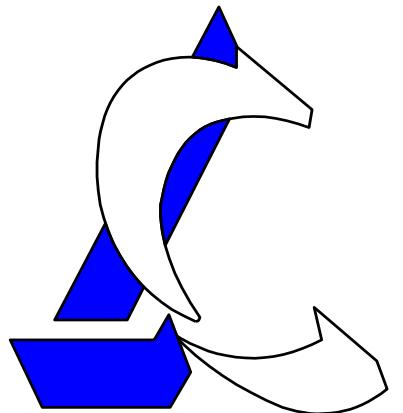


# CONFIGURATION MANUAL

## ITR 2.0

# SMA SpeedWire



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## 2 INTRODUCTION

The ITR 2.0 can communicate with and control the PV production of SMA SUNNY BOY and SMA SUNNY TRIPOWER inverters, including Core1 and Core2 models, via the SMA Ethernet bus (SpeedWire). The connection to the inverters will be made using the Ethernet RJ45 network connector available on the ITR.



**Refer to the specific SMA SpeedWire bus manuals to determine the maximum allowable cable types and lengths.**



**This manual is a supplement to the manuals of the inverter manufacturer and the ITR 2.0 itself.**

The information given in this manual covers the particular details of the ITR 2.0 communication with SMA inverters using the SpeedWire bus, but does not replace the manufacturer's and ITR manuals, which should be consulted for the installation of the system.

## 3 CONNECTION

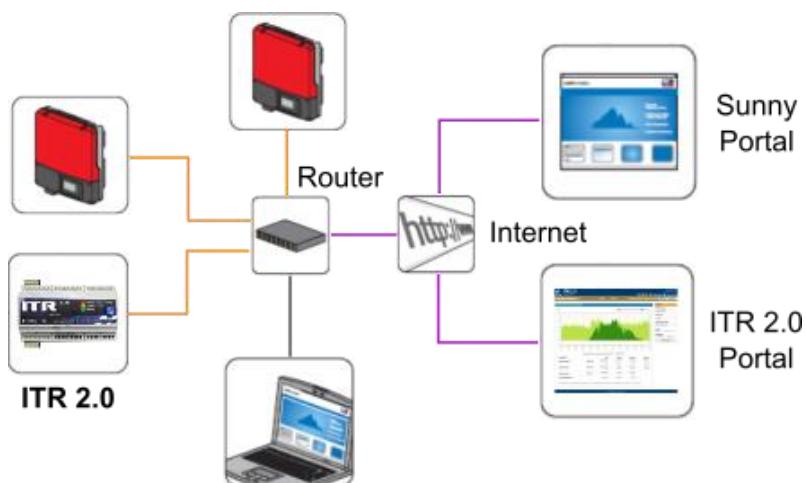
The inverters and the ITR 2.0 must be connected on the same local Ethernet network using standard network devices, such as routers or switchers.

It will also be necessary to connect a personal computer on the same local network to perform all system configuration:

- No specific application is required to configure the ITR 2.0, as this is done via the integrated WEB server.
- To configure the inverters, the SMA software SUNNY EXPLORER must be installed. The Core1 and Core2 models will be configured using their integrated WEB server.

If the local network has internet access, once the system is connected and correctly configured the inverters can send their information to the SMA monitoring portal, and the ITR will send the operating data of the entire plant to its own WEB platform.

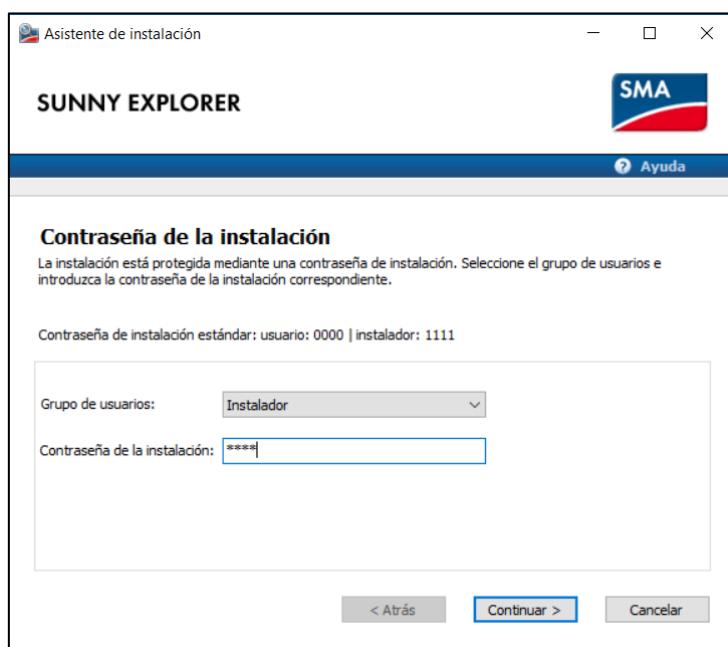
The following diagram shows a star topology connecting all devices to a central router that provides access to the Internet.



