Model P33 pH and ORP Analyzer

Panel-mount 1/4 DIN Style

Multiple Measurements
The Model P33 displays measured pH (or ORP) and temperature either separately or together. Both analog outputs can also be shown. Front panel red LEDs indicate relay "on/off" status.

Backlit LCD Readout
The two-line, 16 character backlit LCD provides excellent viewing contrast under all lighting conditions.

Panel-mount 1/4 DIN Case with NEMA 4X Front Panel
The P33 is housed in a 1/4 DIN plastic case that features a NEMA 4X front panel.

Electromagnetic Conformance
The analyzer exceeds U.S. and meets European standards for EMI and RFI.

Multiple Language Capability
All screens can be selected for display in English, French, German, or Spanish. (Other available languages can be substituted.)

"Menu-guided" Operation
The simple keypad and logical menu structure make this analyzer easy to use. Menu screens guide you through setup, calibration, operation, and test/maintenance functions.

Passcode-protected Access
For security, use the P33's passcode capability to restrict access to configuration settings and calibration to authorized personnel only.

OEM Versions Available
These analyzers can be manufactured to accommodate OEM-specific needs.

Accepts GLI Differential Sensor or Conventional Combination Electrode
The Model P33 can be used with any GLI Differential Technique pH or ORP sensor, or any conventional combination electrode. For temperature compensation, the P33 accepts a Pt 1000 RTD, Pt 100 RTD or NTC 300 ohm thermistor.

Two 0/4-20 mA Analog Outputs
Each of the two isolated analog outputs can be set to 0-20 mA or 4-20 mA, and assigned to represent the measured pH (or ORP) or temperature. During calibration, both outputs can be held at their last measured values, transferred to preset values, or remain active.

Simple Interactive Diagnostics
Built-in diagnostics continuously test analyzer and sensor operation.

WE'VE GOT HART ABILITY

CE
Certified Compliant to European Community Standards

HACH®
Be Right™

Specifications

Operational

Display . . . . . .Two-line by 16 character backlit LCD

NOTE: *The measured pH (or ORP) and temperature can be displayed separately or together on one screen. Both analog output values are shown together on one screen.*

Measurement	Selectable Ranges
pH	-2.0 to 14.0 pH or -2.00 to 14.00 pH
ORP	-2100 to +2100 mV
Temperature	-4.0 to 392.0˚F or -20.0 to +200.0˚C
Analog Outputs (1 and 2)	0.00-20.00 mA or 4.00-20.00 mA

Ambient Conditions . . . . . Operation: -4 to +140˚F (-20 to +60˚C); 0 to 95% relative humidity, non-condensing
Storage: -22 to +158˚F (-30 to +70˚C); 0 to 95% relative humidity, non-condensing

Relays

Types/Outputs . . . . . .Two electromechanical relays; SPDT (Form C) contacts; U.L. rated 5A 115/230 VAC, 5A @ 30 VDC res.

Operational Mode . . . . . Each relay (A and B) can be driven by the measured pH (or ORP) or temperature

Function Modes:
- Control . . . . . Settings for high/low phasing, setpoint, deadband, overfeed timer, off delay, and on delay
- Alarm . . . . . Settings for low alarm point, low alarm point deadband, high alarm point, high alarm point deadband, off delay, and on delay
- Status . . . . . Not configurable; relay only activates when a diagnostic WARNING condition exists
- Timer . . . . . Relay is activated by user-set interval and time duration values to control a GLI sensor cleaning system

Indicators . . . . . .Relay A and B LEDs indicate respective relay status

Temperature Compensation . . . . . .Automatic from 14.0 to 230.0˚F (-10.0 to +110.0°C) with selection for NTC 300 ohm thermistor (used in GLI Differential sensors), Pt 1000 ohm RTD or Pt 100 ohm RTD temperature element, or manually fixed at a user-entered temperature; additional selectable temperature correction factors (ammonia, morpholine or user-set pH/°C linear slope) for pure water automatic compensation from 0.0-50.0°C)

Sensor-to-Analyzer Distance

GLI Differential Technique Sensor . . . . . .3000 ft. (914 m) maximum

Conventional Comb. Electrode w/Preamp . . .985 ft. (300 m) maximum

Conventional Comb. Electrode w/o Preamp . .100 ft. (30 m) maximum with electrode cable capacitance of less than 30 pF/foot

Power Requirements . . . . . .90-130 VAC, 50/60 Hz. (10 VA max.) or 190-260 VAC, 50/60 Hz. (10 VA max.)

