ALLSOLUS

INSTALLATION MANUAL VERSION 1.3

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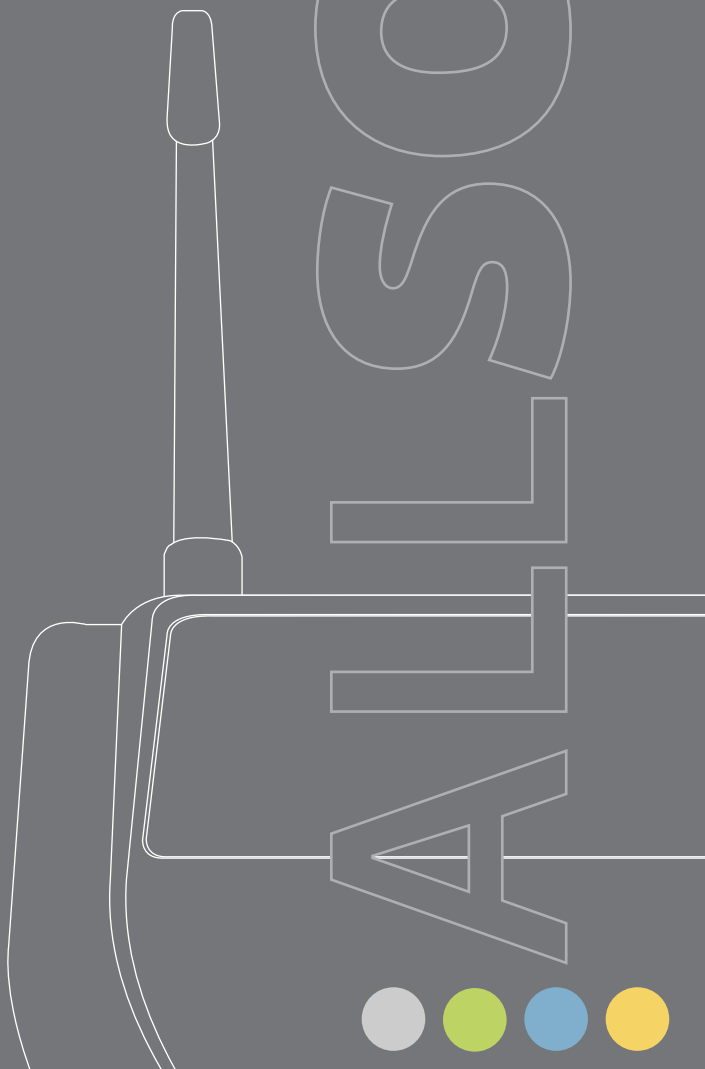


USER

1.1.A – AllSolus Overview and Applications

Congratulations on your selection and purchase of the AllSolus Energy Monitoring System, the range of devices has been specifically designed to provide wireless monitoring and energy management solutions for your home, office, school or commercial location. The system can be utilised to monitor and manage power consuming or producing devices, environmental conditions both internally and externally as well as provide a multitude of visualisation methods and access to reporting and the provision for alarms for improved site control.

Throughout the following pages you will be guided through the complete installation and setup procedures as well as instructions on how to verify the systems functionality and establish the monitoring platform, whether local to a PC, or kiosk or via the AllSolus online portal.

If you have any comments about this document or your new AllSolus Energy Monitoring System, please do not hesitate to contact us via our web site www.allsolus.com.

We trust you will get many years of trouble free operation from your AllSolus Energy Monitoring System.

1.1.B – AllSolus – Australian Warranty

The AllSolus Energy Monitoring System is warranted by the manufacturer for the following period per devices as follows:

LiveBase™	5 Years
MeterLink™	5 Years
EnviroLink™	5 Years
Next G Modem	5 Years
Battery Pulse Counter™	1 Year
THLink™	1 Year
Gavazzi Power Meter	1 Year
CT Clamps	1 Year
Temperature Sensor Probes	1 Year
Wind Direction & Speed Sensors	1 Year
Dome & High Gain Antennas	1 Year

The specified duration of the warranty period will commence from the date of installation and activation at the originally specified site location only. The manufacturer will bear the cost of parts and labour to repair any faults found within the terms and period of this warranty.

Faulty product must be returned to Coffs Harbour, Australia for claim under warranty, at the customer's cost & packaged appropriately. No allowance is made for installers labour or travelling time required to disconnect or reinstall faulty parts. Cost of freight to return the repaired device to the customer within Australia or New Zealand only, will be paid by the manufacturer; method of freight used will be determined by the manufacturer.

Unless otherwise specified to the purchaser the benefits conferred by this voluntary warranty are additional to all other conditions, warranties, guarantees, rights and remedies expressed or implied by the Trade Practices Act in your state or territory.

All installation and user conditions as set down in the instruction manual must be strictly adhered to, failure to do so may void your warranty.

Any faults caused by lightning, water or moisture ingress, faulty installation, using the product in a manner which it is not intended, vermin infestation, improper voltage, alteration which affects the reliability or performance of the unit or devices but not attributable to faulty manufacture, failure to act on service or maintenance recommendations by the manufacturer will not be covered under warranty.

In the event of the product being out of service the manufacturer shall bear no responsibility for any consequential losses or expenses.

The manufacturer will not be held responsible for any misleading or incorrect information conveyed by a salesperson or installer not directly employed by AllSolus or Si Clean Energy.

1.1.C – Included In This Package

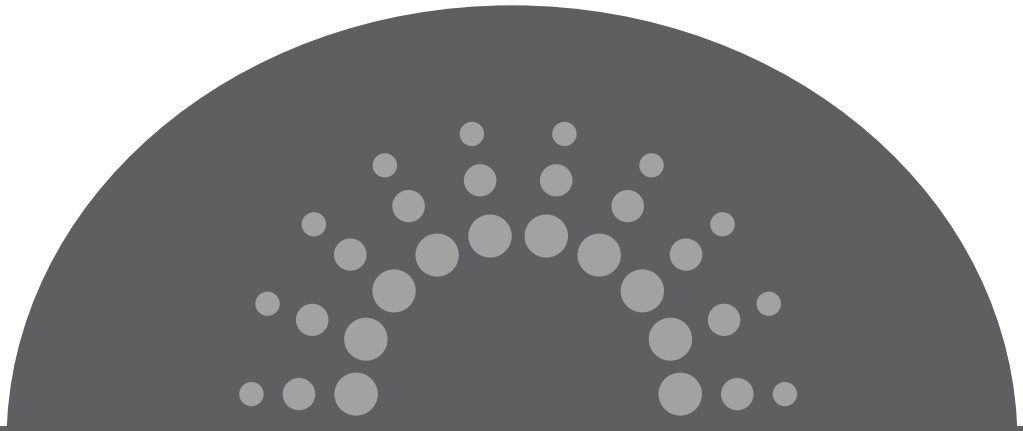
- 1 X AllSolus LiveBase™
- 1 X LiveBase™ Unit Plus Whip Antenna
- 1 X 12v Power Supply (AC Power Point Required)
- 1 X Ethernet Cable For LAN Or Wireless Modem Connection
- 1 X USB Cable For PC Configuration
- 1 X SD Card For Long-Term Data Storage
- 8 X 2 Pin Connectors For Pulse And Analogue Signal Inputs
- 2 X 4 Pin Connectors For RS485 Data Inputs
- 1 X USB Stick With User Manuals, USB Drivers, Configuration Software & Documentation
- 1 X This Manual

1.1.D – Using This Manual

While every attempt has been made to ensure this manual is as self-explanatory and clear as possible, there are some technical issues and safety warnings that require a thorough understanding. It is extremely important that you and your installer follow all of the instructions set out in this document; failure to do so may void your warranty and stop you from gaining the full benefits that we know this product can give you. Four colour coded sections are contained within this document to allow fast access to relative sections. The colour of the symbol located in the top right-hand corner of this page (and following pages) indicates the section.

Grey Pages USER	These are relevant to the user and cover the day to day use of the AllSolus Energy Monitoring System as well as certain safety warnings. This section presumes the unit's installation and setup is complete and correct.
Green Pages INSTALLER	These contain information relevant to installers, from unpacking the unit's and devices to configuring the settings of the AllSolus Energy Monitoring System.
Blue Pages SOFTWARE	They describe the complete use of the AllSolus Energy Monitoring System software provided with your LiveBase™ as well as setting up the system visualisation method.
Yellow Pages SERVICE	These provide information to service or installation personnel in regards to preventative maintenance and troubleshooting in case of a fault.

NOTE: A PDF copy of this manual is additionally found on your USB device, a copy may also be downloaded from the AllSolus web site www.allsolus.com.



1.1.E – Who Should Install The AllSolus Energy Monitoring System

While the AllSolus Energy Monitoring System has been designed for easy installation, and can be connected by any suitably qualified person, to maximize the performance of your system and tailor the programming of the system to your specific needs we recommend you use an AllSolus Authorised Installer.

These selected professionals within the industry have been extensively trained to understand your system, visualisation, ancillary equipment and have access to specialist support within AllSolus to assist with your individual requirements.

The voltages monitored with your AllSolus Energy Monitoring System may be hazardous. Even though the AllSolus Energy Monitoring System does not generate or supply power in any way it will be connected to supply and distribution circuits that may pose a certain level of risk.

All AC monitoring connections to the devices must be carried out by a qualified electrical contractor or similar, failure to do so will contravene legal requirements. All DC monitoring wiring must be carried out by a person experienced with DC electrical circuits and must understand high current low voltage circuits. To ensure an accurate monitoring system installation, cable sizing, type and cable screening must be understood.

AllSolus Australia shall have no obligation as to any equipment which has been improperly installed, stored, or handled, or which has not been operated or maintained according to this manual, nor for any operating mistakes and consequences arising from them.

These products are not to be used for Life Support equipment. An AllSolus Energy Monitoring System which has NOT been installed by appropriately qualified personnel may have insurance claims refused.

1.2 - AllSolus - LiveBase™

The AllSolus LiveBase™ is the heart of the AllSolus Energy Monitoring System. The device comprises of an all-in-one data-logging device for energy monitoring applications.

The AllSolus LiveBase™ calculates power generation by RS485 communication to compatible inverters. Gas, water and electricity can be measured via digital input to compatible power sensors. It offers wireless interfacing to the AllSolus EnviroLink, AllSolus MeterLink, AllSolus Battery Pulse Counter. The AllSolus LiveBase™ transmits all data to AllSolus Software for display. Numerous display options include; AllSolus Online Portal, Local Network Portal and Public Display.

General Specification
- Voltage Input 5 to 30 VDC
- Current 300mA (@12V)
- Diagnostics LED | USB via PC Software
- Configuration USB via PC Software
- Operating Temperature -20°C to 80°C

Signal Inputs
- Number of channels 3
- Voltage supplied 3.3 VDC
- Impedance 1kΩ (3.3mA)
- Interface Isolated

Environmental Monitoring Inputs
- Ambient Temperature Range -50°C to 100°C
- Ambient Temperature Accuracy +/- 0.5°C
- Internal Temperature Range -20°C to 80°C
- Internal Temperature Accuracy +/- 2°C
- Illuminance 0 to 100 mW/cm2

Communication
- Interface RS485
- Ethernet 10/100 Auto Sensing
- USB (High Speed)

Analogue Inputs
- Number of channels 4
- Channels 1 & 2 AllSolus Temperature Sensor
- Channels 3 & 4 0 to +5V [1MΩ]

Memory
- Internal Memory 512 kB
- Removable Storage SD Card

Transceiver
- Frequency Band 915-928 MHz
- RF Technology License Free Frequency
- Hopping Spread Spectrum

Output Power 750mW

Security 56 Bit Encryption Key& 8 Bit system ID

Range <20 km (Line of sight)

1.2.B – AllSolus – EnviroLink™

The AllSolus EnviroLink™ is an easy to install wireless environmental monitoring sensor that interfaces to the AllSolus LiveBase™ either directly or via the MeterLink™ or other AllSolus devices acting as wireless signal repeaters.

The EnviroLink™ measures ambient temperature and solar radiation levels. It includes two additional user-configurable analogue inputs and is self-powered via solar sensor for WireFree installation (WireFree devices are completely wireless and self-powered from renewable sources).

The EnviroLink™ contains an energy reservoir that is charged by the integrated irradiance sensor or via external USB connection. The EnviroLink™'s internal energy reservoir has sufficient to power to supply the EnviroLink™ for up to 4 days without exposure to ambient light. The EnviroLink™ will charge under normal ambient sunlight.

As a default the EnviroLink™ is programmed to wake up every 150 seconds and sample internal temperature, irradiance, ambient temperature, external temperature input and external general-purpose analogue input. The results from sampling are communicated directly to a LiveBase™ for data storage and display or via a MeterLink™ (when repeater functionality enabled) to the LiveBase™. The EnviroLink™ automatically selects the best communication method and automatically reduces output power to maintain a high quality wireless link using the lowest power consumption

The EnviroLink™ will initialise in a secure mode based on programmed encryption codes so that multiple devices can co-exist without interference. Encryption codes can be left in the factory set state or modified using the AllSolus configuration tool.

Environmental Monitoring Inputs€
- Ambient Temperature Range -50°C to 100°C
- External Temperature Accuracy +/- 0.5°C
- Internal Temperature Range -20°C to 80°C
- Internal Temperature Accuracy +/- 2°C
- Illuminance 0 to 100 mW/cm2

General
- Power Supply Self – Powered (Super Capacitor)
- Internal Power Storage Run Time 4 days
- Recharge Time 6 Hours
- Update Interval Default 90 seconds
- Diagnostics USB via PC Software
- Configuration USB via PC Software
- Operating Temperature -20°C to 80°C

Communication
- Interface USB (High Speed)

Analogue Inputs
- Channel 1 AllSolus Temperature Sensor
- Channel 2 0 to +5V [1 MΩ]

Transceiver
- Frequency Band 915-928 MHz
- RF Technology License Free Frequency
- Hopping Spread Spectrum

Output Power 100mW

Security 56 bit Encryption Key & 8 Bit System ID

Range <4km (Line of sight)

1.2.C – AllSolus – MeterLink™

The AllSolus MeterLink™ is a compact power-monitoring device measuring power consumption designed for electrical, gas and water metering outlets.

The AllSolus MeterLink™ communicates via long-range wireless transmission to the AllSolus LiveBase™ either directly or via additional MeterLink™'s or other AllSolus devices acting as wireless signal repeaters. The AllSolus MeterLink™ calculates power consumption and power generation by digital input or RS485 communication to compatible power sensors and inverters.

The AllSolus MeterLink™ can operate as a wireless repeater to connections around larger scale sites with wireless transmission up to 20 kilometres. This is particularly useful for multi-level energy management up to large scale industrial applications.

General
- Voltage Input 5 to 30 VDC
- Current 250mA (@12V)
- Diagnostics LED | USB via PC Software
- Configuration USB via PC Software
- Operating Temperature -20°C to 80°C

Signal Inputs
- Number of channels 3
- Voltage supplied 3.3 VDC
- Impedance 1kΩ (3.3mA @ 3.3V)
- Interface Isolated

Communication
- Interface RS485
- USB (High Speed)

Environmental Monitoring Inputs
- Internal Temperature Range -20°C to 80°C
- Internal Temperature Accuracy +/-2°C

Transceiver
- Frequency Band 915-928 MHz
- RF Technology License Free Frequency Hoping Spread Spectrum

Output Power 750mW

Security 56 bit Encryption Key & 8 Bit system ID

Range <20km (Line of sight)

1.2.D – AllSolus – Battery Pulse Counter™

Designed for locations without a power source, the AllSolus Battery Pulse Counter™ operates on internal batteries. At the default update rate of 5 minute intervals the device will operate for 5 years. Battery replacement is simple using standard C Cell batteries.

The AllSolus Battery Pulse Counter™ is a wireless device that calculates usage data on up to 4 pulse signals simultaneously. With 5 minute update rates near to real time data monitoring can be achieved. Designed to be rugged the AllSolus Battery Pulse Counter™ can be installed in harsh environments. Due to the powerful wireless communication the AllSolus Battery Pulse Counter™ will work in water pits and other environments where other wireless devices fail.

The AllSolus Battery Pulse Counter™ communicates via the AllSolus LiveBase™ to the web display. If greater signal strength is required the AllSolus MeterLink™ can be installed as a repeater.

General
- Power Supply 6 x Alkaline C-Cells (User replaceable)
- Battery Life 5 Years (At 5 min update intervals)
- Enclosure IP67
- Operating Temperature -20°C to 80°C
- Diagnostics LED
- USB PC Interface

Pulse Signal Inputs
- Number of Channels 4
- Voltage Supplied 3.3 VDC
- Impedance 100kΩ

Transceiver
- Frequency Band 915-928 MHz
- RF Technology License Free Frequency
- Hopping Spread Spectrum

Output Power 100mW

Security 56 bit Encryption Key & 8 Bit System ID

Range <4km (Line of sight)

1.2.E – AllSolus – THLink™

The AllSolus THLink™ is an accurate digital temperature, humidity and dewpoint sensor.

Installation is simple by using modular connectors to an AllSolus MeterLink™ or AllSolus LiveBase™. The AllSolus THLink™ features 2 modular connectors allowing up to 255 AllSolus THLink™ devices to be connected to one AllSolus MeterLink™ or AllSolus LiveBase™.

The AllSolus THLink™ communicates via the AllSolus LiveBase™ to the web display.

General
- Power Supply 3.3V / 1mA (Powered by RS485 connector)
- Diagnostics LED
- PC Interface
- Interface 2 x RJ10 Ports
- RS485 (2 Wire)
- Protocol Modbus (Up to 255 devices per network)

Sensor Inputs
- Temperature Range -40°C to 100°C
- Temperature Accuracy 0.3°C @ 25°C
- 0.6°C (0°C to 50°C)
- Humidity Range 0% to 100%
- Humidity Accuracy 2% (10% to 90%)
- Dewpoint Range -40°C to 100°C
- Minimum Sampling Rate 1 sample per 10 seconds

1.2.F – AllSolus – Gavazzi Power Meter

The Gavazzi Power Meter is a single or 3-phase energy meter with removable front LCD display unit. The same unit can be used either as a DIN-rail mounting or a panel mounting energy meter.

This general purpose energy meter is suitable for both active and reactive energy metering for cost allocation but also for main electrical parameter measurement and retransmission (transducer function).

The Gavazzi Power Meter will interface with the AllSolus MeterLink™ or LiveBase™ and communicates via digital RS485 communication. The housing for DIN rail mounting has an IP50 (front) protection degree. Current measurements are carried out by means of external current transformers (CT's).

General
- Power Supply 18 to 260Vac (48-62Hz)
- Power Consumption <2VA/1W
- 6KV Surge Protection
- -25°C to +55°C operating Temperature
- Front Panel Protection Degree IP50
- Noise Rejection 100dB, 48 to 62Hz
- Display LCD

Signal Outputs
- Number of Channels 1
- Programmable 0.01 to 9.99kWh p/pulses
- Pulse Duration >100ms <120ms
- RS485 Connectivity
- 2-Wire 1000m Max Distance

Display
- 2 Push Button Variable Selection
- 1 Sec Display Refresh Duration
- 2 Line Display

MODBUS/JBUS (RTU) Protocol

9600 bits per/s Default Baud Rate

1.2.G – AllSolus – CT Devices

To allow for all forms of required power monitoring there are three CT's options available for the AllSolus Energy Monitoring System.

- CR Magnetics DC CT's for monitoring specific devices such as inverter production 20A to 50A
- HOBUT Split Core CT's for power circuits 100A to 800A
- TYCO Split Core Bus Bar CT's for circuits 1000A to 1600A

CR Magnetics
Small split core sensor that generates a 0-5 Vdc signal proportional to the input AC current. The output signal is average sensing, calibrated to RMS. The sensor is used with process control and industrial instrumentation equipment. The DC output can be connected directly to an analogue input connection without additional signal conditioning. Care must be taken to ensure the burden impedance of the instrumentation is greater than 1.0 meg ohm.

HOBUT
Split-core transformer, with a unique clip-together feature, they are supplied in a moulded case with 1 metre flying leads. Suitable for primary ranges up to 800A with 5A secondary, used for installation into existing networks without having to disconnect cable circuits. The fast action clip function ensures a high speed permanent installation.

TYCO
Split-core Bus Bar transformer, with a screw-together feature, they are supplied in a moulded case and are designed with plug-in metal feet for wall or base mounting. They also offer fast action clip function ensures a high speed permanent installation.

CR Magnetics
- Conforms to BS 7626, BSEN 60044-1.
- Accuracy: +/- 5% Full Scale
- Ambient temperature range -30°C to 60°C.
- Frequency range 50-400Hz.
- Insulation level 600V.
- Max Signal Out 12Vdc.
- Fully Isolated, Reverse Polarity Protected.

HOBUT
- Conforms to IEC185, BS 7626, BSEN 60044-1 and IEC 60044-1.
- Rated system voltage 0.72/3kV.
- Ambient temperature range -30°C to 80°C.
- Frequency range 50-60Hz.
- Insulation level 3kV for 1 minute.
- Continuous current, 1.2 x rated current.
- Enclosure flame retardancy UL94VO.

TYCO
- Conforms to BS 7626, IEC/EN 60044-1.
- Rated system voltage 0.72/3kV.
- Relative Humidity 0-90% (non condensing)
- Ambient temperature range -20°C to 70°C.
- Frequency range 50-60Hz.
- Insulation level 3kV for 1 minute.
- Continuous current, 1.2 x rated current.
- Enclosure flame retardancy UL94VO.

1.2.H – AllSolus – Wind Sensors

To complement the irradiance and ambient air temperature ability of the EnviroLink™, AllSolus also offer a wind speed sensor and an wind directional sensor

- APRS 6504 Wind Speed Sensor (Anemometer)
- APRS 6507 Wind Directional Sensor

APRS 6504
The Wind Speed Sensor is manufactured to precise industry standards. The rotor is made of tough polycarbonate for exceptional durability and reliability. The sensor base is also made of rugged polycarbonate, making it more resistant to damage during installation than the competition or metal cub designed products. A moulded vinyl boot protects the anemometer wiring. Made in the USA with exceptional quality control, all units are tested mechanically and electronically before shipping.

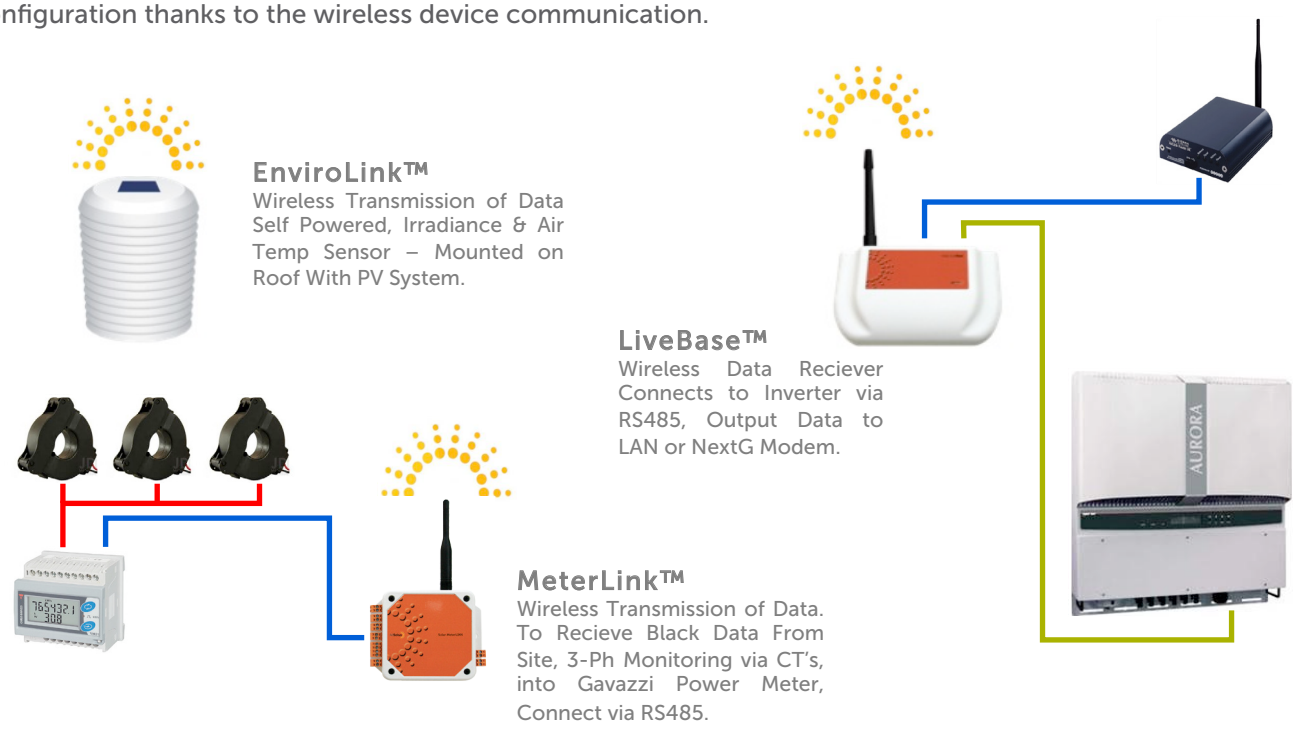
APRS 6507
The wind directional sensor has a analogue DC voltage output proportional to wind direction angle. It has a 360 continuous mechanical rotation with a permanent mechanical decoder. The output voltage range of the unit is between 0-5Vdc with no dead band.

APRS 6504 – Speed Sensor
- Accuracy within 0.1m/s for the range 5m/s to 25m/s
- Rotor moment of inertia 92.2 x 10-6 kg-m2
- Distance constant 3.0m
- Transfer function m/s = (Hz *0.383) +0.324
- Protection Metal Oxide Varistor between terminals
- 5.1cm Cup diameter
- 108 grams in weight

APRS 6507 – Directional Sensor
- Angular accuracy within 0.05°C @ 25°C
- Threshold 402m/s
- Double shielded and hardened ball bearings
- Life Expectancy 50 million revolutions

2.1.A – AllSolus System Layout & Devices

The key benefit and design function of the AllSolus Energy Monitoring System is its ability to be tailored to the exact requirement of the clients specification. In addition the system offers the benefit of ease of installation and configuration thanks to the wireless device communication.



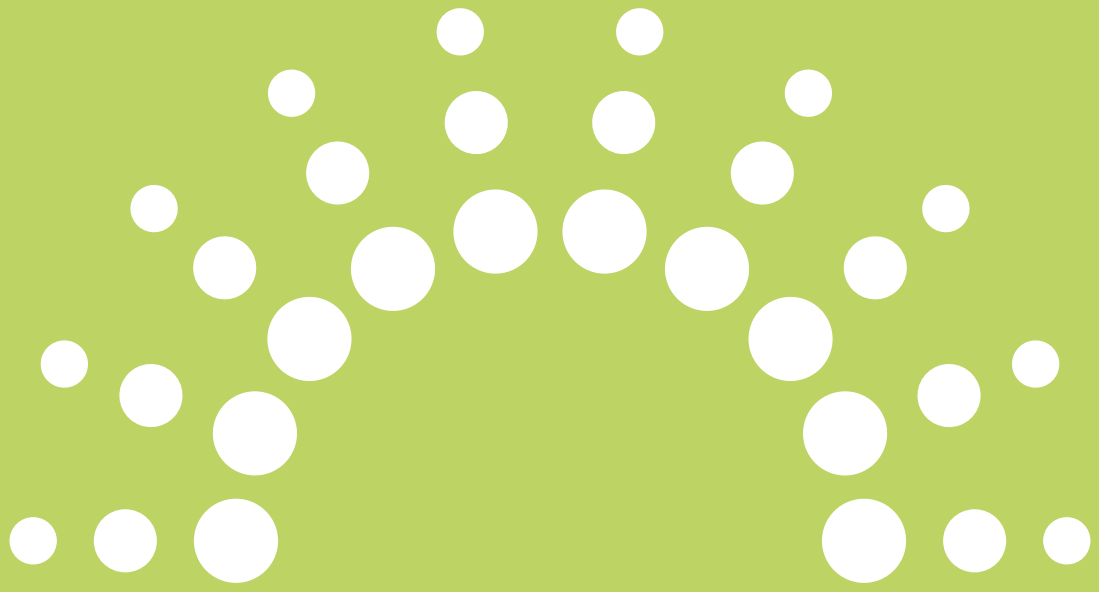
The above illustration shows a typical system whereby a grid-connect PV inverter is being monitored along with roof top irradiance and air temperature and a three phase building power supply. As you will see in section 4 there is no restriction or limitation to the manner in which the AllSolus Energy Monitoring System can be configured, added to or developed.