**In-line connection of the inverters using the two RJ45 connectors available on each inverter is not recommended.**

## 4 INVERTER CONFIGURATION

The SMA software SUNNY EXPLORER is used to configure the inverters. It is necessary to log in as 'Installer'.

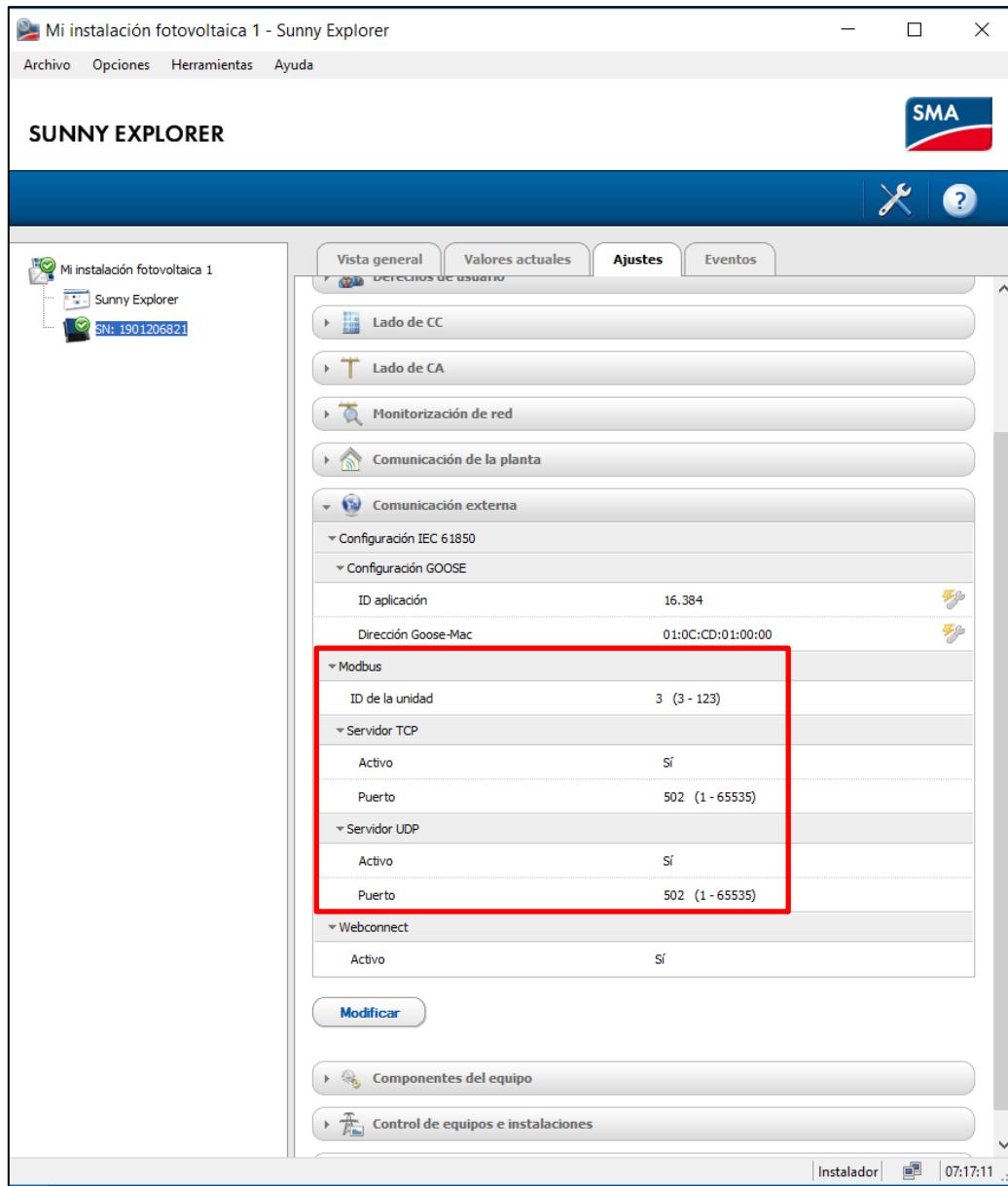


**Refer to the specific SMA manuals on the operation of the SUNNY EXPLORER software.**

The Core1 and Core2 models will be configured via their integrated WEB server, which presents options equivalent to those displayed by the Sunny Explorer software.

In order for the ITR 2.0 to communicate with and control the inverters, it is necessary to enable the Modbus TCP and UDP servers integrated in the inverters. The default status of both servers in a new, unconfigured inverter is disabled.

In the 'External communication' option of the 'Settings' menu of each inverter, the two Modbus servers will be activated, keeping the rest of the parameters with the default options: 'Port' 502 and 'Unit ID' set to 3.

