

# Energy Management Function On Fronius Datamanager

Fronius Datamanager 1.0 and Datamanager 2.0

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## 1 GENERAL INFORMATION

The Energy Management Function on the Fronius Datamanager essentially allows the power produced from the solar system to “divert” to a load instead of exporting it to the grid.

The Datamanager comes built-in in the inverter series Fronius Galvo, Primo, Symo, Eco and can be retrofitted to Fronius IG, IG Plus, and CL. The Fronius Datamanager is available as card or box.

A key feature allows an external load to be turned ON or OFF depending on the amount of power the inverter is producing or according to the amount of production being consumed on-site.

Using a Fronius Smart Meter (energy meter) in the installation allows the consumption to be taken into account and therefore a load can be switched on whenever there is surplus power available that can be used on site instead of feeding it into the grid. This increases the self-consumption ratio. Without the energy meter in the system loads can be controlled accordingly to the output power of the inverter.

The Energy Management Function puts out one signal. It can be potentially used to switch electric hot water heater, heat pump, pool pump, air conditioner, bore pump, etc.

This document describes how to use the functionality and setup of the Energy Management Function of the Fronius Datamanager.

### 1.1 System design

#### 1.1.1 Switching loads via external Relay

The digital output signal of the Datamanager controls an external relay which switches the load. The energy meter measures the loads in order to calculate the available surplus power.

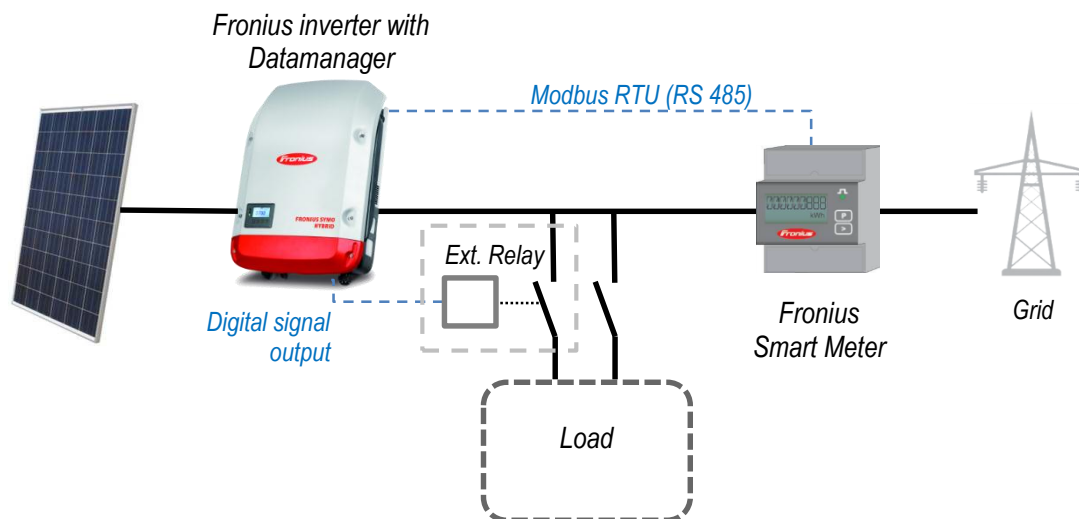


Figure 1 – Energy management function on external relay and energy meter

### 1.1.2 Switching loads via external Relay without energy meter

The digital output signal of the Datamanager controls an external relay, which switches the load. The threshold to switch ON/OFF can be set accordingly to the output power of the inverter.

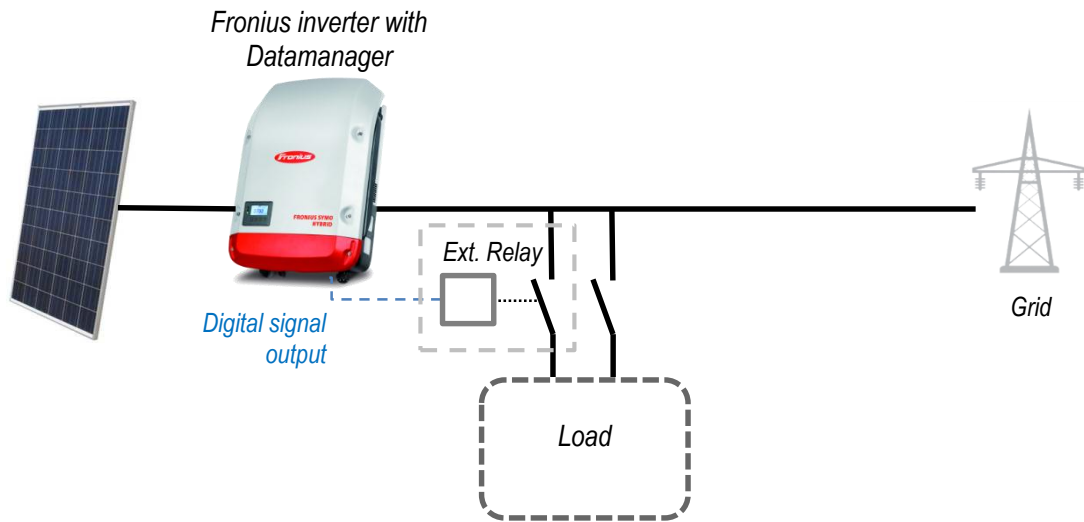


Figure 2 – Energy management function on external relay

### 1.1.3 Switching loads via external signal input

Loads with an external signal input may be connected to the digital signal output of the Datamanager. Therefore no additional equipment is required. This setting can be used with or without an energy meter.

