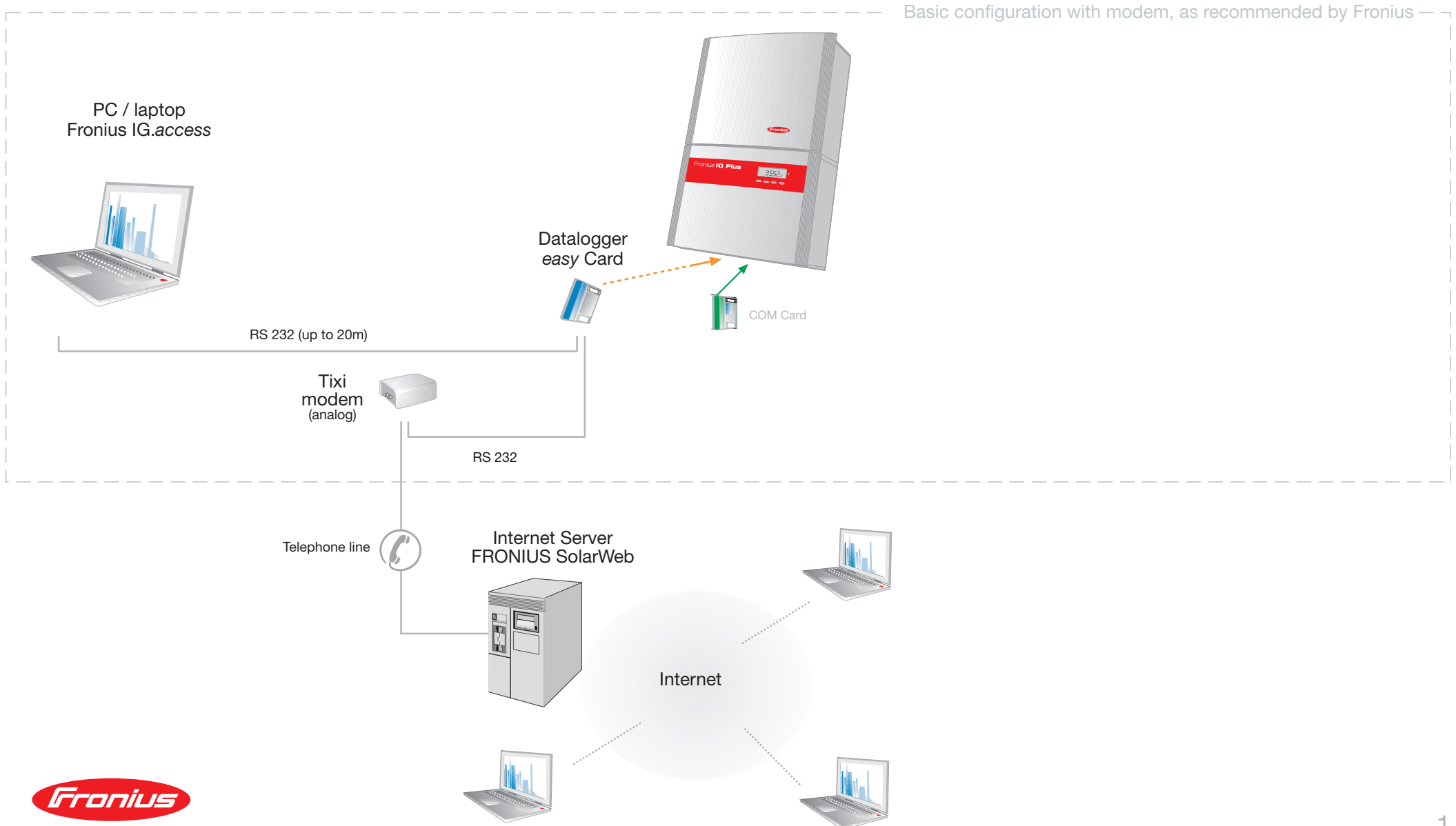


System monitoring case studies

- 4,5 kWp system, detached house – internet display 1
- 9 kWp system, detached house – remote monitoring, sensors, radio display 3
- 14 kWp system, farm – radio display, fault reporting contact 5
- 40 kWp system, public participation system – internet display, remote monitoring,
large-scale display, sensors 7
- 80 kWp system, private rooftop installation – string monitoring, remote monitoring 9
- Sketch diagram of initial configuration for remote monitoring of system 11

