

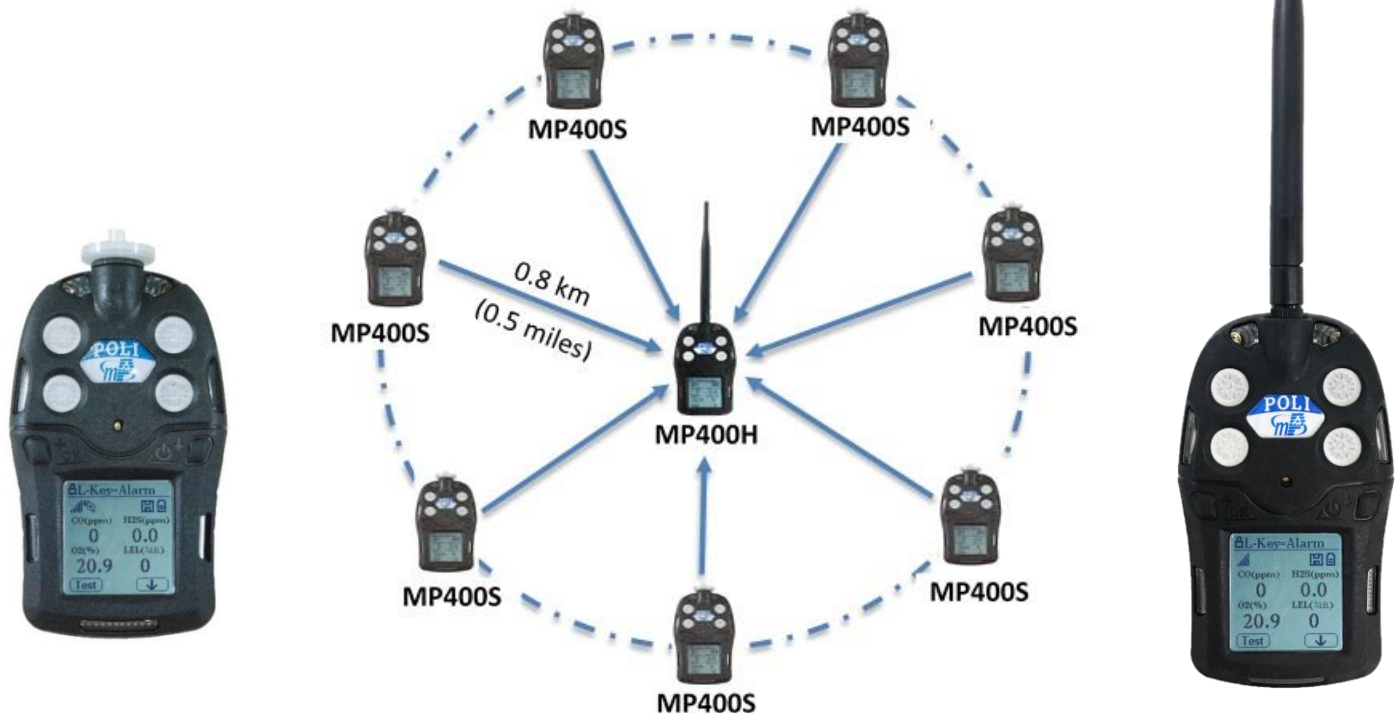
mSQUAD

mSQUAD Pro

mPLATOON

**Mobile Wireless Multi-Gas Team
Warning Systems**

User's Guide



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Read Before Operating

This manual must be carefully read by all individuals who have or will have the responsibility of using, maintaining or servicing this product. The product will perform as designed only if it is used, maintained and serviced in accordance with the manufacturer's instructions. The user should understand how to set the correct parameters and interpret the obtained results.

CAUTION !

- REMOVE MONITOR COVER ONLY IN AREA KNOWN TO BE NON-HAZARDOUS.
- RECHARGE BATTERY ONLY IN AN AREA KNOWN TO BE NON- HAZARDOUS.
- USE ONLY mPOWER'S RECHARGEABLE LITHIUM BATTERY P/N M004-3002-000.
- USE OF NON-mPower COMPONENTS WILL VOID THE WARRANTY AND CAN COMPROMISE THE SAFE PERFORMANCE OF THIS PRODUCT
- SUBSTITUTION OF COMPONENTS MAY IMPACT INTRINSIC SAFETY.

CAUTION: HIGH OFF-SCALE READINGS MAY INDICATE AN EXPLOSIVE CONCENTRATION. ANY RAPID UP-SCALE READING FOLLOWED BY A DECLINING OR ERRATIC READING MAY INDICATE A GAS CONCENTRATION BEYOND UPPER SCALE LIMIT WHICH MAY BE HAZARDOUS.

ATTENTION: DES LECTURES SUPÉRIEURES A L'ÉCHELLE PEUVENT INDIQUER DES CONCENTRATIONS EXPLOSIVES. TOUTE LECTURE RAPIDE ET POSITIVE, SUIVIE D'UNE BAISSSE SUBITE AU ERRATIQUE DE LA VALEUR, PEUT INDIQUER UNE CONCENTRATION DE GAZ HORS GAMME DE DÉTECTION QUI PEUT ÊTRE DANGEREUSE.

WARNINGS !

ONLY THE COMBUSTIBLE GAS DETECTION PORTION OF THIS INSTRUMENT HAS BEEN ASSESSED FOR PERFORMANCE.

UNIQUEMENT, LA PORTION POUR DÉTECTOR LES GAZ COMBUSTIBLES DE CET INSTRUMENT A ÉTÉ ÉVALUÉE.

CAUTION: BEFORE EACH DAY'S USE, THE SENSITIVITY OF THE COMBUSTIBLE GAS SENSOR MUST BE TESTED ON A KNOWN CONCENTRATION OF METHANE GAS EQUIVALENT TO 20 TO 50% OF FULLSCALE CONCENTRATION. ACCURACY MUST BE WITHIN 0 AND +20% OF ACTUAL. ACCURACY MAY BE CORRECTED BY A CALIBRATION PROCEDURE.

ATTENTION: AVANT CHAQUE UTILISATION JOURNALIERE VERIFIER LA SENSIBILITE AVEC UNE CONCENTRATION CONNUE DE METHANE EQUIVALENTE A 20-50% DE LA PLEINE ECHELLE. LA PRECISION DOIT ETRE COMPRISE ENTRE 0-20% DE LA VALEUR VRAIE ET PEUT ETRE CORRIGEE PARUNE PROCEDURE D'ETALONNAGE.

⚠ WARNINGS !

- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- The 868MHz frequency of these wireless monitoring systems meets the requirements of the European Communications Office EC Decision 2007/344/EC Annex 1.

CAUTION: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Special Conditions for Safe Use

- The POLI multi-gas detector must be calibrated if it does not pass a bump test, when a new sensor has been installed, or at least once every 180 days, depending on use and sensor exposure to poisons and contaminants
- No precautions against electrostatic discharge are necessary for portable equipment that has an enclosure made of plastic, metal or a combination of the two, except where a significant static-generating mechanism has been identified. Activities such as placing the item on a belt, operating a keypad or cleaning with a damp cloth, do not present a significant electrostatic risk. However, where a static-generating mechanism is identified, such as repeated brushing against clothing, then suitable precautions shall be taken, e.g., the use of anti-static footwear.

Note: Users are recommended to refer to ISA -RP12.13, Part II-1987 for general information on installation, operation, and maintenance of combustible gas detection instruments.

Proper Product Disposal at the End of Life



The Waste Electrical and Electronic Equipment (WEEE) directive (2002/96/EC) is intended to promote recycling of electrical and electronic equipment and their components at end of life. This symbol (crossed-out wheeled bin) indicates separate collection of waste electrical and electronic equipment in the EU countries. This product may contain one or more Nickel-metal hydride (NiMH), Lithium-ion, or Alkaline batteries. Specific battery information is given in this user guide. Batteries must be recycled or disposed of properly. At the end of its life, this product must undergo separate collection and recycling from general or household waste. Please use the return and collection system available in your country for the disposal of this product.

1. General Information

The mPower Wireless Systems are quickly-deployable sets of mobile multi-gas meters that communicate wirelessly with each other and a central location via built-in wireless modules at ISM band (902-928 MHz, FCC Part 15 approved). The systems are ideal for hazmat response, firefighters, temporary venue protection, tank entry, plant turn-around, and other high-risk jobs. Three versions are currently available (described in more detail in the sections below):

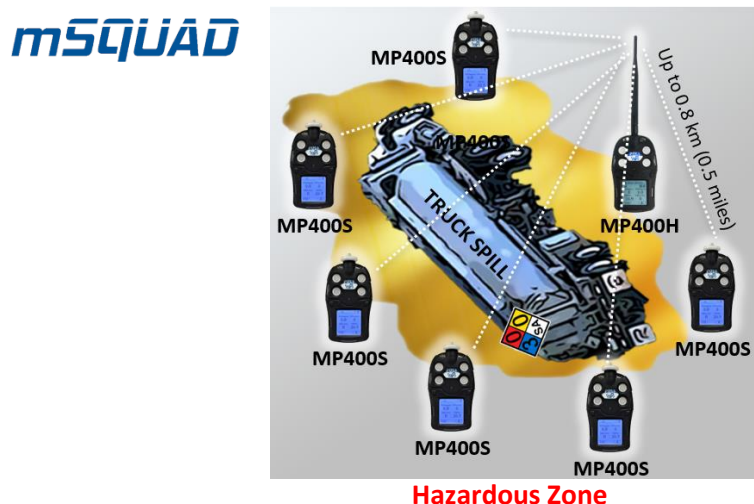
- **mSquad:** One Head monitor (MP400H) and up to 7 Soldier monitors (MP400S) within 0.5 miles; battery-powered, mobile and Class I Division I intrinsically safe for hazardous zones
- **mSquad Pro:** Multiple mSquads plus long-range Soldier monitors (MP400HS) within 2 miles communicating to a command center outside the hazardous zones using mLink modem.
- **mPlatoon:** Multiple mSquads plus long-range Soldier monitors (MP400HS) within 2 miles communicating to a command center outside the hazardous zones using mLink, with GPS mapping.

Communication proceeds from Soldier to Head, Head to mLink modem, and finally mLink to Android device or PC. Each 4- or 5-gas monitor has a full selection of sensors including for over 15 toxic gases (CO, H₂S, HCN, HCl, Cl₂, NH₃, NO₂, etc.), oxygen (O₂), combustibles (LEL), carbon dioxide (CO₂) and PID for volatile organic compounds (VOCs). The Head/Host MP400H has the firmware for the leader to maintain an overview of the whole team, and a long-range antenna. The MP400HS has the same head antenna, allowing long-range communication, but the firmware of a soldier. Both MP400H and MP400HS monitors always sample by diffusion because the communications antenna is attached to the pump inlet port, while MP400S Soldier units have a built-in sampling pump for active gas sampling, and thus a somewhat faster response time. In addition to high gas concentration alarms, all units within an mSquad receive any Man-Down alarms to notify them remotely of a worker in distress. Each Wireless System comes preconfigured for immediate deployment and the Head user or command center can assign monitor names for ease of recognition.

Read POLI Manual First: Detailed operations and maintenance for the MP400S, MP400H and MP400HS as individual monitors are described in the POLI User's Guide. This Wireless System Guide highlights the features required to connect multiple instruments to communicate wirelessly and function as a team. Users should familiarize themselves with the basic POLI User's Guide before reading this manual.

1.1 mSquad 4 and mSquad 8

The mSquad is designed for local area monitoring within a potentially hazardous zone or incident. It uses up to 7 Soldier monitors (MP400S) that communicate to a Head/Host within 0.5 miles (0.8 km) line-of-sight, or shorter distances if obstructions are present. Critical information and alarms, such as Man-Down, are sent back out to each of the Soldiers so that they can assist a nearby worker in distress. The entire system is intrinsically safe for hazardous locations and is mobile, running on batteries for up to 12 hours. mSquads are currently available in two options: mSquad 4 with one host/head (MP400H) and three soldiers (MP400S), and mSquad 8 with one host/head and seven soldiers. Individual MP400S or MP400HS units can be added to an mSquad 4 to configure systems with 5, 6, or 7 total monitors. Each system comes in carry case(s) holding up to four units and arrives fully configured and ready for use after charging and calibration.

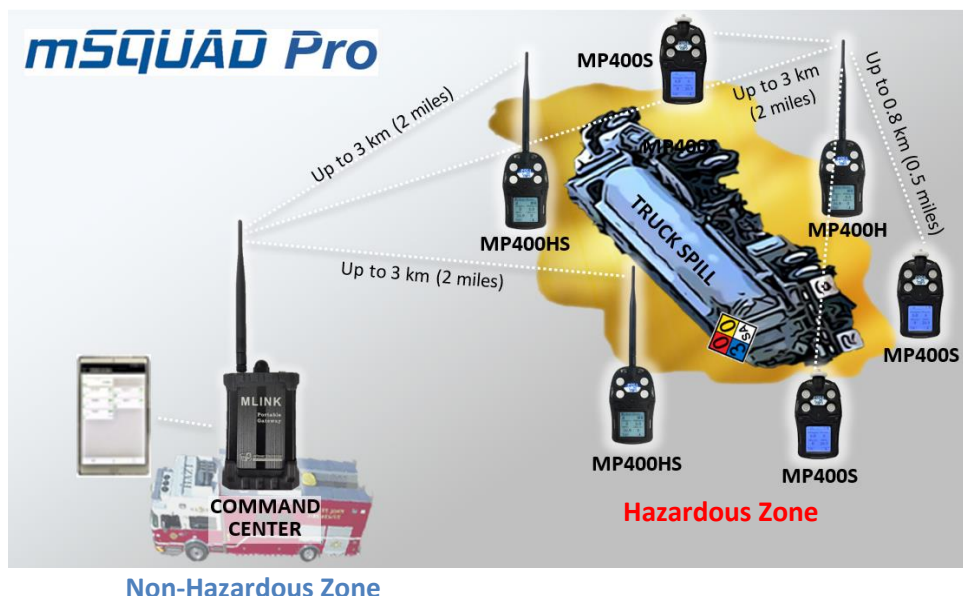


1.2 mSquad Pro

The mSquad Pro adds an mLink modem to communicate to/from a command center up to 2 miles (3 km) away (line-of-sight) outside the hazardous zone. Up to 32 individual multi-gas

Add:

- mLink modem
- MP400HS monitors & mSquads for up to 32 total monitors
- Mobile phone or Tablet with free Android App



POLI monitors can be connected*, either as part of mSquad(s) that communicate through an MP400H Head(s), or as individual MP400HS units that have their own large, external antenna. As with the simple mSquad, critical information and alarms, such as Man-Down, are sent back out to each of the MP400S and MP400HS users so that they can assist a nearby worker in distress. An Android tablet or phone is used to read information and alarms received by the mLink. The mLink and mobile device communicate via BLE and therefore must remain within 20 feet (6 m) of each other to maintain contact. The mLink has a battery run time of over 24 hours and the entire system is mobile insofar as the command center is mobile and stays outside any hazardous zones.