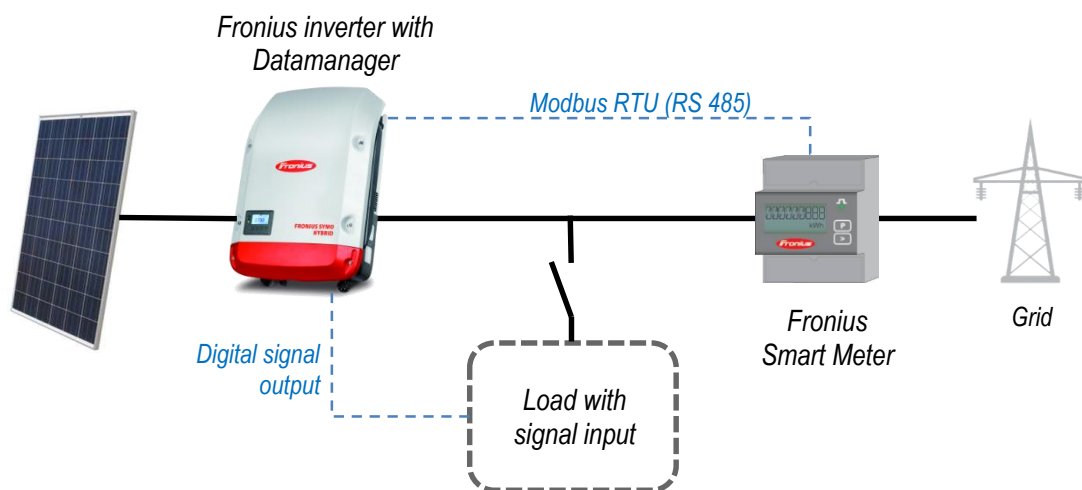


Figure 3 – Energy management function on load with signal input and energy meter

## 1.2 Wiring Detail

The following diagram shows a typical wiring example using an external relay and an override switch that allows the additional, manual control of the load.

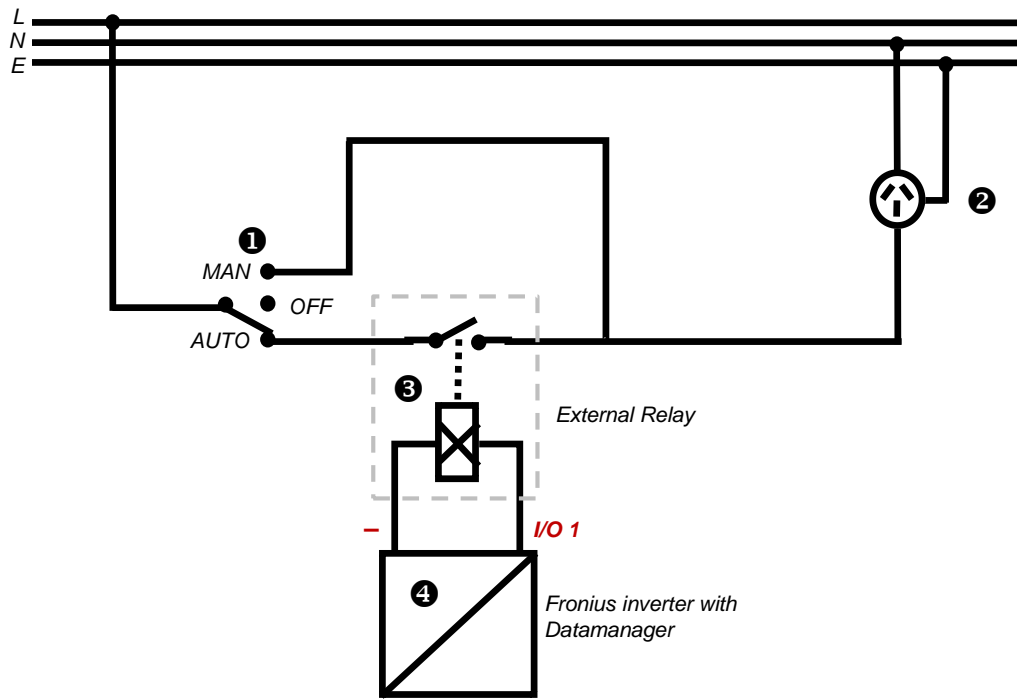


Figure 4 – Example connection diagram

This circuit consists of an override switch (1) where the load can be switched manually and the power outlet (2), which the load can be connected to. With the external relay (3) the loads will be switched on/off controlled by the settings of the Fronius Datamanager (4).

The output on the Datamanager is on I/O port 1 and the Minus pole (or GND on Datamanager 1.0). For further details see next chapter.

## 2 DATAMANAGER HARDWARE

### 2.1 Datamanager Version 1.0

Datamanager version 1.0 was inbuilt in Fronius Galvo and Symo inverters until end of 2014. Inverters with a serial number lower than 25490000 are equipped with version 1.0.

