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

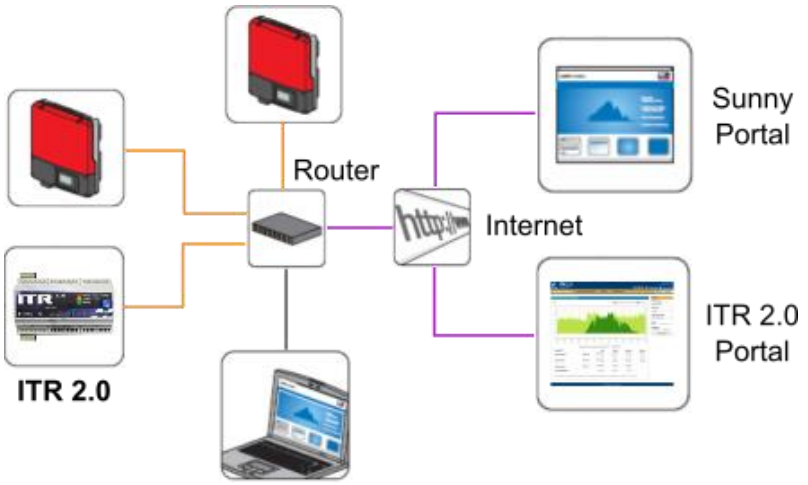
The inverters and the ITR 2.0 must be connected on the same local Ethernet network using standard network devices, such as routers or switchers.

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.

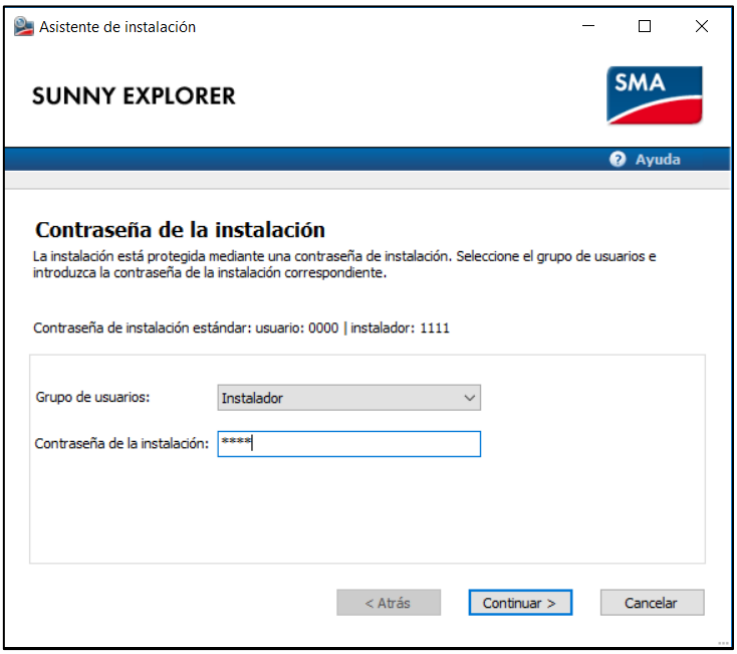
The following diagram shows a star topology connecting all devices to a central router that provides access to the Internet.



⚠	**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'.