With any system design the fundamental parameter is an understanding of the environment with which the device must function and exist. The onus here is with understanding what is required to be monitored, where are the elements to be monitored located with respect to each other, and what form of visualisation is required? Also if a LAN connection is available where would this be located too.

From this basic specification and understanding the correct component list and installation design can be simply drawn up. If you require support or assistance with understanding what is to be monitored, as well as how best the system designed then please contact AllSolus via www.allsolus.com.au.

2.1.B – AllSolus & Integration With Other Devices & Systems

The AllSolus Energy Monitoring System can be configured to work in conjunction with many existing monitoring devices, building management systems and third party web sites. For further information, design assistance, configuration, and support please contact AllSolus via www.allsolus.com.au so that we can help with specific details.

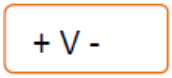


INSTALLER

3.1.A – LiveBase™ – Mounting & Power Supplies & Connections

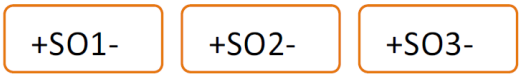
Mounting
The AllSolus LiveBase™ can be mounted using the keyholes screw mounting positions on the underside of the device using pan-head screws with a thread no wider than 4mm (0.157") and a head no wider than 3mm (0.118").

Mount the LiveBase™ at a distance greater than 1 m from inverters.



Power Supply
The LiveBase™ comes supplied with its own power supply & connector. Connect the power supply connector to the +V- terminal on the LiveBase™ and plug the power supply to an external power source.

The LiveBase™ power input operates on a power range of 6 to 30Vdc; the device is reverse polarity and surge protected.



Pulse Signal Input
The three pulse signal inputs, these are designed to connect to any device that generates a pulse signal output, these can often be water or gas meters for example. The signal outputs are compatible with all open collectors or relay meter outputs. Simply connect the power supply connector to the +SO*- terminals on the LiveBase™

The LiveBase™ pulse signal input operates on a positive terminal of 3.3V and is limited to 3.3mA. The pulse signal input values are configured using the AllSolus configuration tool.

Analogue Signal Input
The LiveBase™ has dual analogue Inputs, these provide the system a configurable and general purpose input for data logging and display. The analogue Input is commonly used to measure an inverter power generation using a DC Current Transformers (CT). The analogue Inputs can also be used to measure devices such as wind speed and directional sensors. The analogue Inputs are connected to the +AIN- terminals on the LiveBase™.

The LiveBase™ analogue input accepts a 0 to 5Vdc signal. The analogue Input scaling, calibration and mapping is configured using the AllSolus configuration tool.

RS485 Signal Input
The LiveBase™ RS485 data input provides digital connection to compatible multiple power sensors and inverters using the RS485 protocol. The RS485 connections require a three wire shielded cable connected to the VAB0 terminals on the LiveBase™. The current compatible inverters and protocol include but are not limited to:

- Aurora Protocol for Aurora Inverters
- SMANet for SMA Inverters
- Samil Protocol for Samil Inverters
- AllSolus THLink™
- AllSolus multi parameter power sensors

	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0

The selection of RS485 and inverter types is configured using the AllSolus Configuration tool.

3.1.B – EnviroLink™ – Mounting & Power Supplies & Connections

Mounting

The AllSolus EnviroLink™ can be mounted using the screw mounting positions located on the bracket attached to the device using two 5mm bolts (included). Mount the EnviroLink™ in a secure location to measure ambient temperature and irradiance (making sure that the solar panel on the top of the device is sitting horizontally).

It is recommended that the EnviroLink™ in mounted in similar light conditions to the solar panels (if installed) to allow for relevant comparison data between the irradiance sensor and solar output power.

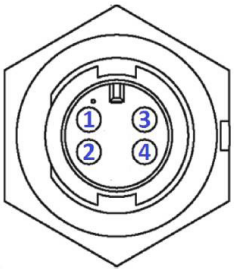
Power Supply

Due to storage periods the EnviroLink™ will normally require charging at the time of unpacking. The EnviroLink™ can be connected via a standard USB cable to a computer or power source. Charging usually takes approximately 20 minutes. When charged via a USB supply the EnviroLink™ draws approximately 300mA, as charging it will automatically begin synchronisation in approximately 30 minutes.

Alternatively the EnviroLink™ will charge when exposed to full sunlight for approximately 6 hours at which time it will initiate communication. The EnviroLink™ contains an energy reservoir that is charged by the integrated irradiance sensor or via external USB connection. The EnviroLink™ internal energy reservoir has sufficient to power to supply the EnviroLink™ for up to 4 days without exposure to ambient light. The EnviroLink™ will charge under normal ambient sunlight.

To connect the AllSolus EnviroLink™ to a USB remove the USB dust cap from the base of the unit and connect with the cable supplied, please ensure that he dust cap is replaced once disconnected.

Analogue Signal Input



The EnviroLink™ has two analogue signal inputs, these are designed to connect to any device that generates an analogue signal output, and these are commonly for temperature probe sensors and wind sensor devices. Device connections are via Pins 1 & 2 for device 1 and pins 3 & 4 for device two.

The temperature probes that AllSolus recommend are the NTC Temperature Probes, (AllSolus part number: ANAI-PTEMP-ELS). AllSolus Temperature Probes achieve an accuracy of 0.5 Degrees Celsius using internally programmed calibration tables. These temperature probes can be connected in either polarity as they are not polarity sensitive.

Generally the analogue input signal provides a user-configurable general-purpose input for data-logging and display. The analogue input accepts a 0 to 5V DC input. The analogue input can be used to measure wind speed and direction.

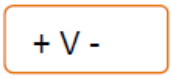
The analogue input scaling, calibration and mapping of a wind sensor device or temperature probe is configured using the AllSolus Configuration tool.

If an external analogue input is to be connected please request a mating line plug when ordering.

3.1.C – MeterLink™ – Mounting & Power Supplies & Connections

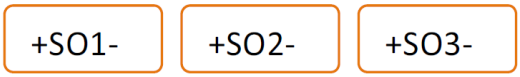
Mounting
The AllSolus MeterLink™ can be mounted using the screw mounting positions located on each side the device using pan-head screws or bolts with a thread no wider than 4mm (0.157") and a head no wider than 3mm (0.118").

Mount the MeterLink™ at a distance greater than 1 m from inverters.



Power Supply
The MeterLink™ comes supplied with its own power supply & connector. Connect the power supply connector to the +V- terminal on the MeterLink™ and plug the power supply to an external power source.

The MeterLink™ power input operates on a power range of 6 to 30Vdc; the device is reverse polarity and surge protected.



Pulse Signal Input
The MeterLink™ has three pulse signal inputs, these are designed to connect to any device that generates a pulse signal output, these can often be water or gas meters for example. The signal outputs are compatible with all open collectors or relay meter outputs. Simply connect the power supply connector to the +SO*- terminals on the MeterLink™.

The MeterLink™ pulse signal input operates on a positive terminal of 3.3V and is limited to 3.3mA. The pulse signal input values are configured using the AllSolus configuration tool.

RS485 Signal Input
The MeterLink™ RS485 data input provides digital connection to compatible multiple power sensors and inverters using the RS485 protocol. The RS485 connections require a three wire shielded cable connected to the VAB0 terminals on the MeterLink™. The current compatible inverters and protocol include but are not limited to:

- Aurora Protocol for Aurora Inverters
- SMANet for SMA Inverters
- Samil Protocol for Samil Inverters
- AllSolus THLink™
- AllSolus multi parameter power sensors

	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0

The selection of RS485 and inverter types is configured using the AllSolus Configuration tool.

3.1.D – Battery Pulse Counter™ – Mounting & Power Supplies & Connections

Mounting
The AllSolus Battery Pulse Counter™ can be mounted using the fixing brackets that come supplied with the device. Alternative it can be secured in place by any appropriate means or even mounted on a flat surface.

The Battery Pulse Counter™ does not have a minimum distance requirement from a local device.

Power Supply
The Battery Pulse Counter™ comes supplied with its own power internal supply from x6 C size standard cell batteries. These can be replaced if need be.

The Battery Pulse Counter™ will have a 5 year internal power supply life, this can vary though depending on range, installation location and sampling parameters.

Pulse Signal Input
The Battery Pulse Counter™ has four pulse signal inputs, these are designed to connect to any device that generates a pulse signal output, often water or gas meters for example. The signal outputs are compatible with open collectors or relay meter outputs. Simply connect as per the wiring matrix shown.

The Battery Pulse Counter™ input signal operates on a positive terminal of 3.3V and is limited to 3.3mA. The pulse signal input values are configured using the AllSolus configuration tool.

	Signal	Common	Signal Descriptions (For your reference)
Pulse 1	White	Black	
Pulse 2	Red	Orange	
Pulse 3	Yellow	Green	
Pulse 4	Blue	Purple	

3.1.E – Raven Next G Modem – Mounting & Power Supplies & Connections

Mounting
The Sierra Wireless Airlink Raven XE Next G modems are designed to specifically connect to the AllSolus LiveBase™ when a LAN connection is unavailable.

The Next G Modem is to be mounted using the supplied mounting bracket to install the modem at least 1 metre (3.3 feet) from an inverter, and within connection range of the AllSolus LiveBase™ unit and its Ethernet cable. Ideally mount the device on a flat panel so that it is sitting vertically in an upright position.

Next you will need to attach the antenna/s to the modem antenna connection point on the top of the devise. and ensure it is positioned so that the antennas are vertical to maximize RF signal strength.

Power Supply
The Next G Modem comes supplied with its own power external supply, simply plug this into the DC input on the device.

Ethernet Connection
The final step of installation of the Next G Modem is to connect the device to the AllSolus LiveBase™. Simply plug the supplied Ethernet cable into both devices.

3.1.F – THLink™ – Mounting & Power Supplies & Connections

Mounting
The AllSolus THLink™ can be mounted using the keyhole screw mounting position on the underside of the device using pan-head screw with a thread no wider than 4mm (0.157") and a head no wider than 3mm (0.118"). Alternatively the device can be opened by pressing the two snap catches on either side and the device can be screwed to a surface using suitably sized screws or bolts.

Power Supply
The THLink™ has no internal power supply or requirement for any specific power source. The device will run from the nominal power supplied via the RJ12 plug connection.

PIN	SIGNAL	RS485	COMMON COLOUR CODE	COLOUR CODE (Your Reference)
1	3.3V	V	BLK	
2	S-	A	RD	
3	S+	B	GRN	
4	O COM	O	YW	

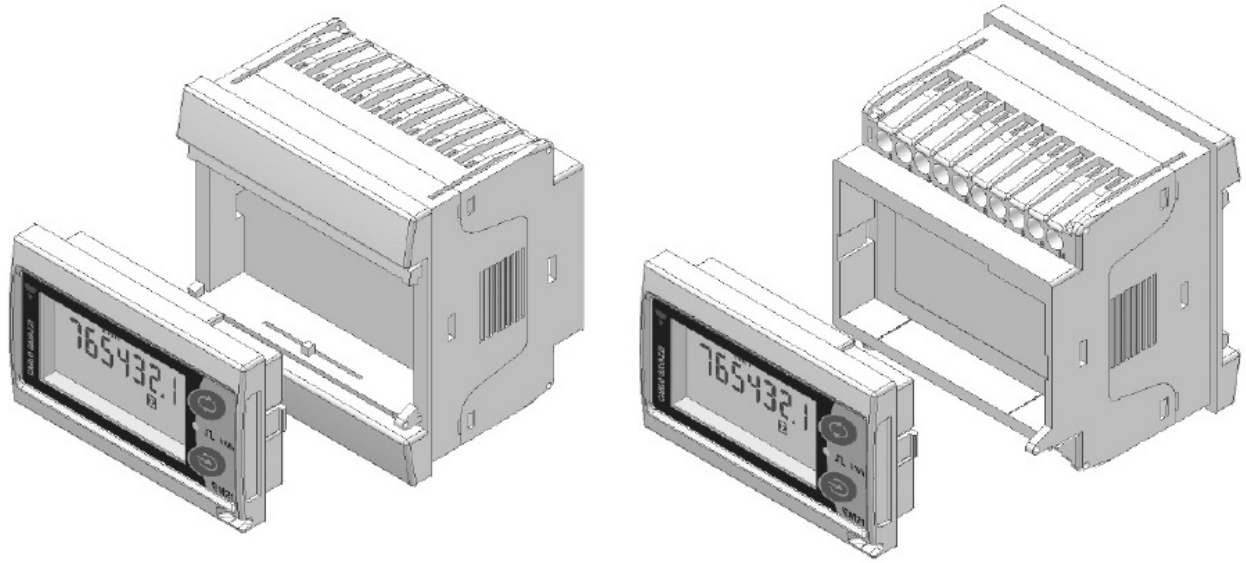
Signal Input
The THLink™ has been designed so that multiple units can be strung together to be able to supply temperature, humidity and dew point readings within a localised proximity. Up to 255 THLink™ devices can be daisy chained together so that the RJ12 plug in connection will simply flow from one to another.

The THLink™ has been designed so that standard telephone cables will connect to them so that standard length cables can be purchased without the need for installers to have to terminate multiple plugs on site.

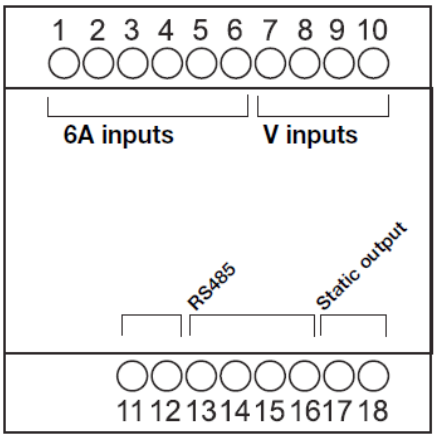
The THLink™ will connect to the RS485 signal input of either the AllSolus LiveBase™ or the MeterLink™.

3.1.G – Gavazzi Power Meter – Mounting & Power Supplies & Connections

Mounting
The Gavazzi Power Meter can be installed on either a DIN rail (either inside an existing switch board enclosure or on its own rail), or alternatively it can be mounted on a flat panel. The LCD screen can be removed from the front of the device housing and inserted into the rear to enable either DIN or panel mounting. When mounting the device on a panel additional fixing brackets are also required. (These are supplied with the device).



It makes sense for the Gavazzi Power Meter to be installed within close proximity to the cables that are being CT measured so that the CT cables do not require extending at all. If CT cables require extending use a cable with a current capacity of 5Amp or more.



Power Supply

The Gavazzi Power Meter requires a power supply with a 18Vac to 260Vac voltage range and 48-62Hz frequency range. The supply is connected to the device across input "VL1" and "N". Mostly only a single phase input is utilised, in this case the neutral supply is connected to terminal 10 and the positive to terminal 9, an earth is not required. If three phase supply is used the phase 1 goes to terminal 9, phase 2 to 8 and phase three to terminal 7.

A DIN rail power supply part no: DRPS is available from AllSolus; this has a 24VDC 1.5A output suitable for supplying the Gavazzi Power Meter.

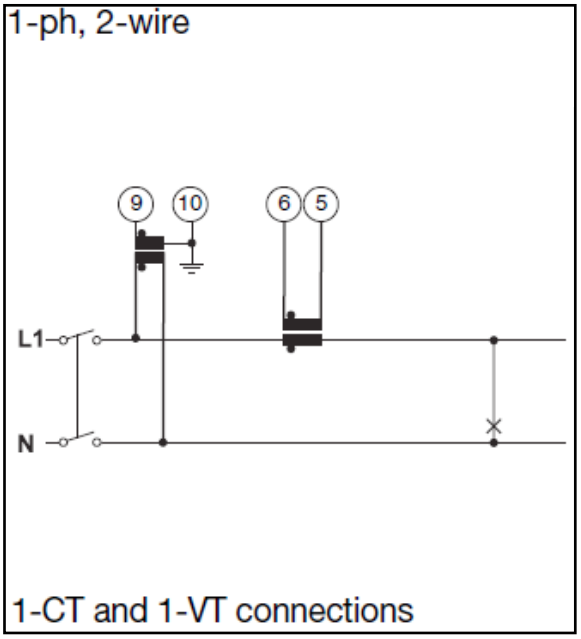
CT Signal Input

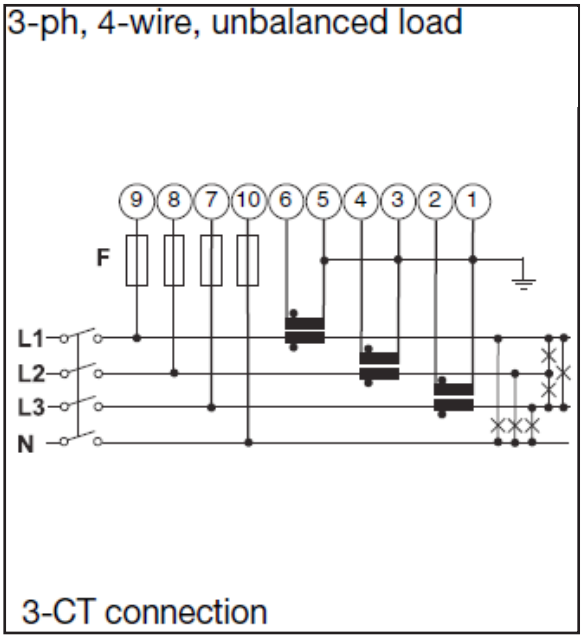
The Gavazzi Power Meter when used for AllSolus energy monitoring, is commonly used for either a single or three phase power system. When installing the CT devices. (Whether cable or Bus Bar style) are polarity sensitive so please refer to the arrow on the CT sticker for the correct current flow:

For Single phase CT monitoring the device needs to be wired to terminals 5 and 6, for 3-phase monitoring the CT's need to be connected to terminals 1 through to 6.

RS485 Signal Output

The Gavazzi Power Meter connect to the RS485 signal input of either the AllSolus LiveBase™ or the MeterLink™ via terminals 14 (A-) and 15 (B+). Input is then configured using the AllSolus Configuration tool.





3.1.H – DC CT Devices – Mounting & Positioning

Mounting
The DC CT Device is primarily used for measuring the AC production of an inverter or for the power consumption of a specific device up to 50A.

The CT's come with a small cable tie which is deigned to secure it to the AC cable to be measured. The device has a split core so has a snap catch opening. In some circumstances it is possible to mount the device to a board or panel will an additional cable tie or suitable fixing. It is not recommended to use any permanent adhesive to secure the device in position.

DC Signal Output
The DC CT is to connect to the analogue input terminals of the AllSolus LiveBase™ or the via the +AN1- or +AN2- analogue input terminals.
The DC CT input parameter is then configured using the AllSolus Configuration tool.

3.1.I – Wind Sensors – Mounting & Positioning

Mounting
Both the APRS wind speed sensor and the wind directional sensors are available from AllSolus with a mounting structure. Alternatively an appropriate mount can be fabricated; both devices accept a 12.7mm or ½" shaft. This shaft is retained in place with a split pin and screw arrangement.

It is recommended that the mounting structure be vertically positioned to ensure that the electrical integrity of either device is retained. Each device will also be supplied with a vinyl boot to protect the electrical connections; this can be secured via the use of an additional cable tie or left in place with its own interference fit.

Device Signal Output
Both devices are to connect to the analogue input terminals of the either the AllSolus EnviroLink™ or the LiveBase™.

Each device will operate with a twisted pair arrangement, the connection polarity is irrelevant but a 10kΩ resistor is required, for this reason it is recommended that the connector cables from AllSolus are utilised.

If the AllSolus EnviroLink™ is to be used then a dedicated cable complete with correct plug adaptor is available.

If the AllSolus LiveBase™ is to be used then the device is to be connected to the TP1 terminal.

The wind sensor input parameters are then to be configured using the AllSolus Configuration tool.

3.1.J – Temperature Probes – Mounting & Positioning

Mounting
The temperature probes have been primarily specified to measure the specific temperature of PV solar panels. However these devices can be used to monitor any heat source that has a range of -25°c to + 80°c.

The temperature probes are supplied with a self-adhesive backing; they can therefore be simply stuck to the surface that requires monitoring. When adhering to a solar PV module please fix the temperature probe to the underside of the module.

Try to position the device so that it is not directly under a PV cell as increased localised rates of degradation in this specific area can occur.

Signal Output
The temperature probes have been designed to connect directly to either of the analogue input terminals of the AllSolus EnviroLink™ or the LiveBase™.
If the AllSolus EnviroLink™ is to be used then dedicated cable complete with correct plug adaptor is available.
If the AllSolus LiveBase™ is to be used then the device is to be connected via the TP1 or TP2 terminals.

The temperature sensor probe input parameters are then to be configured using the AllSolus Configuration tool.

3.1.K – High Gain & Dome Antennas – Mounting & Positioning

Mounting
To increase the wireless signal ability and to aid with the transmission of a signal from within a steel enclosure such as a meter box, AllSolus have an additional dome antenna plus high gain antenna available.

The additional antennas come supplied with a cable and simply require screwing onto the antenna connector on either the AllSolus LiveBase™, MeterLink™ or the Battery Pulse Counter™ .

The antennas come with mounting brackets and fasteners so it should be simple to apply to any location. Note, the antenna's need to be installed in a vertical position.

Received Signal
To ascertain whether an installation requires the additional antennas AllSolus has produced a received signal calculator.

In calculating the received signal strength please be aware that within the calculation matrix the antenna itself will counter and therefore remove the negative value of any listed physical obstacles between itself and other AllSolus devices.

Excessive signal noise from neighbouring wireless devices to the LiveBase™ may alter received signal strength. Metal obstacles, such as a cubicle, will require an external dome or high gain whip antenna to overcome reduced signal.

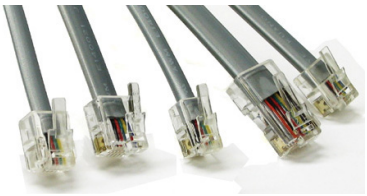
Received Signal Calculator

Category	Parameter		Example		Your Calculation	
	Description	Value	Qty	Value	Qty	Sub-Total
Transmit Power	Long Range Version (Standard)	+130	1	+130		
Antenna 1 Add Value Per Antenna	Small Whip	0	0	-8		
	Large Whip	+2	0			
	Low Profile Dome	-8	1			
	External Cabinet Mount Whip with 1m Cable	0	0			
Path Distance	10m	-52	(80m Path Distance)	-72		
	100m	-72				
	1oom (1km)	-92				
	10,000m (10km)	-112				
Physical Obstacles Add Value Per Obstacle	Glass (13mm Thick)	-2	1	n/a		
	Brick (18cm Thick)	-5	1	n/a		
	Masonry Brick (40cm)	-17	1	n/a		
	Concrete (10cm Thick)	-12	0	n/a		
	Concrete (30cm Thick)	-35	0	n/a		
	Tree	-8	2	n/a		
Antenna 2 Add Value Per Antenna	Small Whip	0		+2		
	Large Whip	+2	1			
	Low Profile Dome	-8				
	External Cabinet Mount Whip with 1m Cable	0				
Simply Add All Of The Values Together						
			Total	+52	Total	
The overall value must be +20 or more to ensure a good working signal						

The received signal calculator matrix is a rough guide only but should help to create an overview of the effect of building materials on the AllSolus devices as well as the relative distance and range.

4.1.A – RS485 Cable Runs

Where RS485 protocol connection and cable runs are required the recommended cable type will be a CAT5 UTP or STP cable. UTP (Unshielded Twisted Pair) or STP (Shielded Twisted Pair) selection will depend on the proximity to other devices, electrostatic interference or cable run lengths.



Generally an RS485 CAT5 cable run will allow for a 1200m route length.

Often an RS485 protocol cable connection terminal will comprise of a RJ11, RJ12 or RJ45 connector. In some circumstances and on some inverters an RS232 terminal may be fitted.

The common 4 pair CAT5 cable will comprise of the following pair colour codes;

Pair 1	Pair 2	Pair 3	Pair 4
Blue White	Orange White	Green White	Brown White
Blue	Orange	Green	Brown

4.1.B – Screw Terminal Connections

The AllSolus LiveBase™ and the MeterLink™ both have WAGO screw terminal connector strips. These strips are supplied with the devices and are given in various lengths depending upon the terminal position required. Each screw terminal will accept a cable up to 2.5mm CSA solid core.

The screw terminal and cable can be secured prior to connection to the specific device and allow for simply unplugging of connections without the need for disturbing terminated cables.

4.1.C – USB Connections

The input parameters of all of the respective devices are configured using the AllSolus Configuration tool, to connect each device to a PC the use of a USB connection is required, therefore the AllSolus LiveBase™, EnviroLink™, MeterLink™ and the Battery Pulse Counter™ all have mini USB terminals and come supplied with a USB cable.

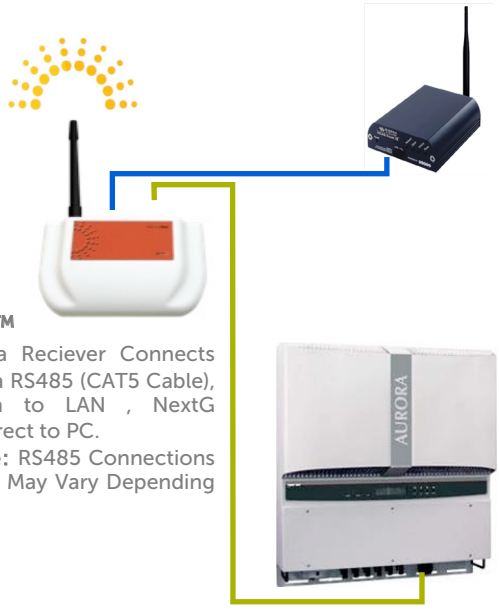
The LiveBase™ has the USB terminal connection on the top edge adjacent to the WAGO screw terminal and LAN port.

The EnviroLink™ has the USB terminal connection on the underside, remove the plastic dust cap to reveal.

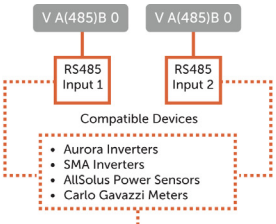
The MeterLink™ has the USB terminal located internally, to access remove the front cover via the four black screws in each corner of the front panel. The USB connection is then found adjacent to the WAGO screw terminals.

The Battery Pulse Counter™ also has the USB terminal located internally, to access, remove the front cover via the four screws in each corner of the front panel. The USB connection is then found adjacent centrally between the batteries.

4.2.A – Grid-Connect inverter with protocol setup within the current AllSolus firmware

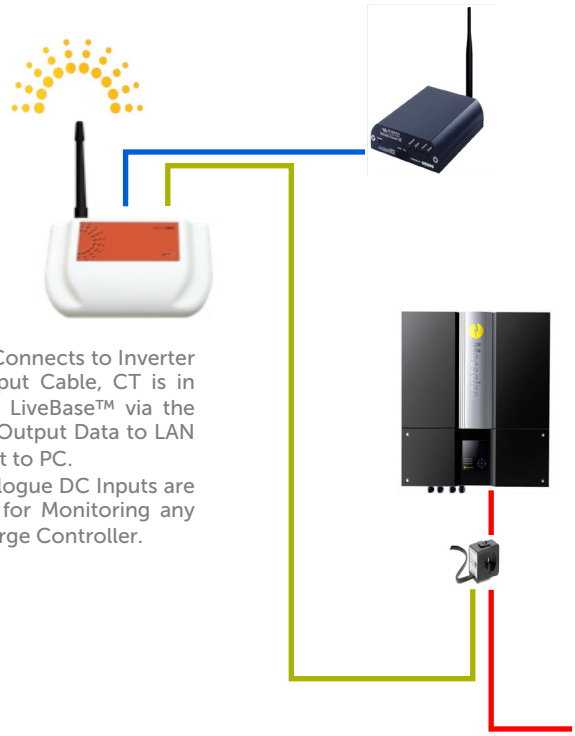


LiveBase™
Wireless Data Reciever Connects to Inverter via RS485 (CAT5 Cable), Output Data to LAN , NextG Modem or Direct to PC.
Please Note: RS485 Connections into Inverters May Vary Depending on Brand.

