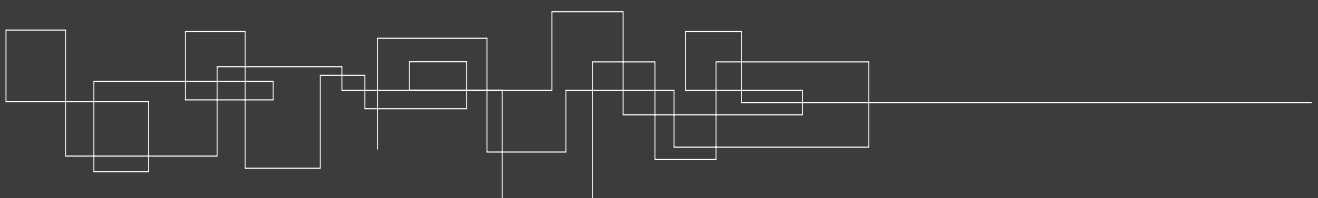




# **LS4 & GLB+**

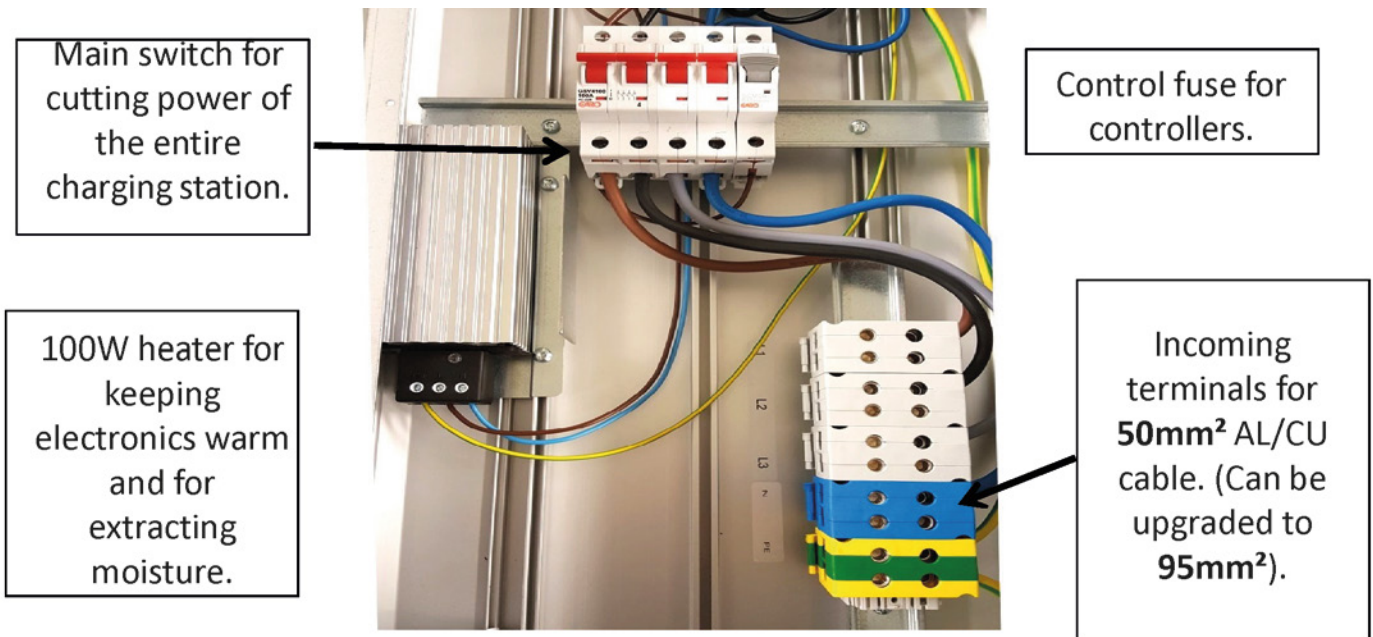
# **Operational Instructions**



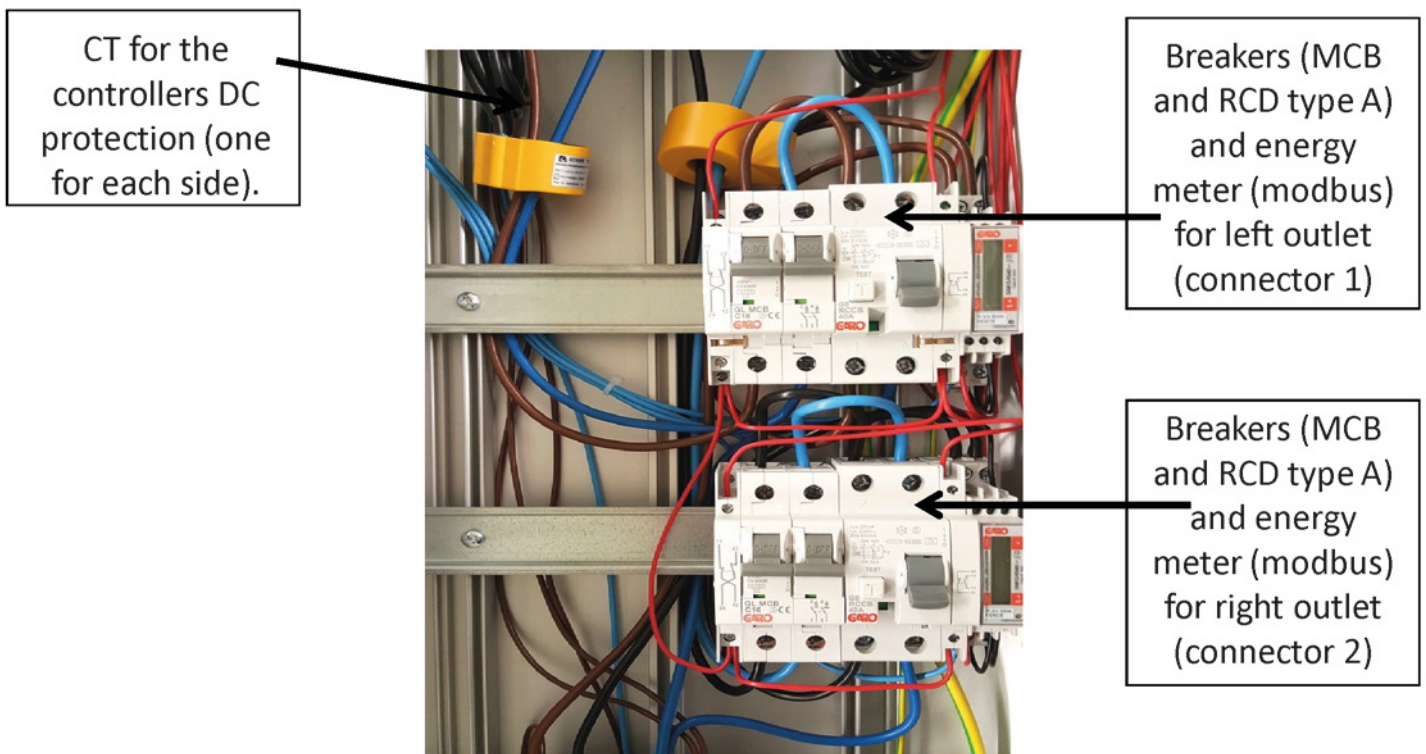
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# Interior Bottom