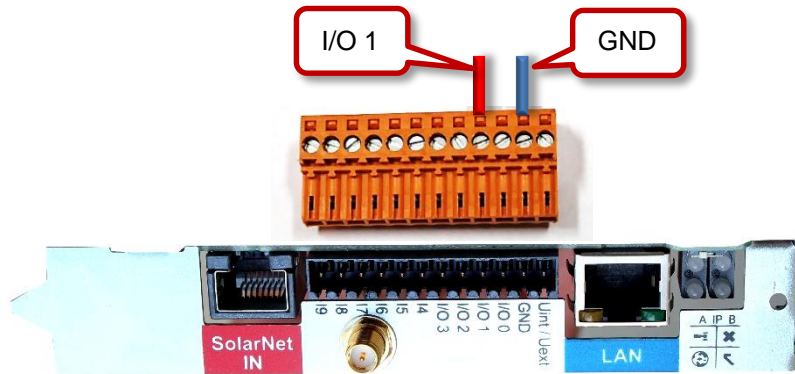


Figure 5 - Datamanager 1.0 – card & plug

#### Internal view: Schematic connection of the Fronius Datamanager 1.0 I/O ports

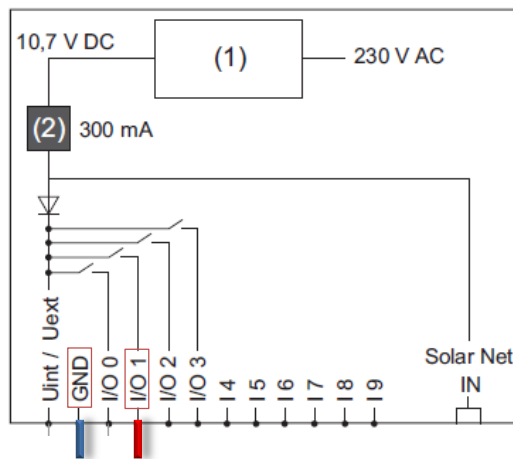


Diagram on left:

- (1) Internal Power supply,
- (2) Internal current limit,
- (3) Fronius Solar Net IN connection socket

Figure 6 - Datamanager 1.0 – card & plug

The physical connection of the energy management signal on the card is on pin I/O 1 as the positive and the GND as minus. See Figure 5 and Figure 6.

Switching capacity of the digital outputs of the Datamanager 1.0 plug-in card: 3.2 W, 10.7 V in total for all 4 digital outputs.

Switching capacity when supplied by an external power supply with min. 10.7 – max. 24 V DC, connected to Uint / Uext and GND: 1 A, 10.7 – 24 V DC (depending on the external power supply) per digital output.

## 2.2 Datamanager Version 2.0

Fronius Datamanager 2.0 has more functions than version 1.0. The new features include the Modbus RTU (RS485) communication protocol to connect a Fronius Smart Meter (energy meter) and the built-in WiFi hotspot, which allows commissioning and adjusting the settings wirelessly. Datamanager version 2.0 was built-in in Fronius Galvo and Symo inverters until end of 2014. Inverters with a serial number 25490000 and higher are equipped with version 2.0. It is built-in in all Fronius Primo and Eco units.

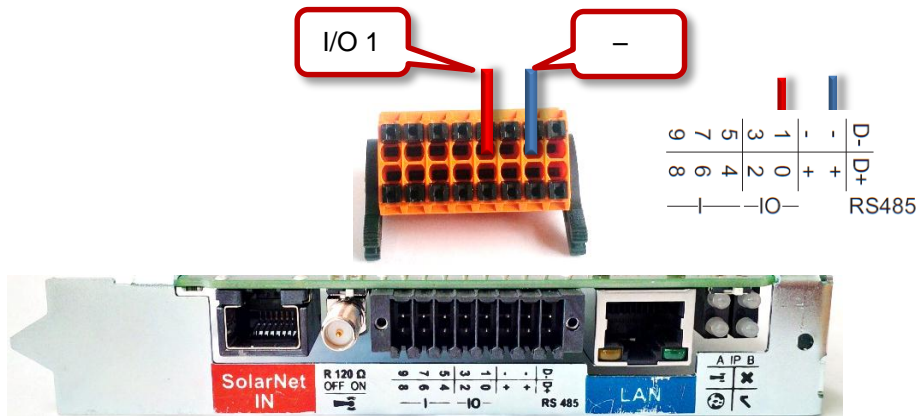


Figure 7 - Datamanager 2.0 – card & plug

### Internal view: Schematic connection of the Fronius Datamanager 2.0 I/O ports

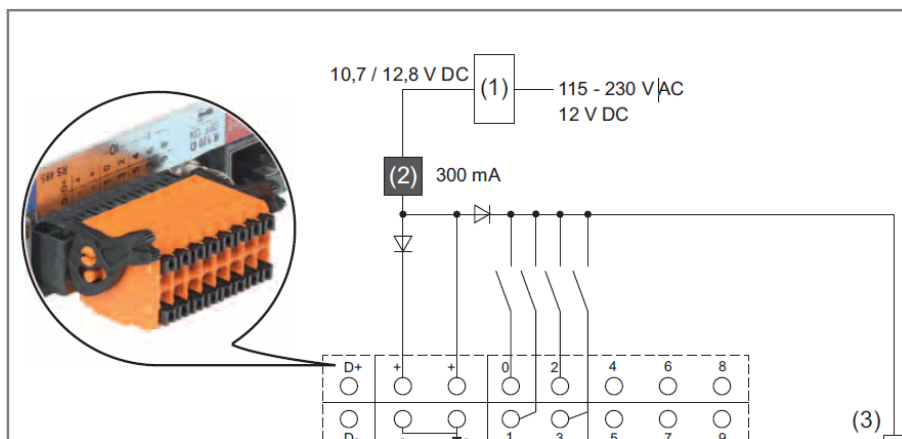


Diagram on left:  
 (1) Internal Power supply,  
 (2) Internal current limit,  
 (3) Fronius Solar Net IN connection socket

Figure 8 - Datamanager 2.0 – connections

Switching capacity of the digital outputs of the Datamanager 2.0 plug-in card: 3.2 W, 10.8/12.8 V in total for all 4 digital outputs:

10.8 V: Fronius IG, Fronius IG Plus, Fronius IG Plus V, Fronius CL, Fronius IG 300–500

12.8 V: Fronius Galvo, Fronius Primo, Fronius Symo, Fronius Eco

If the switching capacity is not sufficient (for switching bigger external relay) an external power supply can be used as shown in diagram below.

Please note: When the supply is via an external power supply, the external power supply must be galvanically isolated.

