

Operation and Maintenance Manual



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704-529-5442
Service: X10250
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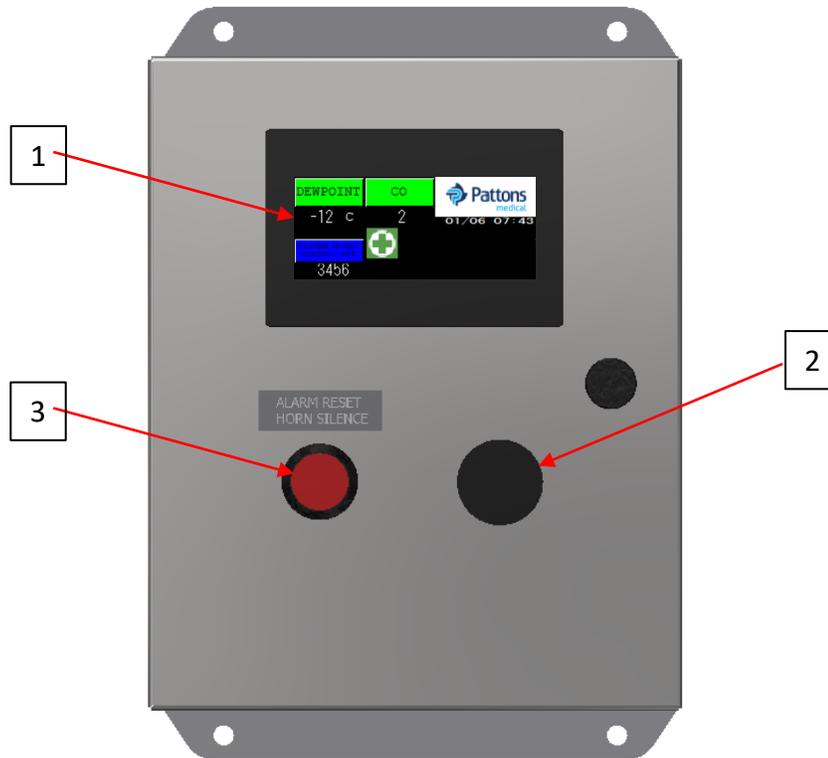
• Safety Precautions

Pressurized air from the system may cause personnel injury or property damage if the unit is improperly operated or maintained. The operator should have carefully read and become familiar with the contents of this manual before installing, wiring, starting, operating, adjusting, and maintaining the system. The operator is expected to use common sense safety precautions, good workmanship practices and follow any related local safety precautions.

In Addition:

- Before starting any installation or maintenance procedures, disconnect all power to the package.
- All electrical procedures must be in compliance with all national, state, and local codes and requirements.
- A certified electrician should connect all wiring
- Refer to the electrical wiring diagram provided with the unit before starting any installation or maintenance work.
- Release all pressure from the package before removing, loosening, or servicing any covers, guards, fittings, connections, or other devices.
- Notify appropriate hospital personnel if repairs or maintenance will affect available compressed air levels.
- Prior to using the medical system, the facility must have a certifier perform all installation test as specified in the latest edition of NFPA 99 and is responsible for ensuring that the system meets the minimum requirements as specified in the latest edition of NFPA 99.
- Make sure that all loose articles, packing material, and tools are clear of the package.
- Check all safety devices periodically for proper operation.
- The “MANUAL PURGE” mode of operation should only be used for emergencies such as PLC malfunction and should not be used for normal operation.
- Electrical service must be the same as specified on the control panel nameplate or damage to the equipment may occur.
- Vibration during shipment and operation can loosen electrical terminals, fuse inserts, and mechanical connections. Tighten as necessary.
- Refer to the electrical diagram provided with the unit before starting any installation or performing any maintenance work.
- Do not operate on a voltage other than the voltage specified on the system nameplate.
- All customer wiring should be in compliance with the National Electrical Code and any other applicable state or local codes.

- Control Panel



1. Display Screen - Displays the systems operating screens.
2. Alarm Horn – Sounds when an alarm condition occurs
3. Alarm Reset/Horn Silence – Pushbutton to silence alarm and reset visual alarm on screen after alarm condition is corrected

- Main Display Screen

Below is the main screen. If any faults occur, the display defaults back to this screen.



The main screen gives an overview of the system. It provides the status and readings of the DEWPOINT and/or CO. It also provides the hours accumulated by the monitor for service of the sensors. Alarms for dewpoint sensor fault, CO sensor fault, PLC fault, and Service Due also blink on this screen when activated. Touching the icon of any alarm will take you to an informative screen.

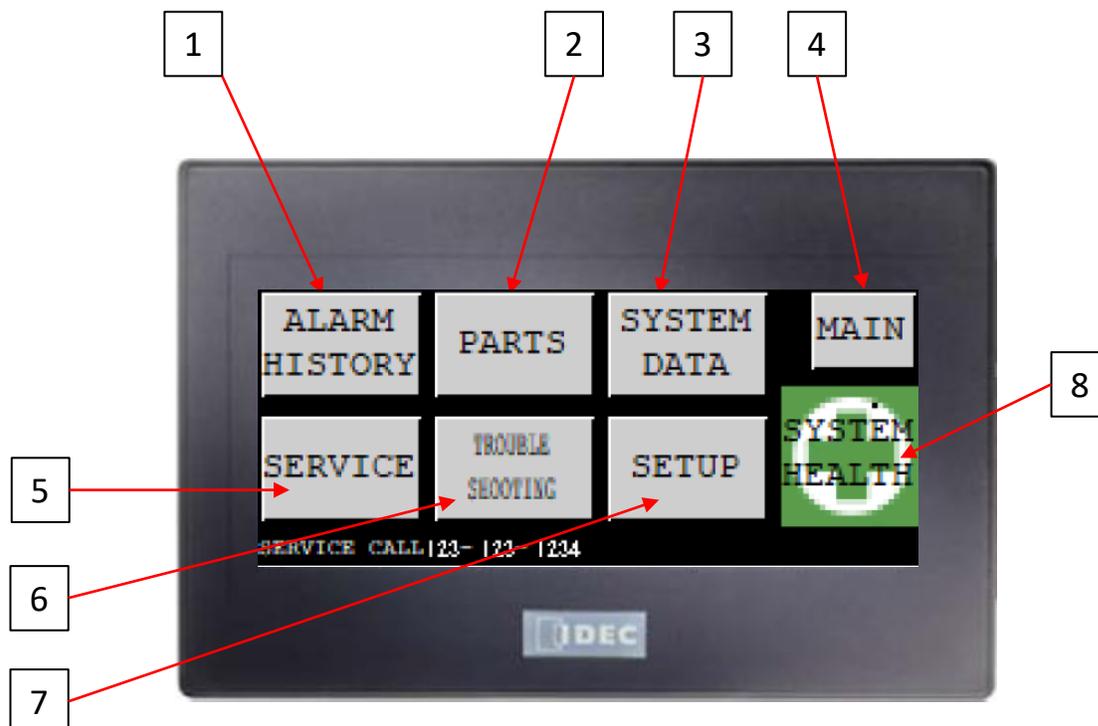
The Menu access button is in the upper right corner (Pattons Medical logo) will allow you to navigate through screens.