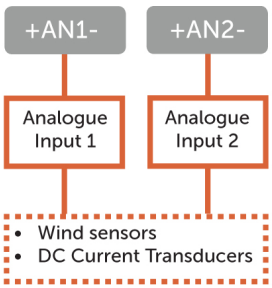


	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0

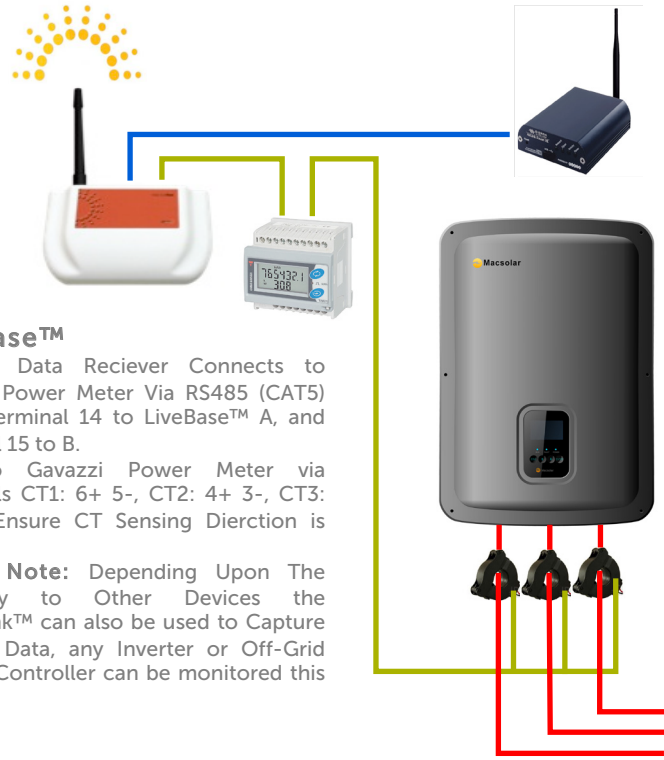
4.2.B – Grid-Connect inverter without the inverter protocol already setup in the Allsolus firmware



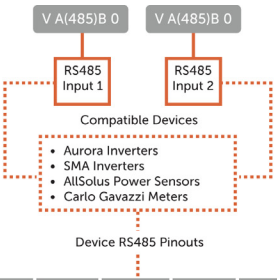
LiveBase™
Wireless Data Reciever Connects to Inverter DC CT on the AC Output Cable, CT is in Turn Connected to the LiveBase™ via the +AN1- Analogue Input. Output Data to LAN , NextG Modem or Direct to PC.
Please Note: Two Analogue DC Inputs are available, these can be for Monitoring any Inverter or Off-Grid Charge Controller.



4.2.C – 3 phase Grid-Connect inverter without the inverter protocol already setup in the AllSolus firmware

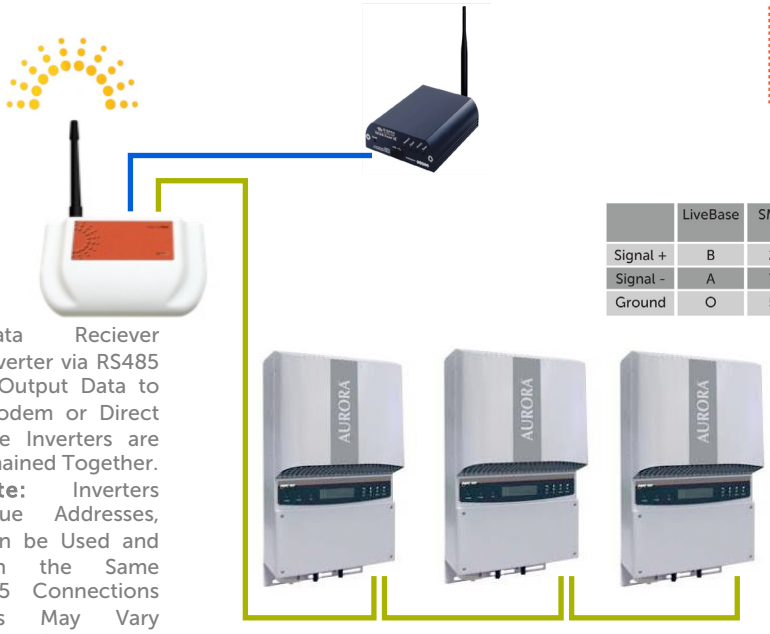


LiveBase™
Wireless Data Reciever Connects to Gavazzi Power Meter Via RS485 (CAT5) Cable Terminal 14 to LiveBase™ A, and Terminal 15 to B.
CT's to Gavazzi Power Meter via Terminals CT1: 6+ 5-, CT2: 4+ 3-, CT3: 2+ 1-, Ensure CT Sensing Dierction is Correct.
Please Note: Depending Upon The Proximity to Other Devices the MeterLink™ can also be used to Capture Gavazzi Data, any Inverter or Off-Grid Charge Controller can be monitored this way.

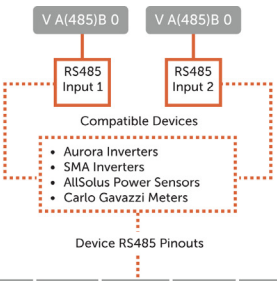


	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0

4.2.D – Multiple Grid-Connect inverters with the protocol setup within the current AllSolus firmware

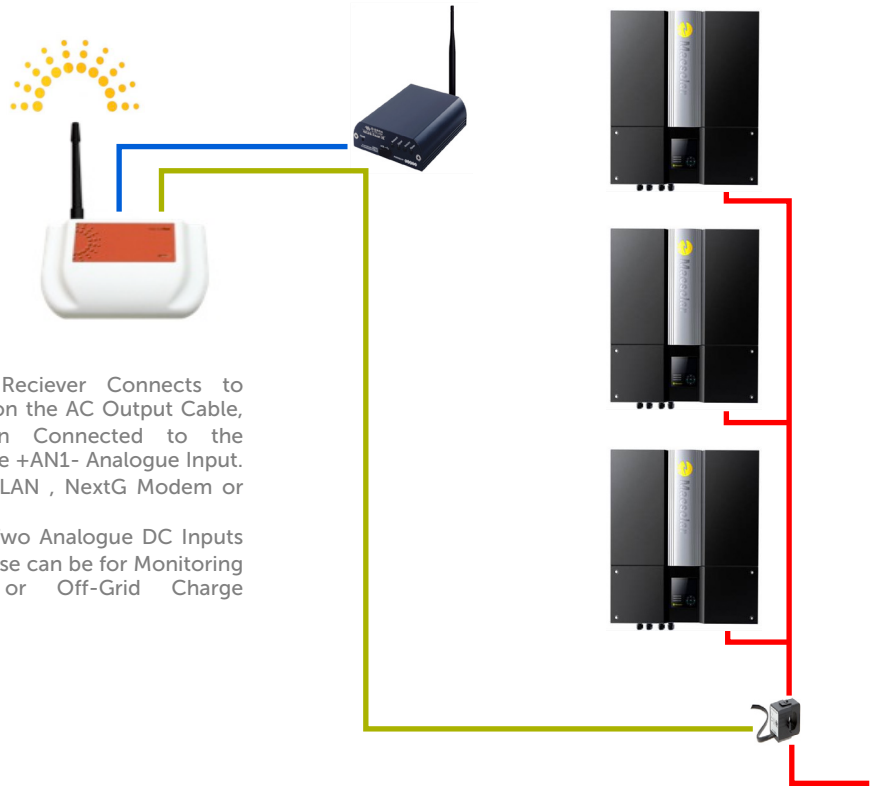


LiveBase™
Wireless Data Reciever Connects to Inverter via RS485 (CAT5 Cable), Output Data to LAN, NextG Modem or Direct to PC. Multiple Inverters are Simply Daisy Chained Together.
Please Note: Inverters Require Unique Addresses, MeterLink™ can be Used and Connected in the Same Manner. RS485 Connections into Inverters May Vary Depending on Brand.



	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0

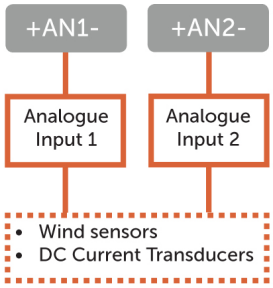
4.2.E – Multiple Grid-Connect inverters without the inverter protocol already setup in the AllSolus firmware



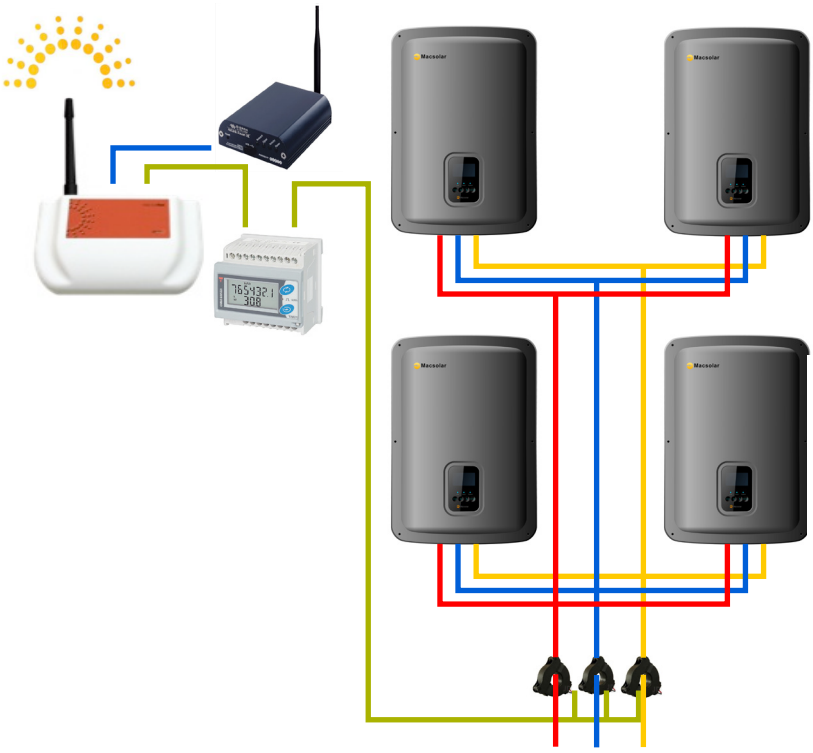
LiveBase™

Wireless Data Reciever Connects to Inverter DC CT on the AC Output Cable, CT is in Turn Connected to the LiveBase™ via the +AN1- Analogue Input. Output Data to LAN , NextG Modem or Direct to PC.

Please Note: Two Analogue DC Inputs are available, these can be for Monitoring any Inverter or Off-Grid Charge Controller.



4.2.F – Multiple 3 phase Grid-Connect inverters without the inverter protocol already setup in the AllSolus firmware

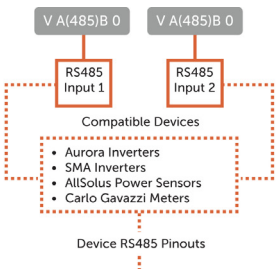


LiveBase™

Wireless Data Reciever Connects to Gavazzi Power Meter Via RS485 (CAT5) Cable Terminal 14 to LiveBase™ A, and Terminal 15 to B.

CT's to Gavazzi Power Meter via Terminals CT1: 6+ 5-, CT2: 4+ 3-, CT3: 2+ 1-, Ensure CT Sensing Dierction is Correct.

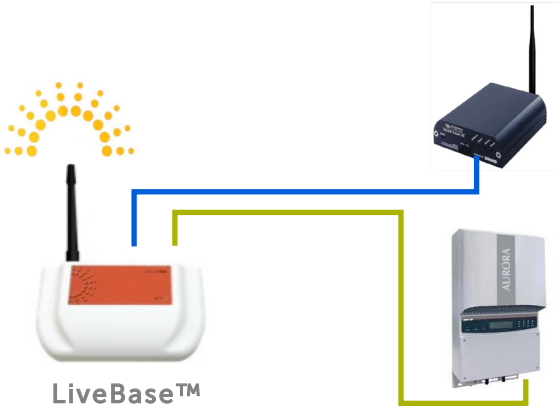
Please Note: Depending Upon The Proximity to Other Devices the MeterLink™ can also be used to Capture Gavazzi Data, any Inverter or Off-Grid Charge Controller can be monitored this way.



	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0

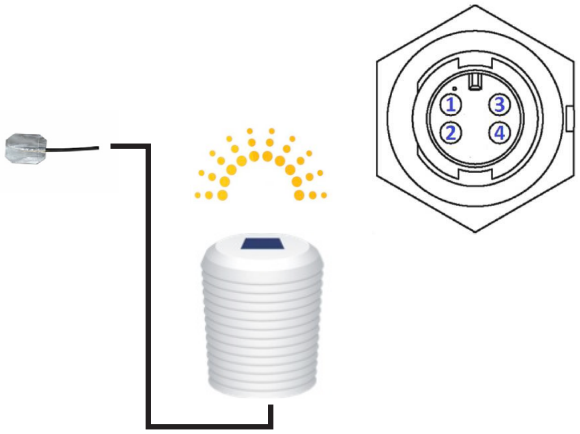
4.3.A – Irradiance and Ambient Air Temperature sensing

EnviroLink™
Wireless Transmission of Data Self Powered, 4km range, Irradiance & Air Temp Sensor.
– Mounted on Roof With PV System if Installed
– To be charged either by USB via PC for 30mins or by 4hrs sunlight.

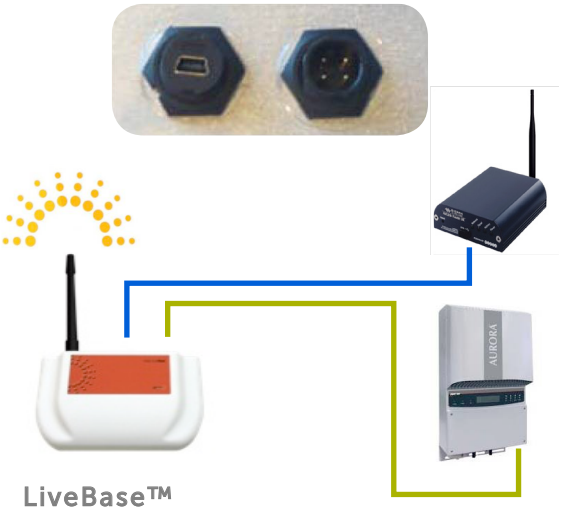


LiveBase™
Wireless Data Reciever, Inverter Input, Output Data to LAN, NextG Modem or direct to PC.

4.3.B – Irradiance and Ambient Air Temperature sensing with Panel Temperature

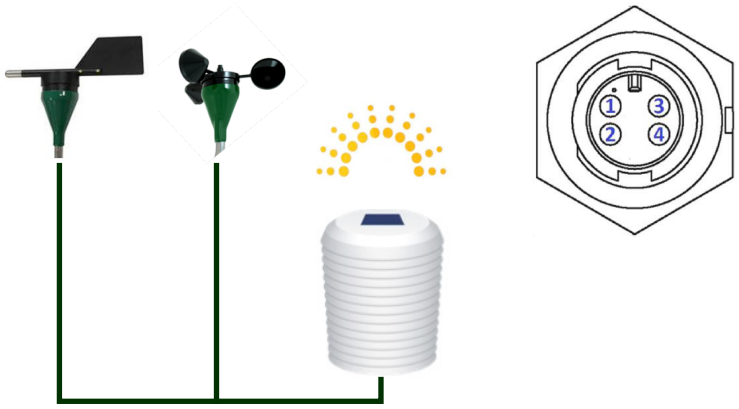


EnviroLink™
Wireless Transmission of Data Self Powered, 4km range, Irradiance & Air Temp Sensor.
– Mounted on Roof With PV System if Installed
– To be Charged Either by USB via PC for 30mins or by 4hrs Sunlight.
– Panel Temperature Probe to Connect to Pins 1 & 2.



LiveBase™
Wireless Data Reciever, Inverter Input, Output Data to LAN, NextG Modem or direct to PC.

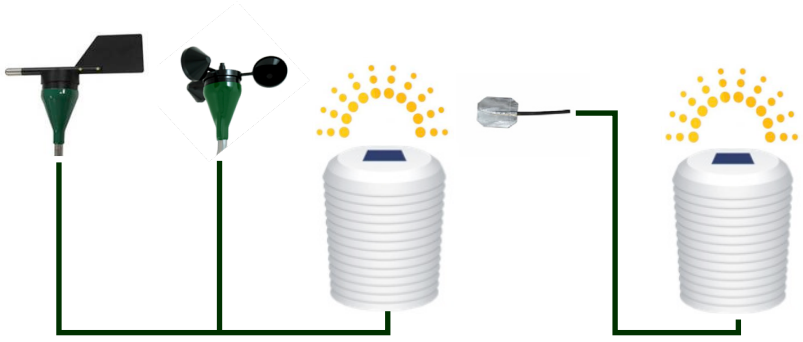
4.3.C – Irradiance, Ambient Air Temperature sensing with Wind Direction and Wind Speed



EnviroLink™
Wireless Transmission of Data Self Powered, 4km range, Irradiance & Air Temp Sensor.
– Mounted on Roof With PV System if Installed.
– To be Charged Either by USB via PC for 20mins or by 4hrs Sunlight
– Wind Direction Sensor to be Connected to Analogue Input Terminal 1 Positions 1+ and 2- (0-5Vdc input).
– Wind Speed Sensor to be Connected to Analogue Input Terminal 2 Positions 3+ and 4- (0-5Vdc input).

LiveBase™
Wireless Data Reciever, Inverter Input, Output Data to LAN, NextG Modem or direct to PC.

4.3.D – Irradiance, Ambient Air Temperature sensing with Wind Direction, Wind Speed and Panel Temperature



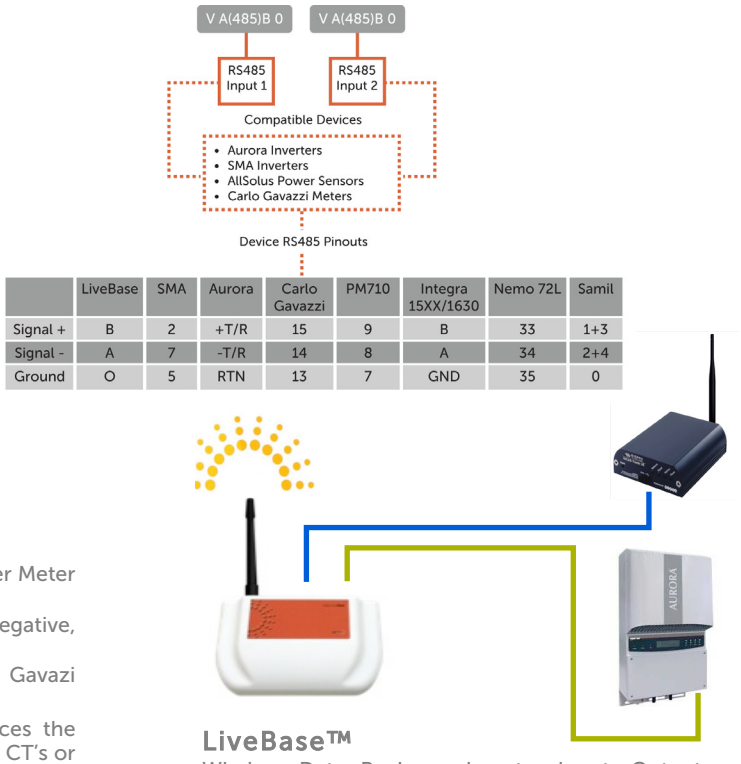
EnviroLink™'s 1&2
Wireless Transmission of Data Self Powered, 4km range, Irradiance & Air Temp Sensor Both to be Mounted on Roof With PV System if installed – To be Charged Either by USB via PC for 20mins or by 4hrs Sunlight.

Unit 1:
– Wind Direction Sensor to be Connected to Analogue Input Terminal 1 Positions 1+ and 2- (0-5Vdc input).
– Wind Speed Sensor to be Connected to Analogue Input Terminal 2 Positions 3+ and 4- (0-5Vdc input).

Unit 2:
– Panel Temperature Probe to Connect to Pins 1 & 2.

LiveBase™
Wireless Data Reciever, Inverter Input, Output Data to LAN, NextG Modem or direct to PC.

4.4.A – Single Phase CT Measured

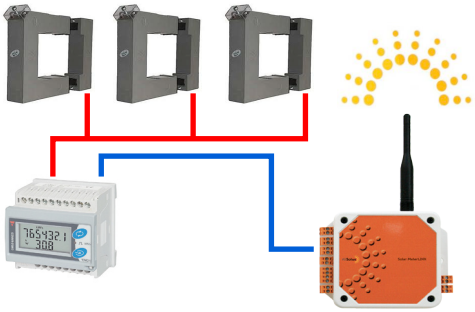


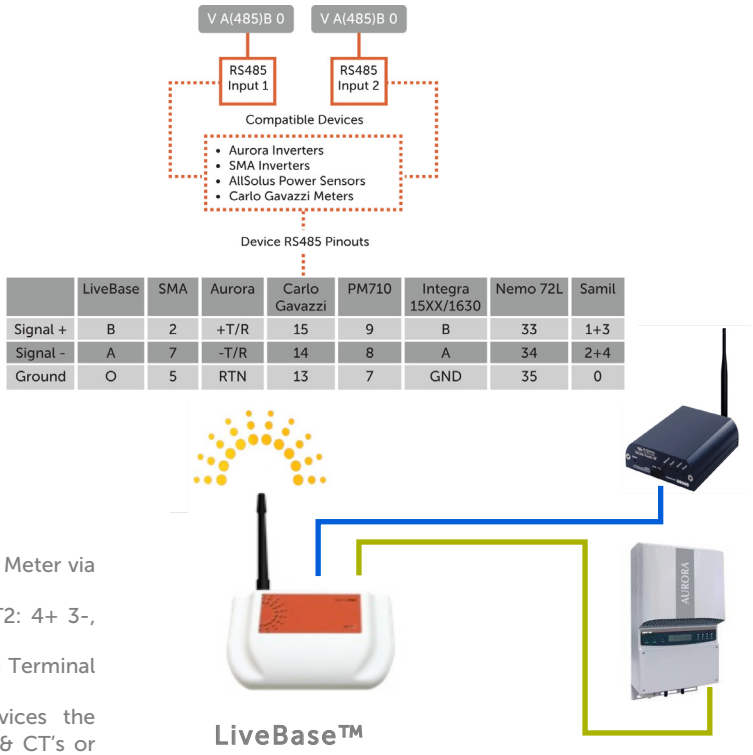
	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0

MeterLink™
Wireless Data Transmitter and Repeater, Connects Gavvazzi Power Meter via CAT5 Cable.
CT Input Into Gavazzi Power Meter via Terminal 6 Positive & 5 Negative, Ensure CT Sensing Dierction is Correct.
Gavazzi to MeterLink™ Connection Via RS485 (CAT5) Cable Gavazi Terminal 14 to Meterkink A, and 15 to B.
Please Note: Depending Upon The Proximity to Other Devices the LiveBase™ can Also Be Used to Capture Meter Data via Gavazzi & CT's or Pulse Data.

LiveBase™
Wireless Data Reciever, Inverter Input, Output Data to LAN, NextG Modem or direct to PC.

4.4.B – Three Phase CT Measured



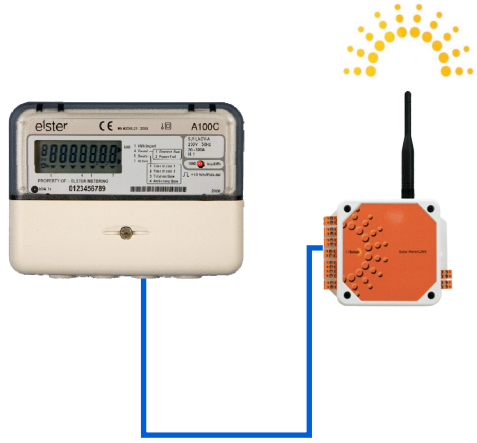


	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0

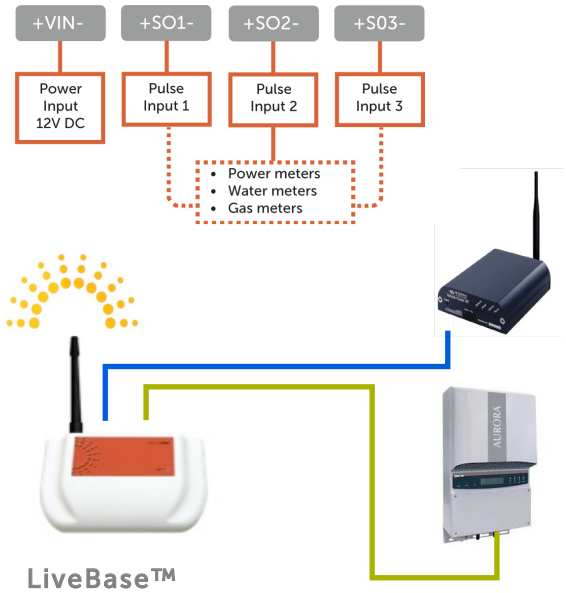
MeterLink™
Wireless Data Transmitter and Repeater, Connects Gavvazzi Power Meter via CAT5 Cable.
CT Input Into Gavazzi Power Meter via Terminals CT1: 6+ 5-, CT2: 4+ 3-, CT3: 2+ 1- Ensure CT Sensing Dierction is Correct.
Gavazzi to MeterLink™ Connection Via RS485 (CAT5) Cable Gavazi Terminal 14 to Meterkink A, and 15 to B.
Please Note: Depending Upon The Proximity to Other Devices the LiveBase™ can Also Be Used to Capture Meter Data via Gavazzi & CT's or Pulse Data.

LiveBase™
Wireless Data Reciever, Inverter Input, Output Data to LAN, NextG Modem or direct to PC.

4.4.C – Single Phase Pulse Data Measured Direct From Meter

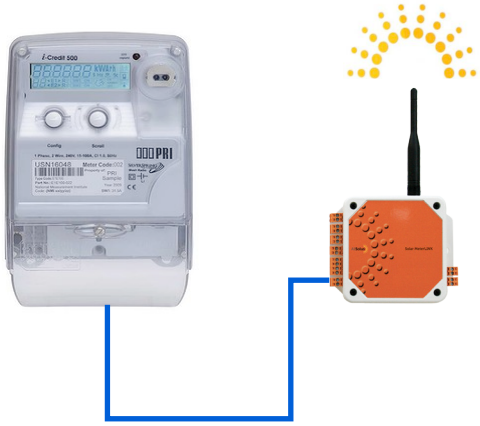


MeterLink™
Wireless Data Transmitter and Repeater, Connects to Pulse Signal Output of Utility Meter via CAT5 Cable, Input Into MeterLink™ via Pulse Singnal Input +SO1- input.
Please Note: Depending Upon The Proximity to Other Devices the LiveBase™ can Also Be Used to Capture Meter Pulse Data.

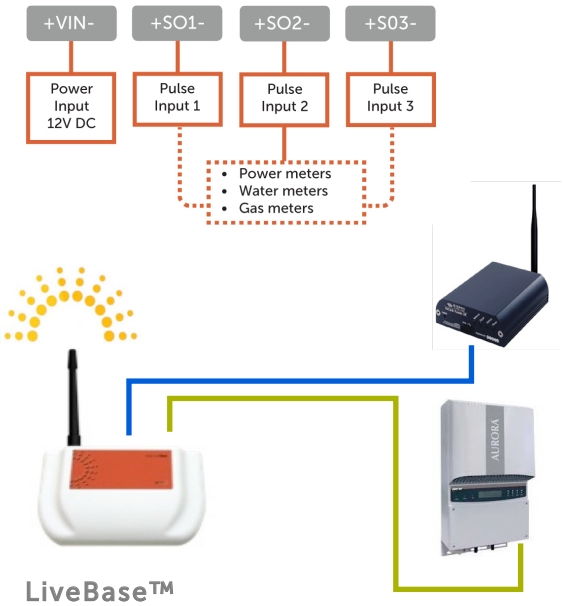


LiveBase™
Wireless Data Reciever, Inverter Input, Output Data to LAN, NextG Modem or direct to PC.

4.4.D – Three Phase Pulse Data Measured Direct From Meter



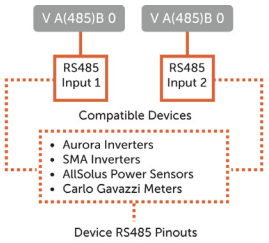
MeterLink™
Wireless Data Transmitter and Repeater, Connects to Pulse Signal Output of Utility Meter via CAT5 Cable, Input Into MeterLink™ via Pulse Singnal Input +SO1- +SO2- +SO3- inputs.
Please Note: Depending Upon The Proximity to Other Devices the LiveBase™ can Also Be Used to Capture Meter Pulse Data.



LiveBase™
Wireless Data Reciever, Inverter Input, Output Data to LAN, NextG Modem or direct to PC.

