

SP PRO Fronius Primo or Symo Managed AC Coupling

Introduction

The SP PRO and Selectronic Certified (SCERT) Fronius Primo or Symo Managed AC Coupling, provides a method of linking the Fronius range of grid tie inverters to the SP PRO via the AC Load supply. Regardless of whether the grid or a generator is connected, the SP PRO can manage and control Fronius SCERT inverters.

Each SP PRO can manage a maximum of five Fronius SCERT inverters by commanding each one to output the required amount of power to simultaneously supply the load, export to the grid and charge the battery bank as required at any particular point in time. This is done via a communications link between the SP PRO and the Fronius SCERT.

This document applies to Fronius Primo or Symo SCERT inverters which have been preconfigured and programmed by Selectronic, and details the steps needed to install a managed AC Coupled system. SCERT inverters can be identified by a sticker on the front of the product.

The SP PROs and Fronius SCERTs must be installed as per their individual installation instructions with the additional allowance for communications cables linking all of the inverters together.

Note: This document needs to be read in conjunction with the SP PRO Instruction Manual and the Fronius Primo or Symo Instruction Manual.

No SP PRO Installed? Important information

If the Fronius SCERT inverter is not yet connected to an SP PRO, refer to **Fronius SCERT Backup Ready Connection** instructions (page 4).



Compatibility table

SP PRO System	Primo SCERT	Symo SCERT
SP PRO series I single phase	\checkmark	×
SP PRO series II single phase	\checkmark	×
SP PRO series II three phase (legacy)	\checkmark	×
SP PRO 2i single phase	\checkmark	×
SP PRO 2i (or SP PRO series II with advanced Comms cards, ACC, fitted) Advanced three phase.	\checkmark	\checkmark

- Only make adjustments to the Primo or Symo configuration as indicated in this document.
- The SP PRO and Fronius SCERT Managed AC coupling cannot be used with a Fronius Smart Meter. See Appendix III: Disable Fronius Smart Meter (page 44).

ADDITIONAL INFORMATION

Selectronic web site – <u>http://www.selectronic.com.au</u> or contact the Selectronic Sales Team.

For Fronius SCERT that need to be re-programmed, see **Appendix II: Fronius Step Through Configuration** (page 32).



Installation check list

The following table summarises the steps taken to set up a Fronius SCERT in a Managed AC Coupled system. Once the system has been installed, use the table to check that each step has been completed.

Refer to the pages following the tables for detailed information on each of the installation steps.

Installation step		Pages	SP PRO	SP PRO	SP PRO
-1			Series I	Series II	Series Zi
1	Install SP PROS as per manual		•	•	•
2	2 Install and configure batteries		v	V	V
3	Installing Fronius SCERT as per Fronius manual		\checkmark	\checkmark	\checkmark
	Installing Fronius SCERT without an SP PRO				
4 Fronius Primo or Symo must be Selectronic Certified		5	\checkmark	\checkmark	\checkmark
5	5 SP PRO Firmware Requirement – V12.18 or higher		\checkmark	\checkmark	\checkmark
6a	Fronius Primo AC Wiring	10	\checkmark	\checkmark	\checkmark
6b	Fronius Symo AC Wiring	12	×	(with ACC fitted)	~
7	Communications Link (RS485)	13	\checkmark	\checkmark	\checkmark
6a	Series 2i ONLY RS485 Communication connection between SP PRO and Fronius SCERT	14	×	×	~
6b	Series I ONLY RS485 Communication connection between SP PRO and Fronius Primo	15	\checkmark	×	×
7	Communications connection for Fronius SCERT 01 (Master)	17	\checkmark	\checkmark	\checkmark
8	Communications link for multiple installed Fronius SCERTs	18	\checkmark	\checkmark	\checkmark
9	Configure SP PRO Note: SP PRO must be configured via SP LINK "Site Configuration Wizard" before configuring Fronius SCERT	20	\checkmark	\checkmark	\checkmark
10	Configure the Fronius SCERT for the first time	21	\checkmark	\checkmark	\checkmark
11	Test system function	27	\checkmark	\checkmark	\checkmark
12	Step Through Config – for Fronius SCERT that need to be re-programmed	32	\checkmark	\checkmark	\checkmark
13	De-configure Fronius Smart Meter	44	\checkmark	\checkmark	\checkmark



Fronius SCERT "Backup Ready" Connection

When Selectronic Certified Fronius SCERTs are installed without an SP PRO,

1. A **link** must be fitted to the orange "Fronius Datamanager Connector" from the "+" pin to IO "2" pin so that Fronius SCERTs can produce full power.



2. The country code must be set to AU – Australia



Please note: The link is only required when the SCERT inverter is installed without an SP PRO.



Overview – Single Phase Series 2i

The diagram below shows a managed AC coupled system with five Fronius Primos.



Overview – Three phase Series 2i

The diagram below shows a managed AC coupled system with five Fronius Symo.





System Requirements

To successfully install the inverters, there are particular system requirements that need to be met.

- SP LINK Site Configuration Wizard must be used to verify:
 - 1. Combined maximum Fronius AC output
 - 2. Battery bank size
- The combined maximum AC output of all the connected Fronius SCERTs must be verified in the SP LINK Wizard.
- Battery bank must be sized to suit the SP PRO model and the combined maximum AC Output power of the Fronius SCERTs. Check the SP LINK Wizard.
- The SP PRO must have firmware version 12.18 or higher.
- The Fronius inverters must be Selectronic Certified (SCERT).
- Maximum of five Fronius Primo SCERTs per SP PRO inverter in a single phase system.
- Maximum of fifteen Fronius Primo SCERTs in a three phase SP PRO system. (five Primo per SP PRO).
- Maximum of five Fronius Symo SCERTs per three SP PRO inverters in an Advanced three phase system.
- There CANNOT be a mix of Fronius Primo and Fronius Symo within the same power system.

To configure the SP PRO - Fronius system, the Site Configuration Wizard in SP LINK's Easy Start Guide must be used.



