Grant

Yoyo Data Loggers

Operating Manual

yoyo_log_ ™

Copyright

Key Account Manager

If you have any questions about installation or functionality of the software, please contact your local dealer or:

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1   Contents

2   Hardware Checklist

Included in delivery for all loggers are:

- Data logger series **yoyo**_log_
- Lithium battery type CR2477N
- USB cable
- YoyoView Software for Windows supplied on USB-Stick

Additionally included in delivery of YL-M32, YL-M41, YL-M42, YL-M90

- YY-CS cable(s)

Further options include:

- Calibration certificate
- Wall holder, metal strip and seal
- Connection cables YY-CI, YY-CUS, YY-CP
  (for connecting voltage/current signals >1V to the inputs)

3   Quickstart

Receive readings in only six easy steps:

►Install the USB driver from the USB stick:
execute file: …\USBDriver\USBXpressInstaller.exe

►Install YoyoView for Windows
Execute file …\setup.exe

► Open the logger by unscrewing its rear cap. Insert the battery. Connect the USB cable to the respective ports of the logger and the PC.

► The Operating System will detect the device automatically. Wait for the notice that the device is ready to use.

► Start YoyoView. The program automatically recognizes the logger and displays a picture of that logger.
Double click on the picture to select the logger.

► Right Click on the logger and select Metermode. After a few seconds online readings from the connected logger will appear on the screen.

Start logging in two additional steps

►Again Right Click on the logger picture and then click on **Start Logger**.

► Click on **Start Logger now**. The logger will start on the nearest minute with a preset logging interval of 10 seconds. The logger's blue LED will flash accordingly.

Viewing a Graph of measured data in just another step

►Click on **Download Data**.
Stored readings will be downloaded, saved as an ASCII file, and a graph is displayed.

4 General information

The yoyo*log* series consists of a large variety of loggers:
Some have an internal sensor only. Others have inputs for external sensors, whilst some have both sensor types.

A full list of models can be found on our website.

The logger uses sensor inputs to which external sensors are connected. Some of the sensors are combined sensors, such as the YS-RHT for measuring temperature and humidity. This sensor uses a single input connector.

The loggers have a memory capacity for 100,000 readings which can optionally be extended to 4,000,000 readings.

Logging can be set to either "stop-when-full" or" ring-buffer mode" (continuous mode).

The device can be controlled over the USB interface using YoyoView Software. It only a few clicks to select the relevant parameters

4.1   Installing the batteries

The logger's power supply is provided by a 3.0V lithium battery (CR2477N).
Optionally for high-temp-applications a CR2450HT battery can be supplied.

The device offers internal battery monitoring. YoyoView will indicate when the battery will require replacing. In addition, the LED flashing periodically indicates the need for the battery to be replaced (see chapter 0, understanding LEDs for further information).
In order to insert a battery into the datalogger, unscrew the back cover of the logger then insert the battery keeping the correct polarity – negative pole downwards.

When the battery has been fitted after a few seconds the LED on the front of the logger will start flashing in red/green/blue to indicate it is operating.

yoyo-Logger	
Interval	Battery life
>1 min	4 years
10 sec	230 days
1 sec	25 days

The battery life depends mainly on the logging interval selected. The table gives an overview for typical intervals.

Some other factors reduce battery life. E.g., low temperatures decrease battery life. Downloading data or operation in MeterMode will also cause an increased energy consumption, which further decreases battery life.

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4.2   Installation of YoyoView

System requirements

Hard-/Software	Minimum-Configuration	Recommended Configuration
Computer:	Intel Pentium, 1 GHz	Intel Pentium III, 2 GHz
Operating system:	Windows XP/Win7	Windows XP/Win7
RAM:	512 MB	1 GB or more
Monitor:	Any windows-supported monitor	Monitor with VGA- or higher resolution graphic
Mouse:	Any windows-supported mouse	Any windows-supported mouse
Port:	1 free USB-port	1 free USB-port
Printer:	Any windows-supported printer	Any windows-supported printer

The setup program for YoyoView can be found on the USB-stick provided. Click on **Setup_YoyoView_ForWindows.exe** which will guide you through the installation progress.

Choose the appropriate folder and wait for the software to install.

Install the **USB driver** when prompted.
Click on **Install** and wait until the driver has been installed.
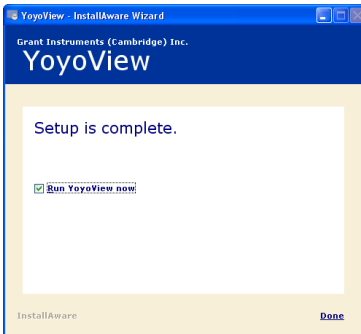
After the setup has been completed, tick the checkbox to run **YoyoView** immediately**.** Then click **Done** to finish.

NOTE: If YoyoView does not automatically, please open it manually from the start menu or the shortcut on the PC.