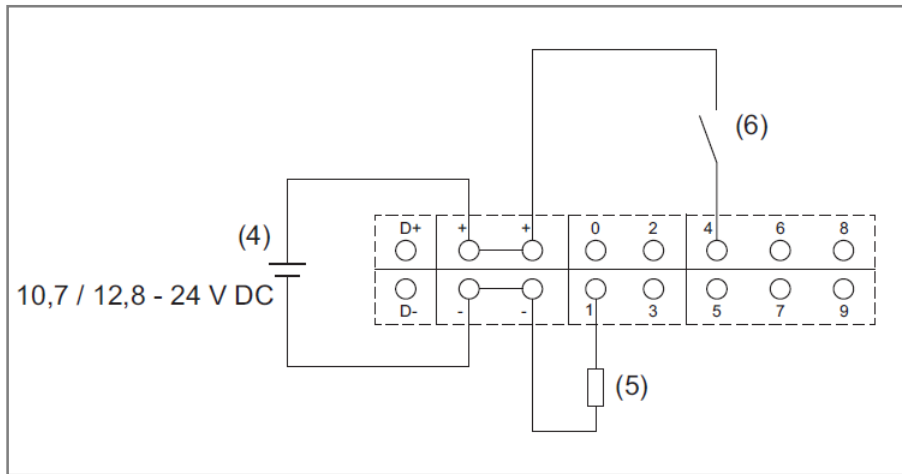


Diagram on left:  
(4) External Power supply,  
(5) Load (external relay),  
(6) Switch

Figure 9 - Datamanager 1.0 – card & plug

Switching capacity when supplied by an external power supply with min. 12.8–max. 24 V DC (+ 20%), connected to U<sub>int</sub>/U<sub>ext</sub> and GND: 1 A, 12.8–24 V DC (depending on the external power supply) per digital output.

The connection to the I/Os is made via the supplied orange terminal connector.

For installation and setup of the Fronius Smart Meter please see instructions in the meter manual available on the website [www.fronius.com.au](http://www.fronius.com.au).

## 3 SOFTWARE SETUP AND CONFIGURATION

### 3.1 Datamanager Interface

The settings can be adjusted via the Datamanager website (webserver is built-in) by following these steps:

- / Activate the Wi-Fi hotspot\* on the Datamanager card (inverter) or Datamanager Box V2
- / Connect your computer/tablet/smartphone to the Datamanager's WLAN hotspot\*. Or connect a LAN cable to the computer.
- / Open a web browser and go to <http://192.168.250.181>\* or <http://datamanager/>  
Alternatively you can use Fronius SolarWeb App for tablet or smart phone and go to 'Settings' and click 'PV Inverter Homepage'
- / Select Firmware update The Datamanager web interface (PV Inverter Homepage)

### 3.2 Energy Manager Settings

#### 3.2.1 Datamanager software version 3.3.0 and higher

Before setting the thresholds to switch ON/OFF, the following points should be considered

- / Approx. base load of the site should be measured (-> energy meter) or calculated.
- / PV system size known
- / Power requirement of the device to be controlled with the Energy Management Function

To adjust the settings follow these steps:

- / Go to the Datamanager Web Interface (For instructions on how to go to the Datamanager Web interface see chapter 'Datamanager Web interface' in the appendix.)
- / Go to "Settings"
- / Select the "ENERGY MANAGER" tab (see Figure 10)

1. Activate Energy Management function by selecting "**Controlling: by power production**".  
If a *Fronius Smart Meter* is included in the system, the setting "**by power surplus (in case of feed-in limits)**" can be chosen. The thresholds to switch ON/OFF are then activated according to site surplus energy.
2. Set "**Thresholds on:**" to level of which the relay should be switched on
3. Set "**Thresholds off:**" to level of which the relay should be switched off
4. Set "**Minimum duration per on-signal**" (if required)\*\*
5. Set "**Maximum duration per day**" (if required)
6. Click "**Save**" for the settings to be activated

If the load needs to be switched ON every day for a certain amount of time, then apply the following settings:

1. Tick "**Desired duration**" to activate a minimum time to switch on (if required)
2. Set a desired daily ON duration in minutes ("**per day**")
3. Set the time of day by which the desired duration should be completed by ("**is to finish by**")
4. Click "**Save**" for the settings to be activated



