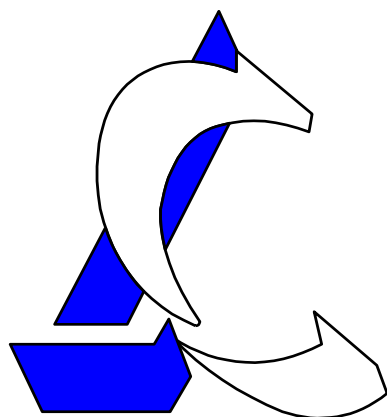


CONFIGURATION MANUAL

ITR 2.0

KOSTAL

(ETHERNET INTERFACE)



LACECAL

LACECAL I+D

Edificio UVAINNOVA
Campus Miguel Delibes
Paseo de Belén 11
47011 Valladolid
<http://www.lacecal.es>



Distributed by Amara NZero

Technical Department
☎ +34 91 167 10 52
tecnicos.solar@amaranzero.com
<https://amaranzero.es>

1	TABLE OF CONTENTS	
2	Introduction.....	3
3	Connection.....	3
4	Inverter Configuration	5
5	ITR 2.0 configuration	7
5.1	Ethernet Connection Configuration	7
5.2	Inverter Configuration.....	8
6	Functional Check	9
6.1	InveRtEr Communication	9
6.2	Power Regulation	10

2 INTRODUCTION

The ITR 2.0 can communicate with and control the PV production of KOSTAL PIKO and PLENTICORE inverters via the Ethernet bus. The connection to the inverters will be made using the Ethernet RJ45 network connector available on the ITR.



Refer to the specific KOSTAL manuals on Ethernet connection to determine cable types and maximum allowable lengths.



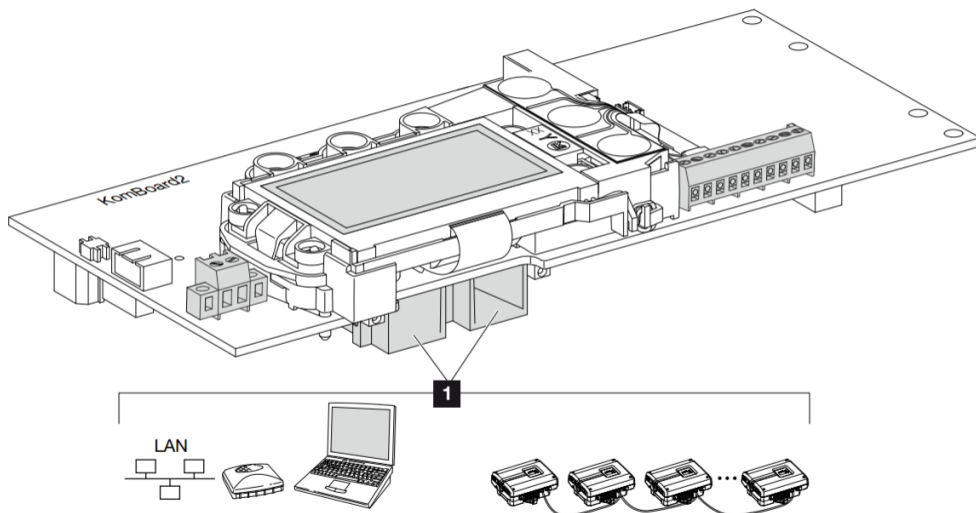
This manual is a supplement to the manuals of the inverter manufacturer and the ITR 2.0 itself.

The information given in this manual covers the particular details of the ITR 2.0 communication with KOSTAL inverters using the Ethernet network, 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.

The connection to the inverter is made using the RJ45 connectors available on your communication card.



Refer to the inverter manual to determine the location of the communication card.