5   Main Software-Menu

Exit YoyoView

Display logged data
as a graph

Preferences and
general setup

Display logged data
as a table

Search for devices
connected to the PC

5.1   Preferences and general setup

  To set up preferences for the YoyoView Software, click on
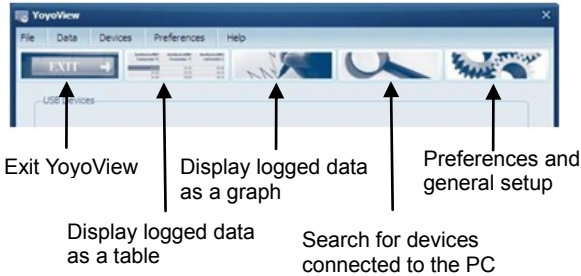**Preferences/Program** or the **Preferences** icon.
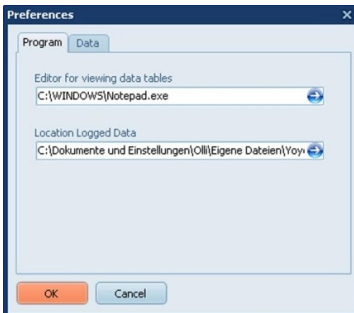
Click on **Program** to change the settings and
paths within YoyoView.

Set the default program used to view the
downloaded data

Select **Location** where downloaded data is stored
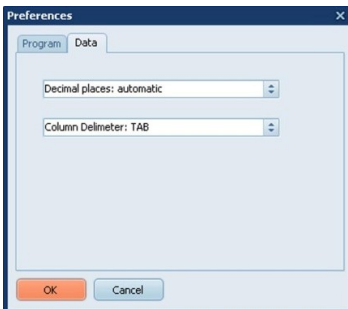
Click on **Data** to change export settings.

Select **Decimal places** to **automatic** (default) to
export data with as many decimal places as the
sensor channels physically allows or select the
required number of decimal places.

Select the **Column delimiter** to **TAB** or
Semicolon, as required.

5.2   Search for Devices

Locate the USB port of the logger, next to the battery, and plug in the USB cable supplied with the logger.
Plug the other end of the USB cable into any USB port on the PC.

Windows will automatically identify the logger using the USB-Express driver. In the YoyoView software a picture of your datalogger will appear. This may take up to 30 seconds.

Normally a logger will be automatically detected when connected. If the logger is not automatically detected click on the icon or **Devices/Search** in order to scan the USB ports for new devices.

Up to 6 dataloggers can be connected to the PC at any one time.   A picture will appear for each logger allowing communication to anyone of them.
If more than 6 loggers are connected, only 6 will be shown.

NOTE: If the picture of the logger does not appear please check if the USB cable is properly connected and then refer to chapter 8 for troubleshooting.

6 Logger Identification

By moving the mouse pointer across a picture of a logger, a prompt will appear to click once or twice on that picture.

By clicking once, further information will appear to identify the logger.

A **serial number, the Short ID, Date Code, Description** as well as the **manufacturers name** will be displayed.

If more than one logger is connected, double click on the particular logger to enable communication. This highlights the chosen logger.

Now the logger has been selected further information is available.

Click once on the logger's picture to show additional information about the logger model and status.

The **full serial number, logger status, number of channels, firmware version, battery capacity, memory percentage used** and the **actual logger time** will be displayed.

Logger Status gives information about the status of the logger. If the status is "**sleeping"**, no readings are being taken and the logger is waiting to be 'set' to log.
If the status is **"logging"** the interval set will also be displayed.

The **battery voltage** is an indication of the battery life remaining. It is recommended keeping track of the battery usage or simply use a new one if the status of the battery is unknown and data is important. Refer to table in chapter 4.1 to understand the impact of the interval on the battery life. The logger works with a lithium battery whose life isn't easy to predict. A brand new battery has a capacity of 3.0 V. A completely worn battery has less than 2.5V. The logger also predicts battery life which is indicated on the LEDs. Please refer to chapter 0 to understand the meanings of the LEDs .

Memory % shows the memory capacity used.
Note, that stored readings are overwritten when the logger is set to start logging.

Actual Time shows the loggers´ time. The logger automatically synchronizes its logger time with the PC time when it is starts logging.

7 Logger Control

Once the logger has been selected, right click to enter the menu to control the logger.

A logger control window is opened and will show the following functions **Metermode, Start/Stop Logger, Download Data** and **Logger Setup**.

7.1 Online Meter

In the Logger control window click on **Metermode**, to see current logger readings for channels that are set.

Note that the screen shows channels in their numeric order. That means that first of all, all channels assigned to slot 1 will be displayed, then all channels assigned to slot 2 and so on.
Please refer to chapter 7.5 for more information on Slot numbers and channel numbers.

Note: The logger is mainly used for unattended long term logging, therefore Meter Mode is used to test the logger and verify that the sensors have been connected correctly and are providing the correct readings.

When the logger is connected to a USB port it will self heat therefore the internal sensors may not be as accurate, the values may be up to 2°C higher than the actual values.

Once the logger has been disconnected from the PC and moved to an external environment, the internal sensors of the logger may take up to a few hours to stabilise.