The System Health access button (green cross) takes you directly to the System Health status screen, which also provides access to the trending screens.

• MENU Screen

The menu screen provides a central gateway to access many additional screens of the monitor.

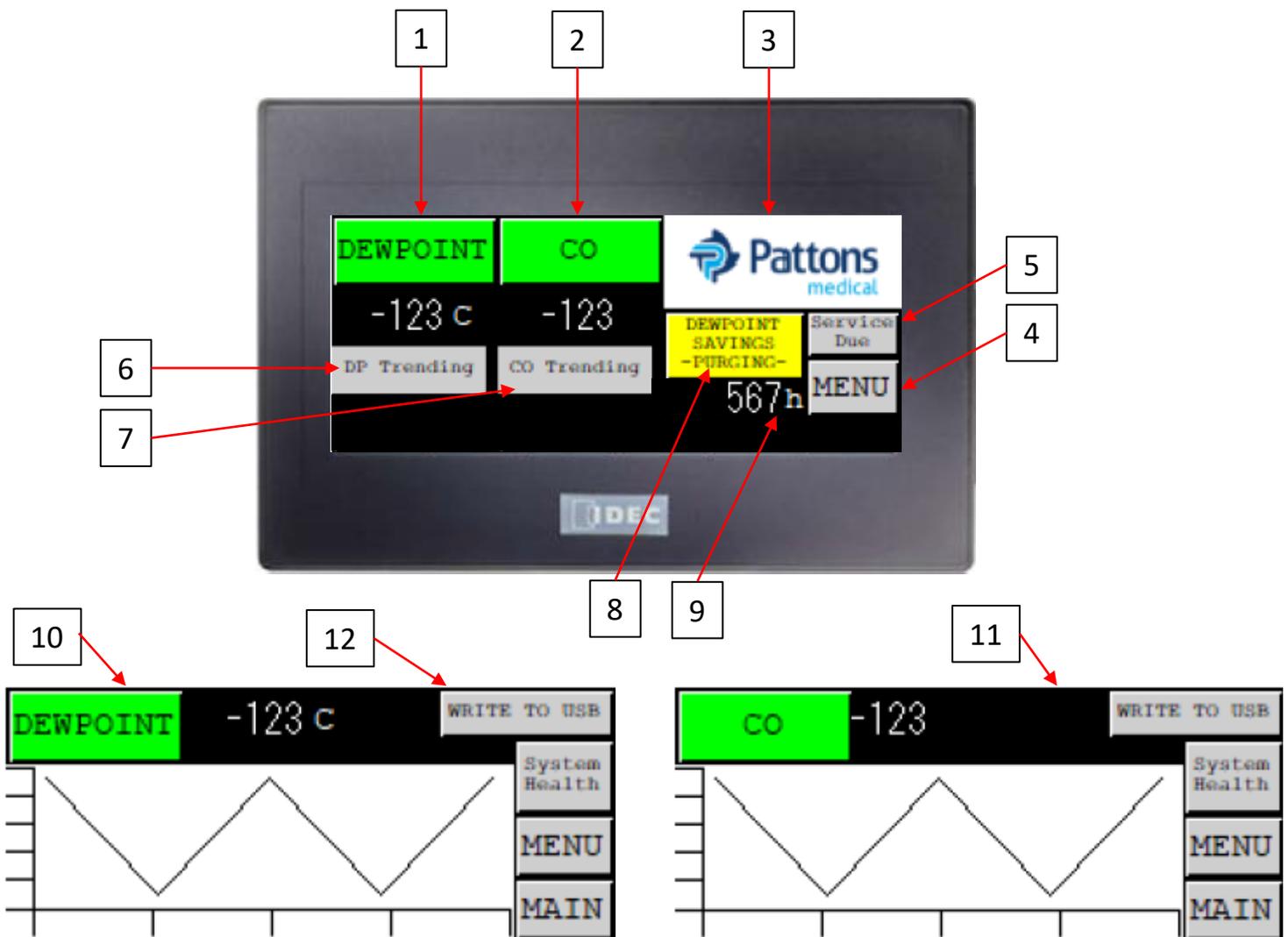
1. **ALARM HISTORY**: Will open a new window listing all the alarm conditions that have occurred as well as routine maintenance alerts and warnings. The list shows time of the incident, type of incident, and when the incident was corrected/cleared. Alarms shown on this screen have a permanent record.
2. **PARTS MENU**: Provides a list of basic service parts for the system.
3. **SYSTEM DATA**: Provides all the system information required when scheduling maintenance or purchasing spare parts from Patton Medical.
4. **MAIN**: Can be found on most screens. Takes you back to the main screen.
5. **SERVICE**: Takes you to the Service screen, which gives access to reset the calibration timers, adjust service intervals, or to the Service Due screen. The service phone number can also be changed on this screen.
6. **TROUBLESHOOTING**: Takes you to the troubleshooting screen which has links to the individual troubleshooting pages.
7. **SETUP**: Access screen to setup the monitor.
8. **SYSTEM HEALTH**: This button takes you to the SYSTEM HEALTH screen that provides an overview of the system and links to all trending screens.



