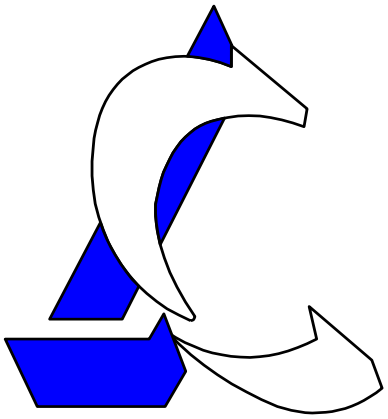
CONFIGURATION MANUAL

ITR 2.0

Firmware Master/Slave



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

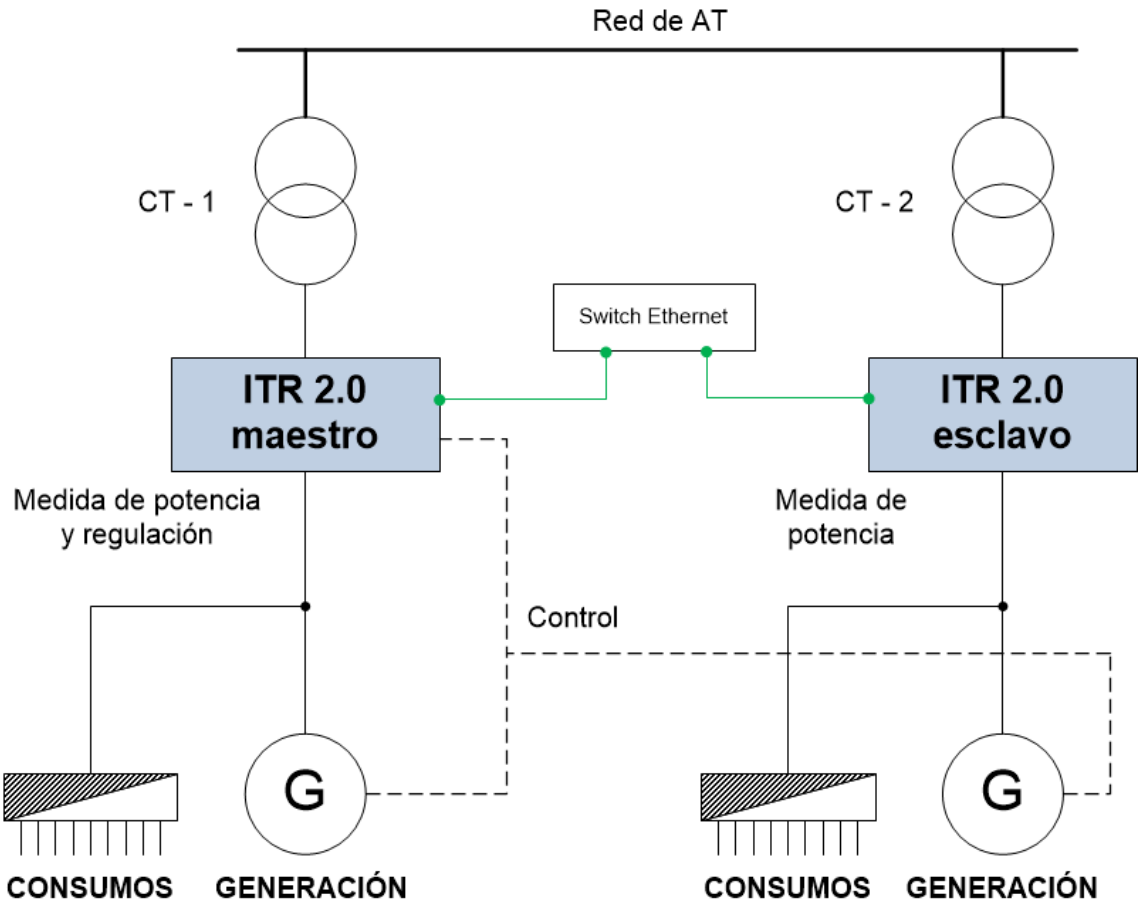
1 TABLE OF CONTENTS

2 CONNECTION

The master/slave configuration is suitable for installations with several transformer substations where power measurement on the high voltage side is not feasible.

In these cases it is possible to perform the anti-spill control by installing an ITR 2.0 on the low voltage side of each transformer substation.

	**Refer to the ITR 2.0 generic instruction manual.** The way to connect and configure the measurements of each of the ITR 2.0 should be consulted in its generic installation and use manual.



In the above diagram a single slave has been depicted, but up to a maximum of 10 slaves can be connected to a master ITR 2.0. This means that there could be a maximum of 11 transformer stations in the installation.

