ESENZ INSTALLATION GUIDE

e-SenZ™

WWW.ESENZINNOVATIONS.COM

BANGALORE

This manual will guide you on the installation of the Esenz data loggers, Power limiters, Splitters and MODBUS repeaters.

(DO NOT CONNECT ESENZ DIRECTLY AT YOUR OWN, PLEASE GIVE US A CALL, WE WILL GUIDE YOU FOR THE SAME)

Esenz Team shall provide only remote (Off Site) support for the installation. With a dedicated team with vast experience in solar sites data logger configuration with over 2500+ sites having multiple inverters/MFM/WMS being configured, we assure a quick and trouble free installation, with major chunk of configuration being handled by our team itself.

NO tickets to be raised, no prior bookings required, reach us directly on the contact numbers given at the end of the document for installation.

Basic knowledge required from the Technician

The Installation is meant to be carried out by Skilled personnel's with basic knowledge of electrical connections and safety, below are the skill sets the technician should know about

a) A fair idea about the connections and how to do the MODBUS communication and how to do daisy chain connection and basic usage of Laptop and Mobile (Bluetooth and WIFI functionality with whatsapp)
b) For Zero Export/DG Sync, technician should have knowledge about the installing of multi-function meter with CT's/PT's.
c) Inverter/MFM meter/WMS product details and support might be required during installation; these details have to be fetched by the Customer side/Installers from respective vendors/manufacturers of the product.

NOTE: The Installation of Meters, RPR, CT and other non logger devices is not under scope of Esenz Innovations Pvt ltd (Referred to EIPL from now on in this Document)

Models of esenz

e-SenZ Model	No Of Inverters	Maximum Site Capacity Allowed	Maximum Parameters that can be Monitored
Lite Model	MAX 2 Inverters	990 KW	100 Parameters
Pro Model	MAX 5 Inverters	990 KW	175 for WIFI , and 200 With SIM
Pro+ Model	MAX 10 Inverters	990 Kw	175 for WIFI , and 200 With SIM
PL & Mega	MAX 20 Inverters *	NO Limits	175 for WIFI , and 200 With SIM

- No Of Inverters to be connected to Power limiter & Mega model will depend on the order Placed and Invoice amount of the same.

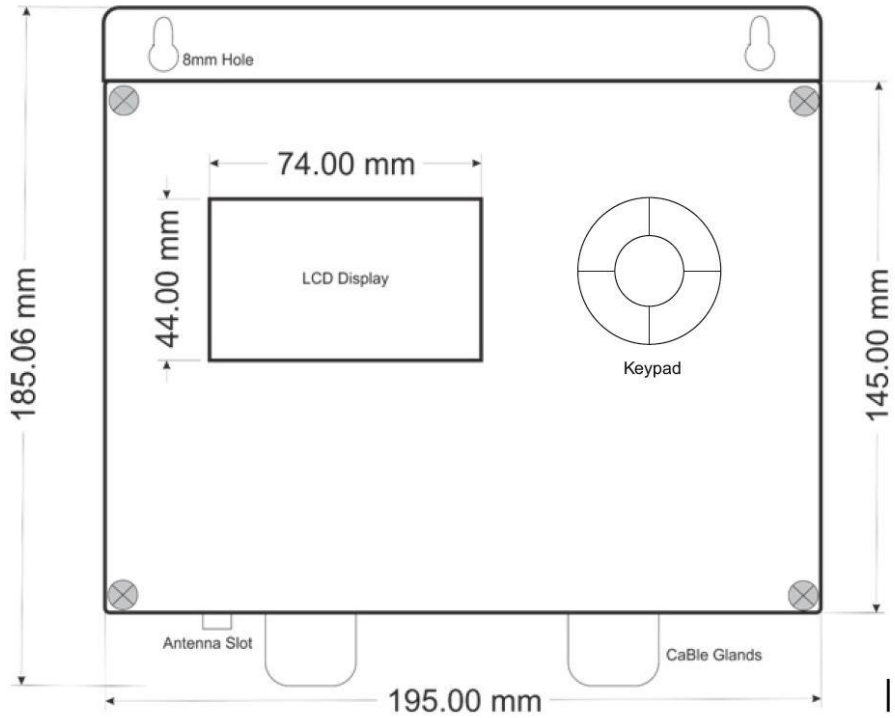
Mounting the esenz device

Esenz device's comes in IP65 boxes. It is still advised and safe practice to mount the device has to be mounted on wall in a clean and dry place and avoid any direct Contact with rainwater / Dust/ sunshine for Long life of the device. In case of SIM/WIFI enabled devices, place the esenz device / Antenna at the place, where good network connectivity is available.