7.2   Start/stop logger

Clicking on **Start Logger** in the logger control window will bring up the settings for logging.

Note: that if the logger is already logging data, the **Start Logger** command will not be available. Instead the **Stop Logger** command will be displayed.

In the **Start DataLogging** window there are the following settings: **Logger Start condition**, **Logger Stop condition**, **Interval (unit/value)** and a **run description**.

The logger can be started **immediately** or at **a specific date/time**.
When set to **immediately** the logger will start logging from the nearest full minute.

To change the settings I click on the arrow button next to the default condition.

click here
to change
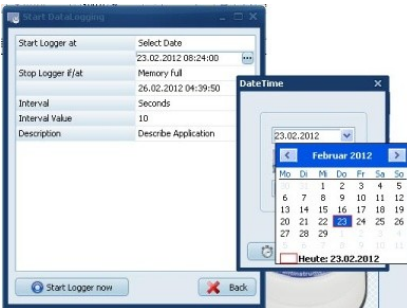
To set the logger to start at a specific date/time, change the **Start Logger at**-condition to **Select Date.** Then browse the **calender** to change the **Start date** and **time.**

In the **Start Datalogger** window, the **Stop condition** for the logger can be set.
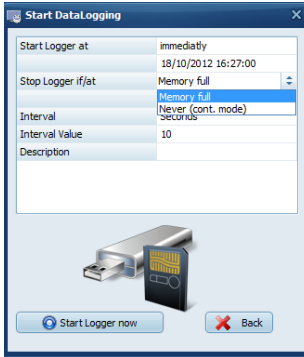
If the **Memory full** option is selected the loggers will stop logging when the memory is full.

If **never (cont mode)** option is selected the logger will start to overwrite the oldest readings when the memory is full.

To set the interval rate of the readings, select the unit ; Hours, Minutes, Seconds or Hertz and define the Interval Value.

Examples: to log every 10 Minutes, select **Minutes** at the Section **Interval** and enter **10** as the **Interval Value.**
To log at 5 Hertz, select **Hertz** at the Section **Interval** and enter **5** as the **Interval Value.**

Finally, a **Description** of up to 46 characters can be entered. This Description will be stored in the datafile to identify the readings when viewed later.

When all settings have been entered as required, click on **Start logger now**.

Once started a message will appear to confirm the logger has started logging successfully.

7.3   Download Data

Clicking on **Download Data** will transfer all stored data to your PC. It will automatically store the files as a ***.BIN-File** and as a*.**ASCII file**. The original ***.BIN-File** is a compressed datafile which can be archived using a minimum of hard disk space.

The ***.ASCII-File** is used for the graphical analysis with the GraphTool of YoyoView (only YoyoView plus) and to import into third-party software.

As soon as the data has been fully processed the GraphTool-Software will pop up.
When purchasing the YoyoView Plus software there will be a serial number and two keys which will need to be entered here. If these have already been entered the analysis function will appear. (details about graphical analysis can be found in a separate manual for the GraphTool software package)

The files are automatically stored in a folder defined by YoyoView.
This can be found at **C:\Users\Public\Public Documents\Graphtool**
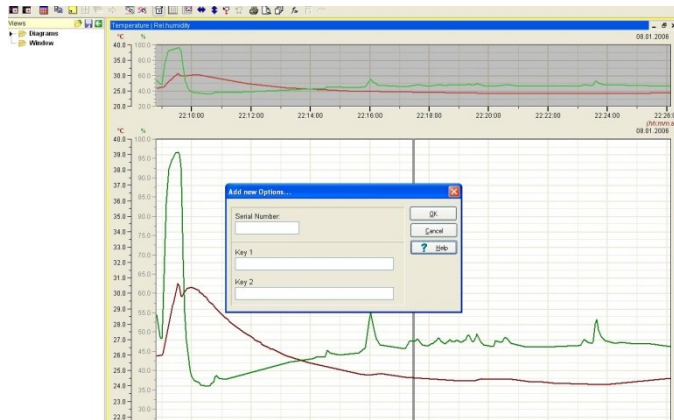
7.4 Logger Setup - General
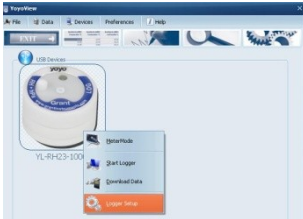
Click on **Logger Setup**, to define general settings for the logger, i.e. channel settings, alarm settings).

A picture of the logger is displayed so the inputs/slots can be identified.

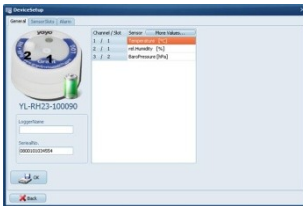The battery capacity is displayed in the same picture. If the battery status is "green" the battery is still in a usable condition. If the battery is red, it should be replaced soon and only a short term logging period should be performed.
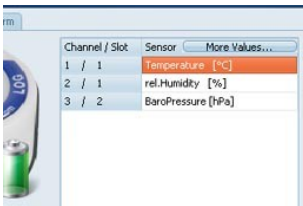
Click on the **General** tab and then enter a logger name this can be used for later for identification.

