



ERX150 Product Manual

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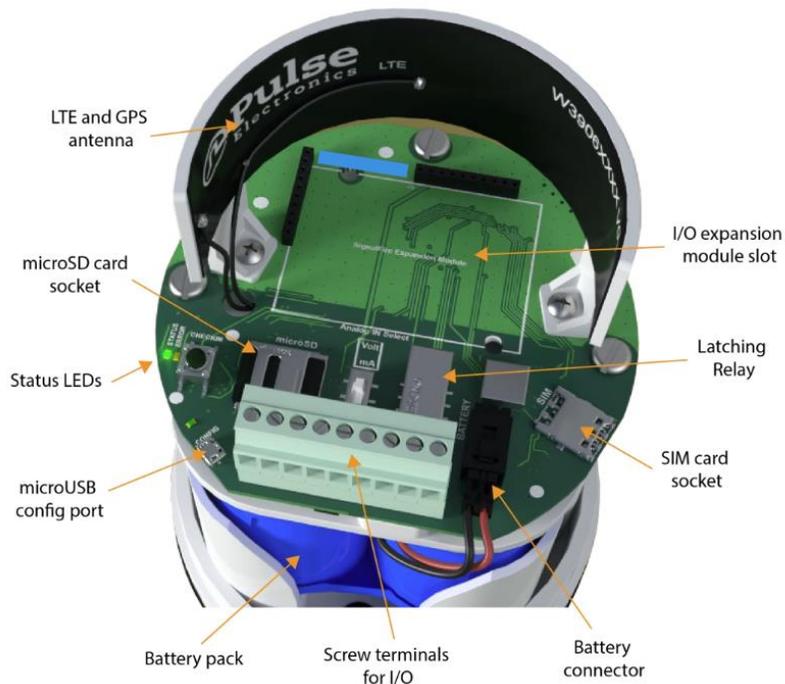
www.crwall.com

1. Introduction

The ERX150 pressure monitor is a self-contained device that provides pressure readings over the LTE-M cellular network.

- Integrated pressure sensor available in a wide variety of pressure ranges.
- Configurable from MasterLink 150 (MasterLink150 software)
<http://www.signal-fire.com/downloads/MasterLink150/Honeywell%20MasterLink150%20Installer%20v1.0.27.00.exe>
- Cloud allows for data visualization, trending, and alarming.
- Supports MQTT Sparkplug B communication protocol for connection to other servers.
- Compact and simple to install and maintain.
- Local configuration and diagnostics available using the micro-USB port and the MasterLink 150 configuration program.
- Internal backup of a minimum of 200 datapoints in the event of loss of network signal. Backup will be automatically sent when the ERX150 reconnects to the network.
- Class 1 Division 2 certified.

2. Identifying the components



3. Network connection / LEDs

STATUS LED: The STATUS LED (green) will flash 3 times on a successful data transmission to the server.

ERROR LED: The ERROR LED (red) will blink 3 times to indicate that an attempted data transmission failed.

4. Force a Call Button

If the Force a Call button is pressed the ERX150 will blink the Green or Red status LED 3 times to indicate the status of the last transmission to the server.

If the Force a Call button is pressed and held for more than 1 second, the ERX150 will take readings from the attached pressure sensor and send the readings to the server.

5. Micro SD Slot

The MicroSD card is for future use, it is not yet implemented and should not be installed.

6. Powering up

The internal lithium battery pack is the default power source for the ERX150, simply plug the battery pack into the ERX150 battery connector to power the ERX150 on. Please note substitution of Honeywell ERX 150 battery may void CSA approval.

Leave ERX150 un-powered until next step.

6. Connecting to the ERX150

Open MasterLink 150 (no username or password required).