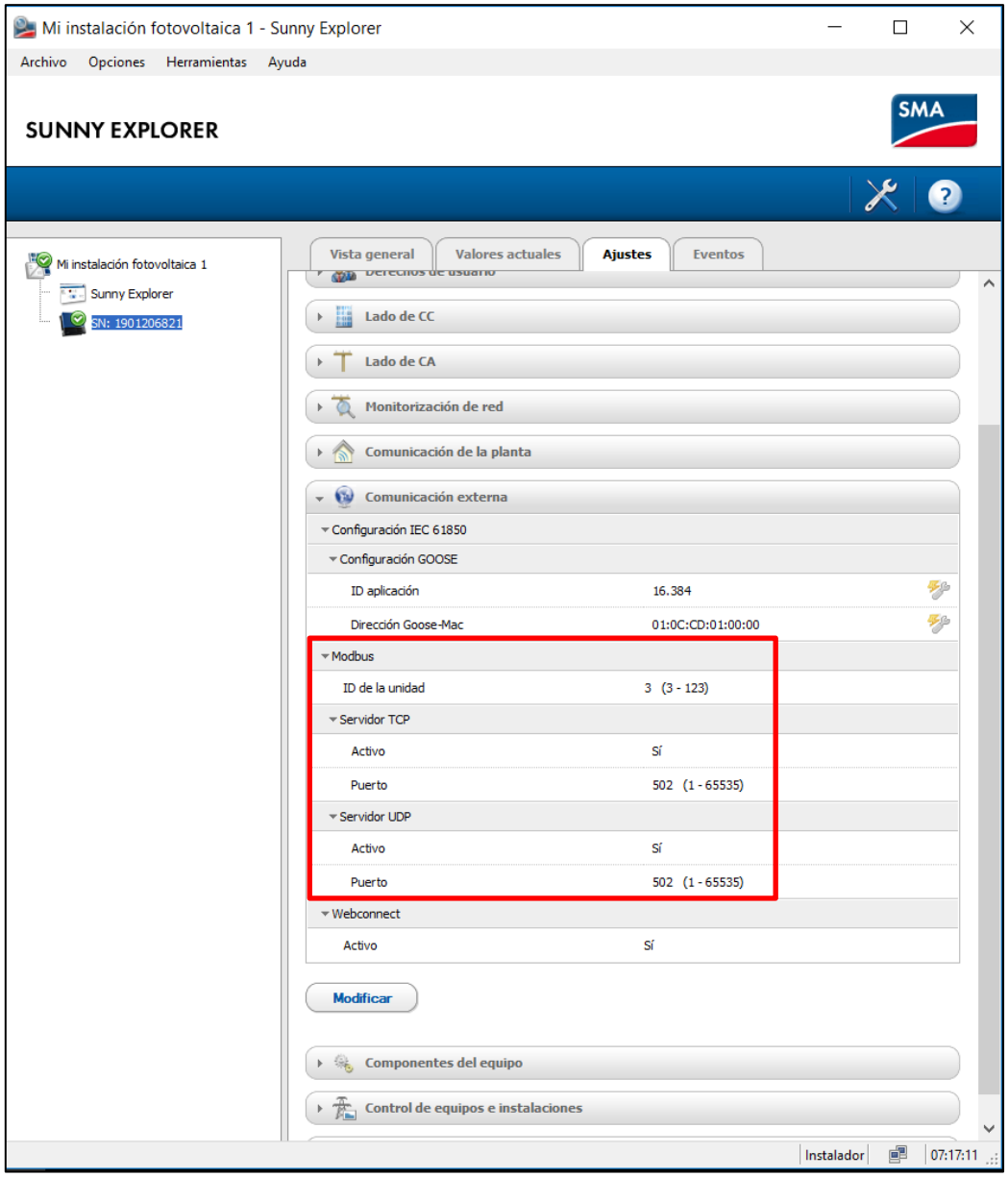


⚠	**Refer to the specific SMA manuals on the operation of the SUNNY EXPLORER software.**

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.

