IDC30E DC Charger

Dynamic Load Management

SUNGROW

Version 1.0 EN

1. Introduction

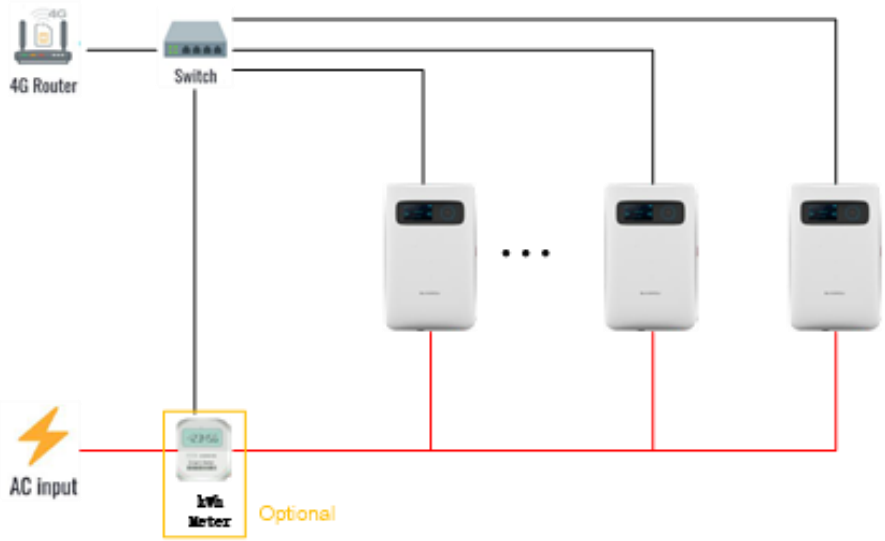
This document describes the Dynamic Load Management (DLM) function of IDC30E.

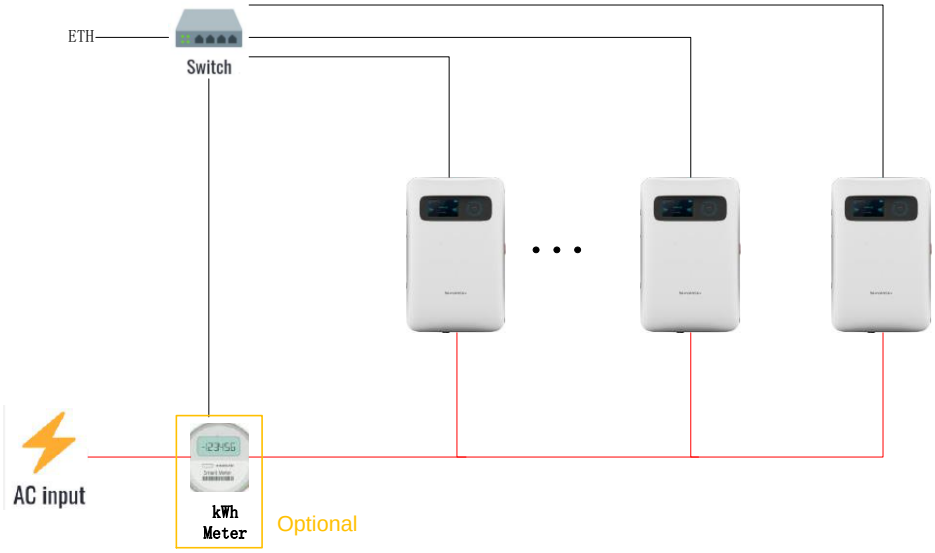
2. DLM Details

2.1. Introduction to DLM

The Dynamic Load Management (DLM) function incorporates power management capabilities for the entire charging station. This feature allows for the adjustment of charging power for each charger based on the real-time power limit of the charging station and the current load conditions. The primary goal is to prevent the overall station from operating under overload conditions.

Each charger within the station can establish a network connection through a wired method within a local area network. The AC meter is linked to the local area network using a network cable. Additionally, the OCPP platform supports connectivity via a 4G router or an external network cable. The specific networking diagram is illustrated below:





Note: The networking method above requires ensuring that the network segment connected to the network is not on 192.168.1. X, otherwise networking will not be possible.

The specific application scenarios are as follows:

Configuring AC Meter:

When an AC meter is configured, real-time power data collected by the meter is utilized. This data is then compared with the overall station's limited power. The available power is subsequently allocated to each charging pile accordingly.