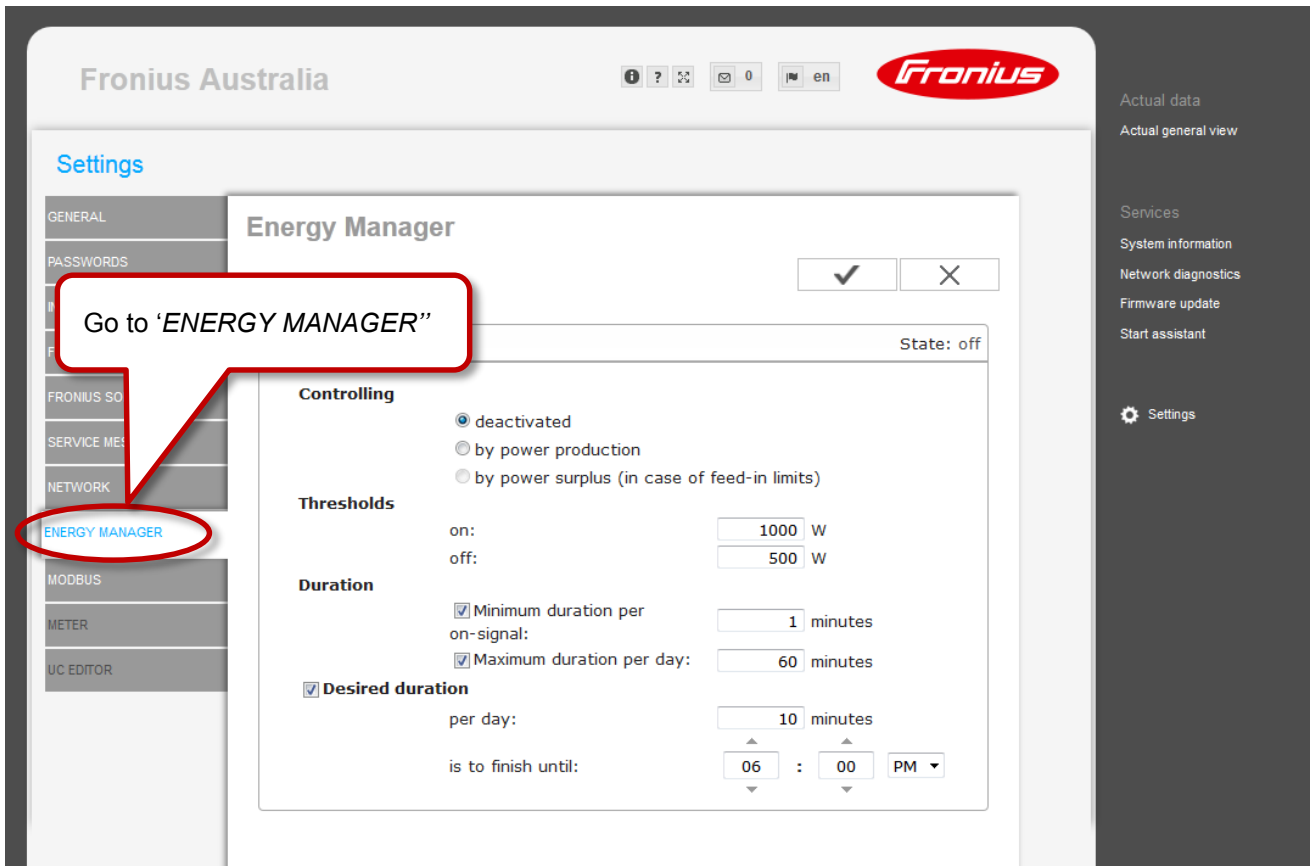


Figure 10 - Datamanager web interface

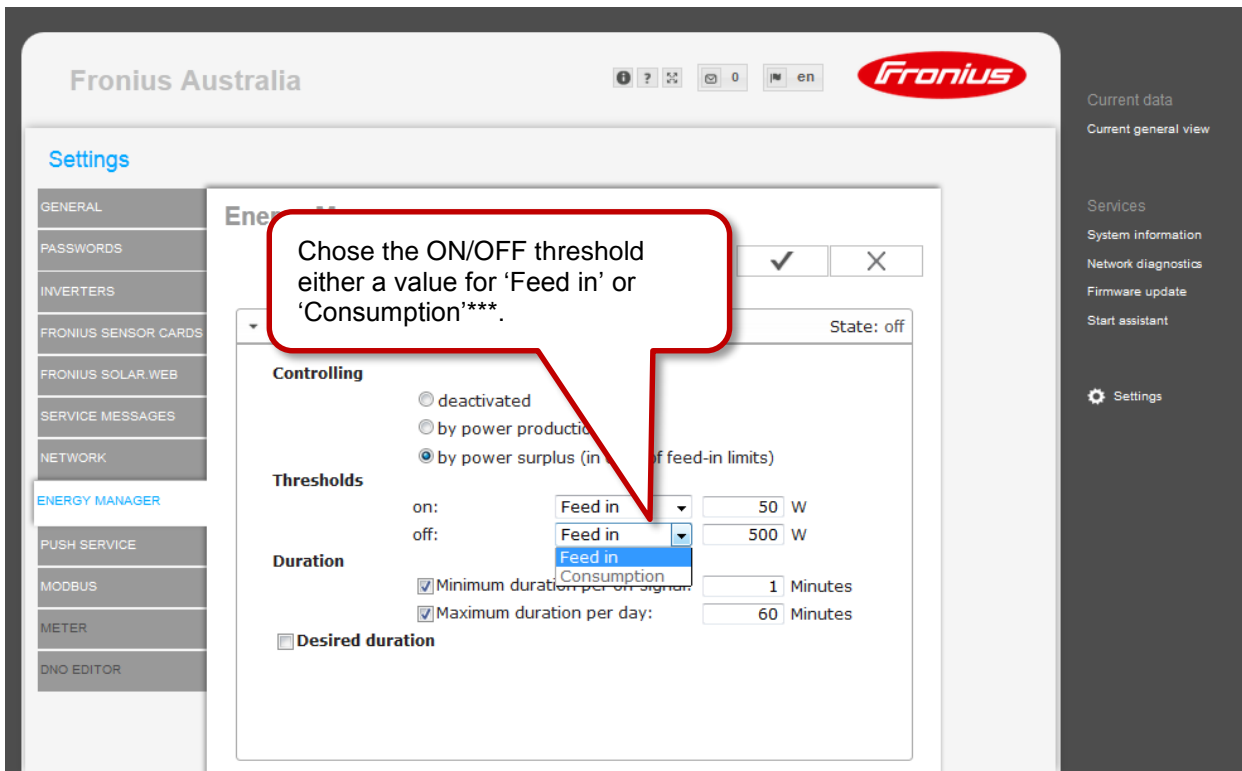


Figure 11 - Datamanager web interface when using an energy meter

### 3.2.2 Datamanger software version 3.2.2 or smaller

Note: Datamanger software version 3.2.2 and smaller have less features. To get the full functionality make a software update as described in chapter 5.2 *Software Update of Datamanger*.