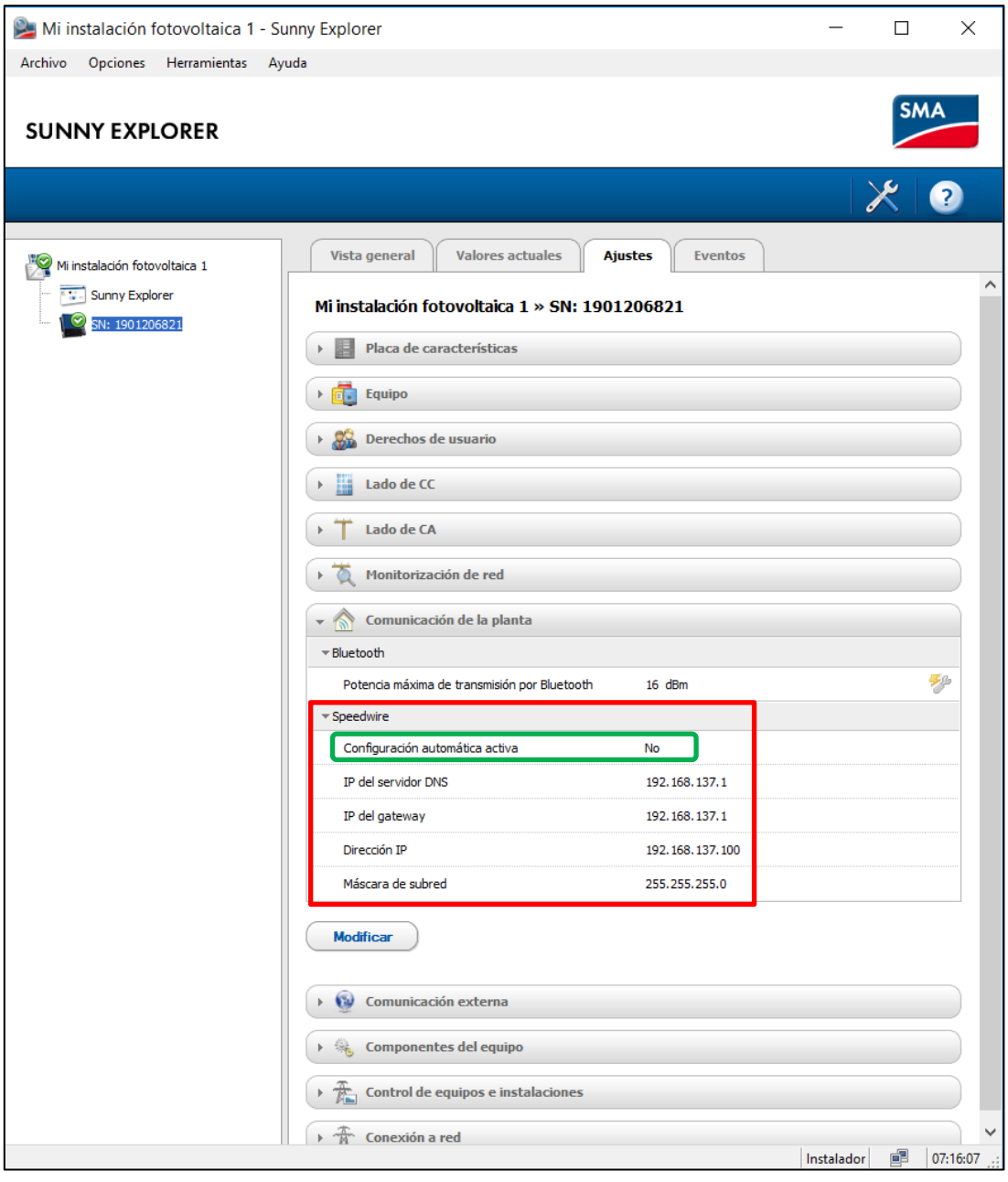
In order for the ITR 2.0 to communicate with and control the inverters, it is necessary to enable the Modbus TCP and UDP servers integrated in the inverters. The default status of both servers in a new, unconfigured inverter is disabled.

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.