Calibration Methods

2-point Buffer (for pH only) . . . . . .Automatic calibration and buffer recognition using two buffers from a selected buffer set

1-point Sample (for pH or ORP) . . . . . .Automatic calibration and buffer recognition using one buffer from a selected buffer set

NOTE: *When using buffers that are not included in either of the analyzer buffers sets, use only the 2-point Sample method or 1-point Sample Method respectively for calibration.*

Analog Outputs . . . . . .Two isolated 0/4-20 mA; each with 0.004 mA (12-bit) resolution and capability to drive up to 600 ohm loads

NOTE: *Each output can be assigned to represent the measured pH (or ORP) or temperature. Parameter values can be entered to define the endpoints at which the minimum and maximum mA output values are desired (range expand). During calibration, both outputs can be selected to hold their present values, transfer to preset values to operate control elements by an amount corresponding to those values, or remain active to respond to the measured value.*

Communication
- RS-232 . . . . . .Enables configuration and retrieval of measured data for one analyzer using IBM-compatible PC and GLI optional software tool kit
- HART Protocol . . . . . .Enables configuration and retrieval of measured data for multiple analyzers over a communication link using appropriate hand-held terminal or data system with HART software

Memory Backup (non-volatile) . . . . . .All user settings are retained indefinitely in memory (EEPROM)

Electrical Certifications

European Community EMC . . . . . .Certified CE compliant for conducted and radiated emissions (EN 50081-2) and immunity (EN 50082-2)

General Purpose . . . . . .UL

Analyzer Performance (Electrical, Analog Outputs)

Accuracy . . . . . .± 0.1% of span

Sensitivity . . . . . .± 0.05% of span per 24 hours, non-cumulative

Repeatability . . . . . .± 0.01% of span or better

Temperature Drift . . . . . .Zero and Span: < 0.03% of span per ˚C

Mechanical

Enclosure . . . . . .Polycarbonate with NEMA 4X front panel; general purpose; two brackets for panel mounting

Mounting Configurations . . . . . .Panel mounting

Net Weight . . . . . .1.7 lbs. (0.8 kg) approximately

Ordering Information

Model Number

P33 pH analyzer (also selectable for ORP measurement) in 1/4 DIN panel mount with NEMA 4X front panel. Includes two brackets with adjustable screws for panel mounting.

Communications Option
- **A** None
- **B** HART Protocol

Reserved Categories

Company ID Nameplate
- **N** GLI Nameplate
- **B** Customer-specified Nameplate (see note below)
- **C** No Nameplate

Equipment Tagging (specify tag data)
- **N** None
- **P** Paper
- **S** Stainless steel

P33	1	Product Number

Choose one from each category.

NOTES: *The nameplate cannot be printed with a company logo. Please specify the desired name which is printed in only capital letters*

Accessories (order separately)

Sensors

Refer to GLI data sheets G109 for pHD™ Differential Sensors, G110 for Encapsulated Sensors, G112 for 3/4-inch Combination Sensors and G114 for Manual Positioners.

Software Tool Kit (P/N1000G331)