Sketch diagram for case study 1



4,5 kWp system, detached house Example 1

On-site situation:

- 4,5 kWp system
- 1 Fronius IG Plus 50
- Inverter is installed in the cellar.
- Distance between inverter and PC: 10m
- No sensors
- Analog telephone

Recommended setup:

- Fronius IG.access (user)
- No remote monitoring
- Internet display FRONIUS SolarWeb

Step 1 (datalogger)

Only 1 inverter, distance from PC < 20 m
→ 1 Fronius IG Datalogger easy Card

Step 2 (components)

Table shows:

In addition to the datalogger,
Fronius IG.access requires:
→ 1 Fronius IG COM Card

FRONIUS SolarWeb also requires:
→ 1 Tixi MessageModem 56 k

Since the customer has an analog telephone system, the
56 k Tixi MessageModem is selected

Step 3-7

→ not required

Summary:

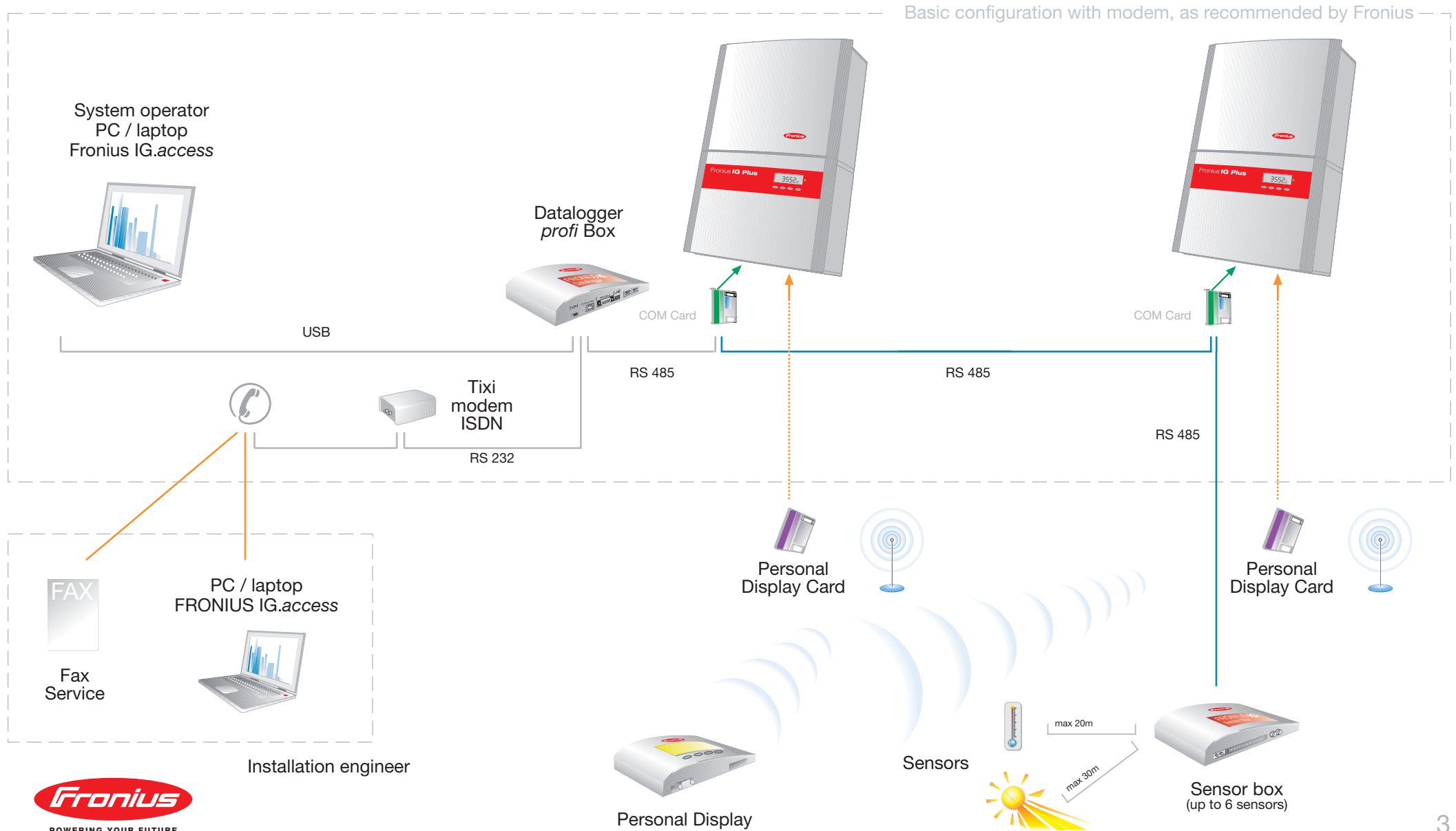
1 Fronius IG Datalogger easy Card
(Fronius IG.access software included)
1 Fronius IG COM Card
1 Tixi MessageModem 56 k