# Interior (Lower Middle)



# Interior (Upper Middle)

Contactors, one for each connector.

Type 2 outlet. Can be replaced with fixed cable type 1 or 2.



# Interior (Top)

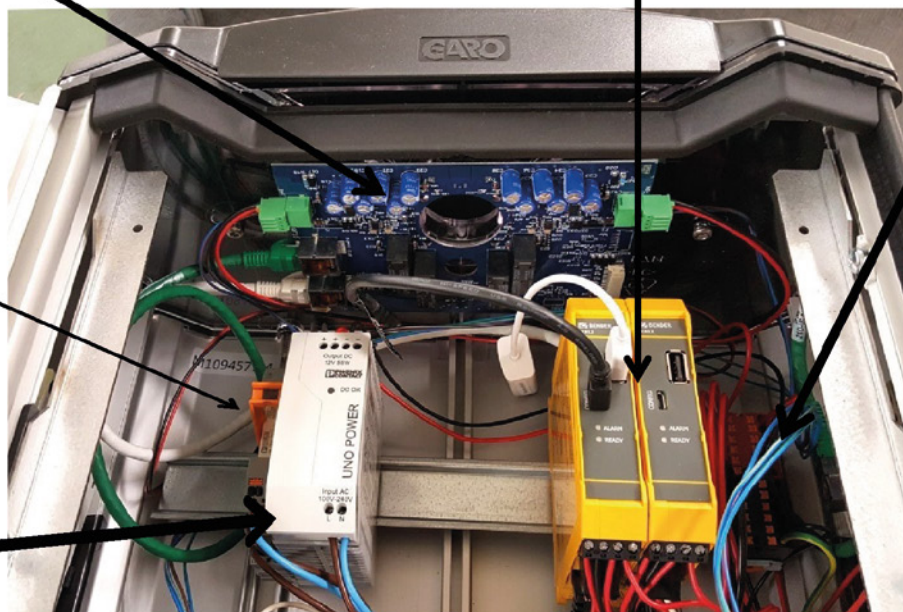
Top-card

Controllers

DC distributing terminals.