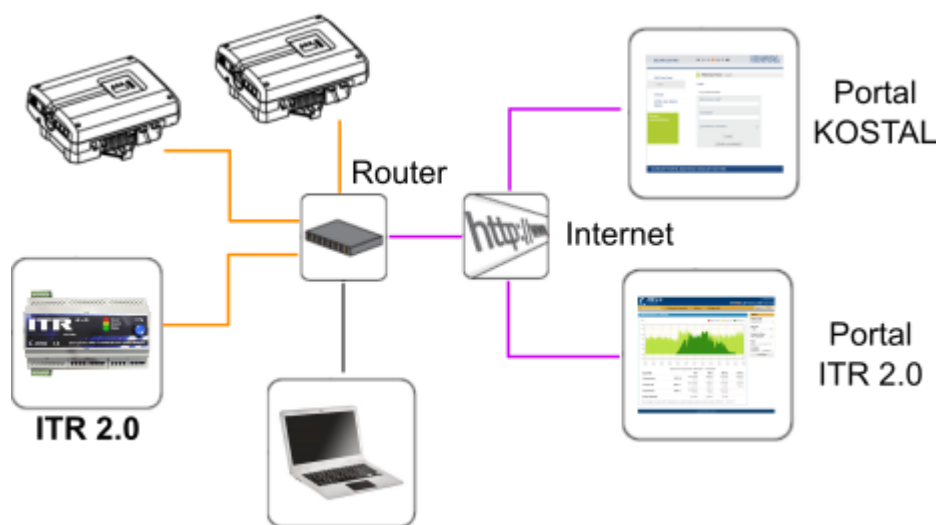
Optionally, the double RJ45 connector available on the inverters can be used to make an in-line connection between them.

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

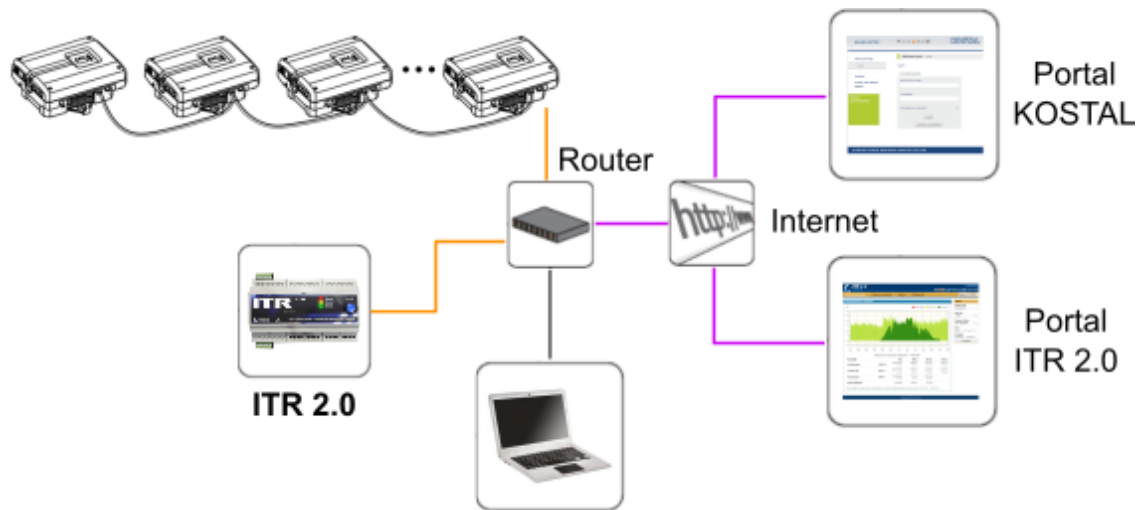
- No specific application is required to configure the ITR 2.0, as this is done via the integrated WEB server.
- The inverters can be configured through the inverter's own display and keyboard or through its WEB server.

If the local network has internet access, once the system is connected and correctly configured the inverters can send their information to the KOSTAL monitoring portal, and the ITR will send the operating data of the entire installation 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.



An in-line connection of the inverters is also possible using the two RJ45 connectors available on each inverter:



Note that with this second topology, the failure of one inverter may result in the loss of communication with all downstream inverters.

4 INVERTER CONFIGURATION

The Ethernet network parameters and the address assigned to the inverter in the communication protocol must be configured in each inverter.

Configuration can be done via the inverter menu or via its integrated WEB server.

