

The Flexi1 is an ultra low-power data-logger (remote terminal unit) that can interface with a range of sensors, inputs, outputs and GPS, and upload data via different selectable communication channels.



Figure 1: Flexi1 in its basic form, includes optional communications flexi card.



Figure 2: Flexi1 provided with optional IP67 rated enclosure and battery pack.



Figure 3: Flexi1 in IP67 rated enclosure

Ideal for remote data logging / telemetry where a compact, battery powered device is required with simple installation.

- 🐾 Equipment tracking and monitoring of run hours
- 🐾 Temperature monitoring
- 🐾 Agriculture
- 🐾 Liquid Level monitoring
- 🐾 Soil moisture
- 🐾 Temperature
- 🐾 Tipping rain gauge
- 🐾 Weather stations
- 🐾 Fuel levels in bowsers
- 🐾 Gas levels
- 🐾 And a huge range of other applications

1. ENABLING THE “INTERNET OF THINGS”

The Flexi1 is designed to perform data logging from a variety of sensors and interfaces, and to have maximum flexibility in data upload options. The Flexi1 has been designed to be ultra-low power and to run on a wide range of battery options or line power depending on your power requirements. The easy access to the screw terminals makes wiring and installation of the various sensors and interfaces easy and accessible. The USB port makes the configuration and in-field testing of the device convenient.

Key features:

- A variety of interfaces to connect sensors, inputs and outputs, plus a built-in GPS for location (order option)
- An ultra-low power device that can run off a range of battery voltages and sizes, or off line power
- Communication options to suit your application including Cellular, Iridium satellite, WiFi, ISM band radio, SigFox, LoraWan and others available on request
- Easy to install and wire up, simple to configure, test and manage
- Available in kit form – buy only what you need

1.1. Custom Designs

For custom application requirements, based on the business case, we can tailor a version of the Flexi1 or even design to meet your specific requirements.

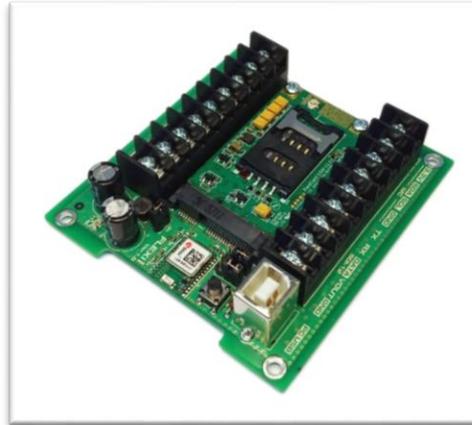


Figure 4: Flexi1 includes communications module as installed in middle of this PCA

The beauty of this solution is the fact that one could use various communications cards to connect to networks around the world. We utilise the miniPCle form-factor and have custom designed 2G, 3G, LoRaWAN, Sigfox, WiFi, and Iridium communications modules to suit various applications.

The Flex comms cards can be used or selected by customers to suit their target network or remote communications requirements.



Figure 5: miniPCle form-factor

2. INTERFACING OPTIONS

Inputs, Outputs, Switched Power and Sensor Interfaces	
Digital Inputs	<p>3 digital inputs</p> <p>Wake device on input change</p> <p>Internal pull-up and pull-down resistor options</p> <p>48V maximum input</p>
Analogue Inputs	<p>1 x analogue input reading 0V to 5V</p> <p>Battery voltage: built-in analogue input reading 4V to 16V</p>
Digital Output	<p>1 x switched ground (open collector) output</p> <p>Used to switch relays or trigger other devices</p>
SDI-12	<p>This interface is commonly used in agricultural sensors and measurement devices:</p> <ul style="list-style-type: none"> • Soil moisture probes • Temperature • Electrical conductivity (EC) of soils • Dissolved salts • Other SDI-12 probes and sensors
I2C Interface	<p>I2C (inter-IC communications) is an interface commonly used in sensor modules. This allows the Flexi1 to talk to a wide range of sensors including:</p> <ul style="list-style-type: none"> • Temperature • Humidity • Vibration • CO2 gas • And numerous others
RS232 / TTL	<p>The serial interface can be set to operate at either RS232 levels or TTL (3.3V) levels. This allows the Flexi1 to talk to a wide range of external sensors, modems, and other systems.</p>
3.3V Switched Power	<p>Used to control the 3.3V power to external sensors and peripherals. Load limited and short circuit protected.</p>
Vbat Switched Power	<p>Used to control the battery power to external sensors and peripherals. Load limited and short circuit protected. This passes the battery voltage to the external device or sensor.</p>
Optional GPS	<p>The optional GPS module allows the Flexi1 to periodically update its location and time. This is very handy to know the exact position of your sensors.</p>

3. COMMUNICATIONS

The Flexi1 has a single FlexiCard communications slot offering you a unique array of data transfer options depending on the application:

Currently available:

- 2G and 3G cellular
- Iridium SBD data
- DMRF - ISM band RF (868MHz and 902-928MHz)
- WiFi (802.11 b/g/n)
- LoRaWan radio
- SigFox radio

Currently in testing:

- 4G / LTE cellular
- CDMA (Sprint)

In development / planning:

- Bluetooth Smart (Low Energy)
- Next generation LPWAN – NB-IoT or CAT-NB1 as its referred to by 3GPP (awaiting network availability)

Other communications options can be developed.

