



mPower Electronics

Making Powerful Senses

Toll Free: 1-866-mPower7

POLI MP100P and MP100 User and Service Training

- By William Rosales -

www.mpowerinc.com





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The POLI multi-gas detectors (MP400, MP400P, and MP400S) offer 4 to 5-gas monitoring of O₂, LEL, CO₂, and VOC's.



- POLI MP400 is a compliance model with LEL, O₂, H₂S, CO and HCN.
- POLI MP400P is a standard model and adopts a full range of sensors selection, e.g. electrochemical (EC), pellistor, non-dispersive infrared (NDIR) and photo-ionization detector (PID) in pump or diffusion).
- POLI MP400S - Wireless is an advanced model and has a built-in wireless module for real-time data transmission.



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POLI MP400 Multi Gas Detector DIFFUSION

SENSORS: LEL, O2, H2S, CO or HCN, CO, LEL, O2

Features, Functions and Benefits



- Diffusion sampling
- Battery operation 16 hours
- Durable double shot outer case
- 360-Degree LED alarm bar
- Man-Down alarm
- USB Micro charger & communications cable
- Flip screen
- Integrated calibration cup
- Smart sensors carry ID and calibration
- 6 Months continuous datalogging
- Modular design



POLI MP400P Multi Gas Detector PUMP

Available in 27 different sensors.

Features, Functions and Benefits



- Wide selection of “plug-and-play” Smart Sensors
- 16-Hour rechargeable Li-ion battery
- Pump-off switch saves battery for longer operation time
- Automatic flow fault on pump
- 360-Degree LED alarm bar
- Man-Down alarm
- USB Micro charger & communications cable
- Flip screen
- 6 Months continuous datalogging
- Durable double shot outer case




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Detector Specifications

Size	5.74 x 3.31 x 1.65 in (140 x 84 x 42 mm)
Weight	15.5 oz (435 g)
Sensors	Over 30 interchangeable and field-replaceable sensors including PID for VOCs, EC for Toxic and O ₂ , Pellistor for LEL, and NDIR for LEL, Vol% and CO ₂
Response time (t90)	<ul style="list-style-type: none"> • 15 seconds (LEL/CO/H₂S/O₂) • Others vary – see sensor specification sheet
Battery	Rechargeable Li-ion pack: 16 hours in diffusion mode, 12 hours with pump
Direct Readout	<ul style="list-style-type: none"> • Real-time reading of gas concentration • PID measurement gas and correction factor, • Visual compliance indicator • Battery status • Datalogging on/off • STEL, TWA, peak and minimum values • Man-Down alarm on/off
Display	128 x 128 graphical LCD, 1.77 x 1.73 in (45 x 44 mm), with LED backlight for enhanced readability. Automatic screen “flip” feature
Keypad	2 Operation keys
Sampling	Built-in pump or diffusion
Calibration	Manual calibration. CaliCase option allows automatic bump test and calibration on up to 4 units simultaneously

Alarms	<ul style="list-style-type: none"> • Audible (95 dB @ 30 cm) • Visual (flashing bright red LEDs) • Vibration • On-screen indication of alarm conditions • Man-Down alarm with pre-alarm
Datalogging	Continuous datalogging (6 months for 4 sensors at 1-minute intervals, 24 hours/day and 7 days/week)
Charging and Communication	Charging, data download, instrument setup and firmware upgrades on PC or laptop via PC comm, cradle, travel charger, or CaliCase.
Temperature	-4° to 122°F (-20° to 50°C)
Humidity	0% to 95% Relative humidity (non-condensing)
IP Rating	IP-65 (pump versions); IP-67 (diffusion versions)
Safety Certifications	<ul style="list-style-type: none">  Class I, Div 1, Group ABCD T4, -20°C ≤ T_{amb} ≤ +50°C IECEX Ex ia IIC T4 Ga ATEX II 1G Ex ia IIC T4 Ga (pending) CE European Conformity (pending)
EMC/RFI	EMC directive: 2014/30/EU
Warranty	<ul style="list-style-type: none"> • 2 Years on instruments • 2 Years on sensors for pellister LEL, and O₂, CO, H₂S, SO₂, HCN, NO, NO₂, and PH₃ EC sensors • 1 Year on other sensors



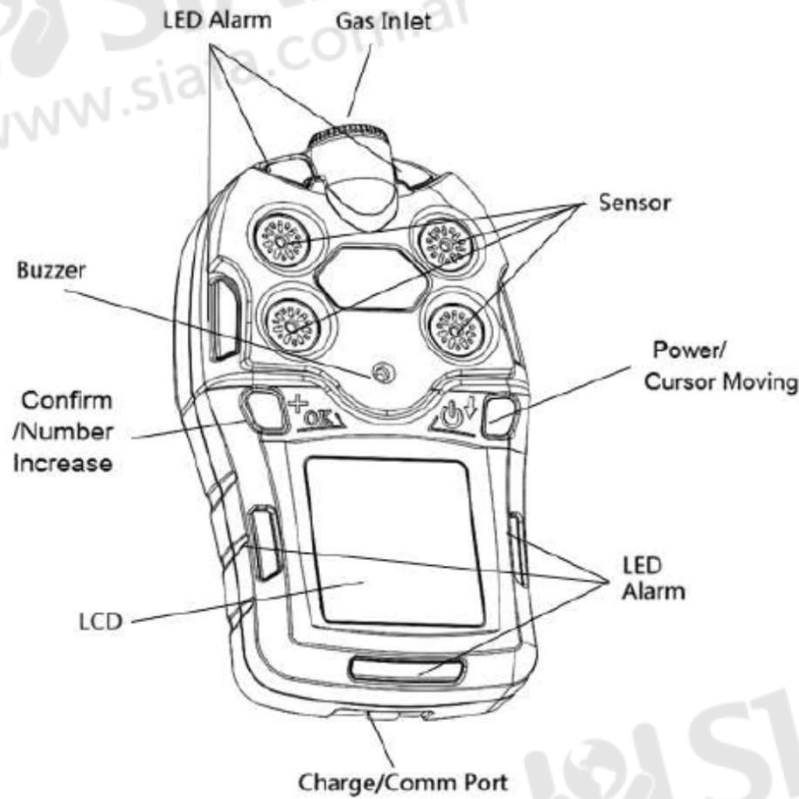
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Making Power