You should be at the MasterLink main page (see fig 1)

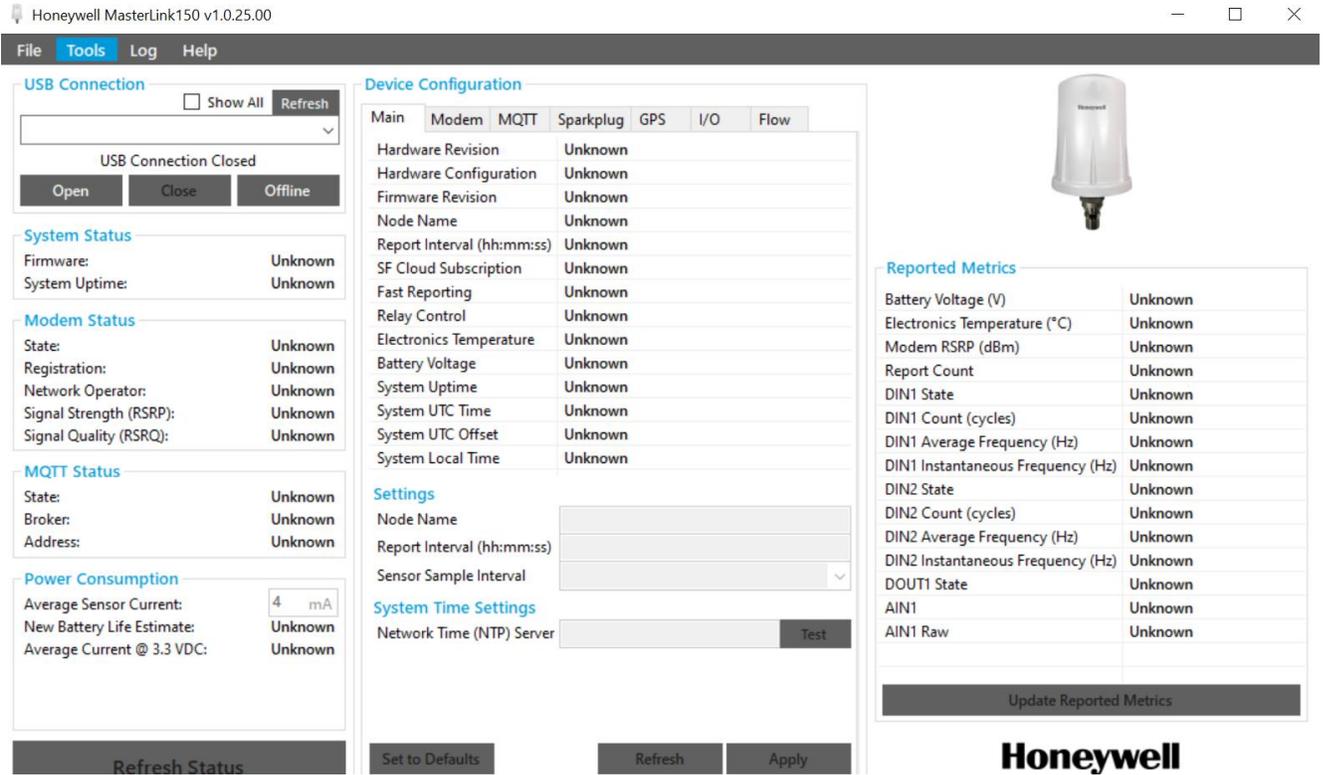


Fig 1

Install Sim Card into the ERX 150.

Power up the ERX 150.

Connect the Micro USB cable to your computer and to the ERX 150

Select the proper USB port in the USB Connection Box, if no USB ports show up, hit refresh (see fig 2)

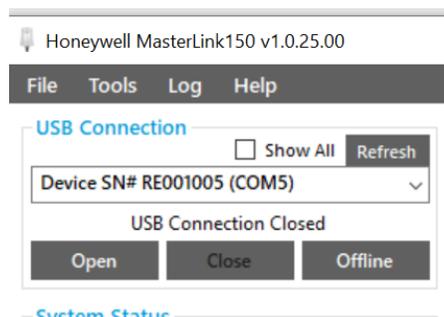


Fig 2

Click the open button, and the main page should populate with the info in the ERX 150 see fig 3.