Antenna can be mounted inside the housing or can be extended and mounted on the outside of the housing or even up a mast, maximising the options for optimal signal reception.

4. POWER

The Flexi1 has been designed from the ground up to be an ultra-low power device. When the device is not performing its logging or data upload functions it can enter sleep mode where it uses less than 10uA current. This allows the device to be battery powered for most applications.

The Flexi1 has been designed to allow operation over a wide range of input voltages (4V to 16V maximum), resulting in a range of power options:

- Small AAA alkaline battery pack
- Larger alkaline battery packs (AA, C, D)
- AAA or AA Lithium battery packs
- 9V small battery or lantern battery
- 12V sealed lead-acid for higher power operations
- Lithium-thionyl-chloride battery options @ 3.6V per cell (extreme temperature batteries)
- 5V USB wall socket power supply
- 12V wall socket power supply, with optional battery backup
- 12V sealed lead-acid battery with external solar panel and charger

5. CONFIGURATION AND TESTING

5.1. USB Device

The robust USB port on the Flexi1 allows the device to be easily plugged into a laptop, netbook or tablet in order to access the menu on the device whilst in the field.

Using the support menu, a technician can configure, test, and monitor the performance and operations of the device.

5.2. Push Button and Status LEDs

The built-in button can be used to activate the default behaviour (as configured) for the Flexi1. For example, a single press of the button can initiate an SDI-12 sample from a soil moisture probe. A long press of the button can initiate a data transfer via the cellular FlexiCard. The two status LEDs provide visual feedback on the operation of the device without requiring the USB port to be used.

6. DATA LOGGING

The Flexi1 has sufficient memory to store over 50,000 records in its flash memory. Normally the data will be uploaded immediately but if the device is out of range then there is sufficient space to ensure that data can be stored for many months if required.

The flash memory is also used to store firmware updates, parameters, GPS aiding data and other important information that needs to be securely stored.

7. DEVICE MANAGEMENT – OEM SERVER

The Flexi1 device is fully managed Over-The-Air (OTA) via our OEM Server web interface (www.oemserver.com). The OEM Server seamlessly manages:

- Device firmware – firmware updates can be done remotely
- Network (administrator) parameters relating to critical communications
- System parameters, including GPS parameters, IO configuration, logging options and general device behaviour settings
- GPS AssistNow Offline aiding data files
- Remote debugging of devices, including being able to trace data, view detailed debug message logs, and view a live trace of the server debug messages
- Remote disconnect and reboot of devices
- Provides a command and message queuing platform to the devices and is incorporated into the remote management and debugging applications

7.1. Data Connectors

The OEM Server provides Data Connectors that forward data records on to the software platform of your choice, including the Telematics Guru platform.

Please contact us for more information on the OEM Server and how to integrate to your own Cloud assets.

Lynx Tracking login is available at: <https://lynxtracking.telematics.guru>, contact a Lynx Tracking representative, details in para 7.3 Contact Information.

If you would like to integrate the Flexi1 into your own software system, then please contact Lynx Tracking for more information on our integration protocols and integration options.

7.2. Committed to Quality

We take pride in designing each of our products with the goal of providing the best performance and reliability possible in the price range of that product. “Engineered to outperform”.

Not all telematics devices operate with the same level of performance or reliability, especially when exposed to extreme conditions in the field. In addition, we only use the highest quality parts and the latest assembly and quality control techniques to ensure the reliability and long life of our products.

Every device is individually tested at production.

The Flex1 device is covered by a one-year manufacturer’s warranty.

7.3. Contact Information

For the latest versions and product information please contact:

Sean van der Walt

M: +61 (0) 408 306 547

E: sales@walt-tech.com.au | sales@redlinx.net.au | sales@lynx-tracking.com.au

U: www.walt-tech.com.au or www.redlinx.net.au or www.lynx-tracking.com.au



LYNX Tracking is a branding and operational unit of Walt Technologies Pty Ltd. LYNX Tracking is an authorised distributor, whereas LYNX Tracking offers additional value-added services.

8. PARTNUMBERS AND ORDERING

Flexi1 - IoT Datalogger: Measure, Log, Transmit:

Partnumber:	Description:
LYNX-FLEXI1-NOGPS	Flexi1 IOT sensor node - PCB, no GPS
LYNX-FLEXI1-GPS	Flexi1 IOT sensor node - PCB, with GPS
<i>Note: Add a Flexicard, housing, battery holder and other options from the peripherals section</i>	

Modular Flexi Comms Cards:	
LYNX-CARD-2G	Modular Flexicard - 2G UFL connector
LYNX-CARD-3GE	Modular Flexicard - 3G (HE910EUD) - UFL connector
LYNX-CARD-IRIDIUM	Modular Flexicard - Iridium Modem and antenna
LYNX-CARD-WIFI-WFL	Modular Flexicard - WiFi with W.FL connector
LYNX-CARD-LORA	Modular Flexicard – LoraWan
LYNX-CARD-Sigfox	Modular Flexicard – Sigfox

Note: USA CDMA card in testing, Sigfox card in testing and to be announced soon – contact for details. LTE (CAT-1 & NB-IoT) cards will be considered please contact for details.

Optional Extra Items & Accessories:	
LYNX- A-ENCL-212MF	Enclosure for Flexi1 - 212MF
LYNX- A-BATT-HOLD-4AA	Battery holder - 4 x AA
LYNX-A-ANT-FXP14	FXP14 quad band antenna - UFL connector