• SYSTEM HEALTH (and Trending) Screen

The System Health screen provides an overall snapshot of the system status.

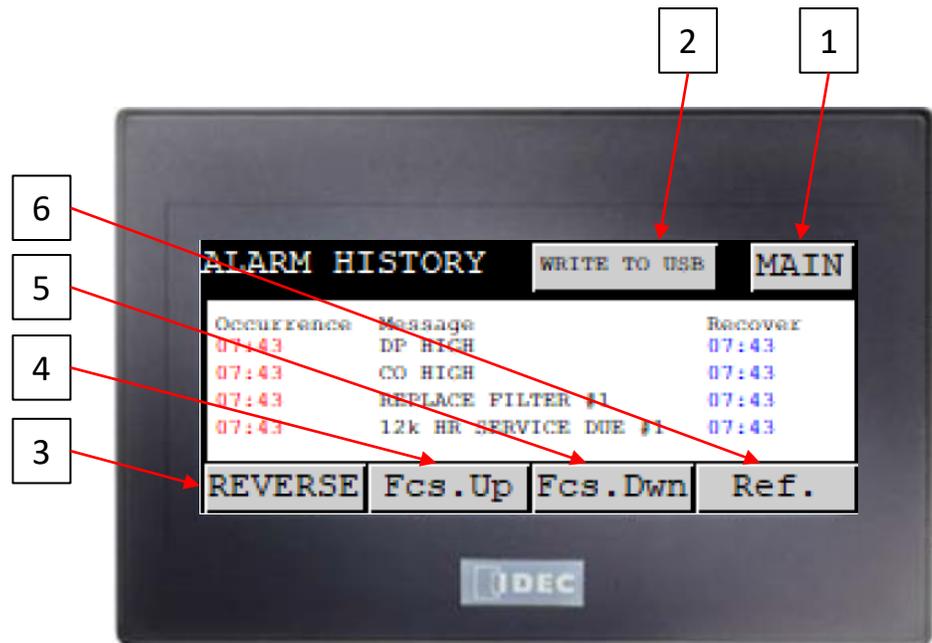
1. **DEWPOINT**: Displays current dewpoint and notifies at a predefined setpoint.
2. **CO**: Displays current CO reading and notifies at a predefined setpoint.
3. **PATTONS MEDICAL logo**: Returns user to main screen.
4. **MENU**: Returns user to menu screen.
5. **Service Due**: Takes you to the Service Due screen
6. **DEW POINT TREND**: Link to trend screen of dew point showing the charted readings
7. **CO TREND**: Link to trend screen of CO showing the charted readings
8. **DEWPOINT SAVINGS**: Provides status of PURGE control
9. **DEWPOINT SAVINGS HOURS**: Displays the # of hours purge control has been activated
10. **DEWPOINT TRENDING**: Shows current reading and trend (-80C to +20C)
11. **CO TRENDING**: Shows current reading and trend (0-50ppm)
12. **WRITE TO USB**: Writes all trending and alarm data to USB drive



• ALARM HISTORY Screen

The Alarm History screen provides an overview of the last alarms that have been logged. It provides the time and date the alarm triggered, the type of alarm, and the time the alarm was repaired or cleared.

1. **MAIN**: Takes you back to the main screen.
2. **WRITE TO USB**: Allows you to download all alarms to a USB memory device.
3. **REVERSE**: Highlights a row to allow scrolling up and down
4. **Fcs.Up**: Allows scrolling up
5. **Fcs.Dwn**: Allows scrolling down
6. **Ref.**: Exits Alarm History Screen



• SYSTEM DATA Screen

The System Data screen provides key information about the system that is helpful to the service person and/or when calling for support.

1. **MAIN**: Takes you back to the main screen.
2. **LOGIN**: Allows installer to enter “Startup Date” and “Startup Tech”.
3. **MODEL**: Entered by manufacturer and provides model number of monitor
4. **SERIAL**: Entered by manufacturer and provides serial number of monitor for warranty
5. **STARTUP DATE**: Entered by installer to provide startup date for historical information
6. **STARTUP TECH**: Entered by installer to provide startup date for historical information
7. **WIRING DIAGRAM**: Provides wiring diagram number for support and reference



• PARTS Screen

The Parts screen provides service parts for the monitor.