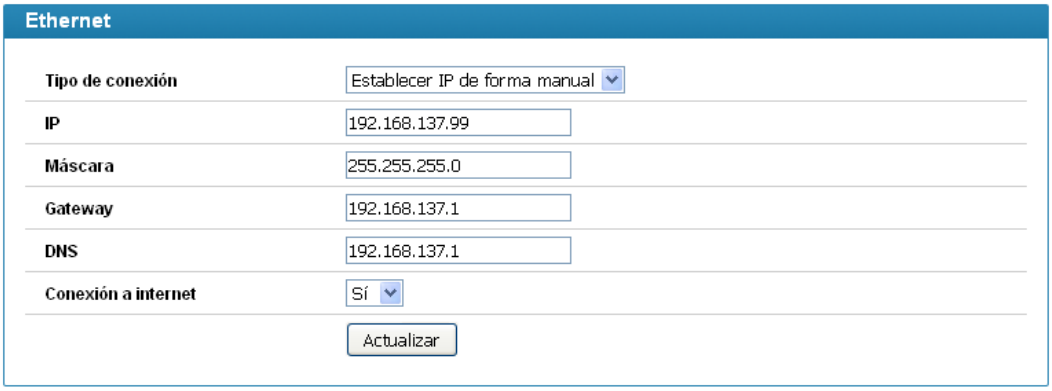
	**Consult your local network administrator to determine the appropriate network parameters.** If you are connecting the inverters to an existing local network, the parameters 'DNS server IP' and 'Gateway IP' usually match the IP of the router providing Internet access. The 'IP address' of each inverter must be unique throughout the local network.



5 ITR 2.0 CONFIGURATION

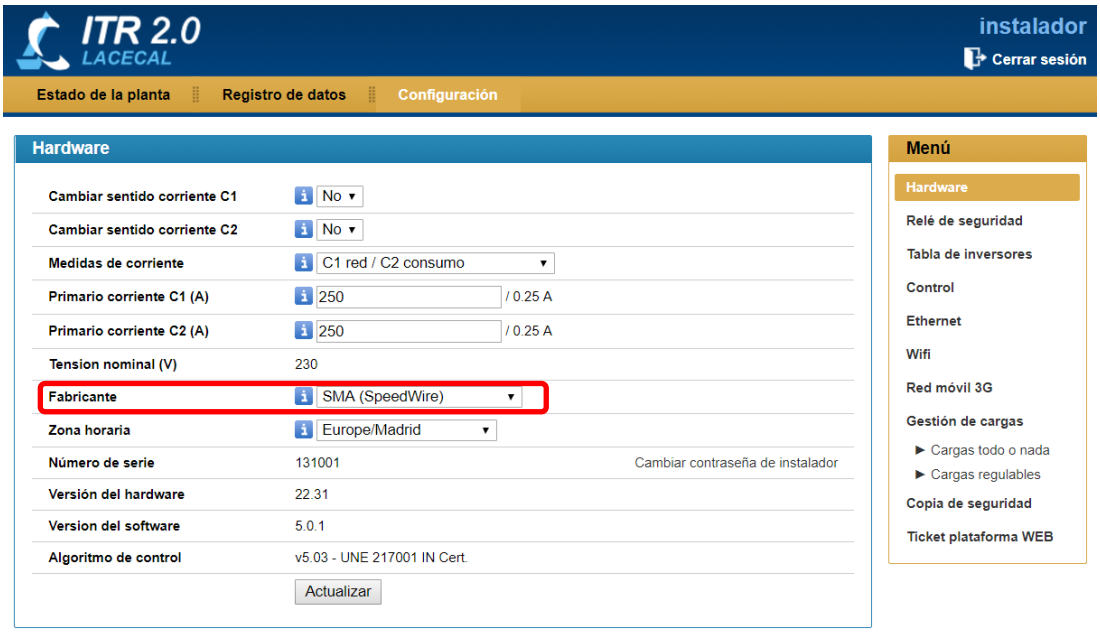
5.1 ETHERNET CONNECTION CONFIGURATION

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.