Relay for heater

Power supply  
230V → 12V  
(55W)



# Connecting the Laptop computer

The cable is connected to the micro-USB Socket on the Slave controller

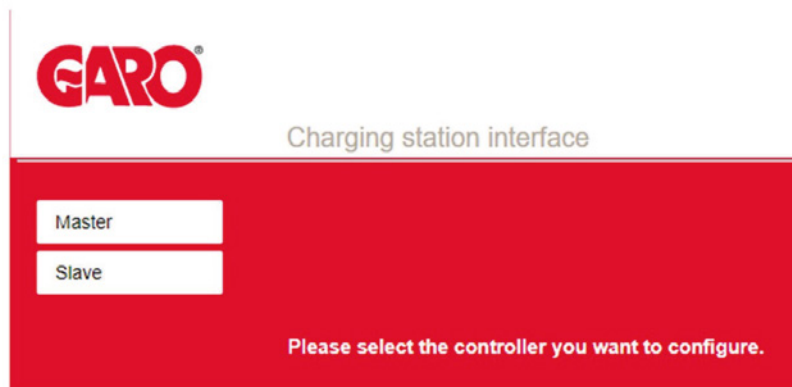
USB to Micro USB cable



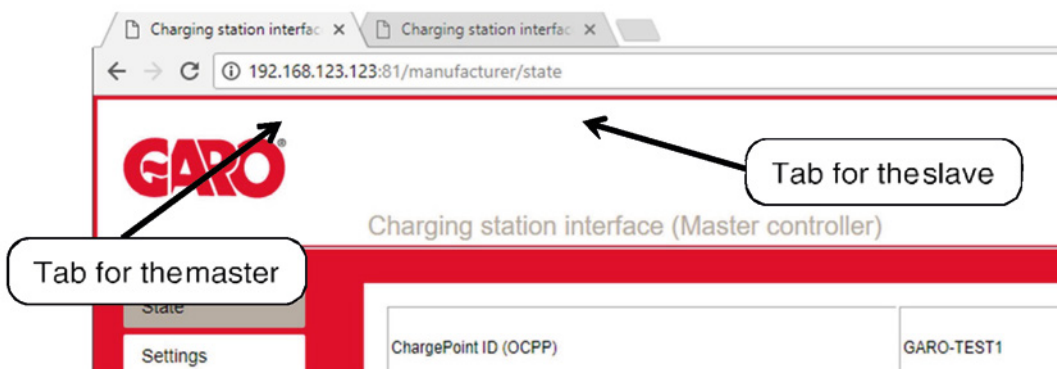
## Access to the charging stations web interface

This description applies to charging stations with two controllers configured as master and slave connected through a USB - MicroUSB cable.

1. Connect the computer to the right controllers (slaves) micro USB port
2. Open up the web browser of the computer
3. In the address field; type in 192.168.123.123/operator and press ENTER to navigate to the web interface startup page where you get to choose which controller (master or slave) you want to connect to.



1. Right click on the "Slave" and chose "Open link in new tab"
2. Left click on "Master".
3. Now two tabs is shown in the browser. One for the master (left) and one for the slave (right). Shift between these tabs to configure respectively controllers.



## The Categories of the web interface

The web interface is divided in five different categories. These has different levels of accessibility:

- **State (read only)** – The startup page of the web interface gives an overview of the charger status for charging sessions, meter values, connectivity, firmware and alarms. The state view can only be used for reading values and parameters. Nothing can be changed from here,

*“State” is accessible for everyone with access to the web interface address (192.168.123.123)*

- **Settings** – Here you can access the most fundamental settings for operating and backend connection of the charger. From here you can configure type of connection, OCPP protocol and backend address. You can also activate or de-activate the chargers. RFID-readers and turn down the current limit of the outlets.

*“Settings” demands “operator” or “manufacturer” permission.*

- **Operator** – Here you’ll find all the parameters from the “Settings” view and also more advanced settings when it comes to connectivity, communication, monitoring, authentication and behavior during operation.

*“Operator” demands “operator” or “manufacturer” permission. (operator / yellow\_zone ) version 4.2) (operator / cherry\_zone )version 4.3)*

- **Manufacturer** – Here you have access to all hardware settings of the charger, such as charging equipment, max hardware current limit, model, vendor, serial number and the master/slave setup.

These settings should not be changed after the charger has left the factory unless the charger is rebuilt or modified.

