Pegasus Plus
User Manual

Version 1.4

Warning: This manual contains important safety and operating information. Please read, understand and follow the instructions in the manual.

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WEEE and the Battery Directive

Waste Electrical and Electronic Equipment.
HWM-Water Ltd is a registered producer of Electrical and Electronic Equipment in the United Kingdom (registration number WEE/AE0049TZ). Our products fall under category 9 (Monitoring and Control Instruments) of The Waste Electrical and Electronic Equipment (WEEE) Regulations. We take all environmental issues seriously and fully comply with the requirements for collection, recycling and reporting of waste products.

HWM-Water Ltd is responsible for WEEE from customers in the United Kingdom provided that:
The equipment was produced by HWM-Water Ltd (Palmer Environmental / Radcom Technologies / Radiotech / ASL Holdings Ltd) and supplied on or after 13th August 2005
The equipment was supplied before 13th August 2005 that has been directly replaced HWM-Water Ltd products manufactured since 13th August 2005.
HWM-Water products supplied after 13th August 2005 can be identified by the following symbol:

Under HWM-Water Ltd's Terms and Conditions of Sale, customers are responsible for the cost of returning WEEE to HWM-Water Ltd and we are responsible for the costs of recycling and reporting on that waste.
Instructions for returning WEEE:
Ensure that the WEEE meets one of the two conditions above.
The waste will need to be returned in accordance with the regulations for transporting data loggers with lithium batteries.

a. Pack loggers in strong, rigid outer packaging to protect them from damage.
b. Attach a Lithium Warning Label to the package.
c. The package must be accompanied by a document (e.g. consignment note) that indicates:
    i. The package contains lithium metal cells;
    ii. The package must be handled with care and that a flammability hazard exists if the package is damaged;
    iii. Special procedures should be followed in the event the package is damaged, to include inspection and repacking if necessary; and
    iiii. A telephone number for additional information.
    d. Refer to the ADR regulations on shipping dangerous goods by road.

Return the WEEE to HWM-Water Ltd using a licensed waste carrier.
In accordance with the regulations, customers outside the United Kingdom are responsible for WEEE.

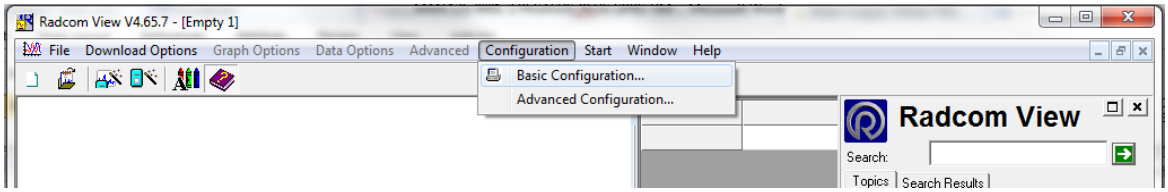
The Battery Directive

As a distributor of batteries HWM-Water Ltd will accept old batteries back from customers for disposal, free of charge, in accordance with the Battery Directive.
PLEASE NOTE: All lithium batteries MUST be packaged and returned in accordance with the relevant regulations for transporting lithium batteries.

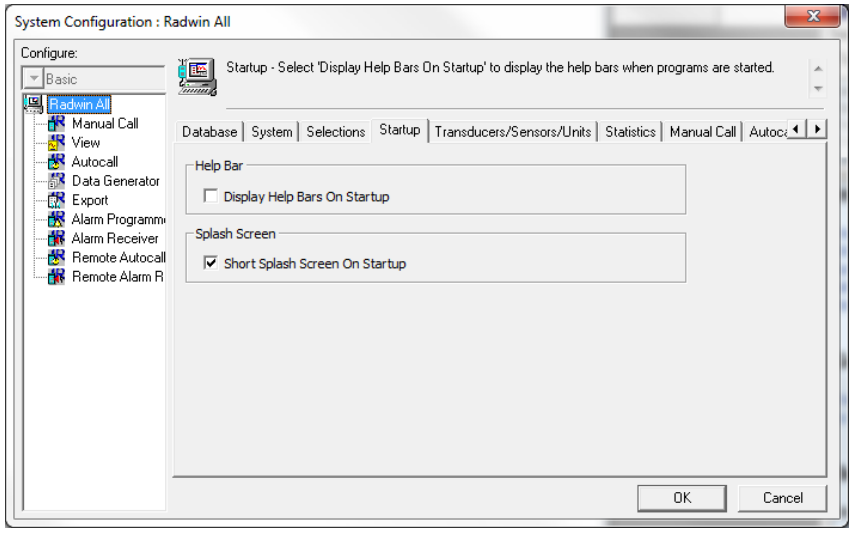
A licensed waste carrier must be used for transporting all waste.
For more information on WEEE compliance or the Battery Directive please e-mail CService@hwm-water.com or phone +44 (0)1633 489 479

Basic Configuration

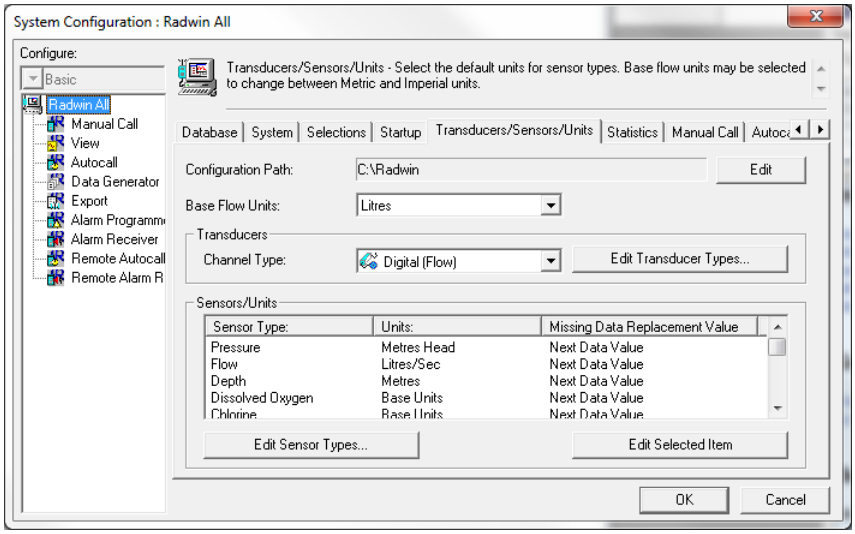
The first time Radwin is used the System Configuration window will appear automatically, it can also be accessed from “Configuration” in any of the Radwin Modules.



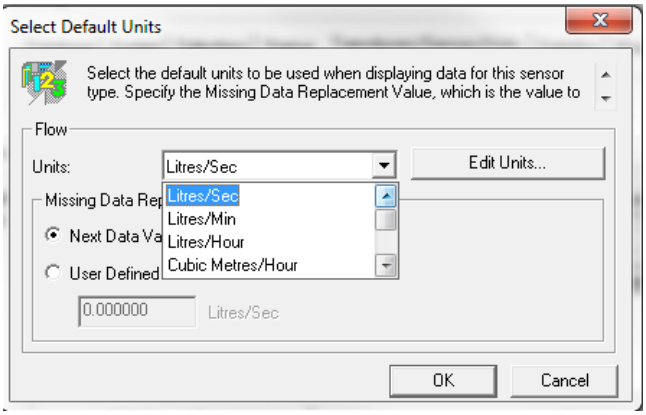
In the “Database” tab you can set the folder where you will store all data received, by default this is C:\Radwin\Data.
In the “Startup” tab you can configure how you want Radwin to Start, checking the box “Short Splash Screen on Startup” reduces the amount of time which the spinning Radcom logo appears, and unchecking “Display Help Bar” cancels the appearance of the Radwin Help at startup.



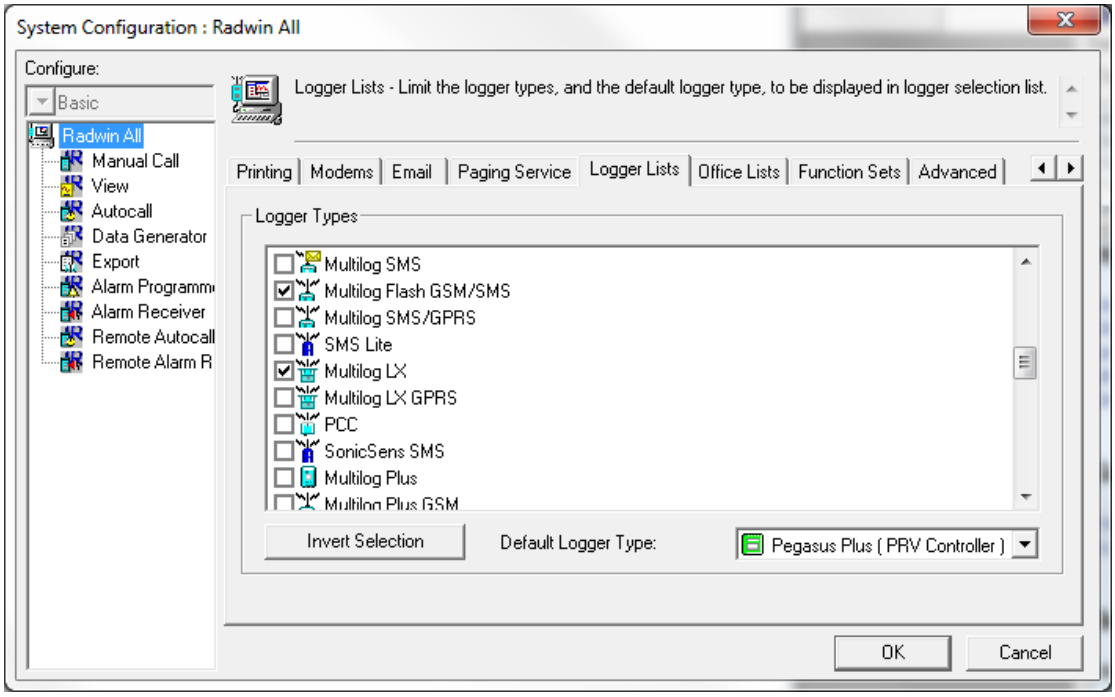
In the "Units" tab you can change the default units for pressure and flow, by double clicking on them.



In this example the flow units are configured to Litres/sec.



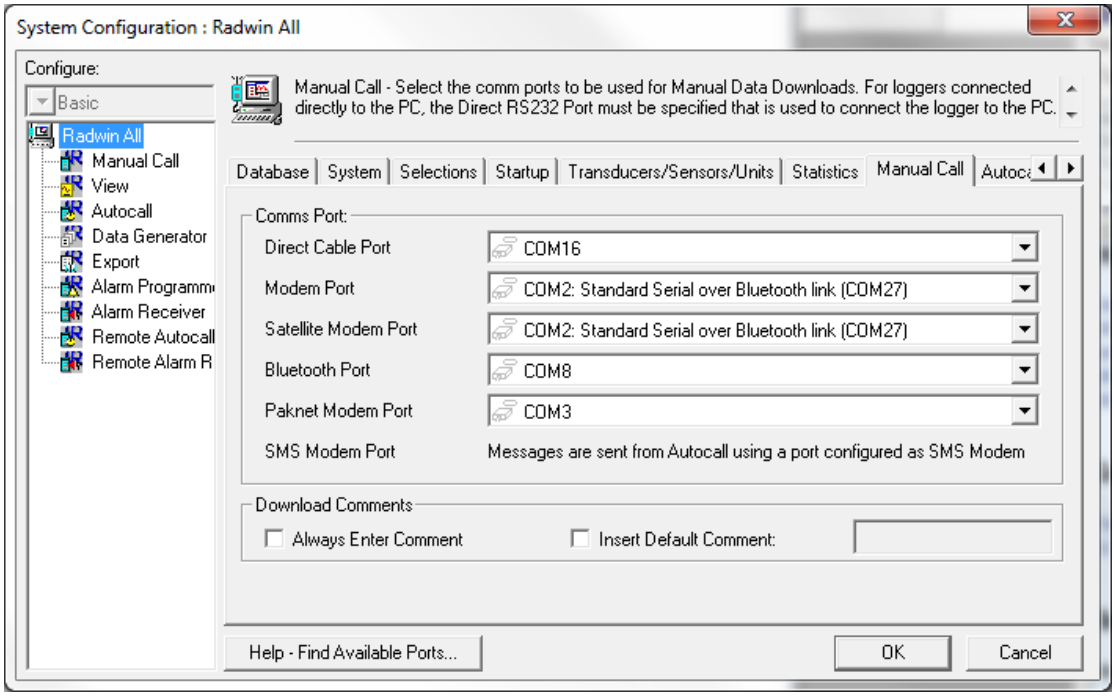
The logger type that appears by default can be configured in the “Logger Lists” tab. Which logger types appear in the drop down list can also be configured.



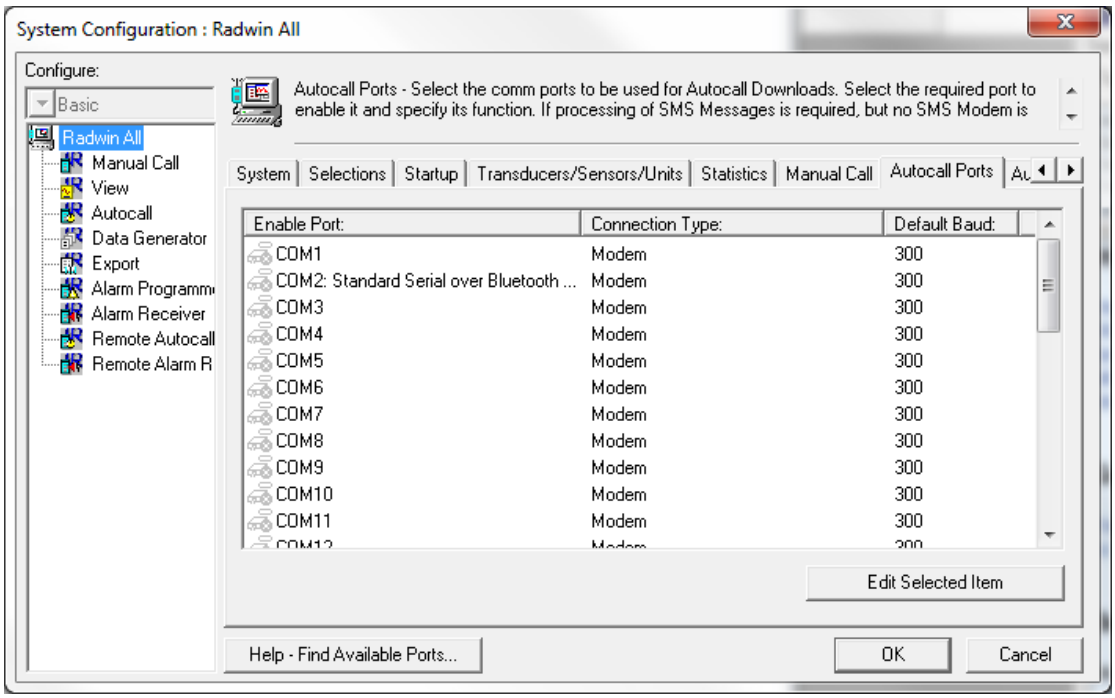
Communications Configuration

To configure the port for local communication, click on the tab “Manual Call” and for “Direct Cable Port” choose the correct port that the communications cable is connected to.