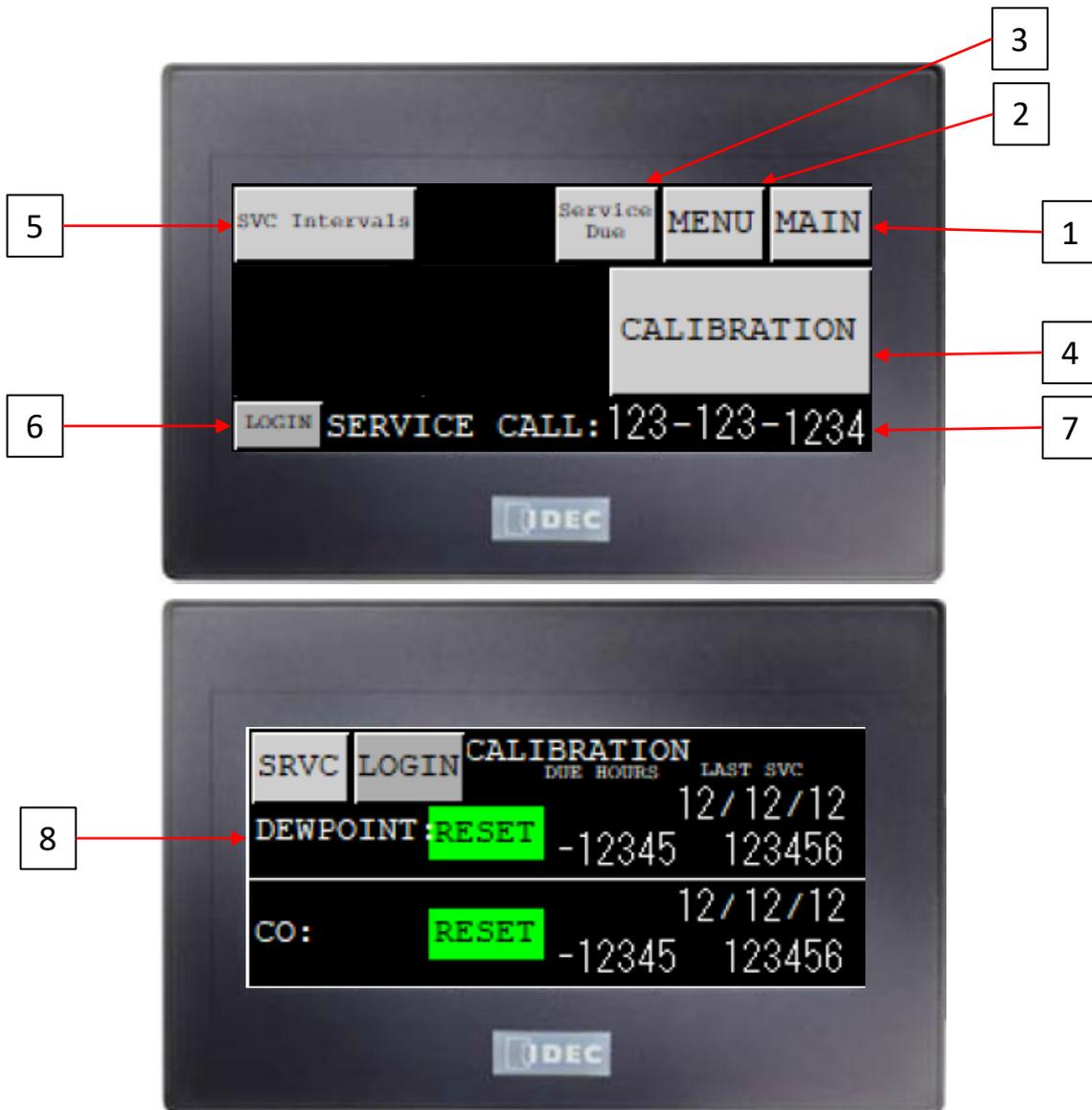
1. **MAIN**: Takes you back to the main screen.



• SERVICE Screen

The Service screen provides information on when the service function was last performed and how many days or hours until service is due again. When service is due, the tag on the left will flash as notification and the Service Due button will be illuminated on the main page.

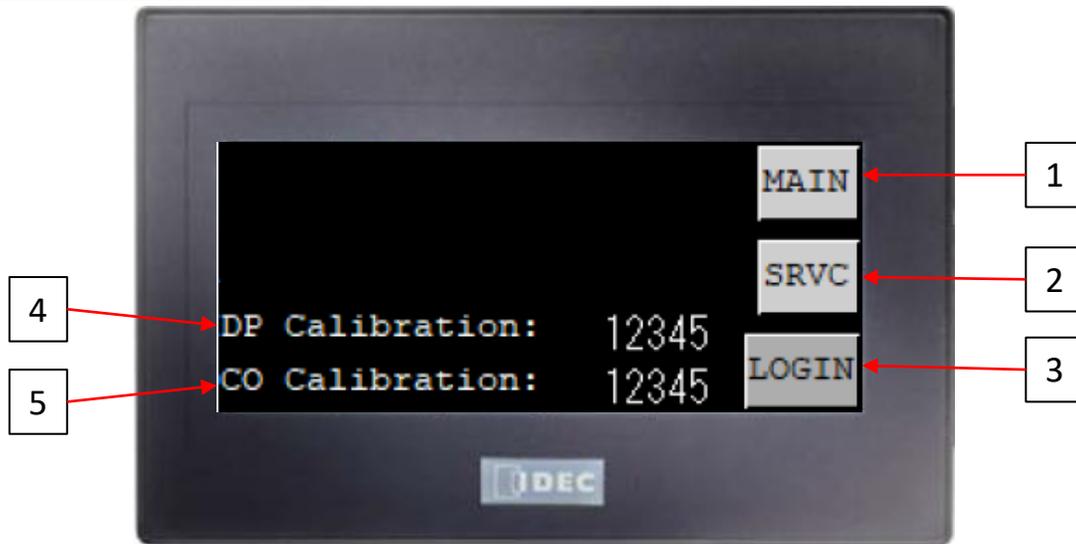
1. **MAIN**: Takes you back to the main screen.
2. **MENU**: Takes user back to the menu screen.
3. **Service Due**: Take user to the Service Due screen
4. **CALIBRATION**: Takes user to the Calibration screen
5. **SVC Intervals**: Takes user to the Service Intervals screen.
6. **LOGIN**: Allows user to login to make changes/adjustments to the monitor.
7. **Service Call Phone Number**: Allows installer to login and enter their phone number (also provides service phone number for user)
8. **CALIBRATION screen**: Allows service person to reset timers (requires login); provides hours until calibration due, date of last calibration, and hours at last calibration



• SERVICE INTERVALS Screen

The Service Intervals screen allows the operator to adjust the standard service times of serviceable items. The current setting is shown in the boxes beside the description.

1. **MAIN**: Takes you back to the main screen.
2. **SRVC**: Takes user back to the SERVICE screen
3. **LOGIN**: Allows user to login and adjust settings on the screen
4. **DEWPOINT CALIBRATION**: Standard calibration is every 2 years.
5. **CO SENSOR CALIBRATION**: Standard calibration is 1/year.



• SERVICE DUE Screen

The Service Due screen provides status of the sensor and a phone number if service is required.