1.3 mPlatoon

The mPlatoon has all the features of an mSquad Pro plus adds the mapping software mPower Suite RT 1.0, displayed on a personal computer. The mLink communicates status of all (up to) 32 multi-gas monitors* by BLE via a USB dongle attached to the PC, staying within 32 feet.



As with mSquad Pro, the mLink has a battery run time of over 24 hours and the entire system is mobile insofar as the command center is mobile and stays outside any hazardous zones.

** The Android mobile device App and mPower Suite RT 1.0 can process up to 64 monitors; however, the query time to cycle through all the monitors then takes several minutes and such systems can no longer be considered "real-time" monitoring. In case of a man-down event, there may not be enough warn time to come to the aid of a distressed worker if 64 monitors were used.*

2. Battery

Fully charge the POLI batteries upon receiving the mSquad and before each day's use. The Li-ion batteries are charged using a Micro-USB cable.

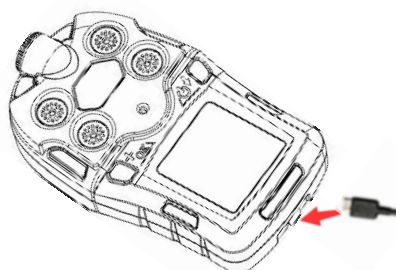
⚠ WARNING

To reduce the risk of ignition of hazardous atmospheres, recharge, remove or replace the battery only in an area known to be non-hazardous!

2.1 POLI Battery Charging

Up to four POLI monitors can be charged simultaneously using the cables inside the mSquad carry case. Plug the mini ends of the Micro-USB cables into the charging port of each POLI, and the power adapter into a wall socket (100-240 VAC). The POLIs can also be charged individually on a personal computer using the USB power/communications cables provided.

NOTE: Any locally-obtained USB A to Micro B USB cable works for charging, but does not work for communication with mPower Suite configuration and data transfer software. The mPower USB cable P/N M-011-3003-000 is required for a PC to recognize the instrument and communicate with mPower Suite.



The screen will display a battery icon from empty to full and one alarm LED will remain yellow. When the battery is fully charged, the icon displays full status, and the alarm LED turns green. The battery icon on the display shows the battery level, and alerts of any charging problem.

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

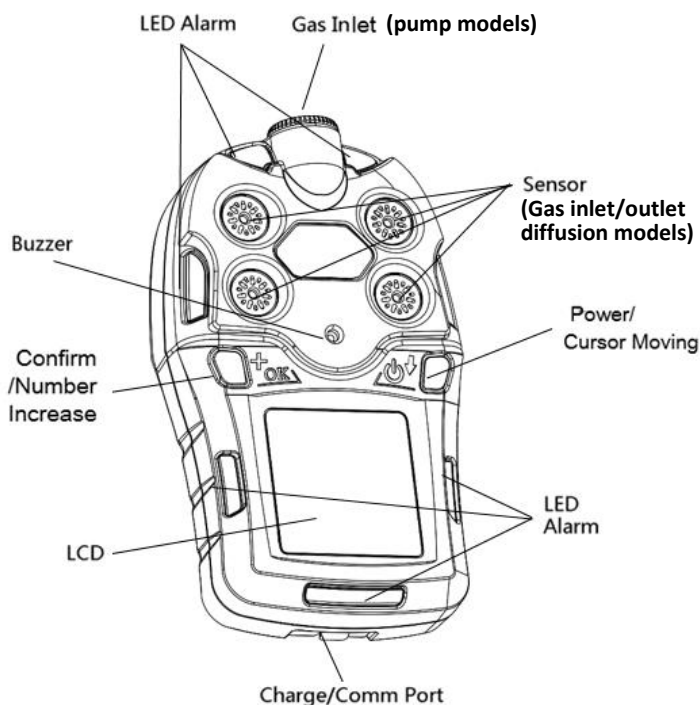
When the battery's charge falls below a preset voltage, the instrument warns by beeping once and flashing once every minute. The instrument automatically powers down within 10 minutes, after which the battery must be recharged. When a low-battery alarm occurs, we recommended promptly switching instruments to a fully charged POLI, and/or charging the battery in a non-hazardous location.

2.2 mLink Battery Charging

Connect the charge adapter. The LED flashes red once per second while charging and stays green when fully charged. When the charger is disconnected, the green light turns off to save battery power.

3. User Interface

The POLI user interface consists of two keys, four sensor sockets, one large Liquid Crystal Display (LCD), eight alarm LEDs, one buzzer, and two vibration alarms.



3.1 Turning On & Off

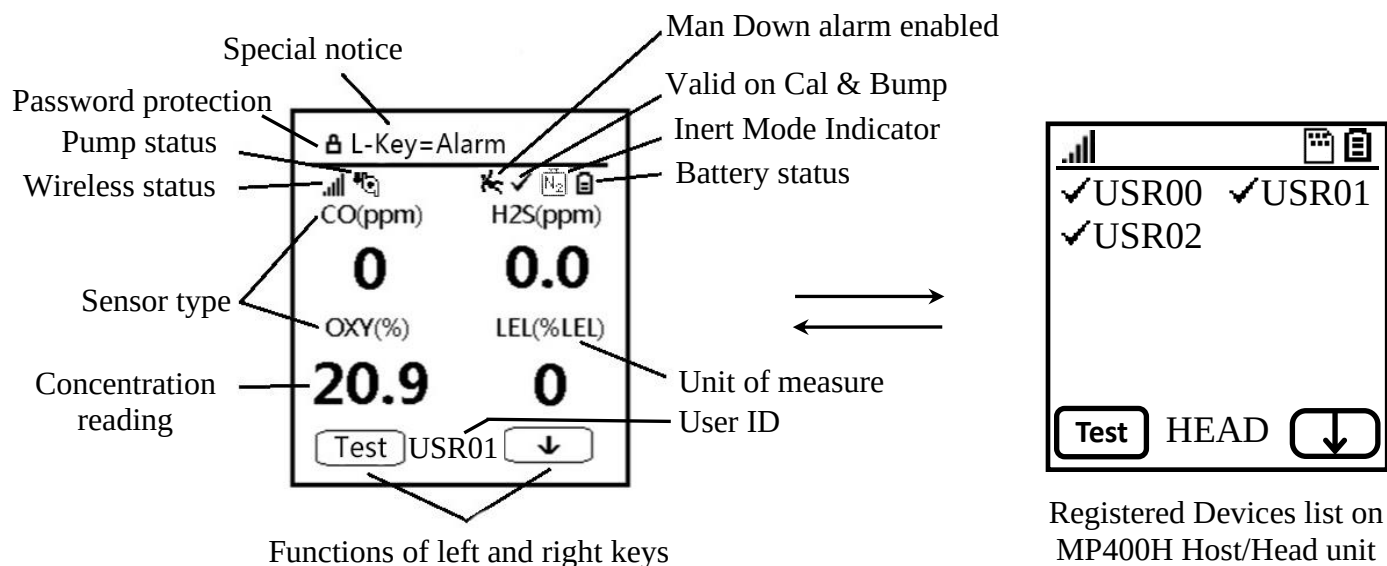
To turn on, press and hold the [⏻/↓] Key for 3 seconds, until the buzzer beeps and the red LED turns on. To turn off, in normal reading mode, press and hold the [⏻/↓] key for a 5-second count down until the unit displays 'Power Off'.

3.2 Main User Menu

See the POLI User Guide for a full description of the main user menu.

3.3 Displays and Keys

The LCD provides visual information that includes real-time gas readings, sensor types, datalog / battery / pump / wireless status, and others. The main user screen is shown below. On the Host/Head unit this main screen alternates with a second screen listing the Registered Devices.



3.3.1 Status Indicator Icons

Along the top of most screens are status icons that indicate whether a function is operating and/or its strength or level.

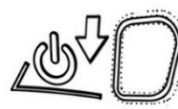
Icon	Function
	Password protection enabled
	Wireless signal strength at 0-5 level
	Pump status (pump versions only)
	Inert mode enabled
	Battery voltage status
	Man-down alarm enabled
	All sensors have been bump tested and calibrated and none are overdue. On the registered devices list the checkmark means unit is communicating and all is OK.

3.3.2 Keys and Interface

The POLI has two keys:



Left [+ / OK] Key



Right [/ ↓] Key



Confirm Operation/Increase Number Power On-Off/Move Cursor

These two keys are marked as [+/OK] to Confirm Operations or Increase Number and [⏻/↓] to Power On-Off / Move Cursor. They also act as 'soft keys' mapped to two text or symbol boxes at the LCD bottom that change numbers and make selections under various menus.

In addition to the functions described above, the Left [+/OK] key can be used to manually activate the LCD backlight when it is off, and to manually test the LED, audio and vibration alarms from the main display.

4. mSquad Operation

See the POLI User's Guide for basic operation information for POLI multi-gas monitors. Special considerations for mSquad POLI monitors include:

- Alarm notifications and field physical set-up
- Calibration of the Head/Host and MP400HS units
- Wireless communication set-up in Configuration Mode and in mPower Suite

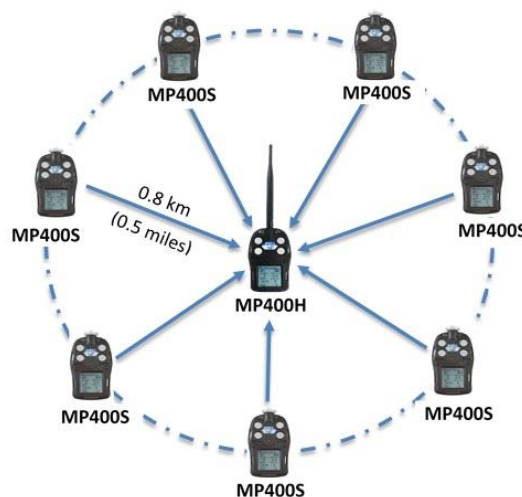
4.1 Field Set-up

Before beginning operations, the field set-up should be checked to ensure good wireless connection.

4.1.1 mSquad Set-up

The Head/Host communicates directly with each Soldier monitor, while communication between Soldiers occurs indirectly via the Head/Host. The maximum line-of-sight distance between a Soldier and Head is about 0.5 miles, and thus two Soldiers could be as far as 1 mile apart and still communicate. However, in many cases the practical operating distances are on the order of a few hundred yards because hills, buildings and other structures (especially metal and concrete barriers) impede wireless transmission.

Communication can be improved by operating the Head unit at the highest point of the arena and/or placing it on a pole or other elevated structure. If a Soldier moves out of communication range for more than one minute, it will alarm. A quicker test of connectivity can be done by sending a Panic Alarm (Hold Left key for 3 seconds.)



4.2 Alarm Notifications

The POLI provides alarms including audible buzzer, visible bright LEDs, vibration, and text notification on the display. These can be programmed or selectively turned on or off. If an alarm occurs in any one unit, all units within an mSquad also go into alarm for a short period (about 15 seconds) and then stop, but the alarm continues on the affected unit and the Head/Host until the alarm condition is cleared. If the alarm does not silence automatically after the issue has been resolved, in most cases it can be cleared by pressing the Left Key.

4.2.1 Alarm Testing

Under normal operation mode and non-alarm conditions, the audible (buzzer) alarm, vibration alarm, LED, and backlight can be tested at any time by pressing Left [+ / OK] once. This alarm is given only on the local instrument.

4.2.2 Gas Alarms

When the gas concentration is outside the alarm preprogrammed Low, High, TWA and STEL alarm limits on any one monitor, all units within the mSquad are alarmed. The Host/Head displays a bell symbol  next to the User Name in place of the check mark to indicate a gas alarm, and other Soldiers display NAME-Gas in the top bar, where NAME is the user in alarm. Alarms on other Soldiers cease after about 15 seconds but the  continues to pulse as a reminder that another worker had an alarm. The pulsing  can be cleared by cycling through the main menu.

If two Soldiers experience gas alarms at the same time, both names are highlighted with a bell  on the Head/Host, but only the last to alarm is shown on the other Soldiers.

4.2.3 Function Alarms

When an instrument malfunction errors occur, such as a low battery, pump stall or sensor fault, all units within the mSquad are alarmed. The Host/Head displays a triangle symbol  next to the user name in place of the check mark to indicate a function alarm, and other Soldiers display NAME-Fault in the top bar, where NAME is the user in alarm. Alarms on other Soldiers cease after about 15 seconds as described above for Gas Alarms.

4.2.4 Communication Loss

When a monitor moves out of communication range or is otherwise disconnected, it alarms on the local Soldier instrument and Head/Host. This alarm can be silenced by pressing the Left Key while still showing the Host? warning. If the Host/Head is turned off, the local Soldier alarms immediately with HEAD OFF!, followed by flashing Host? if the alarm is silenced. If a Soldier is turned off, other Soldiers alarm immediately for 15 seconds. The Host/Head is alarmed with a  symbol displayed next to the user name after the communication-lost timer runs out (about 2.5 minutes). Once the soldier is turned back on, the alarm disappears immediately.

