

Model # WDLM914HP

Quatro Wireless Data Link Module (WDLM914HP) User Guide

Introduction

The Quatro **W**ireless **D**ata **L**ink **M**odule (WDLM914HP) is a battery powered self-contained data transmitter receiver device, designed to give a long service life of up to 5 years in permanent installations dependent on battery size and application.

This is achieved through careful power management techniques, ensuring that the transmitter and ancillary systems are turned off when not required to conserve the battery.

The WDLM series of modules are used in a range of Quatro products to report sensor status to the monitoring receiver. When triggered, the transmitter uses a short transmission to alert the monitoring receiver that it has been activated. It also transmits its status periodically to the monitoring receiver as a 'health' check.

The data to be transmitted can range from a simple event trigger to stream of status data.

The WDLM series along with ancillary circuits are typically powered by a 3.6V Lithium cell for longest life, but other power sources are possible depending on application.

For example multiple cells may be used to extend battery life still further.

The WDLM device is embedded into a sensor, the entire device (WDLM and sensor) is then "learned" into the sensor monitor. The sensor is learned by presenting a magnet to the sensor. This sends the detector's serial number in an encoded, short, low power transmission to the sensor monitor.

The sensor's serial number is the same as the sensors electronic address and is independent of the WDLM.

Another WDLM device is used in the monitoring receiver.

The WDLM relies on a matching processor which programs the WDLM with the desired radio frequency parameters such as RF output power, modulation parameters and frequency hopping method along with the data traffic to be transmitted.

Configuring the radio link involves setting a number of registers in the transceiver chip via a serial connection in accordance with the Texas Instruments data to create the required mode and method of operation.

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The parameters for operation are hard coded into the Quatro firmware and are not user accessible or changeable.

This is to make sure the module remains FCC compliant.

See reference 1 below for more detail about the Texas Instruments chipset used.

Module Installation

The module comes pre-installed in the device it is intended to inter-operate with, therefore the user should not tamper with, attempt to remove or otherwise interfere with the device.

Doing so will invalidate the FCC certification and any implied warranty.

NOTE – The transmitter must not be co-located or operated in conjunction with any other antenna or transmitter. This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

Electrical / Mechanical Specifications

The module is designed to be powered from the equipment into which it is installed and as such is dependent on it for power and control signals.

For the sake of completeness the following outlines the modules key electrical specifications.

- DC Power requirement
 - 3.6V nominal (3.7V max) at up to 350mA, dependent on RF output power
- RF output power
 - Up to +26dBm (400mW), but limited by control firmware to meet Part 15 FCC regulations
- RF receive sensitivity
 - Typically better than -100dBm
- RF operating frequency
 - Capable of operating between 850 and 950MHz, but limited in firmware to meet Part 15 FCC regulations
- Operating and Storage temperatures
 - Storage temperature range -40C to + 80C
 - Operating temperature range -10C to +40C (Limited by equipment battery temperature range)
- Spurious emissions and receiver blocking

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- FCC part 15 compliant

Mechanical constraints

- Module size 34x5x14mm
- Installation by means of 13 pins on 2.4mm pitch

Further technical information - is available in the document named "914P High Power Wireless Link Operational Description.

Troubleshooting Guide

There are no user serviceable parts within the WDLM series of devices or associated equipment. Please return the faulty unit to the Service Department, Head Office for testing and repair.

Note, there are some simple system checks to validate correct operation that can be performed before the unit is returned to base.

It is assumed the WDLM is embedded in a multi-function switch sensor and thus the following checks that not only the WDLM is operational but also the associated MFS is operating correctly.

Others sensors which contain a WDLM may operate and learn in a different manner, but in general terms if a sensor is able to learn into a monitor the WDLM is functioning correctly.

Conversely if a sensor is not able to learn into a monitor, the problem may lie with either the WDLM, associated processor, the sensor itself or the battery supply.

It is not possible to identify the root cause without further detailed tests which are beyond the scope of this document.

FAULT	ACTION
Sensor monitor receiver reports sensor 'tampered'	<ul style="list-style-type: none">○ Check that the sensor is mounted vertically with the LEDs facing downwards.○ Check that the enclosure is not damaged○ With the sensor monitor in standby, open the door, wait 5 seconds, then close the door again.
Sensor monitoring receiver reports the sensor 'open'	<ul style="list-style-type: none">○ Check alignment of actuator and sensor.○ With the sensor monitor in standby, open the door, wait 5 seconds, then close the door again.
Sensor will not learn into the sensor monitor.	<ul style="list-style-type: none">○ Tilt the unit to check that the yellow LED flashes indicating that the unit is powered on.○ With the unit mounted vertically, place two magnetic keys on the sides of the unit and observe the two LEDs flash○ While in walk test mode, place one magnet along the side of the sensor, near the blank silver labels. The green LED will illuminate when the magnet is near the sensor and switch off when the magnet is withdrawn
Sensor not activating	<ul style="list-style-type: none">○ Check alignment of the magnetic actuator

	<ul style="list-style-type: none">○ While in walk test mode, place one magnet along the side of the sensor, near the blank silver labels. The green LED will illuminate when the magnet is near the sensor and switch off when the magnet is withdrawn. Check that the green LED flashes when using the door mounted actuator. If not, recheck the alignment.○ Tilt the unit to check that the yellow LED flashes indicating that the unit is powered on.
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FCC Statements

CAUTION : changes or modifications to this equipment not approved by Quatro Electronics Ltd could void the user's authority to operate the equipment.

FCC ID : XL8WDLM914HP

*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.*

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(CFR 47 part 15.105)

Reference 1 - <http://www.ti.com/lit/ds/symlink/cc1101.pdf>