Cables required:

The RS 232 cable for connecting the datalogger card to
the PC must be made up to the correct length.

Instructions for the once-only procedure to configure the
modem can be found on the last page.

Sketch diagram for case study 2



9 kWp system, detached house Example 2

On-site situation:

- 9 kWp system
- 2 Fronius IG Plus 50
- Inverters are installed in the cellar.
- Distance between inverters and PC: 30m
- ISDN telephone system

Recommended setup:

- Insolation sensor and module temperature sensor
- Fronius IG.access (user)
- Personal Display
- Warning message sent to installation engineer by fax (via Tixi MessageModem)

Step 1 (datalogger)

2 inverters, distance from PC > 20 m

→ 1 Fronius IG Datalogger *profi* Box

The datalogger is installed near the PC as it is connected to a USB port.

Step 2 (components)

Table shows:

In addition to the Datalogger,

Fronius IG.access requires:

→ 2 Fronius IG COM Cards

Also required for the warning message:

→ 1 ISDN Tixi MessageModem with fax function

The installation engineer can now make a choice:

Either he can enable faults to be sent to him by fax direct from the modem. Alternatively, he can set up Fronius IG.*message* in his office and enable automatic fax forwarding.

In our example, the engineer has decided to receive notification by fax direct from the Tixi MessageModem.

For servicing purposes the engineer can also use Fronius IG.access to monitor the system from his office. All the components required for this are already installed.

Step 3 (sensors)

The insolation sensor and the temperature sensor are installed on the roof. The inverters are installed in the cellar. The distance from the inverters to the sensors is 20 m. When the distance from the inverters to the sensors is > 15 m
→ Fronius IG Sensor Box

Step 4, 5 and 7 → are not required

Step 6 (Personal Display)

The Personal Display is set up in the living room. One Personal Display card (with its own antenna) is installed for each inverter.

→ 1 Fronius IG Personal Display

→ 2 Fronius IG Personal Display Card

Summary:

1 Fronius IG Datalogger *profi* Box
(Fronius IG.access software included)

2 Fronius IG COM Card

1 ISDN Tixi MessageModem with fax function

1 Fronius IG Personal Display

2 Fronius IG Personal Display Card

1 Fronius IG Sensor Box

(plus: insolation sensor and temperature sensor)

Cables required:

RS 485 cable for connecting Datalogger Box to inverter (self-assembly, or install a ready-made CAT 5 cable)

RS 485 cable for connecting Sensor Box to inverter (self-assembly, or install a ready-made CAT 5 cable)