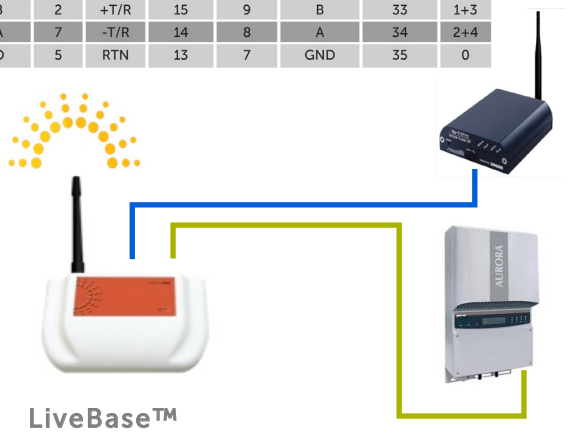
4.5.A – Single Phase CT Measured

EnviroLink™
Wireless Transmission of Data Self Powered, Irradiance & Air Temp Sensor – Mounted on Roof With PV System.



Device RS485 Pinouts

	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0



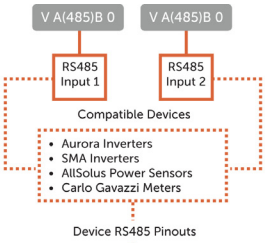
MeterLink™ & 2 Gavazzi Meters
Wireless Data Transmitter and Repeater,
Connects Gavvazzi Power Meter via CAT5 Cable.

CT Input Into Gavazzi Power Meters via Terminal 6 Positive & 5 Negative, Ensure CT Sensing Dierction is Correct.
Gavazzi 1 to MeterLink™ Connection Via RS485 Input 1 (CAT5) Cable Gavazi Terminal 14 to Meterkink A, and 15 to B.
Gavazzi 2 to MeterLink™ Connection Via RS485 Input 1 (CAT5) Cable Gavazi Terminal 14 to Meterkink A, and 15 to B.
Please Note: Depending Upon The Proximity to Other Devices the LiveBase™ can Also Be Used to Capture Meter Data via Gavazzi & CT's or Pulse Data.

LiveBase™
Wireless Data Reciever, Inverter Input, Output Data to LAN, NextG Modem or direct to PC.

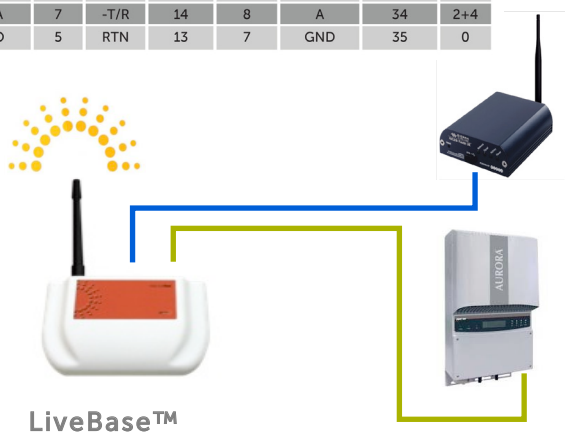
4.5.B – Three Phase CT Measured

EnviroLink™
Wireless Transmission of Data Self Powered, Irradiance & Air Temp Sensor – Mounted on Roof With PV System.



Device RS485 Pinouts

	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0

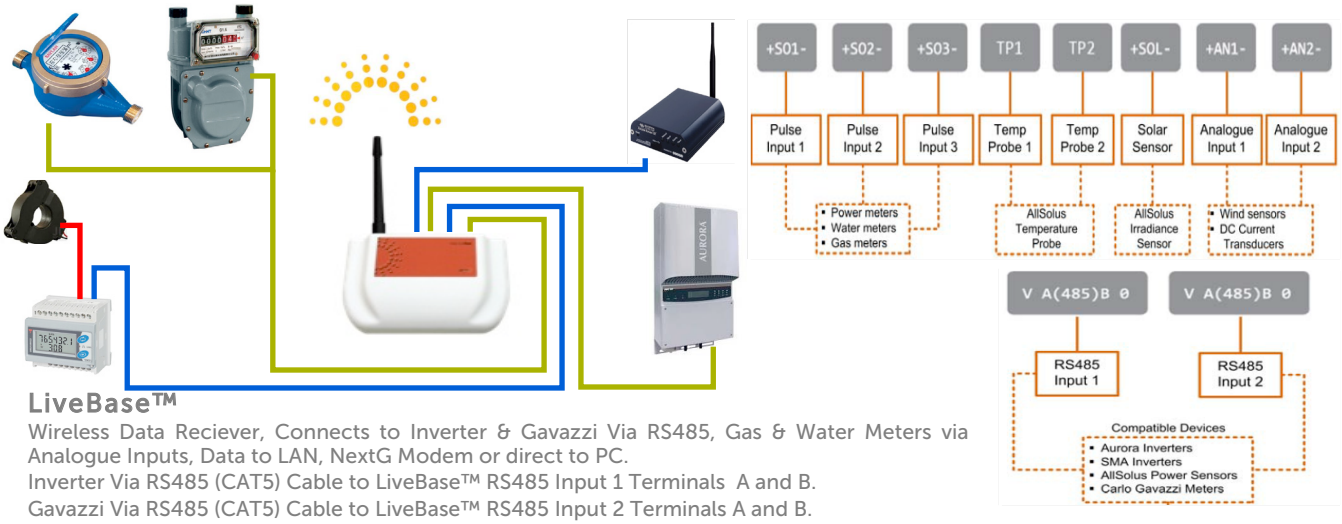


MeterLink™ & 2 Gavazzi Meters
Wireless Data Transmitter and Repeater,
Connects Gavvazzi Power Meter via CAT5 Cable.

CT Input Into Gavazzi Power Meters Single Phase via Terminal 6 Positive & 5 Negative, Three Phase via Terminals CT1: 6+ 5-, CT2: 4+ 3-, CT3: 2+ 1-, Ensure CT Sensing Direction is Correct.
Gavazzi 1 to MeterLink™ Connection Via RS485 Input 1 (CAT5) Cable Gavazi Terminal 14 to Meterkink A, and 15 to B.
Gavazzi 2 to MeterLink™ Connection Via RS485 Input 1 (CAT5) Cable Gavazi Terminal 14 to Meterkink A, and 15 to B.
Please Note: Depending Upon The Proximity to Other Devices the LiveBase™ can Also Be Used to Capture Meter Data via Gavazzi & CT's or Pulse Data.

LiveBase™
Wireless Data Reciever, Inverter Input, Output Data to LAN, NextG Modem or direct to PC.

4.6.A – With Input to LiveBase™



LiveBase™
Wireless Data Reciever, Connects to Inverter & Gavazzi Via RS485, Gas & Water Meters via Analogue Inputs, Data to LAN, NextG Modem or direct to PC.
Inverter Via RS485 (CAT5) Cable to LiveBase™ RS485 Input 1 Terminals A and B.
Gavazzi Via RS485 (CAT5) Cable to LiveBase™ RS485 Input 2 Terminals A and B.

Gas Meter Via Analogue Input Terminal 1 Positions 1+ and 2- (0-5Vdc input).
Water Meter Via Analogue Input Terminal 2 Positions 3+ and 4- (0-5Vdc input).

Please Note: Depending Upon The Proximity to Other Devices the MeterLink™ can A Used to Capture Meter Data via Gavazzi & CT's or Pulse Data or Capture the Gas & Water

EnviroLink™
Wireless Transmission of Data Self Powered, Irradiance & Air Temp Sensor – Mounted on Roof With PV System.

4.6.B – With Input to Battery Pulse Counter™

Battery Pulse Counter™
Wireless Transmission of Data Battery Powered, 4km range, IP65 Enclosure, Quad Pulse Inputs.

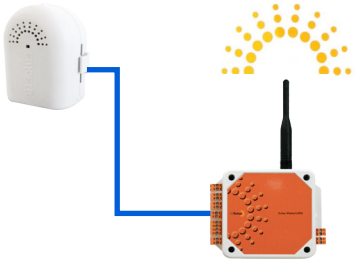
Devices hard wire direct to cable supplied as per the folowing:

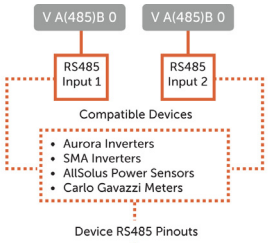
	Signal	Common
Pulse 1	White	Black
Pulse 2	Red	Orange
Pulse 3	Yellow	Green
Pulse 4	Blue	Purple

EnviroLink™
Wireless Transmission of Data Self Powered, Irradiance & Air Temp Sensor – Mounted on Roof With PV System.

LiveBase™
Wireless Data Reciever, Inverter Input, Meter Input via CT & Gavazzi Power Meter, Output Data to LAN, NextG Modem or direct to PC.

4.7.A – With Single Monitoring Device





	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0

MeterLink™ & THLink™
MeterLink™ Wireless Data Transmitter and Repeater.

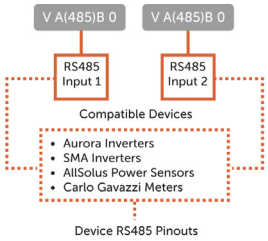
THLink™, Temperature, Humidty & Dew Point Senso.r

THLink™ Input Into MeterLink™ via RJ11 Plug Terminal on Device and RS485 Input 1 (CAT5) Terminal to Meterkink RS485 Input 1 A and B.
Please Note: Depending Upon The Proximity to Other Devices the LiveBase™ or Battery Pulse Counter™ can Also Be Used to Capture Data from the THLink™ Device.

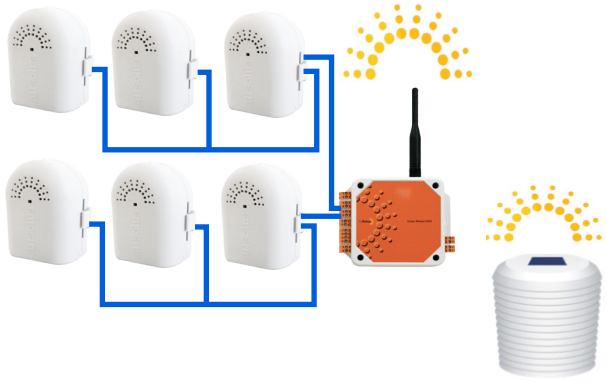
EnviroLink™
Wireless Transmission of Data Self Powered, Irradiance & Air Temp Sensor – Mounted on Roof With PV System.

LiveBase™
Wireless Data Reciever, Inverter Input, Meter Input via CT & Gavazzi Power Meter, Output Data to LAN, NextG Modem or direct to PC.

4.7.B – With Multiple Monitoring Devices



	LiveBase	SMA	Aurora	Carlo Gavazzi	PM710	Integra 15XX/1630	Nemo 72L	Samil
Signal +	B	2	+T/R	15	9	B	33	1+3
Signal -	A	7	-T/R	14	8	A	34	2+4
Ground	O	5	RTN	13	7	GND	35	0



EnviroLink™
Wireless Transmission of Data Self Powered, Irradiance & Air Temp Sensor – Mounted on Roof With PV System.

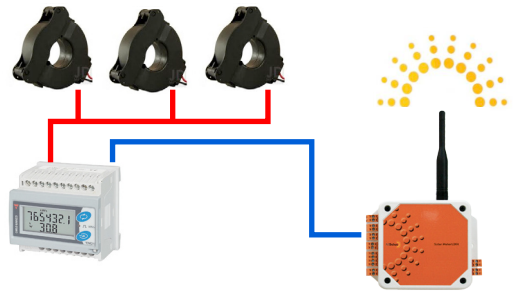
LiveBase™
Wireless Data Reciever, Inverter Input, Meter Input via CT & Gavazzi Power Meter, Output Data to LAN, NextG Modem or direct to PC.

MeterLink™ & THLink™
MeterLink™ Wireless Data Transmitter and Repeater.

THLink™, Temperature, Humidty & Dew Point Sensor.

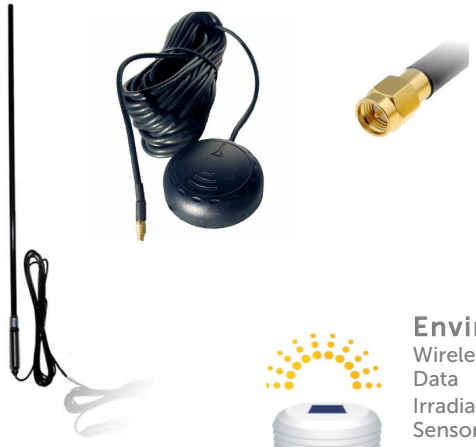
THLink™ Input Into MeterLink™ via RJ11 Plug Terminal on Device and RS485 Input 1 (CAT5) Terminal to Meterkink RS485 Input 1 A and B.
THLink™ Devices connect to each other via RJ11 Plug Terminal Daisy Chain Arrangement, up to 255 THLink™ Units can Be Installed in a Single Chain.
Please Note: Depending Upon The Proximity to Other Devices the LiveBase™ can also be used.

4.8.A – High Gain & Dome Antenna



MeterLink™

Wireless Transmission of Data. To Recieve Black Data From Site, 3-Ph Monitoring via CT's, into Gavazzi Power Meter, Connect via RS485.



High Gain & Dome Antenna

Wireless Transmission Range and Penertration Increase can Be Achieved with the Upgrade of either Antenna to Either the LiveBase™ or MeterLink™ Unit. Signal Strength and Range Calculator is Available to Aid with Installation and System Design.

EnviroLink™

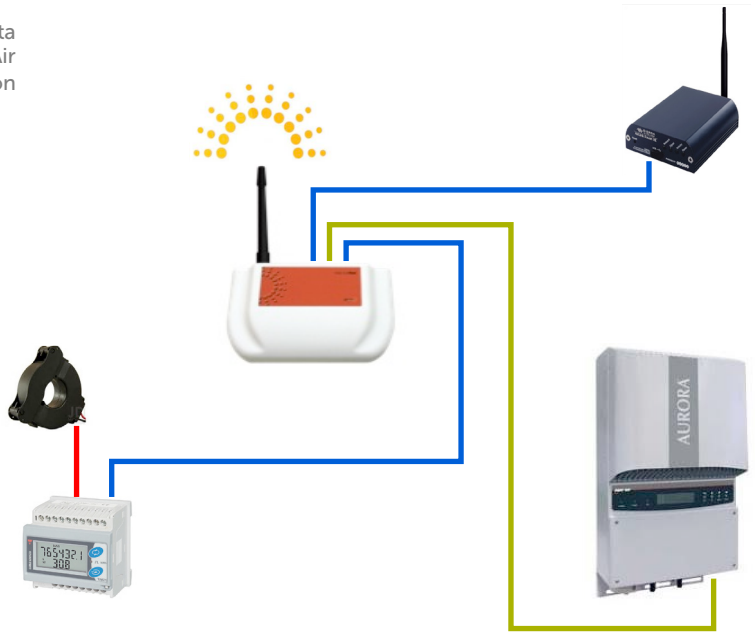
Wireless Transmission of Data Self Powered, Irradiance & Air Temp Sensor – Mounted on Roof With PV System.

LiveBase™

Wireless Data Reciever, Inverter Input, Meter Input via CT & Gavazzi Power Meter, Output Data to LAN, NextG Modem or direct to PC.

4.9.A – Domestic PV System Monitoring

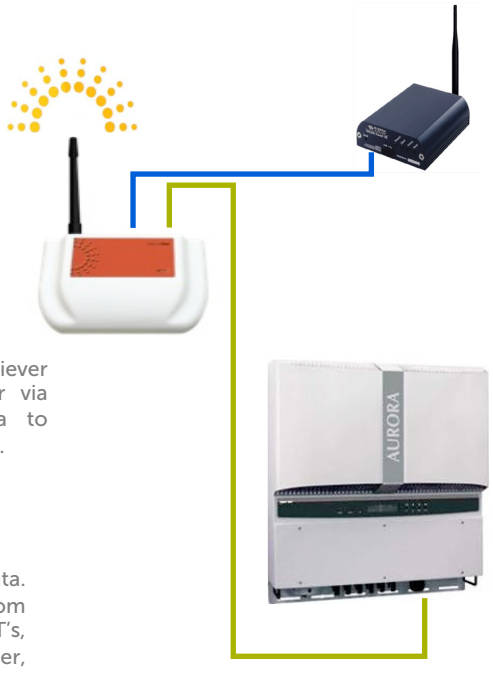
EnviroLink™
Wireless Transmission of Data Self Powered, Irradiance & Air Temp Sensor – Mounted on Roof With PV System.



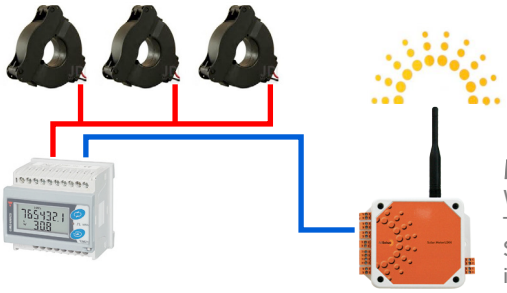
LiveBase™
Wireless Data Reciever, Connects to Inverter Via RS485 If Unit Has Protocol in Line With Current Firmware, if not Then CT's Are Required. Black Data From Meter Board Via CT & Gavazzi Power Meter Connected Via RS485 Output Data to LAN, NextG Modem or direct to PC.

4.9.B – NSSP System Monitoring

EnviroLink™
Wireless Transmission of Data Self Powered, Irradiance & Air Temp Sensor – Mounted on Roof With PV System.

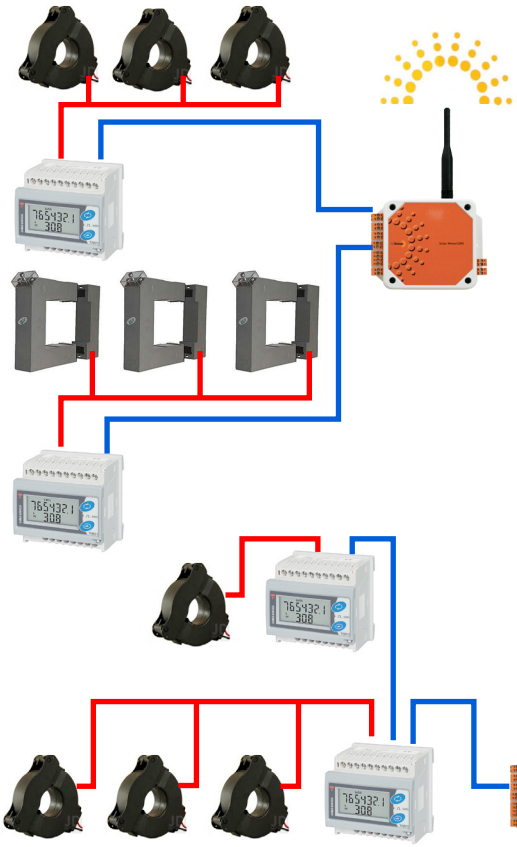


LiveBase™
Wireless Data Reciever Connects to Inverter via RS485, Output Data to LAN or NextG Modem.



MeterLink™
Wireless Transmission of Data. To Recieve Black Data From Site, 3-Ph Monitoring via CT's, into Gavazzi Power Meter, Connect via RS485.

4.9.C – Commercial Energy & System Monitoring



MeterLink™ 1 & 2

Wireless Transmission of Data. To Recieve Black Data & Dedicated Circuit from Site, 3-Ph Monitoring via CT's, into Gavazzi Power Meter, Connect via RS485.

Please Note: Up to 247 Gavazzi Power Meters can be connected via daisy chain series.

EnviroLink™

Wireless Transmission of Data Self Powered, Irradiance & Air Temp Sensor – Mounted on Roof With PV System.

MeterLink™ 3 & THLink™

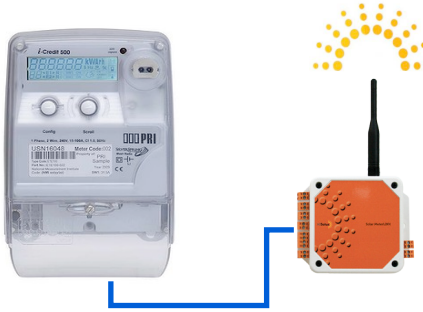
MeterLink™ Wireless Data Transmitter and Repeater.

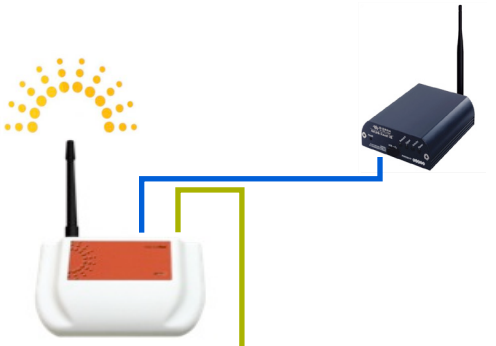
THLink™, Temperature, Humidty & Dew Point Sensor.

THLink™ Input Into MeterLink™ via RJ11 Plug Terminal on Device and RS485 Input 1 (CAT5) Terminal to Meterkink RS485 Input 1 A and B.
THLink™ Devices connect to each other via RJ11 Plug Terminal Daisy Chain Arrangement, up to 255 THLink™ Units can Be Installed in a Single Chain.

MeterLink™ 4

Wireless Transmission of Data. To Recieve 3-phase Meter Data to Connect via RS485.



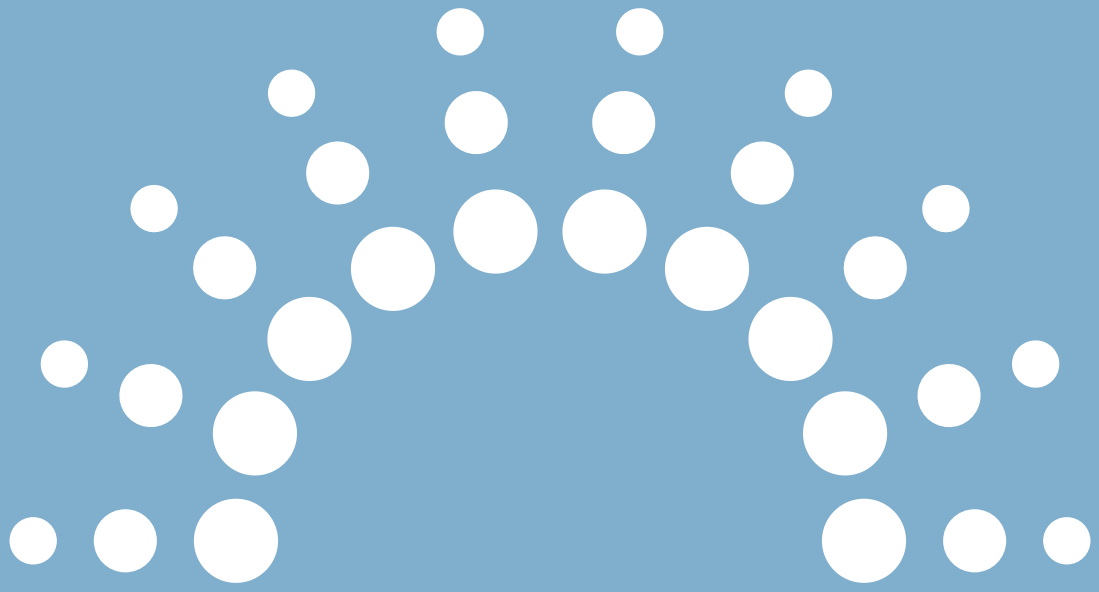


LiveBase™

Wireless Data Reciever Connects to Inverter via RS485, Output Data to LAN or NextG Modem.

Battery Pulse Counter™

Wireless Transmission of Data Battery Powered, 4km range, IP65 Enclosure, Quad Pulse Inputs Devices hard wire direct to cable supplied as per the folowing:



SOFTWARE

5.1.A – AllSolus Configuration Tool Overview

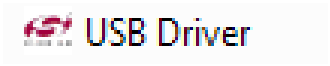
The AllSolus Configuration Tool has been developed to allow for the setting up and configuration of the AllSolus system and devices. The one software page will support all devices.

The AllSolus Configuration Utility allows communication between AllSolus devices. These devices are pre-configured with the most common settings to minimise installation requirements. More detailed information is provided below for advanced users.

5.1.B – Installing AllSolus Configuration Tool

With your AllSolus LiveBase™ you will receive this installation manual but also a USB data storage device, insert this into your computer or laptop.

You can either run the software from here or alternatively copy and paste the entire "AllSolus Configuration Tool" folder as well as the "USB Driver" folder into a suitable location on your machine.

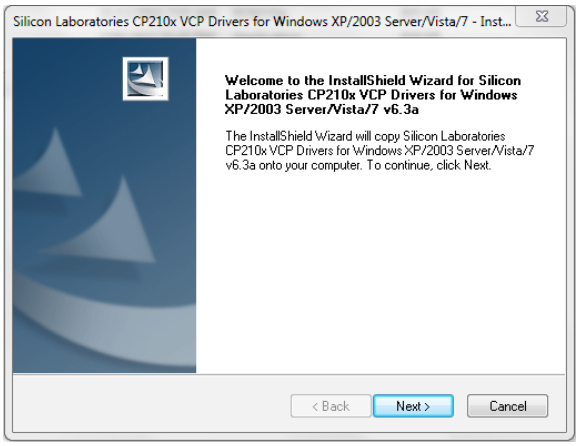


Firstly open the "USB Driver" folder and double click the USB Driver application file.

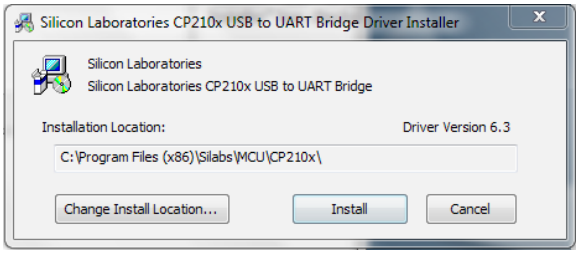
A "Silicon Labs" window will briefly appear as the software starts to run; this will then change to a, "InstallShield Wizard" screen.

At this point simply press "Next" and then "Accept the terms of the license agreement" and "Next" and press "Install".

Allow the software to install, leave the "Launch the CP210x VCP Driver Installer" box checked and press "Finish".



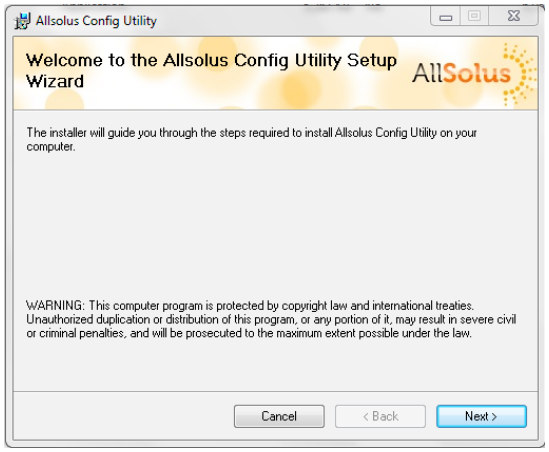
At this point expect to see an additional box refiring to 'Silicon Laboratories", simply press "Install" and this will finalise the USB Driver installation. This process is now complete.



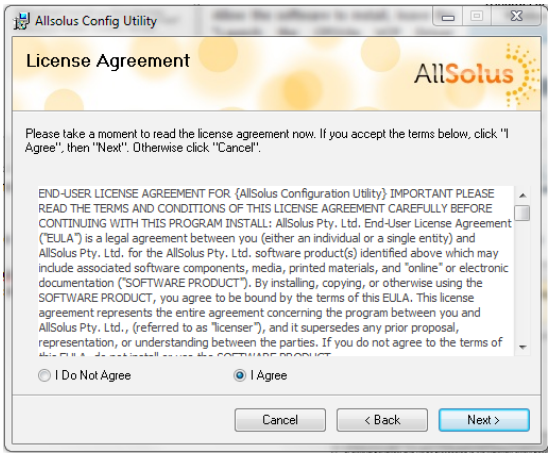
5.1.C – AllSolus Configuration Tool Installation & Setup

Next return to the "AllSolus Configuration Tool" folder and double click the "Setup" command;

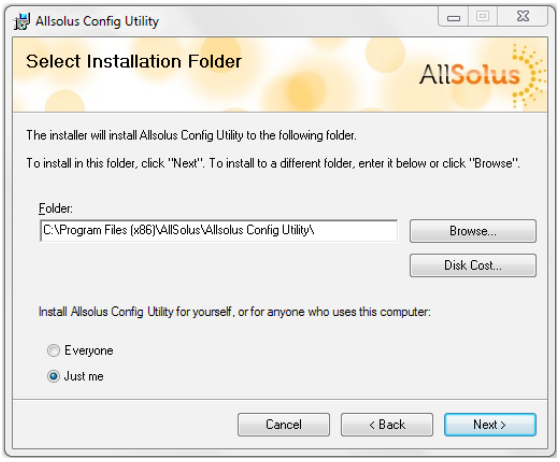
The "AllSolus Config Utility Setup Wizard" will now open, click "Next" to continue;



The Following window refers to the "License Agreement", please read the agreement and check "I Agree" and "Next" to continue, if you have any questions regarding the license agreement please feel free to contact AllSolus to discuss.