*“Manufacturer” demands “manufacturer” permission. Be aware that wrongly made changes of these parameters could result in serious consequences of the chargers operating behavior.*

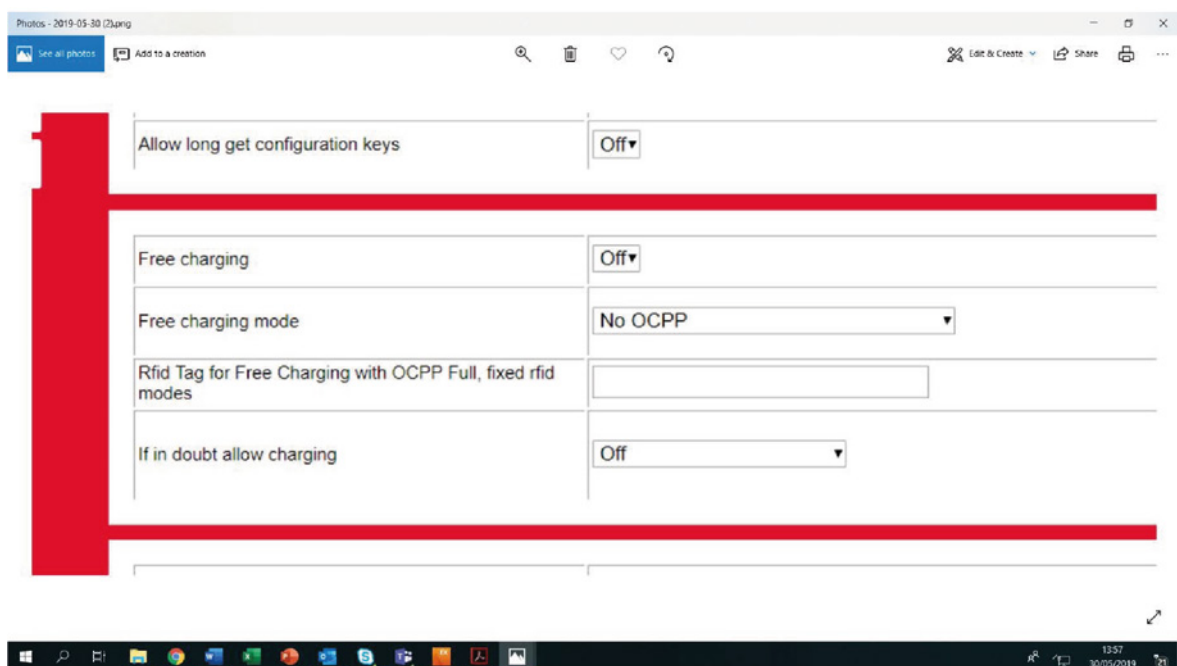
- **Documentation** – Is divided into two subcategories;
- **Error Documentation**, where error codes are listed together with possible cause and solution and **OCPP Keys Documentation**, which lists OCPP-commands/keys for the currently running FW version.

*“Documentation” is accessible for everyone with access to the web interface address (192.168.123.123).*

# Adding RFID Cards

Connect USB /usb micro to RHS slave controller config port & to laptop. Enter 192.168.123.123/operator

- Select MASTER
- Select OPERATOR
  
- Enter user: operator
- Enter password: yellow\_zone (for version 4.2)  
Cherry\_zone (for version 4.3)
- Scroll down to Free Charging (approx. half-way)



- Select "if in doubt allow charging"
  - select ON
  - Select SAVE on Laptop
  
- Plug in CAR or TEST Equipment to master socket (LHS) Activate CP Button
- Place new RFID card to RFID reader
- When charging "STARTS" select save on laptop
- Switch OFF charging

Start Charging again and place new card to RFID reader

- Select SAVE on laptop
- Continue as required.
- Change "if in doubt allow charging" back to OFF
- Select SAVE

EXIT



# Setup of DLM with external (Secondary) Meter

- State
- > DLM
- Settings
- > Default
- Operator**
- > Default
- Manufacturer
- System
- Documentation