RS 485 cable for connecting inverter to inverter (self-assembly, or install a ready-made CAT 5 cable)

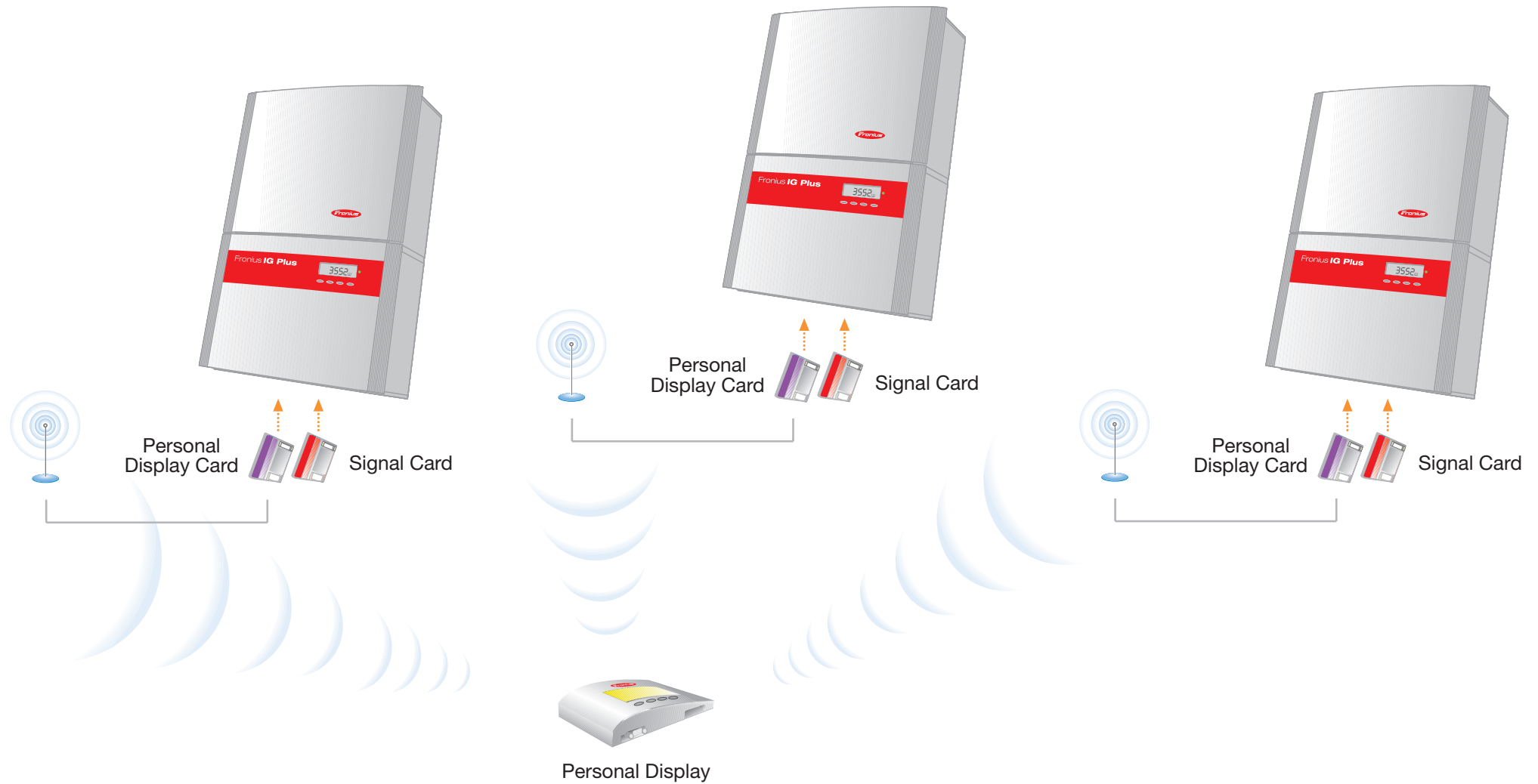
USB cable for connecting Datalogger Box to PC

RS 232 cable for connecting inverter to modem (included with modem)

POTS cable for connecting modem to telephone (included with modem)

Instructions for the once-only procedure to configure the modem can be found on the last page.