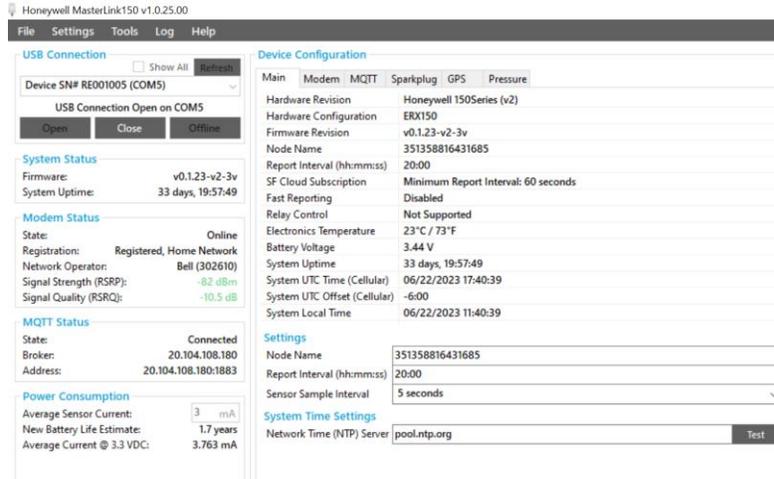


Fig 3

7. Device Configuration

MAIN TAB

In the Device Configuration box, with the Main tab visible (see fig 5) you will need to enter in the following into settings:

Node Name – this can be found on the antenna of the ERX 150 (IMEI #), see fig 4.



Fig 4

Report Interval – How often you want the ERX 150 to send data to the host (hh:mm:ss). Note that the more often you send data to the host, the less battery life you will expect to get.

Sensor Sample Interval – This is how often the pressure transducer is going to take a snapshot of the line pressure (5, 10, 15, 30, 60 second options).

Network Time (NTP) Server – set with: pool.ntp.org, see fig 5. In most cases it is best to use **pool.ntp.org** to find an NTP server (or 0.pool.ntp.org, 1.pool.ntp.org, etc. if you need multiple server names). The system will try finding the closest available servers for you.

Settings

Node Name	351358816431685
Report Interval (hh:mm:ss)	20:00
Sensor Sample Interval	5 seconds

System Time Settings

Network Time (NTP) Server	pool.ntp.org	<input type="button" value="Test"/>
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Fig 5

MODEM TAB

In the Device Configuration box, with the Modem tab visible you will see the following screen see fig 6.

Device Configuration

Main	Modem	MQTT	Sparkplug	GPS	Pressure
Firmware Version	mfw_nrf9160_1.1.4				
IMEI	351358816431685				
IMSI	302690501732737				
SIM ICCID	89302690100012635006				
SIM Operator ID	Unidentified				
Operator Selection	Auto				
Modem State	Online (9 days, 2:03:21)				
Registration	Registered, Home Network				
Network Operator	Bell (302610)				
Tracking Area Code (TAC)	11228				
Cell Identifier (CI)	54568459				
Access Point Name (APN)	mnet.bell.ca.ioe				
Radio Access Technology	LTE-M				
Signal Strength (RSRP)	-82 dBm				
Signal Quality (RSRQ)	-10.5 dB				
LTE-M Frequency Band	B17 (700MHz)				
LTE-M eDRX Cycle	Disabled				
LTE-M eDRX PTW	Disabled				

Settings

Access Point Name (APN)	mnet.bell.ca.ioe
Cellular Radio Mode	LTE-M Only (default)
LTE-M/NB-IoT Mode	Low Latency
Fallback DNS Server	Not Set

Fig 6

You will need to enter the following into settings:

Access Point Name (APN) – This will be provided by your cellular carrier. The Access Point Name (APN) defines the network path for all cellular data connectivity.

