Mounting kit for surface, pipe and panel mount, is included | | | |
| **Sensor Input** | Probe: -600 to +600mV<br>Temp. Sensor: 0 to 9999Ω | Probe: -1999 to +1999mV<br>Temp. Sensor: 0 to 9999Ω | Cell: 0 to 9999Ω<br>Temp. Sensor: 0 to 9999Ω | Paddle: 0 to 2000Hz |
| **Invalid Entries** | Invalid entries cannot be stored | | | |
| **Manual Test Mode** | Process value can be simulated with arrow keys to verify correct setup of outputs | | | |
| **Manual Relay Override** | Relays can be set to on / off / auto, to verify correct wiring of auxiliary devices, or to manually adjust process | | | |
| **Output Hold** | All outputs are placed on hold when SHARK is in Menu mode | | | |
| **Calibration Data** | Recall data from last calibration, calibration mode, 1st & 2nd accepted buffer value and probe mV output, calibration temperature, calibration slope, and probe efficiency | | Recall data from last calibration, calibration buffer accepted value, and cell resistance, calibration temperature | Recall store K factor. |
| **Auto Return** | User selectable auto return if SHARK is left in menu mode or if relays are left in manual override mode for more than 10 min. | | | |
| **Display Damping** | User can select rate at which SHARK updates display. Enables display damping of unstable process | | | |
| **Net Weight** | 2.2lbs (1kg) | | | |
| **Approvals** | ULC (pending) | | | |