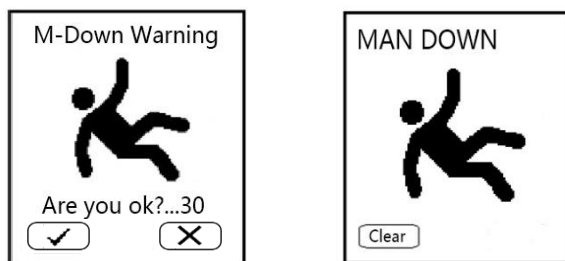
4.2.5 Panic Alarm

If a Soldier recognizes an emergency situation, he or she can notify all mSquad members by holding down the Left Key for 3 seconds to initiate a Panic Alarm. This condition is indicated by a large **X** appearing next to the user name on the Host/Head and NAME-Panic on the top bar of each Soldier. A Panic Alarm is cleared by holding down both Left and Right Keys simultaneously for 3 seconds.

4.2.6 Man-Down Alarm

When a user who is carrying the instrument stops moving or shifts to an abnormal position for a set period of time, the Man-Down Alarm is triggered, notifying all mSquad members immediately. A large **X** appears next to the user name on the Host/Head and each Soldier displays NAME-Mandown on the top bar. The alarms cease as soon as the Man-Down condition is cleared either automatically or manually.

The Man-Down function also has features to warn nearby co-workers who are not connected to the mSquad network. The user is pre-warned by visual and audio alarms at 2 pulses per second that the Man-Down condition has been detected. He then has a set time to clear the warning by



pressing '✓' if he is OK. If not cleared in time, a louder Man-Down Alarm starts, consisting of a short vibration followed by a pitch-rising, once-per-second alarm to warn co-workers within earshot that the user may need rescue. During the warning period the user can also press 'X' if he is in distress, to start the full Man-Down Alarm immediately. These alarms are very different from high-gas alarms, so that nearby co-workers can easily distinguish them. If a full Man-Down Alarm starts but the user is OK, it can be stopped using the Left key (Clear).

⚠ WARNING!

The Man-Down feature cannot detect a worker in distress in all situations even if they have collapsed. The Man-Down function should not be used to supplant other safety precautions.

4.3 MP400H/HS Calibration

For general MP400 calibration procedures, including mSquad MP400S Soldiers, see the POLI User Guide. The MP400H and MP400HS units require a special calibration adapter because the antenna blocks the pump inlet port. Calibrate as for any other POLI diffusion instrument except for connecting the calibration cap to the front face of the monitor, as shown below, and using a fixed-flow regulator with a flowrate of about 0.3 to 0.5 LPM.

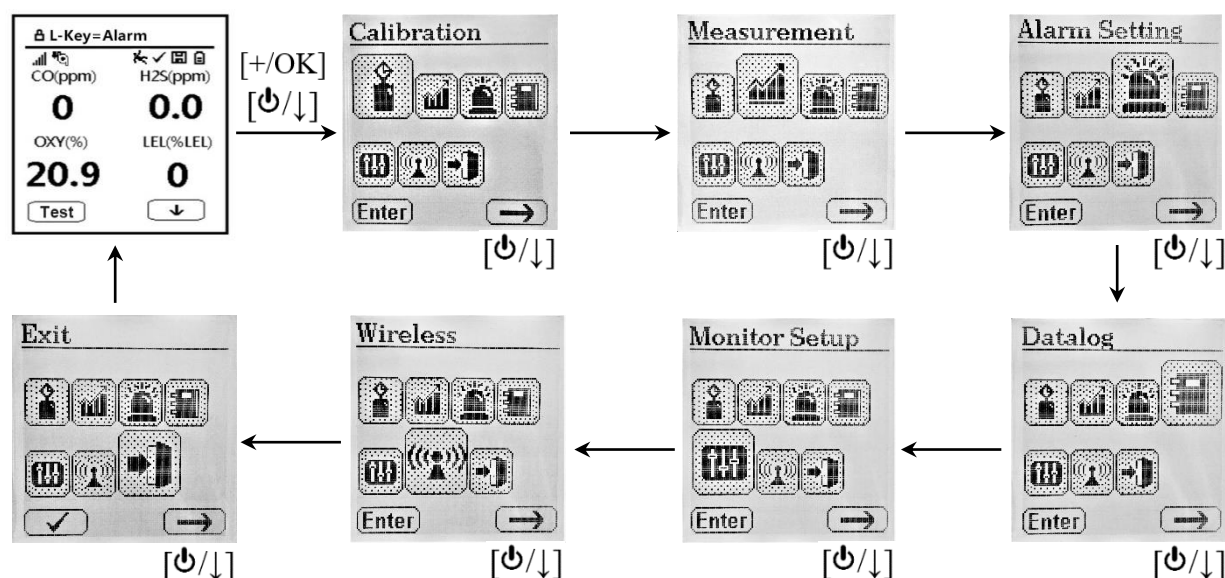


5. POLI Configuration Mode

The Configuration Mode (Config Mode) is used to adjust the POLI's operation settings and calibrate sensors. For mSquads, this mode is additionally used to select the wireless channel, register devices, and assign worker names. See the POLI User's Guide for instructions on how to enter, navigate, and exit Configuration Mode. Only configurations relevant to wireless operations are described here.

5.1 Navigating Configuration Mode to Edit Parameters

After entering Config Mode, the calibration menu is displayed first. Press [$\uparrow/\downarrow$] ($\rightarrow$) to step through the menus and [$+/OK$] (Enter) to enter a menu to edit the parameters in its submenu.



5.1.1 Configuration Mode Menus and Sub-menus

Calibration	Measurement	Alarm	Datalog	Monitor Setup	Wireless**	Exit
Fresh Air Calib	Enable/Disable	High Limit	Clear All	LCD Contrast	Register Devices [¥]	
Multi Span	PID Meas. Gas [‡]	Low Limit	Interval	Pump Speed*	Assign Worker [¥]	
Single Zero (for O ₂ & CO ₂ only)	Set Custom CF [‡]	STEL Limit	Sensor Select	Pump Stall*	Register	
Single Span	Gas Unit	TWA Limit	Exit	Temp. Unit	Host ID	
Bump Test	Exit	Alarm Device		Language	Channel	
Set Span Value		Heart Beat Light		Back Light Mode	Exit	
Set Span2 Val [£]		M-D [†] On/Off		LCD Auto Flip		
3-Point Cal [£]		M-D [†] Warn Time		Policy Check		
Exit		M-D [†] Threshold		Real-Time Clock		
		M-D [†] Tmotionless		Exit		
		Exit				

* Pump versions only ** Wireless only [‡] PID only. [£] PID & Dual-range LEL only [†] M-D = Man-Down [¥] Host/Head only

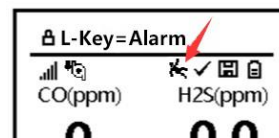
5.2 Man-Down Function

5.2.1 Man-Down On/Off

The Man-Down On/Off function has 4 settings:

- **Off**
- **On** Alarm is triggered with insufficient movement in any direction. The pre-warn or alarm can be cleared by quickly tilting, or by pressing the Left [+ / OK] key.
- **Vertical Off** The alarm stays off as long as the instrument is held in a vertical position, such as clipped to a belt (or straight upside-down), and triggers when in any other position including held sideways or laying face up or down. A pre-warn can be cleared by quickly returning the POLI to a vertical position, or pressing the Left [+ / OK] key.
- **Horizontal Off** The alarm stays off as long as the instrument is held in a horizontal position, such as laying face up on a table, and triggers when in any other position. A pre-warn can be cleared by quickly returning the POLI to a horizontal position, or pressing the Left [+ / OK] key.

The Man-Down icon on the main screen verifies that the Man-Down function is enabled.



5.2.2 Man-Down Warn Time

This menu allows adjustment of the time allowed for the user to clear a pre-warn signal before the unit goes into full Man-Down Alarm. The pre-warn time can be adjusted between 10 and 60 seconds and the default value is 30 seconds.

5.2.3 Man-Down Threshold (Sensitivity)

This menu allows adjustment of the sensitivity to motion (On Mode) or position changes (Vertical or Horizontal Off Modes) for detecting a Man-Down condition. Low sensitivity means fewer alarms and High sensitivity means a greater likelihood of triggering an alarm.

5.2.4 Man-Down Motionless Time

This menu allows adjustment of the time allowed for stopped motion (On Mode) or position changes (Vertical or Horizontal Off Modes), before a Man-Down condition is detected. The motionless or position-change time can be adjusted between 10 and 60 seconds and the default value is 30 seconds.

5.3 Registering Soldier MP400S POLIs

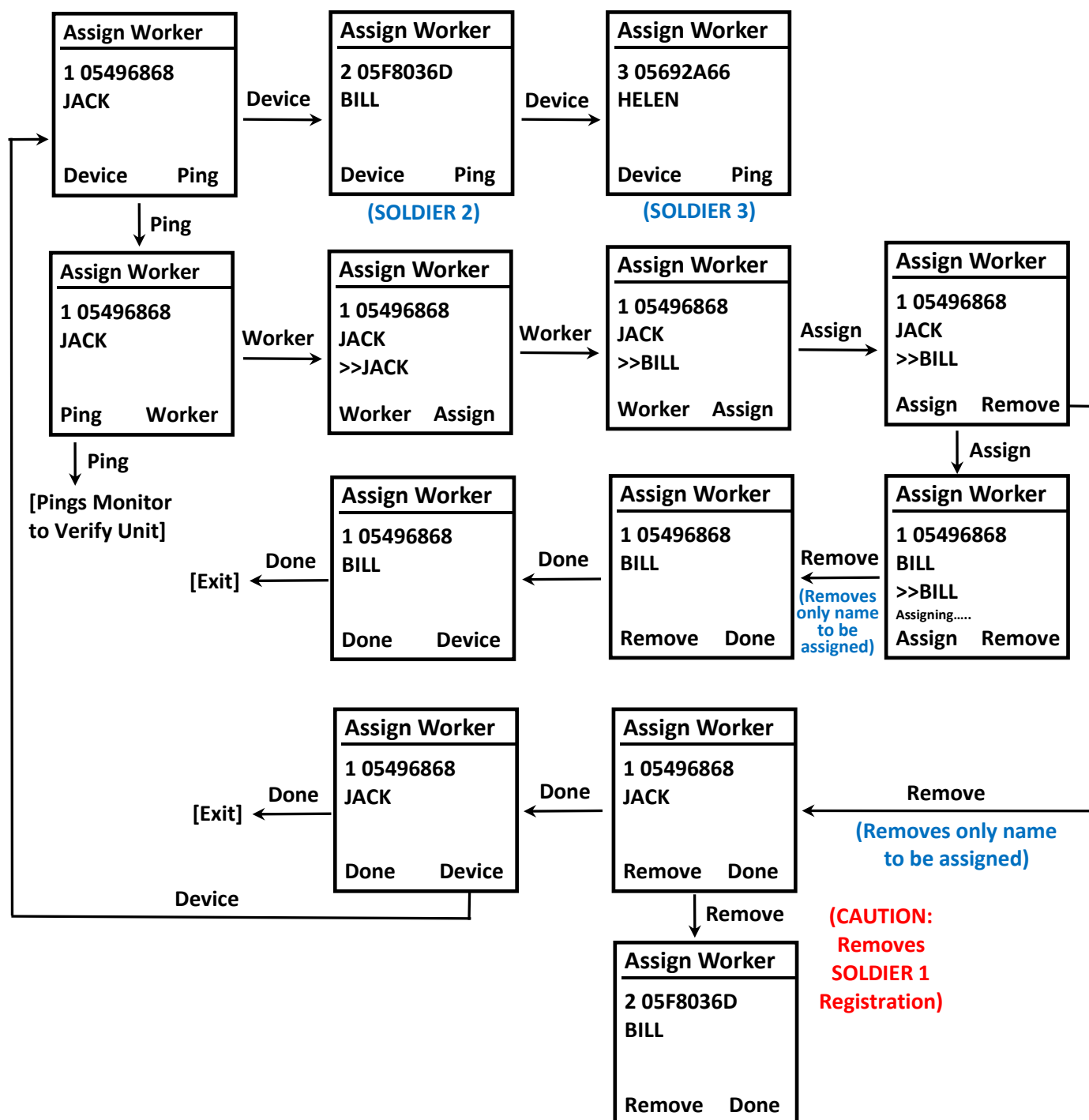
Before the mSquad units can communicate with each other, each Soldier (MP400S) must be registered with the Head (MP400H). If an mSquad Soldier is not registered with a Head, it will alarm and flash the query “Host?” on the top bar, beginning about one minute after turn-on. The alarm can be silenced by pressing the Left [+ / OK] (ACK) key, while the “Host?” query remains.

To register, place both the Head and the Soldier into Configuration mode and enter the Wireless sub-menu.

- Ensure that all monitors are on the same wireless channel: Wireless → Channel. Scroll to one of the 16 channels offered and press Enter → Select → Save.
- On the Host, enter Wireless → Register Devices
- On the Soldier, enter Wireless → Register → Enter → Start
- The Soldier and Head/Host will beep once to acknowledge the registration, and the Soldier will display the Registration Address (1 to 8) above the message “Registered”. The new Soldier name will appear on the Host/Head Registered Device List with a ✓ next to the name. The Host assigns registration addresses and default user names in the order they are registered, e.g. USR00, USR01, USR02....etc. If a different device is already registered at a given address, the new registration will replace the previously existing one.
- To enter a personalized user name of up to 5 letters/digits, use mPower Suite software. Connect the Host to a personal computer equipped with mPower Suite version 1.2.2 or higher. Search for the Host, click on the POLI serial number and click on the Squad Users tab on top. Type in the desired names for up to 7 users, preferably 5 letters or less for ease of reading on the displays. After saving to the Head/Host (see Section 6.1.3), the new Soldier names will update on the Soldiers next time they communicate with the Head/Host (this may take a few minutes). Alternatively, put both Host and Soldier back into Register Device mode and re-register each Soldier to receive its new name.
- If a Soldier get disconnected, the “Host?” query re-appears on the Soldier, and the Head/Host unit is alarmed by audiovisual alarm plus the ⚠ symbol appearing next to the user name on the Connected Devices list.
- On the Head/Host, the Register Menu allows connection to a larger network using an mLink.