Overview – Series I

SUITABLE FOR SINGLE PHASE SYSTEMS ONLY

The diagram below shows a managed AC coupled system with five Fronius Primo inverters.



System Requirements

To successfully install a SP PRO Series I - Fronius managed system, there are particular system requirements that need to be met.

- SP LINK Site Configuration Wizard must be used to verify:
 - 1. Combined maximum Fronius AC output
 - 2. Battery bank size
- To install an AC coupled system using a Series I SP PRO an additional AC coupling adaptor (stock code 005077) is required.
- The SP PRO must have firmware version 12.18 or higher.
- The Fronius Primo must be Selectronic Certified (SCERT).
- Maximum of five Fronius Primos per SP PRO

To configure the SP PRO Fronius system, the Site Configuration Wizard in SP LINK's Easy Start Guide must be used.



MINIMUM battery capacity for Solar Hybrid & Off Grid Systems

Each application will have a minimum battery capacity and a maximum allowable PV, please refer to the battery manufacturers data sheet as well as the guidance given in the SP LINK Site Configuration Wizard.

Note:

- a. For a Solar Hybrid (grid connected) system, the minimum battery capacity that must be connected to the SP PRO varies depending on SP PRO model. When the system is islanded (e.g. during a grid outage) the SP PRO will limit the output of the AC coupled solar based on the actual installed battery size.
- *b.* For an Off-Grid system, the minimum battery capacity connected to the SP PRO varies depending on SP PRO model, an overriding minimum battery capacity and the <u>combined</u> <u>maximum</u> Fronius SCERT AC Output.



SP PRO Firmware Requirements

- 1. All SP PRO Revisions are supported for the Fronius Primo SCERT.
- 2. Only SP PRO Revision 22 and above or Revision 20 and above when fitted with Advanced Comms Cards, are supported for Fronius Symo SCERT.
- SP PRO Software Version 12.18 or higher is required. To check firmware revision run SP LINK, connect to the SP PRO and go to Data View – Technical Data – "SP PRO Revision" and "Software Version".
- 4. Older revisions of firmware must be updated.
- 5. Do not change any configuration settings until the firmware is updated.

- Inverter	
SP PRO Model	Control PCA Serial
SPMC482-AU	121331
SP PRO Ratings	Control PCA Revision
48V DC, 7.5kW, 240V AC	22
SP PRO Serial Number	Control PCA Mod Status
125055	
SP PRO Revision	Power PCA 1 Serial
23	115531
SP PRO Mod Status	Power PCA 1 Revision
	3
Seftware Version	Power PCA 1 Mod Status
(12.18.M4	
String Inverters Supported	Power PCA 2 Serial
Fronius	115755
Grid Connect SW Version	Power PCA 2 Revision
2.00	3
SP PRO Total Run Time 30233.0 h	Power PCA 2 Mod Status

Data View – Technical Data screen

Note: Selectronic web site – <u>http://www.selectronic.com.au</u> for latest SP LINK software with the SP PRO firmware included.

FRONIUS PRIMO OR SYMO MUST BE SELECTRONIC CERTIFIED

The Fronius inverter must be Selectronic Certified. Other Fronius inverters will not operate correctly.

SELECTRONIC CERTIFIED

Note: do not update Fronius SCERT firmware or Datamanager firmware



Installation

The SP PRO and Fronius SCERTs must be installed as per their respective installation instructions. Particular instructions directly related to Managed AC Coupling are listed below.

It is good practice to number each Fronius SCERT from 1 up to 5 so that each inverter can be easily referenced within SP LINK.

In a multiphase system, label each Fronius Primo SCERT connected to L1, from L1-1 to L1-5. Do the same for each of the Fronius Primos connected to L2, from L2-1 to L2-5, and so on.

This number 1 to 5 is used for the communications link addressing. See Configuration section.

Fronius AC wiring Primo

For correct and safe operation, the Fronius AC output wiring must be connected to the AC Load terminals of the SP PRO in accordance with local wiring rules.



Fronius AC Wiring guide for Grid connected installation

SP PRO Fronius Primo or Symo Managed AC Coupling Installation Notes



Fronius AC Wiring guide for Off Grid installation

Note: The system will not function correctly if the Fronius Primos are installed on the AC Source side of the SP PRO.

2

:



Fronius AC wiring Symo

For correct and safe operation, the Fronius AC output wiring must be connected to the AC Load terminals of the SP PRO in accordance with local wiring rules.

It is important that the phase rotation of the Fronius Symo inverters match that of the SP PRO three phase system. L1 to L1, L2 to L2 and L3 to L3



Wiring guide for Fronius Symo SCERT in a grid connected three phase system with SP PRO 2i



Wiring guide for Fronius Symo SCERT in an Off grid three phase system with SP PRO 2i



RS485 Connection to SP PRO 2i

For Series II, see Appendix IV.

The communication link always starts at the SP PRO, then connects to the first Fronius SCERT (Master). The Fronius link is used to connect subsequent Fronius SCERTs that are connected to the same SP PRO.



SP PRO Connections (inside unit) – RS485 Port 2 RJ45 connector to RS485 Adapter to Fronius Datamanager connector.



RS485 Connection to First Fronius SCERT (Master) – Series 2i

Using the supplied 'CAT5' network cable connect one end to the RS485 Port 2 RJ45 connector on the SP PRO's Advanced Communications Card. At the Fronius SCERT 01 (Master), connect the CAT5 cable to the RS485 adapter cable that is connected to the Fronius Data Manager Connector.



The Fronius link connects subsequent Fronius SCERTs on the same SP PRO. Do not link together Fronius SCERTs that are on different SP PROs.

Please Note: The RS485 adapter cable comes connected the Data Manager Connector within the Fronius SCERT.



Fronius SCERT Connections (inside unit) – RS485 Adapter Wires terminated into the Fronius Datamanager Connector.

