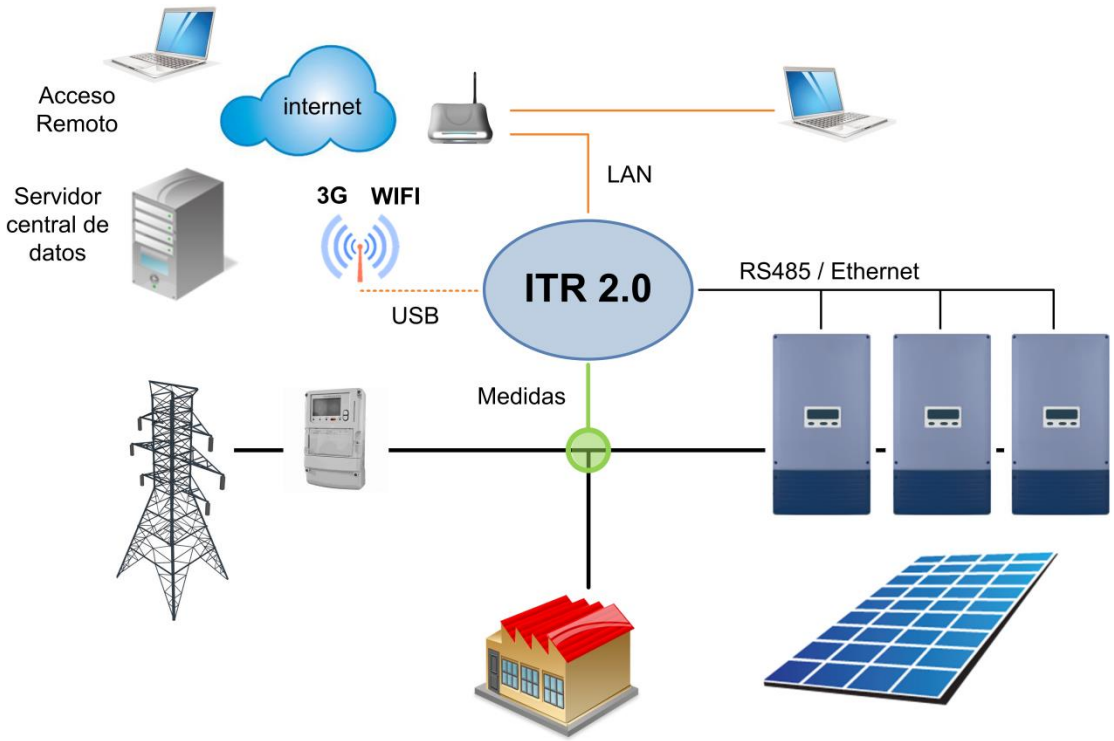
SELF-CONSUMPTION AND ZERO INJECTION MANAGER

ITR 2.0 B

LACECAL
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

LACECAL's self-consumption and zero injection management system integrates a **double three-phase network analyzer** that simultaneously measures three voltages and up to six currents, so that when connected at the grid connection point with the photovoltaic plant and the consumption, it allows complete monitoring of the status of the installation at all times.



The mains voltages are connected directly, while external current transformers with 5 A or 250 mA secondary are used for current measurement. The power measurement accuracy of the ITR is 1%.

The measurement and control loop refresh rate is 0.1 seconds. As soon as the ITR 2.0 detects that energy is being discharged into the power grid, it sends the inverters the appropriate control commands to reduce their production and eliminate such discharge. Depending on the make and model of the inverters, communication can be via RS485 or Ethernet. The possibility of control via Ethernet drastically reduces the response time since the transmission of the set point to all the inverters in the plant is practically instantaneous.

In addition, by always measuring at least the energy that is being exchanged with the grid (the same that the utility meter will measure) the control loop has been programmed in closed loop, not depending on the precision with which the inverters adjust their power to the programmed value. The ITR 2.0 will continuously adjust the operating point of the inverters with the objective of not injecting power into the grid.

Valores eficaces Actualización automática

RED	Total	Fase R	Fase S	Fase T
Tensión:	--	224,9 V	225,5 V	225,7 V
Intensidad:	--	19,0 A	18,5 A	19,1 A
Potencia Activa:	11,706 kW	3,910 kW	3,841 kW	3,954 kW
Potencia Reactiva:	-5,053 kVAr	-1,736 kVAr	-1,605 kVAr	-1,712 kVAr
Potencia Aparente:	12,750 kVA	4,284 kVA	4,170 kVA	4,318 kVA
Factor de Potencia:	0,918	0,913	0,921	0,916