Sketch diagram for case study 3



14 kWp system, farm Example 3

On-site situation:

- 14 kWp system
- 3 Fronius IG Plus 50
- Inverters are installed on the outside of the barn.

The distance from the house is 100 m

Recommended setup:

- Data transfer via radio link → Fronius IG Personal Display
- Floating fault reporting contact → Fronius IG Signal Card

Step 1 – 5 → are not required

Step 6 (radio display)

The radio display is positioned in the living area in the house.
One Personal Display card (with its own antenna) is required for each inverter.

The following components are required to transfer data by radio:

- 1 Fronius IG Personal Display
- 3 Fronius IG Personal Display Cards

Step 7

(floating fault reporting contact)

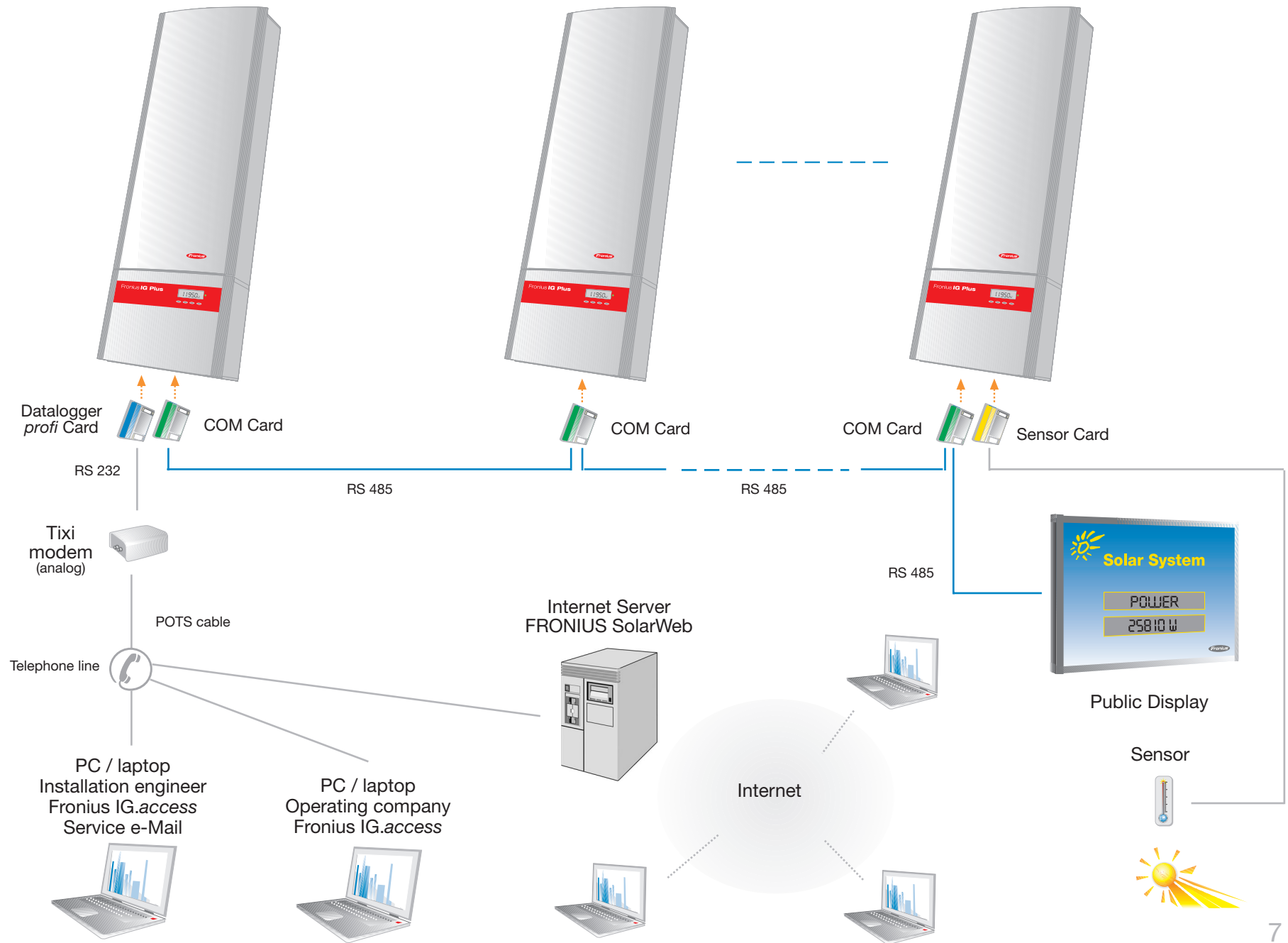
One Fronius IG Signal Card is required for each inverter.