5.4 Assigning Workers

Each day or on a shift change, it may be desirable to transfer a monitor to a different worker or remove workers. This can be done using the Assign Worker function on the Head/Host. Turn on all monitors and set the Head/Host in to the Wireless configuration menu. Select the Assign Worker sub-menu and follow the flowchart below.



To summarize the keystrokes: Assign Worker → Device → Ping (R) → Ping (L) (beeps on both to confirm) → Worker (R) → Worker (L) (scroll L to select worker) → Assign (R) → Assign (L) to assign (beeps to confirm) → Remove (R) → Remove (L) to remove registration or Done (R & L) to exit.

5.5 Host ID

Displays the Head Monitor or mLink ID. For Soldiers, it is its registered Head ID; for a Head, it is its registered mLink ID when part of an mPlatoon or mSquad Pro wireless network.

5.6 Channel

Select the operating Channel, from CH1 to CH16. Ensure that the same selection is made on the Head/Host as on all Soldiers in the mSquad.

6. mSquad Pro and mPlatoon Wireless Networks

Multiple (up to 4) mSquads, for up to 32 monitors within the hazardous zones, can be connected to form an mSquad Pro or mPlatoon to communicate with a command center located outside the hazardous zones. The command center consists of one or more mLink modems plus:

- 1) Smartphone or tablet fitted with mPower Suite mobile Android App (**mSquad Pro**)
- 2) Laptop computer fitted with mPower Suite RT software and comm dongle (**mPlatoon**).
Includes Map View showing location of monitors.

The mLink communicates up to 2 miles (3 km) line-of-sight with each MP400H Host/Head or MP400HS Soldiers fitted with long-range antenna. The mLink transmits concentration and alarm data to the mobile phone, tablet or laptop via Bluetooth within 20 ft (6 m).



mPLATOON



Non-Hazardous Zone

6.1 mLink Interface

6.1.1 mLink Charging

Connect the charge adapter. The LED flashes red once per second while charging and stays green when fully charged. When the charger is disconnected, the green light turns off to save battery power.



6.1.2 mLink Power On/Off

Press the button on top of the mLink for 5+ seconds to power on or off. A green light appears briefly to indicate turning on, while a red light indicates turning off.

6.1.3 Bluetooth (BLE) Communication

Bluetooth communication requires that the mLink and PC or Android device be within about 20 feet (6 meters) line of sight of each other. BLE connection is enabled:

- automatically for 90 seconds when power is turned on (indicated by flashing orange light)
- manually by pressing the button for 0.2 to 1.0 seconds and releasing

Once a wireless connection is made with another device, BLE remains on automatically until communication is lost for any reason. While BLE is on, every 10 seconds the mLink LED will flash once for LoRa connection status and then flash once for BLE connection status. During LoRa connection status, the LED flashes green if least one MP400H/MP400HS is connected, and red if none are connected. During BLE connection status, the LED flashes in green if BLE is connected, or red if BLE is off (or no connection is set up).

mLink (MP290P) LED Definitions

Condition	LED	Notes
<i>To power on /off press and hold the mLink button for 5+ seconds</i>		
Charging (External power: ON Backup battery: Installed)	RED Flash (1 flash/sec)	ON 0.5 sec – OFF 0.5 sec
Fully charged	GREEN	ON continuously
Battery Low	RED Flash (1 flash /3 sec)	ON 0.3 sec – OFF 2.7 sec
BLE activated for connection	YELLOW Flash (5 flashes /sec)	RED and GREEN ON 0.1 sec – OFF 0.1 sec BLE is automatically enabled for 90 seconds on power on, or BLE connection is made, or user presses (0.2-1 secs) and releases the button to manually activate BLE. Stop GREEN flash if BLE connected
Remote LoRa device (MP400H/MP400HS) connected	GREEN for 1 sec every 10 secs	At counting index 7, if LED OFF for counting index 0--6 and 8
No LoRa device connected	RED for 1 sec every 10 secs	At counting index 7, if LED OFF for counting index 0--6 and 8
BLE connected (with PC or mobile device)	GREEN for 1 sec every 10 secs	At counting index 9, if LED OFF for counting index 0--6 and 8
BLE not connected	RED for 1 sec every 10 secs	At counting index 9, if LED OFF for counting index 0--6 and 8
Bootloader, while updating firmware	RED Flash with communication	

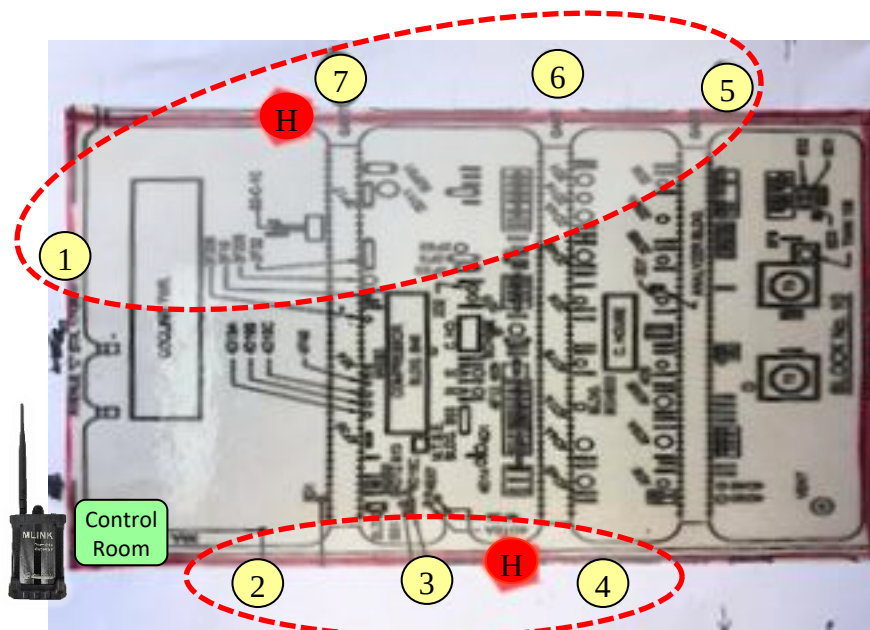
6.2 mSquad Pro and mPlatoon Set-up

For the longer-range systems, mSquad Pro and mPlatoon, which require an mLink modem, it is recommended to perform a site survey BEFORE purchase to selecting proper number of Head monitors and mLink modems. A site survey also allows optimizing the team arrangement, creating a preliminary setup diagram and selecting the best wireless channel.



To set up the system, proceed as follows:

- 1) Note that the wireless Line-of-Sight transmission capability between Head and mLink is 4 times that between Head and Soldier. Deploy the Head as close as possible to its Soldiers while minimizing the severity of obstructions. For the example site below, it is suggested to set up 2 or 3 teams with each Head close enough to its Soldiers, and yet also close enough to connect to the mLink in the control room. The diagram below shows a 2-Head solution.



- 2) Before setting up the whole system, select the best wireless channel for the site, and decide how many Heads (squads) should be set up to connect all the Soldiers.
- 3) Set up the first team:
 - a. Power off all other teams to simplify the setup.
 - b. Register the Soldiers in the team to the Head, using the Head wireless ping function (see Sections 5.3 Registering and 5.4 Assigning Workers) to check the wireless communication quality with each of its Soldiers: ping the Soldier 10+ times to ensure that the response ratio is not less than 70%.
 - c. Find the Soldier with worst communication quality (by ping response ratio), try to change the wireless channel on both the Head and that Soldier. (Background: CH1 is the lowest frequency, factory default is CH8). Because the wireless interference often crosses many wireless channels, it is suggested to first try channel 8, then 1, then 16 (CH8 → CH1 → CH16) to most quickly find the optimal wireless channel.
 - d. Once the best channel has been selected, change all other team Soldiers to match, and verify the response ratio on each. After verification with all Soldiers, the team is set up. If there are one or more Soldiers with communication difficulty with the Head, consider setting up another team or joining them to another Head.
- 4) Repeat step 3(a) and 3(b) and use the same channel previously selected to set up the other team(s) as needed.
- 5) Turn off all Heads and Soldiers. Power on the mLink, start the App and connect to the mLink. Power on all Heads and register all Heads to the mLink (from the App).
- 6) Power on all Soldiers.

Setup Troubleshooting:

- 1) Head does not show up on the App or goes offline
 - a. Increase the height of either or both the mLink (antenna) and Head to improve the wireless communication.
 - b. Ping the Head on the App to verify the communication, or re-register the Head if necessary (see Section 6.3.2 on Android App Operation below).
- 2) Solider does not show up on the App or goes offline (but its Head may show up)
 - a. Press the Left (+/OK) key on the Head to send the latest Soldier list to the mLink.
 - b. Wait up to 10 minutes for the latest Soldier list to be sent to the mLink automatically.
 - c. Increase the height of both Soldier and Head to improve the wireless communication.
 - d. Check on the Head if the Soldier is shown normally. Try pinging the Soldier on Head (see Section 5.4 Assigning Workers) to verify the communication.
 - e. Rebooting its Head AND rebooting the Soldier can speed up the communication and data being shown on App, under some conditions.
- 3) Changed Soldier name is not reflected on the App
 - a. Wait several minutes as it may take a few query cycles for the name change to show.
 - b. Rebooting the mLink AND restarting the App can speed up the name update.

6.3 mSquad Pro Interface

6.3.1 mPower Suite Android App Set-up

1) Specifications

• Software Installation: mPower Suite Android App download at [Software Downloads | mPower Electronics Inc. \(mpowerinc.com\)](http://Software Downloads | mPower Electronics Inc. (mpowerinc.com))

- Communication: 20 ft. (6 m) LOS (line of sight) between Android device and mLink
- Maximum 8 MP400H (mSquad Head)
- Maximum 32 MP400S / MP400H / MP400HS monitors

2) Requirements

- System: Android v. 6.0 or higher (latest version is recommended)

3) Set-Up Procedures

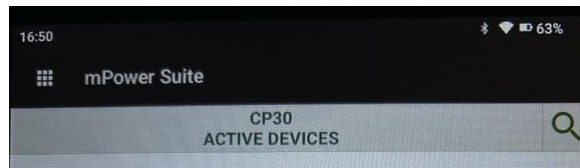
- Download the App file from the mPower web site, copy it to the mobile download folder, and start the installation from that folder. Confirm the installation as Android OS requires.
- On the first time starting, grant the privileges required by the App.

Note: Some Android mobile devices do not allow granting the privileges after the App starts. On these devices, re-install the App and before starting the App, go to its OS Settings to grant all required privileges.

6.3.2 mPower Suite Android App Operation

1) First-time operation: **Registering** units.

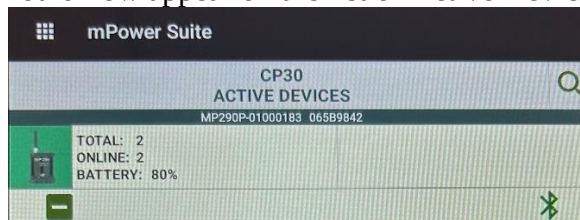
- Register all Soldiers to their Head** using the procedures in Section 5.3, if not already done. If there is more than one Head/mSquad, be sure to turn off all other Heads and register each mSquad monitor to its Head separate from all other Heads/mSquads. Repeat for each mSquad.
- Register all Heads to the mLink.**
 - Turn on the mLink and Head monitor (and any Soldiers, if desired).
 - Open the mPower Suite App on the mobile device and click the search icon in the upper right corner.



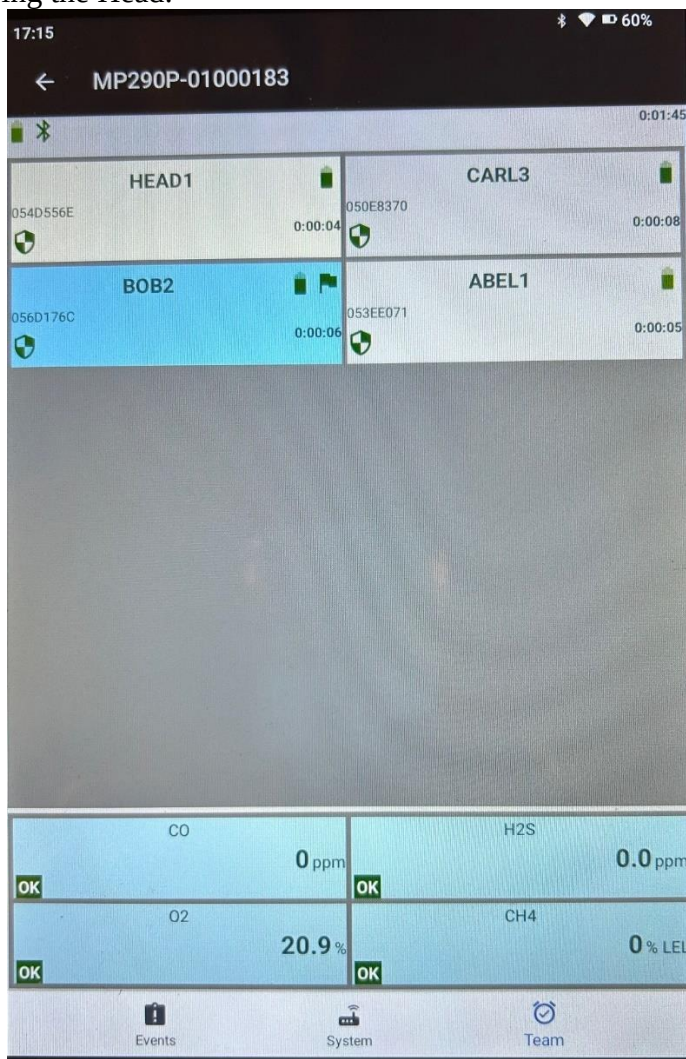
- The display should show Devices Nearby and the MP290P (mLink) should appear. If the mLink is not found, push its button briefly to manually initiate communication.