Click on "**More values**", to set the calculated readings required.

Select the calculated values as they are required to be returned. These will be stored in the same ASCII-file as the original data.

Note: If the calculated values are not selected, the .bin file can be imported and the calculated values can be selected as appropriate.

7.5   Logger Setup – Sensor Slots

Those loggers that have additional inputs for external signals or sensors have to be configured correctly to show the expected values and prevent damage.

The input types that can be configured for different sensor/signals types are shown in the table:

	PT100/PT1000/ Thermistor	Humidity/ Temp	Barometric Pressure	Condensation	Voltage current	Pulse	Thermocouple	Strain gauge	Micro volt	Soil Moisture	Light
YL-T11 YL-T12	x										
YL-T15 YL-T16							x				
YL-RH23		x	x								
YL-RH25	x	x		x							
YL-M32					x			x	x		
YL-M33 YL-M34					x						
YL-M41 YL-M42						x					
YL-M61											x
YL-M62		x									x
YL-M90	x	x		x	x	x			x	x	
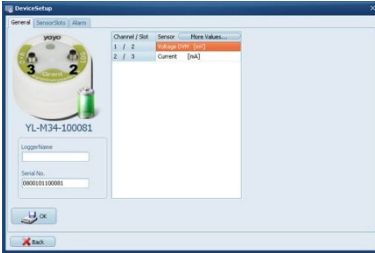
Click on **Logger Setup,** to configure the inputs.

The actual configuration of the logger and the range are displayed.

Click on the **Sensor Slots** tab.

NOTE: This function is only available when the logger is not logging.
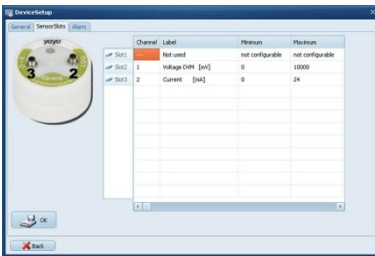
Click on the symbol of the slot to be modified for example **Slot2**.
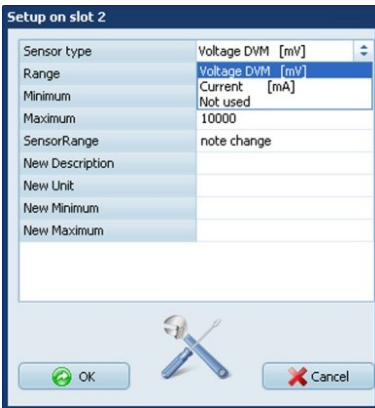
Here the sensor type connected to Slot2 can be selected. If one of the standard sensors of the yoyo loggers is required then simply select the corresponding sensor type.

If the sensor has any analogue output the sensor range can be scaled.

YoYoView automatically assigns the **minimum** and **maximum** values of the sensor range. This can be altered if required.

In order to set engineering units for the sensor, select **Change to new Unit** in the section **SensorRange**.

Further settings can be entered. The above example shows the values for a sensor with a linear range of 0…50m/s = to 0…1V.

In this example the following has been entered:
New Description: Velocity
New Unit: m/s
New Minimum: 0
New Maximum: 50

Once the correct settings have been entered for the sensor click on the **OK** button.

As per the default, this new range will automatically be activated and logged when the logger is started. If the engineering units are no longer required they can be deselected at **Logger Setup, General, More values**, further information on this can be found in chapter 7.4.

7.5.1 Temperature PT100/PT1000/Thermistor

The standard temperature sensors supplied (YS-EU, YS-CM etc) are all PT1000-sensors. If you are connecting a standard sensor, select type **Temp.PT1000**.

If you are using a sensor purchased elsewhere, assign pins 1 to 4 and select the appropriate sensor type in the software.

Sensor   **Pin outs** 4pin

1.   White
2.   Brown
3.   Black
4.   Blue
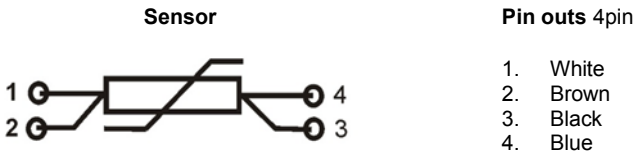
This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode: **Temp.PT1000 [°C] or PT100 or Thermistor U**

7.5.2 Sensors for temperature (Thermocouple)

The YL-T15 and YL-T16 allow connection of the thermocouple sensors. These can be of any type from K, T, J, B, E, N, R or S. Connect the sensors into the logger with the correct polarity.

This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode: **Thermocouple [°C].**

7.5.3 Combined Sensors for temperature / humidity

This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode: **Temp/RH [°C/%]**. Although humidity/temperature-sensors have are two separate sensors, they only use one channel of the logger.

Humidity sensor life can be affected by environmental conditions. Read the Trouble shooting section for more details.