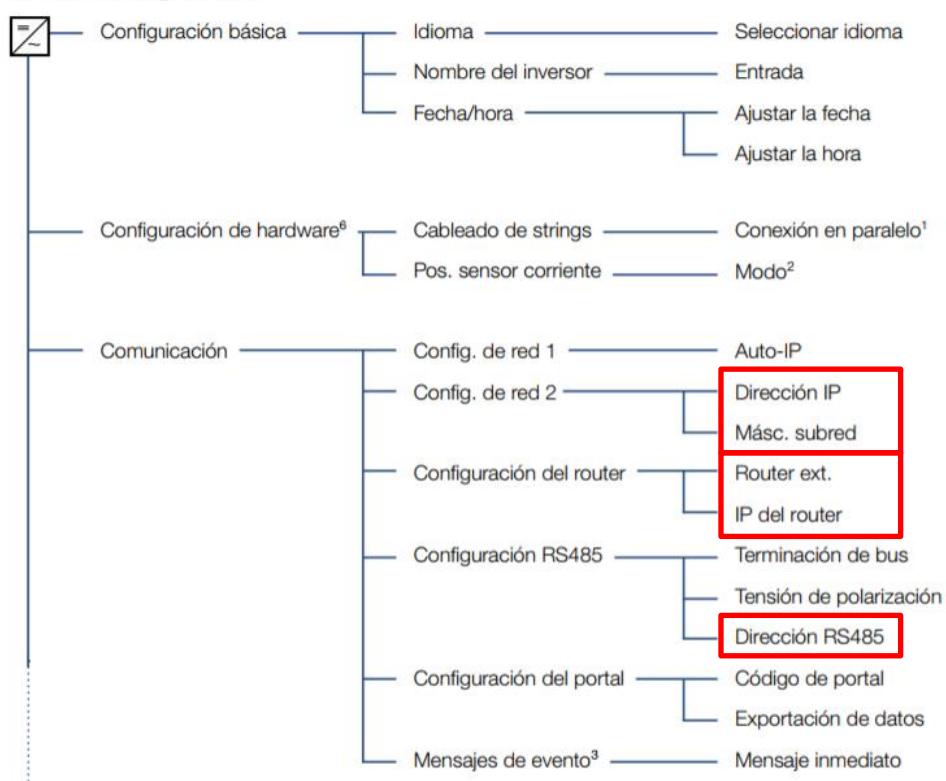


Consult your local network administrator to determine the appropriate network parameters.

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

In addition, the IP address of each inverter must be unique throughout the local network.

Menú Configuración



Statistics

Settings

- General
- Communication
- Inverter address
- Network (TCP/IP)**
- RS485
- Modem
- Portal configuration
- Data logger
- Plant configuration
- Switched output
- Analog inputs

Info

- Events
- Versions

Logout

Smart

Settings | Communication | Network (TCP/IP)

Network configuration

☐ Auto IP / DHCP

☒ Manually IP

IP address	192	168	1	161
Subnet mask	255	255	255	0
Router/Gateway	192	168	1	1
DNS server	8	8	8	8

! If you change the IP adress, you have to load the website manually new.

Data export

☒ Router/Gateway

☐ Inverter with modem



In **ALL** inverters the RS485 address or 'Inverter address' must be set to 1.

Statistics

Settings

General

Communication

Inverter address

Network (TCP/IP)

RS485

Modem

Settings | Communication | Inverter address

Inverter address

1

Statistics

Settings

General

Communication

Inverter address

Network (TCP/IP)

RS485

Modem

Portal configuration

Data logger

Plant configuration

Switched output

Analog inputs

Settings | Communication | RS485

Bus termination

☒

Bus bias voltage

☒

Protocoll

KOSTAL

Baud rate

19200

Inverter address

1

5 ITR 2.0 CONFIGURATION

5.1 ETHERNET CONNECTION CONFIGURATION

As with the inverters, the ITR 2.0 must have a 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 '**Kostal TCP**' in the menu 'Configuration' -> 'Hardware'.

The screenshot shows the 'Hardware' configuration page in the ITR 2.0 interface. The page has a blue header with the 'ITR 2.0 LACECAL' logo and a user menu 'instalador' with a 'Cerrar sesión' option. Below the header is a navigation bar with 'Estado de la planta', 'Registro de datos', and 'Configuración'. The main content area is titled 'Hardware' and contains several configuration fields:

- Cambiar sentido corriente C1: No
- Cambiar sentido corriente C2: No
- Medidas de corriente: C1 red / C2 consumo
- Primario corriente C1 (A): 250 / 5 A
- Primario corriente C2 (A): 250 / 5 A
- Tension nominal (V): 230 / 230(400) V
- Usar contador de la compañía: No. **ATENCIÓN:** Usar las lecturas de los consumos de red proporcionadas por el contador de la compañía no es una solución antiverfido certificada.
- Fabricante:** Kostal TCP (highlighted with a red box)
- Zona horaria: Europe/Madrid
- Número de serie: (with a link to 'Cambiar contraseña de instalador')
- Versión del hardware: 43.41
- Versión del software: 7.0.2
- Algoritmo de control: r2.00