D	Socket1	
00	Empty	
A1	PID (High resolution, 0.1-2000 ppm)	
A3	CO ₂ Carbon Dioxide (NDIR 50-50,000 ppm CO ₂)	
A4	Hydrocarbons (NDIR 0-100% Vol CH ₄)	
A5	Hydrocarbons (NDIR, 0-100% LEL CH ₄)	
A6	LEL Combustibles (Pellistor, 1-100% LEL)	
01	O ₂ Oxygen (0.1-30% Vol)	
02	H ₂ S Hydrogen Sulfide (0.1-100 ppm)	
03	H ₂ S Hydrogen Sulfide (1-1000 ppm)	
04	CO Carbon Monoxide (1-1000 ppm)	
05	CO Carbon Monoxide (1-1000 ppm, low H ₂ cross-sensitivity)	
06	SO ₂ Sulfur Dioxide (0.1-20 ppm)	
0R	SO ₂ Sulfur Dioxide (0.1-100 ppm)	
07	NO Nitric Oxide (1-250 ppm)	
08	NO ₂ Nitrogen Dioxide (0.1-20 ppm)	
09	Cl ₂ Chlorine (0.1-50 ppm)	
0A	HCN Hydrogen Cyanide (1-100 ppm)	
0B	NH ₃ Ammonia (1-100 ppm)	
0C	PH ₃ Phosphine (0.01-20 ppm)	
0D	ClO ₂ Chlorine Dioxide (0.01-1 ppm)	
0E	HCl Hydrogen Chloride (0.1-15 ppm)	
0F	HF Hydrogen Fluoride (0.1-10 ppm)	
0H	CH ₃ SH Methyl Mercaptan (0.1-10 ppm)	
0J	H ₂ Hydrogen (10-1000 ppm)	
0L	CO+H ₂ S (CO 1-500 ppm; H ₂ S 0.1-200 ppm)	
0M	H ₂ S+SO ₂ (H ₂ S 0.1-100 ppm; SO ₂ 0.1-20 ppm)	
0P	C ₂ H ₄ O Acetaldehyde (1-100 ppm)	
0Q	ETO Ethylene Oxide (1-100 ppm)	

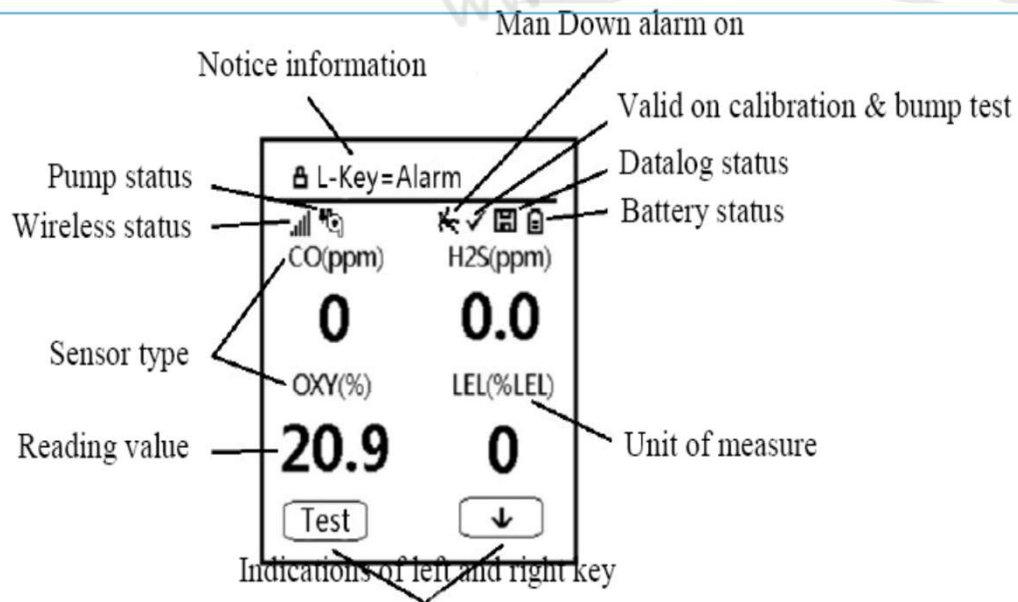


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Once the startup procedure is completed, and a numeric reading screen with icons is displayed, the instrument is fully functional and ready to use.



Icon	Function
	Wireless signal strength at 0-5 level
	Pump status (pump version only)
	Datalogging status (shown when datalogging is on, blank when off)
	Battery voltage status
	Man Down alarm enabled
	All sensors tested and calibrated tick mark (all sensors have been bump tested and calibrated; no sensor is overdue for a bump test or calibration according to the intervals configured on the instrument).



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Pump Status

IMPORTANT!

During operation, make sure the probe inlet and the gas outlet are free of obstructions. Obstructions can cause premature wear on the pump, false readings, or pump stalling. During normal operation, the pump icon alternately shows inflow and outflow as shown here:



If there is a pump failure or obstruction that disrupts the pump, the alarm sounds and you see this icon blinking on and off:



Once the obstruction is removed, you can restart the pump by pressing the [+ / OK] key. If the pump does not restart, and the pump stall alarm continues, consult the Troubleshooting section of this guide or contact your mPower distributor for technical support.