Cellular Radio Mode – This should be LTE-M. LTE-M is a branch of LTE technology that was built for Machine-to-Machine communication. Using LTE-M, IoT devices can transmit and receive large amounts of data without draining the battery, as is the case with [2G](#), 3G and [4G](#) networks.

LTE-M/NB-iot Mode – You can select Low Latency or Low Power.

NB-IoT are standardized, secure, and operator-managed in licensed spectrum. They are designed for IoT applications that are low cost, use low data rates, require long battery life, and often operate in locations that are hard to reach.

Low latency is the ability of a computing system or network to provide responses with minimal delay.

Fallback DNS Server – enter your fallback server address or leave as “Not Set” see fig 7.

Settings	
Access Point Name (APN)	mnet.bell.ca.iae
Cellular Radio Mode	LTE-M Only (default) ▼
LTE-M/NB-iot Mode	Low Latency ▼
Fallback DNS Server	Not Set

Fig 7

MQTT TAB

In the Device Configuration box, with the MQTT tab visible you will see the following screen see fig 8.

Honeywell MasterLink150 v1.0.25.00

File Settings Tools Log Help

USB Connection Show All Refresh

Device SN# RE001005 (COM5)

USB Connection Open on COM5

Open Close Offline

System Status

Firmware: v0.1.23-v2-3v
System Uptime: 33 days, 21:13:19

Modem Status

State: Online
Registration: Registered, Home Network
Network Operator: Bell (302610)
Signal Strength (RSRP): -85 dBm
Signal Quality (RSRQ): -9 dB

MQTT Status

State: Connected
Broker: 20.104.108.180
Address: 20.104.108.180:1883

Power Consumption

Average Sensor Current: 3 mA
New Battery Life Estimate: 1.7 years
Average Current @ 3.3 VDC: 3.763 mA

Refresh Status

Device Configuration

Main Modem MQTT Sparkplug GPS Pressure

MQTT State: Connected (1 day, 17:14:06)

Broker Hostname: 20.104.108.180

Broker Address: 20.104.108.180:1883

TLS Encryption (v1.2): Disabled

TLS Certificate: No Certificate

Quality of Service (QoS): 1 - At least once

Keepalive (mm:ss): 1:00

Settings

Cloud Service: 150Series Cloud Custom

Broker 1 Address: 20.104.108.180 : 1883

Broker 2 Address: : :

Broker 3 Address: : :

Username: CRWE002

Password: *****

Client ID: 351358816431685

Keepalive (mm:ss): 1:00

TLS Settings

TLS Encryption: Disabled ▼

TLS Certificate: No Certificate ▼

Manage TLS Certificates

Set to Defaults Refresh Apply

Fig 8

You will need to enter the following into settings:

Ensure Cloud Service is set to Custom.

Broker 1 Address – this is the IP address of your main hosting site (PowerSpring, Auto Sol etc.)

Broker 2 Address – this is the IP address of your redundant hosting site (PowerSpring, Auto Sol etc.)

Broker 3 Address – this is the IP address of your redundant hosting site (PowerSpring, Auto Sol etc.)

NOTE: If Broker 1 goes offline, the ERX 150 will try Broker 2 or Broker 3, this ensures you will keep getting critical data. You do not need to have the redundant site, just an offer for redundancy sake.

Username – This is the device name as configured in PowerSpring, Auto Sol etc.

Password - This is the device password as configured in PowerSpring, Auto Sol etc.

Client ID – This is the IMEI number found on the ERX 150 antenna (see fig 4).

Keep Alive (mm:ss) – This is the ERX 150 keep alive time when it cannot reach the host, best setting is 1:00

For TLS Encryption and TLS certificate, set to Disabled and No Certificate see fig 9.