At the bottom of the form is an 'Actualizar' button. On the right side, there is a 'Menú' sidebar with options: Mapeo de medidas, Hardware (highlighted), Relé de seguridad, Tabla de inversores, Control, Modbus RTU, Contador compañía, Fecha y hora, Ethernet, Wifi, Red 3G / USB, Copia de seguridad, Actualizar Firmware, and 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 'Tabla de inversores' page in the ITR 2.0 interface. The page has the same header and navigation bar as the previous screenshot. The main content area is titled 'Tabla de inversores' and contains a table with the following columns: Nombre, Modelo, Fase, and Interface. Below the table is a button labeled 'Añadir nuevo inversor', which is highlighted with a red circle. On the right side, there is a 'Menú' sidebar with options: Hardware, Relé de seguridad, **Tabla de inversores** (highlighted), and Control.

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



The screenshot shows the 'Añadir inversor' window in the ITR 2.0 interface. The window has a blue header with the title 'Añadir inversor'. It contains the following fields:

- Fabricante / Modelo: Kostal / PLENTICORE 10
- Nombre: Inversor 1
- Fase: Trifásico
- Interface: Ethernet
- Dirección IP del inversor: 192.168.1.170 (with a note: 'El formato debe ser xxx.xxxx.xxx.xxx')
- Número de serie (opcional): (empty field)

At the bottom of the window are two buttons: 'Añadir' and 'Cancelar'.

- **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:** The only available option will be 'Ethernet'.
- **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'.

Tabla de inversores				
El inversor se añadió correctamente				
Nombre	Modelo	Fase	Interface	
Inversor1	PIKO 17	Trifásico	Ethernet ID = 192.168.1.170	 
Añadir nuevo inversor				

The same process must be repeated for each inverter 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.



instalador

 Cerrar sesión

Estado de la planta

Registro de datos

Configuración

Estado de los Inversores

Nombre	Modelo	Fase	Pot. actual (W)	Límite (%)	Estado
Inversor 1	PLENTICORE 10	Trifásico	0	100	FALLO

Menú

Valores eficaces

Valores instantáneos

Dispositivos Controlados

6.2 POWER REGULATION

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



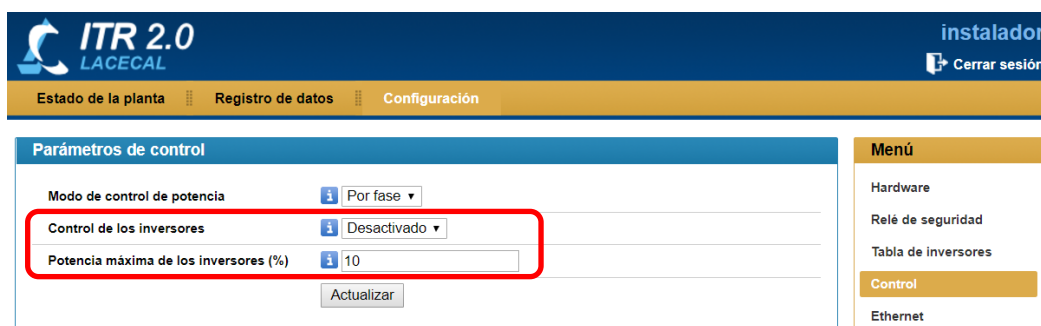
The screenshot shows the 'ITR 2.0 LACECAL' web interface. The top navigation bar includes 'Estado de la planta', 'Registro de datos', and 'Configuración'. The 'Configuración' menu is active, and the 'Control' sub-menu is selected on the right. The 'Parámetros de control' section contains the following settings:

- Modo de control de potencia: Por fase
- Control de los inversores: **Activado** (highlighted with a red box)
- Consumo mínimo por fase (W): 20
- Velocidad del control (%): 50
- Respuesta de los inversores (%): 30

An 'Actualizar' button is located at the bottom of the configuration section.

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 LACECAL' web interface with the 'Control' configuration page. The 'Control de los inversores' option is highlighted with a red box and set to 'Desactivado'. The 'Potencia máxima de los inversores (%)' is set to 10. The 'Actualizar' button is visible at the bottom.



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