Wire Colour	Fronius Datamanager Connector Label
Red	D - RS485
Black	D + RS485
White	GRND



RS485 Communication to First Fronius Primo (RS485) – Series I

The communication link always starts at the SP PRO end via Coupling Adaptor (Sena LTC100) and then connects to the first Fronius Primo (Master). The Fronius link is used to connect subsequent Fronius Primo inverters ON the same phase as the SP PRO.



To install the Coupling adapter, use the RJ45 to DB9 lead and connect the Coupling adapter to the SP PRO Series I **Serial Port 2**. Then using 'CAT5' network cable or similar make, connect the Coupling adaptor to Fronius Primo 01 (Master) as per Table 1, Fronius Datamanager connector.

Coupling Adaptor Connections	Signal	T568 A colour code	T568 B colour code	Fronius RS485 Connector
RX-	Not Used			
RX+	Not Used			
GND	Ground	Green	Orange	- (minus)
TX- / TRX-	RS485 - A	Orange	Green	D- (RS485)
TX+ / TRX+	RS485 - B	Orange/White	Green/White	D+ (RS485)

Table 1: Coupling Adaptor to Fronius connections and wire colours

Note: Ensure that the Sena LTC100 adaptor switch is set to RS485.

IN0049 Revision 09 (005273) - 15 of 50

SP PRO Fronius Primo or Symo Managed AC Coupling Installation Notes





SP PRO Port 2 RJ45 connector to Sena LTC100 and to Fronius Datamanager connector



Fronius Connection

The RS485 Adapter to the Fronius Datamanager connector has been preconnected as illustrated.





RS485 Adapter to Fronius Datamanager connector

For Fronius SCERT 01 only, set the Master/Slave switch (located on the left-hand side of the orange connector) to "MASTER" as illustrated.



Master/Slave switch set to "MASTER" for Fronius SCERT 01

Make sure that the Datamanager 2.0 plug-in card – IP switch is set to position B for Fronius SCERT 01 (Master) only.



The Datamanager 2.0 plug-in card – IP switch is set to position B

Note: Make sure that the "X" LED is Green for Fronius SCERT 01. If the LED is Red then the Fronius Solar Net Connector IN/OUT might not be connected correctly to all inverters (e.g. correct connection: Fronius SCERT 01 OUT connected to Fronius SCERT 02 IN...etc), or **termination connectors are not fitted**, or connectors are not plugged in correctly.



SP PRO Fronius Primo or Symo Managed AC Coupling Installation Notes



Connecting Fronius link between Inverters 02 to 05

The following configuration outlines the connection for multiple Fronius Primos or Symos to the Master Fronius Inverter (Fronius Primo 01 or Fronius Symo 01).

If only a single Fronius is installed, skip to the next section "Configuration – Additional settings" page 20.

Inside the Fronius there are two RJ45 connectors (Fronius Solar Net Connector) with termination connectors installed. The Fronius Solar Net connectors are designed to interface with multiple Fronius SCERTs in a daisy chain arrangement via the input "IN" and output "OUT" connectors.



Fronius Solar Net Connectors with termination: "IN" located on LHS & "OUT" located on RHS

Note: The Fronius Solar Net Connector must be fitted to any unused connectors, or the SP PRO will not communicate to any Fronius SCERTs in the system.

Using a network patch lead connect the "OUT" (Fronius Solar Net) from Fronius SCERT 01 (Master) to the "IN" of Fronius SCERT 02.



Fronius link - Fronius SCERT 01 "OUT"

SP PRO Fronius Primo or Symo Managed AC Coupling **Installation Notes**





Fronius link - Fronius SCERT 02 "IN" & Fronius SCERT "OUT" (Fronius connection on intermediate inverters)

Using another patch lead, connect the "OUT" from inverter 02 (above) to the "IN" of inverter 03 and so on until all inverters in the system are connected.



Fronius link - Last Fronius SCERT on communication link ("IN")

For all the inverters numbered 02 and above, set the Master/Slave switch (located on the lefthand side of the orange connector) to "SLAVE" as illustrated.



Fronius SCERTs 02 to 05: Master/Slave switch set to "SLAVE"

Note: When Master/Slave switch is set to "SLAVE", the LED's on the Datamanager 2.0 plug-in card will be OFF.

> ALL LED's are OFF



IN0049 Revision 09 (005273) - 19 of 50



Configuration – Additional Settings

The Site Configuration wizard (in SP LINK 12.11 or higher) must be used to configure the SP PRO settings. Using the wizard will ensure all SP PRO settings are compatible with the managed AC coupled system.

The settings detailed below will be set when the Site Configuration Wizard is used to configure the SP PRO. Only the settings required to enable Fronius Managed AC Coupling are shown. The remainder of systems settings will be set by the Site Configuration Wizard.

The SP PRO must be configured before any of the Fronius SCERTs are energised.

The Fronius SCERTs are configured to Solar Net as default and the Inverter Number must be set sequentially from 01. (See "Programming the Fronius" section).

Make sure in the SP LINK tab **Configuration Settings** > **System**, the follow settings are set.

- Set String Inverter to Fronius.
- Number of Devices is set to the number of Fronius SCERTs installed on each phase. (On Advanced Multiphase systems, each phase has its own Number of Devices setting.)

In the example below, two Fronius SCERTs are connected to the SP PRO.

Managed AC Coupled Sol String Inverter*	ar Fallback Power
Fronius	Disabled 💌
Number of Devices* [1 - 5] 2	Islanding Power Limit* [0.1 - 15.0 kW] 5.0 ↓ kW ↓
AC Source Limit Monitor Monitoring Direction	
Export	▼
Trip Power Limit [0.0 - 250.0kW] 50.00 (10 kW)	-
Trip Time* [0 - 1000 s]	

SP LINK - Configuration Settings – System tab

Note: Port 2 Communication settings will not be available once Fronius has been enabled. This is normal operation.



Fronius Configuration

The settings listed below are required to be configured in each Fronius SCERT in order for the system to operate correctly.

1. Isolate the DC solar from the Fronius SCERT(s) (via the appropriate DC circuit breaker).

Do not connect the PV solar until the system is configured.