Summary:

- 3 Fronius IG Signal Cards
(plus optionally: 1 optical or acoustic signal transmitter)
- 1 Fronius IG Personal Display
- 3 Fronius IG Personal Display Cards

Cables required: none

Sketch diagram for case study 4



40 kWp system, public participation system in a school Example 4

On-site situation:

- 40 kWp system
- 3 Fronius IG Plus 150
- Inverters are installed on the roof
- Distance from telephone connection: 10 m (one floor below)

Recommended setup:

- Internet display → FRONIUS SolarWeb
- Fully-automated energy comparison → Fronius IG.access
- Service contract with installation engineer → Service E-Mail via modem
- Insolation and temperature sensor
- Fronius IG Public Display

Step 1 (datalogger)

3 inverters, distance from PC < 20 m
→ 1 Fronius IG Datalogger *profi* Card

Step 2 (components)

Table shows:

In addition to the datalogger, Fronius IG.access (fully-automated energy comparison) requires:
→ 3 Fronius IG COM Cards

To enable service e-mails to be sent out (service contract with installation engineer) you will also need:
→ 1 Tixi Message Modem

For FRONIUS SolarWeb (internet display) no additional components are required other than the modem, which is in any case needed for sending service e-mails.

Step 3 (sensors)

The insolation sensor and temperature sensor are installed alongside the inverters on the roof.
Distance from inverters to sensors < 15 m
→ 1 Fronius IG Sensor Card

Step 4 (FRONIUS IG Public Display)

The large display is located in the school's entrance area.
Also required in addition to the datalogger and COM Cards:
→ 1 Fronius IG Public Display

Step 5, 6 and 7 → are not required

Summary:

1 Fronius IG Datalogger *profi* Card
incl. Fronius IG.access software
incl. 2 termination plugs
3 Fronius IG COM Cards

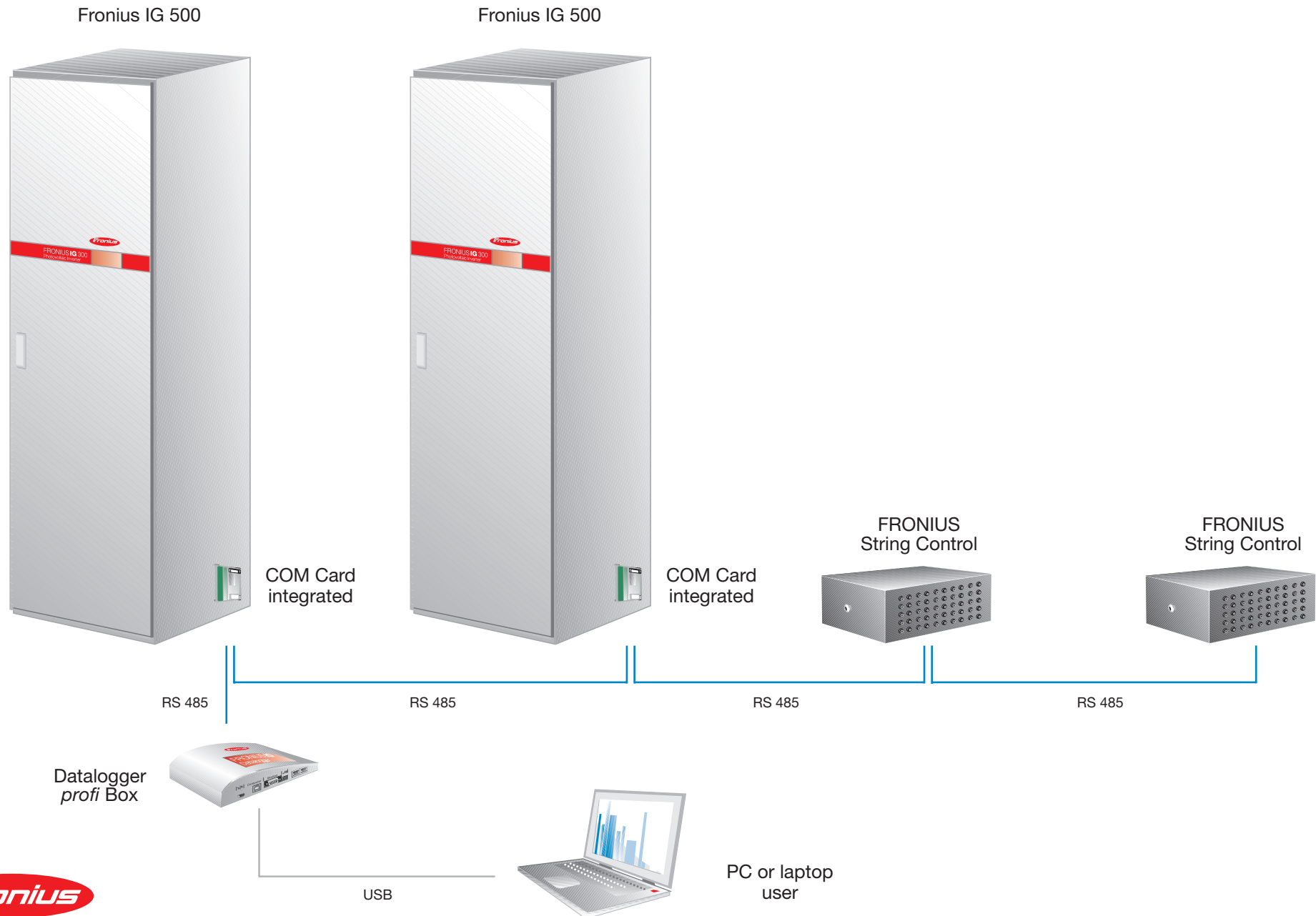
1 Tixi Message Modem
1 Fronius IG Sensor Card
(plus: insolation sensor and temperature sensor)
1 Fronius IG Public Display

Cables required:

RS 485 cable for connecting inverter – inverter (must be made up to length, or a ready-made CAT 5 cable can be used)
RS 485 cable for connecting inverter – Public Display (must be made up to length, or a ready-made CAT 5 cable can be used)
RS 232 cable for connecting inverter to modem (included with modem)
POTS cable for connecting modem to telephone (included with modem)

Instructions for the once-only procedure to configure the modem can be found on the last page.

Sketch diagram for case study 5



80 kWp system, private rooftop installation Example 5

On-site situation:

- 80 kWp system
- 2 Fronius IG 500 with COM Cards already included
- Distance between inverter and user PC: 50m

Recommended setup:

- System monitored by user → Fronius IG.access
- String monitoring → FRONIUS String Control

Step 1 (datalogger)

2 inverters, distance from inverter to PC > 20 m
→ 1 Fronius IG Datalogger *profi* Box

Step 2 (components)

Table shows:

In this scenario Fronius IG.access does not require any additional components other than the datalogger because every Fronius IG central inverter already has a COM Card.