7.5.4 Sensors for condensation

The condensation sensor Type SHS delivers a "1" Signal when condensation has been detected and a "0", if no condensation is detected. This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode: **Condensation [ ].**

7.5.5 Pulse Count - potential-free contacts

The YL-M41/42 and the YL-M90 data loggers can process signals from external switch contacts. The sensors need to be connected to the YY-CS cable. Just connect cable colours according to the scheme below:

Potential free contact (i.e.Reed relay)

White   **Blue**

YY-CS

With both asynchronous and synchronous signals a pulse is counted when the switch is closed.

This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode: **Frequency [Hz].**

Important: **Connecting voltages higher than 3 Volts will damage the device.**

7.5.6 Pulse Count - Voltage pulses <3Volts CMOS

If the pulse signal is not a voltage-free signal but has a potential, **which is less than 3V** then the standard YY-CS cable can be used. Connect pins 3 and 4 according to the following image:

<3V Voltage Pulses

Voltage active low-White   **GND Blue**   *YY-CS*
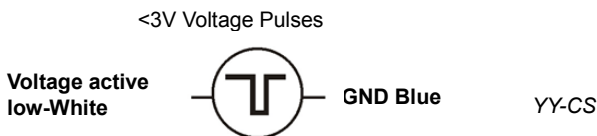
With both asynchronous and synchronous signals a pulse is counted on the falling edge (from high level to low level).

This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode: **Frequency [Hz].**

Important: **Connecting voltages higher than 3 Volts will damage the device.**

7.5.7   Pulse Count - Voltage signals >3Volts

If the loggers YL-M41/42 and YL-M90 are used for pulse counts with a signal between 3V and 24V **the YY-CP** connection cable will be required. Operation with other cables may cause damage.

<3-24V Voltage Pulses

Voltage active high White ⎯ ⊓⊔ ⎯ **GND Blue**   *YY-CS*
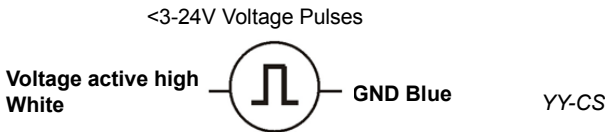
With both asynchronous and synchronous signals a pulse is counted on the rising edge (from low level to high level).

This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode: **Frequency [Hz].**

Important: **Connecting pulse inputs with a voltage greater than 24 Volts will damage the device.**

7.5.8   Voltage - GND reference signals (max 10V)

Applications: standard analogue levels of industrial transmitters, etc.

This mode is suitable for measuring voltage signals between 0-10 Volts. This signal needs to be connected with the YY-CU cable. Input with another cable may cause damage to the device and mismatched readings.
The software allows selection of the input ranges 0-1V/ 0-2,5V / 0-5V / 0-10V (or freely selectable between 1-10V). Input impedance in this mode is 100 KOhm.

0...10V Analogue Output

+U out-White ⎯ (V) ⎯ **GND Blue**
        YY-CU Cable

This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode:
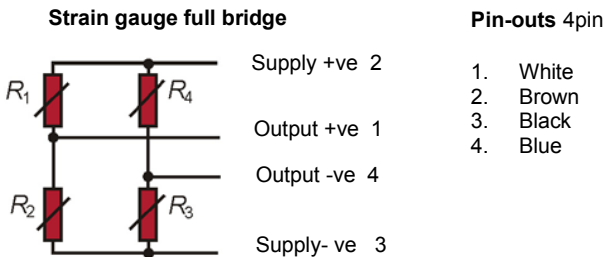
Voltage DVM [mV].

The power supply for additional transmitters needs to be provided externally.

Important: Connecting voltages higher than 10 Volts will damage the device.

7.5.9   Strain gauge – sensors (YL-M32 only)

The YL-M32 logger can measure two strain gauges. It is designed for full resistance bridges at 60-700 Ohms.
Simply use YY-CS cables to connect the sensor to the logger.

Strain gauge full bridge

Supply +ve 2

Output +ve 1

Output -ve 4

Supply- ve 3

Pin-outs 4pin

1.   White
2.   Brown
3.   Black
4.   Blue

This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode: **DMS**.

Usually complete Strain gauge bridges are supplied calibrated. In the calibration certificate the bridge rated output $C_N \left[\frac{mV}{V}\right]$ will be listed. With these specifications the bridge rated output $C_{NR} \left[\frac{mV}{mA}\right]$ is converted as followed:
Conversion of the bridge rated output $C_N \left[\frac{mV}{V}\right]$ to $C_{NR} \left[\frac{mV}{mA}\right]$

$$C_{NR} \left[\frac{mV}{mA}\right] = \frac{C_N * \text{bridge rated output}}{1000}$$

Example: $C\frac{mV}{V}_{NR} = 2\frac{mV}{V}$ @ 50kg   / $R_{bridge} = 120\Omega$

$$C_{NR} = \frac{2*120}{1000} = 0,24 \text{ mV @ 50kg}$$

YoyoView plus has an integrated formula editor, which allows you to enter a formula as described above to calculate Forces/tensions from the mV reading.