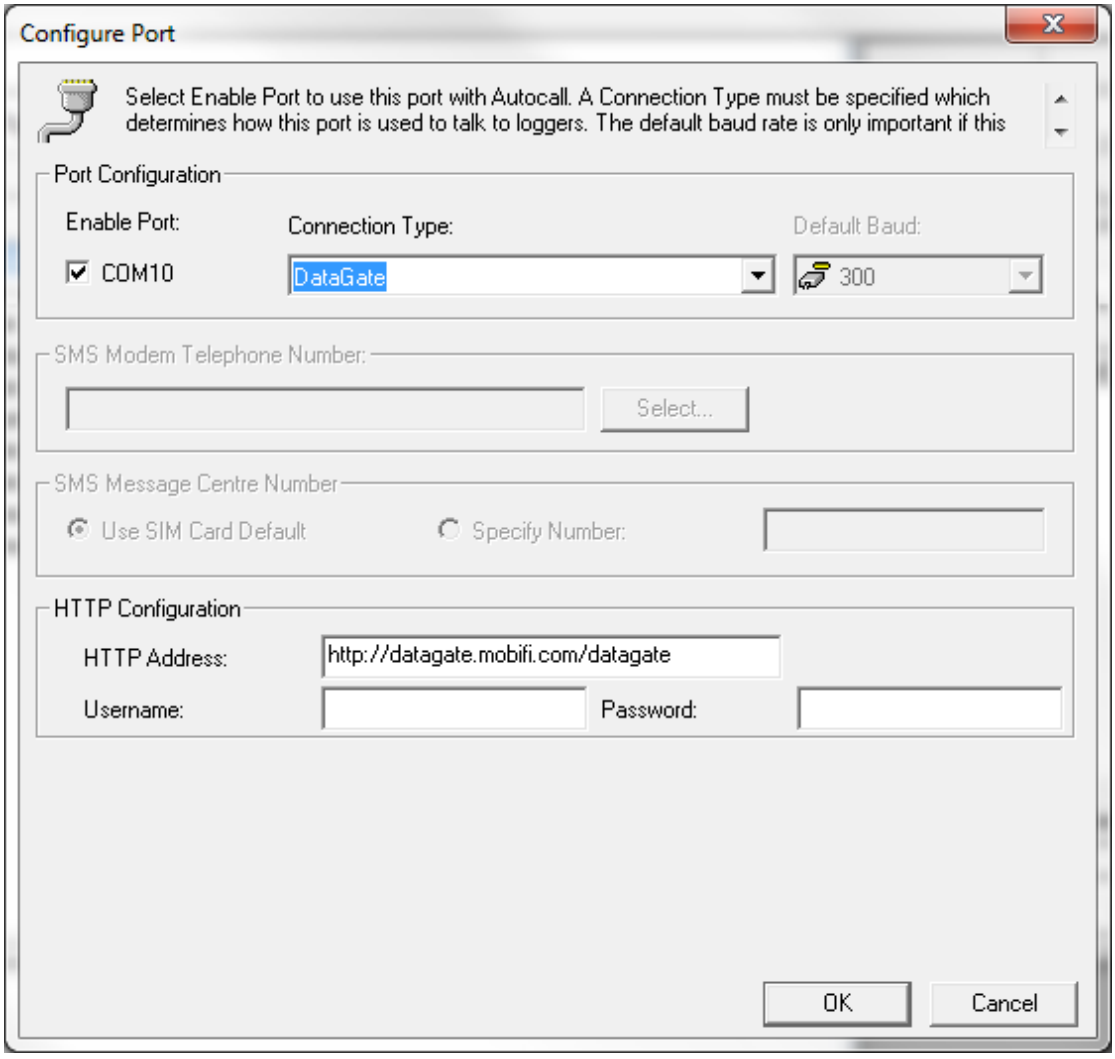
If you intend to use a GSM modem to communicate with the logger during a power window then “Modem Port” should also be configured.



To configure the central computer to receive data, click on the “Autocall Ports” tab

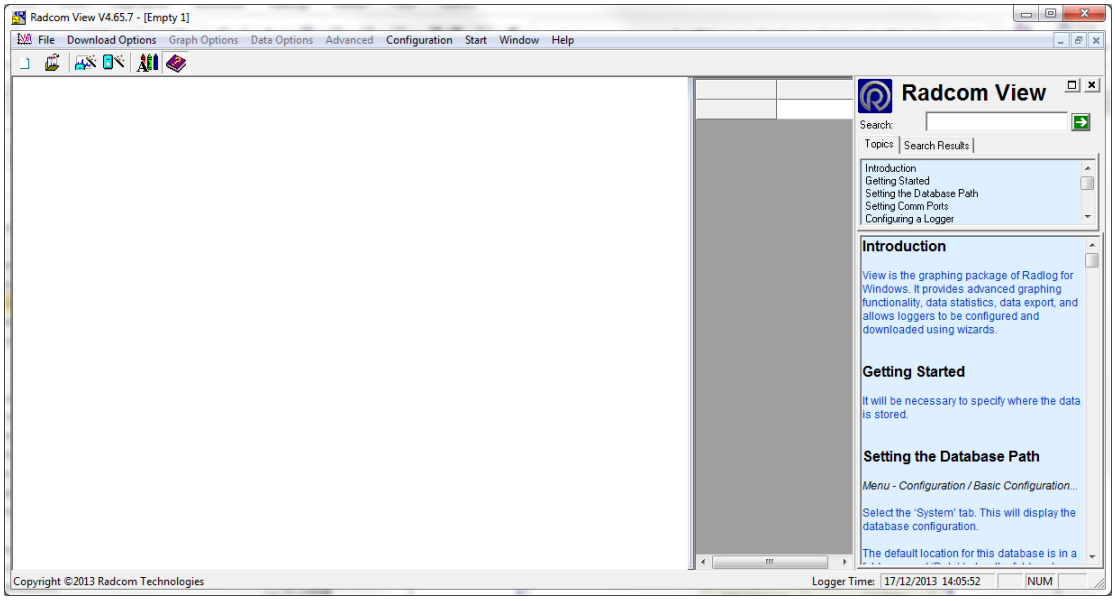


Choose a communications port number that is not in use for another application. To do this, double click on the port and in the new window that appears check "Enable Port ". To direct data to HWM Datagate, select “Datagate”, and enter “username” and “password” in the boxes below.

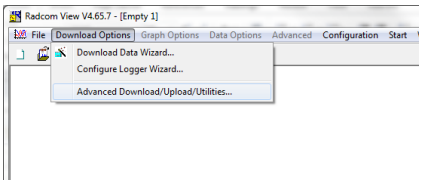


Logger Configuration

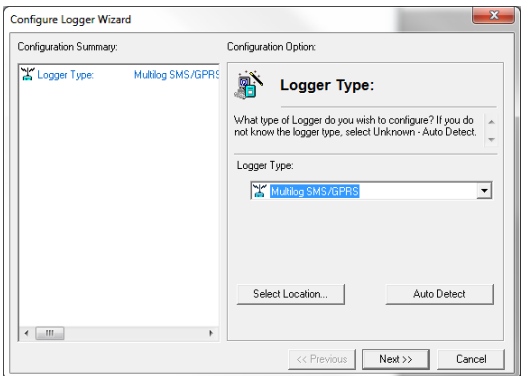
In the previous steps we configured the central computer to receive the data correctly. In these steps we will configure the logger and the database for correct operation in the field this can be done with “Radcom View”.



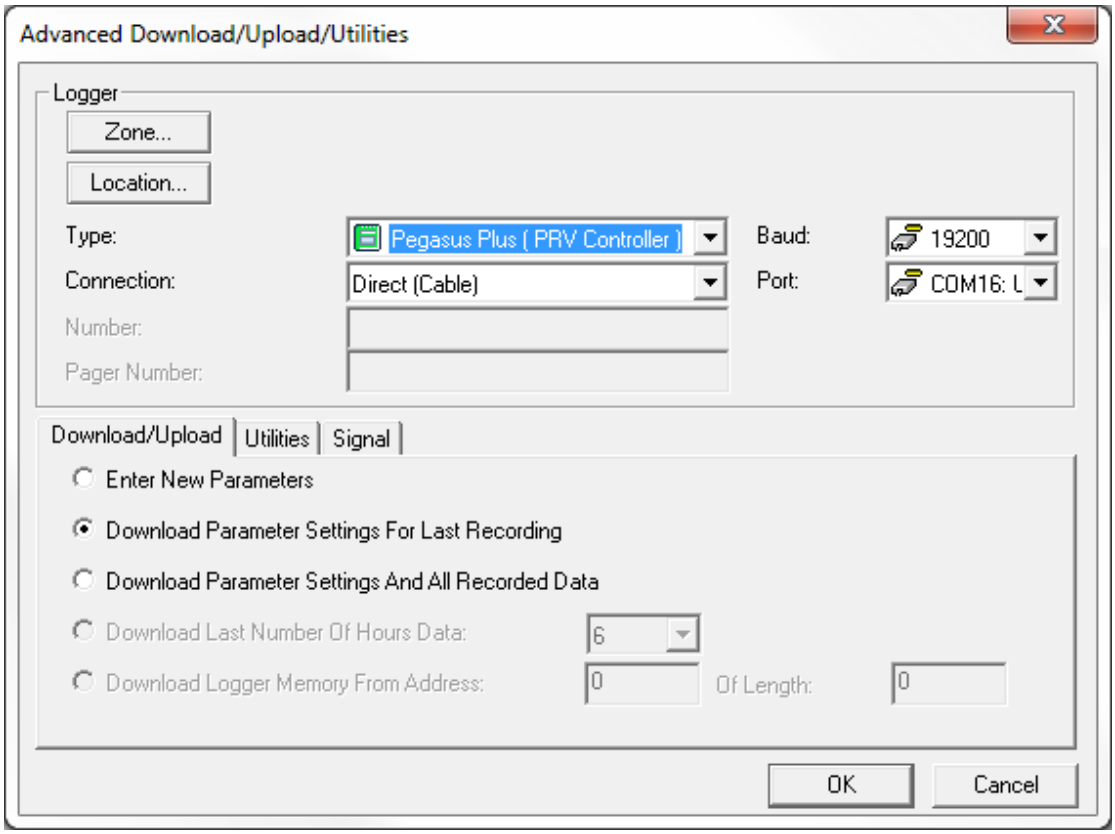
Select “Dwonload Options” then “Advanced Download/Upload/Utilities”



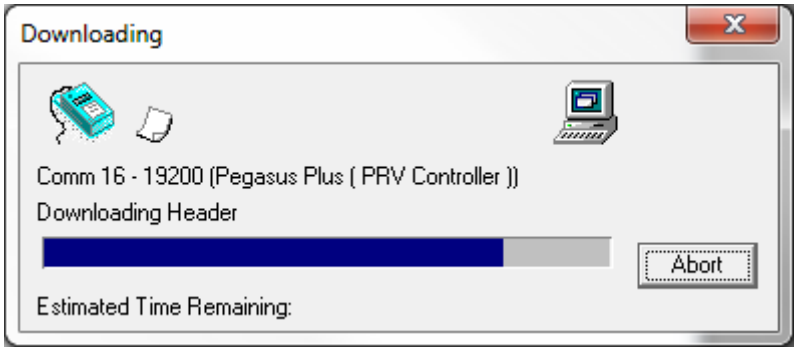
Note - It is not possible to configure the Pegasus Plus PRV controller using the Configure Logger Wizard, but if you prefer the Logging/GPRS elements can be configured using the wizard and logger type (Multilog SMS / GPRS).



Next is to set the logger type “Pegasus Plus (PRV Controller)” the speed of communication (Baud:) will automatically be set to 19200 and “Connection:” should be “Direct (cable)”. “Download Parameter Settings for Last Recording” should also be selected.

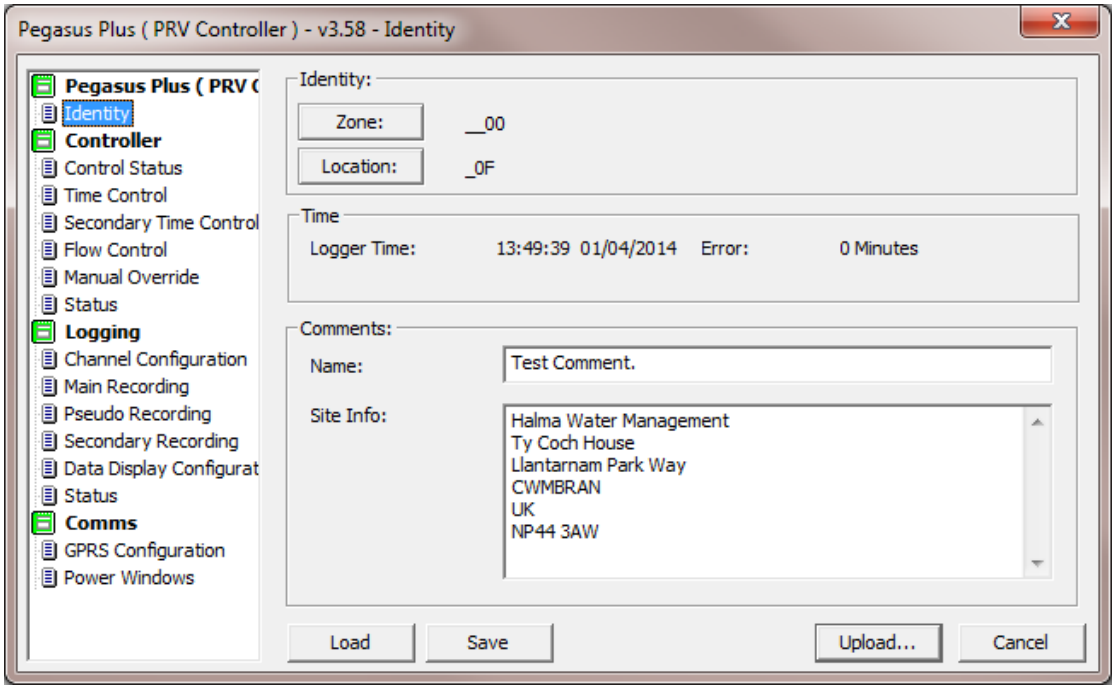


Having made the above changes click on the OK button to start the communication with the logger.