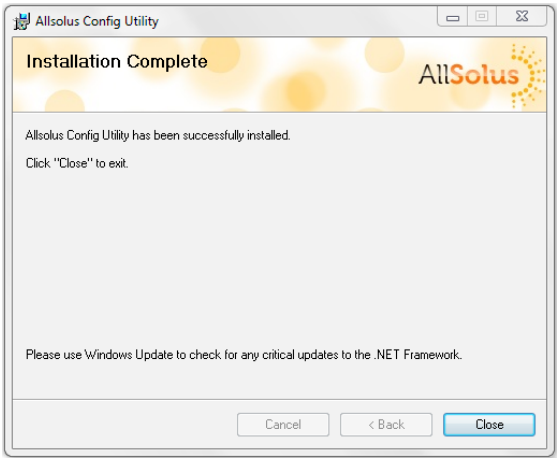


The Following page "Select Installation Folder" then refers to the installation setup parameters, the software folder location will specify a default destination, please modify to an alternative location if required.
This page also allows for the determination of the user, the choice is either just you or everyone using the specific computer. Check whichever choice is required, either "Everyone" or "Just Me", the default is "Just Me", click "Next" to continue.



The “AllSolus Config Utility Setup Wizard” will now install the software, when this process has concluded the “Installation Complete” screen will be shown.

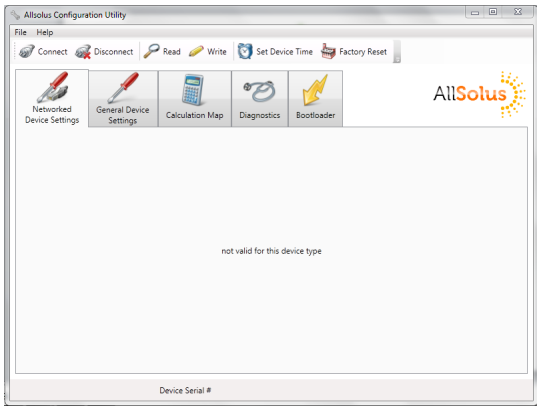
Press “Close” to continue and close the wizard.



5.2.A – AllSolus Configuration Utility – Opening & Verification

To opening the "AllSolus Configuration Utility" go to "Start", and the "All Programs", find the new AllSolus folder and click on the "AllSolus Configuration Utility" Icon.

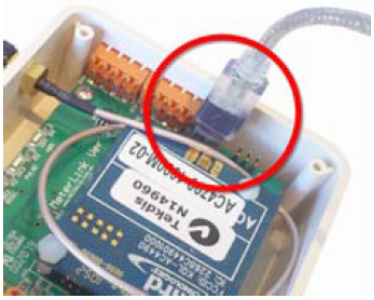
The main screen will then open and the software has installed correctly and is working. If at this stage the adjacent screen is not displayed redo the above installation steps. If issues persist then please contact AllSolus.



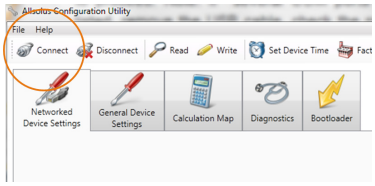
5.2.B – AllSolus Configuration Utility – Connecting a Device

Identify which device you require to connect for setup; this will be a LiveBase™, MeterLink™, EnviroLink™ or Battery Pulse Counter™. Attach the supplied USB cable to the device and then connect it to your PC.

Please note: As explained in previous section of this manual, the MeterLink™ and Battery Pulse Counter™ will require their front cover panels to be removed to access the USB terminal.



Once the AllSolus device and PC has been connected, select and click the "Connect" command on the top tab line of the "AllSolus Configuration Utility" screen.

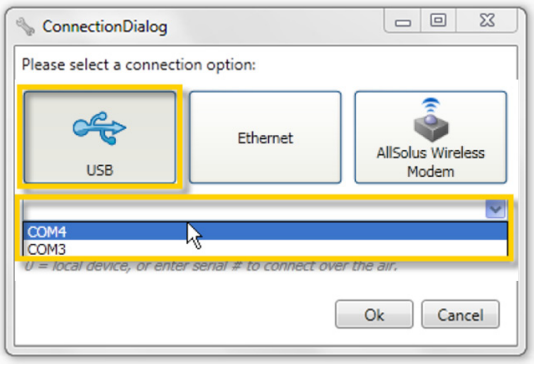


At this point the "Connection Dialog" screen will appear, select the USB button and click.

Then click the drop-down arrow below to select the COM port being used by the PC for USB configuration. At this stage all COM ports currently being used will be highlighted, if no ports are shown, close down "AllSolus Configuration Utility" leaving the device connected and relaunch.

Once a COM port has been identified and selected, click "Ok" to proceed.

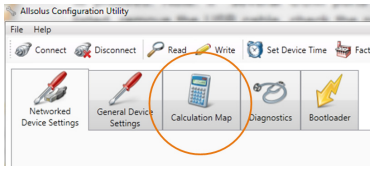
Please Note: if several COM ports are listed, remove the USB cable, check the ports in the drop-down list, then plug the device USB cable back into the PC again, check the list again and select the new port populated in the list as this will be the relevant COM port to the AllSolus device connected.



5.2.C – AllSolus Configuration Utility – Calculation Engine

After connecting successfully to the AllSolus device click the centre "Calculation Map" tab.

This tab is used to map, or configure the "AllSolus Calculation Engines" to various RS485, analogue and digital inputs that may be attached to one of the AllSolus devices connected via the specified COM port.



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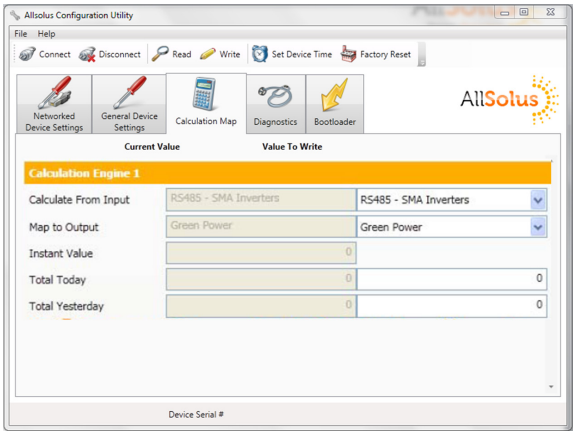


When starting the process of populating the various "Calculation Engines" with the setting of the sensors and various inputs assigned to specific AllSolus devices always start at "Calculation Engine 1".

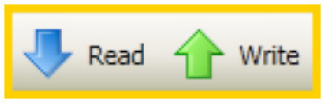
So start the process click on the drop-down arrow for "Calculate from Input", and then select an input source from the list provided.

In this example a SMA inverter has been connected via the RS485 protocol, so RS485 - SMA Inverter is selected.

Then select how this will be represented in AllSolus management software.

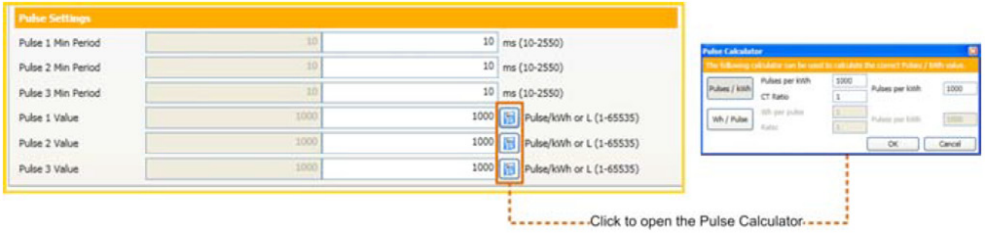
In this example, Green Power has been selected. Proceed from here to program a "Calculation Engine" for each input or sensor attached to the AllSolus device current attached the laptop or Pc via USB.

Important: Once you have completed populating the respective "Calculation Engine" Click "Write" so that any changes can be stored. You can then click "Read" to confirm that the settings and device parameters have been programmed correctly.



5.2.D – AllSolus Configuration Utility – Pulse Inputs

If pulse inputs are connected to the input of the AllSolus device, (i.e. via SO1, SO2, SO3 inputs), then the pulse periods and values must be configured within the "AllSolus Calculation Map" tab to match each specific device's pulse output. To accurately obtain this information initially check with AllSolus to see whether this information is available or alternatively contact the device manufacturer of each input for more information.

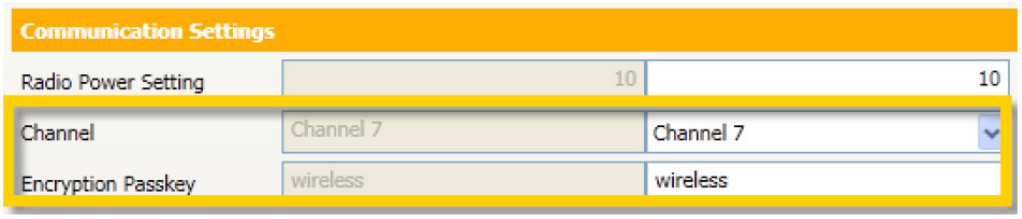


5.2.E – AllSolus Configuration Utility – Channel & Encryption Passkey

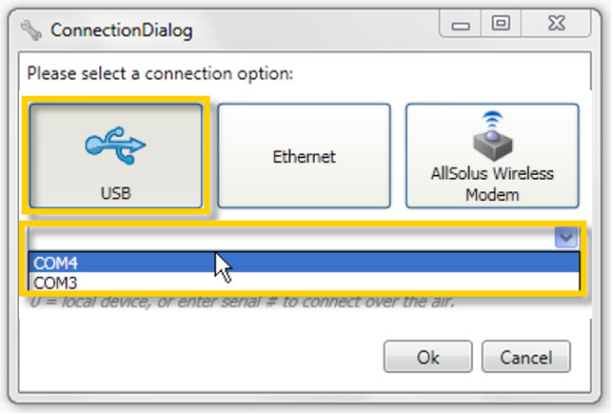
The Channel and Encryption Passkey is pre-set by default. All devices on the same network must have the same setting for both.

This only needs to be changed if multiple systems are operating within a close range.

To adjust this setting click the "General Device Setting" tab and enter a different Channel and Encryption Passkey. AllSolus recommends using the site name when programming multiple passkeys.



5.3.A – Verifying and Upgrading of Current Firmware of Devices

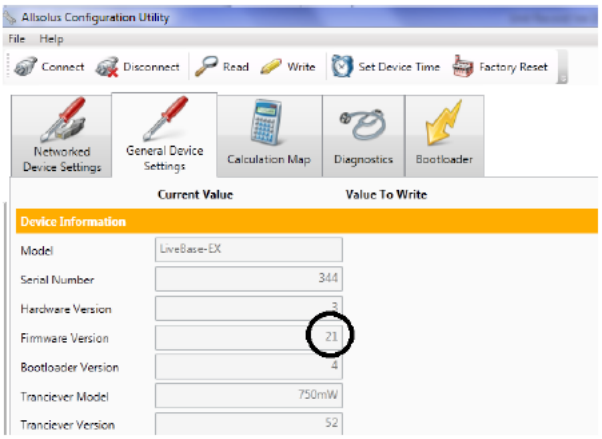


In order to verify the current Firmware installed on any given device, and to upgrade the Firmware if required of any of the AllSolus devices you will need to initially run the "AllSolus Configuration Utility".

To open the "AllSolus Configuration Utility" go to the start menu, click on "All Programs, find the "AllSolus" folder, click on it and then select "AllSolus Config Utility".

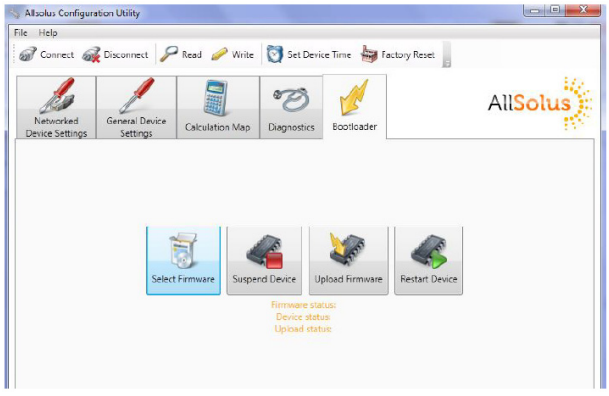
Connect the AllSolus device that required Firmware confirmation or upgrade using the USB cable supplied. Click "Connect" and select the COM port number used for connection. Click the drop-down arrow below to select the COM port, At this stage all COM ports currently being used will be highlighted, if no ports are shown, close down "AllSolus Configuration Utility" leaving the device connected and relaunch. Once a COM port has been identified and selected, click "Ok" to proceed.

Please Note: if several COM ports are listed, remove the USB cable, check the ports in the drop-down list, then plug the device USB cable back into the PC again, check the list again and select the new port populated in the list as this will be the relevant COM port to the AllSolus device connected.



To check the current Firmware version click on the "General Device Settings" tab, you will then be able to note the current "Firmware Version" number.

The USB stick supplied with the LiveBase™ and installation manual will have the current Firmware version loaded. Mostly all devices supplied will have this same version but its good practice to check this anyway. Periodically Firmware versions are revised and upgraded, please contact AllSolus to confirm the current Firmware version, and the relevant version file can be emailed if need be.



To upgrade the Firmware you will need to click the "Bootloader" tab, and then proceed to click on "Select Firmware".

You will then need to open a new firmware file, click "Suspend Device" and then click "Upload Firmware", then just wait for the upload to complete; this may take up to 30 seconds.

You will then need to click "Restart Device". To confirm that the new Firmware has been uploaded correctly simply check the current Firmware version again, click on the "General Device Settings" tab, and then you will be able to note the new "Firmware Version" number.

5.4.A – LAN & IP Settings

The Ethernet interface setting with the AllSolus LiveBase™ device allows form connection to Local Area Network (LAN) or modem.

Additionally the AllSolus LiveBase™ supports the AllSolus Local Network display for local data display or kiosk display.

If Internet connectivity is possible, the LiveBase™ uploads data direct to the AllSolus Online Portal www.allsolus.com for a live display.

The Network Interface supports static and dynamically assigned IP addresses for network compatibility. Network addresses can be configured using "AllSolus configuration tool".

By default the AllSolus LiveBase™ is configured with the following network settings:

- IP Address: 192.168.0.100
- Subnet Mask: 255.255.255.0
- DNS Server IP: 8.8.8.8
- Gateway IP: 192.168.0.1

Access to Embedded Servers Using Local Area Network (LAN):

To access the web server: http://<Device IP>/

Access to Embedded Servers Using Raven XE Modem (AllSolus NextG Modem):

To access the web server: http://<Modem Serial>.eairlink.com/

Access to the AllSolus Live Display

To access the web display: http://www.allsolus.com. (click "Monitoring and Functional Display Setup")

National Solar Schools Project (NSSP) LAN Setup

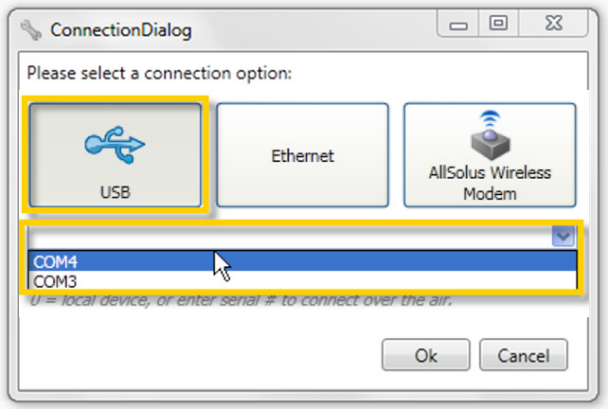
To enable swift installation and configuration of the AllSolus system onto an existing LAN network it is advisable to have the locations IT department setup the network prior to installation.

On the USB device included in with this manual you will find a form "AllSolus - NSSP Pre-Network Pre-Setup" which ideally should be submitted to the school prior to installation.

5.4.B – AllSolus LiveBase™ IP Address Reset

To reset or reconfigure the IP address of the AllSolus LiveBase™, go to "Start", select the "AllSolus" folder and open the "AllSolus Configuration Utility".

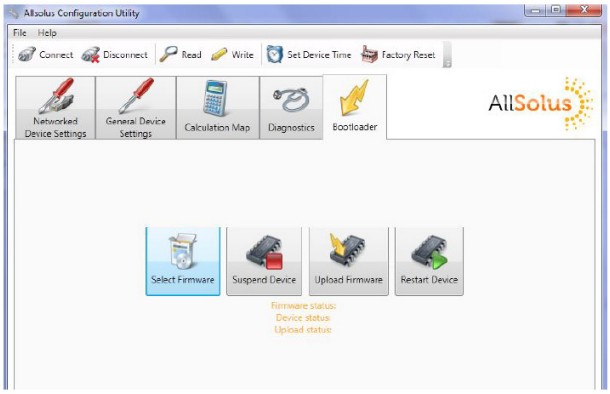
Connect the AllSolus LiveBase™ to a PC or Laptop using a USB cable, run the "AllSolus Configuration Utility" software and click "Connect", then select "USB" and the relevant COM port number used for connection, then "Ok" to continue.



You will then need to modify the network settings, to do this click the tab "Network Device Settings" and click "Read", you can then modify the Network Settings as shown, click "Write" and then click "Read".

You can confirm the settings have been saved, change the AllSolus LiveBase™ to request an IP address from Router at this point if one is connected. The Ethernet interface setting with the AllSolus LiveBase™ device allows connections from either Local Area Network (LAN) or modem.

To reset the device or for the activation of new settings you can click on the tab "Bootloader" from the main screen and the click "Restart Device" to verify.



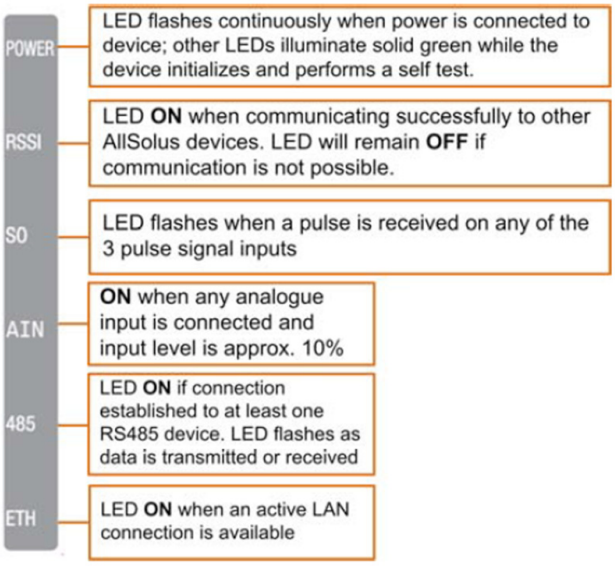
6.1.A – AllSolus LiveBase™ Indicators

The successful operation of the AllSolus LiveBase™ can be confirmed using one of three ways.

Firstly the AllSolus LiveBase™ has a series of green LED indicators, they will illuminate as per the list detailed to show that the unit and associated devices are operating correctly. In addition the LED adjacent to the ethernet connection, will illuminate to confirm that the internet connection has been made and the AllSolus device is communicating to the AllSolus web server.

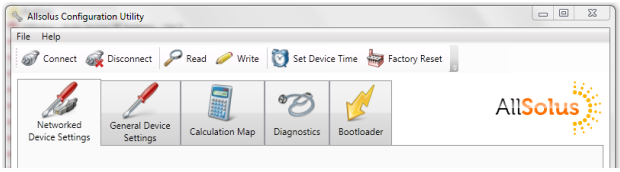
The second method to confirm the correct device operation would be to connect a PC or laptop via the "AllSolus Configuration Utility", simply click on "General Device Settings" to confirm its operation.

The third method is to check via the online web portal or direct visual display, (assuming that either GUI has been set up and configured). If there is no data being displayed then the AllSolus LiveBase™ is not correctly operating or has no



6.1.B – AllSolus EnviroLink™ Indicators

The AllSolus EnviroLink™ has no external lights or indicators on it. There are two methods to confirm that the device is operating correctly; one is to connect a PC or laptop via the "AllSolus Configuration Utility", simply click on "General Device Settings" to confirm its operation. The second method is to check via the online web portal or direct visual display, (assuming that either GUI has been set up and configured).



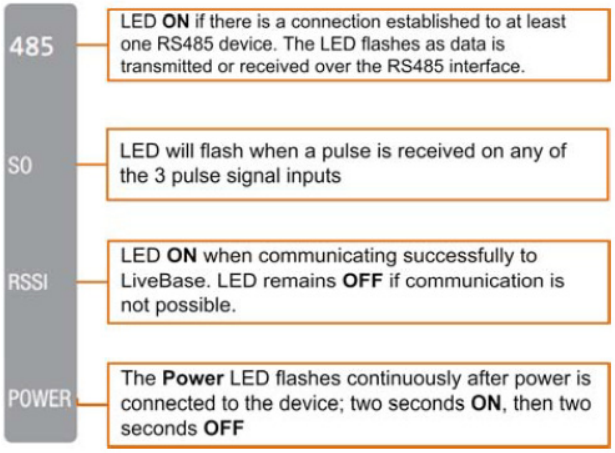
6.1.C – AllSolus MeterLink™ Indicators

The successful operation of the AllSolus MeterLink™ can be confirmed using one of three options.

Firstly the AllSolus MeterLink™ has a series of green LED indicators, they will illuminate as per the list detailed to show that the unit and associated devices are operating correctly.

The second method to confirm correct device operation would be to connect a PC or laptop via the "AllSolus Configuration Utility", simply click on "General Device Settings" to confirm its operation.

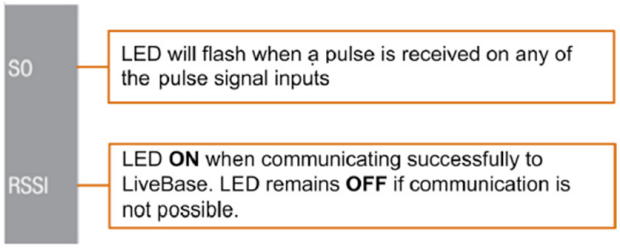
The third method is to check via the online web portal or direct visual display. (Assuming that either GUI has been set up and configured).



6.1.D – AllSolus Battery Pulse Counter™ Indicators

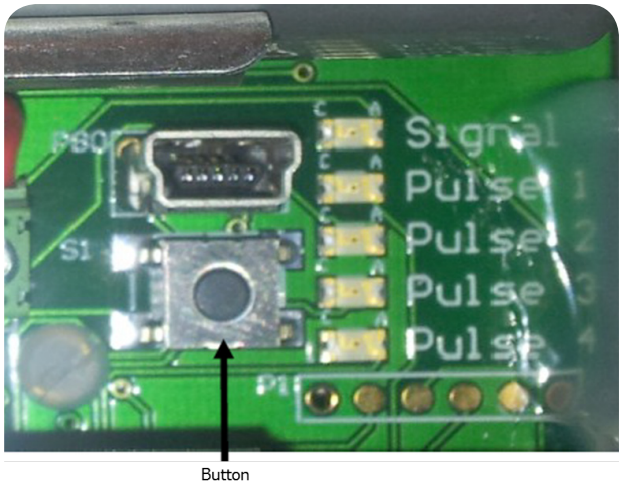
The Successful operation of the AllSolus Battery Pulse Counter™ can be confirmed using one of three options.

Firstly the AllSolus Battery Pulse Counter™ has a series of LED status indicators, they will illuminate as per the list detailed to show that the unit and associated devices are operating correctly. To check the LED status indicators, unfasten the 4 screws and remove the cover of the Battery Pulse Counter™. To check the LED's functional status hold down the small button. When a pulse is received on any pulse input the LED will flash. The RSSI LED will remain on when a connection to the LiveBase™ has been established within the last minute.



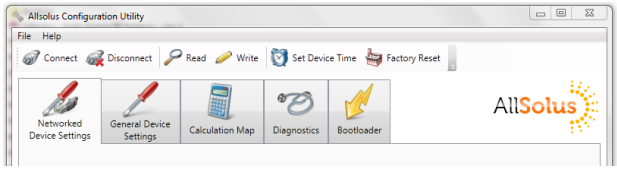
The second method to confirm the correct device operation would be to connect a PC or laptop via the "AllSolus Configuration Utility", simply click on "General Device Settings" to confirm its operation.

The third method is to check via the online web portal or direct visual display. (Assuming that either GUI has been set up and configured).



6.1.E – AllSolus THLink™ Indicators

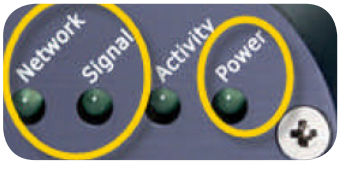
The AllSolus THLink™ devices have LED status indicators that confirm successful connection. It is not possible to verify successful connection via the "AllSolus Configuration Utility".



6.1.F – AllSolus Next G Modem Indicators

The AllSolus Next G Modem has LED indicators on the external device casing. Initially you will be able to verify that the device is powered and that it has been successfully contacted to the AllSolus LiveBase™ as the "Power" and "Network" LEDs will be ON.

To verify that the wireless connection to the network has been successfully established you can check that the "Signal" LED is ON or Flashing. No "Signal" LED will indicate that a low Next G signal strength has been created.

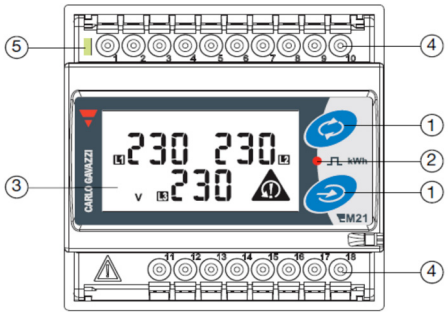


6.1.G – AllSolus Gavazzi Power Meter Indicators

The AllSolus Gavazzi Power Meter has indicators on the external LCD screen. From this panel you will be able to verify that the device has been set up and is working correctly.

The controls are as follows:

1.Keypad	- To program the configuration parameters and scroll the variables on the display
2.Pulse Output LED	- Red LED blinking proportional to the energy being measured
3.Display	- LCD-type with alphanumeric indicators to display all the measured variables
4.Connections	- Screw terminal blocks for instrument wiring
5.Green LED	- Lit when power supply is available



6.1.H – AllSolus Gavazzi Power Meter Programming

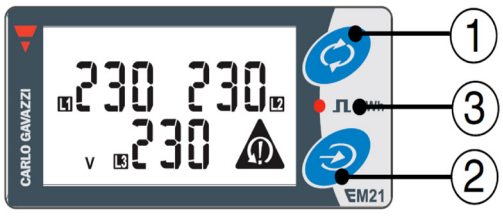
To ensure that the AllSolus Gavazzi Power Meter is operating and monitoring as required it is essential that it has been setup correctly. The AllSolus Gavazzi Power Meter is a versatile unit and is capable of monitoring single, dual or three-phase systems, either balanced, unbalanced or with factoring in reactive power. You will need to ascertain what is to be measured, whether single, dual or three phase and the current rating of the circuit so that the correct CT's are purchased from AllSolus. Once the CT's have been correctly installed and connected to the Gavazzi Power Meter, and the unit has been powered up please follow the following steps to correctly set it up.

The controls for configuring the AllSolus Gavazzi Power Meter are as follows:

1. This being the scroll button to pass between measurement pages
2. This being the scroll button for the information pages
3. This being the indicator to illustrate that the device is measuring

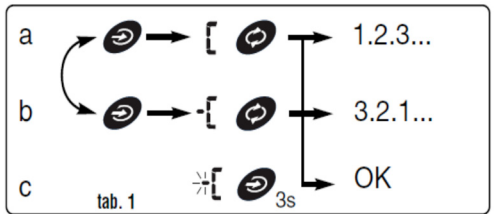
To instigate programming and setting up of the AllSolus Gavazzi Power Meter press and hold button 2 for at least 3 seconds

Once in the programming mode you can press button 1 to scroll through the various menus or use the same button to increase or decrease any of the displayed values.



With button 2 you can enter the sub-menus and change the value, or change the mode from positive to negative.