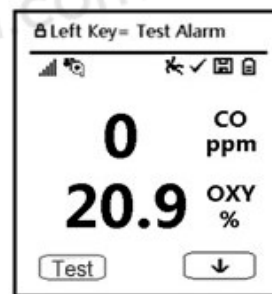
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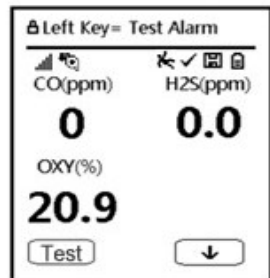
Active Sensor Display



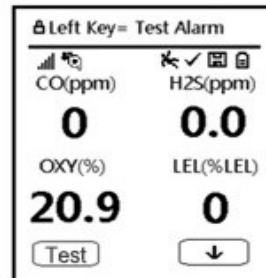
One Sensor



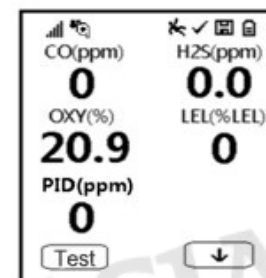
Two Sensors



Three Sensors



Four Sensors



Five Sensors



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Auto Flip Screen



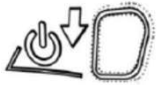


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Turning the Instrument ON and OFF

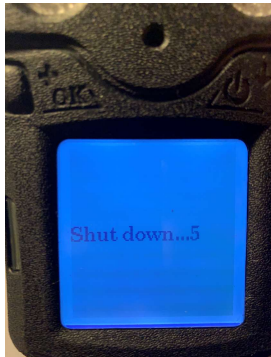


Turning the Instrument ON

Press and hold the Power/Cursor Moving key until the display, beep & LEDs turn on, the then release.



until the display, beep



Turning the Instrument off

Press and hold the Power/Cursor Moving key for 3 seconds and continue to hold for a 5-second Shut down until “Unit off...” is displayed.





Testing Alarm Indicator

The alarm can be tested whenever the main (Reading) display is shown.

Press the Left Confirm key  and the audible and visible alarms are tested.

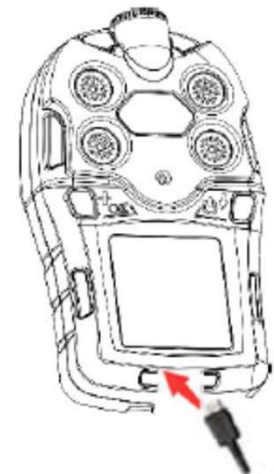
Under normal-operation mode and non-alarm conditions, the buzzer, vibration alarm, LED, and backlight can be tested at any time by pressing [+ / OK] once.

Charging the battery:

Lithium-ion battery pack inside the POLI is a free of maintenance.






USB charging/data cable. Please use manufacture recommended cable.

Charger: 100-240VAC 50/60HZ 0.4A max



3.2 Battery Status

The battery icon on the display shows how much charge is in the battery, and alerts you if any charging problem.

				 blink
Full charge	2/3 charge	1/3 charge	Battery Low	Battery Alarm

When the battery's charge falls below a preset voltage, the instrument warns you by beeping once and flashing once every minute. The instrument automatically powers down within 10 minutes, after which users shall recharge the battery.





4 – 5 Gas Sensors configuration:

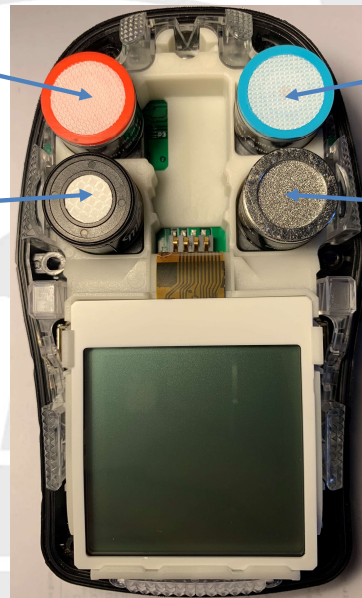


Low Power Sensor

Low Power Sensor

High or Low Power Sensor

High or Low Power Sensor



High Power Sensor

A1	PID (High resolution, 0.1-2000 ppm)
A3	CO ₂ Carbon Dioxide (NDIR 50-50,000 ppm CO ₂)
A4	Hydrocarbons (NDIR 0-100% Vol CH ₄)
A5	Hydrocarbons (NDIR, 0-100% LEL CH ₄)