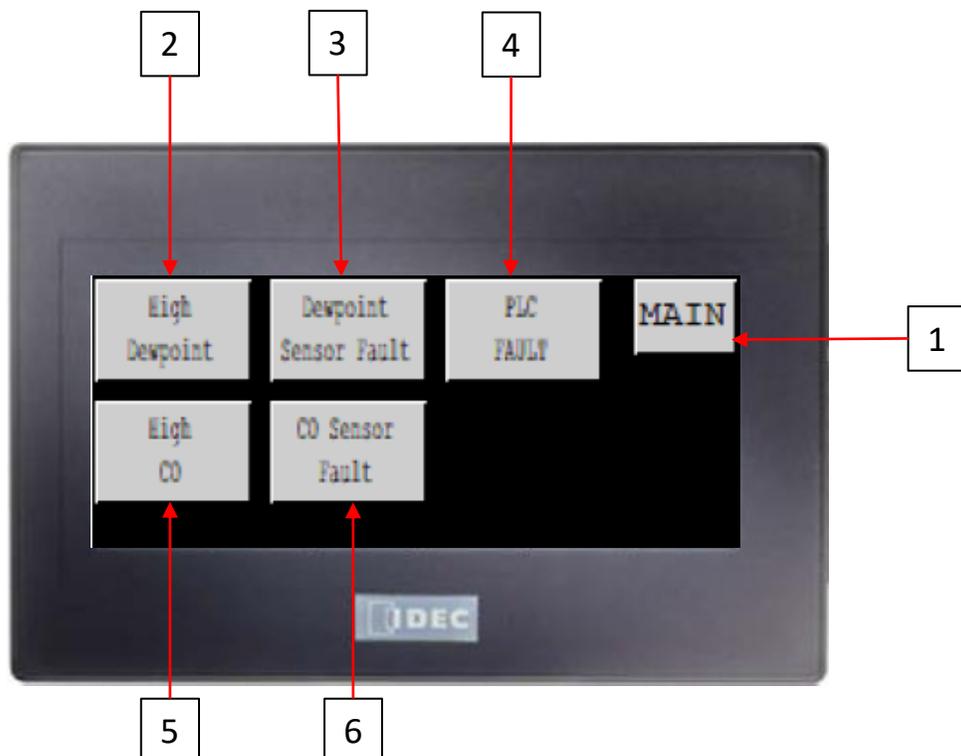
1. **MAIN**: Takes you back to the main screen.
2. **MENU**: Takes user back to the menu screen



- **TROUBLESHOOTING Screen**

The Troubleshooting screen is the gateway to open pop-up screens to give suggestions of where to look to repair certain problems.

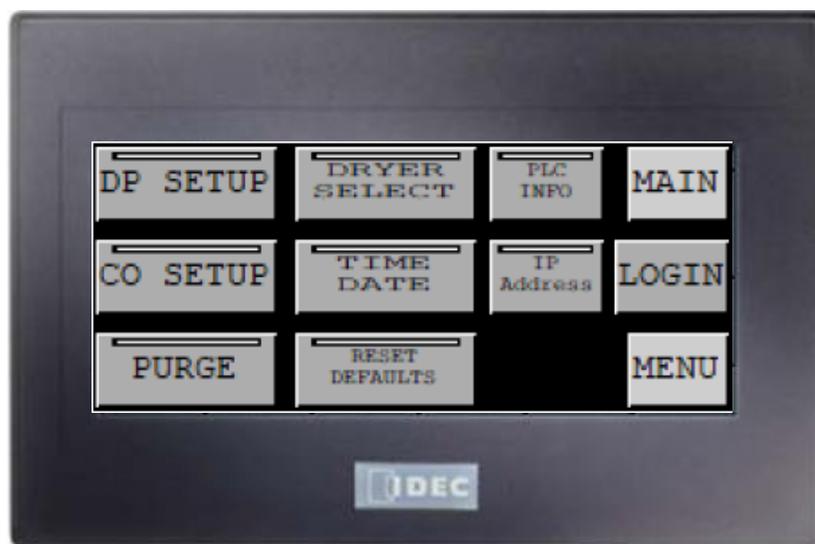
1. **MAIN**: Takes you back to the main screen.
2. **HIGH DEW POINT**: Opens a pop-up window with possible reasons for alarm.
3. **DP OPEN SENSOR**: Opens a pop-up window with possible reasons for fault.
4. **PLC FAULT**: Opens a pop-up window with possible reasons for fault.
5. **HIGH CO**: Opens a pop-up window with possible reasons for alarm.
6. **CO OPEN SENSOR**: Opens a pop-up window with possible reasons for fault.



• SYSTEM SETUP

The HMI is designed to be modular with lots of options that can be turned OFF if not wanted or adjusted. This screen allows the assembler or service person to customize each unit to exactly what the customer needs.

1. **MAIN**: Takes user back to main screen
2. **LOGIN**: Allows user to login to make changes and adjustments
3. **MENU**: Takes user back to the menu screen
4. **DP SETUP**: Takes user to the dewpoint setup screen (login required to make changes)
5. **CO SETUP**: Takes user to the CO setup screen (login required to make changes)
6. **PURGE**: Takes user to the purge setup screen (login required to make changes)
7. **DRYER SELECT**: Takes user to the dryer setup screen (login required to make changes)
8. **TIME/DATE**: Takes user to the time/date change screen (login required to make changes)
9. **RESET DEFAULTS**: Resets all parameters to factory defaults
10. **PLC INFO**: Provides status information on the PLC for service
11. **IP Address**: Takes user to the IP setup screen (login required to make changes)



• SYSTEM SETUP (continued)

The DP and CO setup screens allow the user to turn on/off the DP or CO functions, define the alarm setpoint, and define units (for DP). All adjustments require login.