7.5.10 Lowest-voltage measurement (YL-M32 only)

The YL-M32 can measure very low voltage signals for example in the range of +/-5mV with a resolution as low as 0,15µV.

Microvoltage

+V out-White — (V) — **GND Blue**

YY-CU
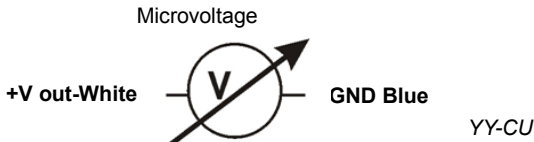
This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode: **High-Impedance.**

7.5.11 Voltage - GND reference signals (YL-M32/-M90, max 1V)

In order to measure low voltage levels < 1VDC from grounded voltage sources, connect the YY-CS cable according to the diagram below.
In this mode the logger can perform at an interval of up to 32 Hz.
Measuring ranges 0-10 mV or 0-1000mV are possible. The measuring range 0-10 mV allows for a resolution of up to 560 nV. The input impedance in this mode is > 2.5 MOhm.

<1V Analogue Output

+V out-White — (V) — **GND Blue**

YY-CU
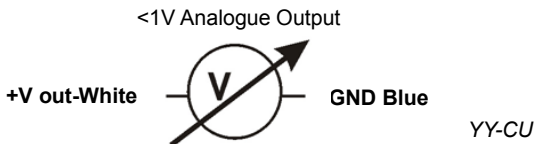
This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode: **Voltage DVM [mV].**

Important: **Connecting voltages greater than 1 Volt will damage the device**

7.5.12 Current measurement (max 24 mA)

Current measurements can be made with signals up to a maximum of 24 mA. The signals need to be connected with the YY-CI cable.
Input with another cable will cause damage to the device.
The software will allow for the input range to be freely selected between 0-24 mA.
The input impedance in this mode is 100 KOhm. The maximum sampling rate is 32 Hz.

This connection can be configured in **LoggerSetup/SensorSlot** - SlotMode:
Current [mA].

**Connections for YY-CI cable to measure a current up to 24mA**
White = Analogue input   +
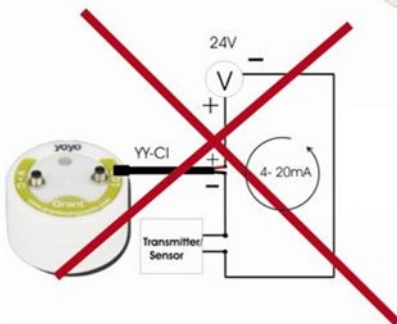**Blue   = Analogue input   -**

The YY-CI has a 10 Ohm shunt resistor built in.

The transmitter will be required to be powered externally.

Warning! Always connect the data logger to the lowest potential of the current loop. Meter the low-side current and do not meter the high-side current (see the following image).
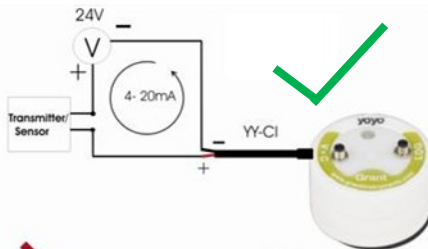
7.5.13 Soil moisture sensor - Decagon series (YL-M90 only)

The ECH2O probes can be connected to the **YL-M90** for measuring soil moisture.

The sensors of the ECH2O series are capacitive sensors for soil moisture that measure the permittivity of soil. An output signal proportional to the soil moisture is created by altering the sensor's reference voltage. The significant differences between the permittivity of water (ca. 80), soil (ca. 4) and air (ca. 1) are beneficial in the measuring principle as the changes in moisture content, result in a large change in the permittivity of the soil.
The influences of the soil's temperature and salinity are minimized by the specialist surface coating of the sensor.

 Specifications:

EC-5
Measuring range: 0-saturation
Accuracy: <0,03m³/m³ for all soils, up to 8 dS/m
With soil specific calibration: +/-0,02 ³/m³ (+/-2%)
Resolution: 0,001 m³/m³ VWC in mineral soils. 0,25% in natural soil
Operating temperature range: -40-60°C

Selecting the measuring site
When selecting the site to measure be aware that the immediate surrounding area of the sensor has the most influence on the readings.
For example, holes, cavities, and compactions can have an effect on the measurements.

Do not install the sensor near large metal objects as this can affect the magnetic field surrounding the sensor.
Please be aware of objects (such as sticks and stones) between the sensor brackets as these may affect the measurements.
When installing the sensor please make sure that the contact areas between the sensor and the soil are maximised.
Two methods can be helpful in siting the sensor:

Installing the EC-5

1. The EC-5's installation is especially easy to manage. After digging a sufficiently deep hole for the sensor, insert the brackets into <u>unspoiled</u> soil at the bottom or side of the hole.
The sensor needs to be entirely covered, including the rubber over molding.
If it's too difficult to insert the sensor, try to loosen the ground. DO NOT drive the sensor into the soil by force, as this may cause irreparable damage.
2. Carefully refill the hole. Try to prevent the rubber-coating segment from being bent as this may cause damage.