Communication between all ITR 2.0 is done through the local network. The slaves will send their power measurements to the master, which adds them together with its own and performs generation control to ensure zero discharge.

	**The Ethernet connection between the ITR 2.0 must be stable.** It is important that the Ethernet connection is made via cable or optic fibre and not via WIFI, since a network failure or networks with high latency may cause the measurements totalized by the master ITR 2.0 to be incorrect.

The generating plants can be distributed in the different transformer stations or grouped in a single one. In either case, the communication bus that allows the control of all the generators must be connected to the master ITR 2.0.

Depending on the generator model, which will usually be PV inverters, the communication bus can be Ethernet or RS485. In the former case the inverters will be connected to the same local network shared by the master ITR 2.0 and the slaves.

	**Maintain the same phase sequence in all ITR 2.0s.** The connection of the measurement voltages and currents in each ITR 2.0 must always be carried out in the same phase order.

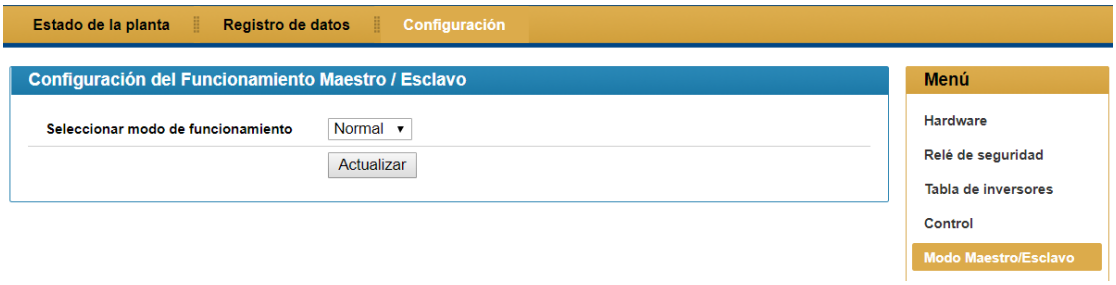
3 ADDITIONAL OPTION 'MULTIPLE MANUFACTURERS'.

With the additional firmware option called 'Multiple Manufacturers' each slave ITR 2.0 can be connected to its own generating plants. The power limitation set points imposed by the master ITR 2.0 will be relayed by the slaves to their own generating systems.

This allows, for example, each ITR 2.0 in the system to control inverters from different manufacturers. In installations with a single transformer substation but several different brands of inverters, slave ITR 2.0s could be installed without instrument transformers, just to control each group of inverters.

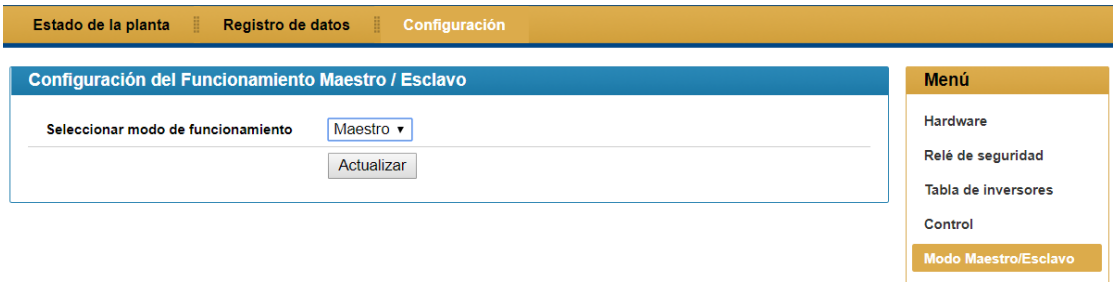
4 CONFIGURATION

The ITR 2.0 that have the firmware installed that allows master/slave mode operation have a specific option for this mode in the configuration menu.



Three different types of operation can be selected:

- **Normal:** In this mode the master/slave functionality is disabled and the ITR 2.0 behavior is standard.
- **Master:** In this operating mode the ITR 2.0 enables the reception of measurements from up to five slaves via the local network.



The instantaneous powers displayed in the RMS values of the plant status by the master ITR 2.0 will be the sum of the powers of all slaves together with his own. The RMS current value will correspond to the current equivalent to the total accumulated powers.

During installation, to verify that the measurements made by the master ITR 2.0 are correct, it is advisable to initially select 'Normal Mode'. In this way the RMS values displayed will not include the measurements of the slaves.

- **Slave:** In this mode the ITR 2.0 sends the instantaneous power measurements to the master whose IP in the local network is specified below.