Once the current configuration has been downloaded we need to go through the headings on the left side to configure the logging and pressure control.

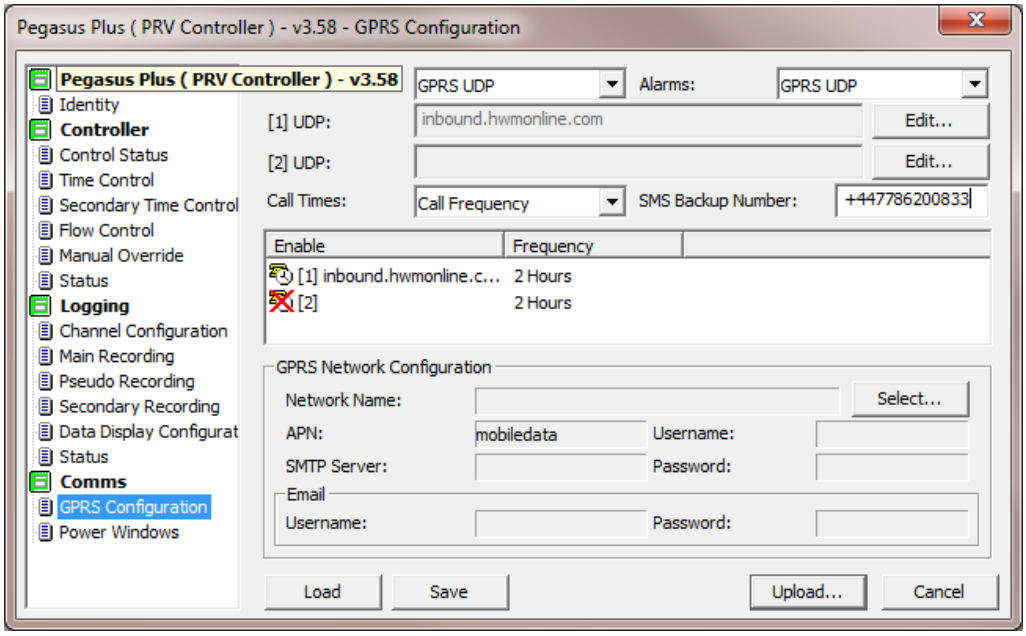
Choose the Zone and Location of the logger, either by selecting from the Database or by creating an new. This will be the folder location where data files will be downloaded and stored in this example __00_0F.



Select Communication

Click on “GPRS Configuration”

To send data to Datagate “GPRS UDP” should be selected, alarms can be sent directly by SMS, or by through Datagate (GPRS UDP), where they would be forwarded by email, or SMS(UK Only).



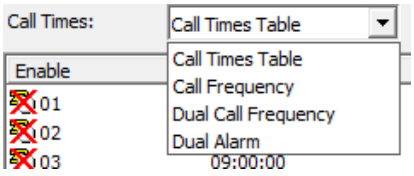
SMS backup can only be used either directly to Datagate (+447786200833) or if an SMS modem is also available on the central computer.

Call Times

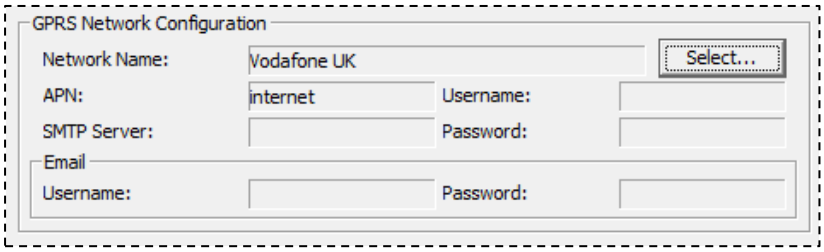
There are 3 options for call in

“Call times table” specifies the exact time(s) data should be sent each day.

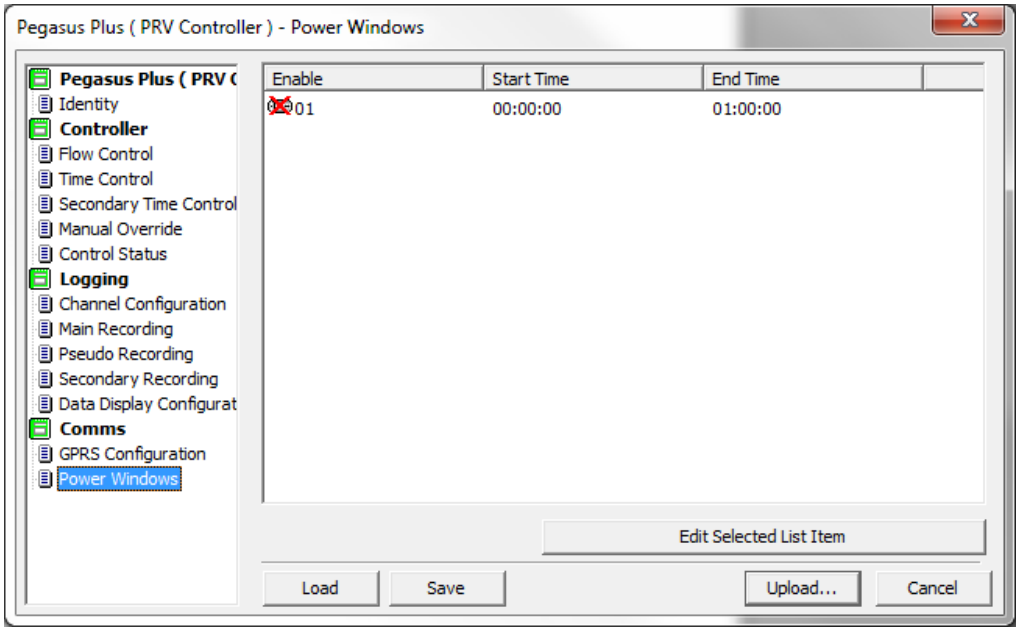
“Call Frequency” allows data to be sent at a specific interval.
“Dual Call Frequency” allows different call frequency for “day” and “night”
“Dual Alarm” Allows call frequency to be increased when and alarm condition occurs.



The APN of the celluallar network provider can be entered if known, or GPRS Test can be used to identify it, later, click “Select..” to edit APN.

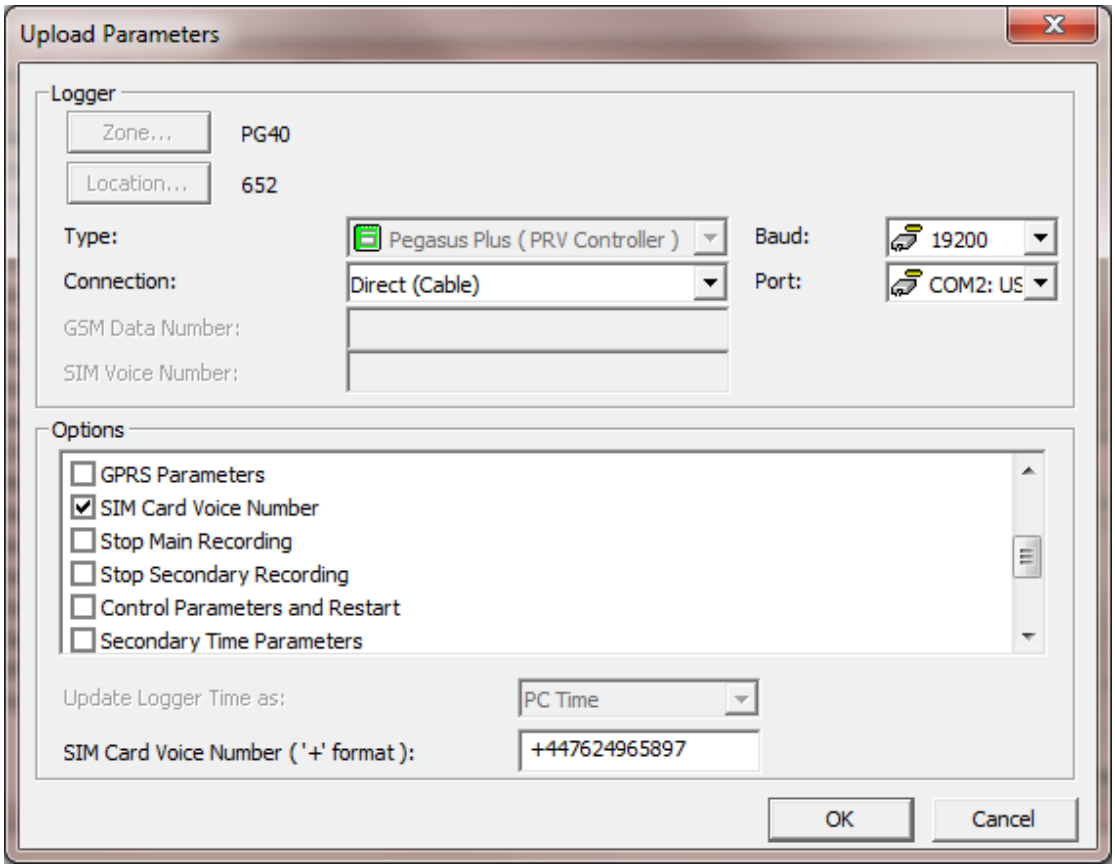


Power Windows allow communication by SMS/GSM with the logger at a predefined time, they are not normally required for GPRS loggers as messages can be sent through the server. To use GSM the sim card in the logger must have a GSM data number, and a GSM Modem is required on the central computer.



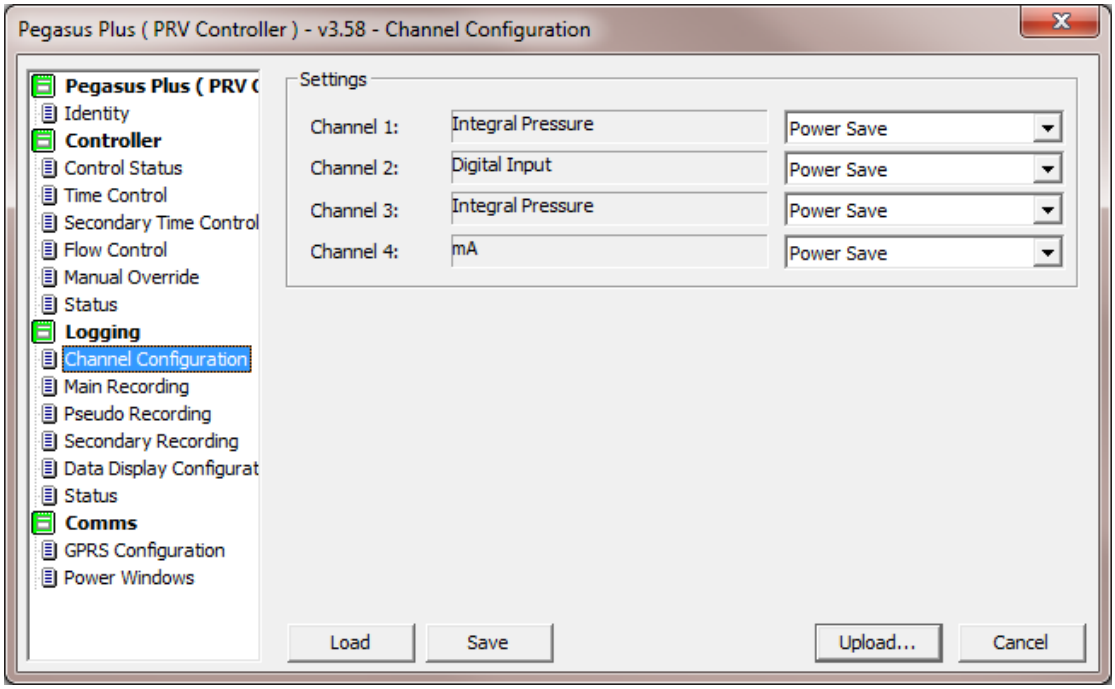
Configuration Phone Number

At this point we set up the phone number from the SIM card, which is in the Pegasus Plus