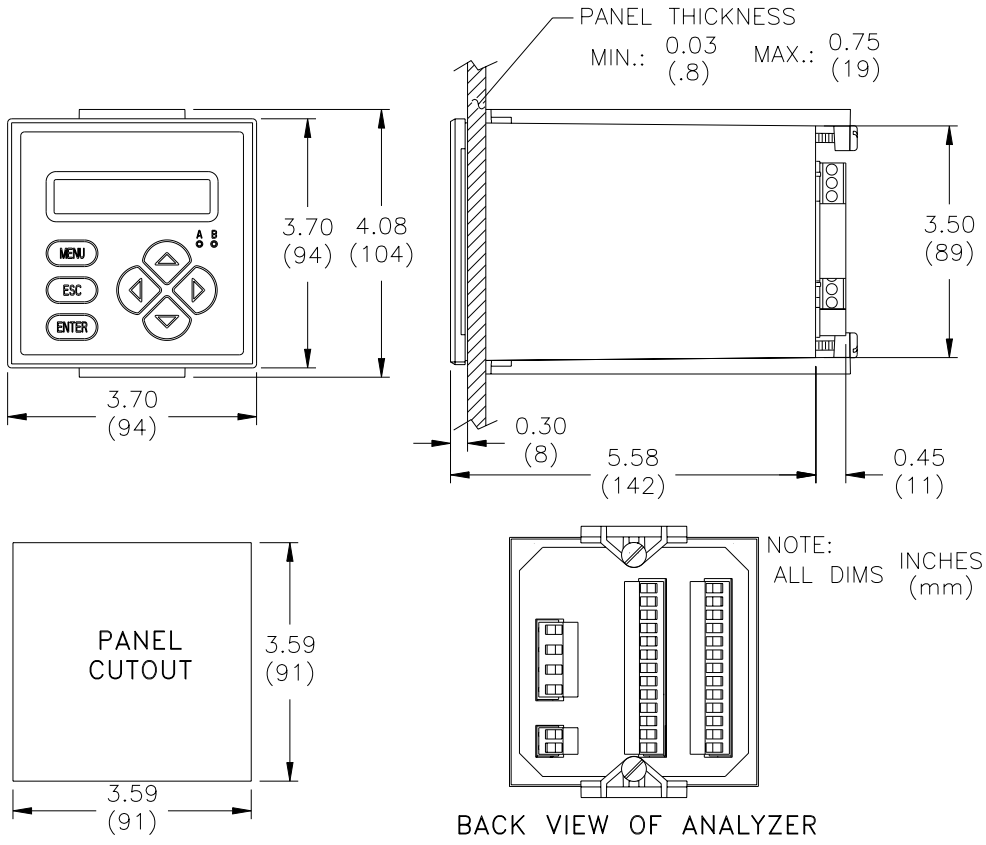
For use with an IBM-compatible personal computer. The software can create and download multiple sets of analyzer configuration values. The kit includes a GLI software CD-ROM and ten-foot cable terminated with a RS-232 connector and stripped/tinned wires for connection to the analyzer.

Engineering Specification

1. The microprocessor-based analyzer shall accept any GLI Differential Technique pH or ORP sensor, or any conventional combination electrode. For temperature compensation, the analyzer shall accept a Pt 1000 RTD, Pt 100 RTD or NTC 300 ohm thermistor temperature compensator.
2. The analyzer shall be software selectable to measure pH or ORP, and configurable for multiple languages.
3. The analyzer shall have a two-line by 16 character backlit LCD. It shall display measured pH (or ORP) and temperature on separate screens, or both measurements together on one screen. Both analog output values shall be displayed together on one screen.
4. The analyzer shall provide these calibration methods:
   a) 2-point Buffer Method (for pH only): Automatic calibration and buffer recognition using two buffers from a selected buffer set.
   b) 1-point Buffer Method (for pH only): Automatic calibration and buffer recognition using one buffer from a selected buffer set.
   c) 2-point Sample Method (for pH only): Enter known values of two samples (determined by laboratory analysis or comparison reading) or two pH buffers.
   d) 1-point Sample Method (for pH or ORP): Enter known value of one sample (determined by laboratory analysis or comparison reading), one pH buffer, or one reference solution (for ORP measurement).
5. The analyzer shall have a passcode to restrict access to configuration settings and calibration to authorized personnel only.
6. The analyzer shall have user-test diagnostics for outputs, relays, and alarm LEDs without requiring special test equipment.
7. The analyzer shall be configurable using its RS-232 port and GLI optional software tool kit, or HART® communication protocol.
8. The analyzer shall have two isolated 0/4-20 mA analog outputs. Each output shall be able to represent the measured pH (or ORP) or temperature. Parameter values shall be entered to define the endpoints at which the minimum and maximum mA output values are desired. During calibration, both outputs shall be selected to hold their present values, transfer to preset values to operate control elements by an amount corresponding to those values, or remain active to respond to the measured value.
9. The analyzer shall be Hach Company, GLI Model P33.

Dimensions

Inches (mm)



GLI pHD™ Differential pH and ORO Sensors

available in convertible (PEEK or Ryton), insertion, and sanitary mounting styles. For complete details and specifications, refer to Data Sheet G109.

GLI 3/4-inch Combination pH and ORP Sensors

Flow-through, immersion, insertion, and sanitary mounting styles in various materials. For complete details and specifications, refer to Data Sheet G112.