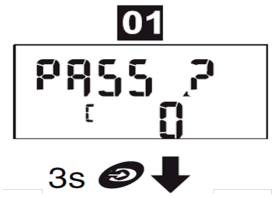
By pressing button 2 a letter [will appear in the bottom row indicating the possibility to change the value by means of pressing button 1. Pressing button 2 again will add a minus sign prior –[indicating that the value will now decrease when pressing button 1.



Holding button 2 will confirm that the value is to be set and pressing button 2 again will take you to the next information page.

Screen 1
PASS?

This is the initial programming screen and it is where a password needs to be entered to all the rest of the programming to commence. The default password number is O.

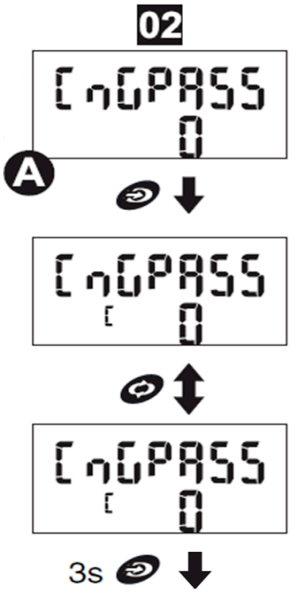


Screen 2
CnG PASS

The second screen allows the password to be reset; if this is done it is imperative that his new password be recorded for future access to the device.

If this element is to be adjusted press button 2 until [appears, if you wish to increase the value press button 1, if you wish the value to decrease then press button 2 again so that –[appear.

Once the desired value has been reached press and hold button 2 again until the [symbol disappears, now press button 2 again to proceed to the next screen



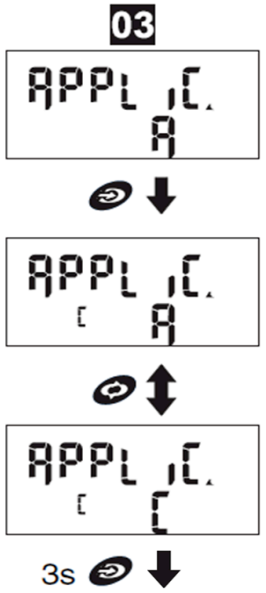
Screen 3
APPLiC

The third screen allows for selecting the pertinent application:

A: active positive energy monitoring
B: active and reactive positive energy monitoring
C: Showing all of the electrical values available.

For the most part simply select option C here, to make any adjustment press button 2 until [appears, if you wish to increase the value press button 1, if you wish the value to decrease then press button 2 again so that –[appear.

Once the desired value has been reached press and hold button 2 again until the [symbol disappears, now press button 2 again to proceed to the next screen.



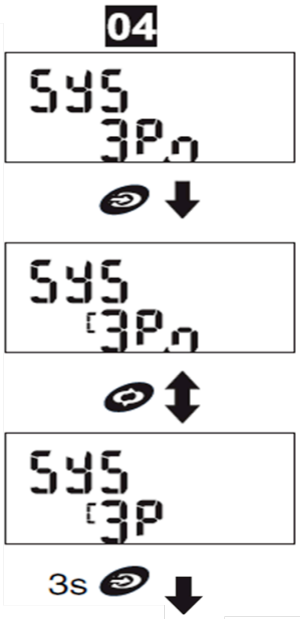
Screen 4
SYS

This fourth screen allows for the selection of the electrical system:

3Pn: 3-phase unbalanced with neutral
3P: 3-phase unbalanced without neutral
3P1: 3-phase balanced with or without neutral
2P: 2-phase
1P: Single phase

If this element is to be adjusted press button 2 until [appears, if you wish to increase the value press button 1, if you wish the value to decrease then press button 2 again so that –[appear.

Once the desired value has been reached press and hold button 2 again until the [symbol disappears, now press button 2 again to proceed to the next screen.

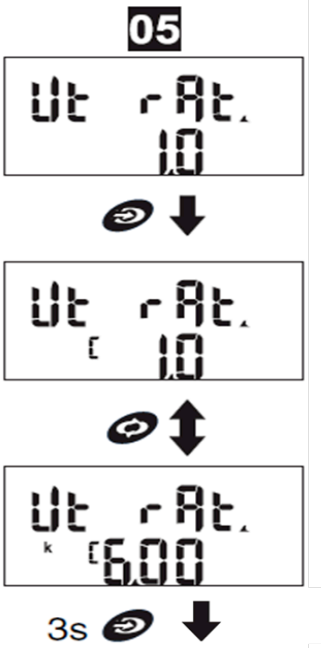


Screen 5
Ut rAtio

The fifth screen allows you to alter the VT ratio, 1.0 to 6.0k, for example if the VT primary is 5KV and the secondary is 100V, the VT ratio needs to be set at 50 (that is 5000/100). If the line voltages are connected directly to the Gavazzi then a VT Ratio of 1.0 should be set.

If this element is to be adjusted press button 2 until [appears, if you wish to increase the value press button 1, if you wish the value to decrease then press button 2 again so that –[appear.

Once the desired value has been reached press and hold button 2 again until the [symbol disappears, now press button 2 again to proceed to the next screen.

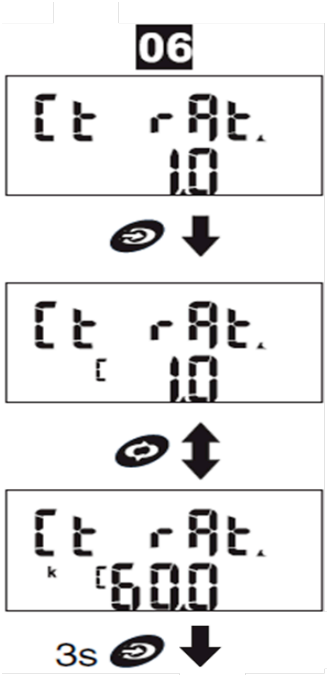


Screen 6
Ct rAtio

The sixth screen allows you to adjust the CT ratio from 1.0 to 60.0k, for example if the connected CT primary is 3000A and the secondary is 5A then the CT ratio is 600 (that is 3000/5).

If this element is to be adjusted press button 2 until [appears, if you wish to increase the value press button 1, if you wish the value to decrease then press button 2 again so that –[appear.

Once the desired value has been reached press and hold button 2 again until the [symbol disappears, now press button 2 again to proceed to the next screen.

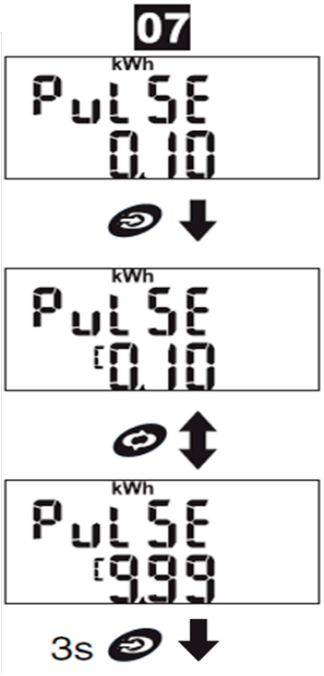


Screen 7
PuLSE

The seventh screen allows the pulse weight to be adjusted, the kWh per pulse is programmable from 0,01 to 9,99.

If this element is to be adjusted press button 2 until [appears, if you wish to increase the value press button 1, if you wish the value to decrease then press button 2 again so that –[appear.

Once the desired value has been reached press and hold button 2 again until the [symbol disappears, now press button 2 again to proceed to the next screen.

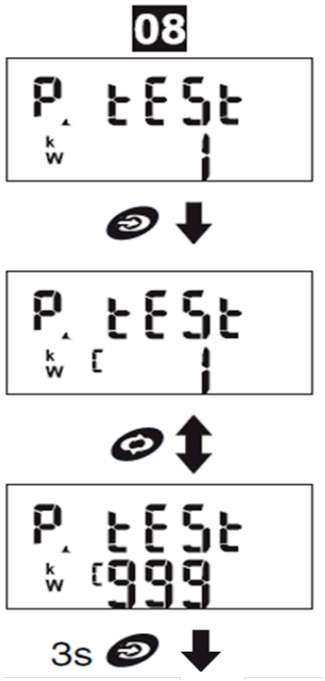


Screen 8
P.tESt

The eight screen sets the simulated power value (kW) to which the proportional pulse sequence according to "PULSE" corresponds. This function is active until you leave the menu.

If this element is to be adjusted press button 2 until [appears, if you wish to increase the value press button 1, if you wish the value to decrease then press button 2 again so that –[appear.

Once the desired value has been reached press and hold button 2 again until the [symbol disappears, now press button 2 again to proceed to the next screen.

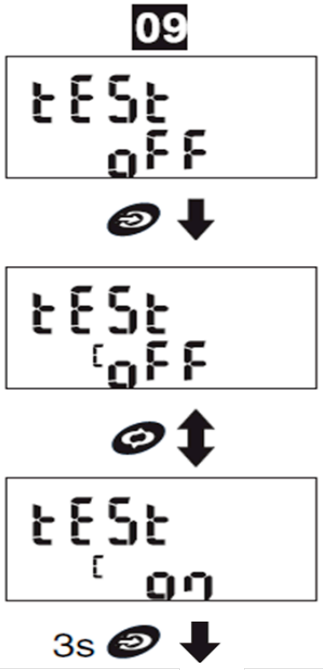


Screen 9
tESt

This ninth screen is activated on the pulse output when ON (this only applies to the APPLic C setting).

If this element is to be adjusted press button 2 until [appears, if you wish to increase the value press button 1, if you wish the value to decrease then press button 2 again so that –[appear.

Once the desired value has been reached press and hold button 2 again until the [symbol disappears, now press button 2 again to proceed to the next screen.

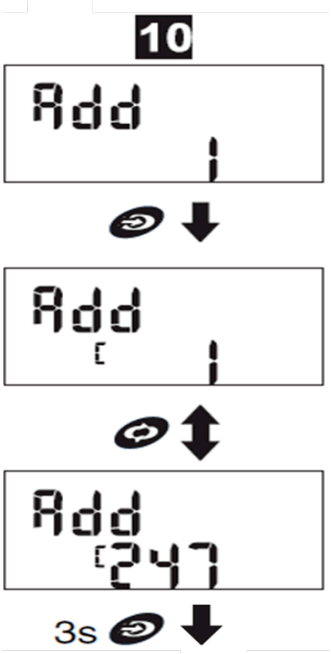


Screen 10
Add

If you wish to add a serial address it is then done from screen ten. This may be required if multiple Gavazzi Power Meters are being used. The value range is from 1 to 247.

If this element is to be adjusted press button 2 until [appears, if you wish to increase the value press button 1, if you wish the value to decrease then press button 2 again so that –[appear.

Once the desired value has been reached press and hold button 2 again until the [symbol disappears, now press button 2 again to proceed to the next screen

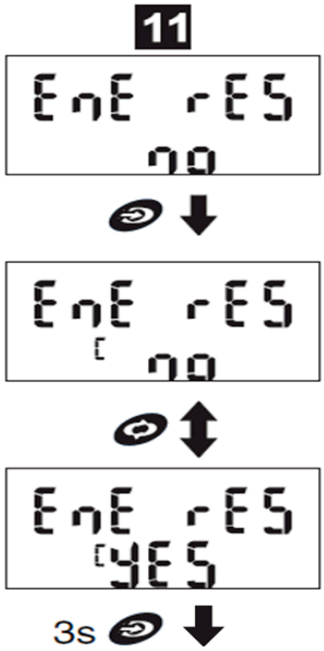


Screen 11
EnE rES

This eleventh screen allows you to reset all of the meters , this really only corresponds to the APPLiC C option though.

If this element is to be adjusted press button 2 until [appears, if you wish to increase the value press button 1, if you wish the value to decrease then press button 2 again so that –[appear.

Once the desired value has been reached press and hold button 2 again until the [symbol disappears, now press button 2 again to proceed to the next screen.

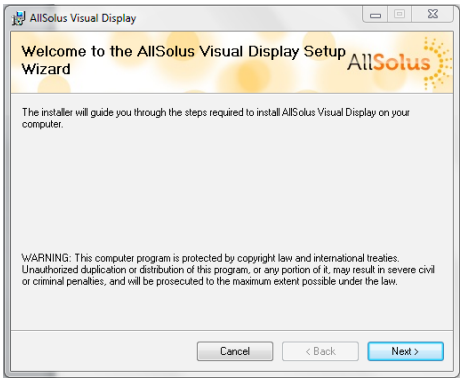


Screen 12
EnD

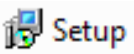
The final twelfth screen concludes the programming of the AllSolus Gavazzi Power Meter, simply press button 2 to leave the settings function and to activate the programmed settings.

7.1.A – AllSolus Visual Display (AVD) - Installation

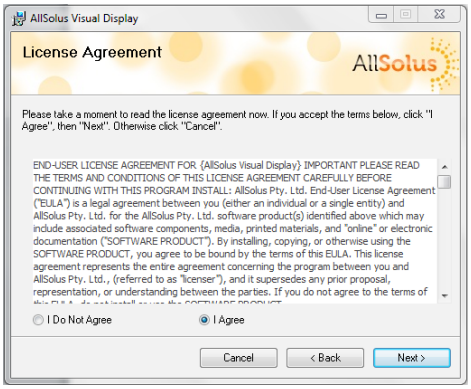
AllSolus Visual Display (AVD) is an option available whereby the information gathered by the AllSolus devices and channelled through the AllSolus LiveBase™ can be delivered direct to a computer, either for personal use, display purposes or for a LAN or intranet system.



To install the AVD software please refer to the AllSolus USB drive that has already been supplied. On the USB you will find a dedicated "AllSolus - Visual Display" folder, simply open this and then open the "AVD" sub-folder and click "Setup".

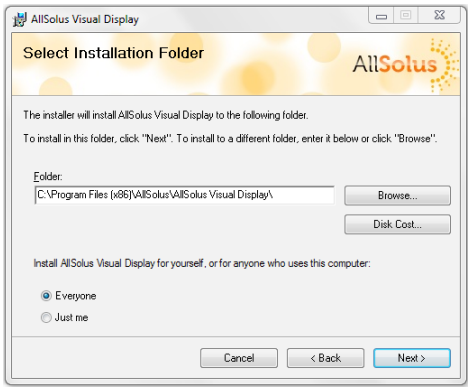


By clicking "Setup" the "AllSolus Visual Display" wizard will now start up, simply click "Next" to continue.

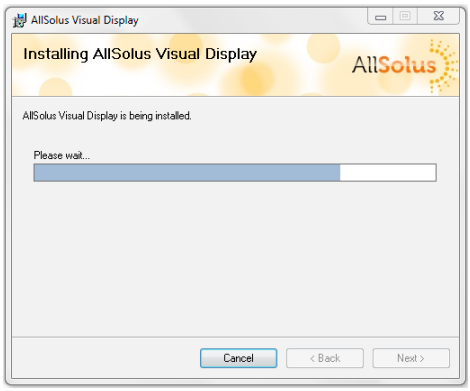


The Following window refers to the "License Agreement", please read the agreement and check "I Agree" and "Next" to continue, if you have any

The Following page "Select Installation Folder" then refers to the installation setup parameters, the software folder location will specify a default destination, please modify to an alternative location if required.
This page also allows for the determination of the user, the choice is either "Just Me" or "Everyone" using the specific computer. Check whichever choice is required, either "Everyone" or "Just Me", the default is "Just Me", click "Next" to continue.

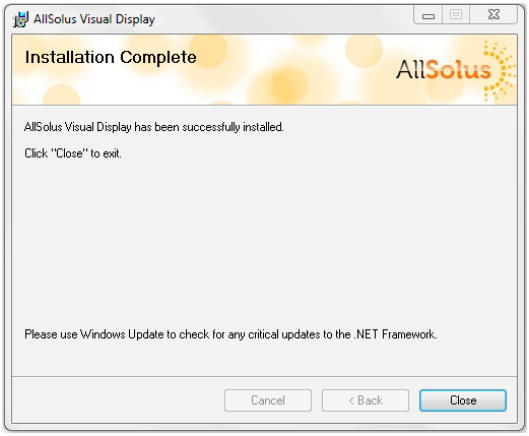


The "AllSolus Visual Display" wizard will now install the software.



When this process has concluded the "Installation Complete" screen will be shown.

Press "Close" to continue and close the wizard.



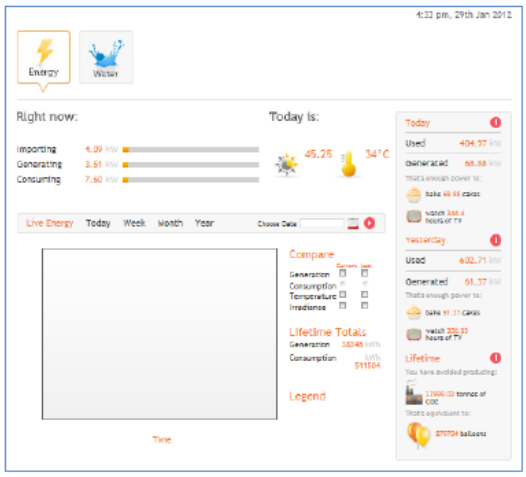
7.1.B – AllSolus Visual Display (AVD) - Setup

Prior to running the AVD software you will need to confirm that the AllSolus LiveBase™ is correctly communicating with you PC or laptop. There are two ways in which the system can connect to your PC or Laptop; one is via the internet and the other via a direct LAN connection.

To test an internet connection (Assuming that the Next G AllSolus Modem has been utilised) simply open your web browser and type in the following URL:

http://<Raven XE Serial Number>.eairlink.com.au (e.g. http://1234567.eairlink.com.au)

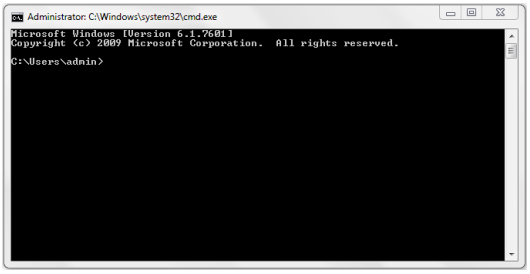
If communication is successful the above display will be shown indicating the web browser can communicate with the AllSolus LiveBase™.



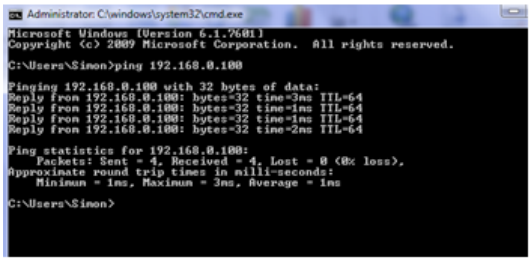
If communication is not successful then the Public Display PC is not able to communicate with the AllSolus LiveBase™. Consult your network administrator or AllSolus for network support.

To do this, firstly connect the AllSolus LiveBase™ to your PC or Laptop via a LAN cable, either the one supplied or a standard cable of longer length.

To ensure that the two devices are correctly communicating click on the Windows "Start" button, and in the box stating "Search Programs or Files" type "cmd" and press enter. The following command prompt dialogue box will then be displayed.



At this prompt type: "ping 192.168.0.100". This will assume that the AllSolus LiveBase™ connected has the following address 192.168.0.100 as this is its default address. If successful the following information will then be displayed stating that a reply was received.

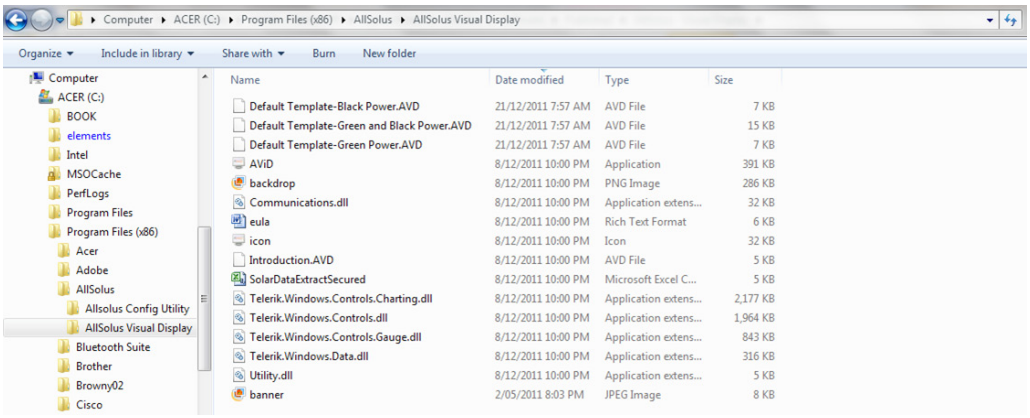


If this process is unsuccessful the IP address on the PC and the LiveBase™ will need to be reset. To set up the PC refer to the Microsoft Operating system notes or call AllSolus for support. To reset the AllSolus LiveBase™ IP address please refer to section "5.3.B – AllSolus LiveBase™ IP Address Reset" of this installation manual.

On the AllSolus USB drive, within the "AllSolus - Visual Display" folder there will be three "Default Template" files for the AVD setup.

Copy and paste these files from the AllSolus USB drive to your Pc or Laptop AllSolus system folder. You will be able to locate the "AllSolus" system folder usually with the "C Drive, Program Files" sections of your computer's hard drive.

The "Default Template" files contain the pages that the ACD will cycle through in a Power Point presentation style display. These pages can be created, deleted and modified at will but act as a structure for you to create your own display.



The template files included in this display are an example only.

File Name	*Description*	*Displays*
Default Template–Green Power.AVD	For installations with renewable energy only (no energy consumption monitoring).	Slide 1 – Live information Slide 2 – Generated Energy Today (Line) Slide 3 – Generated Energy Today (Bar) Slide 4 – Generated Energy this Week (Bar) Slide 5 – Generated Energy this Month (Bar) Slide 6 – Generated Energy this Year (Bar)
Default Template–Black Power.AVD	For installations with energy consumption monitoring only (no energy generation monitoring)	Slide 1 – Live information Slide 2 – Consumed Energy Today (Line) Slide 3 – Consumed Energy Today (Bar) Slide 4 – Consumed Energy this Week (Bar) Slide 5 – Consumed Energy this Month (Bar) Slide 6 – Consumed Energy this Year (Bar)
Default Template–Green & Black Power.AVD	For installations with renewable energy monitoring and energy consumption monitoring.	Slide 1 – Live information Slide 2 – Generated Energy Today (Line) Slide 3 – Generated Energy Today (Bar) Slide 4 – Generated Energy this Week (Bar) Slide 5 – Generated Energy this Month (Bar) Slide 6 – Generated Energy this Year (Bar) Slide 7 – Consumed Energy Today (Line) Slide 8 – Consumed Energy Today (Bar) Slide 9 – Consumed Energy this Week (Bar) Slide 10 – Consumed Energy this Month (Bar) Slide 11 – Consumed Energy this Year (Bar) Slide 12 – Generated & Consumed Energy Today (Bar) Slide 13 – Generated & Consumed Energy this Week (Bar)

7.1.C – AllSolus Visual Display (AVD) - Operation

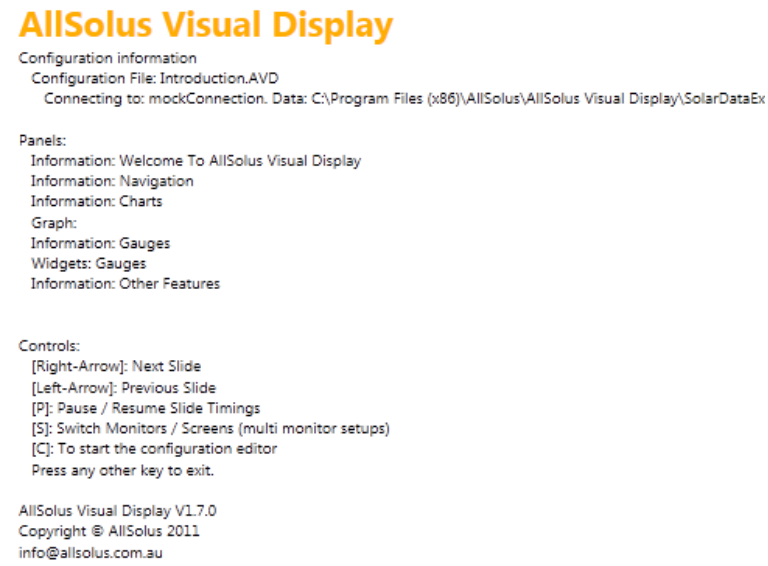
To open "AllSolus Visual Display" go to "Start", and the "All Programs", find the new AllSolus folder and click on the "AllSolus Visual Display" Icon.

The main screen will then open and this will verify that the software has installed correctly and is working. If at this stage the screen below is not displayed then redo the above installation steps. If issues persist then please contact AllSolus.

The AVD controls are shown on this initial page:

[Right-Arrow] Next Slide
[Left-Arrow] Previous Slide
[P] Pause / Resume
[S] Switch Monitors / Screens
[C] Start Configuration Editor
Press Any Key to Exit

The first time that you run the software press "C" so that you can configure the display.

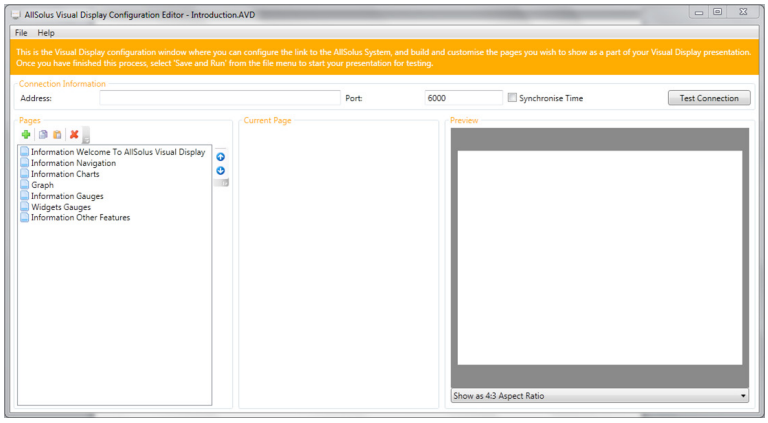


By entering the Configuration command ("C") the configuration editor will then be displayed as follows:

The configuration editor allows customisation of the "AllSolus Visual Display, the requirements of the display will be governed by the information being recorded as well as the target viewers of the display.

Customisation aspects of the display include:

- Setting the network connection address to the LiveBase™
- Modifying slide timing
- Modifying background images slides
- Adding or deleting slides
- Customisation of live widgets on slides
- Customisation of charts on slides
- Customisation of text on slides



All charts, text and live information can be associated with the following variables:

1. Green Power (Energy Generated)
2. Black Power (Energy Consumed)
3. Temperature
4. Irradiance
5. Water
6. Gas
7. Misc 1
8. Misc 2
9. Misc 3
10. Misc 4

The data range of all these variables are:

- Daily (48 x 30 minute intervals)
- Weekly (7 x 1 day intervals)
- Monthly (31 x 1 day intervals)
- Yearly (12 x 1 month intervals)

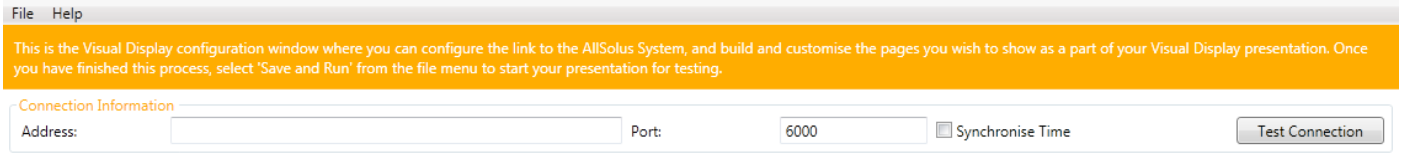
These variables are calculated and stored in the LiveBase™ using the Calculation Engines. For more information on the Calculation Engines refer to the AllSolus LiveBase™ User Manual.

The Configuration Editor page includes:

- File Menu
- Connection Information
- Pages
- Current Page
- Preview

7.1.D – AllSolus Visual Display (AVD) – Dashboard

Connection Information
The connection information is displayed at the top of the "AllSolus Visual Display" configuration editor. The connection information contains information on how the LiveBase™ is accessed from the PC.



Address:

Enter the Address of the LiveBase™ unit in the address field.

- If the LiveBase™ connection is via the internet enter the static IP address or domain name of the site.
- If the LiveBase™ is connected via a Raven XE modem then enter <RavenXESerial>.eairlink.com (e.g. 1234567.eairlink.com)
- If connected to the Local Area Network enter the LiveBase™ IP address. (e.g. 192.168.0.100)

Port:

Set the Port Number to the Visual Display port number as set in the LiveBase™. By default this is 6000.