No AC Meter Configuration:

In scenarios where no AC meter is configured, designed for instances with only pure charger loads, each charger communicates with the host. The objective is to obtain the current power data of all chargers. Subsequently, the current total power is calculated in comparison with the limit power of the entire station. The available power is then computed and allocated to each charging pile based on the calculations.

2.2. Introduction to Each Function

2.2.1. Election Function

Multiple chargers are connected to a local area network, and DLM control instructions are initiated by the host. Therefore, the system is equipped with an election function to designate a primary host. The chosen host communicates with the meter and executes the DLM algorithm. In the event of a failure in host communication, an automatic re-election process is triggered.

A new host is established to seamlessly assume control over the DLM function. This ensures continuous and reliable DLM operation even in the face of host failures.

3. Installation Instructions

Following these guidelines ensures an efficient and correctly configured installation of the communication distribution box, charger, and energy meter components.

3.1. Installation and Wiring

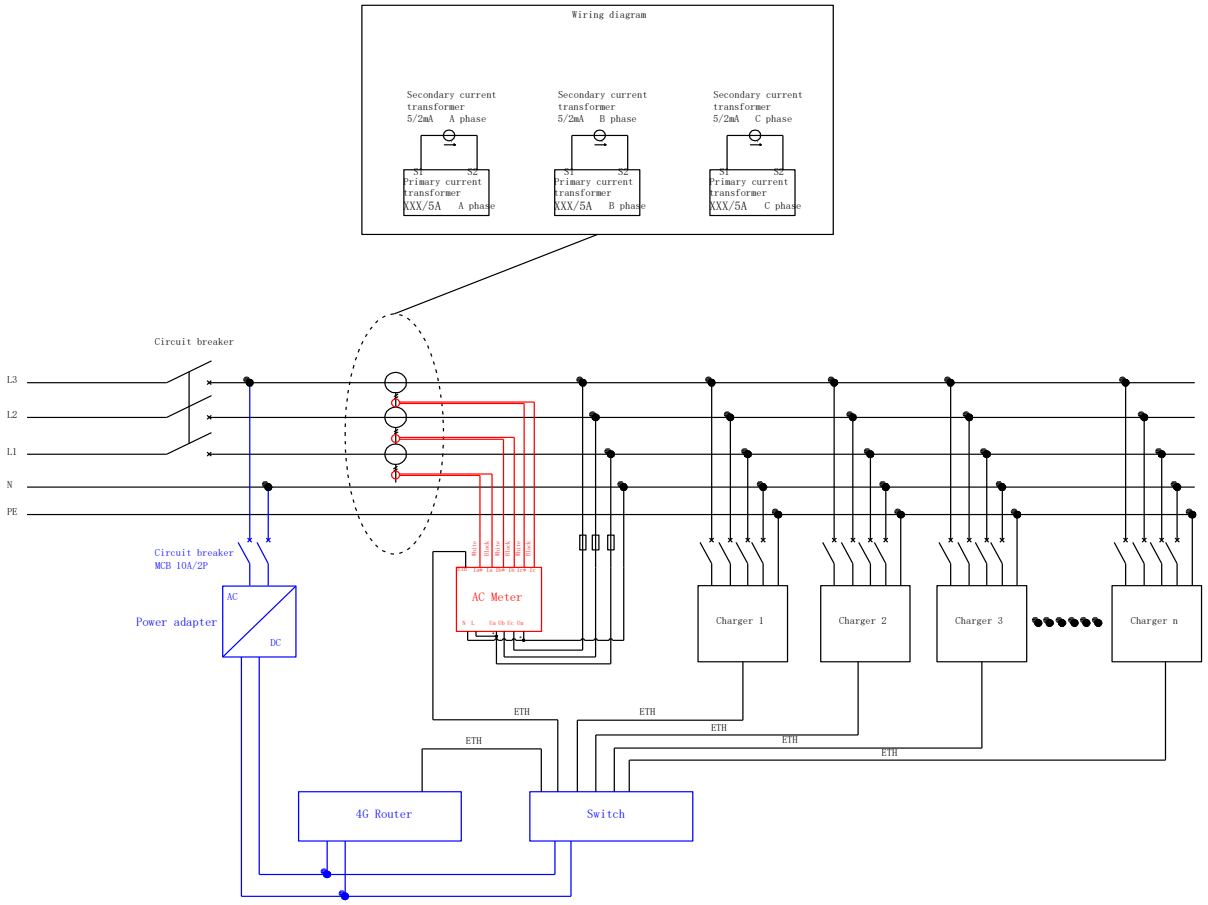
Note: The communication distribution box should be installed as close as possible to the charger and energy meter. They are connected through network cables, and the wiring distance should not exceed 100m.