- 2. Ensuring that the SP PRO AC Load supply is present at the Fronius SCERT, switch on the AC supply to the Fronius SCERT.
- 3. When the Fronius SCERT is powered for the first time, select the "language" for the inverter and press the **ENTER** (4) key.



Then "Select Country",

- For both Grid Connect and Off Grid installations, scroll to **50Hz** - **International** (↓) and press the **ENTER** (↔) key.





Set the "Date" for the inverter and press the ENTER (4) key. Use the 'UP' (+) and 'DOWN' (-) keys to shift the numerical values in an ascending/ descending order.

Note: "Date" will flash after the first **ENTER** (\checkmark) key press, a second **ENTER** (\checkmark) is required to proceed to the next step.



Set the "Time" for the inverter and press the **ENTER** (4) key. Use the **'UP'** (+) and **'DOWN'** (-) keys to shift the numerical values in an ascending/ descending order.

Note: "Time" will flash after the first **ENTER** (\cdot) key press, a second **ENTER** (\cdot) is required to proceed to the next step.



Set the "MPP Tracker 2" for the inverter to "ON" if installing more than one string of panels, otherwise set to "OFF" and press the **ENTER** (\triangleleft) key



Note: When the Fronius SCERT is powered without the DC and the "MPP Tracker 2" is "ON", "INFO STATE 523 LOW PV VOLTAGE" will be displayed on the screen.





4. Once the display is active on the Fronius SCERT, access the main menu. To enter the main menu, press the ESC (¬) key once, then using the LEFT (←) or RIGHT (→) keys to scroll through the main menu. To access any of the menu items, press the ENTER (¬) key on the selected item. The ESC (¬) key is also used to return back to the previous menu or to edit previous digits.

The menu is continuous, when the end is reached the display automatically returns to the first menu item. The **'UP'** (\uparrow) and **'DOWN'** (\downarrow) keys are used to scroll through menu options or to shift numerical scales in ascending/ descending order, they are mainly used in sub menus to scroll through the various menu items.



To access the **SETUP** menu, scroll once to the left and press the **ENTER** (4) key. The **ENTER** (4) key is used to confirm an action or to access submenus.

SP PRO Fronius Primo or Symo Managed AC Coupling Installation Notes





- 5. Scroll to **DATACOM** (\downarrow) and press **ENTER** (4).
 - Standby Standby WiFi Access Point USB Relay * * * *
- 6. Scroll to **Inverter Number** (\downarrow) and press **ENTER** (\triangleleft).



- a. If only one Fronius SCERT is installed then the address must be set to 01.
 - i. If more than one Fronius SCERT is installed then the address must be allocated sequentially starting from 01 (i.e. first Fronius = 01, second Fronius = 02, third Fronius = 03 etc).
 - ii. Do Not skip any address numbers in the sequence when using multiple Fronius SCERT
- b. Once the "Inverter Number" is selected, press the **ENTER** (4) key to configure
- c. Check Protocol Type verify this is set to Solar Net.

SP PRO Fronius Primo or Symo Managed AC Coupling Installation Notes





d Press the **ENTER** (4) key to configure and return to the "DATACOM" menu.



7. Scroll to **Display Setting** (\downarrow) and press **ENTER** (\triangleleft).



8. Scroll to **Night Mode** (\downarrow) and press **ENTER** (4).

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Con	he HDEE tract		
Back	light		
+			
+	+	<u>+</u>	له

a. Set the Fronius SCERT "Night Mode" to "ON", this will allow the Fronius SCERT to control the display operation during the night.

Note: Setting the "Night Mode" will allow communications between the SP PRO and Fronius SCERT to stay awake at all times.

b. Once the "Night Mode" is set to set, press the **ENTER** key to configure and return to the "Display Setting" menu.







The Fronius SCERT is fully programmed and ready for operation in a SP PRO managed AC coupled system.

You are not required to make any changes to the Fronius SCERT from here.

Default values have been entered into the Fronius, such as PV size is equal to the SCERT Power rating, passwords as well.

Admin password: selectronic

Service password: selectronic

If you want to adjust any settings, proceed to "Appendix II: Fronius SolarWeb Configuration" page 29.

2

System Commissioning – Additional Tests

In addition to the normal system testing that would be performed, the following additional tests must be performed as detailed below.

Communications Link Verification

The correct operation of the Fronius Managed AC Coupling relies on the communications link. It is vital that the communications link connection has been setup correctly before operating the AC coupled system.

- 1. Check that all the communication cables have been connected correctly.
- 2. Connect AC to the Fronius SCERTs. Do not connect the PV until commissioning is complete.
- 3. Using SP LINK, connect to the SP PRO. In the **Data View > Now** tab there should be a model number displayed for each of the installed inverters.

Make sure to reset the SP PRO and the Fronius SCERTs after configurations and wiring of both the SP PRO and Fronius are complete.

The communication link may be further tested using the AC Solar Link Test found in SP LINK under the Service Settings tab.

1. In the Service Settings tab click the "Reset Counters" button

Wait 2 minutes and check that the error count remains at zero for all the connected Fronius SCERTs. (An error count of 5 or less per minute is acceptable but, in this case, it is good practice to check the wiring and that the termination resistors are set correctly in the SP PRO and Fronius SCERTs.

Once the Communications link has been verified for each Fronius SCERT, the DC feeds to each inverter can be switch on and full system testing and verification can be performed.

Verification of Fallback Mode:

When the Fronius SCERT loses communications with the SP PRO, the output of the all the Fronius SCERTs will drop to zero power after 10 seconds.

To verify this function, disconnect the communications lead between the SP PRO and Fronius SCERT, wait 10 seconds. Go to **INFO** > **Readings** menu on the front display of the first Fronius SCERT and check that the external limit (ext. Lim.) drops to 0%.