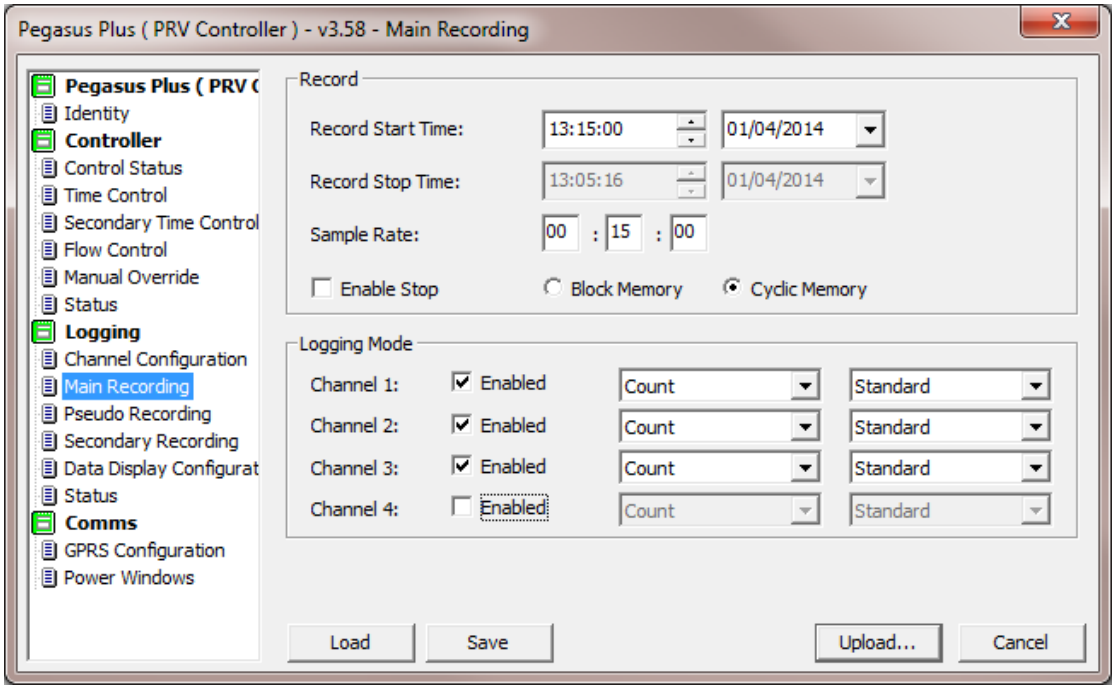


Configuring Input Channels

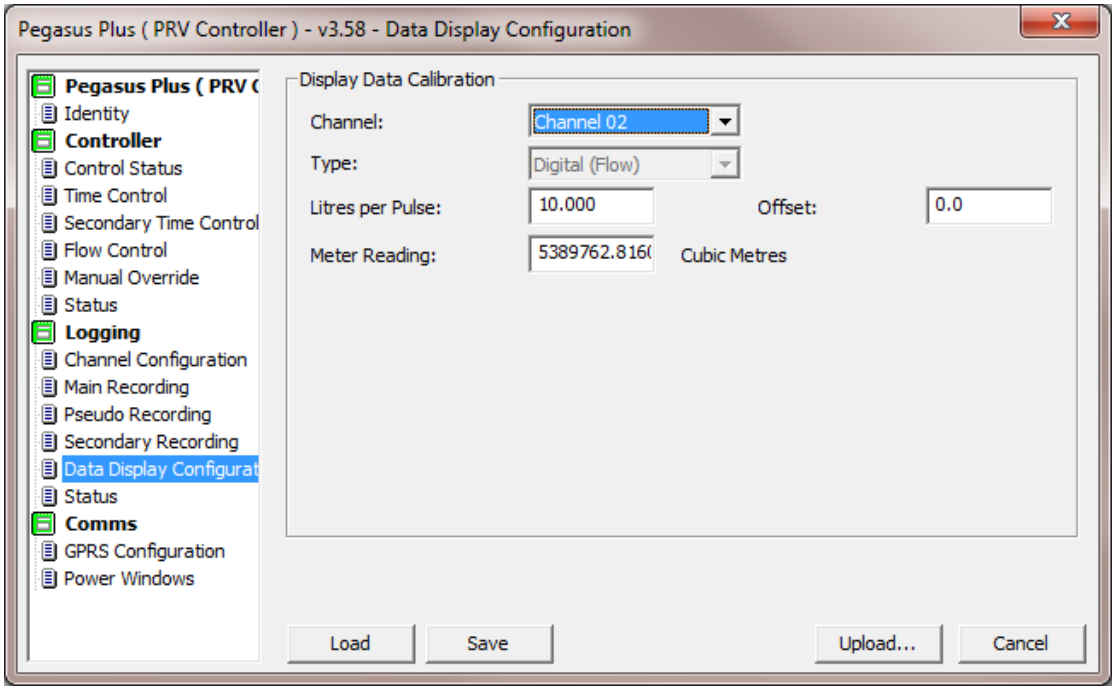
When using either Contact Closure or Open Collector pulse devices “Power Save” should be used.



This window configures the start time of the recording the time you see here is the previous start time, as long as this is in the past, the logging will automatically start at the next sample period. “Record” should always be cyclic, and stop disabled. All available channels should Enabled in “Logging mode” and “Count” and “Standard” are normally used.



Under “Data Display Configuration” for the flow transducer on “Channel 2” the “Litres Per Pulse” value should be entered according to the pulse output of the flow meter.



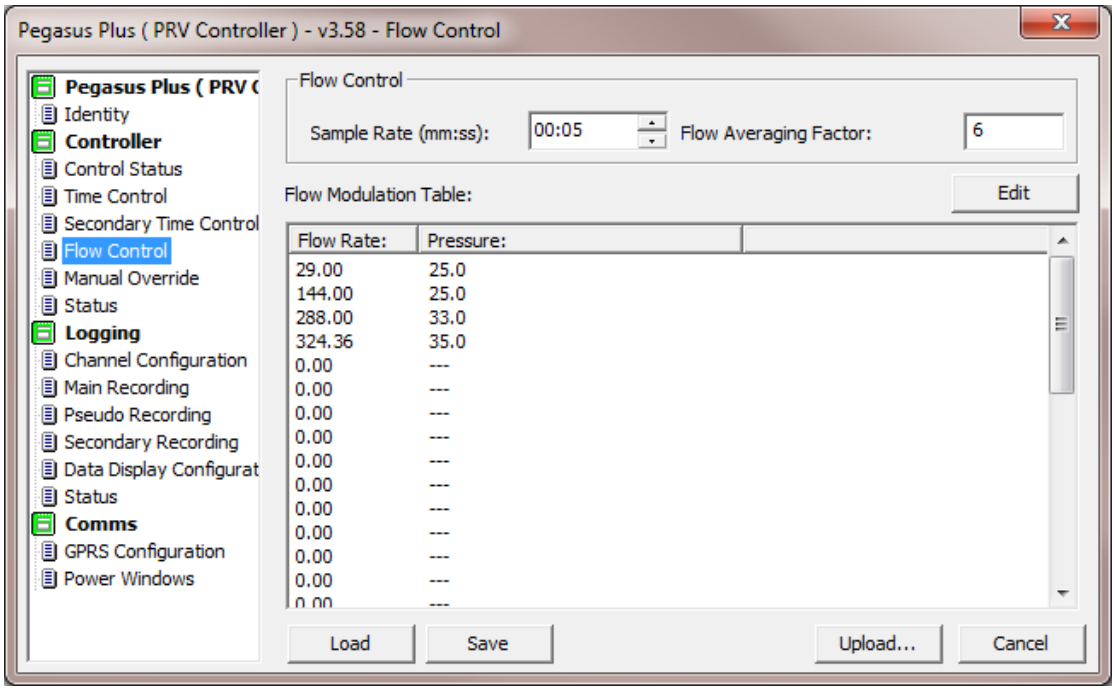
Setting the controller

The Pegasus Plus can be set to control by “Time”, “Flow” or both.
In the event of contradiction the highest pressure is always used

Flow Control

In the tab "Flow Control" in the section "Flow Control" enter the “Sample Rate” and flow averaging Factor. This number should not be too high as flow, is measured at the “Sample Rate” and averaged according to the “Flow Averaging Factor” So each time a new sample is taken the rolling average is updated.

The higher the average factor, the smoother the output pressure curve will be.
Typical Sample Rate = 10 seconds.
Typical Flow Averaging factor = 1



Click edit to enter the values in flow modulation look up table, enter values for flow (always Litres/second) and pressure (always in meters of water.) Then click Ok

You can set up a maximum of 32 points.

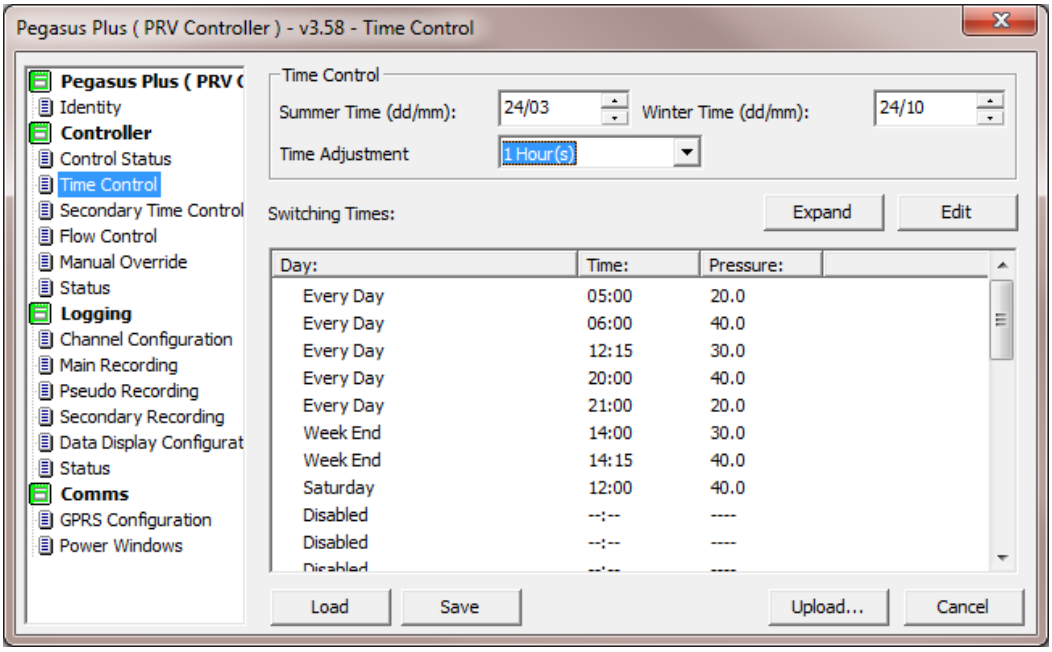
When using flow, the values are linearly interpolated between the points of the table.

Time Control

In the tab "Time Control" can establish a table of values in which for at a certain time, a certain pressure is established.

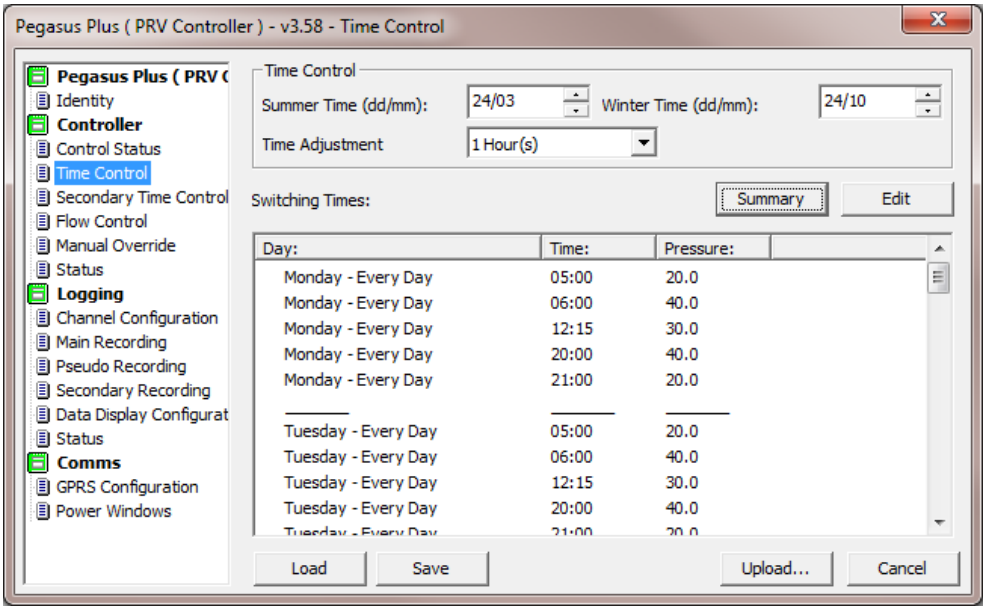
In the first section you can set the date time change for summer and winter.

To modify or add hours change right position is selected and click on "Edit".



In this screen you can select days of the week, Monday to Friday, Weekend or Every day. You can also select the Time and Pressure (always in meters water column) desired. Click on OK to confirm.

The daily shift hours can be viewed by clicking on the Expand button. And appear in the following format:



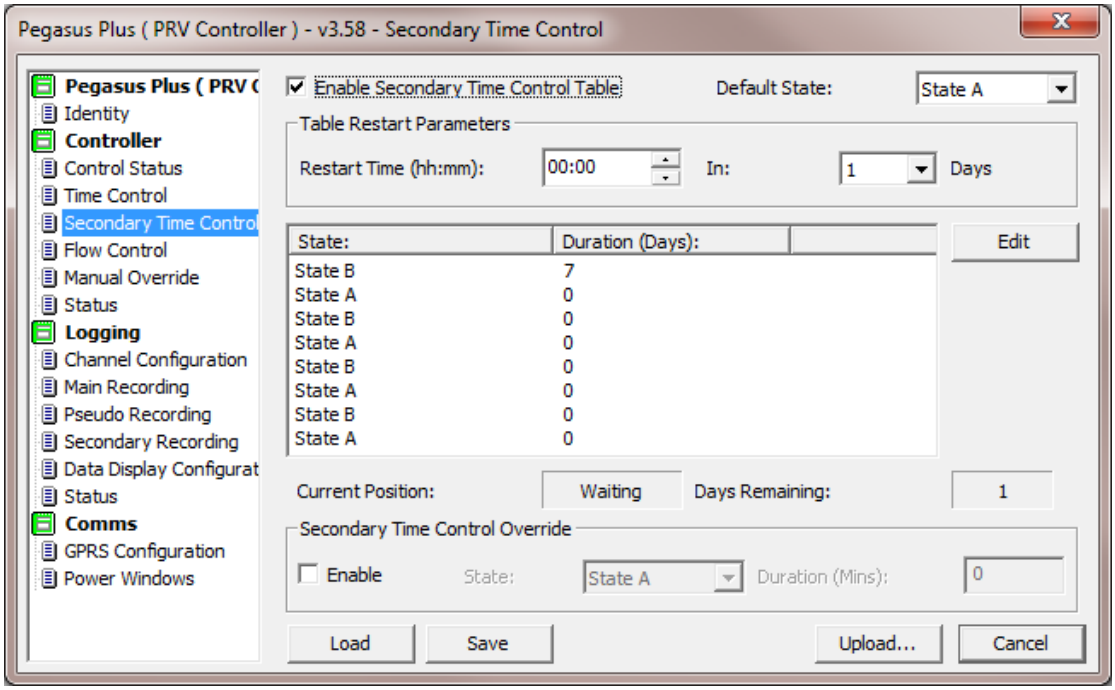
This table shows the same data but extended.

In the tab "Secondary Time Control" a Radcom hydro switch can be used to switch between the Main and Bypass PRV. This is to prevent the bypass valve seizing.