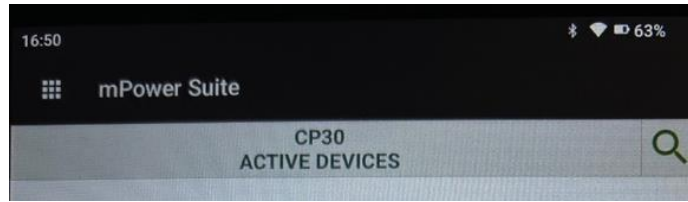
- Once the mLink is found, click on the MP290P black bar to start communication. The mLink panel should now appear on the list of Active Devices.



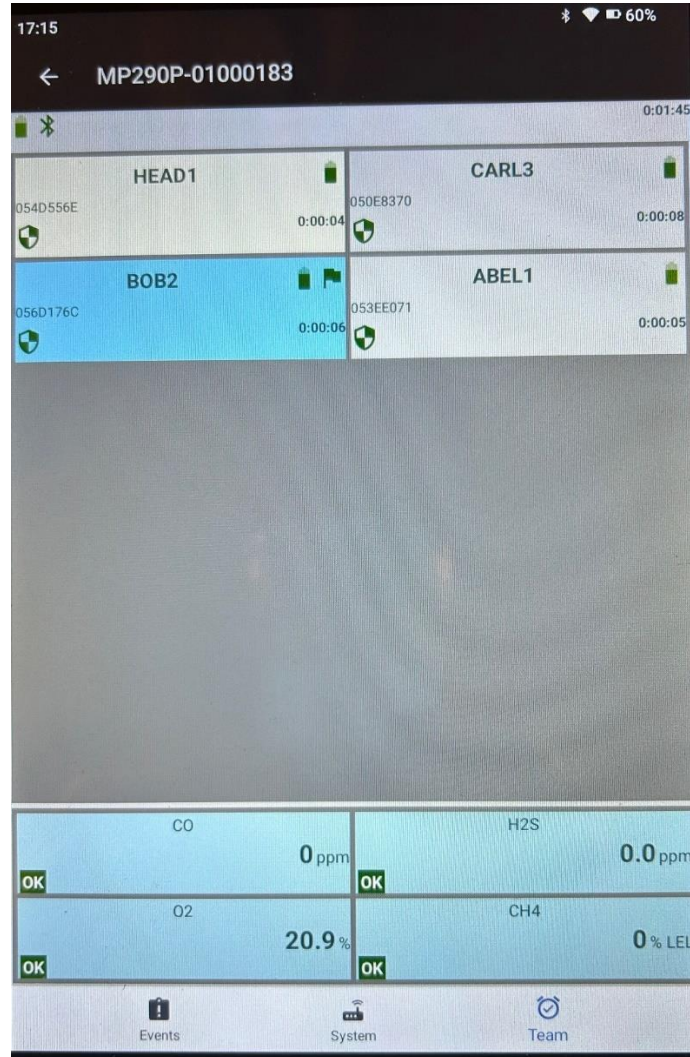
- v. Click on the mLink panel, on the next page click on System at the bottom, and then on Register Device when it appears. Make sure the Channel selected matches that of the Head. This procedure sets the mLink into a mode to accept Head registration.
- vi. On the Head monitor, enter Configuration Mode, go to the Wireless menu, scroll down and select Register (not Register Devices), and push Start. The Head should ping to indicate it is registered and it should appear as a registered device on the App screen. Click on Team in the bottom panel of the App to view the Head sensor readings.
- vii. To verify communication with the Head, click System in the bottom panel and click TEST to ping the Head.



- viii. Any mSquad monitors registered to the Head should also appear on the App display. If they do not appear, press the Left (+/OK) key on the MP400H Head, or turn off and restart the Head, or simply wait for the MP400H Head to automatically send its MP400S Soldier list to the mLink, which it does every 10 minutes.
- 2) Routine operation: Turn on the mLink and associated mSquads and/or POLI H/S units. Allow a minute or more for all units to come into communication with each other. Proceed as above steps i to iv under Register Heads to the mLink.

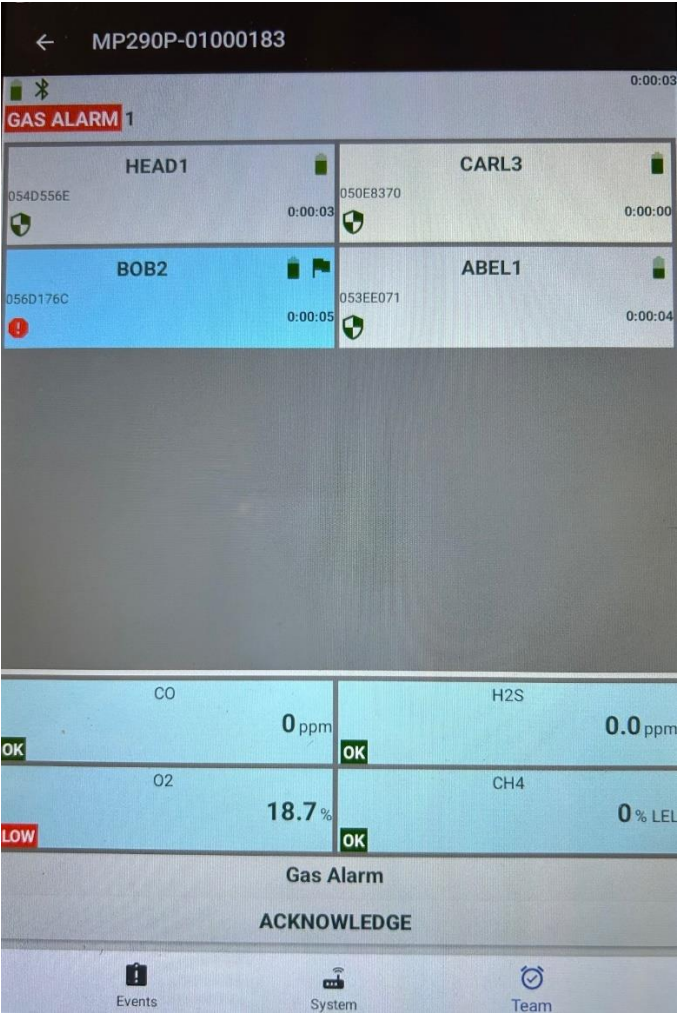


When the mLink appears as a Registered Device, click on its icon to start monitoring. When the Team icon in the bottom panel is highlighted in blue, all units should be shown on the screen. The concentration readings for the currently-queried unit (with name highlighted in pale yellow) is displayed at the bottom:



The system automatically cycles through displays for each monitor. To select readings for a particular monitor, click on its name panel, which will be highlighted in blue. To unselect, click on the blue name panel again to allow the sensor reading once again to follow the pale-yellow-highlighted monitor.

- 3) If any monitor goes into alarm, the Head and the Android App will also alarm. The App alarms both by sound and on the display, and if email and/or SMS messaging is set up, the App will attempt to send those notifications as well:



Press ACKNOWLEDGE on the bottom panel to silence the audio alarm on the App, or it will silence automatically when the alarm condition no longer exists.

Gas Alarm

HEAD1
12/02/2024 19:22:01
Gas Alarm

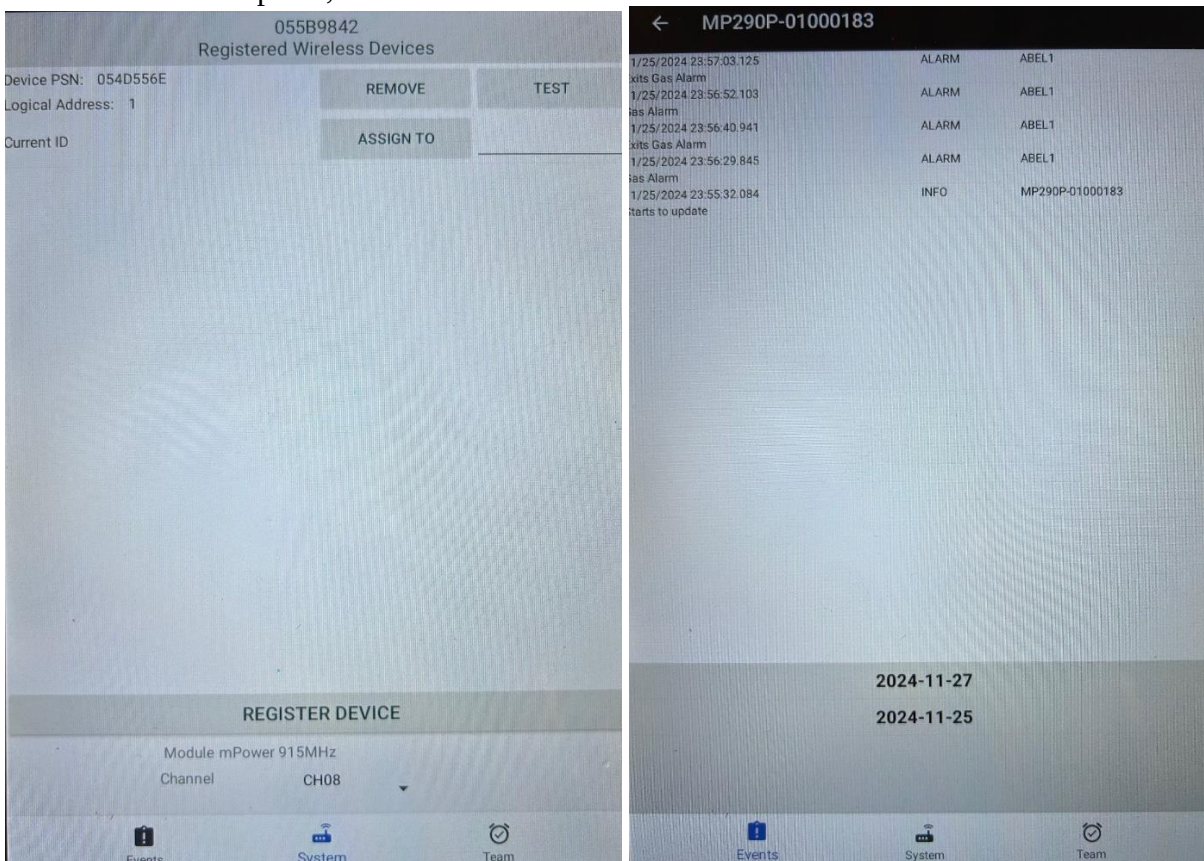
----- Details -----

Battery: 70%
OK

H2S	OK	0.0	ppm
CO	OK	24	ppm
CH4	OK	0	% LEL
O2	Low	19.2	%

Email notification htm file

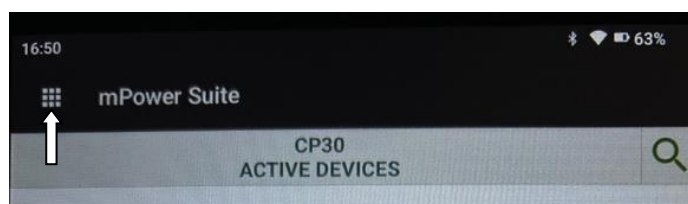
- 4) To assign or change the name on the Head, go to the Systems page, type in a name next to the ASSIGN TO panel, and click on ASSIGN TO.



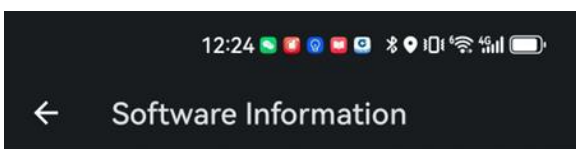
- 5) To view lists of start-up and alarm events, click on the Events icon on the bottom panel.

6.3.3 Data Download and Remote Notifications

- 1) **Set Up Email and SMS Phone Notifications.** In the App, click on the menu icon just to the left of the title “mPower Suite”, to enter the Setup and Datalog menus.



- 2) Click on **Setup** in the bottom panel and enter the mobile phone number(s) for SMS messages and email address(es) for notifications. Once set up, the App will attempt to send notifications of alarm events and faults to both locations and use the email address(es) for downloading datalog files.
- 3) To **Download Data**, click on the Datalog icon in the bottom panel. Click on the green magnifying glass icon to filter data for No Filter, Only Alarms, or By Reading. Next, select the monitor name from the list. If there are more than one file, e.g. showing 4/4, click repeatedly on the monitor name to select the desired file. Then click on the green envelope icon to send a .txt file with the data to the email address(es) previously set up.
- 4) To **View Events or Operations**, select the date of use. No downloading is possible.



user must get separate license from mPower Electronics Inc. and enable the cloud feature in below section Cloud Platform.

SMS NOTIFICATION



mobile phone number #1 mobile phone number #2
mobile phone number #3 mobile phone number #4
mobile phone number #5 The last phone number

Once setup the mobile phone number(s), the app will try to send you the SMS notification, when there is event like device alarm or fault, etc.

Please note the SMS notification is NOT guaranteed.

EMAIL NOTIFICATION



xxli@mpower-electronics.com

email address #2

email address #3

email address #4

The last email address

Once setup the email address(es), the app will try to send you the email with the device alarms or datalog file.

Please note the email notification is NOT guaranteed.