AC	Coupled Solar
Т	otal Power
0.	00 kW
Po	ower #1 (Primo 4.0-1)
0.	00 kW
Po	ower #2 (Primo 3.0-1)
0.	00 kW
Pe	ercent Power
1.	0 %
Т	otal Capacity

from grid-tie inverters can indicate quality of link.				
Counting while grid tie inverter is off is normal.				
Link #1	0			
Link #2	0			
Link #3				
Link #4				
Link #5				
Reset Counters				

		1
Rea	dings	
PV Iso. ext.Lim. V PV1	33,86 0% 350,4	MΩ V
+ +	<u>+</u>	



Appendix I: Connecting to Datamanager Card via Wi-Fi

For LAN connection and No internet, please refer to Appendix II.

The settings listed below are all that is required to connect the Fronius SCERT to the end device (e.g. Laptop) for monitoring and communication to the Fronius SCERT. The settings are ONLY carried out for Fronius SCERT 01 (Master).

Note:

- a. This section needs to be read in conjunction with the Fronius Datamanager 2.0 manual.
- b. The IP Switch must be set to position B for Fronius SCERT 01.
- *c.* Fronius Solar Net termination connectors must be inserted into each empty IN or OUT Solar Net connector socket of the last inverter.
- 1. From the main menu, scroll to **SETUP** and press the **ENTER** (4) key.



2. Scroll to **Wi-Fi Access Point** (\downarrow) and press **ENTER** (4).

			1
+Star	ndby		
	. Acce	sta Rigil	
norr	:0M		
i last i i i "La			
USB			
USB + Rela	ay		



1. Select "Activate Wi-Fi AP?" and press **ENTER** (4).

Note: "Activate Wi-Fi AP?" will take a couple of seconds to appear on the screen.



2. The "WiFi Access Point" will activate automatically "active" and the Network Name "SS" and Password "PW" will be displayed on the screen.

	and the second second second	
		1
WiFi	Access	Point
SS: FR	[active ONIUS 24	0.131081
PW: 12	345678	
PERM	ivate U	
		<u>0</u> 44

Notes:

- 1. DO NOT select "Deactivate WiFi AP?", the Wi-Fi signal will be lost.
- 2. The WLAN Wi-Fi signal stays open for one hour.
- 3. If "[active read only]", check IP switch position is set to "B".
- 3. Connection to the Fronius SCERT can be established via an end device (e.g. PC, tablet).

Note: If using a Tablet, download the **Fronius Solar.web App** from Google play or App Store.

4. From the end device, search for the Network Name displayed on the Fronius SCERT and establish a connection to the network. The password network is displayed on the LCD display of the inverter (Default PW: 12345678).

Note: The Fronius SCERT establishes a direct Wi-Fi connection between the end device and itself. No internet is required.

Show All	•	47
		-
FRONIUS_240.131081 Se	ecurity-enabled network	llte.
		-
t up a connection or network		•



- 5. Open an internet web browser and type the IP address:
 - i. IP address for WLAN connection:192.168.250.181



Note: If using a Tablet, Run the Fronius Solar.web App.

6. The Fronius Datamanager 2.0 website start page appears



Note: The image is used as an example only, settings may differ.

- 7. Defaults for the setting menu in the Fronius Datamanager 2.0 website Username: **admin** password: **selectronic**
- 8. Defaults for the setting menu in the "DNO EDITOR" Username: **service** password: **selectronic**

Note:

- a. Both the admin and service username and password are configured for Fronius SCERT SCERT Managed AC coupling inverters **ONLY**.
- *b.* In "settings" it is required to update the "GENERAL" tab and "INVERTERS" tab with the appropriate information.



Appendix II: Fronius Step Through Configuration

This is required when dealing with Fronius that have had configuration changes made.

LAN Connection

1. Set the IP switch on the Datamanager 2.0 plug-in card to **position A** on **only** Fronius SCERT 01 (Master).



Note: Make sure to set the IP switch back to position B when the "Modbus Communication & Fall-Back Function Setting" section is complete otherwise the Fronius SCERT will not communicate to the SP PRO.

2. Connect a network cable from the LAN connector located on the Fronius SCERT to an end device (e.g. computer or laptop).



To end device (e.g. computer or laptop)

- 3. Open an internet web browser and type the appropriate address for the appropriate connection:
 - IP address for LAN connection: 169.254.0.180



Note: Make sure that the computer is NOT connected to the internet.

🖇 🌌 🛛 🎇 😨 🔜 🥡 🚳 🏟 🗟 🥌 🚱 🔶 12:17 PM

4. Complete the "General" section with the appropriate information, then select "Forward".

General				rter					Net		
System name * .											
Yield											
Feed-in tariff	0.01	\$ (AUD)	•	/kWh							
Grid supply tariff	0.01			/kWh							
System time											
Date / time *	07/28/2017		11 14	08	. 1	14	AM	•			
Cons / Linie	.,,20,2017			*		*	7.64				
Time zone setting	S										
Time zone *	Australia	Melbou	ırne			•					

5. In the "Inverter" section, **Device name** and **PV[Wp]** are required. Select "Forward".

	General	li li	nverter N	etwork setup
System n	ame *			
			244	Set all
No	visible	Device type	Device name	PV[Wp] 😂
3		Primo 3.0-1	* Primo 3.0-1 (3)	*

2

6. A notification will appear before the next section. You must click "Accept" to proceed.

Inverter	Netw	vork setup	Connection buildup
connection mode		LAN Setting	S
Local Network via Acc	ress-Point	Get address	🛇 static 💌 dynamic
	Notification		
- Solar.web via VVLAIN	When this Fronius syst	tem monitoring fur	nction is
Solar.web via LAN	activated, data from t encrypted form via the Solar.web server. In o	he Fronius inverte e internet to the F rder to ensure the	r is relayed in fronius according to the second sec
Solar.web via LAN	activated, data from t encrypted form via the Solar.web server. In o future security of the for installing the softw Fronius. Fronius shall r	the Fronius inverte e internet to the F rder to ensure the services, the user vare updates made not liable for any d	r is relayed in ronius e current and r is responsible e available by lamage caused
Solarweb via LAN	activated, data from t encrypted form via the Solar.web server. In o future security of the for installing the softw Fronius. Fronius shall r by a failure to observe	the Fronius inverte a internet to the F rder to ensure the services, the user vare updates made not liable for any d a this requirement.	r is relayed in Fronius a current and is responsible a available by lamage caused

7. Select "Solar web via LAN" and then select "Connect".

Inverter	letwork setup	Connection buildup
Connection mode Local Network via Access-Point Solar.web via WLAN	LAN Setting Get address Host name IP-Address Subnet-mask Gateway	© static ● dynamic 192.168.1.180 255.255.255.0 192.168.1.1
Solar.web via LAN	UNS-Server	192.108.1.1

2



8. When "Connect" is selected, "Connection buildup" will be displayed.



- Set the **IP Switch** to **position B** and then refresh the webpage.
- Wait for one second.
- Then set the **IP Switch** back to **position A** and then refresh the webpage.