FOTOVOLTAICA	Total	Fase R	Fase S	Fase T
Tensión:	--	224,9 V	225,5 V	225,7 V
Intensidad:	--	8,6 A	8,5 A	8,5 A
Potencia Activa:	5,773 kW	1,923 kW	1,922 kW	1,928 kW
Potencia Reactiva:	0,013 kVAr	0,003 kVAr	0,001 kVAr	0,010 kVAr
Potencia Aparente:	5,773 kVA	1,923 kVA	1,922 kVA	1,928 kVA
Factor de Potencia:	1,000	1,000	1,000	1,000

CONSUMO	Total	Fase R	Fase S	Fase T
Tensión:	--	224,9 V	225,5 V	225,7 V
Intensidad:	--	27,1 A	26,5 A	27,1 A
Potencia Activa:	17,479 kW	5,834 kW	5,764 kW	5,882 kW
Potencia Reactiva:	-5,040 kVAr	-1,733 kVAr	-1,605 kVAr	-1,702 kVAr
Potencia Aparente:	18,191 kVA	6,086 kVA	5,983 kVA	6,123 kVA
Factor de Potencia:	0,961	0,959	0,963	0,961

The installation and configuration of the Self-Supply Manager is carried out in a simple and user-friendly way thanks to the **integrated WEB server**. In one of its screens, all the voltage,

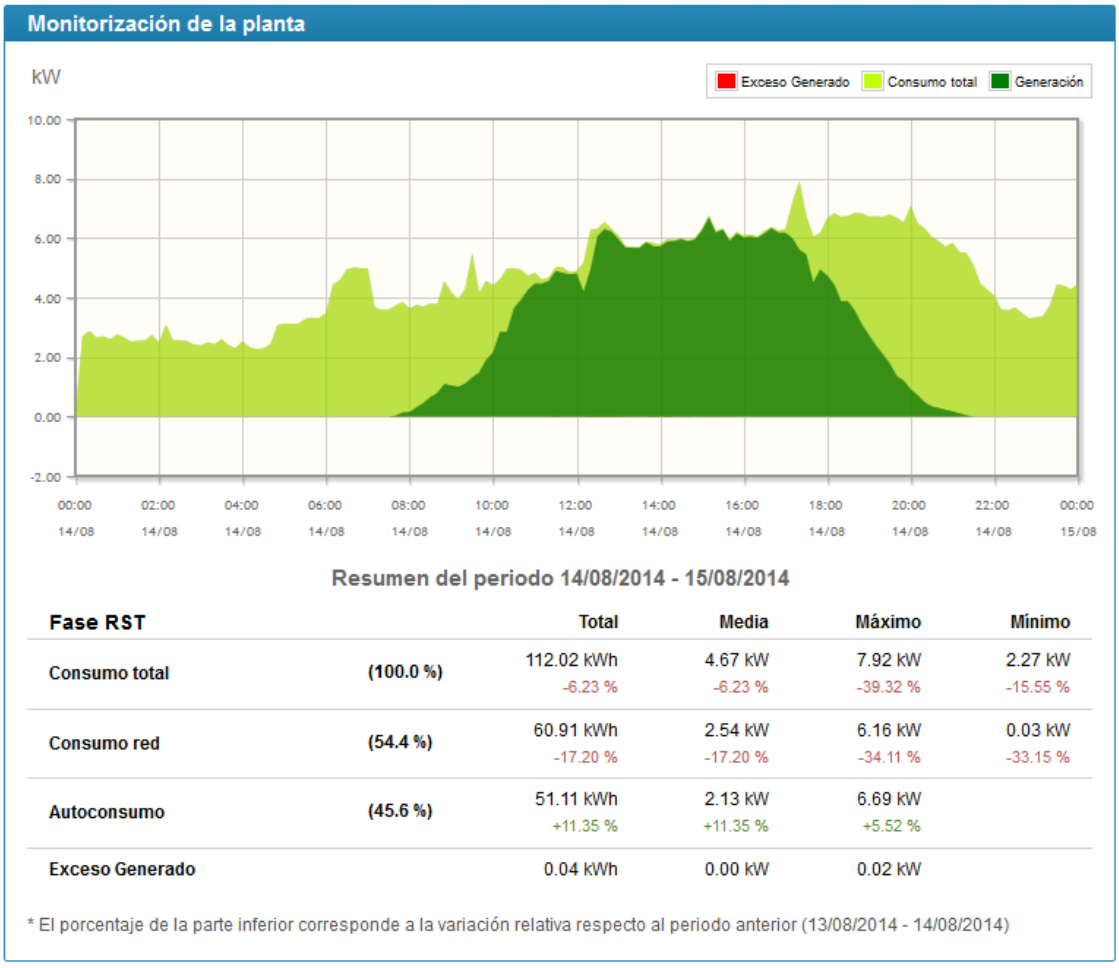
current and power measurements of the installation are available, which allows detecting possible connection errors and verifying that the system is working correctly.