INTERNET-BASED SERVICES

☒ Join Customer Experience Improvement Program (CEIP)

Join CEIP to help us to improve our products and support services for you. CEIP collects normalized data only. Neither the App user name, nor the email address, nor the mobile phone number you have set, nor any hardware ID of this



EULA



Setup



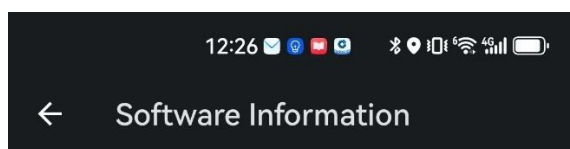
Datalog



Events



Operations



CO, OK, 0, ppm H2S, OK, 0.0, ppm O2, OK, 20.9, % CH4, OK, 0, % LEL	
11/19/2024 16:47:02.655 05D6DC71, , 70, 90, OK	11/19/2024 16:47:01
CO, OK, 0, ppm H2S, OK, 0.9, ppm O2, OK, 20.9, % CH4, OK, 0, % LEL	
11/19/2024 14:20:17.846 05D6DC71, , 70, 90, OK	11/19/2024 14:20:17
CO, OK, 0, ppm H2S, OK, 0.8, ppm O2, OK, 20.9, % CH4, OK, 0, % LEL	
11/19/2024 14:20:06.056 05D6DC71, , 90, 90, OK	11/19/2024 14:20:06
CO, OK, 0, ppm H2S, OK, 0.0, ppm O2, OK, 20.9, % CH4, OK, 0, % LEL	
11/19/2024 14:19:54.415 05D6DC71, , 70, 90, OK	11/19/2024 14:19:54
CO, OK, 0, ppm H2S, OK, 0.0, ppm O2, OK, 20.9, % CH4, OK, 0, % LEL	
11/19/2024 14:19:36.264 05D6DC71, , 70, 90, OK	11/19/2024 14:19:36

BETA

BGC



HEAD

1/1



Datalog



6.4 mPlatoon Interface

6.4.1 mPower Suite RT/Dongle Set-up

1) Specifications

- Software Installation: mPower Suite RT 1.0.x.xxx download at [Software Downloads | mPower Electronics Inc. \(mpowerinc.com\)](https://mPowerElectronics.com)
- BLE Dongle communication: 32 ft. (10m) LOS (line of sight) to mLink
- Web clients: 10
- Max 8 MP400H (mSquad Head) or MP290P (mLink)
- Max 64 MP400S / MP400H / MP400HS (practical limitation is 32 monitors)

2) Requirements

- Systems: Windows 7, Windows 10
- Browsers: Chrome, Edge, Firefox
- RAM: 4GB or more, Free HD: 1GB or more

3) Set-Up Procedures

Run `mPowerSuiteRT_v1.0.x.xxx.exe` to install the software on the windows PC. Installer will

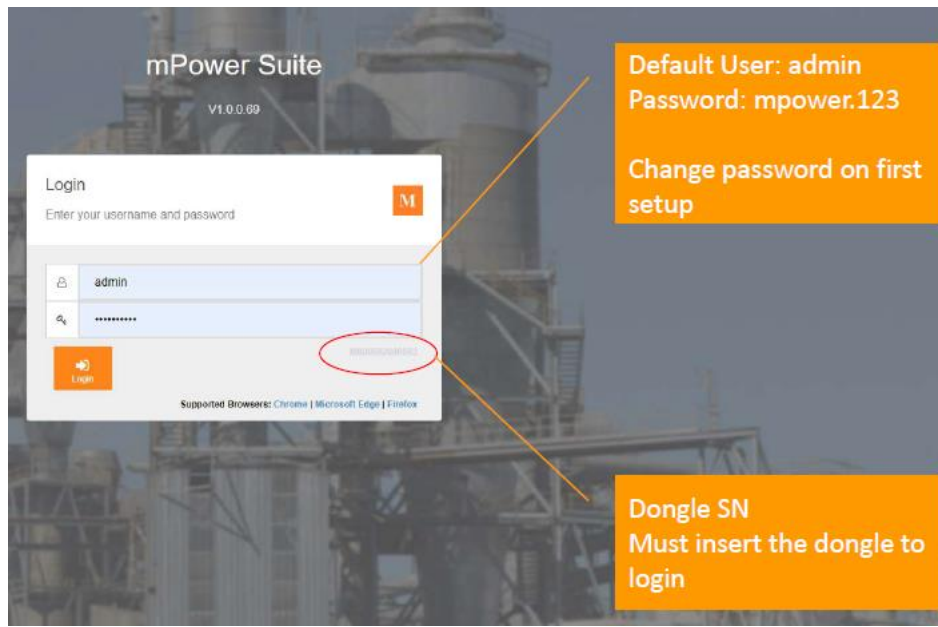
- Create link “mPower Suite RT” on desktop
- Create program menu “mPower Suite RT”
- Create folder C:\mPower Electronics\mPower Suite RT to save logs and settings
- Setup firewall to connect to mPower Suite RT from remote devices
- Setup power configurations to disable computer from turning disk off, disabling standby, and disabling hibernation when external power supply is connected

6.4.2 mPower Suite RT 1.0 Operation

- 1) **Insert the dongle** into the PC USB port and run the application from the PC. Because this is licensed software, it will not run without the dongle inserted. If the dongle serial number does not appear, then the dongle is faulty or unlicensed and must be replaced. To use the map features, be sure the PC is connected to the internet.

Note: keep the dongle “visible” (no obvious obstacles) and close to the mLink for better Bluetooth connectivity.

- 2) **Enter your username and password** (default user: admin, default password: mpower.123). The password can later be customized under the System → Users menu.

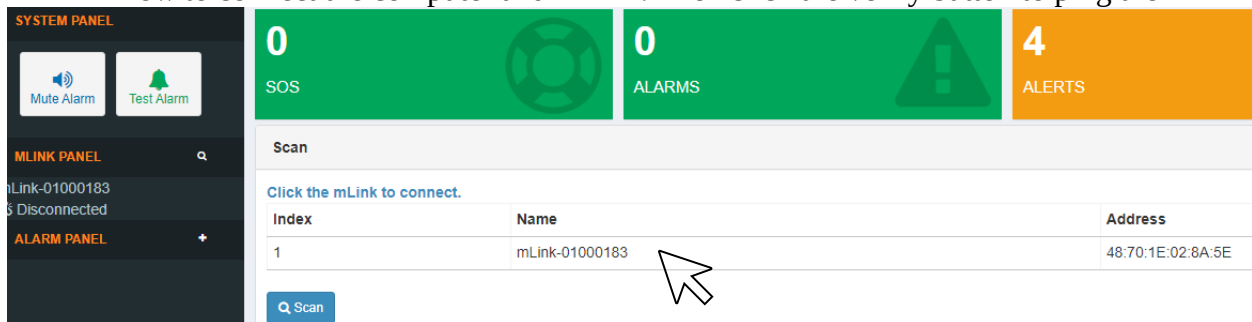


3) First-time operation: **Registering** units.

- Register all Soldiers to their Head** using the procedures in Section 5.3, if not already done. If there is more than one Head/mSquad, be sure to turn off all other Heads and register each mSquad to its Head separate from all other Heads/mSquads. Repeat for each mSquad.
- Register all Heads to the mLink.** In mPower Suite RT, click on the white Search icon in the MLINK PANEL on the left black bar.



The mLink ID should appear once it is found by mPower Suite RT. Click on the mLink row to connect the computer and mLink. Then click the verify button to ping the



mLink and register it to the mPower Suite RT software.

- 4) Routine operation: Turn on all units including Soldiers, Head and mLink. For subsequent re-starts, there is no need to re-register; simply click on the mLink bar to connect. It may take several seconds to a minute to connect the mLink and all the monitors.

Step 4. Setup Connection with mLink

Power on the mLink. In mPower Suite RT 1.0, click on the below white 'Search' icon to set up the connection.

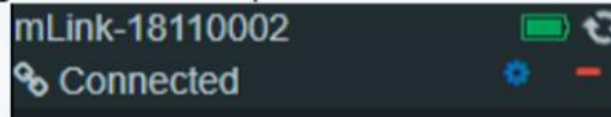


Note:

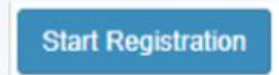
The connection only needs to be set up one time. Once set up, mPower Suite RT 1.0 automatically tries to connect to the mLink if not connected. The user only needs to power on the mLink and/or press the mLink button to enable its BLE module.

Step 5. Set up Wireless Devices

1. Click below blue gear icon to set up the wireless devices for the mLink



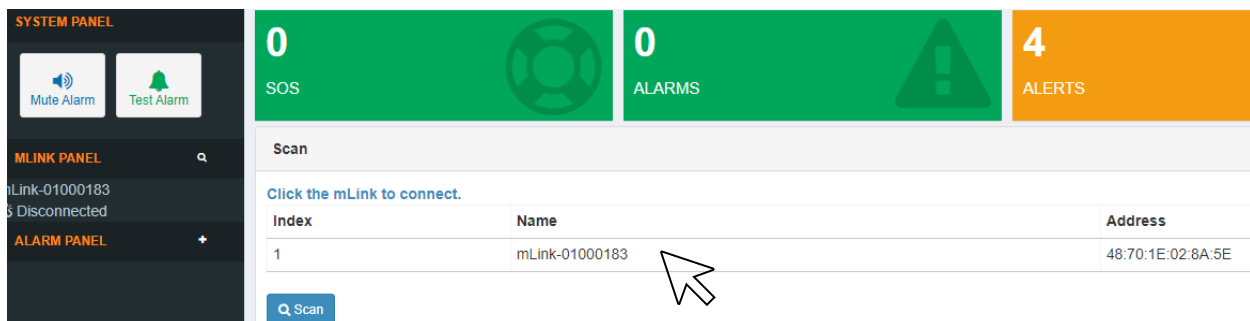
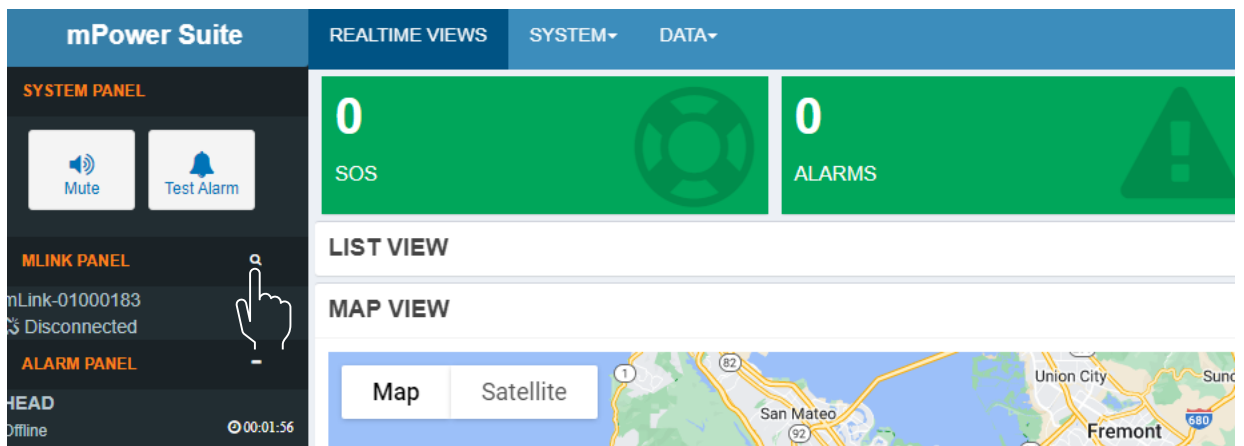
2. Click the button "Start Registration" to register wireless devices.

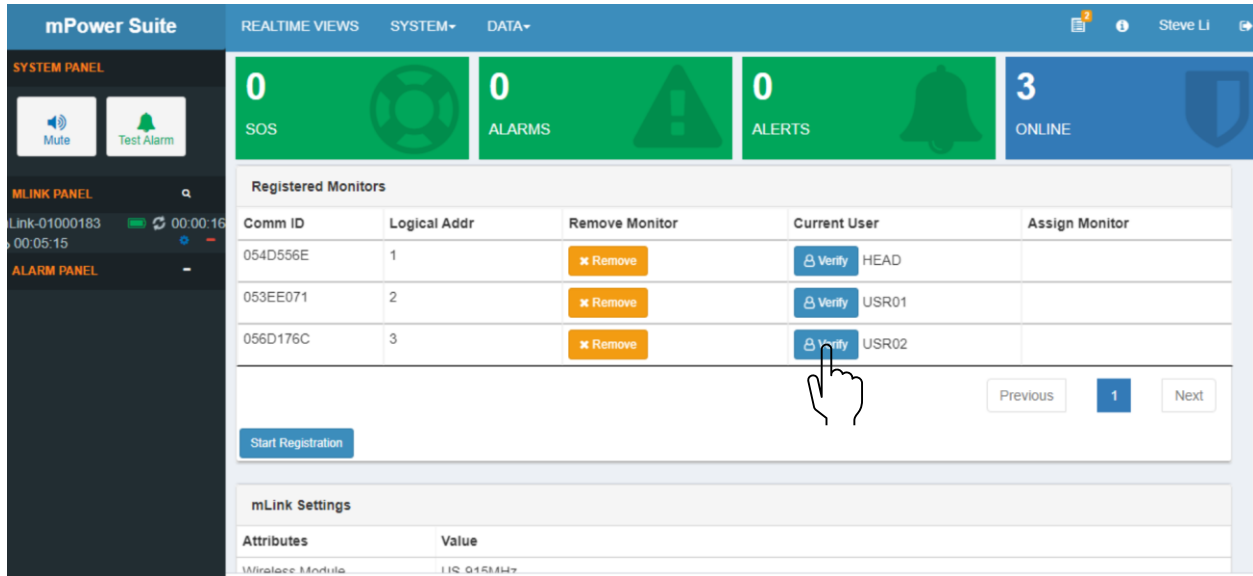


3. On each POLI unit, perform wireless registration from its wireless menu (see mSquad or mPlatoon Manual).

Note:

Wireless devices only need to be set up one time.