Note: When the Fronius SCERT is reconnected to the end device (e.g. computer or laptop), the wizard will automatically proceed to the next section.



9. The "Network status" outlines the network detail. Select "Forward".

Connec	tion buildup N	etwork status	Passwords	
Syste	em monitoring LAN		Internet	5
^o -Address:		available:	No	
letwork mask:		Name server:		
IAC address:	00:03:AC:0A:B2:6E	Gateway:		
G	You are in configured netwo the wizard now.	ork of the monitoring syste	em. You can continue	

10. A password is required to be setup. Create a password that is easy to remember and contains both letters and numbers and select "Finish".

Netwo	ork status	Passwords		
Please set an admini User name	istrator password to p	rotect your system from unauthor	rized changes!	
Password *	•••••	acceptable		
		identical		
Repeat password *	monitoring from una	authorized read access.		



11. The Commissioning Wizard is complete. Select "To Homepage".

System mo	nitoring		🍽 en 🚺	Tronius
Netwo	rk status	Passwords	F	Finish
	Conç	gratulations!		
The	setup of your Fronius sys	tem monitoring was finish	ed successfully	Γ.
	Τ	o Homepage		

12. When "To Homepage" is selected, the Fronius Datamanager 2.0 website start page appears.

			Actual data Actual general v
System overview	100% -		
Real time	90% —		Services System informat
	80%		Network diagno: Firmware updat
0 W	70%		Start assistant
	- 4000		O Settings
000.000 kWh	50% -		
	40%		
Day Energy 0.Wh	30%		
Yield 0 €	20%		
Year •	10%		
Inverter			
Sensors		i.	

Note: The image is used as an example only, settings may differ.



13. On the Datamanager 2.0 website, select "Settings".

Note: The image is used as an example only, settings may differ.

14. Select the "PASSWORDS" tab.

	0 ? 2 0 0 ren Fronius	Actual data
Settings		Actual general view
GENERAL PASSWORDS NETWORK FRONUS SOLAR WEB SERVICE MESSAGES	Asswords User name Password * Repeat password *	Services System information Network diagnostics Firmware update Start assistant
IO MAPPING		🍎 Settings
LOAD MANAGEMENT PUSH SERVICE MODBUS INVERTER	Vser name service Password * Repeat password *	
FROMUS SENSOR CARDS	Protect your system monitoring from unauthorized read access. The Service password protects the system settings from unauthorized changes.	

15. Under "User name service", create a password that is easy to remember and contains both letters and numbers.

Note: The service password is required to access the "DNO EDITOR" tab

2

SP PRO Fronius Primo or Symo Managed AC Coupling Installation Notes

IS				Actual general view
Passv	vords			Services System information
Use DLAR WEB Pag	r name admin sword *		\checkmark	Network diagnostics Firmware update Start assistant
IESSAGES Rep	eat password *	User name	service	Settings
		Password *		
RVICE Use Pas	r name service sword * eat password *	Repeat password *		
SENSOR CARDS	ct your system monitoring from unauthorized read access	s. The Service password protects the system setting	gs from unauthorized changes.	

Note: The image is used as an example only, settings may differ.

Default login: Username service: password selectronic

16. Save the changes made in "PASSWORDS" by selecting the tick (✓) in the top right-hand corner of the page. A popup message will appear to indicate the changes made were saved.

	0 ? 2 0 0 N en	Actual data
Settings		Actual general view
ENERAL SSWORDS	Passwords	Services System information
TWORK RONUS SOLAR WEB	User name admin Password * Repeat password *	Network diagnostics Firmware update Start assistant
	Notification The settings were saved successfully.	Settings
	User name service OK. Old password *	
	Repeat password *	
TER O EDITOR	Protect your system monitoring from unauthorized read access. The Senice password protects the system settings from unauthorized changes.	

2)

:



17. Select the "DNO EDITOR" tab.

		Actual data Actual general view
ettings		
IERAL	DNO editor	Services
		System information
WORK		Network diagnostics
	✓ ×	Start assistant
	Authentication Required	
	A susmame and password are being requested by http://169.254.0.180. The site says: "Webinterface service area" User Namer Password:	🌣 Settings
	DNO EDITOR	
ERTER		
	✓ ×	

18. A user name and password are required to access the "DNO EDITOR" tab. Enter the service username and password created in step "15", select "OK".

Primo 3.0				0 ? ⊠ ⊠ 2 № en	Fronius	Actual data
Settings						Actual general vie
GENERAL	General					Services System information
INVERTERS	Authentication	Required			22	Network diagnosti Firmware update
FRONIUS SENSOR CARDS	0	A username and password ar service area"	e being requested by http://1	69.254.0.180. The site says: "W	ebinterface	Start assistant
SERVICE MESSAGES	User Name:	service				🔅 Settings
NETWORK	Password:			1		
ENERGY MANAGER			OK Cancel	J		
PUSH SERVICE						
MODBUS						
METER						
DNO EDITOR						

19. In the "IO Control" table, toggle the boxes in "I4" column and the fourth row to white.



20. Make sure that the "Active power" for the fourth row is 0%.

Settings					Actual general v
ENERAL	DNO editor	., on 9/12/20	017, 2:18:24 PM		Services
SSWORDS					System in forma
					Network diagno
IONIUS SOLAR.WEB			✓ X		Start assistant
	IO control				
MAPPING	unlocked Input pattern Active power	Power factor cosφ UC exe output inve	ccluded renter(s)		🏟 Settings
AD MANAGEMENT	8 4 9 9 17 17				
SH SERVICE	V 100 %	□ 1 O ind @ cap 🔽	0		
DBUS		🗖 1 O ind @ cap 🛛	100	-	
/ERTER	Ø	🗖 📘 🖻 ind 💿 cap 🛛 🔽	V 0	%	
		🗖 🔟 💿 ind 💿 cap 🗹	12121	Theorem 1	
ETER		ind @ cap	0		
O EDITOR	not applicable	pin open			

2

21. Save the changes made in "DNO EDITOR" by selecting the tick (✓) in the top right-hand corner of the page. A popup message will appear to indicate the changes made were saved "The settings were saved successfully".