Synchronise Time:

Select this tick box if the AllSolus LiveBase™ does not have connectivity to the AllSolus Website.

The AllSolus LiveBase™ requires an accurate time source. If the network connectivity to the AllSolus Website from the LiveBase™ is available then the LiveBase™ will retrieve the time from the website and this tick box should be not be ticked.

If the LiveBase™ does not have outside connectivity then the Public Display PC is required to set the LiveBase™ time zone and this tick box should be ticked.

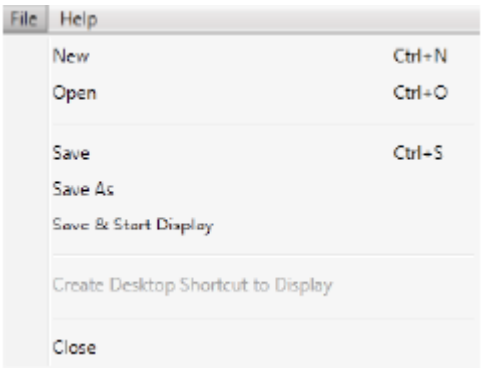
Test Connection:

Select "Test Connection" to confirm that connectivity is availability.

If unsuccessful the Network Connection between the AllSolus LiveBase™ and Public Display is not available. Contact your Network Administrator or AllSolus for support.

File Menu:

By Selecting File from the menu toolbar the following popup is displayed:

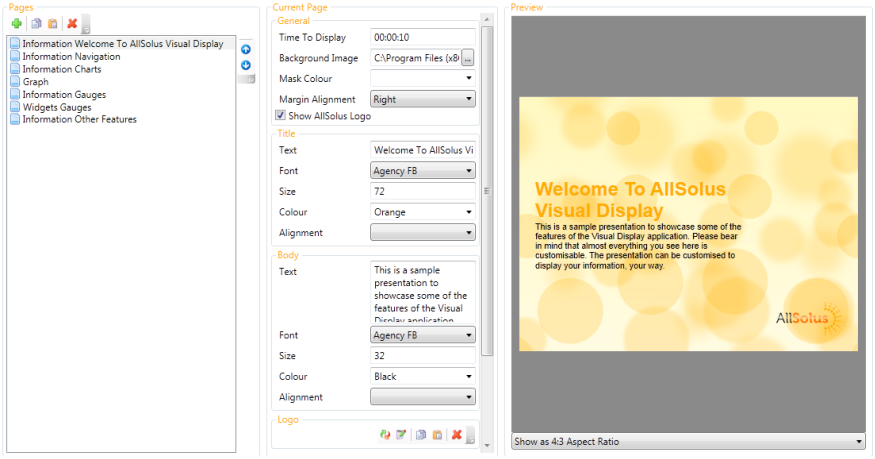


The commands associated with this function are as follows;

New	- Starts a new template
Open	- Open an existing template
Save	- Save the current template
Save As	- Save the current template under a new file name
Save & Start Display	- Start the current template and start displaying
Close	- Close the Visual Display Application

Page, Current Page & Preview:

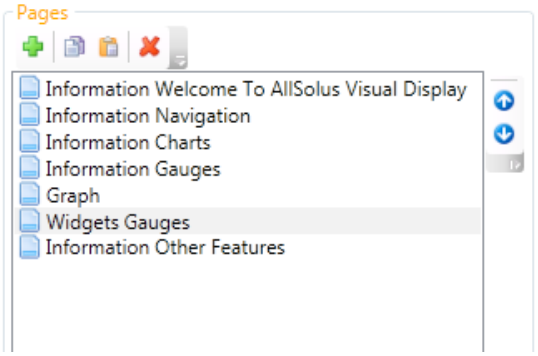
The main portion of the AVD Configuration page is split into the Page overview, the Current Page configuration and the Preview section:



The following describes each section in more detail;

Pages
The page section allows the user to add, delete and organising the display pages.

Item	*Description*
	Add a new page. The page types available are: • AllSolus – AllSolus logo page. This page is not customisable. • Information – Basic page for displaying customised content • Graph – Information page with a graph • Widget – Information page with widgets • Image – Image page
	Copy selected page to clipboard
	Paste page from clipboard
	Delete selected page
	Move selected page up
	Move selected page down



Current Page:
The pages of the AVD can be customised as required. Each page has different settings available. The page types will feature some of the following settings:

General Page Settings:

- Time to Display - The time to pause on the current page before moving to the next page
- Background Image - The image displayed on the page background
- Mask Colour - The colour displayed behind the widget or graph (not available on image type page)
- Margin Alignment - The location of where the margin items will be displayed
- Show AllSolus Logo - If selected the AllSolus Logo will be displayed in the margin

Page Title Settings:

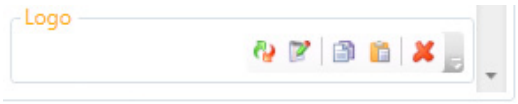
- Text - Page title
- Font - Font type for the title
- Size - Font size for the title
- Colour - Font Colour for the title
- Alignment - Alignment of the title

Body Text – Above or Below Widget

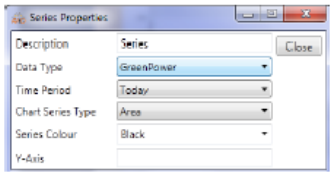
- Text Above - Text to be displayed above the widget or graph
- Text Below - Text to be displayed below the widget or graph
- Font - Font type for the title
- Size - Font size for the title
- Colour - Font Colour for the title

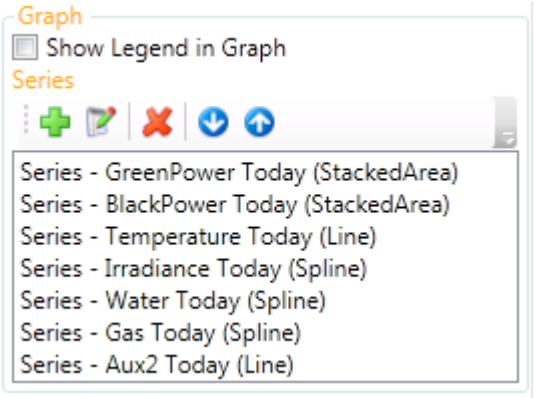
Logo:
There is an option to insert your own specific logo into the display.

Item	*Description*
	Replace the current logo with a customised logo.
	Edit the current customised logo
	Copy selected logo to clipboard
	Paste logo from clipboard
	Delete selected logo

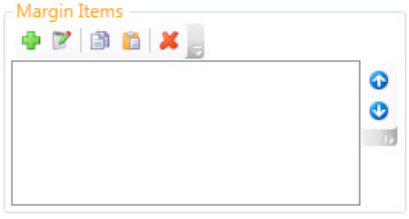


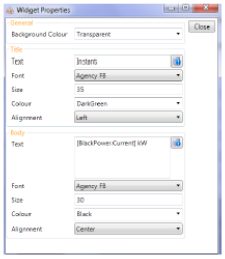
Graph:
The graph stylesection allows for adjustiment to the colour, scaling, labels and a number of variables that the display can be configured to represent:

Item	*Description*
Show Legend	Show the graph legend in the column of the graph display area.
	Edit selected graph. The following popup is then displayed:  Sections available are: • Data Type • Time Period • Chart Series Type • Series Colour • Y-Axis label
	Delete selected graph
	Move selected graph up
	Move selected graph down

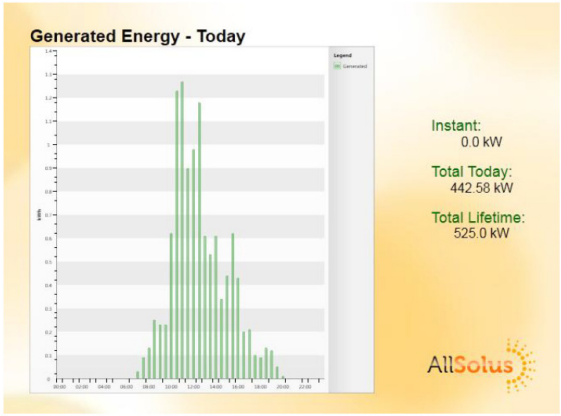


Margin Items:
The margin items section will enable displaying customised text and real time live values in the margin area.

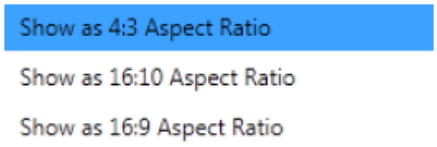


Item	*Description*
	Add a new line to the margin
	Edit margin item. The following popup is then displayed:  The text displayed in the margin consists of <Title> <Body>. The title and body items can be static text or live text that is mapped to a live value retrieved from the LiveBase. Live values are selected by clicking the icon: Live values in the field are then displayed in closed bracket. E.g. [BlackPower.Current] is the live black power value in kW. The above text will read: Instant: 12.3 kW
	Copy selected margin item to clipboard
	Paste margin item from clipboard
	Delete selected margin item

Preview Field:
The preview field shows in real time the graph that will be displayed in the final presentation or display. An example is shown below.

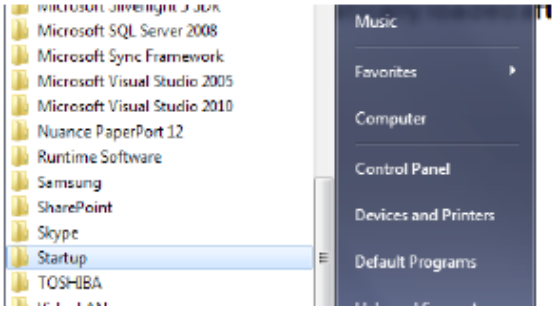


The final presentation is be scaled to the full screen. During preview three different viewing modes are available:



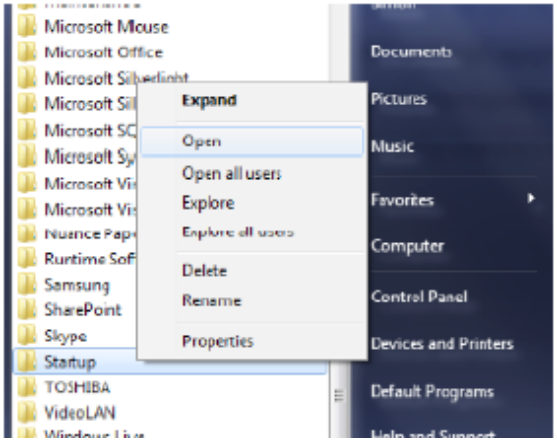
7.1.E – AllSolus Visual Display (AVD) - Auto Start

If required the "AllSolus Visual Display" can be setup so that after a PC reboots for whatever reason the display will automatically re-establish itself. To enable this function the application in the start-up folder needs to be created which are then automatically executed.



Templates or shortcuts to templates can be saved in to the start-up folder therefore the "AllSolus Visual Display" is automatically loaded after the PC is turned on.

To open "Startup" go to "Start", and the "All Programs", scroll down until you find the find the "Startup" folder and right click on the folder and select "Open".

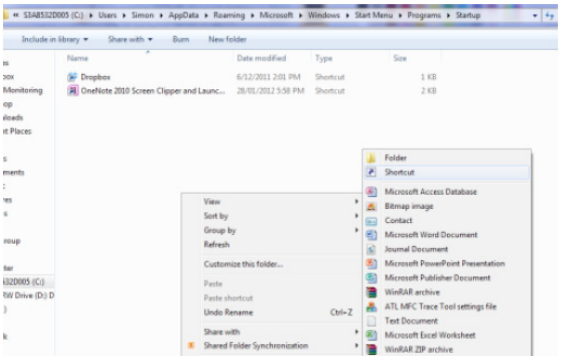


This will open the start-up folder where a shortcut can be created.

Right click inside the folder and select "New" then "Shortcut".

You will then need to locate the "AllSolus Visual Display Template" file to be loaded during PC reboot or Startup.

To locate the "AllSolus Visual Display Template" file to be loaded during PC reboot or Startup. Follow the same steps that you did to copy and paste the paste the template files into the "AllSolus" system folder usually with the "C drive, Program Files" section of your computer's hard drive.



As explained in section 7.1.B of this installation manual.

7.2.A – AllSolus – Online Portal – (www.allsolus.com)

The AllSolus online portal is to be found at www.allsolus.com to enable the website functionality your installed system has to be configured by AllSolus.

On the USB drive supplied with this installation manual you will find a pdf named "AllSolus – Site Configuration Form", please complete this form and forward it to AllSolus as detailed.

The purpose of completing this form allows for the registration of the installed system but additionally

AllSolus –Site Configuration Form

AllSolus Site Registration
Send a copy of this completed form to info@allsolus.com.au

Allowing up to 24 hours to view your site online.

Site Name:	
Site Address:	
Site Contact Details:	
Name / Position:	
Phone:	( )
Email:	
Serial Number Information *For AllSolus devices record last 3 digits located on the barcode and box of each device.	
Modem:	
AllSolus LiveBase:	
AllSolus MeterLink:	
AllSolus EnviroLink:	
Inverter Panel Size / Type	
Display Mode PLEASE CIRCLE	**PUBLIC (default)** **PRIVATE**

7.2.B – AllSolus – Online Portal – Homepage

The homepage of the AllSolus web site is an information access point relating to the overall system.

At the top right hand side you will find links relating to further product information, additional services and project examples. The centre of the homepage offers additional information relating to key strategic services and functions of AllSolus and additionally there is our blog and contact sections lower down.

To access live streaming system data there are currently two methods of visualisation, one for NSSP schools projects and one for all other monitoring systems.

7.3.A – AllSolus – Online Portal – NSSP

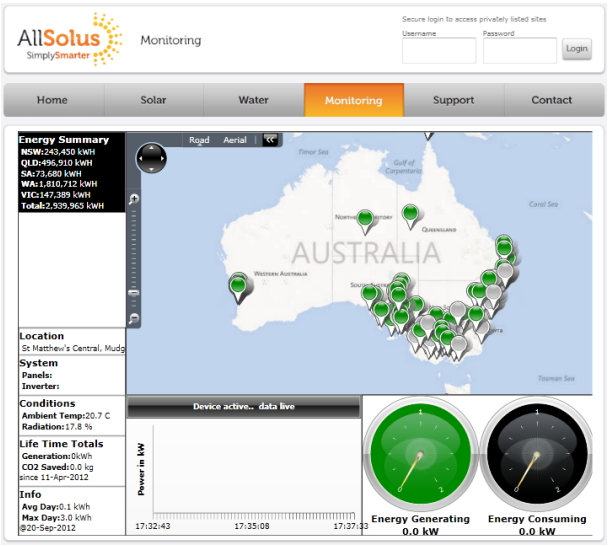
The National Solar Schools Portal (NSSP) currently has its own site location, to access this area click on the "ALLSOLUS SKYVIEW" link on the top right hand side of the homepage.

7.3.B – AllSolus – Online Portal – NSSP – Main Page

The main page of the NSSP site location initially shows an overview of all of the AllSolus registered systems in Australia. At the upper left hand side there is a running total of all of the power generated by the systems installed state by state and as a total.

To locate your system simply use the zoom section adjacent to the map and drag to find the relevant tag. By mousing over any tag the live data will change in the bottom windows and a balloon will appear with the name and location being highlighted.

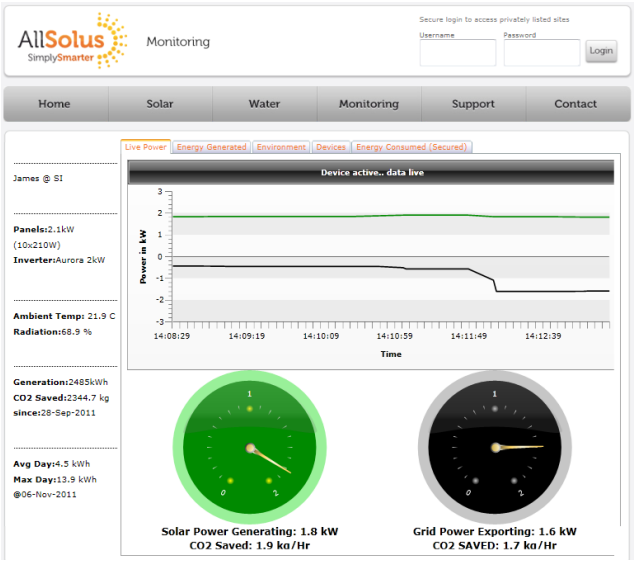
This purpose of this mouse over function is such to allow for very quick comparisons to be made from sites.



7.3.C – AllSolus – Online Portal – NSSP – Site Overview

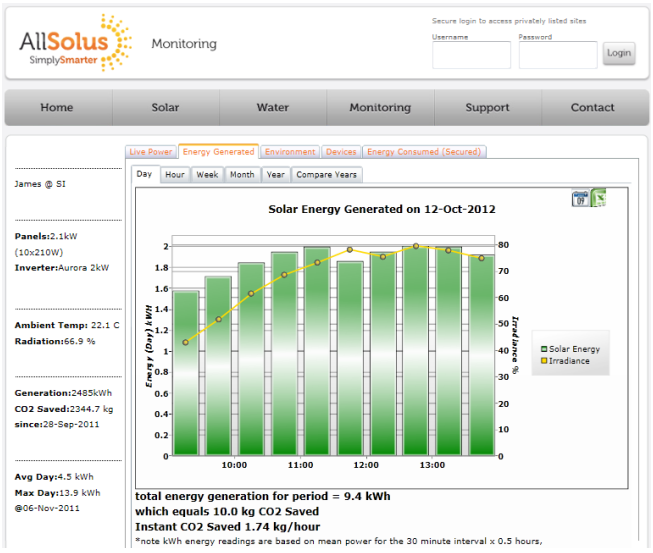
Once you have located and clicked on the tag of your system you will be taken to a site overview page, what you will be able to see here is the live streaming data showing your instantaneous (15 sec delay) solar power generation as well as grid power consumption.

To the left hand side you will see the basic system parameters including your location, system setup with your inverter and panel amount, the basic environmental conditions of ambient temperature and irradiance, the generation in total terms CO2 saving and date of system activation as well as your average daily power generation and maximum daily production.

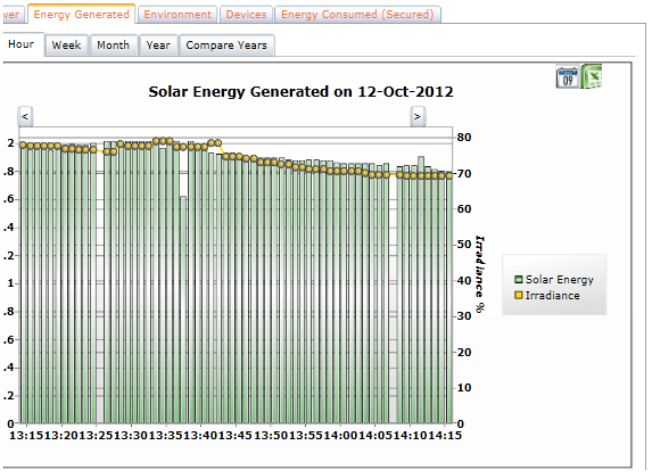


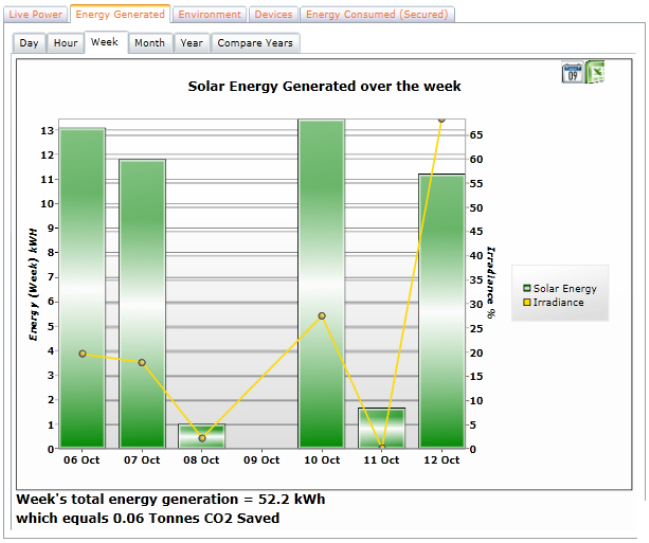
7.3.D – AllSolus – Online Portal – NSSP – Energy Generated

The "Energy Generated" tab shows you a graph comparing the solar energy generated when compared with irradiance.



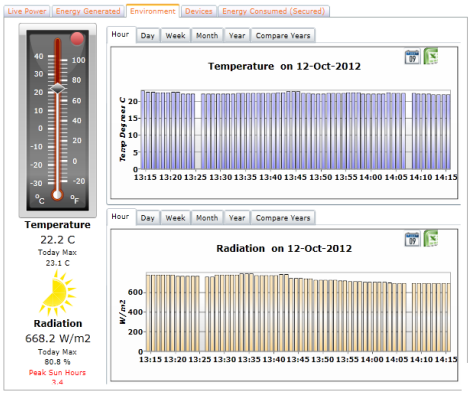
The visualisation options here allow you to look at the data either by the current day hour, week, month, year or alternatively you can choose to compare years.





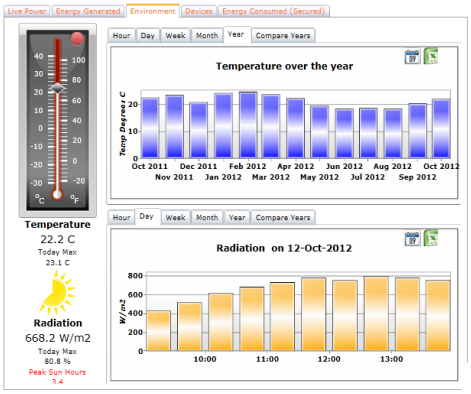
7.3.E – AllSolus – Online Portal – NSSP – Environment

The "Environment" tab shows you a couple of graphics comparing the temperature range and the solar energy generated, in addition on the left hand side there is a thermometer graphic illustrating the current temperature and under that the actual degree C value, today's maximum value, a graphic showing the value of watts per square meeting where by 1000W/m2 would be a full sun and the days total max W/m2 value and Peak Sun Hour amount.



(Peak Sun Hours being the amount of blocks of 1000W/m2 that p/hour that have been recorded, if the sun's power is 1000W/m2 for 1 hour that equals 1 Peak Sun Hour).

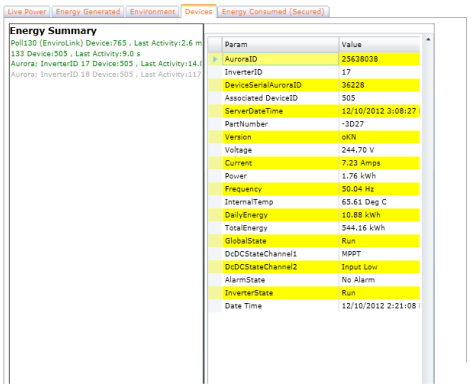
The visualisation options here allow you to look at the either data set by the current day hour, week, month, year or alternatively you can choose to compare years.



7.3.F – AllSolus – Online Portal – NSSP – Devices

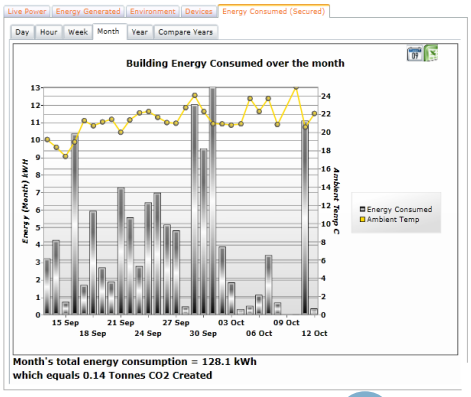
The "Devices" tab shows you all of the data that is available for any of the sensing devices attached. If an inverter is connected via RS485 then all of the data packets that the inverter sends will be available for viewing.

(Peak Sun Hours being the amount of blocks of 1000W/m2 that p/hour that have been recorded, if the sun's power is 1000W/m2 for 1 hour that equals 1 Peak Sun Hour).

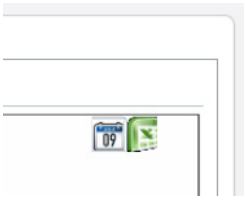


7.3.G – AllSolus – Online Portal – NSSP – Energy Consumed

The "Energy Consumed" tab shows a graphic whereby the amount of energy consumed in the location is compared with ambient air temperature ranges, this is displayed in day packets for a monthly period with the overall monthly total shown in the text below.

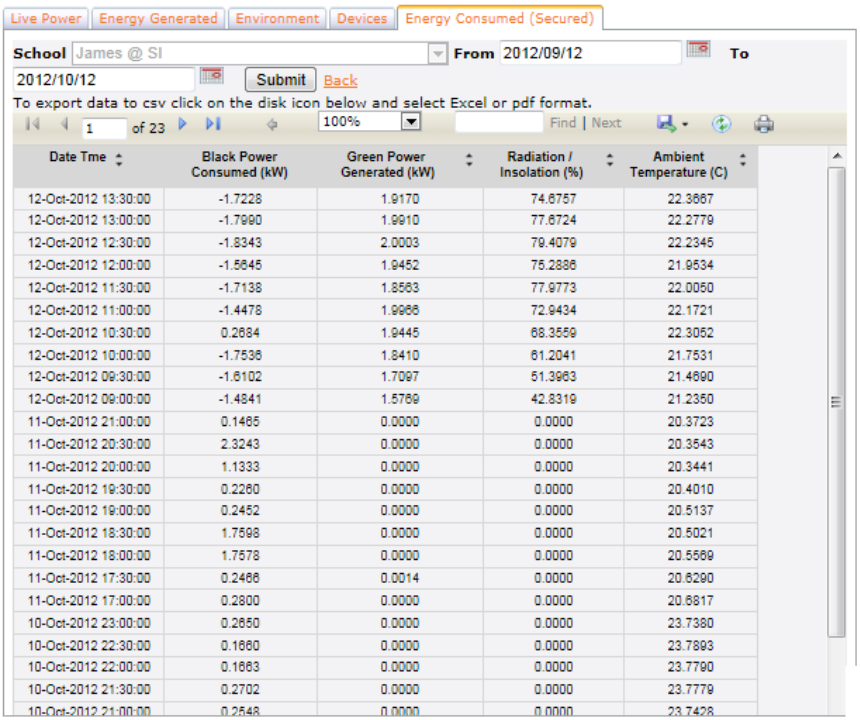


7.3.H – AllSolus – Online Portal – NSSP – Excel Option



On the "Energy Generated", "Environment" and "Energy Consumed" tabs you will note in the top right hand corner a calendar and excel icon.

Clicking these icons will allow the data being graphically represented to be shown in a pure data excel spread sheet



Date Tme	Black Power Consumed (kW)	Green Power Generated (kW)	Radiation / Insolation (%)	Ambient Temperature (C)
12-Oct-2012 13:30:00	-1.7228	1.9170	74.6757	22.3667
12-Oct-2012 13:00:00	-1.7990	1.9910	77.6724	22.2779
12-Oct-2012 12:30:00	-1.8343	2.0003	79.4079	22.2345
12-Oct-2012 12:00:00	-1.5645	1.9452	75.2886	21.9534
12-Oct-2012 11:30:00	-1.7138	1.8563	77.9773	22.0050
12-Oct-2012 11:00:00	-1.4478	1.9966	72.9434	22.1721
12-Oct-2012 10:30:00	0.2684	1.9445	68.3559	22.3052
12-Oct-2012 10:00:00	-1.7536	1.8410	61.2041	21.7531
12-Oct-2012 09:30:00	-1.6102	1.7097	51.3963	21.4690
12-Oct-2012 09:00:00	-1.4841	1.5769	42.8319	21.2350
11-Oct-2012 21:00:00	0.1465	0.0000	0.0000	20.3723
11-Oct-2012 20:30:00	2.3243	0.0000	0.0000	20.3543
11-Oct-2012 20:00:00	1.1333	0.0000	0.0000	20.3441
11-Oct-2012 19:30:00	0.2260	0.0000	0.0000	20.4010
11-Oct-2012 19:00:00	0.2452	0.0000	0.0000	20.5137
11-Oct-2012 18:30:00	1.7598	0.0000	0.0000	20.5021
11-Oct-2012 18:00:00	1.7578	0.0000	0.0000	20.5569
11-Oct-2012 17:30:00	0.2466	0.0014	0.0000	20.6290
11-Oct-2012 17:00:00	0.2800	0.0000	0.0000	20.6817
10-Oct-2012 23:00:00	0.2650	0.0000	0.0000	23.7380
10-Oct-2012 22:30:00	0.1660	0.0000	0.0000	23.7893
10-Oct-2012 22:00:00	0.1663	0.0000	0.0000	23.7790
10-Oct-2012 21:30:00	0.2702	0.0000	0.0000	23.7779
10-Oct-2012 21:00:00	0.2548	0.0000	0.0000	23.7428

7.4.A – AllSolus – Online Portal – Access

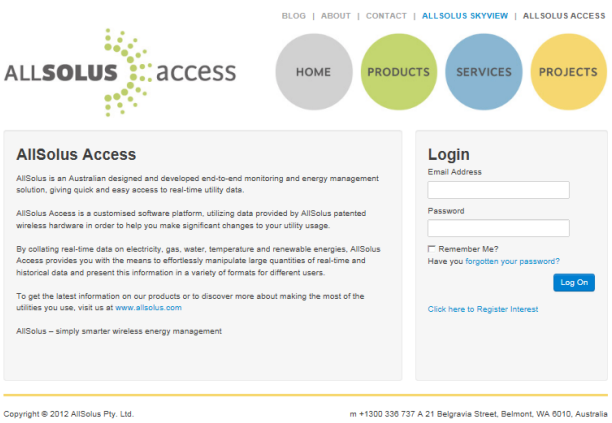
The primary online graphic user interface or visual display also has its own site location, to access this area click on the "AllSolus Access™" link on the top right hand side of the homepage.