System Wiring Diagram:

1) The blue section in the image represents the provided communication distribution box. The internal wiring has been pre-configured, and only an AC230V single-phase power supply needs to be connected to the distribution box.

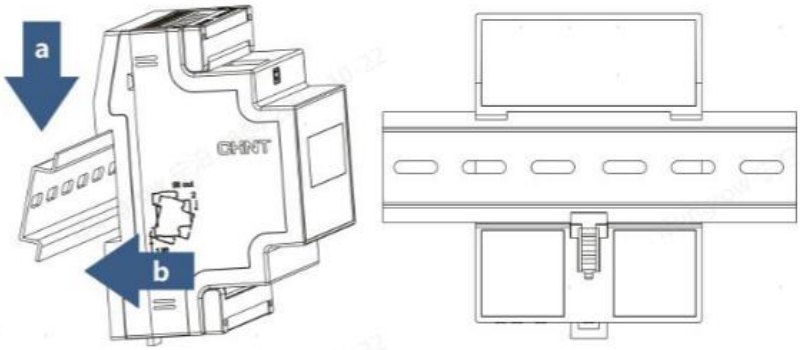
2) The red section in the image represents the supplied electric energy meter and current transformer. These components should be installed at the lower end where capacity limitation is required.*

Note: The primary side current of the matching transformer is 5A. Therefore, a 5A current transformer should be present on the client's power distribution side. The current transformer matching the electric meter is installed on the secondary side of the client's current transformer.



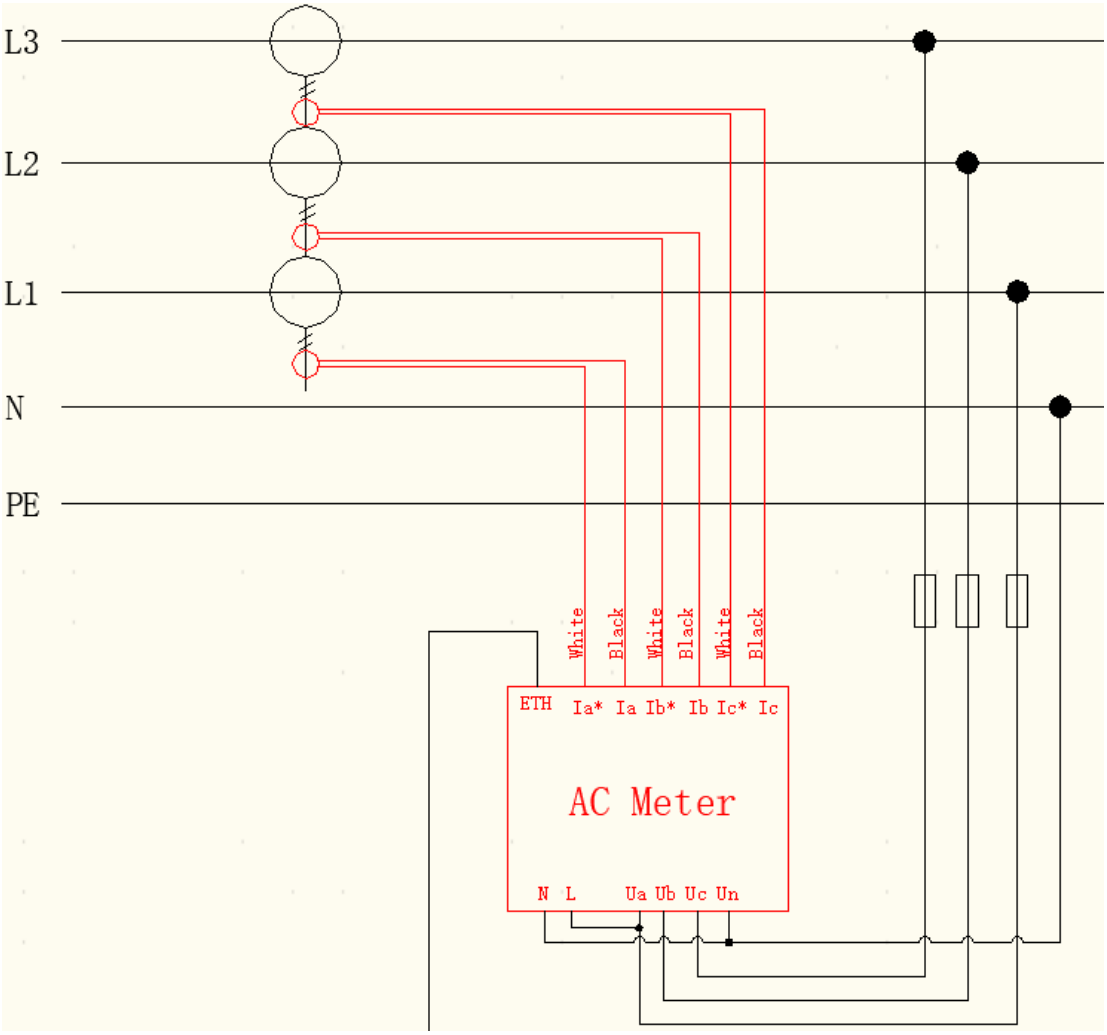
Installation of electric energy meter: The electric energy meter can be installed in the power distribution cabinet using guide rail installation.