Dynamic Load Management	DLM Master (With internal DLM-Slave) ▾			Specifies the ChargePoint's role in a DLM network. There MUST be exactly one DLM Master in a DLM network managing multiple DLM-Slaves. Typically, a ChargePoint configured as DLM Master will also host an internal DLM-Slave. Note: A ChargePoint configured as standalone DLM Master will not host an internal DLM-Slave. If used for charging anyway, its power consumption will be not controlled by DLM.
DLM Network Id	0			Several DLM groupings might coexist in one physical LAN. In case of DLM Master-Auto-Discovery, they are distinguished by Master-Auto-Discovery Network Id.
DLM Algorithm	Fair Trade (FIFO) ▾			Dynamic Load Management Algorithm to be used on the DLM Master for load balancing. 'Fair Trade (FIFO)' selects a fair distribution algorithm which works in a first-in-first-out manner. In case there is no energy remaining to distribute, the car has to wait for a free slot.
EVSE Sub-Distribution Limit (L1/L2/L3) [A]	32	32	32	Overall current limit for DLM available for distribution to EVs.
Operator EVSE Sub-Distribution Limit (L1/L2/L3) [A]	32	32	32	Operator current limit for DLM available for distribution to EVs. The 'Operator EVSE Sub-Distribution Limit' is equal or smaller than the 'EVSE Sub-Distribution Limit'. It can be changed without rebooting the chargepoint. Thus, a backend could use this parameter to alter the energy available for charging EVs dynamically. The backend will not be able to set a value higher than the 'EVSE Sub-Distribution Limit'.
External Input 1 Config	DISABLE ▾			Adds a configurable offset to 'EVSE Sub-Distribution Limit' based on GPI External Input 1.
External Input 2 Config	DISABLE ▾			Adds a configurable offset to 'EVSE Sub-Distribution Limit' based on GPI External Input 2.
External Meter Support	On ▾			If enabled, an external, secondary meter allows to also consider the power consumption of additional load. The power available for charging EVs will be adjusted accordingly. Please make sure, 'Meter configuration (Second)' is configured, preferably to a 3-phase, phase aware meter.
Main Distribution Limit (L1/L2/L3) [A]	63	63	63	Current limit for DLM available for distribution to EVs and additional energy loads. This value is typically higher than the 'EVSE Sub-Distribution Limit' above. An external meter is required to detect the energy consumption of the additional load.
External Meter Disconnected Fallback (L1/L2/L3) [A]	9999	9999	9999	In the error case, where the external meter is disconnected or fails, 'External Meter Disconnected Fallback' is assumed as external meter value. Set to a high value (like the 'Main Distribution Limit' or higher) will result in no current available for the EVSE sub-distribution in that particular situation. Thus, charging would stop.
External Meter Location	Including EVSE Sub-Distribution ▾			Specifies, how the external meter is connected: in case the external meter measures the energy of chargepoints and additional consumer altogether, the value shall be set to 'Including EVSE Sub-Distribution', otherwise to 'Excluding EVSE Sub-Distribution'.
External Meter Sample Rate	30 sec ▾			Rate at which the values of the external meters will be evaluated. The current considered for DLM is the average main distribution current during the last measurement interval.
Minimum Current Limit [A]	6			Minimum current limit that charging should not go below.
Disconnected Limit [A]	6			Current limit when disconnected from DLM network.

Multiple charge points sharing one energy source are combined into one PeerGroup. To specify the group, list each charge point by its IP<PORT> address and separated by semicolon. Example: 192.168.0.1:192.168.0.2:81;192.168.0.3:192.168.0.4

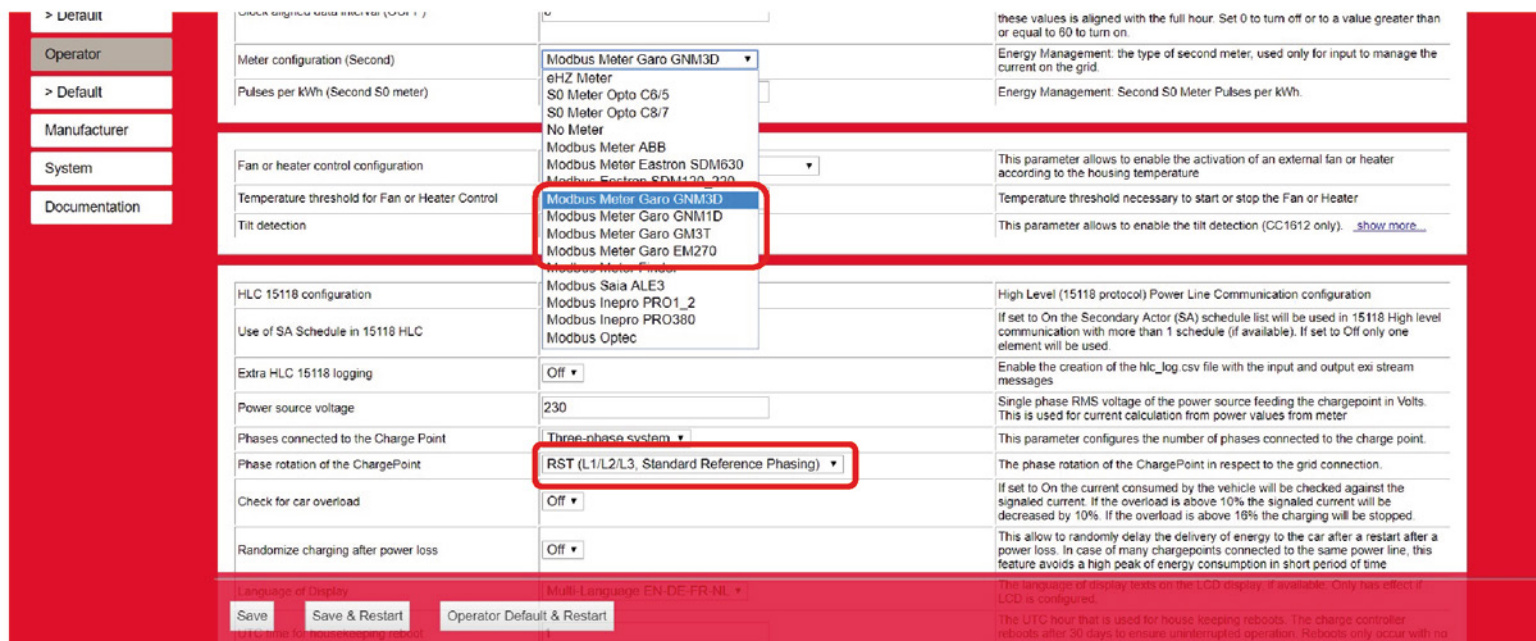
## Explanation of DLM Master parameters (With, or without, secondary meter)