Settings							Actual gener
GENERAL	DNO edit	tor		on 9/11	1/2017, 3:43	3:19 PM	Senires
PASSWORDS							System info
NETWORK							Network dia Firmware ut
					L	×	Start assista
	IO contr	ol					
	unlocked			Notification	led r(s)		🗘 Setting
				The settings were saved succes	sfully.		
			100 %	-	OK	0	
			☑ 60 %		OK	0	
			☑ 30 %	□ 1 0 ind @ cap 1		0	
			☑ 0 %	□ 1 0 ind @ cap		0	
			8	ind 🔍 cap 📃		0	
INO EDITOR		. not applicable 🛛 🔲 n	ot considered	🗌 pin open 📃 pin close	d		
DNO EDITOR		. not applicable 🛛 n	ot considered	pin open	d		

22. In "DNO EDITOR" tab, scroll down to "Controlling Priority" and set:

- i. "IO control" to 2
- ii. "Dynamic power reduction" to 3
- iii. "Controlling via Modbus" to 1



2



23. Save the changes made in "DNO EDITOR" by selecting the tick (✓) in the top right-hand corner of the page. A popup message will appear to indicate the changes made were saved "The settings were saved successfully".

	Notification	✓	×
Dumania naura advetian	The settings were	saved successfully!	
Dynamic power reduction			
Power limit: 🧕 No limit 🔘 limit fo	or entire system	ок	
		1	X
		_ · ·	· · ·
Controlling priority		<u> </u>	
Controlling priority			
Controlling priority	3		
Controlling priority 1 2 IO control © @	3		
Controlling priority 1 2 IO control © © Dynamic power reduction © ©	3	<u> </u>	
Controlling priority 1 2 IO control © Dynamic power reduction © Controlling via Modbus ©	3 0 0	<u> </u>	
Controlling priority 1 2 10 control © Dynamic power reduction © Controlling via Modbus © Legend: 1net priority	3 © ©		

24. Check the Modbus settings – settings must be as below -

Settings				
GENERAL	Modbus			
PASSWORDS			✓ ×	
NETWORK	Data export via Modbus	○ off ○ tcp ● rtu		
FRONIUS SOLAR.WEB	Baud rate	9600 ~		
io mapping	Parity	no ~		
LOAD MANAGEMENT	Sunspec Model Type	●float Oint + SF		
	Demo mode			
PUSH SERVICE	Inverter control via Modbus	\checkmark		
MODBUS	Note: when connecting a Fronius Sma	rt Meter, Modbus RTU is automatically dis	sabled.	

25. Carry out the System Commissioning on Page 27.

Fronius configuration is now complete

Note: On Fronius SCERT 01 (Master), make sure the IP switch is in position 'B', otherwise the Fronius SCERT will not communicate to the SP PRO.



Appendix III: Disable Fronius Smart Meter

If the Fronius SCERT has been connected to an external smart meter, the internal Fronius Smart Meter must be disabled. Follow the instructions below to disable.

The Fronius Datamanager webpage can be accessed in two ways:

- 1. Wi-Fi connection:
 - Activate the Wi-Fi Access Point on the Datamanager card, can be accessed via the font panel display.
 - Connect the computer or smart device to the "Fronius_240.XXXXXX" Wi-Fi network. The Wi-Fi Password is 12345678.
 - Open an internet web browser and go to http://192.168.250.181
 Alternatively, can use Fronius SolarWeb App (Tablet/Smart Phone), go to `*Settings'* and click '*PV Inverter Homepage'* (IOS) or My System Monitoring (Android)
- 2. LAN connection NO internet:
 - Connect the computer to the Datamanager via a network cable.
 - Set the Datamanager IP Switch to positon "A".
 - Open an internet web browser and go to http://192.254.0.180

Note: For information on how configure the Datamanager card for Wi-Fi and LAN connection, refer to Appendix I (page 29).

When the Fronius Datamanager webpage appears, select "Settings".



Note: The image is used as an example only, settings may differ.



Make sure the Service password is configured in order to access the "METER" and "DNO EDITOR".

Select the "METER" tab.

lab	0 ? X © 2 N en Franius	Actual data
Settings		Actual general view
GENERAL	Meter settings	Services
PASSWORDS	Authentication Required	System information
NETWORK	A username and password are being requested by http://169.254.0.180. The site says: "Webinterface	Firmware update
FRONIUS SOLAR WEB	User Name:	Start assistant
SERVICE MESSAGES	Password:	
IO MAPPING	OK Cancel	🔅 Settings
LOAD MANAGEMENT		
PUSH SERVICE		
MODBUS	METER	
NVERTER		
FRONIUS SENSOR CARDS		
METER	i sente de la companya de la company	
DNO EDITOR		

A user name and password are required to access the "METER" tab. Enter the service username and password created and then select "OK".

lab	0 ? X © 2 N en Fronius	Actual data
Settings		Actual general view
GENERAL PASSWORDS NETWORK	Meter settings	Services System information Network diagnostics
FRONIUS SOLAR WEB	Authentication Required	Firmware update Start assistant
	A username and password are being requested by http://169.254.0.180. The site says: "Webinterface service area"	🏟 Settings
PUSH SERVICE MODBUS	Password: •••••••• OK Cancel	
INVERTER		
DNO EDITOR		



Set the "Meter" to "None selected" and select the tick (\checkmark) to save all changes.