Settings	
Cloud Service	<input type="radio"/> 150Series Cloud <input checked="" type="radio"/> Custom
Broker 1 Address	20.104.108.180 : 1883
Broker 2 Address	:
Broker 3 Address	:
Username	CRWE002
Password	●●●●●●●●
Client ID	351358816431685
Keepalive (mm:ss)	1:00
TLS Settings	
TLS Encryption	Disabled
TLS Certificate	No Certificate
Manage TLS Certificates	

Fig 9

SPARKPLUG TAB

In the Device Configuration box, with the Sparkplug tab visible you will see the following screen see fig 10.

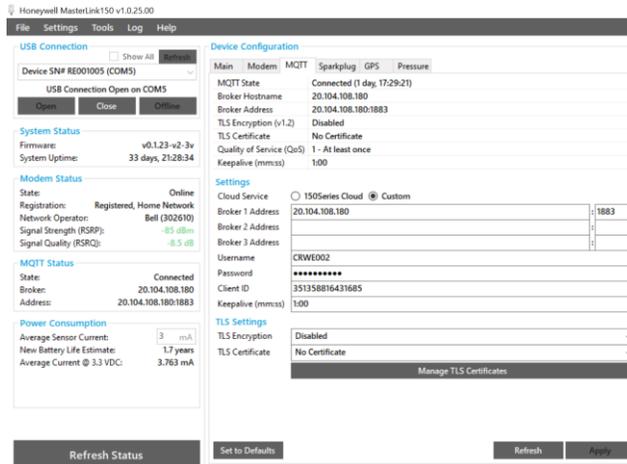


Fig 10

You will need to enter the following into settings:

Group ID – Set to none.

Edge Node ID – Enter the ERX 150 IMEI number (found on the antenna, see fig 4).

Require Primary Host ONLINE to Publish – Check this box.

Primary Host ID List – Enter the MQTT host (server) name see fig 11.

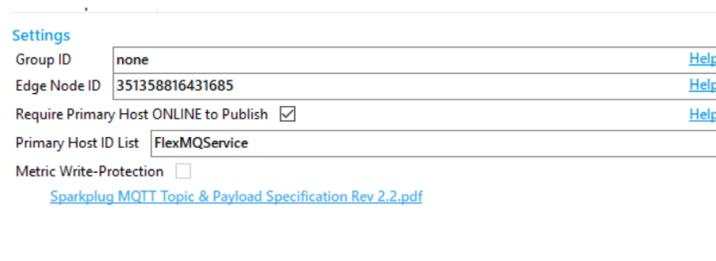


Fig 11

GPS TAB

In the Device Configuration box, with the GPS tab visible you will see the following screen see fig 12.

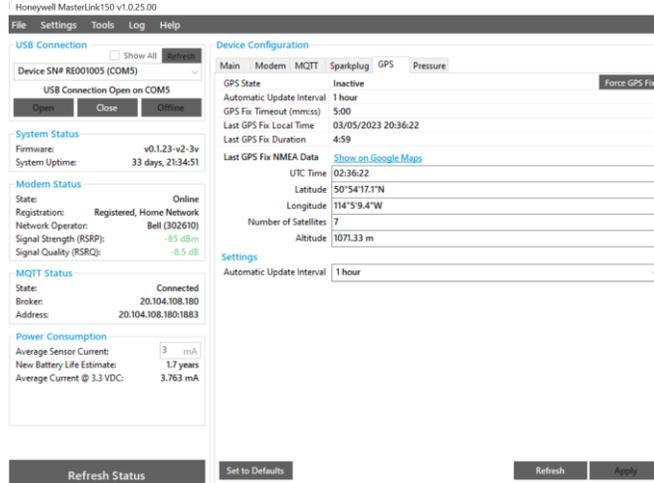


Fig 12

Leave the GPS as inactive, as turning GPS on, will drain the battery much quicker. Typically, the ERX 150 will be installed and left at a stationary location, so there is no need for GPS.