<b>Dynamic Load Management</b>	<b>DLM Master with internal DLM-Slave</b> Define the role of the controller in the DLM cluster as the Master with its own charging equipment connected to it.
<b>DLM Network ID</b>	<b>0</b> Shows which ID (could be any between 0-255). The DLM Slaves will use this ID to find their specific Master.
<b>DLM Algorithm</b>	<b>FIFO</b> First In First Out – The only available Algorithm in 4.2X-4.3X. More on the way.
<b>EVSE Sub-Distribution Limit (L1/L2/L3)[A]</b>	<b>32 32 32</b> Defines the mutual main fuse for all the controllers in the DLM cluster (In the specific case 32A on all phases).
<b>Operator EVSE Sub-Distribution Limit (L1/L2/L3)[A]</b>	<b>32 32 32</b> Same as the one above, but this is configurable downwards from the backend. (Can never be higher than the EVSE Sub-Distribution Limit (L1/L2/L3)[A])
<b>External Input 1 Config</b>	<b>DISABLE</b> (Not yet implemented on the LS4)
<b>External Input 2 Config</b>	<b>DISABLE</b> (Not yet implemented on the LS4)

## Explanation of DLM Master parameters (Secondary meter)

<b>External Meter Support</b>	<b>On</b> Defines if a secondary meter (measuring the whole buildings total load) is installed.
<b>Main Distribution Limit (L1/L2/L3)[A]</b>	<b>63 63 63</b> The maximum main fuse of the entire premise (building/area/grid).
<b>External Meter Disconnected Fallback (L1/L2/L3)[A]</b>	<b>9999 9999 9999</b> In case of a disconnection from the external meter the DLM Master will assume this is the load that is being drawn from the meter. A high value (as in this case) will terminate all charging sessions.
<b>External Meter Location</b>	<b>Including EVSE Sub-Distribution</b> Shows that the external meter is measuring both external load and charging points.
<b>External Meter Sample Rate</b>	<b>30 Sec</b> The time interval which the DLM Master will read the external meter for changes in the load.
<b>Minimum Current Limit [A]</b>	<b>6</b> The minimum current the chargepoint need to start charging a car.
<b>Disconnected Limit [A]</b>	<b>6</b> No function for the DLMMaster.

# Setting up the secondary meter and Phase rotation on the DLM Master



## Meter configuration (Second)

Model of the external meter.

This meter should be addressed "2" and be connected to the DLM masters meter bus.

## Phase rotation of the ChargePoint

RST (L1/L2/L3, Standard Reference Phasing)

The phase rotation from the grid on the posts incoming terminals.

# Setting up the DLM Slaves

State			
Settings			
> Default			
Operator			
> Default			
Manufacturer			

Dynamic Load Management	DLM Slave (Master-Auto-Discovery) ▼	Specifies the ChargePoint's role in a DLM network. There MUST be exactly one DLM Master in a DLM network managing multiple DLM-Slaves. Typically, a ChargePoint configured as DLM Master will also host an internal DLM-Slave. Note: A ChargePoint configured as standalone DLM Master will not host an internal DLM-Slave. If used for charging anyway, its power consumption will be not controlled by DLM!
DLM Network Id	0	Several DLM groupings might coexist in one physical LAN. In case of DLM Master-Auto-Discovery, they are distinguished by Master-Auto-Discovery Network Id
Minimum Current Limit [A]	6	Minimum current limit that charging should not go below
Disconnected Limit [A]	6	Current limit when disconnected from DLM network

## Dynamic Load Management

### DLM Slave (Master-Auto-Discovery)

Define the role of the controller in the DLM cluster as a Slave that automatically will find its master and follow its lead.

## DLM Network ID

0

Shows which ID (could be any between 0-255). The DLM Slaves will use the is ID to find their specific Master.

## Minimum Current Limit [A]

6

The minimum current the chargepoint need to start charging a car.

## Disconnected Limit [A]

6

The maximum current the DLM Slave will be allowed to use if disconnected from the DLM Master. If disconnected the DLM Master will assume that the DLM Slave is using this current on all phases and use this in its calculations.