Here we work with two states A and B are the states of the Hydro Switch

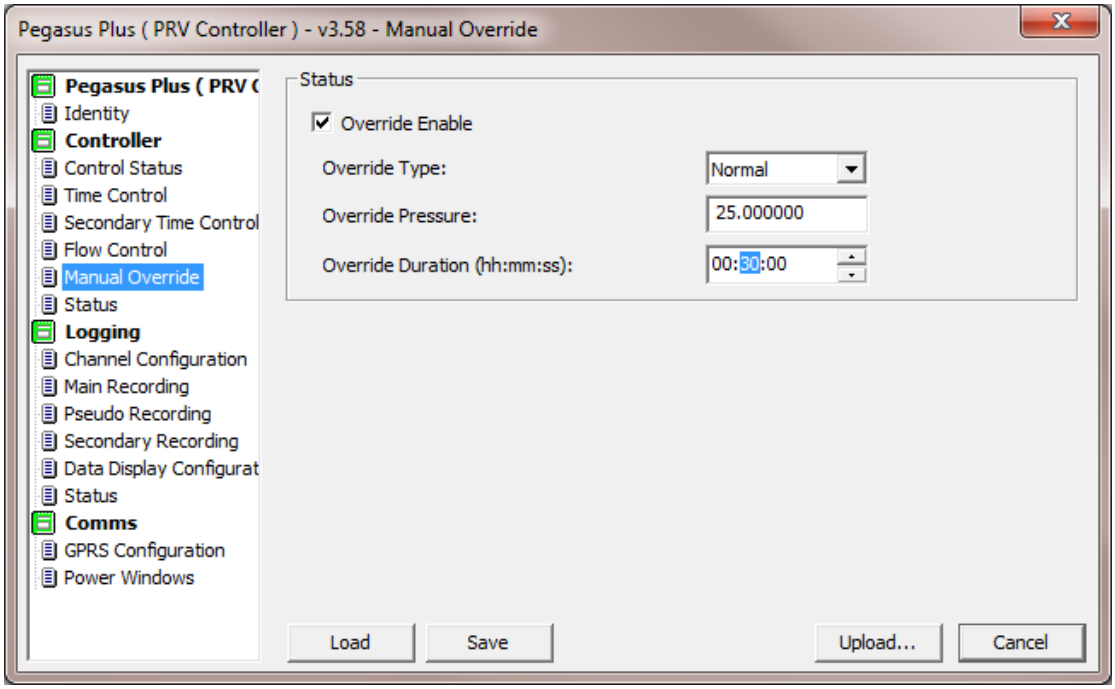
To use this feature first "Enable Time Control Table" and choose the Default state,

In "Table Restart Parameters" you can choose the time and period of days before the switching is started.

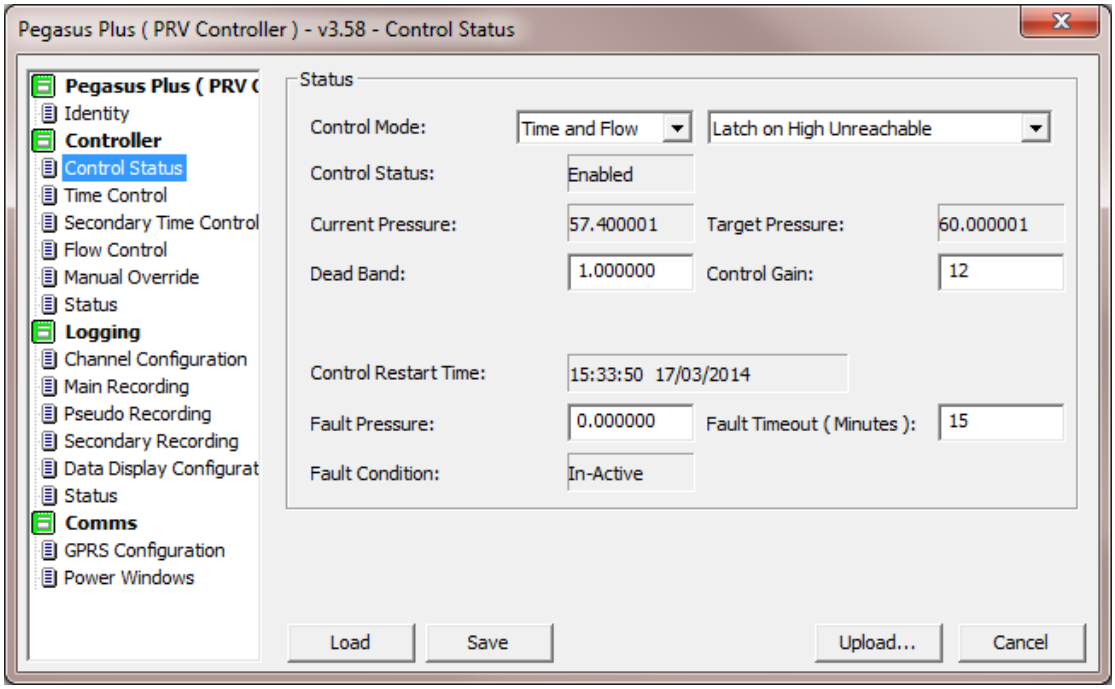


The "Secondary Time Control Override" allows temporary selection of one of the states for a period of time. After finishing time, the controller will return to Secondary Time control table.

In the tab "Manual Override" you can set a time period in "Override Duration (hh: mm: ss)" in which the downstream pressure will keep the pressure is set to "Override Pressure". Once this time has elapsed, the controller will return to the Control Pegasus automatically. To reach this value can be done by two methods: Normal or fast



In the "State Control" can be set and view different controller parameters.



In the "Control Mode" to select from: None, Time, Flow or Time and Flow (making the maximum pressure of the two).

In "Control Status" you can see if the controller is enabled and disabled.
Also you can see what the "Target Pressure" and "Current Pressure" downstream were when Pegasus Plus was downloaded.

The "Dead Band" can set the tolerance with which the driver must follow the target pressure. This value is given by + / - in meters water column. A typical value is 0.5 meters
"Gain Control" depends on the response time of the PRV.

Typical Gain Control = 10

These values, together with hysteresis are modified by the controller over time depending on the difficulty you find to reach the target pressure.
This is intended to optimize the battery life of the controller.

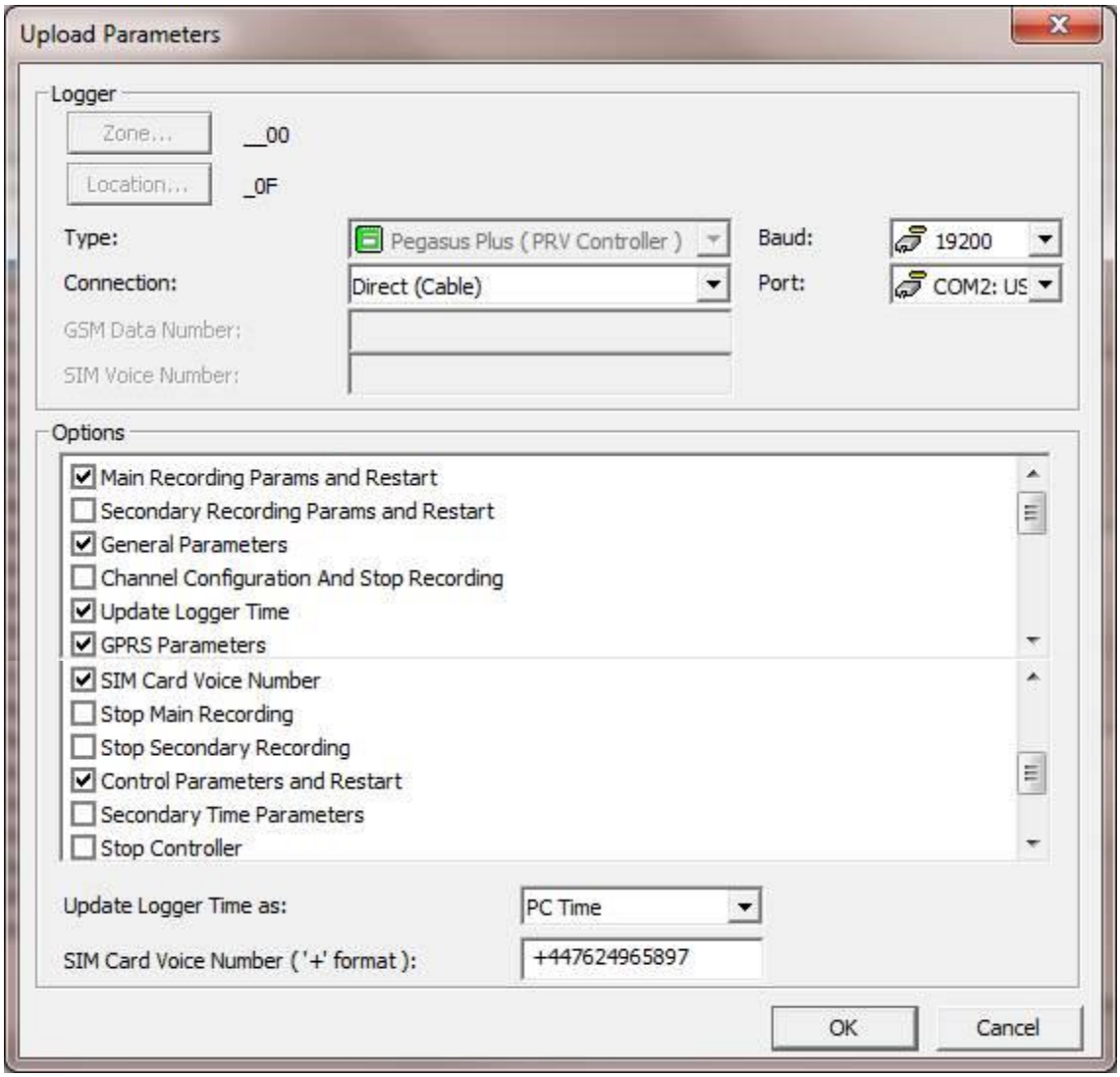
In "Control Restart Time" will appear the date and time that the controller was reset last.

In "Pressure Fault" should set the pressure at which the controller will maintain if you see no pulses in a certain time period of "Fault Timeout (Minute)". This option is used for flow control.

In "Failure Condition" you can see if the failure pressure is active or inactive.

Once the configuration is complete, click “Save” to save logger configuration to the computer, then click upload to programme the logger,

Click on “Advanced…” and select the tick boxes as below

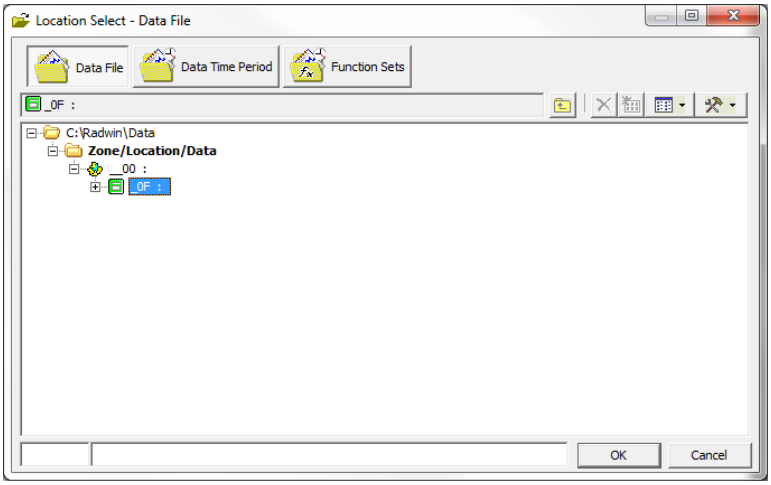


If required “Secondary Time Parameters” can also be ticked.

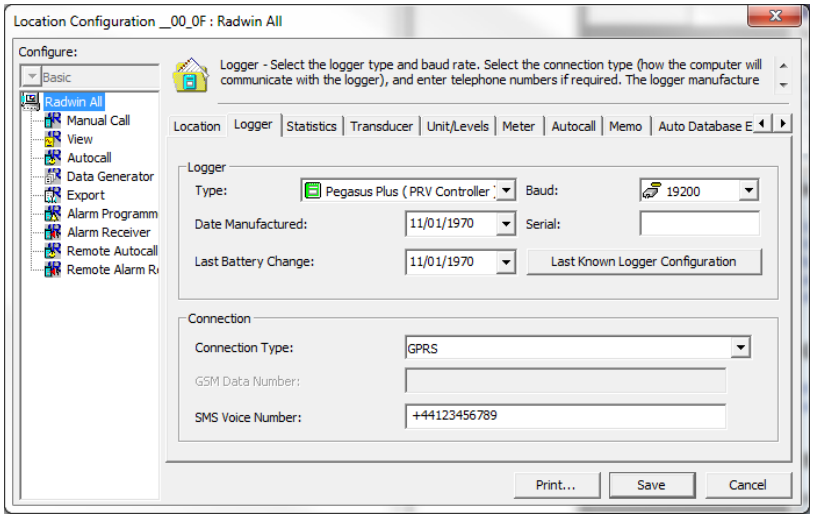
Override Parameters should only be selected on it’s own, once the controller is in an “Active” control state.

In View we can check the settings

We can see a drop-down appears with loggers (Zone/Locations) that exist in the database.



Right click on the Pegasus Plus created, and select “Location Database / Edit Location” to see the configuration. The most important tabs are Logger, Transducer, Units/Levels, Logger Call Numbers/Times and Logger Power Windows. To move through the different tabs use the arrows at the top, which are next to the tabs.



Features controllers Pressure Reducing Valves

- Control by Pressure profile or flow
- Built-in data logger
- Battery life up to 5 years
- Compact design with IP68 protection
- Intelligent Operation "failure mode"
- Manual Override Option

Specifications PRV Controllers

INPUTS

The "Pegasus" has a flow channel (input pulses from a pulser voltage free).Maximum of 128 pulses / sec.)
"Pegasus" also has the option of a second flow channel.
"Pegasus" has two input channels for pressure recording. Pressure transducers may incorporate internal or military connectors for external pressure sensors.

OUTPUTS

Three outputs are available directly from the Pegasus, they act on two solenoid pulse (one to increase the pressure and one for decrement) and a solenoid latch for emergency conditions (rapid increase in pressure if high flow, fault, etc.).