Combo Sensor – Low Power Sensor

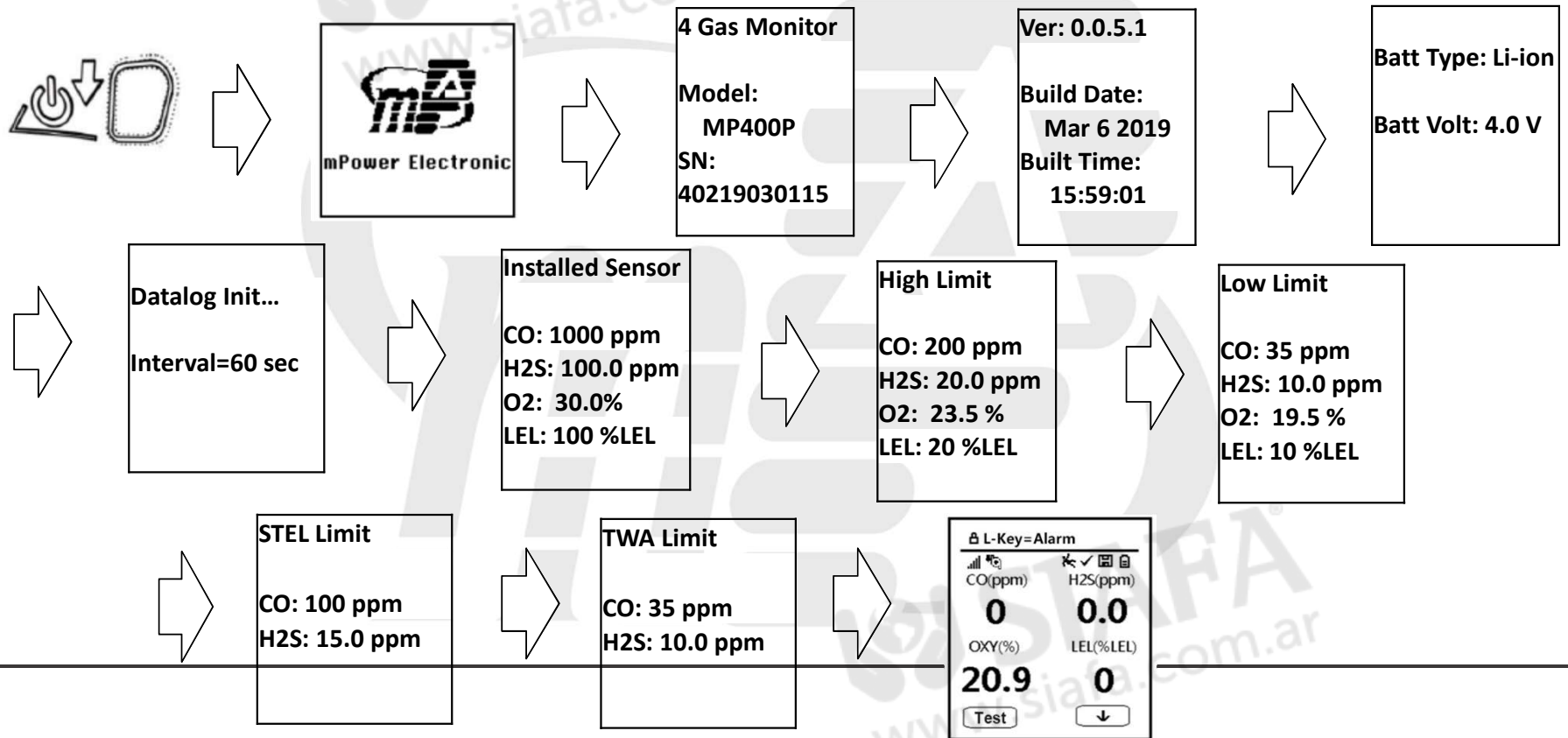
0L	CO+H ₂ S (CO 1-500 ppm; H ₂ S 0.1-200 ppm)
0M	H ₂ S+SO ₂ (H ₂ S 0.1-100 ppm; SO ₂ 0.1-20 ppm)

Low Power Sensor

A6	LEL Combustibles (Pellistor, 1-100% LEL)
01	O ₂ Oxygen (0.1-30% Vol)
02	H ₂ S Hydrogen Sulfide (0.1-100 ppm)
03	H ₂ S Hydrogen Sulfide (1-1000 ppm)
04	CO Carbon Monoxide (1-1000 ppm)
05	CO Carbon Monoxide (1-1000 ppm, low H ₂ cross-sensitivity)
06	SO ₂ Sulfur Dioxide (0.1-20 ppm)
07	NO Nitric Oxide (1-250 ppm)
08	NO ₂ Nitrogen Dioxide (0.1-20 ppm)
09	Cl ₂ Chlorine (0.1-50 ppm)
0A	HCN Hydrogen Cyanide (1-100 ppm)
0B	NH ₃ Ammonia (1-100 ppm)
0C	PH ₃ Phosphine (0.01-20 ppm)
0D	ClO ₂ Chlorine Dioxide (0.01-1 ppm)
0E	HCl Hydrogen Chloride (0.1-15 ppm)
0F	HF Hydrogen Fluoride (0.1-10 ppm)
0H	CH ₃ SH Methyl Mercaptan (0.1-10 ppm)
0J	H ₂ Hydrogen (10-1000 ppm)
0P	C ₂ H ₄ O Acetaldehyde (1-100 ppm)
0Q	ETO Ethylene Oxide (1-100 ppm)



Turning the Instrument ON – SELF TEST





Press pressing to scroll down/up the basic menu.

☰ L-Key=Alarm

CO(ppm)	H2S(ppm)
0	0.0
OXY(%)	LEL(%LEL)
20.9	0

Test ↓

CO = 0 ppm
H2S = 0.0 ppm
O2 = 20.5 %
LEL = 0 %LEL

Clear PEAK ↓

CO = 0 ppm
H2S = 0.0 ppm
O2 = 20.2 %
LEL = 0 %LEL

Clear MIN ↓

CO = 0 ppm
H2S = 0.0 ppm

STEL ↓

CO = 0 ppm
H2S = 0.0 ppm

TWA ↓

Date: 2019-06-13
Time: 20:08:52
Temp: 25 C

↓

Bat= Polymer
BatV= 3.68 V
Run Time= 0:36
Last Run= 2:30

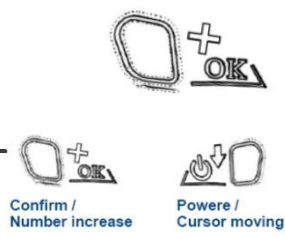
↓

LEL Calib. Gas
Methane
LEL Meas. Gas
Methane
CF= 1.0

↓

Start Comm?

✓ ↓





Entering Configuration Mode:







Press  and  at the same time for 2-3 seconds.