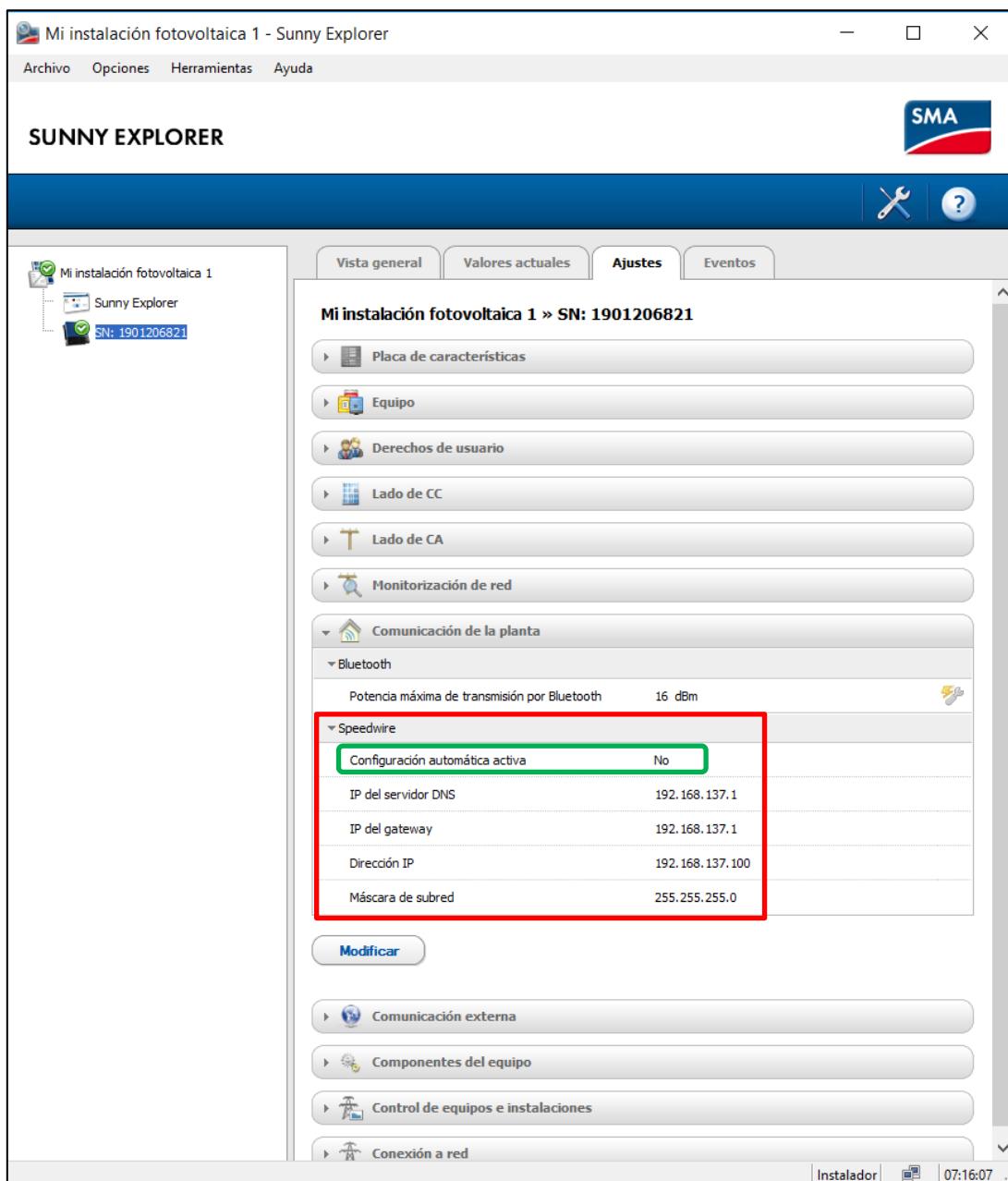


A separate fixed IP address must also be assigned to each inverter.

**⚠ Consult your local network administrator to determine the appropriate network parameters.**

If you are connecting the inverters to an existing local network, the parameters 'DNS server IP' and 'Gateway IP' usually match the IP of the router providing Internet access.

The 'IP address' of each inverter must be unique throughout the local network.



The screenshot shows the 'Sunny Explorer' software interface for managing a solar installation. The main window title is 'Mi instalación fotovoltaica 1 - Sunny Explorer'. The menu bar includes 'Archivo', 'Opciones', 'Herramientas', and 'Ayuda'. The top right features the SMA logo and icons for 'Ajustes' (Settings) and 'Ayuda' (Help). The main content area is titled 'SUNNY EXPLORER' and shows the serial number 'SN: 1901206821'. The 'Ajustes' tab is selected. The left sidebar lists 'Mi instalación fotovoltaica 1' and 'Sunny Explorer'. The main panel displays 'Mi instalación fotovoltaica 1 » SN: 1901206821'. A list of configuration items is shown, with the 'Speedwire' section highlighted by a red box. The 'Speedwire' section contains the following data:

Configuración automática activa	No
IP del servidor DNS	192.168.137.1
IP del gateway	192.168.137.1
Dirección IP	192.168.137.100
Máscara de subred	255.255.255.0

Below this table is a 'Modificar' (Modify) button. The bottom of the window shows other sections like 'Comunicación externa', 'Componentes del equipo', 'Control de equipos e instalaciones', and 'Conexión a red'. The status bar at the bottom right shows 'Instalador', '07:16:07', and a battery icon.