Settings			Actual general vie
ENERAL ASSWORDS ETWORK	Meter settings	✓ ×	Services System informatio Network diagnost Firmware update
RONIUS SOLAR. WEB	Click here for circuit diagrams of the meter installation	Meter: None selected 🔹 🗘 Settin	gs
DAD MANAGEMENT		Click here for circuit diagrams of the meter in	nstallation
ODBUS			
VERTER			
RONIUS SENSOR CARDS			

Select the "DNO EDITOR" tab.

	0 ? X 0 0 M en	Actual data
Settings		Actual general view
GENERAL	DNO editor ., on 9/12/2017, 2:18:24 PM	Services
PASSWORDS		System information
NETWORK		Network diagnostics Firmware update
FRONIUS SOLAR WEB	V X	Start assistant
SERVICE MESSAGES	IO control	
IO MAPPING	unlocked Input pattern Active power Power factor cose UC excluded output inverter(s)	Settings
LOAD MANAGEMENT	- · · · · · · · · · · · · · · · · · · ·	
PUSH SERVICE		
MODBUS		
INVERTER		
FRONIUS SENSOR CARDS		
METER		
DNO EDITOR	🗖 not applicable 🛛 not considered 📄 pin open	
	f Import 7 Export	



Scroll down to "Dynamic power reduction" and set to "No limit", select the tick (\checkmark) to save all changes.

METER	
DNO EDITOR	not applicable not considered pin open pin closed
	S Import S Export
	✓ ×
	AUS - Demand Response Modes (DRM)
	Reactive power output (Qrel) for DRM 3 0 % Reactive power consumption (Qrel) for DRM 7 0 %
	✓ X
	Dynamic power reduction
	Power limit: 🖲 No limit 💿 limit for entire system
	Controlling priority
	Dynamic power reduction O O O

Check the Modbus settings – settings must be as below -

Settings				
GENERAL	Modbus			
PASSWORDS			\checkmark	X
NETWORK	Data export via Modbus	○ off ○ tcp ● rtu		
FRONIUS SOLAR.WEB	Baud rate	9600 ~		
IO MAPPING	Parity String control address offset	no ~ 101		
LOAD MANAGEMENT	Sunspec Model Type	●float Oint + SF		
PUSH SERVICE	Demo mode Inverter control via Modbus			
MODBUS	Note: when connecting a Fronius Smar	t Meter, Modbus RTU is automatically dis	abled.	

The Fronius Smart Meter is now disabled and communication between the SP PRO and Fronius SCERT can be established.



Appendix IV: Communications Link Configuration with "AC Coupled Interface PCA"

The communication link always starts at the SP PRO and links to the "AC Coupled Interface PCA", then connects to the first Fronius Primo (Master). The Fronius link is used to connect subsequent Fronius Primos on the same phase as the SP PRO. Do not connect Fronius Primos on different phases together.

To install the AC Coupled Interface PCA, remove the bottom two screws from the Expansion Card and replace them with the provided stand-offs. Mount the AC Coupled Interface PCA to the Expansion Card inside the SP PRO close to the Serial Communication PCA, and connect the connector with the two blue wires to socket J2 on the Expansion Card as illustrated.



Expansion Card bottom screws replaced with stand offs.





- Connect the RJ45 Connector lead from the AC Coupled Interface PCA "To RS485 Port 2" to the SP PRO Serial Communication PCA RS485 Port 2.
- Connect the second RJ45 lead from the AC Coupled Interface PCA "To Other AC Coupled Inverters" to Fronius Primo 01 (Master), Fronius Datamanger connector (see section "Fronius RS485 Connection to Inverter 01 (Master)" page 49).
- Connect the AC Coupled Interface PCA power loom (12V) from AC Coupled Interface PCA "12V DC Power J4" to the SP PRO Serial Communication PCA 12V connector.

Note: Do not connect any RJ45 leads to the AC Coupled Interface PCA "**To ABB AC Coupled** *Inverter*" connector as the pinout is different to the Fronius Primo connection.





SP PRO Connections (inside unit) – RS485 Port 2 RJ45 connector to AC Coupled Interface PCA and to Fronius Datamanager connector .



RS485 Connection to First Fronius Primo (Master) – Series 2i and Series II

Using the supplied CAT5 network cable, connect one end to the AC Coupled Interface PCA "**To Other AC Coupled Inverters**" on the SP PRO. At Fronius Primo 01 (Master), **cut off the non-connected RJ45 connector**, expose and crimp the wires using wire crimps, or alternatively use a longer cable as required (not supplied) as outlined in the table below.



The Fronius link is used to connect subsequent Fronius Primos on the same phase as the SP PRO. Do not connect Fronius Primos on different phases together.

NOTE: There are two different colour coding for RJ45 plugs, **T568A** and **T568B**, it is common that either colour code is used. To ensure correct connections please check that the "RS485 RJ45 Adaptor pin #" (see below table) corresponds to the "Fronius RS485 Connector" connection by buzzing out the lead before connecting it to the Fronius Primo or the SP PRO.



RS485 RJ45 Adaptor Pin 1 designation



Cut off one RJ45 Connector (T568A colour code shown)

RS485 RJ45 Adaptor pin #	Signal	T568 A colour code	T568 B colour code	Fronius RS485 Connector
1	GND	Green/White	Orange/White	
2	GND	Green	Orange	- (minus)
3	RS485 - B	Orange/White	Green/White	D+ (RS485)
4	GND	Blue	Blue	
5	GND	Blue/White	Blue/White	
6	RS485 - A	Orange	Green	D- (RS485)
7	GND	Brown/White	Brown/White	
8	GND	Brown	Brown	

RS485 adaptor to Fronius Primo connections and wire colours

Note: Only the wires connected to Pins 2, 3 and 6 (on the RJ45) are used.