1. **DP/CO ON**: Allows installer to turn on/off all DP or CO information OFF
2. **DP/CO HORN ON**: Allows installer to turn on/off horns associated with alarm
3. **Celcius/Fahrenheit**: Allows installer to select units for DP reading
4. **Numbers**: Allows installer to adjust alarm setpoint



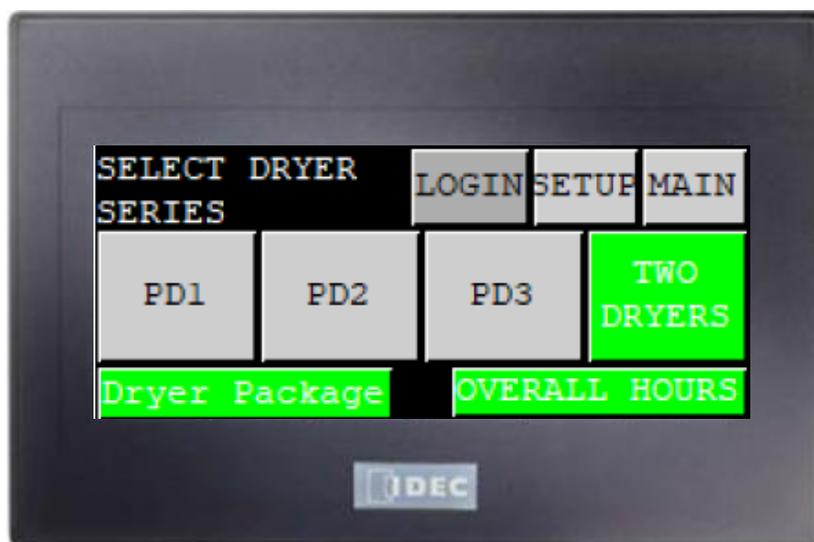
• SYSTEM SETUP (continued)

The PURGE setup screen allows the user to adjust the dewpoint setting where the dryer stops purging to save energy. Login is required to make any changes.

1. **PURGE ON:** Allows installer to turn on/off the purge control function
2. **DEFAULT PHONE#:** Allows installer to put Pattons Medicals phone number quickly into the unit as the service phone number
3. **Numbers:** Value at which the unit transitions purging



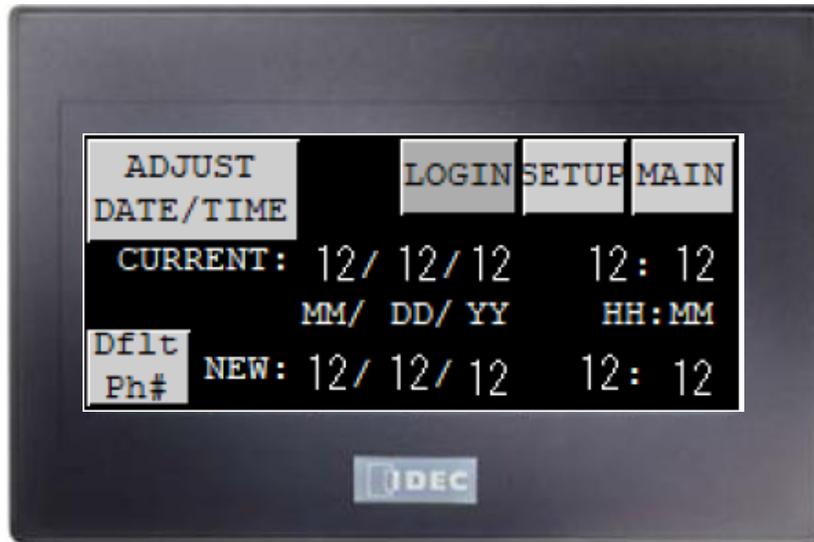
The DRYER select screen allows the user to define the dryer, number of dryers, and if the hours of each dryer are to be displayed. Since this is a monitor only, the “Dryer Package” will show “Monitor Only”. Nothing on this screen should be adjusted in the field.



• SYSTEM SETUP (continued)

The TIME/DATE button takes you to a screen that allows the user to make a time and/or date adjustment (next to NEW), then press the “Adjust Date/Time” button to save it. Login required to make any changes.

1. Dflt Ph#: Sets the Pattons Medical number as the service number
2. ADJUST DATE/TIME: Saves the new date and time.



The PLC INFO button takes you to the below screen. This screen shows which inputs and outputs are off (red) and on (green). It also has a PLC Error LED (upper center) and the PLC Fault code (upper right). There are buttons for Main and Menu and PLC Fault Troubleshooting screen. If you touch and hold the upper left corner for 3 seconds, it will take you to the HMI Maintenance screen (this is rare).



- **SYSTEM SETUP (Continued) LAN SETTINGS screen**

The HMI IP ADDRESS SETUP screen allows the user to set the IP address, Subnet, and Gateway for the HMI. When complete, press the RESET button and the HMI will reboot (note that any alarms connected to the monitor will be set during the reset).



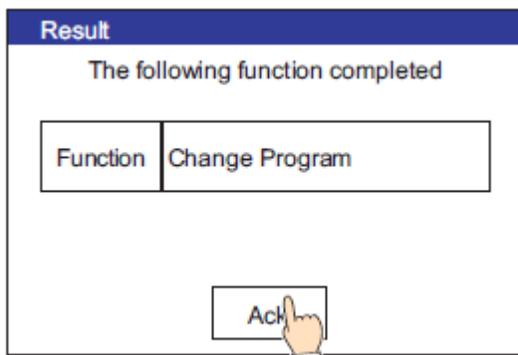
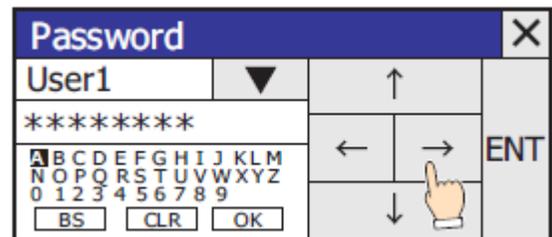
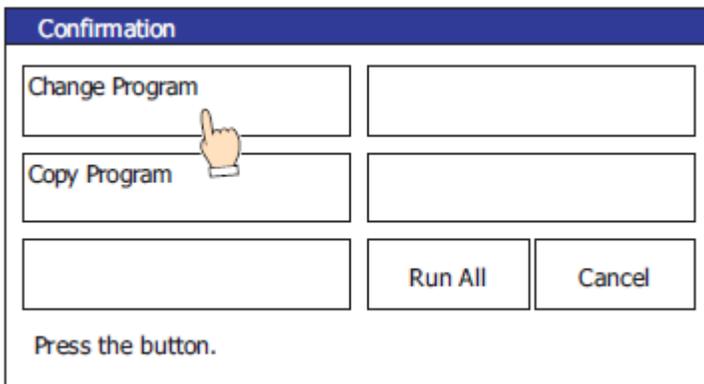
The TARGET IP ADDRESS screen allows the user to set the Target IP address for the Modbus output of the monitor. To save the address, the SAVE button must be pressed. Also, to turn on the Modbus data to be sent, press the PRESS OFF/ON button until the MODBUS STATUS changes to ON (green).