1. Install the Smart Power Sensor on the standard guide rail of DIN 35mm.
2. Press the Smart Power Sensor downwards onto the guide rail, then push it in place along the guide rail.

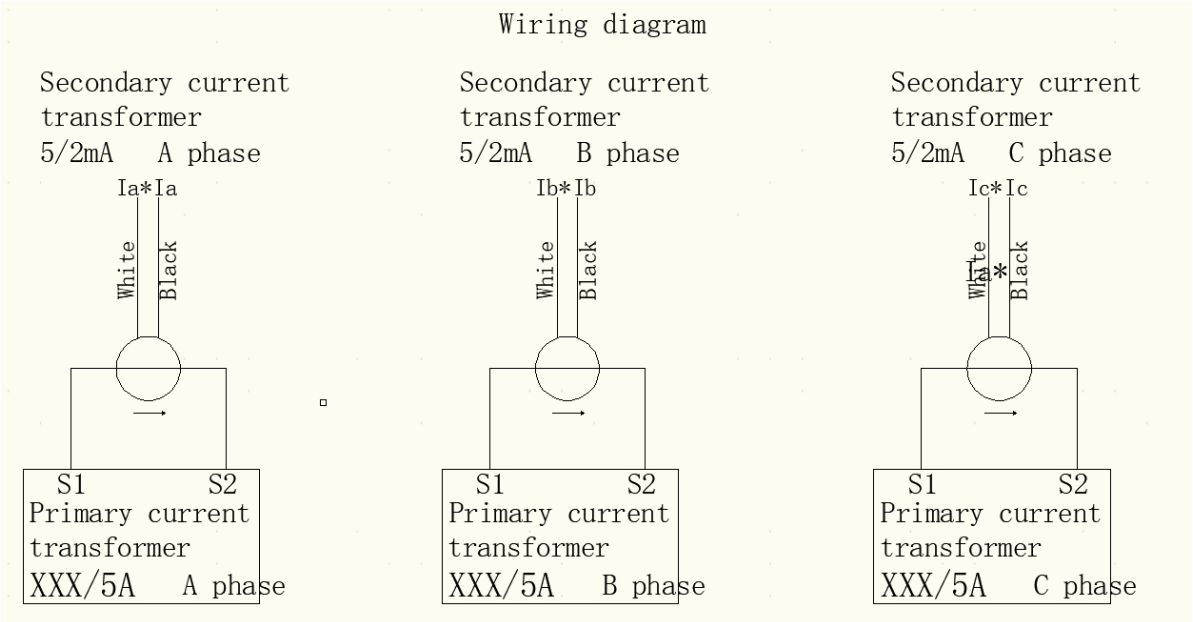


Detailed wiring is as follows:

The secondary wire of the current transformer in the power distribution system passes through the secondary current transformer matched with the energy meter.



Note: The secondary transformer transmission direction and cable color are as follows:



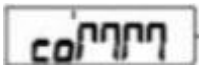
Note: Please note that customers are required to prepare the current transformer, as it is not provided by SUNGROW.

Network connection: Connect the LAN ports of all chargers and the LAN port of the energy meter to the switch of the communication distribution box through network cables.

3.2. Meter Settings

CT Setting:

Firstly, calculate the CT value based on the transformer ratio, considering a secondary current value of 5A in the distribution cabinet. For instance, if the transformer ratio is 200/5, the CT value is 40. Press the SET key to enter the setting mode, and the 

screen will be displayed. Press the SET key again to proceed. Enter the password "701" and press SET to enter the setting mode. Turn the  page to general settings, press the SET key to enter, scroll down to 

, press SET to proceed, set to 40 (calculated based on the transformer ratio), press ESC to exit and save. The CT value is now successfully set.