- 5) Enter the configuration mode on the Head POLI and in the Wireless Menu enter the Register sub-menu. Click on the blue Start Registration button in mPower Suite RT. The Head monitor line should appear in mPower Suite under Registered Monitors. Click on the blue Verify button to ping the Head and verify. For subsequent starts there is no need to re-register.
- 6) Repeat the same procedure as for the Head to register all Soldier POLI monitors. Alternatively, the Soldiers can be registered using the procedures given for mSquad in Sections 5.3 and 5.4.
- 7) To use the **Map Feature**, the location of the Head and Soldiers must be entered manually onto the map. Expand the map to the desired scale, click on a monitor to highlight its bar, and then right-click on the map to place a green & white shield icon at the user's location. Repeat for all of the monitors. The mLink may not appear on the map or may appear at some distance from the operation site.

mSquad User's Guide

The screenshot shows the mSquad interface with a table of sensor data and a map view.

HEAD	OK	CO	H2S	O2	CH4	BATTERY	UPDATE TIME	COMM ID	DEVICE TIME
ABEL1	OK	0 ppm	0 ppm	20.9 %	0 %LEL	70%	2024-06-25 21:24:12	053EE071	2017-01-07 09:07:22
BOB2	OK	0 ppm	0 ppm	20.9 %	0 %LEL	70%	2024-06-25 21:24:16	056D176C	2017-01-07 09:08:23
CARL3	OK	0 ppm	0 ppm	20.9 %	0 %LEL	70%	2024-06-25 21:24:10	050E8370	2024-06-25 21:23:52

The map view shows a street map with a red alarm triangle icon over the location of CARL3. A pop-up window shows details for CARL3:

CARL3
CO 0 H2S 0.0 O2 20.9 CH4 0

- 8) When an alarm occurs, an audio alarm sounds on the PC, the map icon turns from a shield to a red alarm triangle, and a panel pops up in the lower left corner showing details of the alarm event. Alarm dates are listed as Year:Month:Day.

The screenshot shows the mPower Suite interface with a table of sensor data and a map view.

SENSORS		BATTERY	UPDATE TIME	COMM ID	DEVICE TIME
H2S	CO	CH4	O2		
0.0 ppm	0 ppm	0 %LEL	20.9 %		
CO	H2S	O2	CH4		
0 ppm	0 ppm	20.9 %	0 %LEL		
CO	H2S	O2	CH4		
37 ppm	0.0 ppm	19.3 %	0 %LEL		

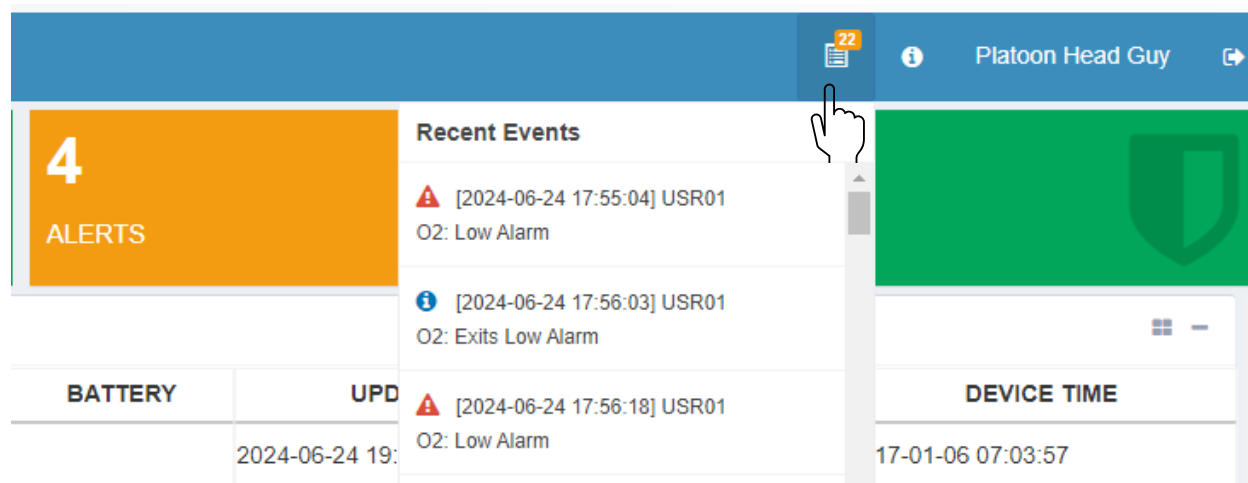
The map view shows a street map with a red alarm triangle icon over the location of CARL3. A pop-up window shows details for CARL3:

Alarm : **O2-Low Alarm**
Time : 2023-06-03 17:45:39
Device : USR01 [053EE071]
MLink : MP290P-01000183
Location :
mLink Addr :

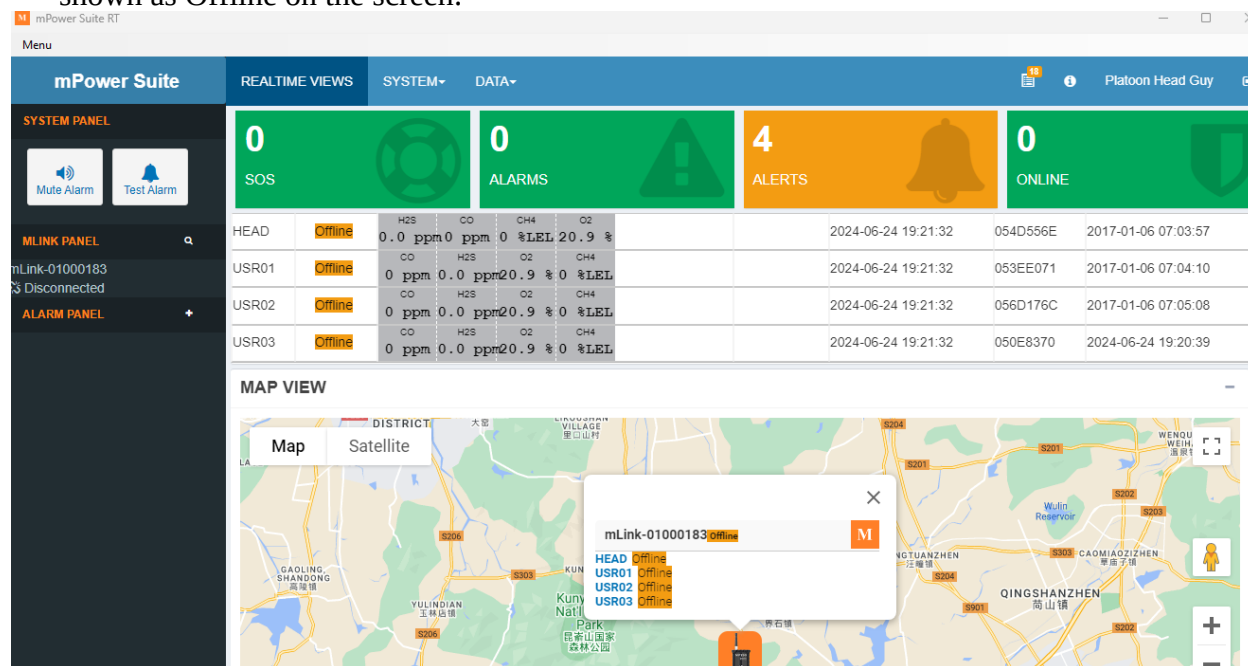
Alarm : **CO-Low Alarm**
Time : 2023-06-03 17:45:39
Device : USR01 [053EE071]
MLink : MP290P-01000183
Location :
mLink Addr :

- 9) After an alarm occurs, the Head unit may continue flashing even after the alarm has been cleared. The head displays the alarm triangle for the Soldier that went into alarm. If ACK appears in the lower left box, Click the Left Key to cycle through and clear the flashing.

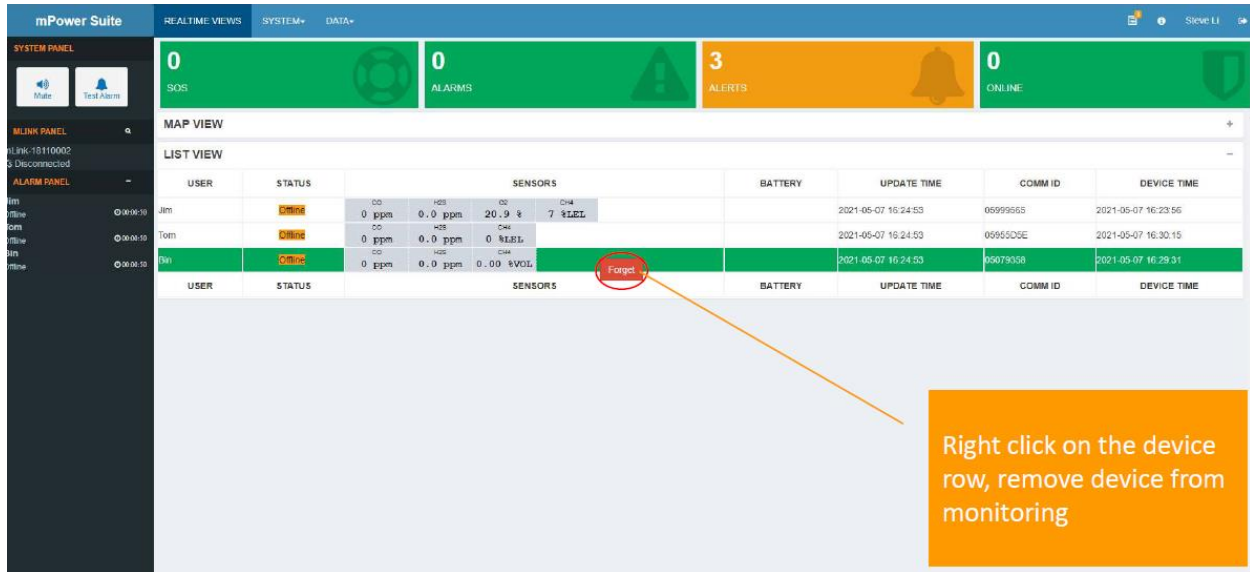
10) To view a list of recent Events, click on the list icon in the upper right:



11) If one or more units are turned off, or go out of range, an alarm will occur, and the unit shown as Offline on the screen:



12) To disconnect a monitor from the system, first turn it off (if it is not yet off or out of range), then click on the monitor row to highlight the entire row in green, and then right-click on the row until “Forget” appears, and then click on “Forget”. If the monitor is still on and active, the system will find it and reconnect it to appear back on the screen. Forgetting a POLI does not erase registration or its shield location on the map, which will be remembered on the next start-up. To permanently remove a POLI from the mSquad system, use the Assign Worker Menu on the Head as described in Section 5.4.

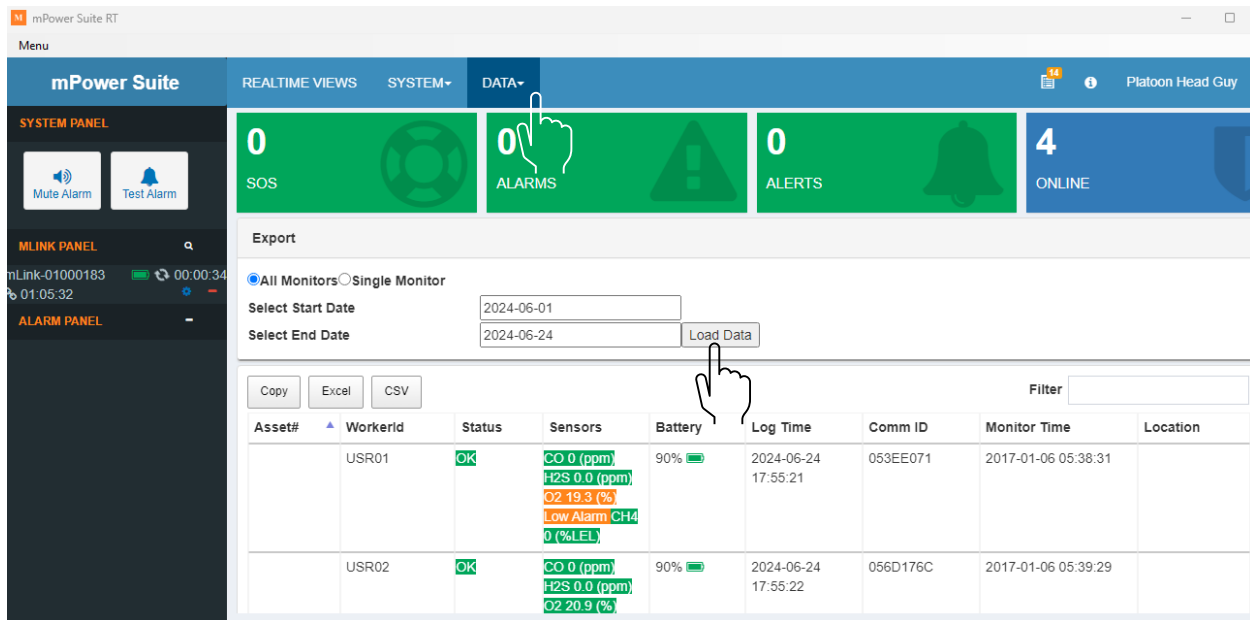


6.4.3 mPower Suite RT Daily Shutdown

To avoid alarms during shutdown, log out of mPower Suite RT before turning off the mLink and POLI monitors for the day. If a worker shuts down his Soldier POLI before mPower Suite RT is shut down, it may be necessary to “Forget” the device from the system to stop or prevent an alarm.

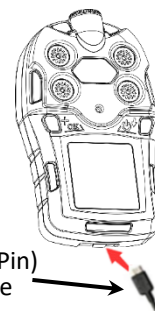
6.4.4 Data Download

Click on Data on the top panel, click on the pull-down menu “Export”, then enter the date range desired and click on “Load Data” near the top center of the window. Then click on your choice of Copy, Excel, or CSV file formats for exporting.