PRESSURE TAB

In the Device Configuration box, with the Pressure tab visible you will see the following screen see fig 13.

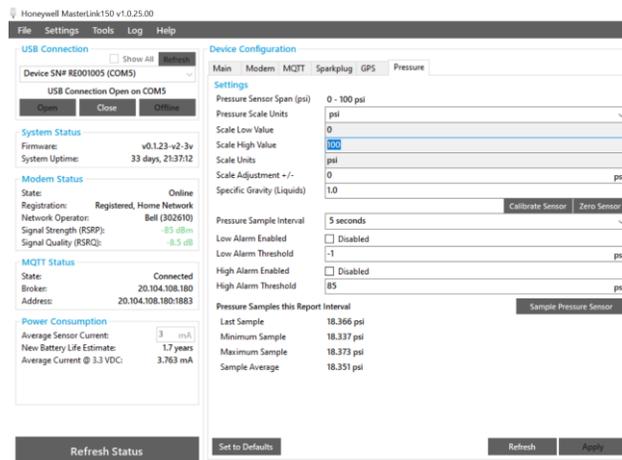


Fig 13

You will need to enter the following into settings:

Pressure Scale Units – Use the drop down to select the unit of measure for the pressure output (PSI, Kpa, Bar).

Pressure Sample Interval – Use the drop down to select the pressure sample rate from 5 seconds to 60 seconds. Faster sample rates will use more battery power.

Low Alarm Enabled – Keep enabled if you wish to get low-pressure alarms, otherwise disable by checking the disabled box.

Low Alarm Threshold – You set what the low-pressure alarm value should be.

High Alarm Enabled – Keep enabled if you wish to get high-pressure alarms, otherwise disable by checking the disabled box.

High Alarm Threshold – You set what the high-pressure alarm value should be.

System Status

The system status will show you the current firmware version of the ERX 150, as well as how long it has been connected to the network, see fig 14.

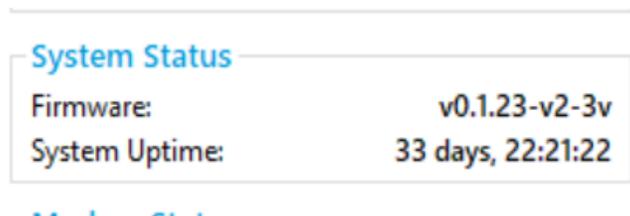


Fig 14

Modem Status

This will show you valuable information regarding your network connection see fig 15.

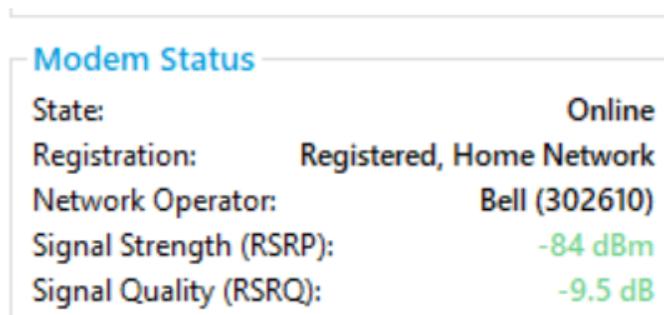


Fig 15

MQTT Status

Here you will see if you are connected to a broker, which broker and address of broker see fig 16.

MQTT Status	
State:	Connected
Broker:	20.104.108.180
Address:	20.104.108.180:1883

Fig 16

Power Consumption

Here you can see information for the ERX 150 battery. This is a valuable tool when selecting sample rates, GPS etc., as it lets you know how any changes you make affect the battery life of the ERX 150 see fig 17.

Power Consumption	
Average Sensor Current:	3 mA
New Battery Life Estimate:	1.7 years
Average Current @ 3.3 VDC:	3.763 mA

Fig 17

Insert 11 – Mounting and care & 12 – Lithium battery replacement.