3.3. DLM Parameter Settings

Upon powering on the charging pile, access the factory mode. In the DLM setting interface for each charger, follow these steps:

1. Check "Enable DLM" to activate the Dynamic Load Management function.

2. Fill in the "Amount of chargers" based on the total number of chargers in the DLM system of the station. For each charger, assign a unique number and specify the Connector name, ensuring no repetition.

3. Select the distribution strategy:

- Strategy 1: Evenly divided.

When a vehicle enters the charging queue, the DLM system recalculates the available power and redistributes it across all active charging stations, ensuring an equitable distribution of power. If the allocated power surpasses the demand of the vehicle, the surplus power is reclaimed and evenly redistributed to other stations with pending demand.

- Strategy 2: First come, first served.

The charging system prioritizes vehicles based on their entry time into the charging queue, ensuring that all chargers can provide at least the minimum power. The specified preceding power level determines this minimum power output

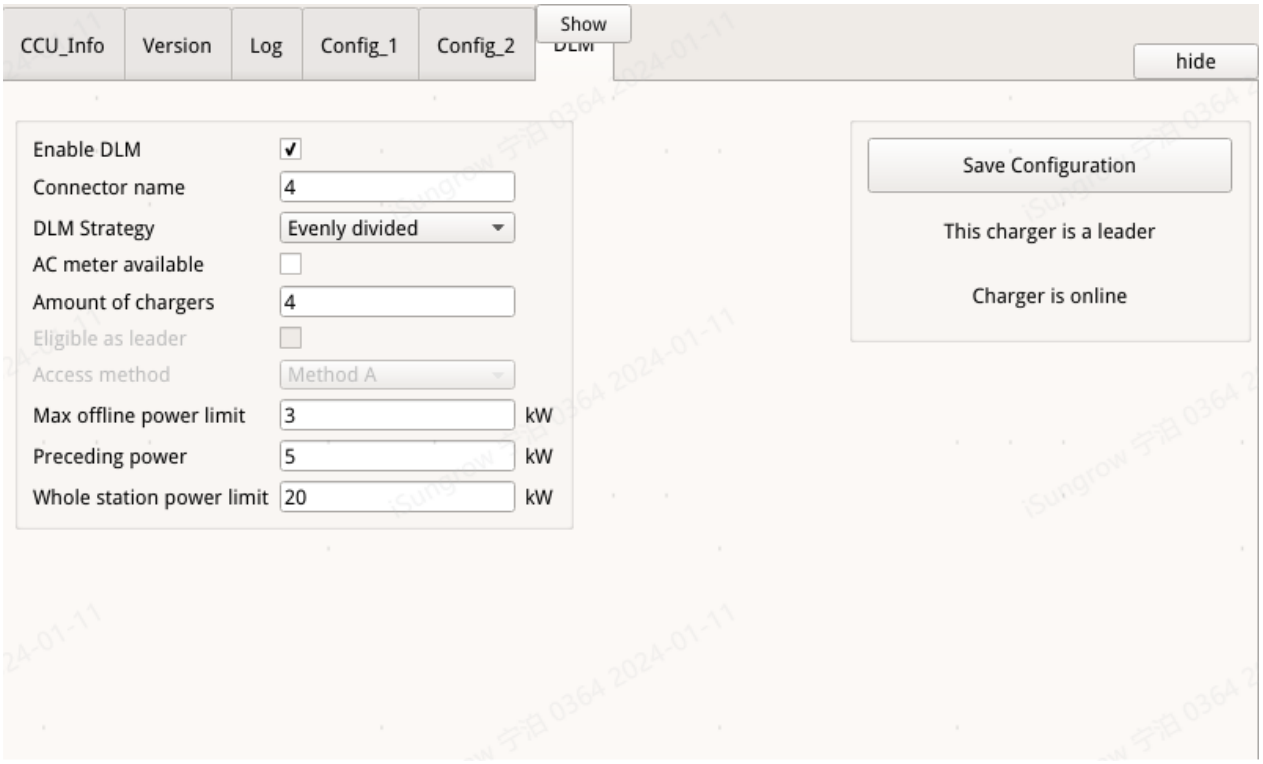
4. Configure the AC meter availability based on whether an electric energy meter is installed.

5. Set the Max offline power, which limits the power when the charger is disconnected from the DLM system.

6. Define the Preceding power, representing the minimum allocated power to ensure that all chargers can charge under the first-come-first-served policy.

7. Whole station power is the total power of the site that the system needs to control.

After configuring the above information, click "Save Configuration" to save your settings.



After the setting is completed, power off and restart all charging piles.