To adjust the settings on Datamanger software version 3.2.2 or smaller follow the steps:

1. Activate function by ticking “**Approved**”
2. Set “**Operating point ON**” to level of which the relay should be switched on
3. Set “**Operating point OFF**” to level of which the relay should be switched off
4. Set “**Minimum ON**” time (if required).
5. Click “**Save**” for the settings to be activated

### 3.3 Remote control

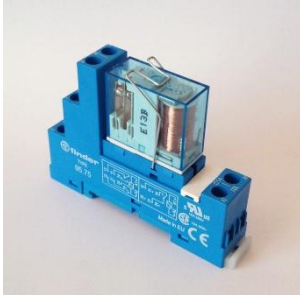
It is possible to remotely adjust the settings on the Datamanger from any PC connected to the same LAN (local network). Therefore it is required to use a “Static IP” address in the network settings of the Datamanger. For a static IP address ask your local IT administrator. This IP address can then be saved in the browser for easy access to the Datamanger interface. Some new network routers (Wi-Fi router) also allow to use the URL <http://datamanger/>.

To get remote access outside of the LAN an external IP address is needed. Ask your IT administrator or internet provider for assistance.

- \* Datamanger 2.0 only
- \*\* Some loads require to be ON for a minimum time (for example an air-conditioner)
- \*\*\* Cannot be chosen if a S0 meter is placed in the consumption path.

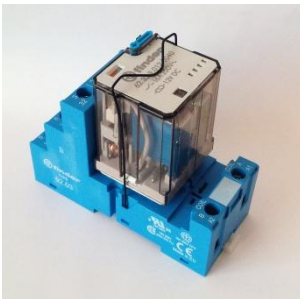
## 5 APPENDIX

### 5.1 Hardware example for the external Relay



#### Components for 16A relay

1 x FINDER Relay – 16A, DPST, 12VDC  
(RS Components, Part# 292-8398.)  
1 x FINDER Relay DINrail Socket 62 Series  
(Element14, Part #2365553)  
1 x FINDER Metal Retaining Clip 62 Series  
(Element14, Part #2365587)



#### Components for 10A relay

1 x FINDER Relay – 10A, PCB, DPCO, 12VDC  
(Element14, Part #1169304)  
1 x FINDER Relay Socket with clip 44 Series  
(Element14, Part #1169230)

Other DC coil relays can be used, however the power requirement of the relay coil needs to be crosschecked against the Datamanager's I/O port power capability.

### 5.2 Datamanager Web Interface

The Datamanager has a web server built-in which enables remote settings adjustments via a normal web browser or via Fronius Solar.Web App.

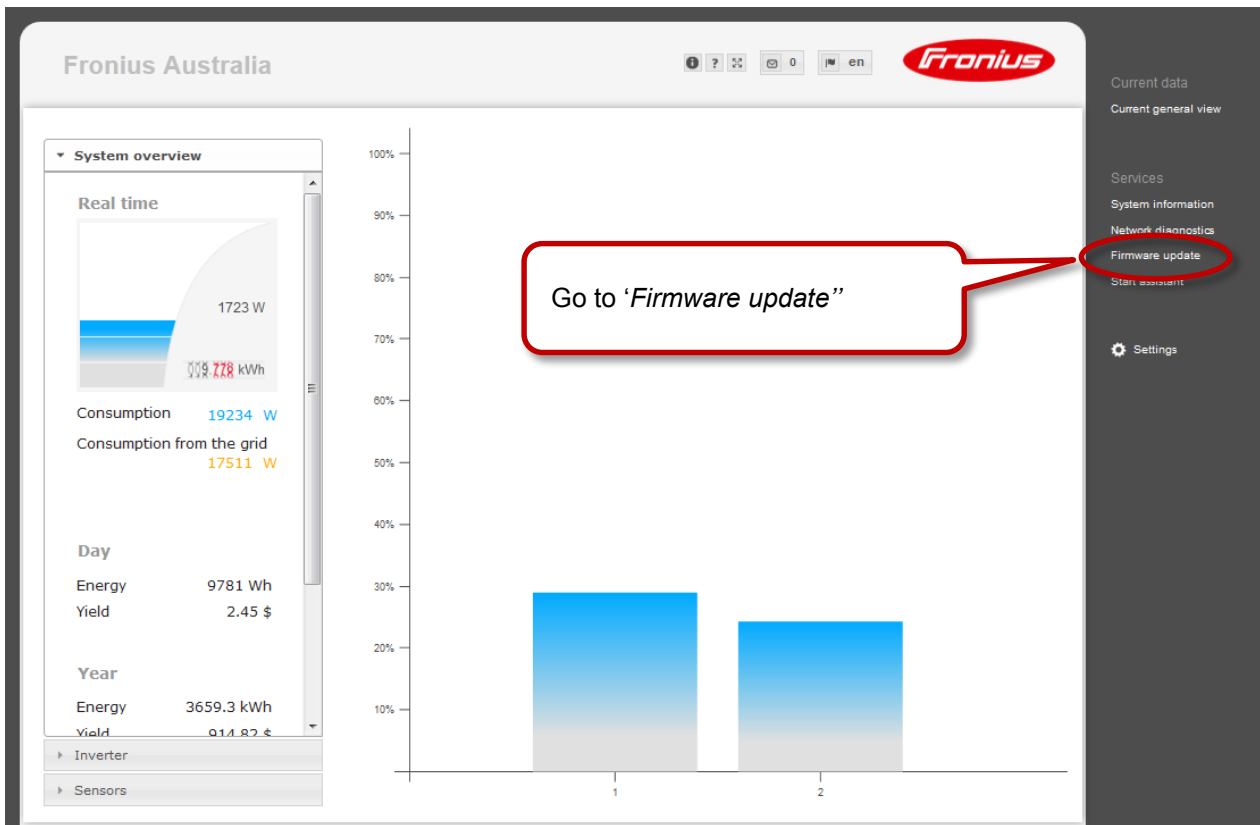
- / Activate the Wi-Fi hotspot on the Datamanager card (inverter) or Datamanager Box V2
- / Connect your computer/tablet/smart phone to the Datamanager's WLAN hotspot
- / Open a web browser and go to <http://192.168.250.181> (via Wi-Fi of Datamanager V2 only)  
or <http://datamanager/>