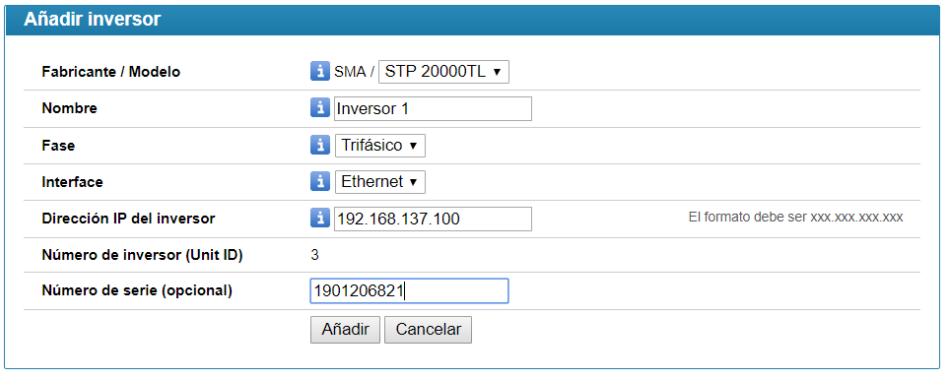
5.2 INVERTER CONFIGURATION

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'.



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

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



- 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'.

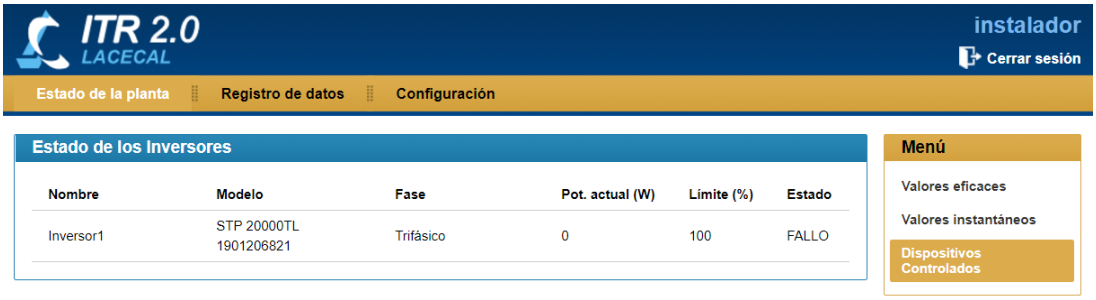
The same process must be repeated for each of the inverters in the plant.

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.

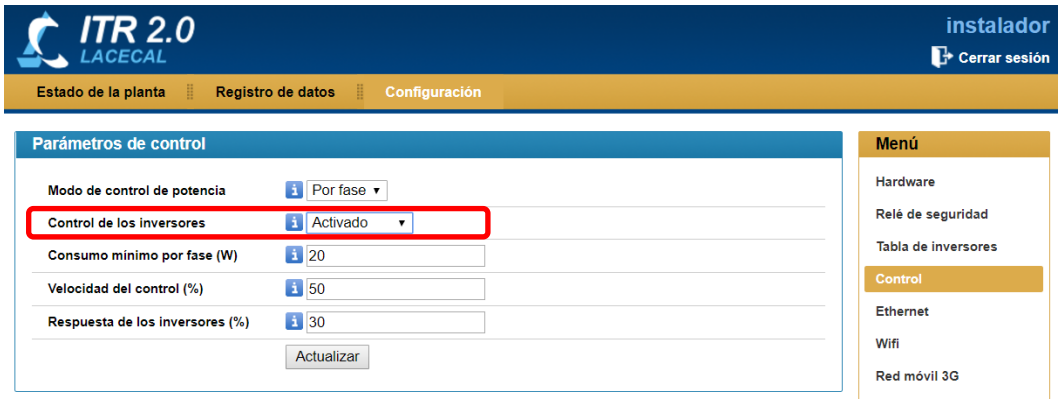
6.1 INVERTER COMMUNICATION

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.



6.2 POWER REGULATION

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



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.

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