Input Password

0000

Enter password
0000









						
Calibration	Measurement	Alarm Setting	Datalog	Monitor Setup	Wireless	Exit
Fresh Air Calib	Enable/Disable	High Limit	Clear All	LCD Contract	Register	
Nitrogen Calib	Gas Unit	Low Limit	Interval	Pump Speed	Return	
Span Calib	Return	STEL Limit	Sensor Select	Pump Stall		
Bump Test		TWA Limit	Return	Temp Unit		
Span Value		Alarm Device		Language		
Return		Heart Beat Light		Back Light Mode		
		M-D On/Off		LCD Auto Flip		
		M-D WarmTime		Return		
		M-D Thresh				
		M-D Tmotionless				
		Return				



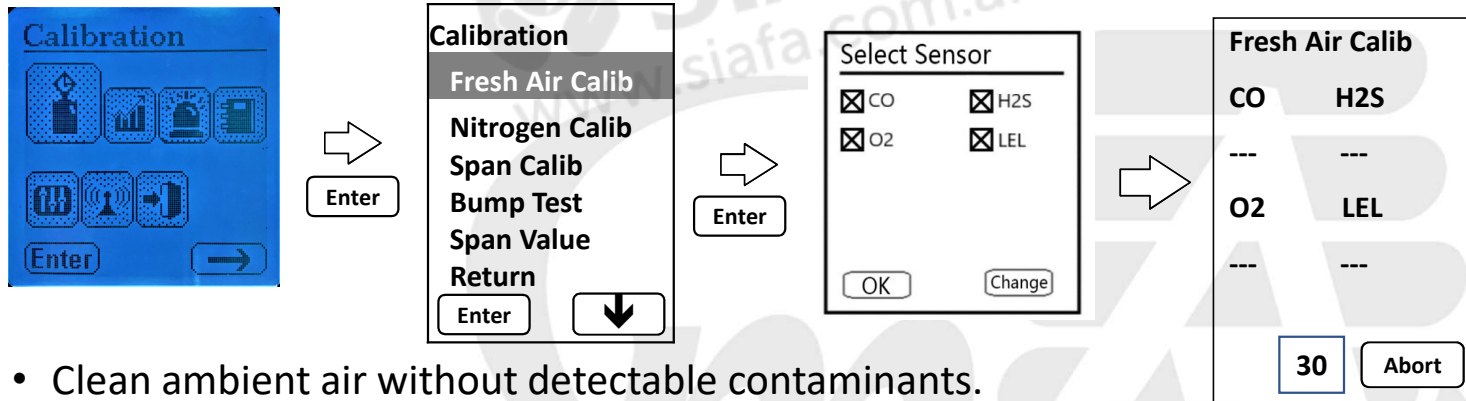
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Calibration	Measurement	Alarm Setting	Datalog	Monitor Setup	Wireless	Exit
Fresh Air Calib	Enable/Disable	High Limit	Clear All	LCD Contract	Register	
Nitrogen Calib	Gas Unit	Low Limit	Interval	Pump Speed	Return	
Span Calib	Return	STEL Limit	Sensor Select	Pump Stall		
Bump Test		TWA Limit	Return	Temp Unit		
Span Value		Alarm Device		Language		
Return		Heart Beat Light		Back Light Mode		
		M-D On/Off		LCD Auto Flip		
		M-D WarmTime		Return		
		M-D Thresh				
		M-D Tmotionless				
		Return				



ZERO CALIBRATION – fresh air calibration

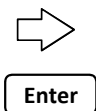


- Clean ambient air without detectable contaminants.
- Air Cylinder: The “Fresh” air must be clean, dry air without organic impurities and an oxygen value of 20.9%.
- Charcoal Filter
- For low PPB range, use fresh air gas.
- Zero calibration is to set the base line for the calibration curve, it is done in clean air with 20.9% oxygen. You can calibrate several sensors simultaneously and can also select one or several sensors individually for zero calibration. This procedure determines zero points of most sensors.





NITROGEN CALIBRATION – fresh air calibration



NITROGEN CALIBRATION – NOT AVAILABLE AT THIS TIME



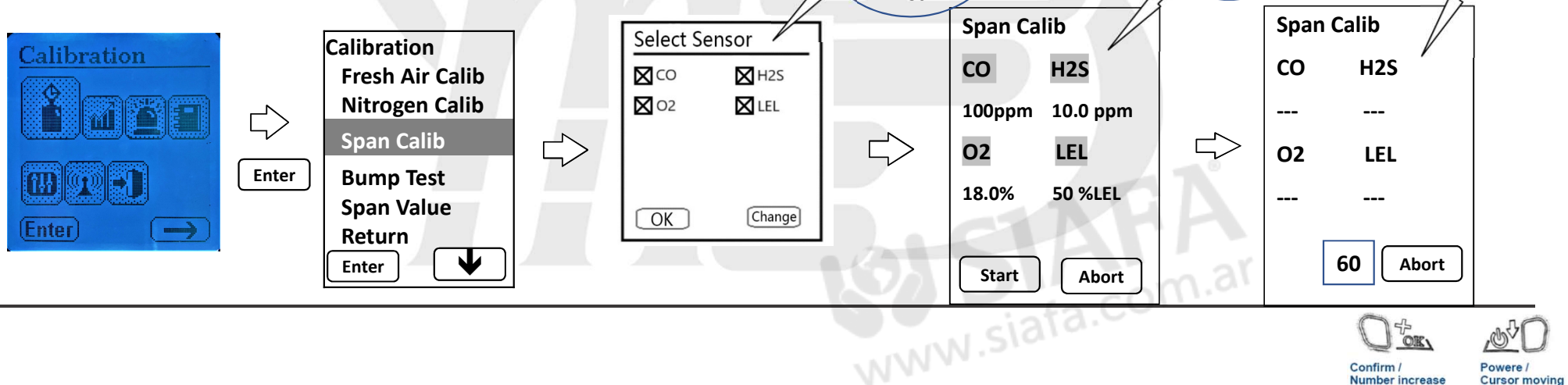


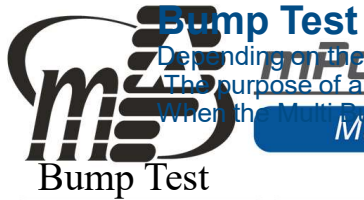
Span Calibration – 60 seconds

Depending on the configuration of your POLI and the span gas you have, you can perform a span calibration simultaneously on multiple sensors.
Using 4gas mix

Make sure the Calibration gas cylinder match the Span Calibration Values on the bottle of gas.