CONTROL FEATURES

- Time Control
- Flow Control
- Real-time clock
- Possibility of communicating by SMS, GSM and GPRS
- Failure mode operation (sensor failure, etc.)
- Accuracy of flow measurement based on time
- Automatic diagnosis within the Controller

DATA LOGGER

- Very resistant housing, IP68 protection, replaceable battery
- Battery life at least five years in normal operating conditions
- Record modes by Count and Event
- Compatible with standard software for Windows Radlog
- Logging interval: 1 second to 1 hour
- Memory Capacity: 49,152 readings (block or cyclic)
- secondary capacity: 8192 readings (17 hours with 4 channels at intervals of 30 seconds)

COMMUNICATIONS

- Local communication in direct connection via serial port RS-232 direct connection to a laptop or fixed or portable reading terminal (TPL)
- Incorporates internal modem for remote communication via GPRS or GSM
- Programming, download and full scan with Windows Radlog

PHYSICAL CHARACTERISTICS

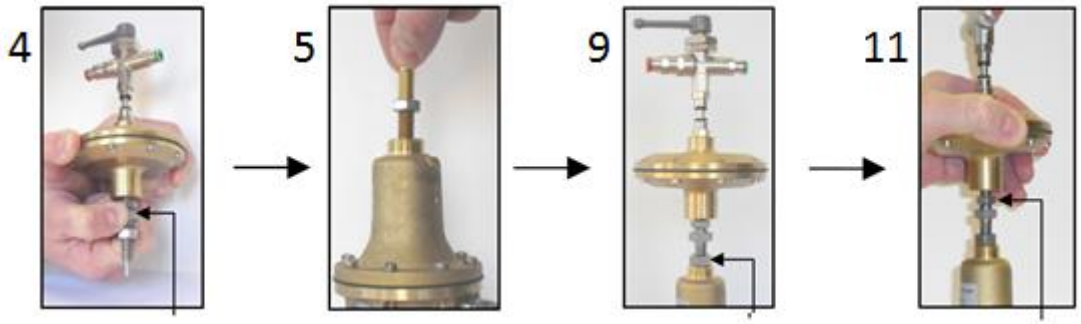
Operating Temperature:-10ºC to +50ºC
Material: Aluminum alloy housing
Sealing:IP68 (Totally submersible)
Dimensions:250 x 175 x 90mm
Weight:3kg

Installation Procedure

The following assumes that the valve is not vented to the maximum or used to cut the water supply. The output pressure is not regulated during installation, and variations in inlet pressure affect the output pressure until the installation is complete.

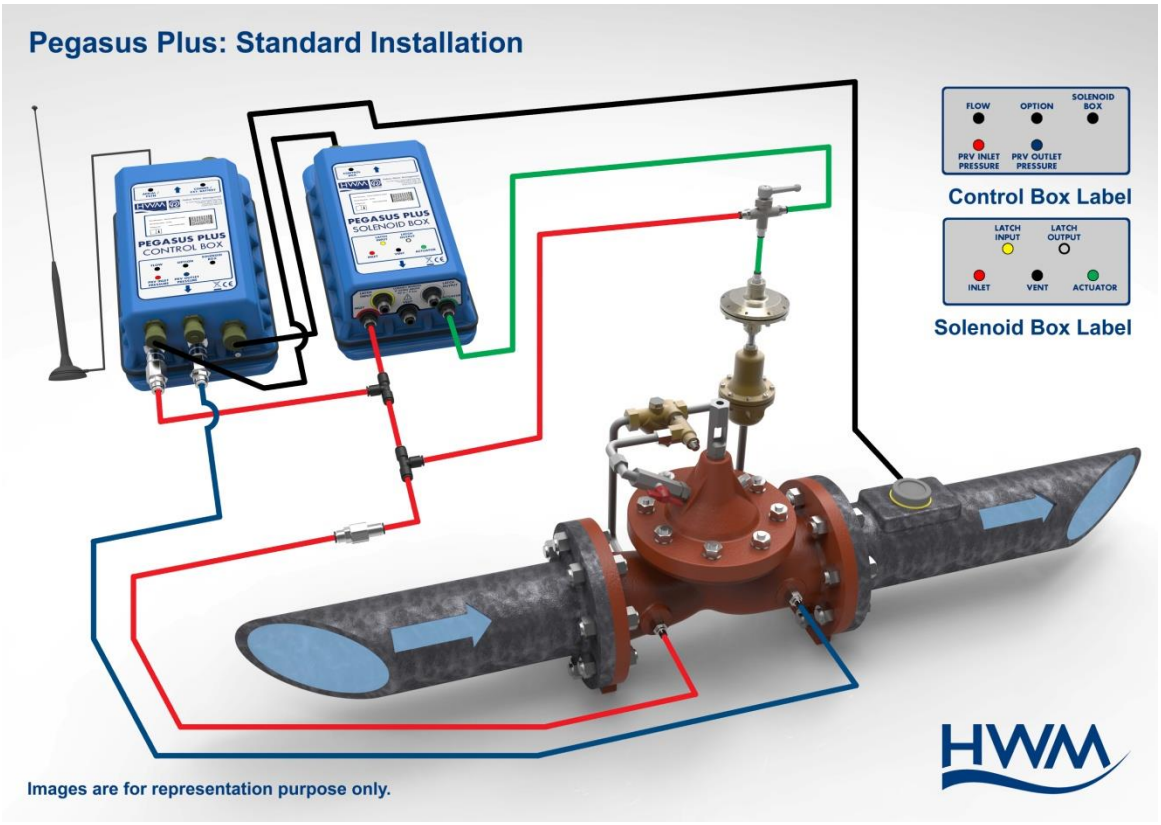
Ensure that the valve is working properly before connecting to the actuator, if not, it is essential to repair the PRV control before.

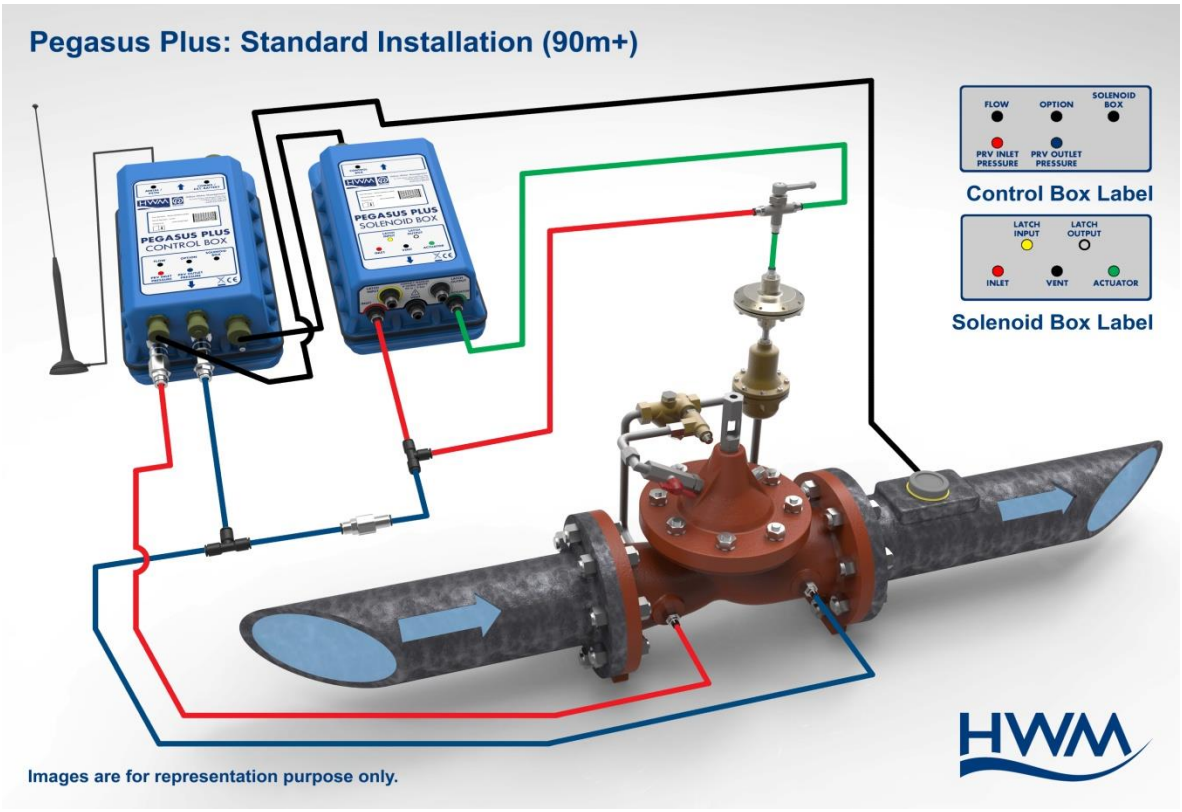
1. Block the PRV into position, closing the valve on the top chamber if possible.
2. Alternatively, shutoff both input and output at the same time, to ensure that the valve is locked in that position. The volume of water in the main chamber remains constant.
3. Ensure that the thread of the actuator is the same type of thread.
4. Screw the Actuator thread in until finger tight, the pin should now be fixed.
5. Unscrew the pressure adjustment screw is located on the pilot of the PRV. If pressure drops at this point the valves are leaking.



6. Screw the actuator in the pilot of the PRV. Rotate the actuator to apply the same force that he had when placed the old screw.
7. Slowly open shutoff valves simultaneously both upstream and downstream, to reapply the pilot control.
8. Check the regulated pressure downstream of the PRV and set the maximum pressure required rotating the actuator.
9. Tighten the lock-nut on the bottom of the screw to secure the maximum output pressure.
10. While checking the regulated pressure downstream of the PRV, Rotate the top of the actuator anticlockwise adjust the minimum pressure required (eg Night) by turning the top of the actuator (support the fixed central nut with a spanner).
11. Tighten the lock-nut on the top of the screw to secure the minimum outlet pressure.

Maximum and minimum pressure are now adjusted.





The hydraulic system is now complete for the PRV.

12. Connect the pressure sensors between the controller and quick-connects upstream and downstream.
13. Connect the controller to the solenoid box using the 6-pin military connector.

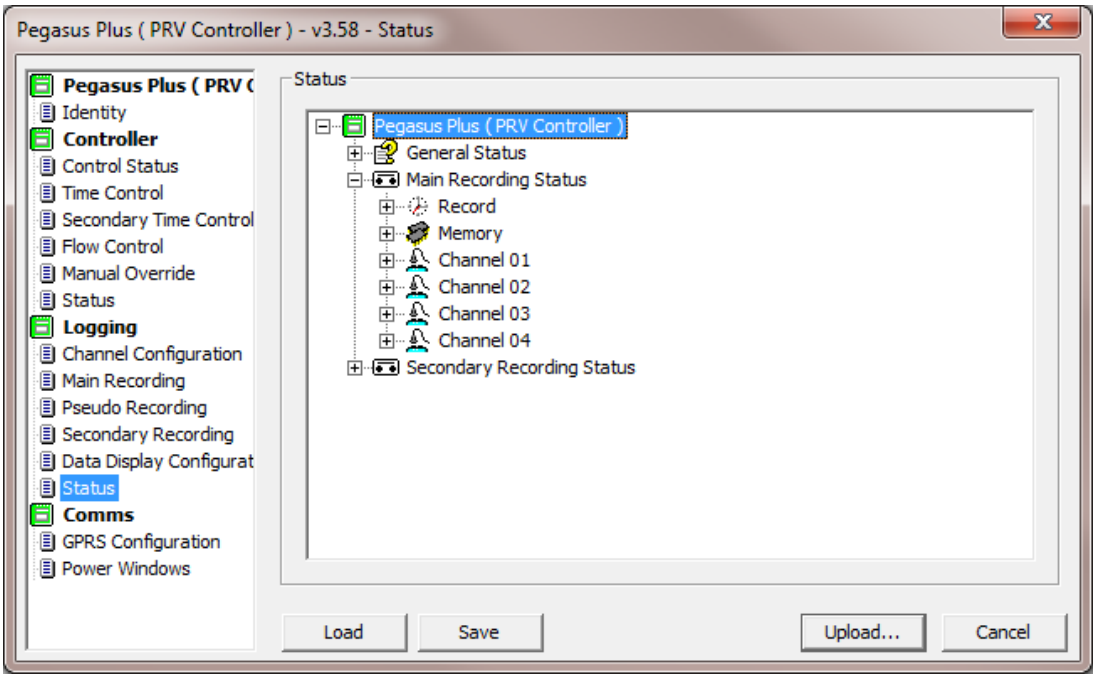
14. (Where necessary) - Connect the controller to the flow meter through the 4-pin military connector.
15. Connect the antenna to the FME connector and place it in the position to obtain better coverage.

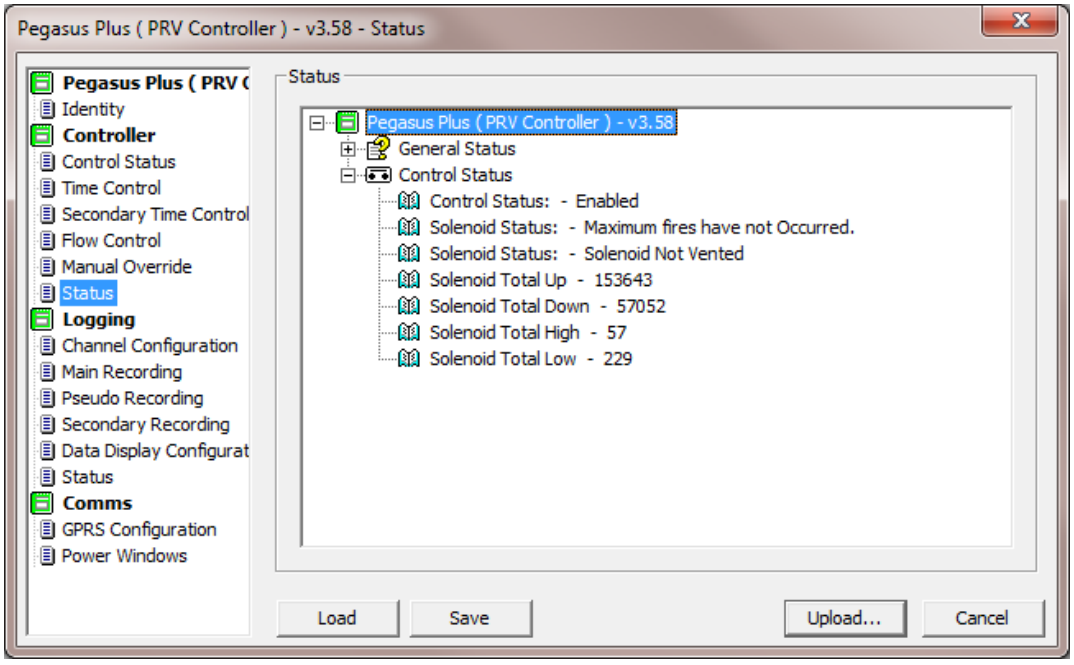
The electrical system is now installed PRV

Verification of the configuration.

It is recommended to download Parameter Settings again to check the configuration.

We will check that has been configured correctly the new identity, GPRS Configuration (phone and time sent), the times and dates of recordecording start are correct and finally, that in “Status” within Logging, “Main Recording Status” is “Waiting to Recording” or “Record”.





Option Save.
If the settings are correct we recommend you click on the Save button, located at the bottom so that the hours of sending data and especially the hours of GSM windows remain stored in the database and can be consulted if required in the future.