7. POLI Data Communication

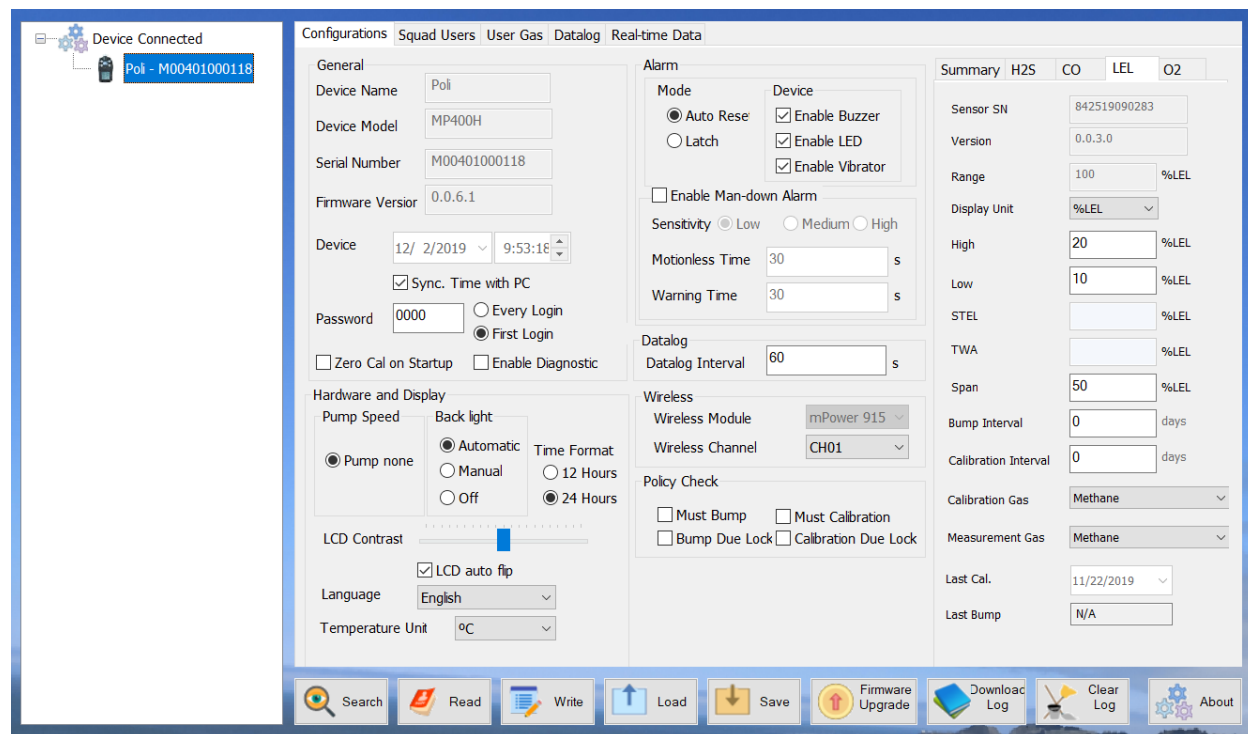
The mPower Suite software can be used to select wireless channels and define mSquad User names. For other configurations, data downloads, real time monitoring and upgrading instrument firmware, see the POLI User's Guide. mPower Suite and instrument firmware can be downloaded from our website at <https://www.mpowerinc.com/software-downloads/>.



7.1 Connecting and Configuring

- Turn on the instrument, cycle through the Main User Mode and enter PC Comm.
- Connect the USB cable to the PC and the Micro-USB end to the instrument.*
- **⚠WARNING!** Connect only in non-hazardous environments!
- Start mPower Suite on the PC and click the “Search” button to find the instrument.
- Find the instrument in the left bar Device Connected list. Click on the S/N to get the configuration file from the instrument.
- Edit the configuration parameters as desired including those under the tabs for each sensor in the upper right. Click “Write” to upload the configuration to the instrument.
- “Read” allows downloading the current configuration file from the instrument.
- “Save” allows storing the current configuration file to the PC.
- “Load” allows calling up a stored configuration file from the PC to mPower Suite.
- To update the instrument firmware, select “Firmware Upgrade”. The firmware must first be downloaded to the PC from the mPower website www.mPowerinc.com.

*NOTE: Any locally-obtained USB A to Micro B USB cable works for battery charging, but the mPower USB cable P/N M-011-3003-000 is required for a PC to recognize the instrument and communicate with mPower Suite software. The Wireless configuration on BLE-enabled instruments using the Android App requires an Android tablet or smartphone (OS 6.0 or above) and is not currently supported on Windows.



mPower Suite Main Configuration Screen for Wireless Monitors

7.1.1 General Instrument Configurations

Use the main configuration window to set general instrument parameters including Man-Down features (see POLI User Guide for details).

7.1.2 Wireless Channels

In the “Wireless” panel box, select the channel desired for the mSquad. Ensure that all units in the mSquad are on the same channel. Select a different channel from other nearby mSquads to avoid interference, or the same channel if cross-communication is desired.

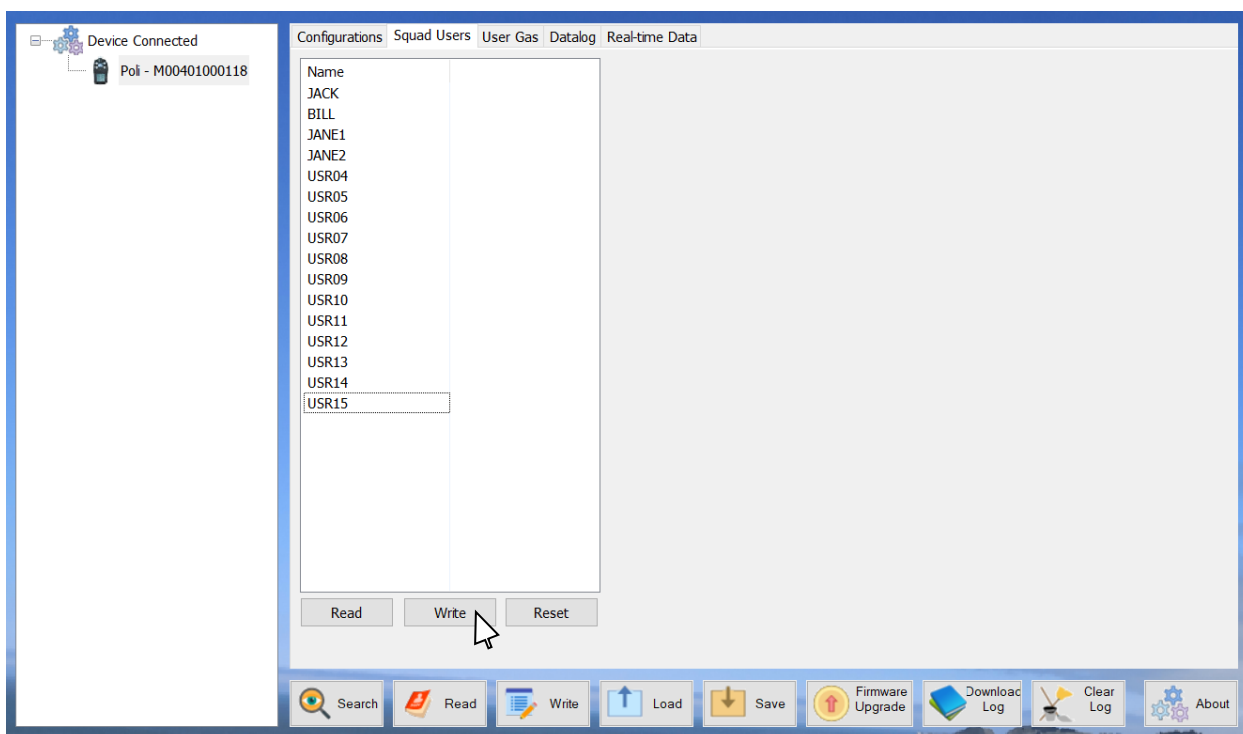
7.1.3 mSquad User Names

To enter a personalized user name of up to 5 letters/digits, click on the Squad Users tab on top.

- Type in the desired names for up to 7 users, preferably 5 letters or less for ease of reading on the displays.
- Click “Write” on the bottom of the Name panel to send the user names to the Host/Head. (If the Write and Reset buttons are greyed out, first click “Read” to enable them, type in the new names, and then click “Write”.)

NOTE: There are two “Write” buttons on this page, and only the one at the bottom of the Name panel sends the names to the instrument; the “Write” bottom at the very bottom of the page sends the parameters on the main Configuration page but not the mSquad user names.

- After saving to the Head/Host, the new Soldier names will update on the Soldiers next time they communicate with the Head/Host (this may take a few minutes). Alternatively, re-register each Soldier to receive its new name: Exit mPower Suite, enter Configuration Mode on both Host and Soldier, and scroll to the Wireless/Register Device menus.



mPower mSquad Users Configuration Screen

8. Maintenance and Troubleshooting

For instrument maintenance and troubleshooting, please see the POLI User Guide.

9. mPlatoon Technical Specifications

mLink-P & Platform Specifications

Size	5.0 x 3.6 x 1.9 in. (13 x 9.1 x 5.7 cm) w/o/Antenna 12 x 3.6 x 1.9 in. (30 x 9.1 x 5.7 cm) w/Antenna
Weight	16 oz (450 g)
IP & Temp.	IP54; -4° to 131°F (-20° to 55°C)
Power Supply	Rechargeable Li-ion battery; ≥24 hrs run time
Frequency	ISM band (902-928 MHz) FCC Part 15 approved
Range	Up to 3 km (2 miles) line-of-sight Bluetooth: up to 6 m (20 ft.) to PC or Android device
RF	2.5 dBi Antenna
No. of Devices	Up to 32 Wireless POLI units
Certifications	Wireless: FCC Part 15; Safety: Non-haz. loc. only

MP400H/S/HS Specifications

Size	5.7 x 3.3 x 1.7 in (140 x 84 x 42 mm) w/o Antenna
Weight	15.5 oz (435 g)
Sampling	Diffusion (MP400H & MP400HS); Pump (MP400S)
Battery	Rechargeable Li-ion pack, typical run time: • 1 Day – Using NDIR LEL sensor • 2 Days – Using EC sensors only
Direct Readout	• Real-time gas concentrations; Battery status • STEL, TWA, peak and minimum values
Display	128 x 128 graphical LCD, 1.77 x 1.73 in (45 x 44 mm), with LED backlight for enhanced readability.
Calibration	Manual calibration. MonoDock option allows automated calibration on individual POLI MP400S units
Frequency	ISM License-free band (902-928 MHz)
RF	2.5 dBi Antenna; 20 dBm Peak power
Wireless Comm	Poll gas concentration readings from Software on Android phone or tablet via mLink
Alarms	Push Notification via mLink, plus local audible (95 dB @ 30 cm) and visual (flashing LEDs) alarms
Direct Comm and Charging	USB cable for charging, download, configuration and upgrades on PC or 100-240V AC charger.
Temperature	-4° to 122°F (-20° to 50°C)
Humidity	0% to 95% Relative humidity (non-condensing)
IP Rating	IP-67 (IP-65 for MP400S)
Safety Certifications	 Class I, Div 1, Group ABCD T4, -20°C ≤ T _{amb} ≤ +50°C  Ex ia IIC T4 Ga  II 1G Ex ia IIC T4 Ga  European Conformity
EMC/RFI	EMC directive: 2014/30/EU
Warranty	• 2 Years on instruments; 1 year on exotic sensors • 2 Years on sensors for pellistor LEL, and O ₂ , CO, H ₂ S, SO ₂ , HCN, NO, NO ₂ , and PH ₃ EC sensors

Sensor Options

Sensor Types	Interchangeable: EC for Toxic and O ₂ , Pellistor for LEL, and NDIR for LEL, Vol% CH ₄ and CO ₂		
Response time (t90)	• 20 s (LEL/CO/H ₂ S/O ₂) • Others vary up to 120 s		
Sensor	Range	Resolution	
PID	0-2000 ppm	0.1 ppm	
Oxygen (O ₂)	Lead Wool	0-30%Vol	0.1%Vol
	Lead-Free	0-30%Vol	0.1%Vol
Combustibles (LEL%)	0-100%LEL	1%LEL	
High Resolution version	0-100%LEL	0.1%LEL	
NDIR Methane (Vol%)	0-100%Vol	1%Vol	
Dual-Range version	0-100%Vol	1%LEL	
CO ₂ (Carbon Dioxide)	0-50000 ppm	100 ppm	
CO (Carbon Monoxide)	0-1000 ppm	1 ppm	
H ₂ S (Hydrogen Sulfide)	0-100 ppm	0.1 ppm	
	0-1000 ppm	1 ppm	
CO + H ₂ S	CO	0-500 ppm	1 ppm
	H ₂ S	0-200 ppm	0.1 ppm
SO ₂ + H ₂ S	SO ₂	0-20 ppm	0.1 ppm
	H ₂ S	0-100 ppm	0.1 ppm
NH ₃ (Ammonia)	0-100 ppm	1 ppm	
	0-500 ppm	1 ppm	
Cl ₂ (Chlorine)	0-50 ppm	0.1 ppm	
H ₂ (Hydrogen)	0-1000 ppm	1 ppm	
HCl (Hydrogen Chloride)	0-15 ppm	0.1 ppm	
HCN (Hydrogen Cyanide)	0-100 ppm	0.1 ppm	
NO (Nitric Oxide)	0-250 ppm	1 ppm	
NO ₂ (Nitrogen Dioxide)	0-20 ppm	0.1 ppm	
PH ₃ (Phosphine)	0-20 ppm	0.01 ppm	
	0-1000 ppm	1 ppm	
SO ₂ (Sulfur Dioxide)	0-20 ppm	0.1 ppm	
	0-100 ppm	0.1 ppm	
ETO (Ethylene Oxide)	0-100 ppm	0.1 ppm	
CH ₃ SH (Methyl Mercaptan)	0-10 ppm	0.1 ppm	
THT (Tetrahydrothiophene)	0-40 ppm	0.1 ppm	

All specifications and listed sensors are subject to change without notice. Please check for updates at www.mpowerinc.com.

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