Alternatively you can use Fronius Solar.Web App for tablet or smart phone and go to 'Settings' and click 'PV Inverter Homepage'

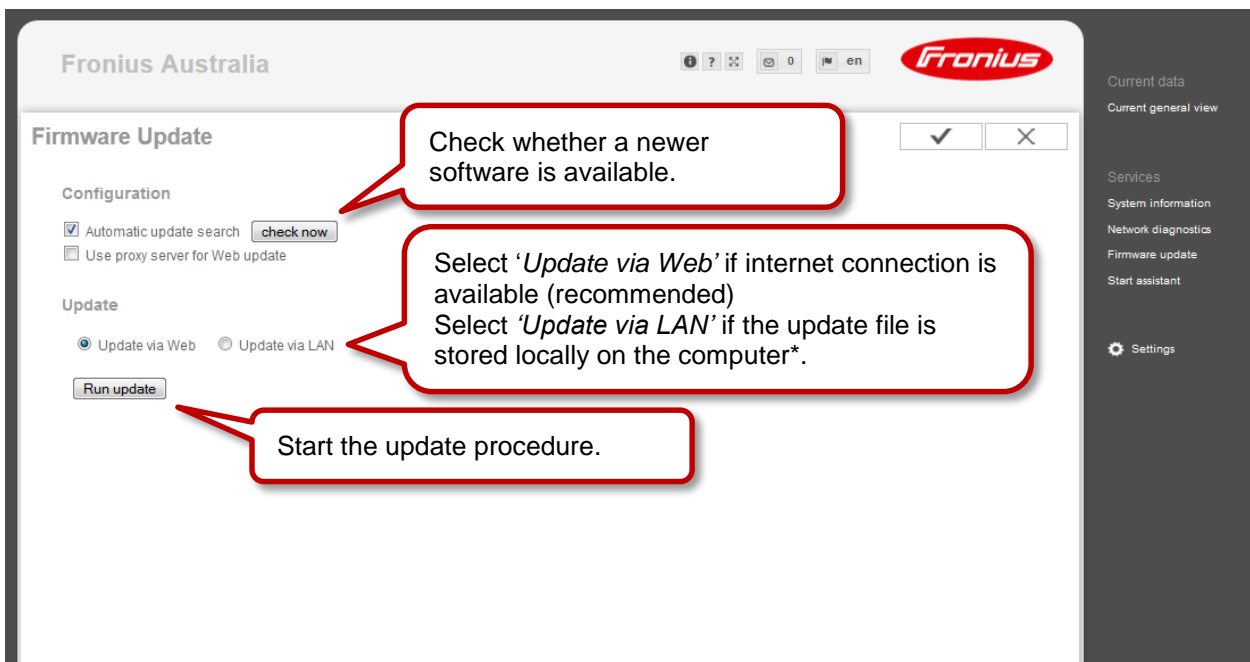
### 5.3 Software update for Fronius Datamanager

/ Go to Datamanager web interface as described in 5.2 *Datamanager Web Interface*

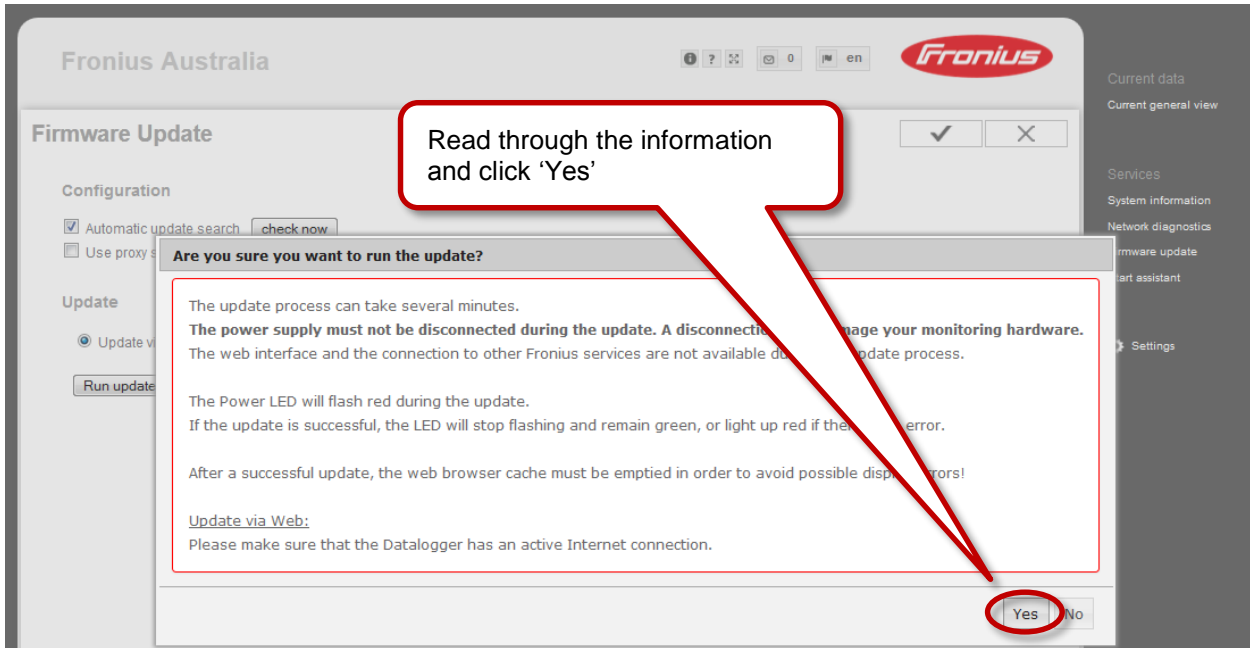
/ Select *Firmware update* on the right hand side of the Datamanager web interface (also called PV Inverter Homepage) and follow the steps shown in the pictures below.