SPAN CALIBRATION – 60 seconds





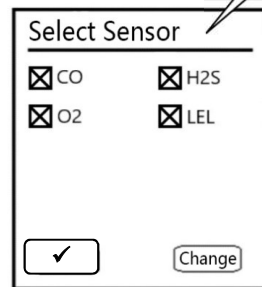
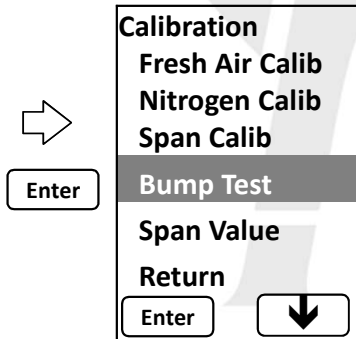
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Depending on the configuration of your PDU and the span gas you have, you can perform a bump test simultaneously on multiple sensors. The purpose of a bump test is to ensure that the instrument's sensors respond to gas and all the alarms are enabled and functional. When the Multi-Bump test is completed, the screen shows down with the sensor names and either 'Pass' or 'Fail' shown next to them.

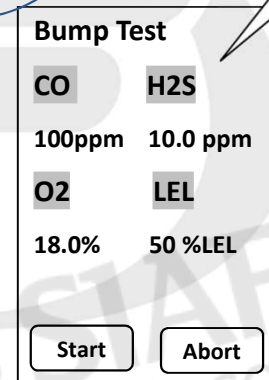
L-Key=Alarm	
CO(ppm)	H2S(ppm)
0	0.0
OXY(%)	LEL(%LEL)
20.9	0
Test	↓

If one or more sensors requires a bump test, then the screen displays the word 'BUMP'

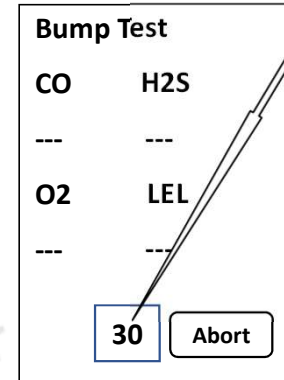
A bump test is required if the defined period of time between bump tests has been exceeded. This interval is set by an administrator using mPower Suite software.



Active Sensors' name are shown in a list



Bump Testing with gas values



Bump Testing 30 seconds count down



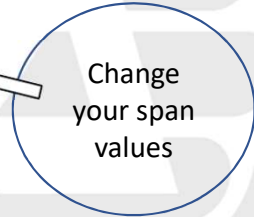
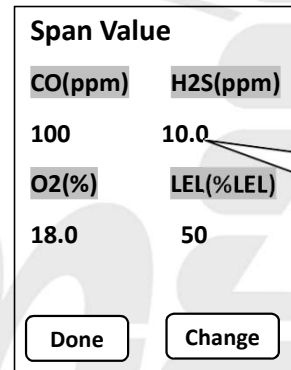
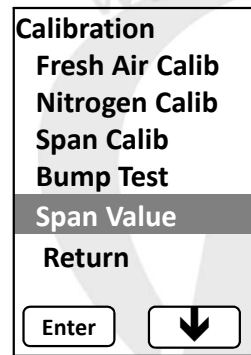


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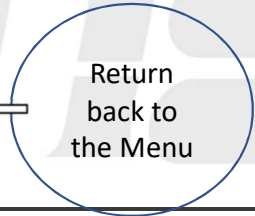
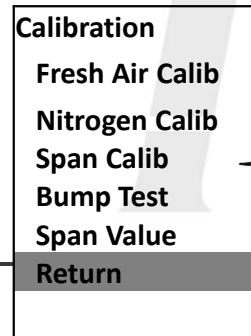


Span Value

Set the span gas value for each sensor
Make sure your POLI span values match the cylinder of gas you are using.

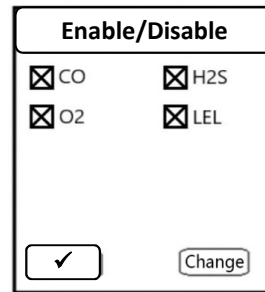
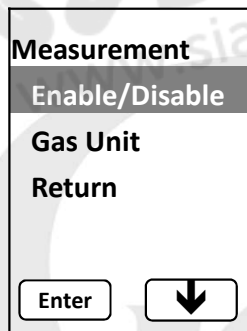
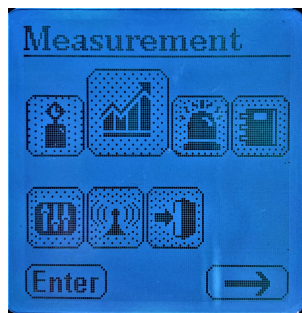


RETURN



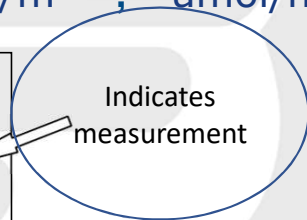
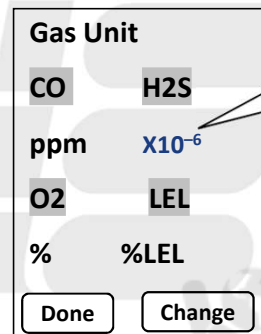
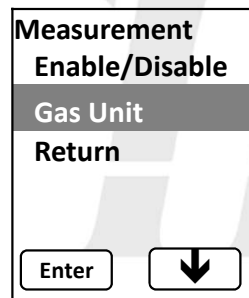
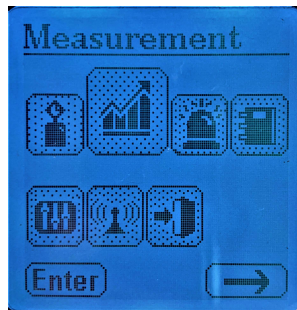


Measurements You can turn sensors on or off via this set of submenus. An 'X' in a box to the left of a sensor's name indicates it is turned on.