General Notes

a) No need to remove the original pilot PRV during system installation.

b) The needle valve may need adjustment.

c) Keep plastic pipes as short as practical, the shorter Best (Maximum of 1 meter).4

d) Do not extend connection cables (If done, the controller may not work properly).

e) Protect plastic pipework from freezing using foam pipe insulation

General System Pressure Regulating

Introduction

The actuator (hydraulic device supplied with the system) replaces the screw on the pilot of the PRV, a moving rod is used to control the maximum and minimum pressures. Working operation of the pilot remains unchanged, the only difference is that the pressure exerted on the inner spring will vary according to the instructions of the controller.

The needle valve to the water inlet of the PRV does not need, in general, be modified. The needle valve prevents the PRV changing position rapidly, limiting the speed of opening and closing the valve.

The inlet pressure is restricted in the pilot before moving to the main chamber of the PRV. Equilibrium is achieved when the flow of water entering the upstream pilot is the same as downstream.

Hydraulics - Needle Valve

The needle valve should be adjusted so that the amount of water is not very big, so it does not cause the rapid closure of the PRV, which could cause serious damage to the circuit of pipes.

Hydraulics - Actuator

To set the maximum output pressure at the PRV, temporarily disconnect actuator tubing coming from the solenoid box, to allow the actuator top at atmospheric pressure. With the lower locknut loosened and the top of the actuator hitting the top of the screw, screwing the actuator in the PRV pilot to increase the downstream pressure (or unscrew to decrease pressure). Having gained the maximum desired pressure, tighten the lower locknut.

To adjust the minimum pressure at the PRV outlet. You have to turn the top of the actuator in the opposite direction to clockwise slowly until desired minimum pressure. Then adjust the upper jam to set minimum pressure.

When we have the high and low pressure, it is necessary to check them to make sure they are well tared. It is advisable to alternate between the two pressures acting on the solenoid.

Maintenance

Electronic controller

The battery life of the controller is more than five years under normal working conditions. These conditions are based on a maximum of two thousand solenoid operations daily. Once the battery fails, the controller must be returned to "HWM-Water Ltd" where batteries are replaced.

The internal battery is measured by the firmware all its life. Before the battery fails, the solenoids are switched to high-pressure and change to low pressure is prevented until the batteries have been replaced.

The logger will continue to record data in its memory until the battery completely fails. The data logger cannot be downloaded after this condition occurs.

If any other problem occurs, the logger should be returned to "HWM-Water Ltd", for repair.

The controller is designed for continuous operation over the life of the batteries. You do not need any maintenance.

Unauthorised servicing will void the warranty and any potential liability for “HWM-Water Ltd”.

Hydraulic Components of the PRV

The hydraulic system consists of quick couplings, hoses and actuator that may require maintenance during the normal life of these products.

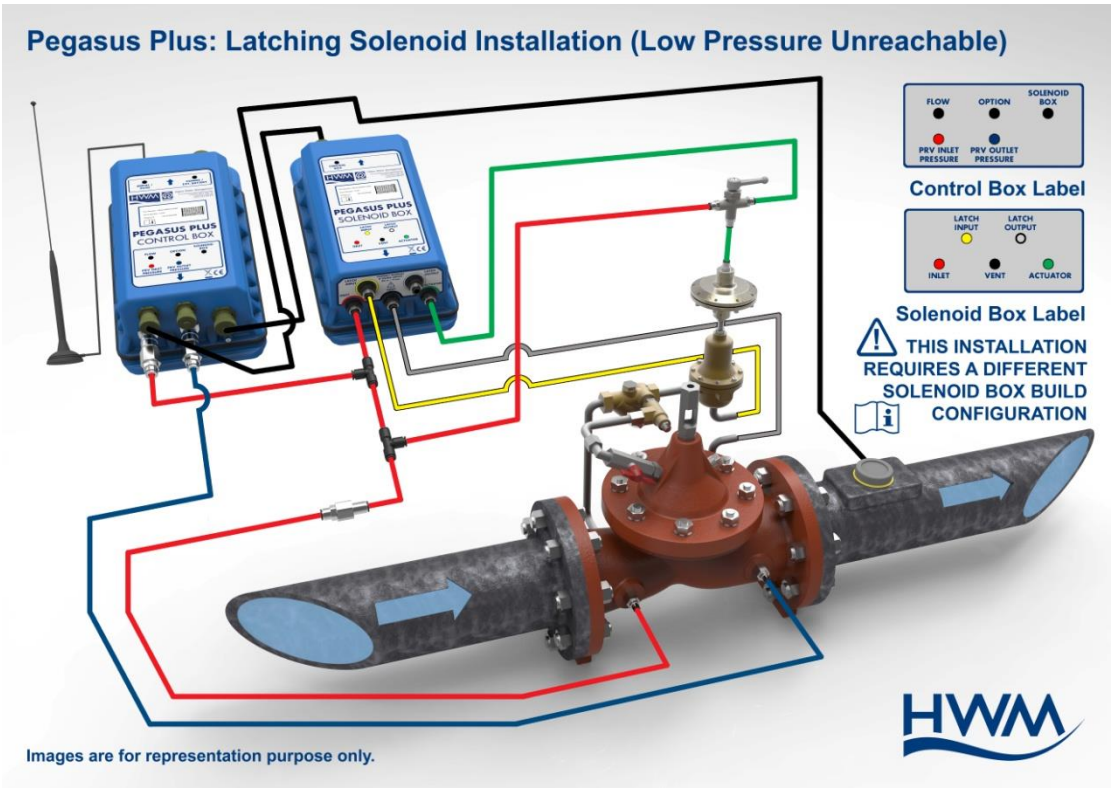
To obtain these parts contact "HWM-Water Ltd"

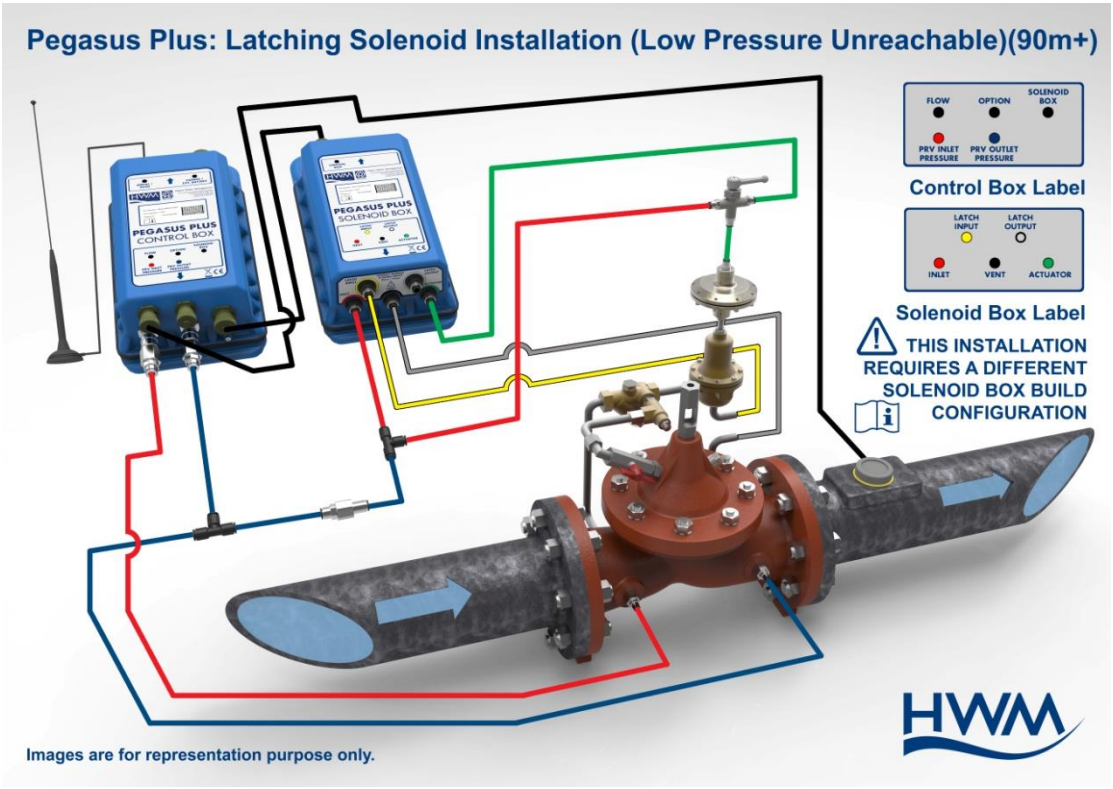
Installation set

Installation Details "Pegasus Plus"

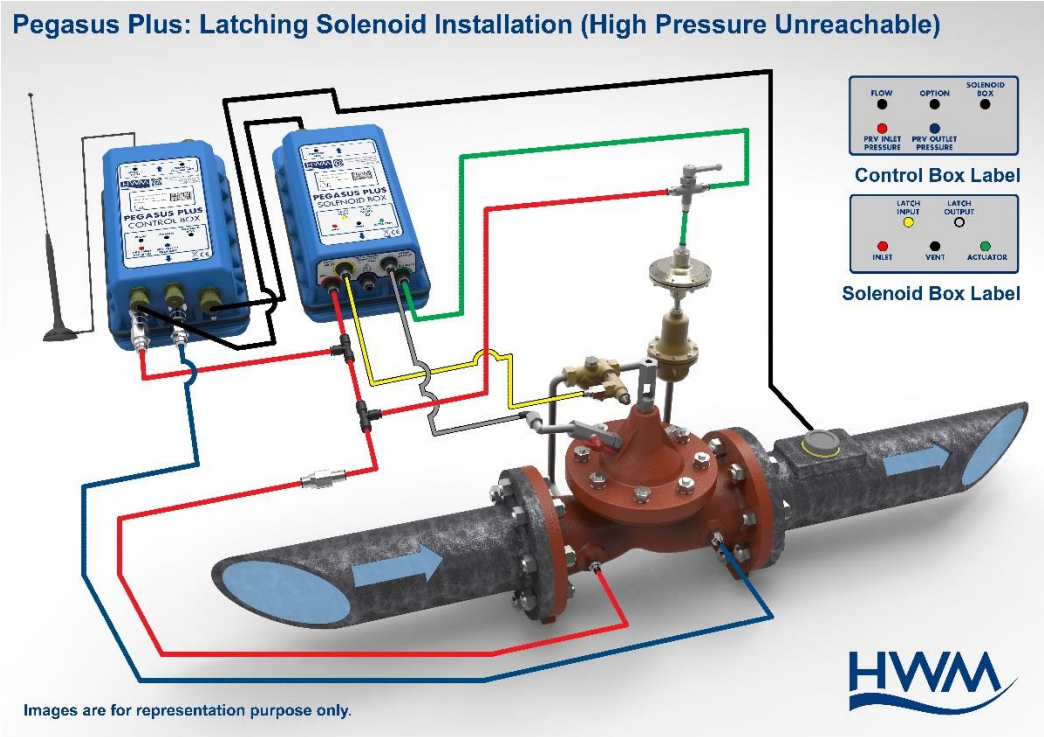
"Pegasus" PRV (Kit "A") - modulated pressure control

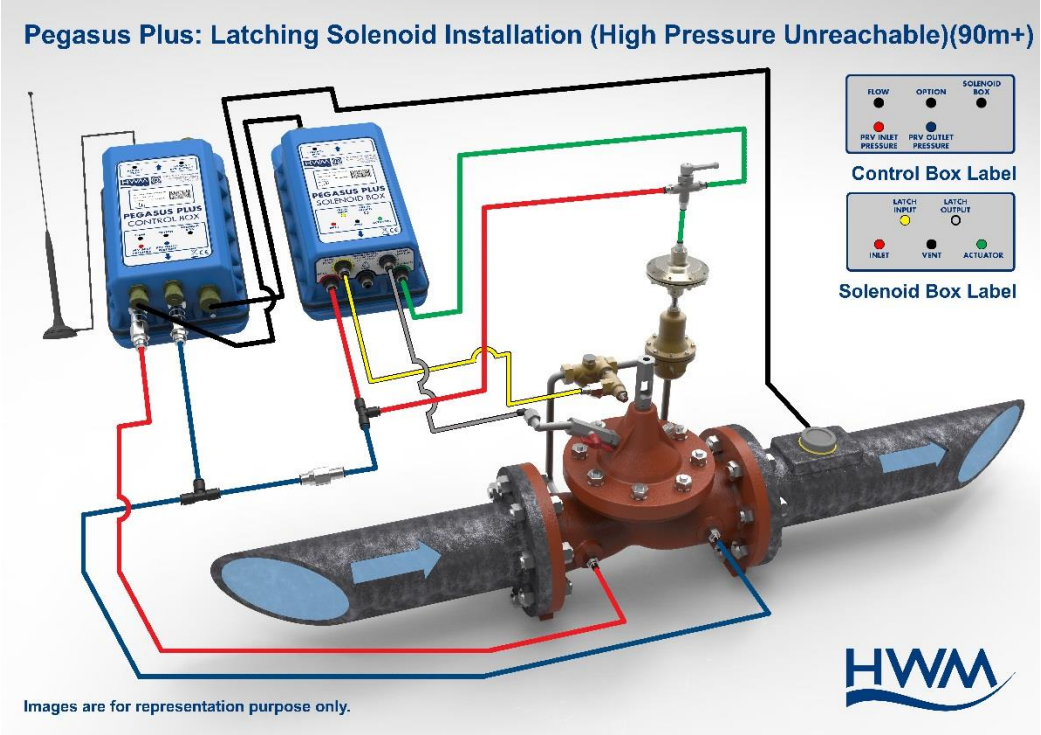
Installation using Latch Solenoid for “Latch on Low Unreachable”





Installation using Latch Solenoid for “Latch on High Unreachable”

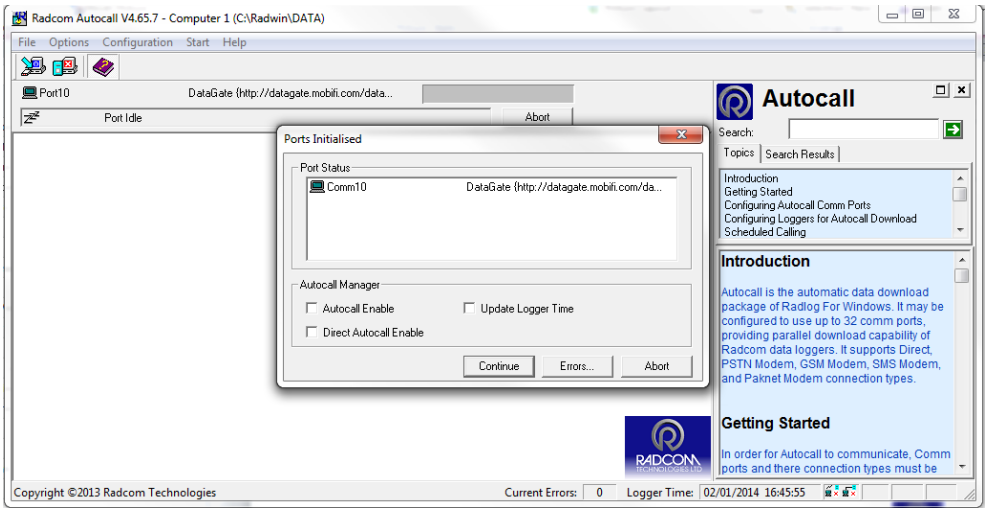




AutoCall

At this time we have prepared the Pegasus and database for data reception. The last step that remains is to open the Automatic Download module that is to be responsible for the receipt and processing of data.