# Setting up the DLM Slaves (Phase rotation)

State	Power source voltage	230	Single phase RMS voltage of the power source feeding the chargepoint in Volts. This is used for current calculation from power values from meter
Settings	Phases connected to the Charge Point	Three-phase system ▼	This parameter configures the number of phases connected to the charge point.
> Default	Phase rotation of the ChargePoint	RST (L1/L2/L3, Standard Reference Phasing) ▼	The phase rotation of the ChargePoint in respect to the grid connection.
Operator	Check for car overload	Off ▼	If set to On the current consumed by the vehicle will be checked against the signaled current. If the overload is above 10% the signaled current will be decreased by 10%. If the overload is above 16% the charging will be stopped.
> Default	Randomize charging after power loss	Off ▼	This allow to randomly delay the delivery of energy to the car after a restart after a power loss. In case of many chargepoints connected to the same power line, this feature avoids a high peak of energy consumption in short period of time
Manufacturer	Language of Display	Multi Language EN DE FR NL ▼	Language of display text on the LCD display, if available. Only two charact LCD is supported.
Custom	Save	Save & Restart	Operator Default & Restart

## Phase rotation of the ChargePoint

### RST (L1/L2/L3, Standard Reference Phasing)

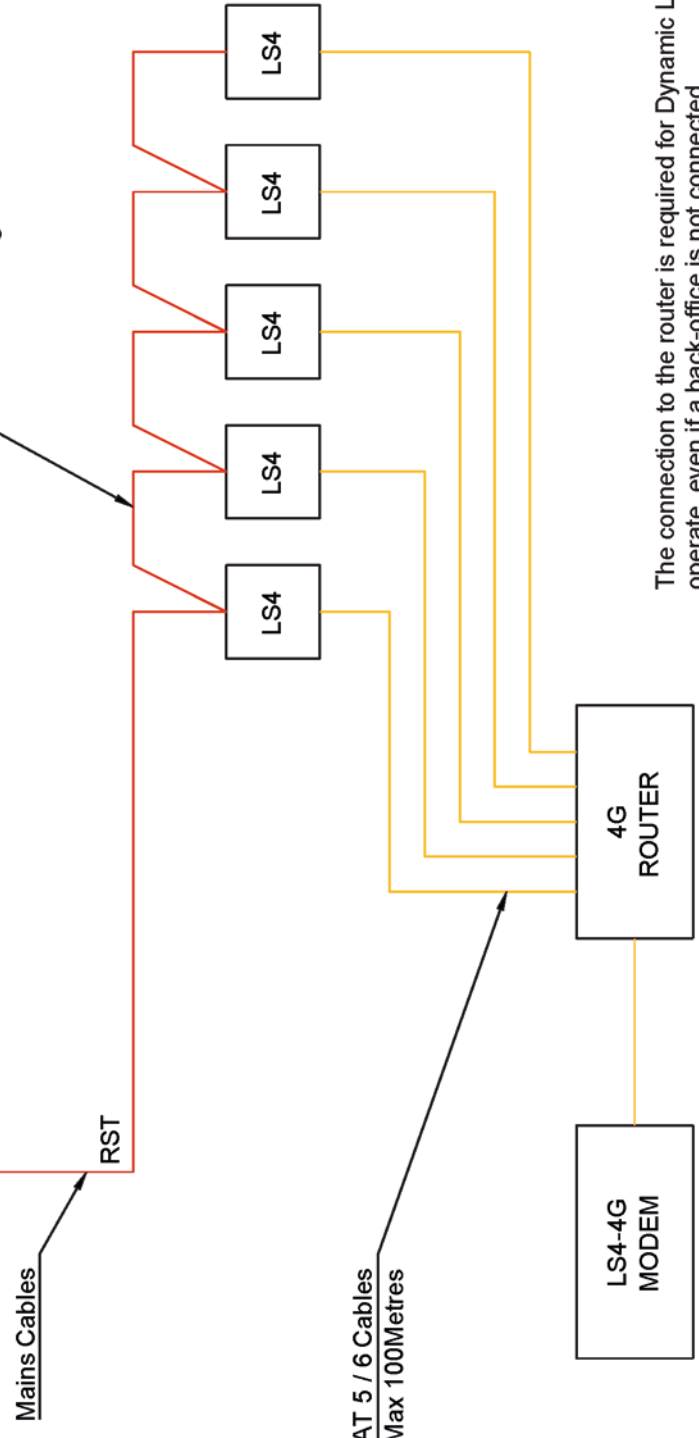
The phase rotation from the grid on the posts incoming terminals. (The phase rotations is just as important on the DLM Slaves as on the DLM Masters).