Position of the sensor

The sensor can be operated in any position, but the installation at right angles to the surface is preferable in order not to impede infiltration.

Removing the sensor

NEVER pull the sensor's cable if to remove it from the ground. This could damage the device.
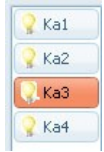
7.6   *Logger Setup – Configuring Alarms*

Yoyo loggers have integrated alarm functionality. An LED will start to flash if thresholds are exceeded.
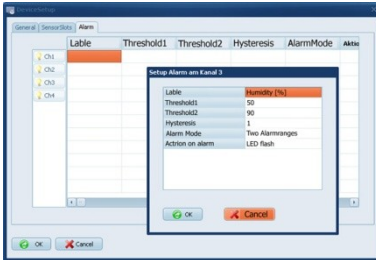
Click on **Alarm**, to display the alarm settings.

Then click on the symbol of the channel in order to change the settings.

Select from the following Alarm Modes:

One alarm range:

Sensor
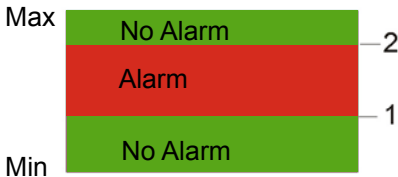
There is one alarm range for the selected channel. If the sensor value is higher than the (Alarm threshold1 ± Hysteresis) and lower than (Alarm threashold2 ± Hysteresis) the logger will start to alarm.

.

Two alarm ranges:

Sensor

There are two alarm ranges for the selected channel. If the sensor value is higher than the (Alarm threshold1 ± Hysteresis) and lower than (Alarm threashold2 ± Hysteresis) there is no Alarm.
Otherwise the logger will start to alarm.

Now set the values for **Threshold 1** and **Threshold 2** and define the **Hysteresis**

7.7   Display logged data as a graph

Click here or go to **Data/Graph** to display readings as a graph.
Select the file to be graphed.
YoyoView automatically searches its predefined folder:
  C:\Users\Public\Public Documents\Graphtool.

As soon as the data has been fully processed the GraphTool-Software will pop up.
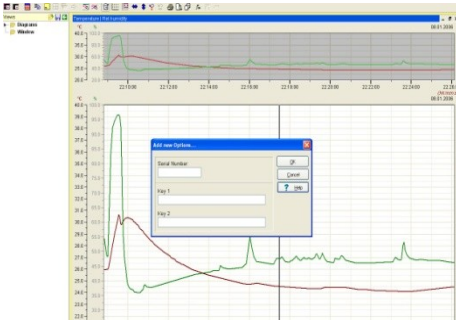
When purchasing the YoyoView Plus software there will be a serial number and two keys which are required to be entered here. The graphing option will appear if these have already be entered.

The software can be upgraded and new options added at a later time. Contact the local distributor or sales partner to obtain, YoyoView Plus.

7.8   Display logged data as a table

Click here or go to **Data/Table** to display data in a table.
Select the file for graphing.
YoyoView will automatically open the file and search for its predefined folder, which has been set in the preferences section.

7.9   Exit

Click here or go to **File/Exit** to exit the application.

8   Troubleshooting

Typical error messages that may occur during operation are listed below.
Try to solve the problem with the following help list before contacting your distributor.

A) *No logger is displayed*
**First, check if the logger cable is correctly connected to the USB Port
and to the logger. Secondly, uninstall the software and re-install the
complete package (software/USB-driver).   Administration rights are
required during the installation process. If the problem still exists there
may be a fault with the logger.**

B) *Unknown Logger is displayed*
**The software being used may be an old version, which doesn't
recognize the new hardware. Check with the local dealer for any
upgrades.**

C) *Cannot contact logger*
**If the error message continues to show after checking that the loggers is
connected correctly and appears in the YoyoView software. This could
be due to the logger having a flat or missing battery. Replace the battery
and verify initial function test as follows:
After having inserted the battery the LED on logger front should flash in
all three colours (LED chaser). This shows the logger is operating. Now,
try contacting the logger. If problem still exists there may be a problem
with the logger hardware, contact the local dealer.**

D) **Logger stops taking readings after a period logging.
Please check the logger setup for any settings selected for a stop
date/time, change the setup if necessary. Otherwise this could be due to
a flat battery.   Check battery voltage in YoyoView (see chapter 4.1) and
possibly replace battery.**

E) **Humidity/Temperature readings continuously show -40°C/+120°C .
Humidity/Temperature-Sensor is faulty or the cable has been damaged.**

F) **Other sensors continuously show their Max/Min:
Sensor or sensor cable could be damaged.**

Important notes for measuring humidity

The Yoyo humidity/temperature probes are a precise, reliable humidity sensor element which has a good long-term stability. The capacitive sensor allows for humidity measurement in many applications and will give stable readings in clean environments for several years.