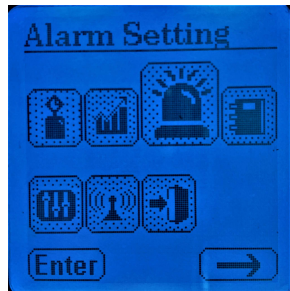
Measurements:

Measurements can be change to ppm , mg/m³ , umol/molμmol , X10⁻⁶



ppm = parts per million
mg/m³ = Milligram Per Cubic Meter
μmol/mol = μmol per mol
X10⁻⁶ = Per Million





- Alarm Settings**
- High Limit
 - Low Limit
 - STEL Limit
 - TWA Limit
 - Alarm Device
 - Heart Beat Light
 - M-D On/Off
 - M-D WarmTime
 - M-D Thresh
 - M-D Tmotionless
 - Return

High Limit

CO(ppm)	H2S(ppm)
200	20.0
O2(%)	LEL(%LEL)
23.5	20

Done Change

Low Limit

CO(ppm)	H2S(ppm)
35	10.0
O2(%)	LEL(%LEL)
19.5	10

Done Change

Change your alarm setting here

JJ1



Alarm Settings –



- Alarm Settings
- High Limit
- Low Limit
- STEL Limit**
- TWA Limit
- Alarm Device
- Heart Beat Light
- M-D On/Off
- M-D WarmTime
- M-D Thresh
- M-D Tmotionless
- Return

STEL Limit

CO(ppm)	H2S(ppm)
100	15.0

Done Change

STEL - Short-Term Exposure Limit
A **short-term exposure limit** (STEL) is the acceptable average exposure over a short period of time, usually 15 minutes as long as the time-weighted average is not exceeded.

TWA Limit

CO(ppm)	H2S(ppm)
35	10.0

Done Change

TWA - Time-Weighted Average
A **Time-Weighted Average** (TWA) A Permissible Exposure Limit (PEL) is the maximum amount or concentration of a chemical that a worker may be exposed to under OSHA regulations.

Alarm Device

- LED
- Buzzer
- Vibrator

✓ Change

An X indicates that the alarm has been selected

JJ1 adff
Jazlyn Jones, 6/14/2019

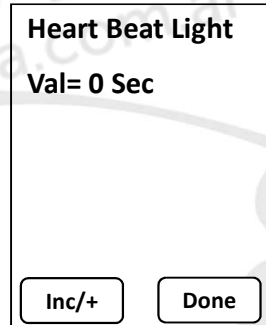
 **SIAFA**[®]
www.siafa.com.ar

 **SIAFA**[®]
www.siafa.com.ar

JJ1

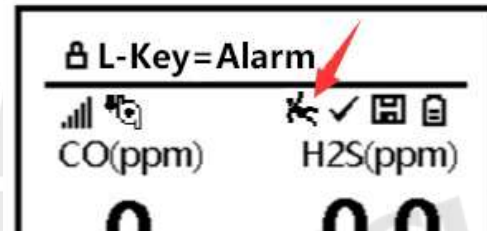
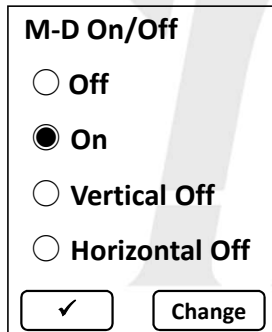


Heart Beat Light-



Heart Beat Light: The interval of heart beat light is at default 1 second and can be increased to 10 seconds. The function of interval is cancelled with the input '0'.