Step 3 and 4

→ are not required

Step 5 string monitoring (FRONIUS String Control)

COM Cards and a datalogger are pre-requisites for string monitoring. The following are also required

→ 2 FRONIUS String Control
→ Fuses for String Control

Step 6 and 7

→ are not required

Summary:

1 Fronius IG Datalogger *profi* Box
incl. Fronius IG.access software
incl. 2 termination plugs
2 Fronius IG COM Cards

2 FRONIUS String Control
Fuses for String Control

Cables required:

RS 485 cable for connecting inverter – Datalogger Box
(must be made up to length, or a ready-made CAT 5 cable can be used)

RS 485 cable for connecting inverter – inverter (must be made up to length, or a ready-made CAT 5 cable can be used)

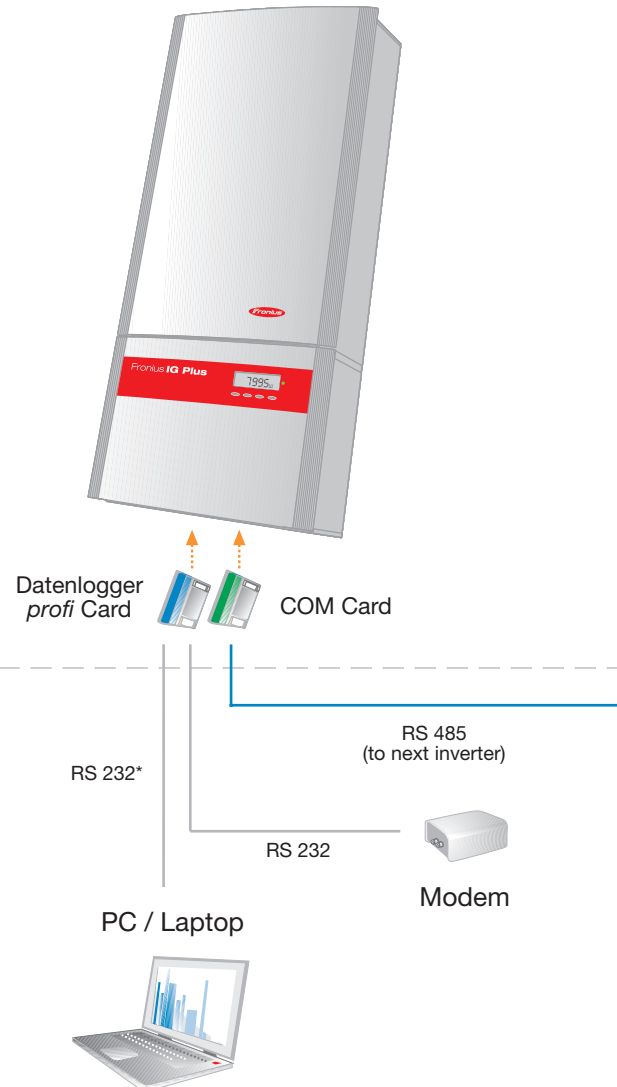
USB cable for connecting datalogger to PC

RS 485 cable for connecting inverter – String Control (must be made up to length, or a ready-made CAT 5 cable can be used)

RS 485 cable for connecting String Control – String Control (must be made up to length, or a ready-made CAT 5 cable can be used)

Sketch diagram of initial configuration for remote monitoring of system

-Basic configuration-



To ensure the accurate interchange of data between the modem and datalogger the modem must be initialised once. To do this you should connect a PC or laptop to the datalogger on which the latest version of the Fronius IG.access software is installed. The menu choice "Settings" → "Modem for datalogger" allows you to select and initialise the relevant modem.

To configure the modem on a one-off basis you will require:

RS 232 cable for connecting datalogger - PC (must be made up to length, or a ready-made interface cable* can be used)

* Please find the correct PIN-assignment in the operating manual "Fronius IG DatCom"