7.4.B – AllSolus – Online Portal – Access - Login

To enable the AllSolus Access™ visualisation you will have to firstly register your system with AllSolus.

After clicking the "AllSolus Access™" button you will be presented with the "Login" page.

Enter the login details forwarded to you by AllSolus and select "Remember Me" if you don't want to have to enter these in future.



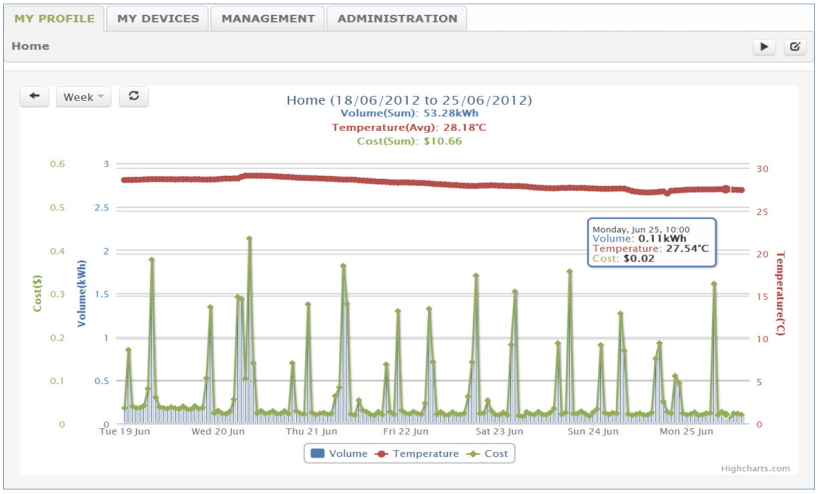
7.4.C – AllSolus – Online Portal – Access – My Profile

Once you have successfully logged into the AllSolus Access™ portal you will as a default be taken to the "My Profile" screen.

As standard this page will show the default devices that where set up onto the site by AllSolus when the system was registered.

The screen is representing data over a weekly period scrolling right to left, in the upper left hand region you can select Year, Month, week, Day or a Now option will show the data in 1 minute intervals.

You can also refresh the data via the adjacent icon and go back by pressing the back arrow icon to view the previous page or data set.



7.4.D – AllSolus – Online Portal – Access – Edit Mode

To either edit the primary "My Profile" screen or to set up a new one simply go to the "Edit Mode" button on the upper left hand region of the screen.

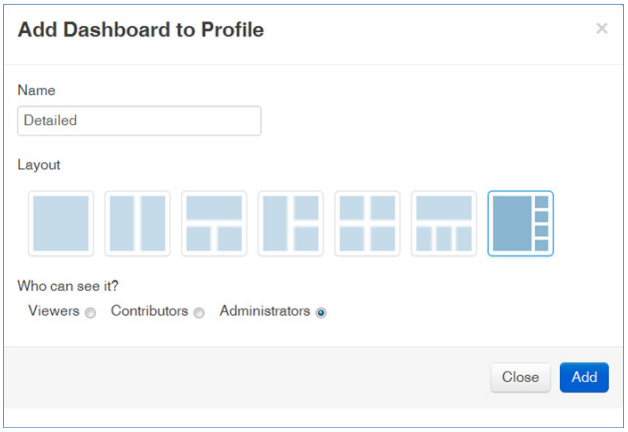
From this point you will be able to adjust the structure and visual aspect of the screen and data set being represented.

7.4.E – AllSolus – Online Portal – Access – Dashboard Profile

When in "Edit Mode" you will be given an option to structure the page from a set series of display templates. You will also then have the option to choose who can see the new page. The choices being;

- Viewers
- Contributors
- Administrators

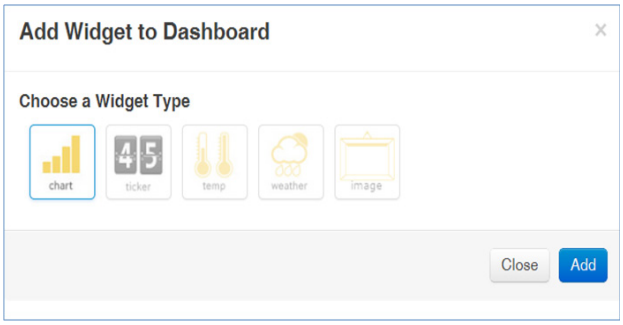
Simply check the relevant box and press "Add" to setup.



7.4.F – AllSolus – Online Portal – Access - Widgets

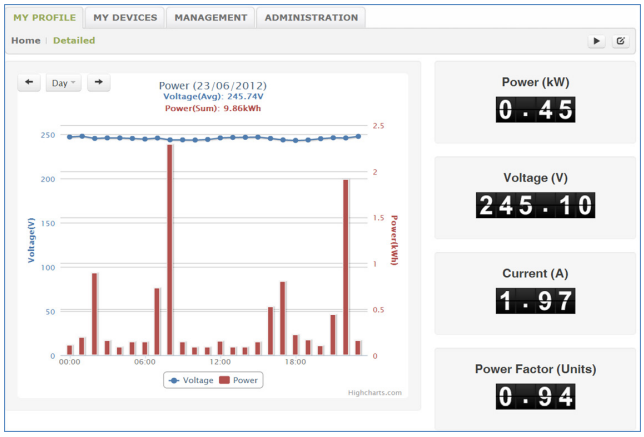
The key to each graph has a widget to easily represent the data being shown.

Simply select the required Widget and press "Add" to assign.



7.4.G – AllSolus – Online Portal – Access - Preview

At any point during the process of establishing or editing a new visual interface you can simply preview the page by de-selecting the "Edit Mode" function.

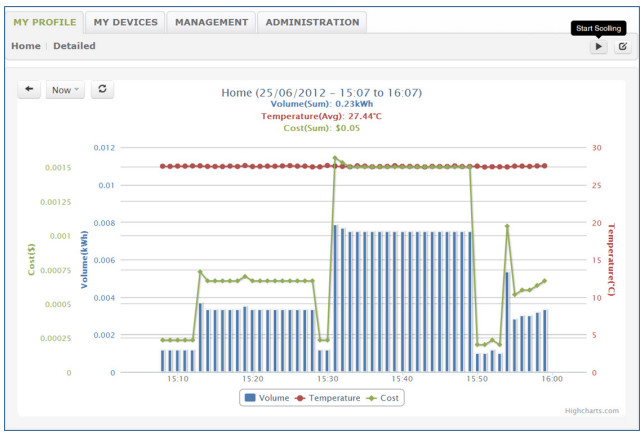


7.4.H – AllSolus – Online Portal – Access – User Accounts

Depending upon the data and access packed subscribed to when establishing the AllSolus Access™ web portal you may or may not have the entitlement to have multiple users access the site and data set.

If multiple users have been allocated for the web interface then you will have the option within this setup procedure to assign their rights and access to dedicated pages.

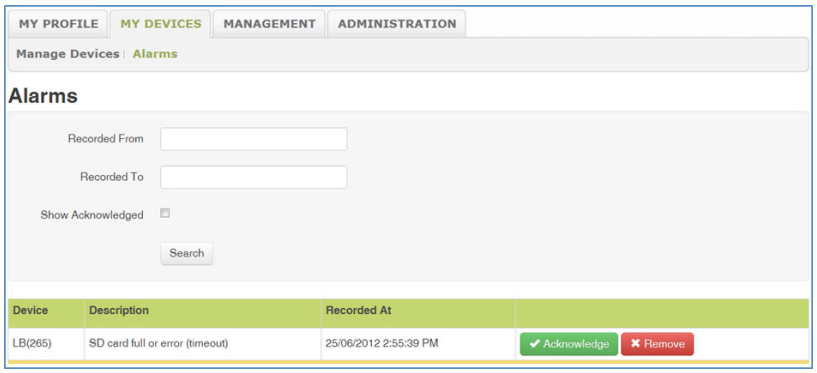
You may have different users set up to view just part of the data being recorded. If you require further assistance with this function please contact AllSolus.



7.4.I – AllSolus – Online Portal – Access - Alarms

Depending upon the data and access packed subscribed to when establishing the AllSolus Access™ web portal you may or may not have the entitlement for the "Alarm" function.

If the "Alarm" function is an option then within the "My Devices" tab you have the option to set up the alarms. Basically you have the option to select a data range from a specific device; if the data set reaches this range then the alarm will be triggered.



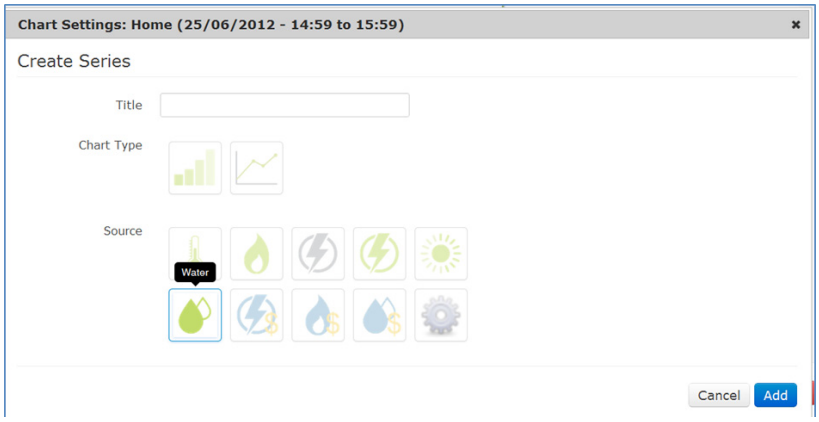
7.4.J – AllSolus – Online Portal – Access – Series Icons

Just like the "Widget" function the AllSolus Access™ Online Portal also gives you the option to establish a series to assign a data set with a common region.

This could be for a specific building or district or for a specific data type such as water flow of temperature.

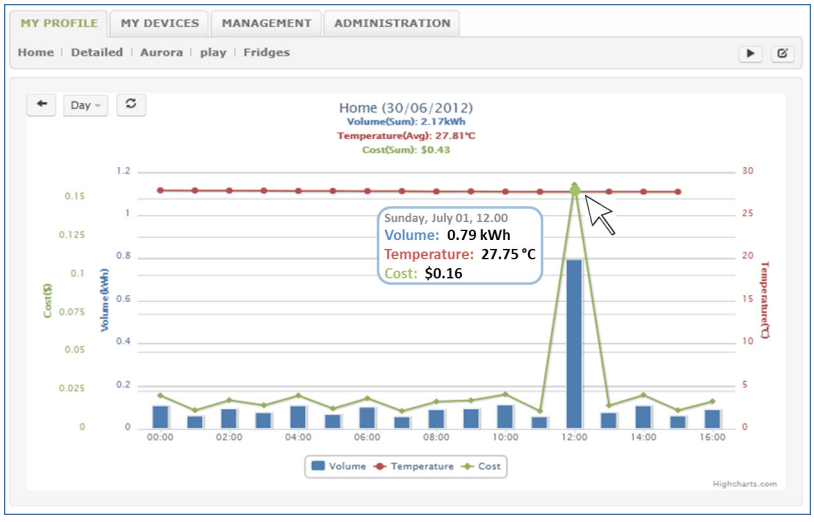
You have the option to assign a chart type as well as a source type and corresponding icons.

Simply press "Add" to assign and continue.



7.4.K – AllSolus – Online Portal – Access – Mouse Over

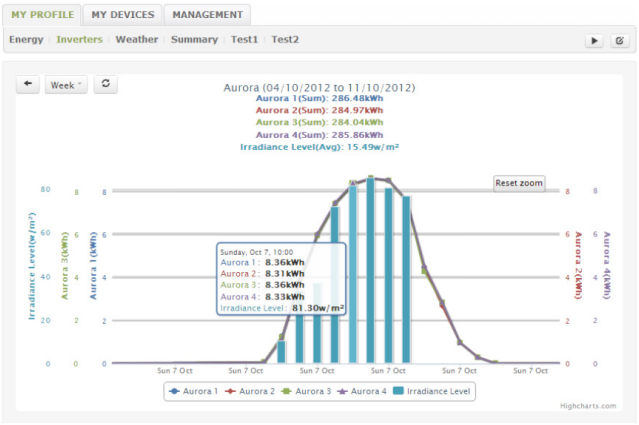
The option to mouse over and see instantaneous data for the time region selected is an automatic feature of the AllSolus Access™ Online Portal, this can be an extremely useful function when presenting or analysing data.



7.4.L – AllSolus – Online Portal – Access – Multi View

The AllSolus Access™ Online Portal also has the option to allow for multiple devices to be shown on the same screen depending upon how the page has been structured.

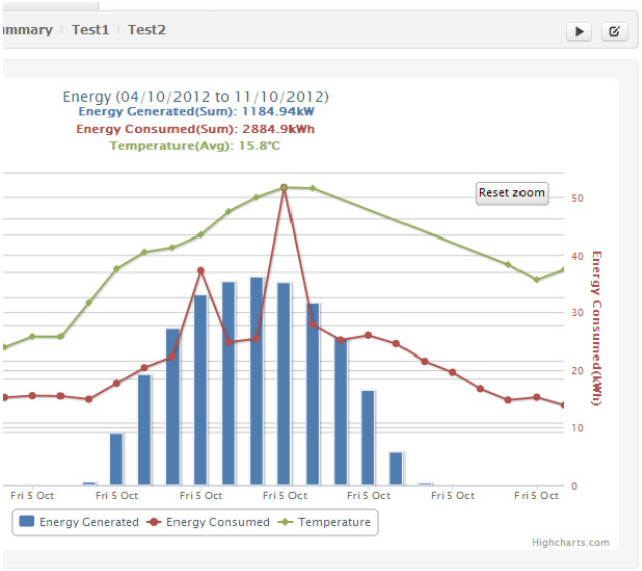
To set up this function and visual simply follow the "Edit Mode" procedure.



7.4.M – AllSolus – Online Portal – Access – Net Totals

When creating a visual reference of data collected measuring consumption where a PV system has been configured on a net metering basis, it is important that the values are adjusted to show the produced PV power that has not been exported is added onto the consumption data to illustrate the net total consumed by the loads.

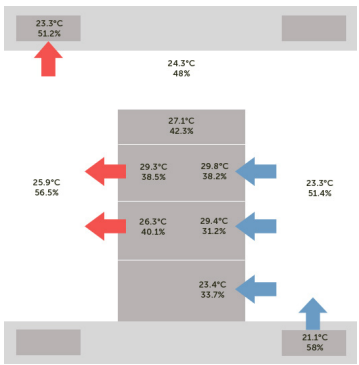
Adjustment of the data in this manner is all possible but may require further assistance from AllSolus so please contact us if this is the case.



7.4.N – AllSolus – Online Portal – Access – Custom Graphic

The option to set up bespoke visuals is also an option with AllSolus; these can additionally be imbedded into the AllSolus Access™ Online Portal.

For further assistance with this option please contact AllSolus.

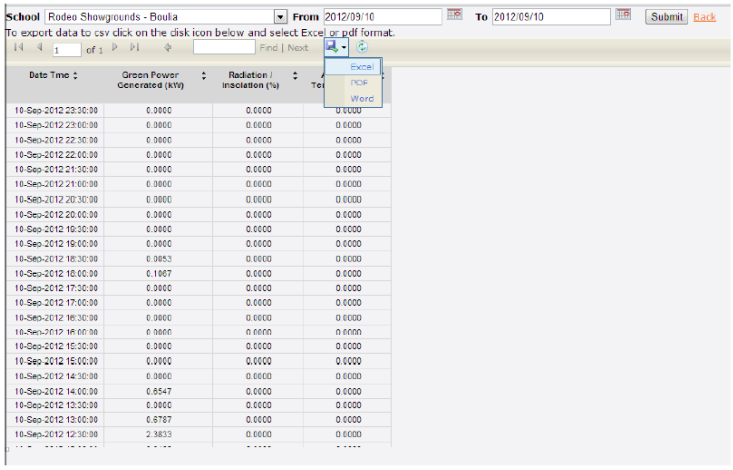


7.4.O – AllSolus – Online Portal – Access – Data Set

The option to grab the data set from the AllSolus Access™ Online Portal is also available.

Data can be either reviewed online or downloaded in Excel, Word or PDF format.

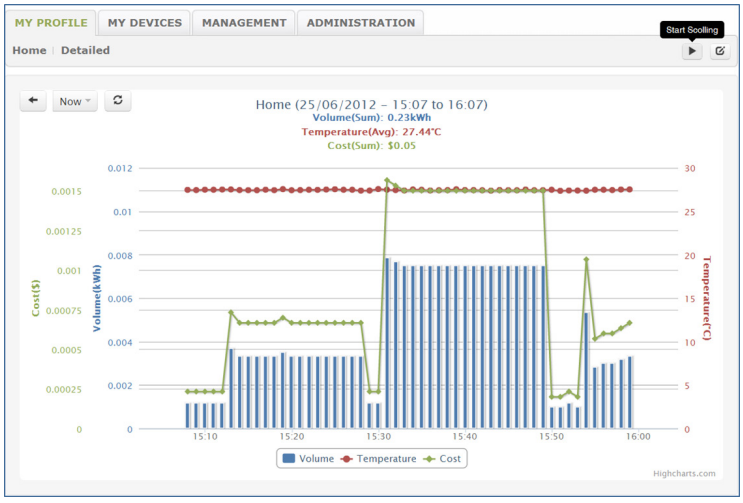
Location data within date ranges is obtainable.



7.4.P – AllSolus – Online Portal – Access - Auto scroll

Once a display has been configured and is working correctly illustrating the data set that you require, you then have the option to have the page auto scroll so that data is shown and continuously displayed on a 20 second refreshing basis.

To enable and activate this function press the play button on the top right hand corner or whichever screen you wish to display.



7.5.A – AllSolus – Building Management System Integration (BMS)

The option to integrate the AllSolus Energy Monitoring System into a Building Management System is completely viable and functional.

AllSolus can additionally integrate with existing monitoring systems' and sensing or measuring devices. This could be to either contribute towards a current BMS system or work alongside it to pull specific data sets and represent them via the AllSolus online portal.

Given the diversity and range of BMS systems and range of 3rd party monitoring and sensing components please contact AllSolus for assistance and advice with integration with or into other systems.

SERVICE

8.1.A – AllSolus LiveBase™ – Troubleshooting FAQ's

What if the AllSolus LiveBase™ does not power up?

1. Check polarity of power supply.
2. Try alternative power supply.

What if I cannot connect to the unit using configuration software?

1. Check in windows -> control panels under "COM's ports" that "AllSolus Communication device" exists and there are no faults.
2. Check the "COM ports"- CP210X device will be displayed under the "Ports" heading.

What if the device is rebooting periodically?

1. Try alternative power supply.

What if all remote devices are offline?

1. Monitor signal strength (RSSI) levels in diagnostics.
2. Connect to other device and confirm it is running. Check signal strength (RSSI) is greater than 50.
3. In case of metal obstacles an external antenna may be required.

What if the device does not connect to AllSolus server?

1. The AllSolus EnviroLink™ for instance will report information directly to the AllSolus LiveBase™. This information is then mapped to the site using unique serial numbers. Confirm site installation form has been completed and sent to AllSolus to serial number mapping.
2. Contact AllSolus support for further assistance.

What if power pulses are not received by the unit?

1. Disconnect so cable. Short input to confirm pulse is received

What if time between flashes on power led is less than one second?

1. Replace SD card

What if RS485 led flashes in time with power led?

1. Reboot the device.
2. If the problem persists contact AllSolus for a replacement

What if the Ethernet led flashes in time with power led?

1. Reboot the device.
2. If the problem persists contact AllSolus for a replacement

8.1.B – AllSolus EnviroLink™ – Troubleshooting FAQ's

What if I cannot connect my laptop unit using configuration software?

1. The device may take up to 5 minutes before connection via the USB software depending on power levels.
2. Confirm device is connected to USB port correctly with a suitable cable.
3. Connect the device to an alternative computer or power source.
4. Allow the unit to charge for up to 15 minutes.
5. Check windows control panel under "COM's ports" that "AllSolus communication device" exists and there are no faults.
6. Check that the "COM ports"- CP210X device will be displayed under the "Ports" heading.

What if the configuration software reports that the unit is offline?

1. Confirm power on for both devices.
2. Confirm encryption codes and channel numbers are the same for both devices
3. Confirm error codes in advanced tab. ensure no error code in "tc setup" on "advance page."
4. Check RSSI (receive signal strength indication) on advanced page (LiveBase™), or general tab (Battery Pulse Counter™). The RSSI readings will report signal strength received by the EnviroLink™ and signal strength received by the other unit.
5. Move devices to a closer proximity to each other (10m) and check if communication is now possible, if communication is now possible suspect interference may exist. External or higher gain antennas may be required to improve radio link. For more information contact AllSolus support.

What if the device does not connect to AllSolus server?

1. The AllSolus EnviroLink™ for instance will report information directly to the AllSolus LiveBase™. This information is then mapped to the site using unique serial numbers. Confirm site installation form has been completed and sent to AllSolus to serial number mapping.
2. Contact AllSolus support for further assistance.

8.1.C – AllSolus MeterLink™ – Troubleshooting FAQ's

What if I cannot connect to unit using configuration software?

1. Confirm device is connected to USB port with suitable cable; try connected the device to an alternative computer or power source.
2. Check in windows control panels under "COM's ports" that "AllSolus communication device" exists and there are no faults.
3. Check the "COM ports"- CP210X device will be displayed under the "Ports" heading.

What if the configuration software reports device offline?

1. Confirm power is on for MeterLink™ and LiveBase™ devices.
2. Confirm encryption codes and channel numbers are the same for both devices
3. Confirm error codes in advanced tab. ensure no tick in "tc setup"
4. Check RSSI (receive signal strength indication) on advanced page (LiveBase™), or general tab (Battery Pulse Counter™). The RSSI readings will report signal strength received by the MeterLink™ and signal strength received by the other unit, confirm the other unit is online and operating with antenna installed.
5. Move devices to a closer proximity to each other (10m) and check if communication is now possible, if communication is now possible suspect interference may exist. External or higher gain antennas may be required to improve radio link. For more information contact AllSolus support

What if the device does not connect to AllSolus server?

1. The AllSolus EnviroLink™ for instance will report information directly to the AllSolus LiveBase™. This information is then mapped to the site using unique serial numbers. Confirm site installation form has been completed and sent to AllSolus to serial number mapping.
2. Contact AllSolus support for further assistance.

8.1.D – AllSolus Battery Pulse Counter™ – Troubleshooting FAQ's

What if I cannot connect to unit using configuration software?

1. Confirm device is connected to USB port with suitable cable; try connected the device to an alternative computer or power source.
2. Check in windows control panels under "COM's ports" that "AllSolus communication device" exists and there are no faults.
3. Check the "COM ports"- CP210X device will be displayed under the "Ports" heading.

What if the configuration software reports device offline?

1. Confirm power is on for the Battery Pulse Counter™ and LiveBase™ devices.
2. Confirm encryption codes and channel numbers are the same for both devices.
3. Confirm error codes in advanced tab. ensure no tick in "tc setup".
4. Check RSSI (receive signal strength indication) on advanced page (LiveBase™), or general tab (Battery Pulse Counter™). The RSSI readings will report signal strength received by the MeterLink™ and signal strength received by the other unit, confirm the other unit is online and operating with antenna installed.
5. Move devices to a closer proximity to each other (10m) and check if communication is now possible, if communication is now possible suspect interference may exist. External or higher gain antennas may be required to improve radio link. For more information contact AllSolus support.

What if the device does not connect to AllSolus server?

1. The AllSolus Battery Pulse Counter™ for instance will report information directly to the AllSolus LiveBase™. This information is then mapped to the site using unique serial numbers. Confirm site installation form has been completed and sent to AllSolus to serial number mapping.
2. Contact AllSolus support for further assistance.

8.1.E – AllSolus THLink™ – Troubleshooting FAQ's

What if I my devices are not shown when using configuration software?

1. THLink is not shown in the configuration software.
2. Confirm the connections are all good and that the units are correctly wired to the THLink™ device.
3. Check that the THLink™ device is connected to USB port with suitable cable; try connected the device to an alternative computer or power source.
4. LED indicators will confirm correct configuration and operation.

What if I have multiple devices but they are not all showing readings?

1. Confirm that all of the series connections are secure.
2. Swap the interconnecting cables from a working section to a non-working section to ensure that the cables are not at fault.
3. Check that the THLink™ sensor is not blocked or obscured in anyway.
4. Replace the THLink™ and re-try.

8.1.F – AllSolus Gavazzi Power Meter & CT - Troubleshooting

What if I my Gavazzi Power Meter is not shown when using configuration software?

1. Confirm the connections are all good and that the units are correctly wired to the Gavazzi device.
2. Check that the Gavazzi Power Meter is powered correctly and the LCD has a reading on it.
3. Check that the device directly connected to the Gavazzi Power Meter is connected via the USB port with suitable cable; try connected that device to an alternative computer or power source.
4. Check in windows control panels under "COM's ports" that "AllSolus communication device" exists and there are no faults.
5. Check readings on LCD, check RS485 light on AllSolus device and check wiring.

What if I have readings displayed from the CT devices but they do not seem to be correct?

1. Confirm that the CT's have been wired into the Gavazzi Power Meter Correctly.
2. Confirm that the APPLiC function has been correctly set on the Gavazzi Power Meter to represent A: Active Positive Energy.
3. Confirm that the SYS function on the Gavazzi Power Meter has been correctly set to meter either 3P1: 3-Phase balanced without neutral, 2P: 2-Phase or 1P: single phase.
4. Confirm that the in Ut rAtio the correct CT ratio has been set on the Gavazzi Power Meter.
5. Confirm that the correct pulse weight in PuLSE on the Gavazzi Power Meter has been set to 0,01.
6. Ensure that is other Gavazzi Power Meters are in use that each have a unique serial address.
7. Ensure that the CT's are clamped onto the correct active cable.
8. Ensure that the CT's are installed in the correct polarised direction.
9. Ensure that the CT's being used are the correct value and range for the circuit being monitored.
10. Test the Gavazzi Power Meter by following the installation and setup procedure and select the tESt function.
11. Replace the Gavazzi Power Meter and re-install.
12. Contact AllSolus support for further assistance.

CAUTION: Ensure CT is connected to the Energy Meter or short circuited before opening CT primary!

• High crest voltages may occur across the open secondary circuit. To avoid personal injury or equipment damage, the secondary must always be short- circuited or connected to a burden/load.

NOTE: A buzzing transformer is an indication of an open secondary.

8.1.G – AllSolus Wind & Temperature Sensor – Troubleshooting FAQ's

What if I my devices are not shown when using configuration software?

1. This won't show up in the Configuration Utility, you just need to ensure the calculation engine is set up and readings on the GUI are correct.
2. Confirm the connections are all good and that the units are correctly wired to the EnviroLink™ device.
3. Check that the EnviroLink™ device is connected to USB port with suitable cable; try connecting the device to an alternative computer or power source.

What if my devices but they are not all showing readings?

1. Confirm that all of the connections are secure.
2. Confirm that the devices are able to rotate, please note that if the wind speed sensor is stationary no value will be recorded, if the directional sensor (wind vane) is facing true north then a zero reading will be recorded.
3. Contact AllSolus support for further assistance.

8.1.H – AllSolus General System - Troubleshooting

If any other issues not mentioned in the section arise then please contact AllSolus for further assistance.

8.2.A – AllSolus Pty Ltd

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