Turning on/off the Man Down Alarm -



JJ1 adff
Jazlyn Jones, 6/14/2019

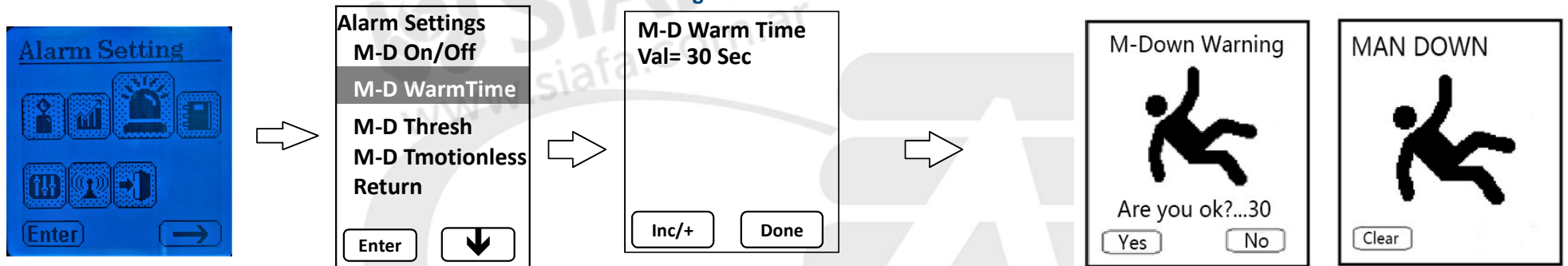
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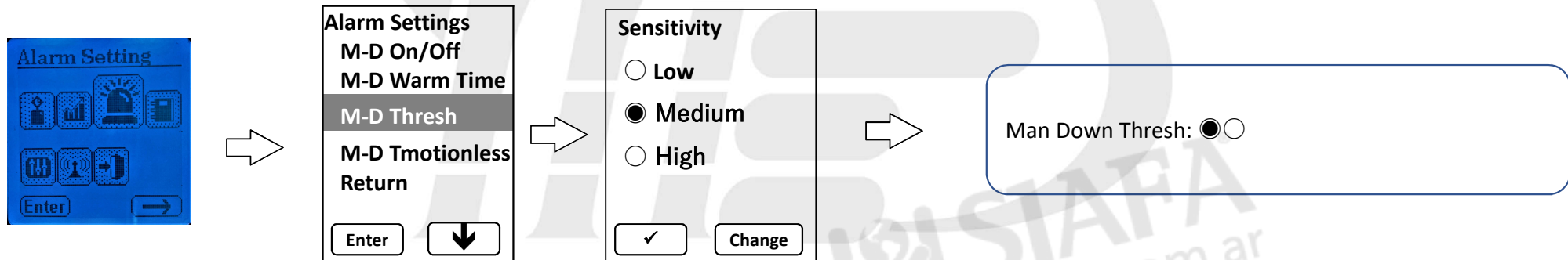
JJ1

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Man Down – warm Time

Man Down alarm timeout is at default 30 seconds and can be changed between 10 and 60 seconds.



Man Down – Thresh

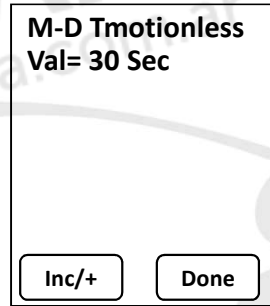
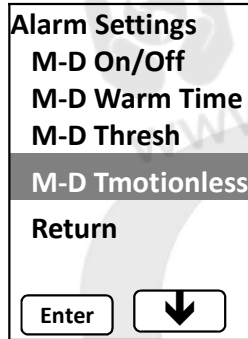
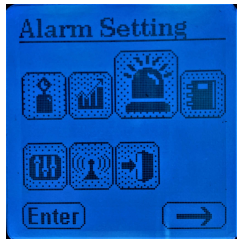


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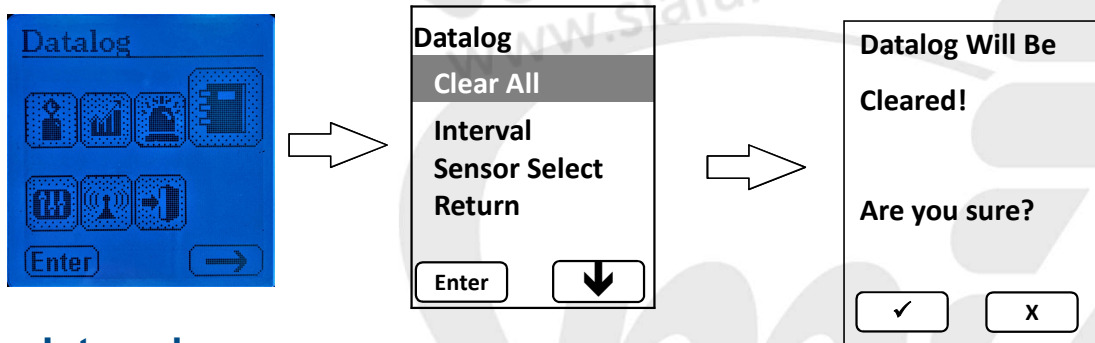
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Datalog:

The instrument automatically stores the concentration readings at the regular time intervals (This function cannot be turned off).



Interval:

Interval are shown in seconds.

- The default value is 60 seconds and maximum is 3600 seconds (1hour).
- Maximum capacity: 6 days at 1-second intervals or 12-months at 60-second intervals or 6-years at 10-minute intervals. Once the datalog is full, it cycles and begins to replace the oldest data.



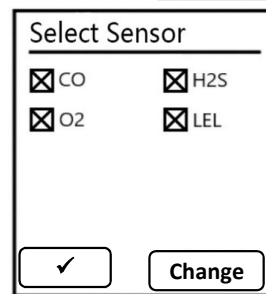
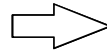
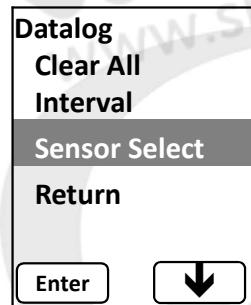
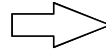


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Datalog:

The instrument automatically stores the concentration readings at the regular time intervals (This function cannot be turned off).





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Monitor Setup

LCD Contrast
Contrast= 50

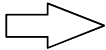
Temperature Unit
 Celsius
 Fahrenheit

Language
 English
 Chinese Trad.

LCD Auto Flip
 Off
 On

Back Light Mode
 Auto
 Manual
 Off

Alarm Settings
 LCD Contrast
 Pump Speed
Pump Stall
 Temp Unit
 Language
 Back Light Mode
 LCD Auto Flip
 Return
 Enter ↓

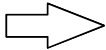




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Making Powerful Senses



Monitor Setup



Alarm Settings
LCD Contrast
Pump Speed
Pump Stall
Temp Unit
Language
Back Light Mode
LCD Auto Flip
Return

Enter ↓



LCD Contrast
Contrast= 50

Inc/+ Done



Pump Speed

Low
 Medium
 High
 Off

✓ Change

Pump Stall
Current Pump
Thresh Setting!
I = 772
Thresh = 1468

Done

Select Sensor

CO H2S
 O2 LEL

OK Change