• WRITE HMI/PLC PROGRAM from USB stick

To update the USB program, you will need a

- blank USB memory stick
 - laptop (or computer) with an USB connection
 - Program on computer to unzip the emailed program file
1. Save zipped HMI program to computer
 2. Unzip the file and save the folder of files (HGDATA01) and the hgauto file to the USB stick
 3. If USB provided by Pattons Medical, skip to step 4.
 4. Install USB stick into USB slot on back bottom side of HMI
 5. Select DOWNLOAD PROJ
 6. Enter the Password
 7. Screen will show “Project Transfer”
 8. Press Ack to close out
 9. Remove USB Drive (May have to press ACK again)



• Wiring the Monitor

All connections should be to the bottom of the terminal blocks.

Power Input Line – F1
Neutral – 2
Ground – GND

DP Sensor: Power – 24V
Signal – 102

CO Sensor: Power – 24V
Signal – 103

DP Alarm: 204 – 205

CO Alarm: 206 – 207

PURGE RELAY

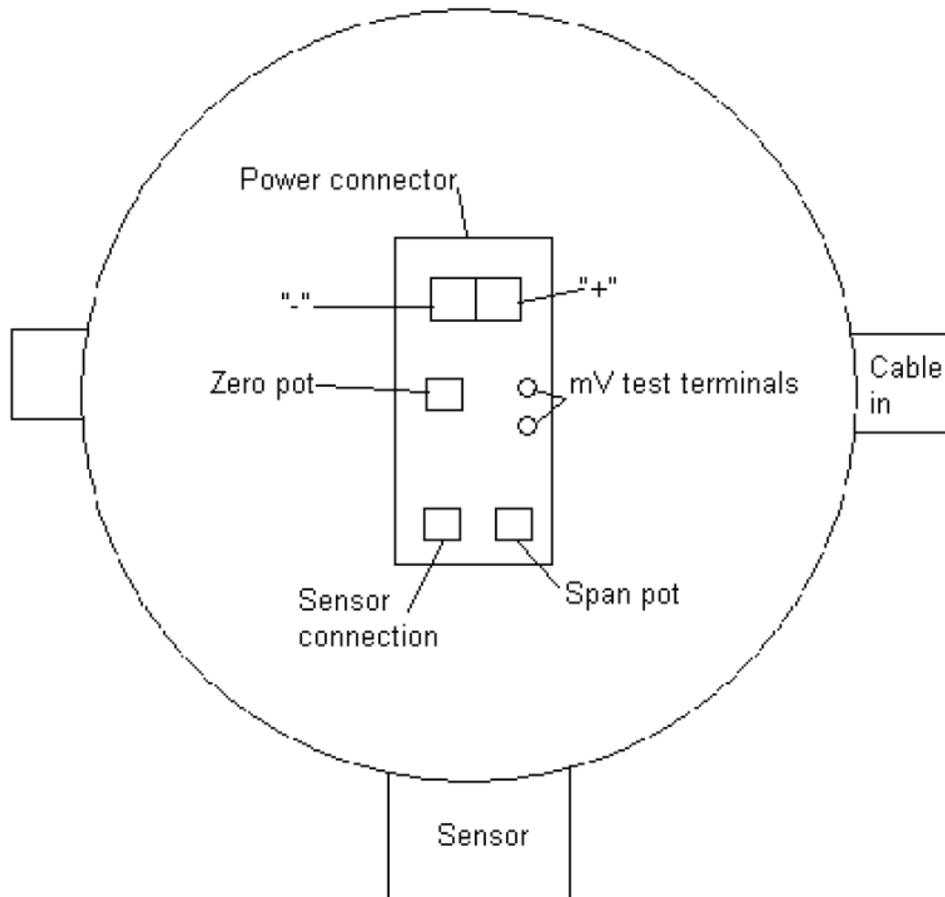
Dryer 1: Common – A
Normally Open Purge – J
Normally Closed Purge – B

Dryer 2: Common – C
Normally Open Purge – K
Normally Closed Purge – D

• CO Calibration

General Information

The CO transmitter uses an electrochemical sensor to convert a gas concentration into a linear 4-20 mA electrical signal and transmits it over a cable to a controller. It is a loop powered two-wire transmitter with the signal carried on the “-” wire and the supply voltage on the “+” wire.



Electrical Connections

The power connector is designed with a “quick disconnect” feature, which simplifies transmitter installation, replacement, and service. The connector plug is easily removed from the transmitter by pulling straight up on the top of the power connector. This separates the bottom connection from the wiring connections to the plug. The connector plug is designed to be installed in only one direction (polarized) for safety reasons. Power is connected to the plug (upper portion) of the power connector by securing the striped ends of the electrical cable using the two screws on the connector plug. Connect the supply wires (10-30vd) to the correct terminals on the connector plug (see diagram) and re-attach to the transmitter pc board by pressing back down on the pins from where it was removed.

CAUTION: If the supply wires are reversed on the power connector, the transmitter will produce no current output.

• CO Calibration (continued)

The CO transmitter uses a conveniently located set of two test terminals (see diagram) which provide a mV reading that corresponds to the 4-20 mA output. A reading of 40 mV on the test terminals corresponds to 4 mA and 200 mV corresponds to 20 mA. This feature offers a quick and easy way to verify zero readings and as response without having to disconnect wires and place current meters in-line with the transmitter.