## 5 ITR 2.0 CONFIGURATION

### 5.1 ETHERNET CONNECTION CONFIGURATION

As with the inverters, the ITR 2.0 must have a fixed and unique IP address on the network. Refer to the manual for the process of setting up the Ethernet network on the ITR.

Ethernet	
Tipo de conexión	Establecer IP de forma manual
IP	192.168.137.99
Máscara	255.255.255.0
Gateway	192.168.137.1
DNS	192.168.137.1
Conexión a internet	Sí
Actualizar	

### 5.2 INVERTER CONFIGURATION

To configure the inverters in the ITR 2.0 the first step is to select from the list of manufacturers the option '**SMA (SpeedWire)**' in the menu 'Configuration' -> 'Hardware'.

Hardware		
Cambiar sentido corriente C1	<input type="button" value="i"/> No	
Cambiar sentido corriente C2	<input type="button" value="i"/> No	
Medidas de corriente	<input type="button" value="i"/> C1 red / C2 consumo	
Primario corriente C1 (A)	<input type="button" value="i"/> 250 / 0.25 A	
Primario corriente C2 (A)	<input type="button" value="i"/> 250 / 0.25 A	
Tensión nominal (V)	230	
Fabricante	<input type="button" value="i"/> SMA (SpeedWire)	
Zona horaria	<input type="button" value="i"/> Europe/Madrid	
Número de serie	131001	Cambiar contraseña de instalador
Versión del hardware	22.31	
Versión del software	5.0.1	
Algoritmo de control	v5.03 - UNE 217001 IN Cert.	
Actualizar		

**Menú**

- Hardware**
- Relé de seguridad
- Tabla de inversores
- Control
- Ethernet
- Wifi
- Red móvil 3G
- Gestión de cargas**
  - Cargas todo o nada
  - Cargas regulables
- Copia de seguridad
- Ticket plataforma WEB

Next, in the 'Inverter table', the 'Add new inverter' button will be used to configure all the inverters in the plant.