## Ordering Information:

**SHARK-120** **120 Volt, 50/60 Hz Power**
**SHARK-240** **240 Volt, 50/60 Hz Power**

## MULTI-PARAMETER Controller and Analyzer

### Bright LED exterior menu panel




### Makes calibration easy…

Auto Cal and Manual Cal from the front menu



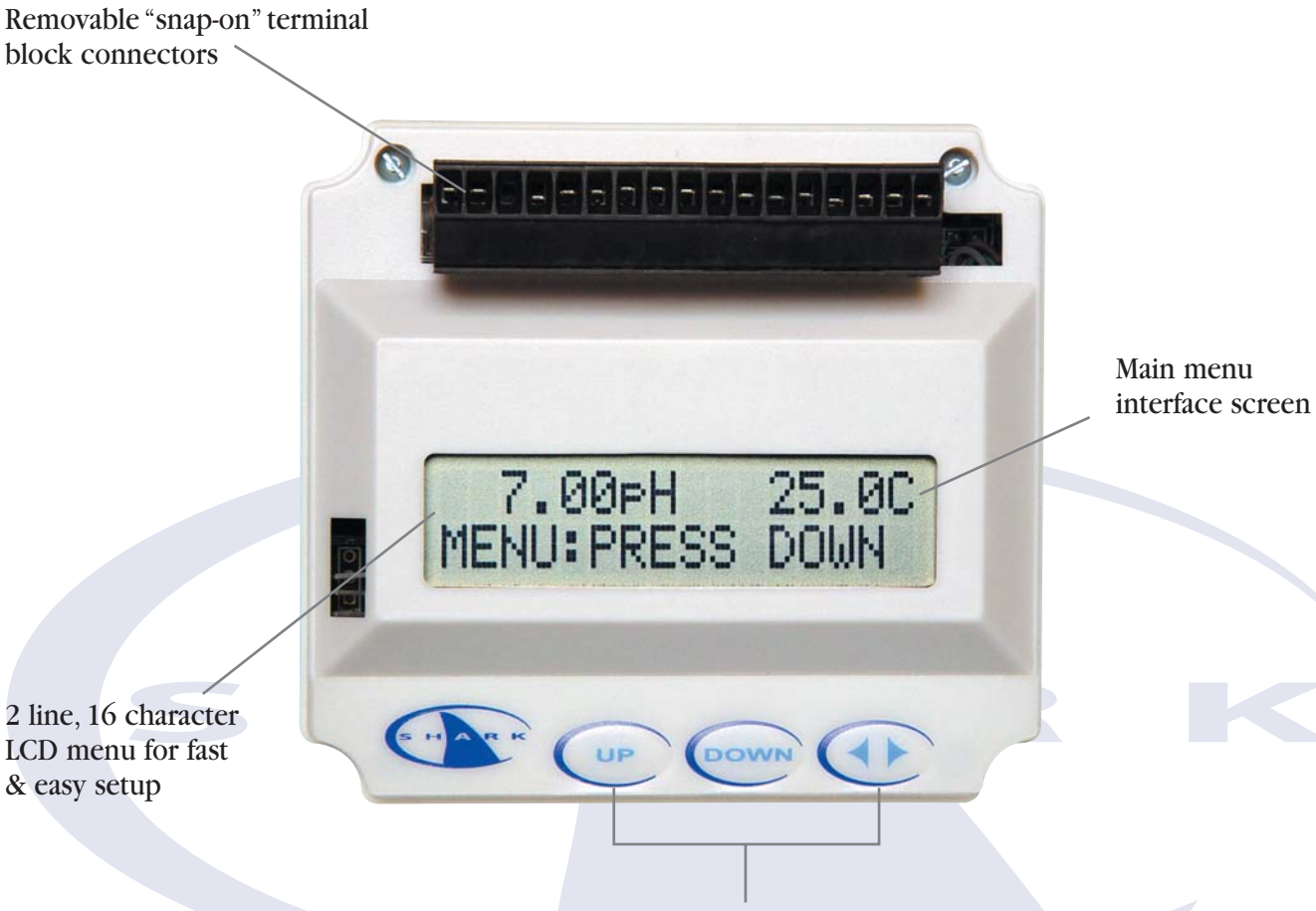

### …and reading temperature too.

In ºC or ºF

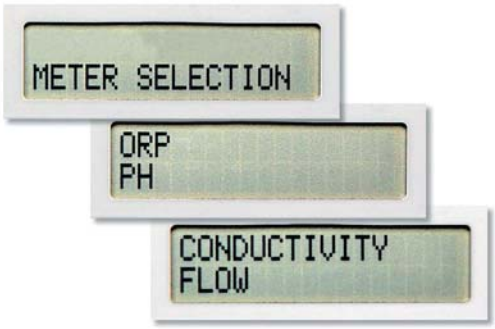


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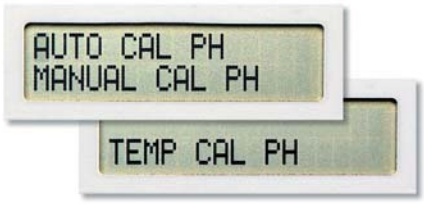
### Easy to use interior LCD menu panel




### Select parameter



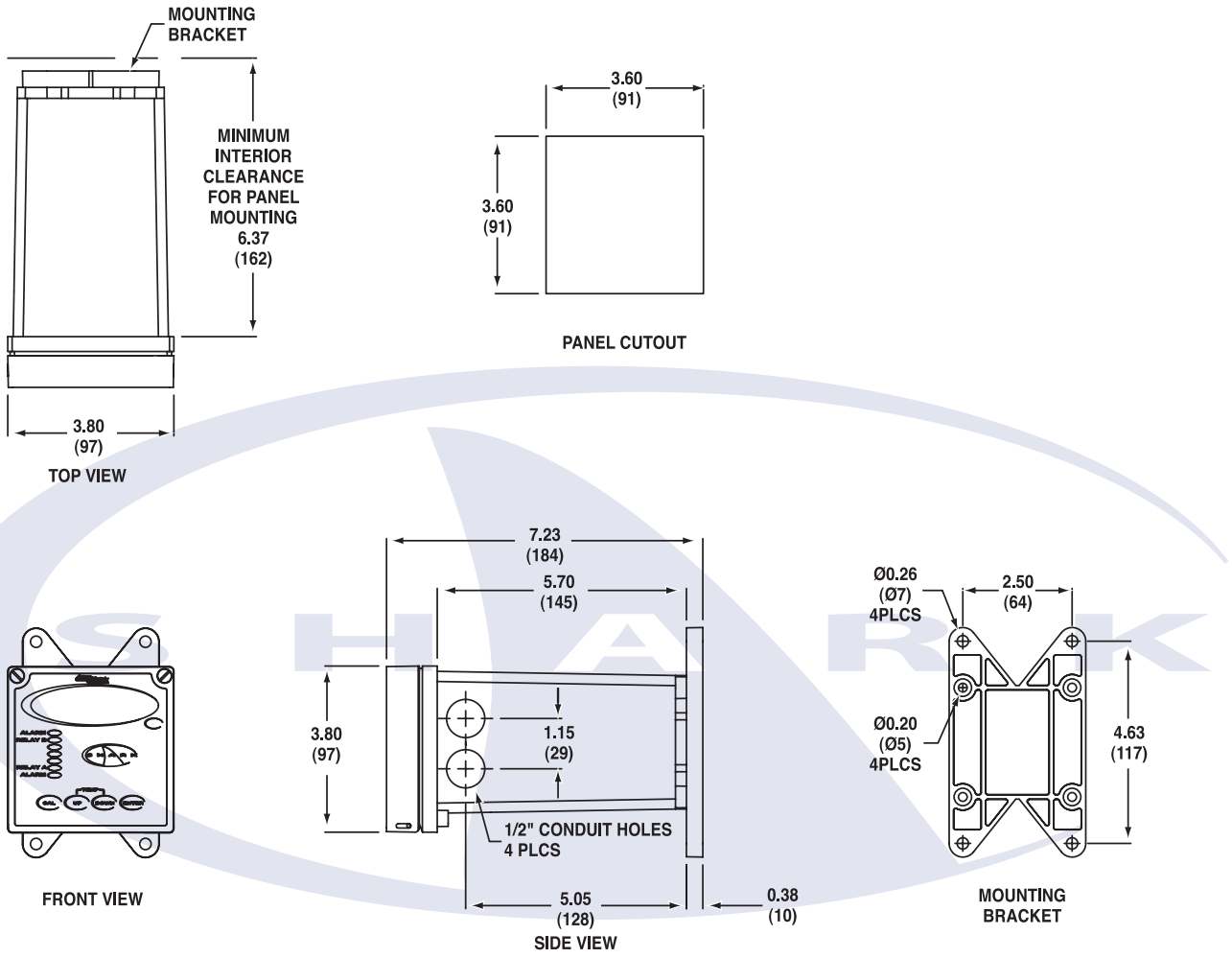

### Select calibration method




### Relay setup



## MULTI-PARAMETER Controller and Analyzer - Dimensions *Inches (mm)*




## MOUNTING CONFIGURATIONS