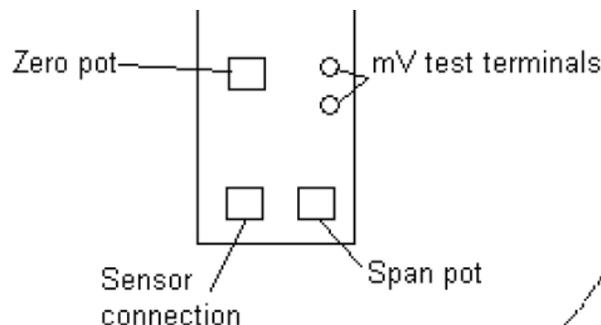
Zero Pont Adjustment (0 ppm = 40 mV)

Using a DC voltmeter set to the mV range, place the voltmeters leads on the 40-200 mv test terminals on the transmitter pc board. The reading should be approximately 40 mV. If you are unsure if the supply air is clean, flow impurity free (zero) air into the sensing inlet using a calibration adapter and a 0.5 lpm fixed flow regulator and allow the mV reading to stabilize. Please contact your Pattons Medical sales representative for zero gas ordering information if necessary. If the mV reading is not close to 40 mV, then the zero must be adjusted.

To adjust the zero to 4 mA (40 mV on the test terminals), slowly adjust the zero potentiometer on the transmitter board (see diagram) until a reading of 40 mV on the test terminals is reached (if the zero potentiometer cannot be adjusted to 40 mV, contact Pattons Medical service for detailed instructions). This procedure will set the current output from the transmitter to 4 mA (zero).

Sensitivity/Calibration Check (20 ppm = 50.6 mV)

Using a DC voltmeter set to the mV range, place the voltmeters leads on the 40-200 mv test terminals on the transmitter pc board. Attach the calibration adapter to the sensing inlet and flow 20 ppm calibration gas at 0.5 lpm. Allow the gas to flow across the sensor for at least 2 minutes or until the transmitter signal is stable, then check to see that the mV reading is at 50.6. If the mV reading is not correct, adjust the span potentiometer slowly until a 50.6 mV reading is obtained. If the span potentiometer cannot be adjusted to the correct mV reading, please contact your Pattons Medical service representative for detailed instructions. After the span adjustment is complete, remove the calibration gas, re-attach the supply air, and allow the transmitter current output to return to 40 mV (zero).



• CO Calibration (continued)

Technical Data

Pattons Medical reserves the right to change part number, prices, and technical information without notification.

Gas & Detection Range:	Carbon Monoxide to 300ppm
Detection Principal:	Electochemical
Gas Supply:	Supplied
Response Time (T90):	<30 seconds
Output signal:	4-20 mA linear
Voltage signal:	10-30 vdc
Sensor Cable:	18 AWG, 2 conductor, shielded
Operating Temperature:	-20 to 50°C (typical)
Relative Humidity:	15-95% rh non-condensing

Troubleshooting

Symptom	Possible Cause	Solution
No output	Supply wires reversed	Check wiring for proper polarity
No voltage to transmitter	No power	Check for 10-30vdc at power connector
No response to gas	Sensor has expired Sensor wire damaged Sensor not plugged in correctly	Replace sensor Check sensor wiring Check sensor connection to transmitter pcb
Sensor will not calibrate	Sensor has expired Incorrect or bad span gas	Replace sensor Use correct concentration of span gas

• Warranty

Patton's Medical Systems Warranty

Patton's Medical warrants that all systems to be free of defects in material and workmanship under normal use for a period of twenty-four months from start-up, not to exceed thirty months from date of shipment. This warranty covers all necessary parts used in repair as well as all reasonable labor expense. Normal consumable parts required for routine scheduled maintenance (such as filters) are not covered under this warranty.

This warranty does not apply to products that are damaged by external causes, or are improperly warehoused, used, installed, serviced, misapplied or maintained by the customer. The sole liability for **Patton's Medical** under this warranty is limited to repairing, replacing, or crediting, at its election, any such products provided that:

- **Patton's Medical** is notified promptly within the warranty period above of any warranty claim.
- The examination of such items by an authorized representative of **Patton's Medical** will disclose to their reasonable satisfaction that claimed products defect has not been caused by misuse, neglect, improper handling, installation, repair, alteration, or accidents.
- **Patton's Medical** requires that systems above 5 Hp simplex be commissioned by an authorized **Patton's Medical** distributor and requires a start-up report to be filed within 30 days of equipment start-up. Failure to submit a start-up report to **Patton's Medical** will void the warranty.
- **Replacement Parts** including pumps and motors carry a limited warranty based upon manufacturer specific terms. **Parts** carry a 90 day warranty unless the manufacturer's stated warranty is different. Labor for these warranties is not included or implied and is at the sole discretion of Patton's Medical.
- **Retrofit Control Panels** carry a 12 month warranty from date of shipment.
- Simplex units 5Hp and below as well as retrofit dryer packages do not include factory assisted start-up in their base price unless specifically noted otherwise.
- Extended warranty is offered and will be noted in the quote.

Product modification performed by the customer without prior written approval by **Patton's Medical** will invalidate the above warranty.

This warranty is given in lieu of all other warranties, expressed or implied, including implied warranties of fitness for a particular purpose and merchantability. In no event shall Patton's Medical be liable for damages in excess of the value of the defective product or part, nor shall Patton's Medical be liable for any indirect, special or consequential damages, loss of profits of any kind, or for loss of use of the products.

Patton's Medical shall not be liable to the customer for any claims, loss of damage of any kind whatsoever arising from the nonperformance of **Patton's Medical** of any part of this agreement occasioned by acts of God, fire, war, labor difficulties, governmental regulations, or action of government. **Patton's Medical** shall not be liable to the customer for any other cause, whether of a similar or dissimilar nature beyond its reasonable control.



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