1 2 3 4 5 6 7 8

If a meter is fitted to monitor the load of the complete installation for Dynamic Load Management, a screened twisted pair beldon cable must connect that Meter to the MASTER LS4



NOTE:  
Dynamic Load Management (DLM)  
MUST be activated when mains is wired  
in this configuration



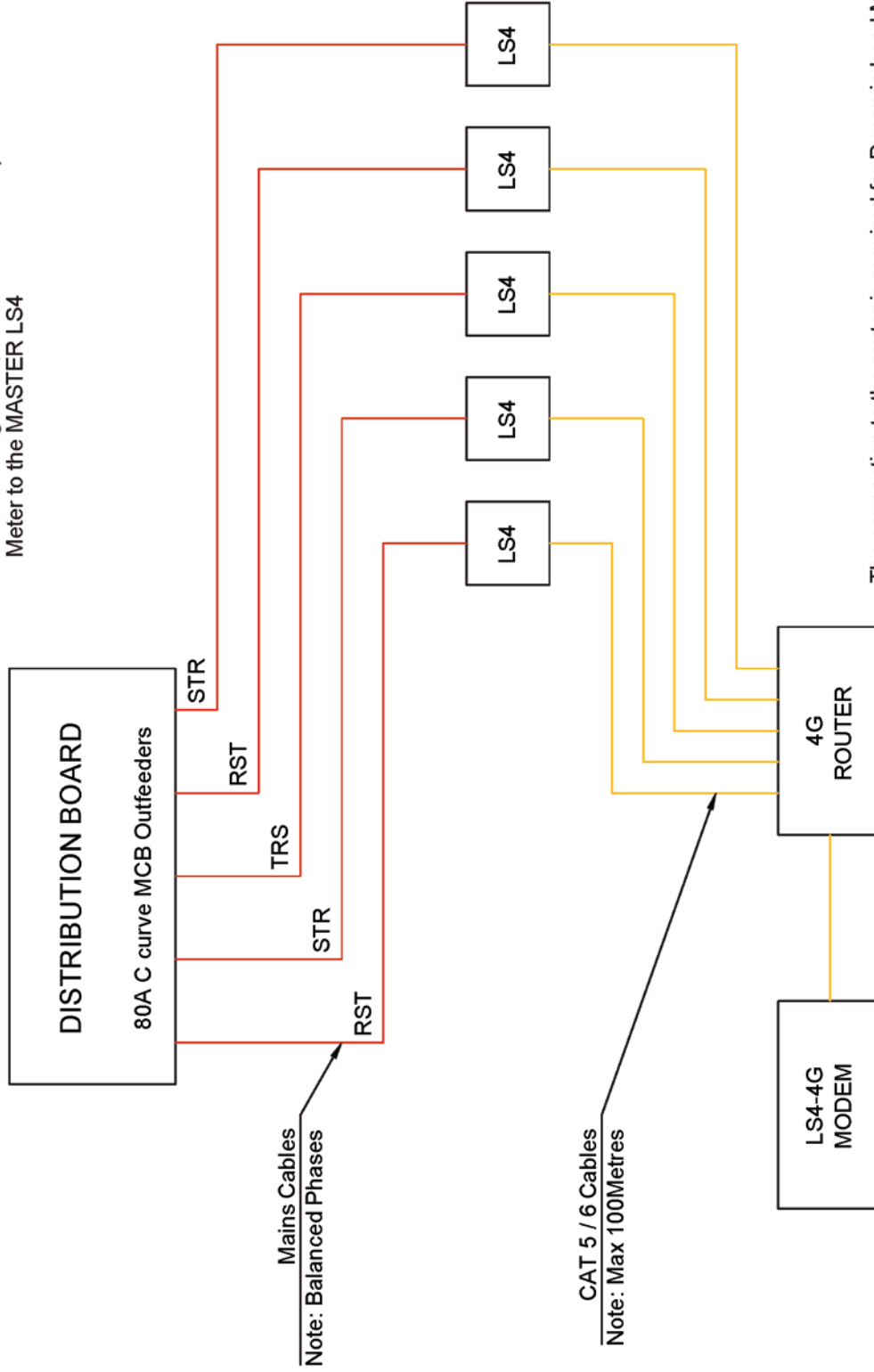
CAT 5 / 6 Cables  
Note: Max 100Metres

The connection to the router is required for Dynamic Load Management to operate, even if a back-office is not connected

DESCRIPTION	DATE	NAME	CHECK	APPD	PROJECT	DRAWING No.	SHEET
					Unit 19 / 307 Northwest Business park Ballycoolin Dublin 15	LS4 Loop Schematic	2



If a meter is fitted to monitor the load of the complete installation for Dynamic Load Management, a screened twisted pair beldon cable must connect that Meter to the MASTER LS4



The connection to the router is required for Dynamic Load Management to operate, even if a back-office is not connected

PROJECT		DRAWING No.		SHEET	
LS4 Schematic		LS4 Schematic		1	
Unit 19 / 307 Northwest Business park Ballycollin Dublin 15		PROJECT No			
=		+			
DESCRIPTION	DATE	NAME	CHECK	APPD	