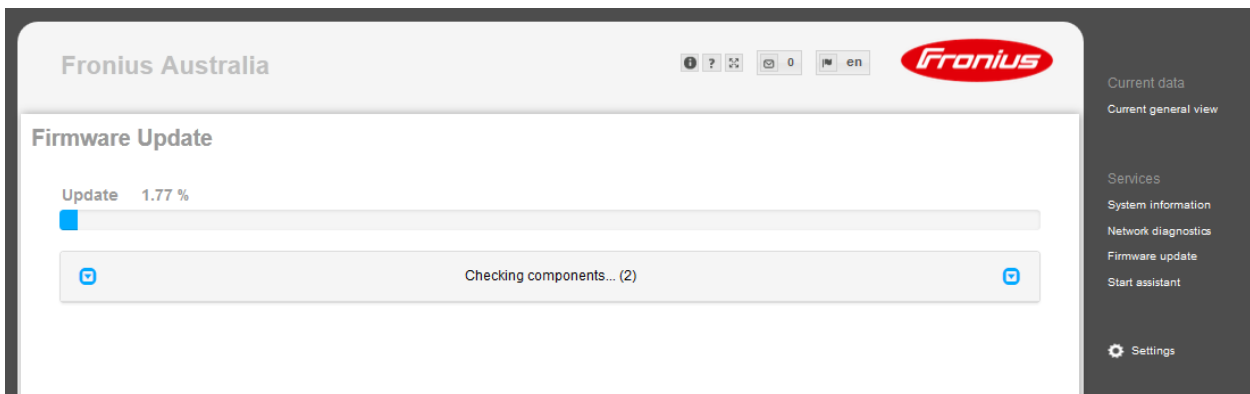
/ Check and run update on the firmware update page



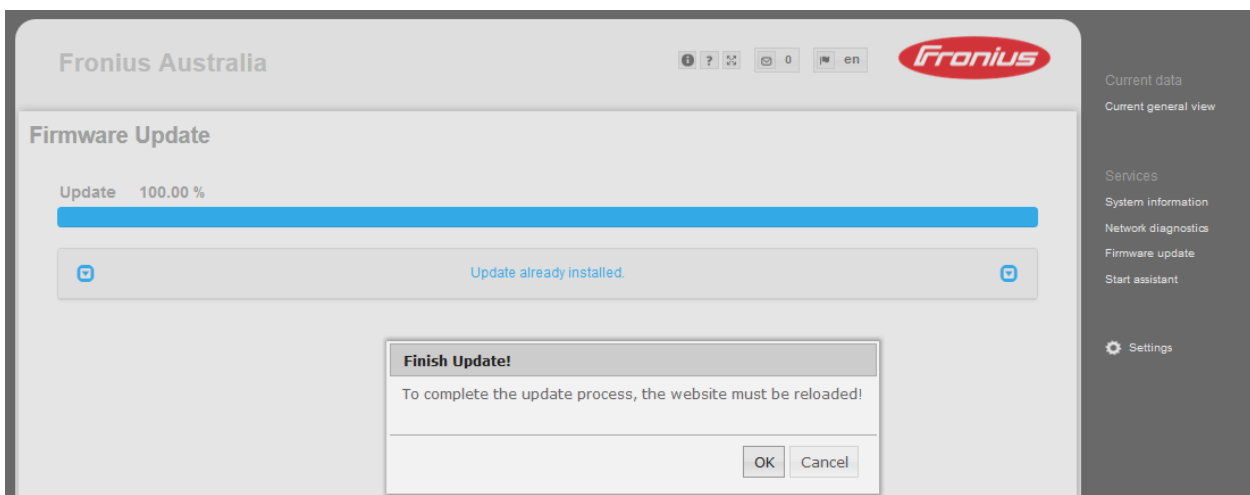
/ Start the download



/ The software will automatically download



/ To finish the update click OK





SHIFTING THE LIMITS

For more detailed information on how to upgrade the firmware for Fronius Datamanager V2 please see the Operating Instructions on the Fronius website under *Solar Energy / Products / System monitoring / Datalogging / Fronius Datamanager 2.0* or click: [http://www.fronius.com/cps/rde/xbcr/SID-DBD64F5C-18F6818F/fronius\\_australia/42\\_0426\\_0191\\_EA\\_388899\\_snapshot.pdf](http://www.fronius.com/cps/rde/xbcr/SID-DBD64F5C-18F6818F/fronius_australia/42_0426_0191_EA_388899_snapshot.pdf)

\*In case there is no internet connection on the Datamanager the software update can be ran on a computer. The software can be downloaded from the Fronius Website under *Solar Energy/Info & Support/Software Downloads/Software Updates* or click here: [http://www.fronius.com/cps/rde/xchg/SID-1CE5A97E-8EC72008/fronius\\_australia/hs.xsl/25\\_7671.htm](http://www.fronius.com/cps/rde/xchg/SID-1CE5A97E-8EC72008/fronius_australia/hs.xsl/25_7671.htm)

Troubleshooting: Please read instruction manual or call  
**Fronius Australia - Technical Support Hotline**  
**03 8340 2910 (Mo – Fr, 9am – 5pm AEST)**

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