By means of any of its three built-in control outputs, it is also possible to manage a relay that disconnects the photovoltaic plant if the inverters do not respond to the commands sent by the ITR 2.0 by reducing the power.

In three-phase installations that incorporate single-phase inverters distributed in the different phases, the ITR 2.0 performs three control loops as described above, one for each of the phases, in order to optimize the use of the energy produced if the loads are unbalanced.

If an internet connection is available, the recorded data will be sent to a central server and can be accessed at any time and from anywhere via our **free WEB platform**, allowing the installation to be continuously verified.

In addition, **alarms and warnings** can be configured and sent by e-mail in the event of certain events, allowing rapid detection of possible faults.



TECHNICAL SPECIFICATIONS

Feeding	External: 5 Vdc 2 A maximum	
Voltage measurement	<u>Direct measurement model</u> 3 x 230 V (phase-neutral) 50 ... 60 Hz 0.03 VA	<u>Medium voltage model</u> 3 x 63.5 V (phase-neutral) 50 ... 60 Hz 0.01 VA
Current measurement	.../0.250 A (0.04 VA) .../5 A (0,5 VA)	
Accuracy	1 %	
Communications	Ethernet RS485 WIFI / 3G via standard USB devices not included.	
User interface	WEB server integrated in the equipment. Access via Ethernet or WIFI.	
Data logging	Local storage of all operating data in uSD included.	
Internet connection	Ethernet / WIFI / 3G Required for sending data to the web portal and receiving automatic firmware updates.	
Mechanical Characteristics	6 DIN modules (106x90x58 mm) ABS UL94V-0 225 gr DIN rail mounting 46277 (EN 50022)	
Working temperature range	-25°C ... +70°C	
Storage temperature range	-40°C ... +85°C	
Maximum relative humidity without condensation	95%	
Maximum altitude	2000m	
Degree of protection	IP20	

Regulations	
Electromagnetic compatibility	UNE-EN 61000-6-4-4:2019 UNE-EN 61000-6-2:2019
Electrical safety	UNE-EN 61010-1:2011/A1:2020

WARRANTY

The manufacturer, LACECAL:

It guarantees its products against all manufacturing defects for a period of three years from the delivery of the equipment.

It will repair any manufacturing defective product returned during the warranty period. If repair is not possible, it will replace the product, always requiring the return of the defective product.

No return will be accepted and no equipment will be repaired unless accompanied by a report indicating the defect observed or the reasons for the return.

The warranty will be void if the equipment has been "misused" or if the instructions in its use and installation guides have not been followed in all aspects: storage, installation and maintenance. “Misuse" is defined as any situation of use, maintenance or storage contrary to the national electrotechnical code or exceeding the limits indicated in the technical and environmental characteristics section of this manual. Likewise, the warranty will be void if it is proven that the equipment has been previously opened or manipulated by non-LACECAL personnel.

LACECAL declines all responsibility for possible damage to the equipment or other parts of the installations in which it is located and will not cover possible penalties resulting from a failure not covered by the warranty. This warranty does not apply to faults occurring in the following cases:

- Due to power surges and/or electrical disturbances in the supply.
- By water, if the product does not have the appropriate IP rating.
- Due to lack of ventilation and/or excessive temperatures.
- Incorrect installation and/or lack of maintenance.
- If the buyer repairs or modifies the material without the manufacturer's authorization.

EC DECLARATION OF CONFORMITY

Manufacturer: Asociación LACECAL

Address: Escuela de Ingenierías Industriales
Paseo del Cauce 59
47011 Valladolid

We declare under our responsibility that the product

Self-consumption and Zero Injection Manager ITR 2.0

models

ITR 2.0B / 0.25A
ITR 2.0B / 5A
ITR 2.0B / 5A MT

is in compliance with European Directives:

2014/30/UE: Compatibilidad Electromagnética
2014/35/UE: Baja Tensión
2011/65/UE: Rohs

in accordance with the standards:

61000-6-2:2019
61000-6-4:2019
61010-1:2011/A1:2020

provided that it is installed, maintained and used according to the instructions indicated in its use and installation guides as well as the applicable installation standards.

Year of CE marking:

2022

In Valladolid, on September 1, 2022

Laboratorio de Calibración Eléctrica de Castilla y León
LACECAL
E.T.S.I. Industriales
Paseo del Cauce s/n
47011 - Valladolid
Tfno.: 983423343
Fax: 983423996

José Antonio Domínguez Vázquez
Director del LACECAL