Depending on the environmental conditions the sensor can become contaminated by for example: dust, chemicals and dirty water which will reduce the active life.

There are further limitations, the sensor may be used in a operating range of 0-100% RH this operating range is reduced at as the operating temperature increases. See the graph below. This is due to the fact that quite an aggressive environment is developed when measuring high humidity and high temperature at the same time:

Operating conditions
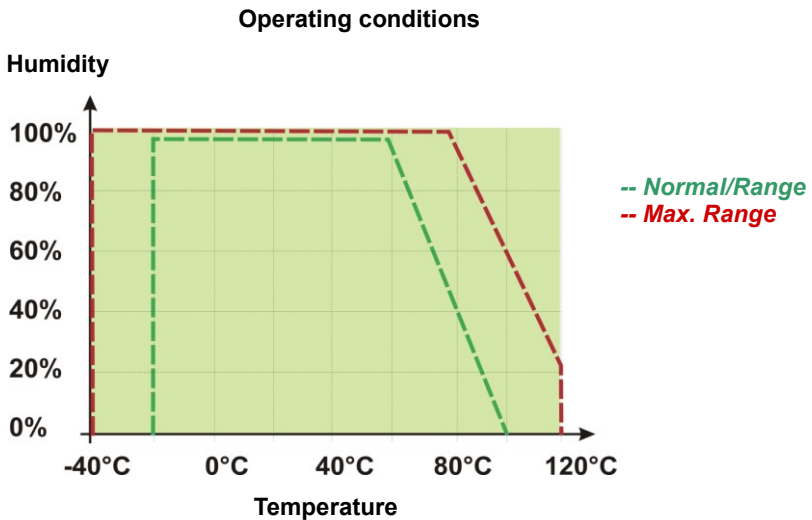
The sensor should not be damaged when condensation occurs occasionally. If condensation does occur, dry out the sensor in order to return to the correct measurements, except the sensor polymer is contaminated with substances (see above).

If condensation occurs regularly or for a long period of time, the sensor life is reduced. If the sensor is even saturated it may give incorrect readings in the range of 0-100% RH (sometimes even negative readings), but will recover when water droplets have evaporated.

To ensure high quality readings we therefore recommend that probes/loggers are verified and calibrated on an annual basis.

9   Understanding the LEDs

The logger LED's for Type YL-T10 and YL-RH20 are coloured differently compared to those of the rest of the yoyo logger series.

Datalogger YL-T10 , YL-RH20

Logger Status	Red LED	Yellow LED	Green LED
Logs at interval	-	-	Flashes at interval
USB communication	-	on	-
Alarm occurred	Flashes at 8seconds	-	-
Alarm status cleared after an alarm occurred	-	Flashes at 8seconds	-
At least 2 alarms occurred with a pause in between.	Flashes at 8seconds	Flashes at 8seconds	-
Battery empty	Flashes at 15seconds	Flashes at 15seconds	Flashes at 15seconds
System check OK after battery change	LED chaser	LED chaser	LED chaser

All other datalogger of Yoyo series

Logger Status	Red LED	Blue LED	Green LED
Logs at interval	-	Flashes according to log interval	-
Monitors alarm conditions	-	-	Flashes every 8 secs
Alarm active	Long Flash for 1 second every 8 seconds	-	-
Alarm occured but is not active anymore	Short Flash every 8 seconds	-	-
Battery empty	Intense flickering for 0.5 seconds every 15 seconds	-	-
System check OK after battery change	LED chaser		

Grant

Grant yoyo log ™

Manufacturer´s Declaration of Conformity

Grant Instruments (Camebridge) Ltd. does declare that, to the best of it knowledge and belief, the products referenced below meet the essential requirements and are in conformity with the relevant EC Directive(s) listed using the relevant section of the EC Standard.

The required performance and safety tests were sucessfully conducted according to the harmonized standards. The CE Marking has been affixed on the devices according to the EC Directives.

Equipment under Test (EuT): yoyo-logger

YL-T10, YL-T10E, YL-T11, YL-T15, YL-T16, YL-RH20, YL-RH20E, YL-RH23, YL-RH23E, YL-RH25, YL-M32, YL-M33, YL-M34, YL-M41, YL-M42, YL-M61, YL-M62, YL-M90

Tests:	Standards:	Result
Emission		
Radiated emission	EN 61326-1:2006	**PASS**
Interference immunity		
Electrostatic discharge	EN 61326-1:2006	**PASS**
Electromangnetic field	EN 61326-1:2006	**PASS**
Magnetic field (power frequency)	EN 61326-1:2006	**PASS**
Explanation:		
PASS - The EuT meets the requirements	FAIL - The EuT does not meet the requirements	N/A - Test is not applicable

Evaluation:
The Equipment under Test (EuT) meets the requirements of the EN61326-1 first class B devices (emission) and industrial environment (immunity).

Calibration

We hereby certify that above products are calibrated using dedicated equpiment which is calibrated according to ISO9001 by comparison against natural standards, natural physical constants, or by ratio type measurements   using self-calibrating techniques.

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