



## Connections and Power

**Connect sensor, analog output (4-20mA) and/or digital communications cables to the back of the analyzer.**

**Connect sample or cal-gas lines to sensor via 1/4" NPT fittings**

**Apply 24VDC power, 1A max**

Internal heater will slowly ramp current up until reaching about 1 amps, 10 Watts.

**CAUTION:** Outside of sensor can exceed 100C. Take measures to protect personnel and other equipment from the hot sensor surface.

It can take as long as 30 minutes for the sensor to fully stabilize.

**Flow sample or cal-gas**

Flow sample or cal-gas at a rate between 0.2 and 20 SLPM, near atmospheric pressure.

## Calibration

**Entering calibration bottle concentrations:**

1. Rotate knob until "Bottle Conc Lo" (or "Bottle Conc Hi") appears.
2. Press and hold knob to enter edit mode (square brackets [ ] will appear).
3. Rotate knob until desired bottle concentration is displayed.
4. Press knob for long duration to store value (\* > < \* brackets appear).
5. Repeat for high bottle concentration.

**Calibrating the analyzer:**

1. Flow low concentration gas and wait for stabilization, typically 2 to 5 minutes.
2. Rotate knob to select "Stored Signal Lo" (or "Stored Signal Hi").
3. Press knob and hold knob to enter edit mode (square brackets [ ] will appear).
4. Press knob for long duration to store low response (\* > < \* brackets will appear).
5. Repeat for high cal-gas response.

## Navigation

**View a parameter or menu item:**

Rotate knob to activate menu and scroll to desired parameter. Parameter title and value will be displayed.

**Exit menu system or abort editing any parameter without storing new value:**

Refrain from pressing or rotating knob for 5 seconds, menu will revert to blank screen.

**Edit a currently displayed parameter:**

1. Press knob for short duration until square brackets [ ] appear, indicating edit mode has been entered.
2. Rotate knob until desired value is displayed.
3. Press knob for long duration until \* > < \* appear indicating the displayed value has been stored.

## Special Commands

**Force Analog Output to 0mA, 4mA, or 20mA temporarily:**

1. Rotate knob until either "Force Analog Out" is displayed.
2. Press and hold knob until [0 mA] appears, indicating 0mA is being sent to the Analog Output.
3. Rotate knob to change currently forced output value to 0, 4, or 20mA.
4. Output will revert to live/process value if knob is not pressed or rotated for 5 seconds.
5. Forced output remains active if knob is pressed or rotated before 5 sec duration expires.

**Restore Defaults to original factory values:**

1. Rotate knob until Restore Defaults is displayed.
2. Press and hold knob until [Press for 3 sec] appears
3. Press and hold knob for 3 seconds to overwrite all parameters with factory default values.

### Parameters and commands available from the front panel.

Parameter/Command	Description	Range of Values
Stored Signal Lo 0.48 mA	Select/edit to calibrate sensor to low-concentration cal-gas. Generally has +0.5 mA offset even if sensor shows 0.0 mA output.	-5 to + 15 mA (nominal .5 mA at 0 %O2)
Stored Signal Hi 4.45 mA	Select/edit to calibrate sensor to high-concentration cal-gas. Stored value approximately represents linearized sensor output when subjected to high concentration cal-gas. Generally has +0.5 mA offset even if sensor shows 0.0 mA output.	-5 to + 15 mA (nominal 4.0 mA at 20.9 %O2)
Bottle Conc Low 0.00 %O2	Concentration of low cal-gas (often zero) used to calibrate the sensor low signal.	0 %O2 to (High bottle conc – 5 %O2)
Bottle Conc High 25.00 %O2	Concentration of high cal-gas (often zero) used to calibrate the high sensor signal.	(Low bottle conc + 5 %O2) to 100 %O2
Aout: Conc @ 4mA 0.00 %O2	O2 concentration represented by 4mA analog output.	0 to 50 %O2
Aout: Conc @20mA 25.00 %O2	O2 concentration represented by 20 mA analog output.	10 to 100 %O2
Filtering Time 30 sec	Approximate averaging time of digital filter.	3 to 30 seconds
Sensor Corr Fact 1.00	Linearity correction factor: Factory default is 1.00 and should be sufficient for most installations	0 to 2.00

Parameter/Command	Description	Range of Values
Comm Parameters 38,400/8/N/1	EIA-485 serial port settings	38,400/8/N/1  if Modbus mode is: RTU: 8 bit, 1 stop bit; ASCII: 7 bit, 1 stop bit;  if either RTU or ASCII: Select baud rate: 9600, 14400, 19200, 38400  and parity: Even/Odd/None
Modbus Address 1	Modbus slave address of the analyzer.	1 to 247
Modbus Mode RTU	Modbus character mode: RTU or ASCII.	RTU ASCII
Force Analog Out	Analog output can be temporarily forced to 0, 4, or 20mA output so that connecting hardware can be adjusted/verified.	0.0 mA 4.0 mA 20.0 mA
Restore Defaults	Factory defaults can be restored by selecting this parameter for edit, then pressing/holding knob for 3 seconds.	n/a
Sensor Status ON (normal)	Read-only. Sensor status will be ON (normal) when the heater voltage is within acceptable range. Otherwise, sensor status will be Off (fault).	ON (normal) OFF (fault)
Firmware ID:23,Ver:1.0000	Read-only Firmware ID and version are displayed	n/a

- The connections are two identical 1/4" female NPT ports. Does not matter which one is used as an inlet.
- Flow should be between .2 and 20 LPM, though typical rates are between .5 and 2 LPM.
- Analog output is a removable-plug two-pin screw-terminal, with pin 1 as low, and pin 2 as high.