From any Radwin module go to the Start menu and click on Automatic Download. At this time we will see a window in which ports are checked data reception.



Once the check click on "Continue".

Now Autocall is waiting to receive UDP data to be processed by the Radwin.

It is not necessary to have Autocall running all the time, but new data will only be available in Radwin, when Autocall has received and processed messages from the server.

APPENDIX A - Examples

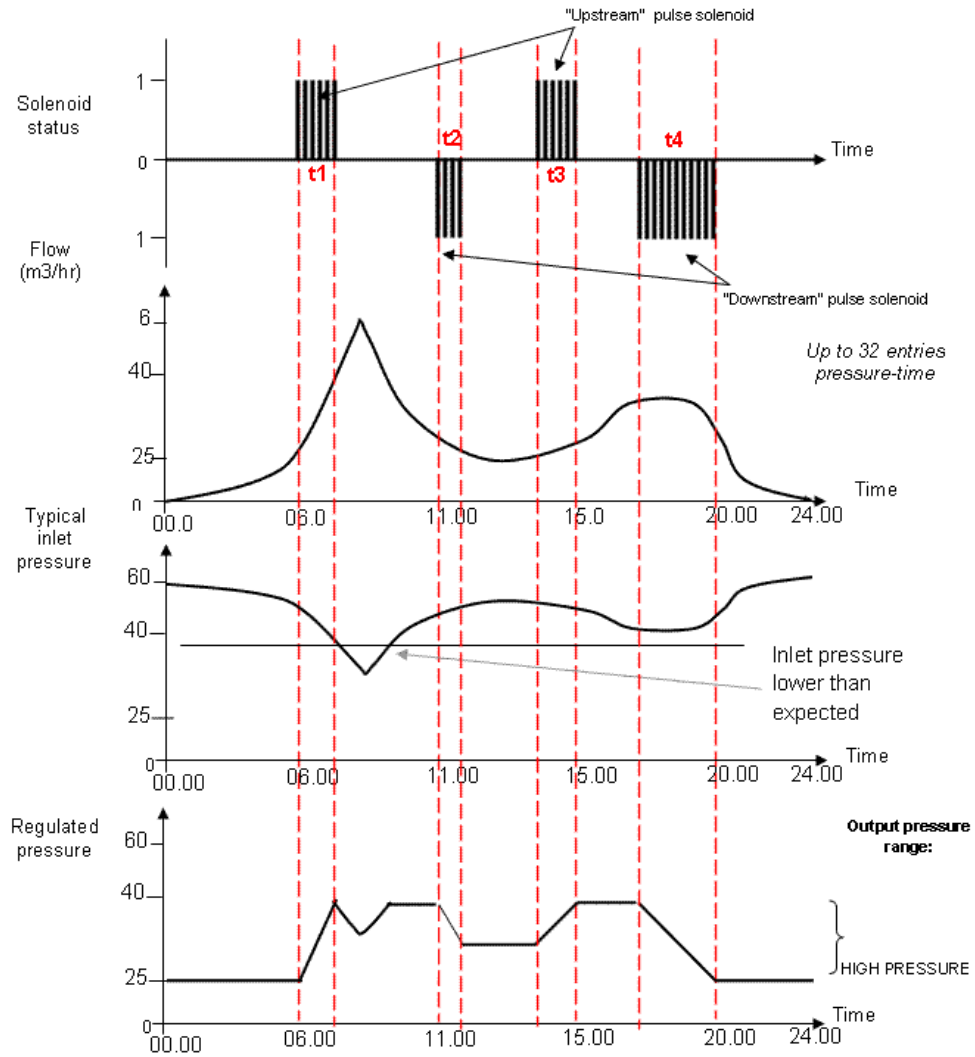
Graphics Example of Reducing

Time control - Two pressure points

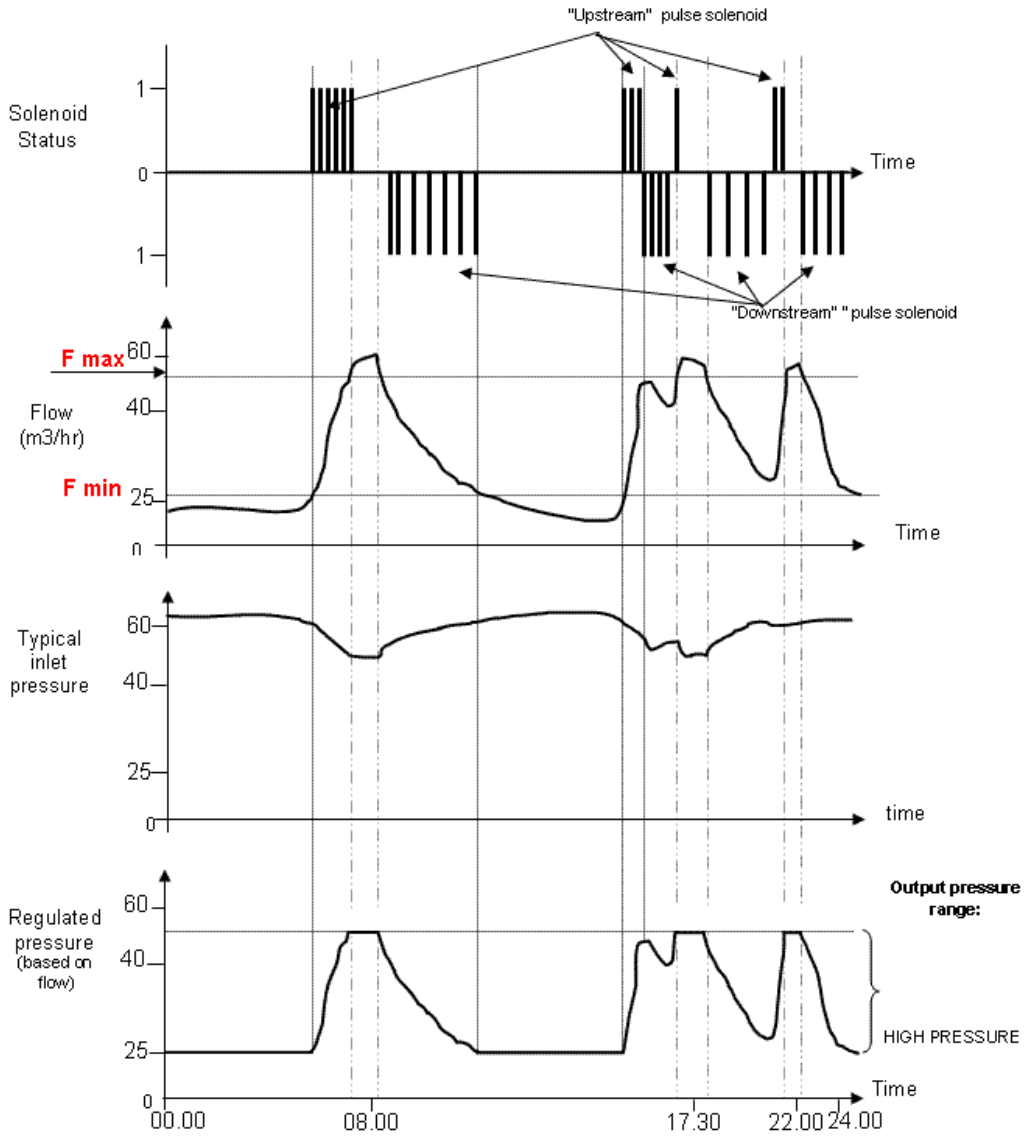
Night-time pressure has been significantly reduced, consequently the water losses due to leaks have also been reduced. During the day it is restored pressure to meet the daytime demand. The flow downstream of the PRV, and the pressure at the “critical point "of the system can also be measured more control over the zone.
The downstream pressure is regulated between two pressures. No flow variation significantly affects the output pressure.

Control Time - Two pressures

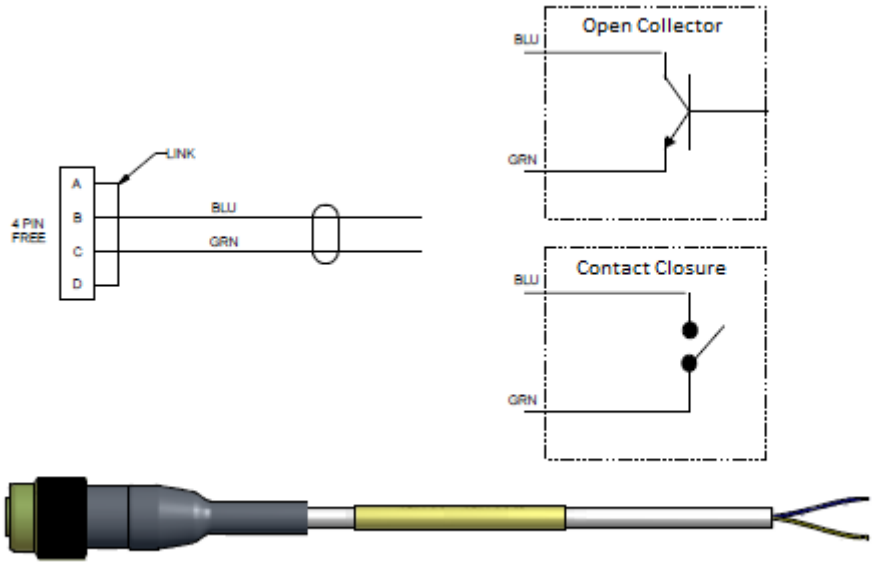
Up to 32 time points can be programmed to vary the downstream pressure between two preset values of high and low pressure. Four values (t1, t2, t3 and t4) are shown in the following application:



Control-Flow - Two pressures



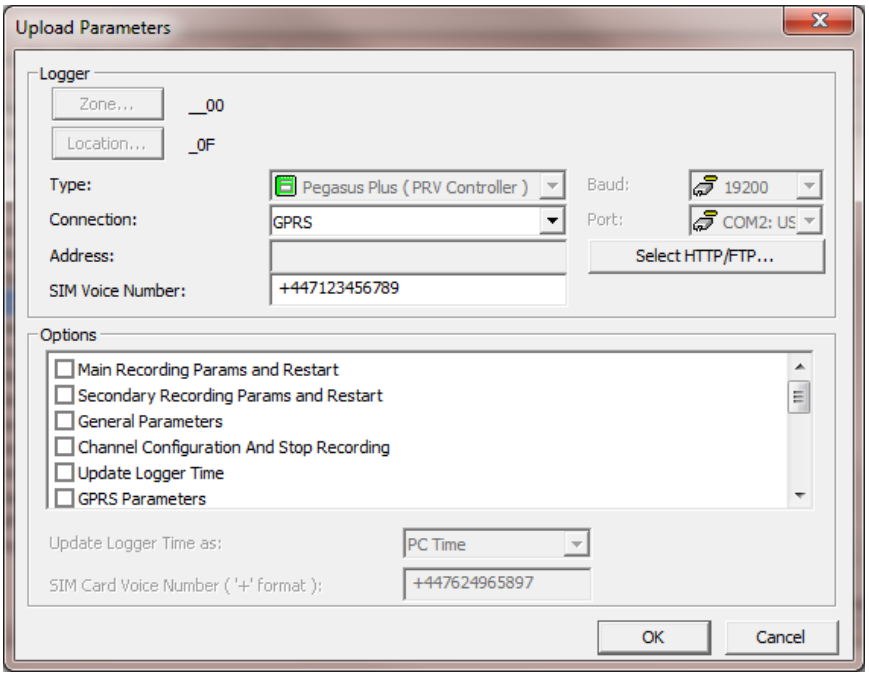
APPENDIX B – FLOW CONNECTION



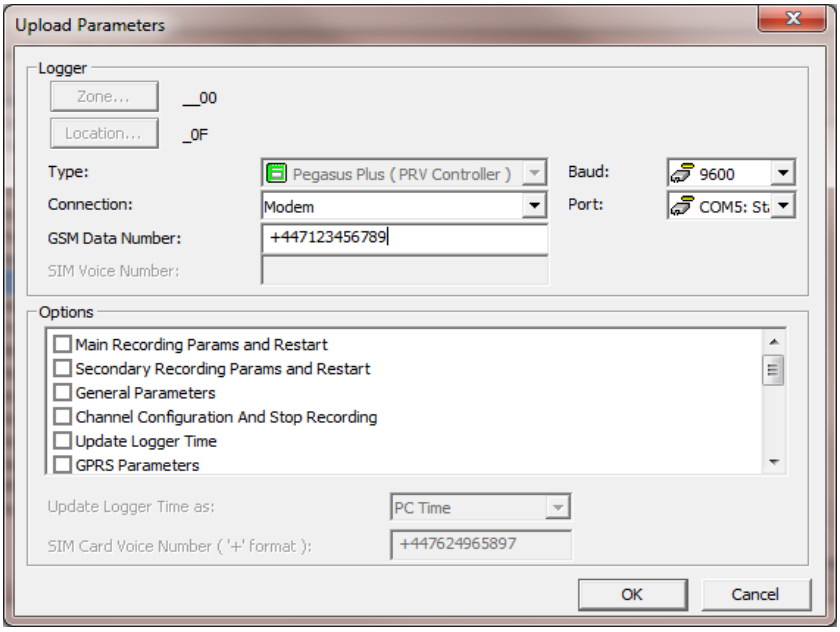
APPENDIX C – MANUAL COMMUNICATION

It is possible to communicate with the logger either by GPRS through Datagate, or directly by GSM with GSM Modem.

Parameters uploaded by GPRS will be collected from Datagate when the Pegasus Plus next calls in.



When communicating by GSM Modem with the Pegasus Plus, it must have GSM Data Number, and be called during a power window,



SIMPLIFIED DECLARATION OF CONFORMITY

This simplified EU declaration of conformity referred to in article 10(9) shall be provided as follows:

Hereby, HWM Ltd declares that the radio equipment type transceiver is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at www.hwmglobal.com

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