The screenshot shows the 'ITR 2.0' software interface with the 'LACECAL' logo. The top navigation bar includes 'Estado de la planta', 'Registro de datos', 'Configuración', 'instalador' (with a 'Cerrar sesión' button), and a 'Menú' section with 'Hardware', 'Relé de seguridad', 'Tabla de inversores', and 'Control'. The main area is titled 'Tabla de inversores' and contains a table with columns 'Nombre', 'Modelo', 'Fase', and 'Interface'. A red circle highlights the 'Añadir nuevo inversor' button at the bottom left of the table area.

The following window will then appear, where the particular data of the inverter must be entered:

The screenshot shows the 'Añadir inversor' configuration window. It includes fields for 'Fabricante / Modelo' (SMA / STP 20000TL), 'Nombre' (Inversor 1), 'Fase' (Trifásico), 'Interface' (Ethernet), 'Dirección IP del inversor' (192.168.137.100), 'Número de inversor (Unit ID)' (3), and 'Número de serie (opcional)' (1901206821). At the bottom are 'Añadir' and 'Cancelar' buttons.

- Model: The inverter model will be selected by means of the drop-down menu.
- Name: This is the name assigned to the inverter and will be used to identify it later in the data registry.
- Phase: If the inverter is three-phase there is no possibility to change the selection. If the inverter is single-phase, the grid phase in which it is connected will be indicated.
- Interface: In SpeedWire communication it will always be Ethernet and there is no possibility to change the selection.
- Inverter IP address: This is the IP address assigned to the inverter during its configuration.
- Serial number: This is an optional field to identify the inverter.

Once all the data has been configured, the inverter will be added by pressing the 'Add' button, which will automatically return to the 'Inverter Table'.

The screenshot shows the 'Tabla de inversores' screen again. A green box at the top says 'El inversor se añadió correctamente' (The inverter was added correctly). The table now includes a new row: 'Nombre' (Inversor1), 'Modelo' (STP 20000TL), 'Fase' (Trifásico), 'Interface' (Ethernet 192.168.137.100), and 'ID' (3). There are edit and delete icons next to the row. The 'Añadir nuevo inversor' button is visible at the bottom left.

The same process must be repeated for each of the inverters in the plant.

## 6 FUNCTIONAL CHECK

Finally, once the entire system has been configured, it is advisable to perform some checks to verify that it is working properly.

### 6.1 INVERTER COMMUNICATION

The first step is to verify that the communication with all inverters is correct. To do this, access the menu 'Plant Status' -> 'Controlled Devices', where a list of all inverters will appear. This list shows the current power they are generating, the percentage of regulation applied and the communication status.

Estado de los Inversores					
Nombre	Modelo	Fase	Pot. actual (W)	Límite (%)	Estado
Inversor1	STP 20000TL 1901206821	Trifásico	0	100	FALLO

### 6.2 POWER REGULATION

It is also possible to verify that the power regulation is working. To do this, access the 'Configuration' -> 'Control' menu.

Parámetros de control	
Modo de control de potencia	Por fase ▾
Control de los inversores	Activado ▾
Consumo mínimo por fase (W)	20
Velocidad del control (%)	50
Respuesta de los inversores (%)	30
Actualizar	

The default situation is that the inverter control is active to avoid dumping energy into the power grid. However, it can be temporarily deactivated to verify that the inverters adjust their production to the selected value.

To do this, select 'Disabled' in the 'Inverter control' option and then enter the maximum power percentage (with respect to the nominal power of each inverter) that is allowed to be generated. Values between 0% (off) and 100% can be selected.



The screenshot shows the ITR 2.0 web interface with the following details:

- Header:** ITR 2.0 LACECAL, instalador, Cerrar sesión.
- Navigation:** Estado de la planta, Registro de datos, Configuración.
- Left Panel:** Parámetros de control (Control parameters).
  - Modo de control de potencia: Por fase.
  - Control de los inversores: Desactivado (highlighted with a red box).
  - Potencia máxima de los inversores (%): 10.
- Right Panel:** Menú (Menu).
  - Hardware
  - Relé de seguridad
  - Tabla de inversores
  - Control** (highlighted with a yellow box)
  - Ethernet



**Do not forget to return this option to its original setting to perform the zero injection control.**