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INGEREV[®] EV CHARGING POINTS

COMMUNICATIONS

INGEREV® charging points have the possibility to communicate with each other and with other equipment in various ways.

1. RS485 Communication

INGEREV[®] charging stations, both CITY and GARAGE product range, are provided by default[1] with communications via RS485 serial bus protocol. Each charging point carries two RJ45 sockets for RS485 on the control board[2].

These two internal RJ45 sockets allow the charging point to be integrated into an RS485 bus, and up to 10 neighboring charging points can be interconnected in a single bus.

The cable suitable for making this connection is UTP cable, cat5e or superior. The equipment manual describes how to make such a connection between charging points.

This RS485 bus allows access to all interconnected charging points from an external device using the appropriate software for configuration and management.

Access to RS485 bus must be done by any charging point located at the ends of the bus.

1. GARAGE Basic requires extra hardware

2. GARAGE Basic RS485 kit does not have RJ45 sockets

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2. Ethernet or GPRS/3G Communications Card

INGEREV® charging points have the possibility of installing an Ethernet or 3G communications card.

Since charging points can be interconnected via RS485 bus, with the installation of a single Ethernet or 3G communications card we can control a group of up to 10 interconnected INGEREV® stations. The communications card must always be installed in a computer at one extreme of the RS485 bus.

Installation of one of these cards disables access to the charging points from the RS485 bus.

2.1. INGEREV® Web Manager

By default the Ethernet or GPRS/3G communications cards internally incorporate a web access and configuration server called INGEREV® Web Manager which can be accessed from any browser with connection to the communications card. Access is protected by user levels and passwords that Ingeteam provides if required at the time of delivery of the card.

The INGEREV® Web Manager interface allows the configuration of the communications card, including firmware and software update. In addition from the web interface itself it is possible to visualize, configure and control all the charging stations connected through the communication card and download the charging sessions.

2.2. Dynamic Load Management

Optionally it's possible to install the module Dynamic Load Management, which it is able to manage in the most flexible and intelligent possible way the available power between a set of interconnected charging points, up to 10 points.

By means of this module it is possible to define the maximum power per phase so that this power is distributed as evenly as possible between the connected vehicles, never exceeding the given maximum setpoint.

The module is able to discriminate against those vehicles that do not make use of all their allocated power by sharing it among the other vehicles that can take advantage of it, all handled in real time.

Consult with Ingeteam for more information about the features of this software module.

The configuration and management of this module is accessible from the INGEREV® Web Manager interface.

2.3. OCPP

It is optionally possible to install OCPP software package on the Ethernet or GPRS / 3G communications card. This way we can access the communications

card and manage those recharge stations connected to it through an OCPP management platform.

There are several providers of OCPP platforms on the market. Consult with Ingeteam for more information on OCPP, as well as on platforms successfully tested with INGEREV® charging points.

The communications card is supplied with the requested OCPP version, but since it can be upgraded, the software version installed afterwards can be modified.

The configuration and management of this module is accessible from the INGEREV® Web Manager interface.

3. INGEREV® Management

The most common ways of managing INGEREV® charging points are:

3.1. INGECON SUN Manager

Ingeteam makes available to anyone a free software for PC (Windows) for the management of their equipment, INGECON SUN Manager, which can be downloaded from the website. It is highly recommended to always use the latest version available, recommending at least version 1.81 for access to INGEREV® charging points.

This software allows the user to connect INGECON® inverters and INGEREV® charging points, either by connecting directly to the RS485 bus via a USB-RS485 converter cable or by a TCP/IP connection with those devices that incorporate an Ethernet or GPRS/3G communications card.

With this software we can access the charging points to view their status and configure them.

Consult with Ingeteam for INGECON SUN Manager specific use manual for INGEREV® recharging stations.

3.2. INGEREV® Web Manager

Only available on computers with Ethernet or GPRS / 3G communications card.

See point 2.1.

3.2. OCPP Platforms

Only available on computers with Ethernet or GPRS / 3G communications card.

See section 2.3.