Note:

In case of DG sync /ZED Sites, it's advised to keep the esenz controller near the Inverters, rather than the MFMs.

Actual Size Dimensions

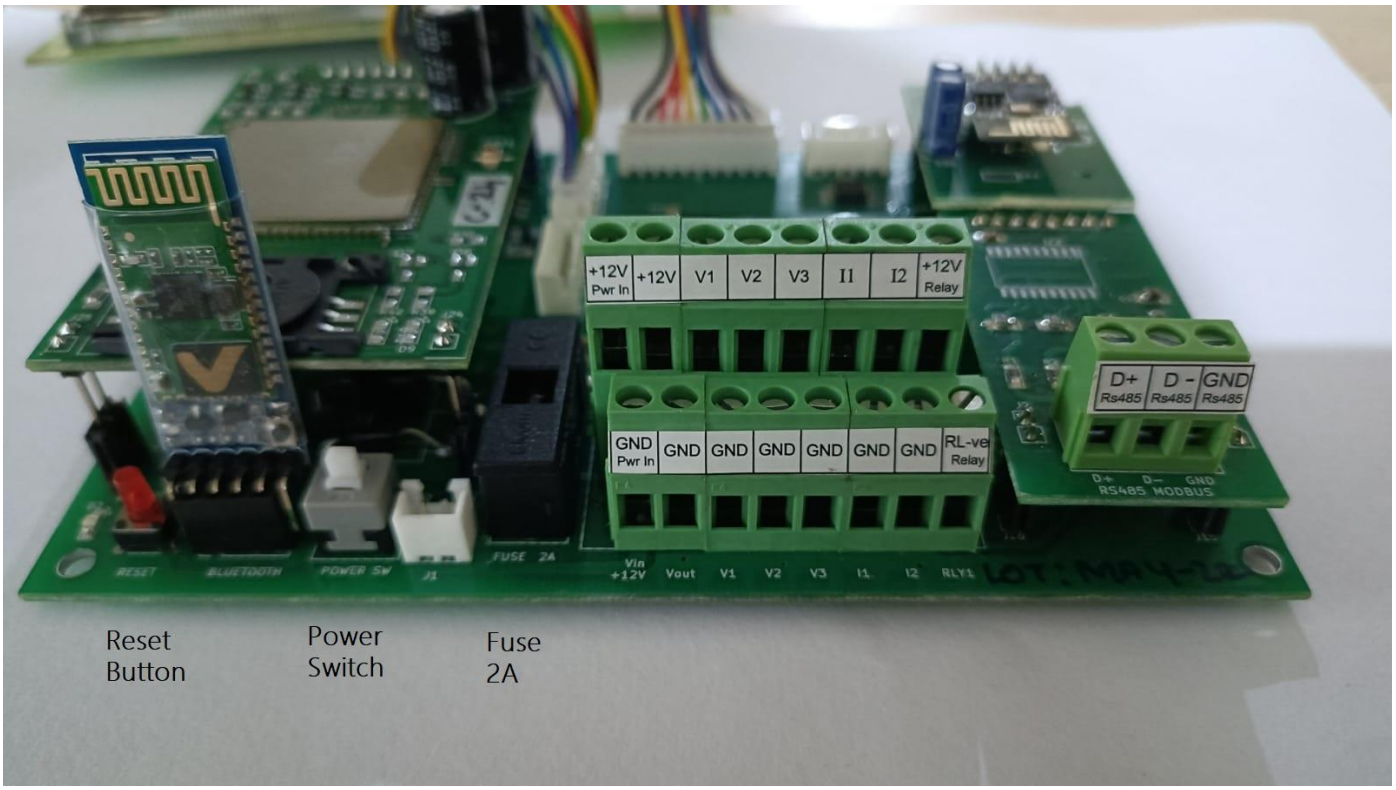


(Esenz Model with Display show for indication)

Directly Mounted on wall

Mounted in Additional IP65 Box

Esenz Connection Terminals



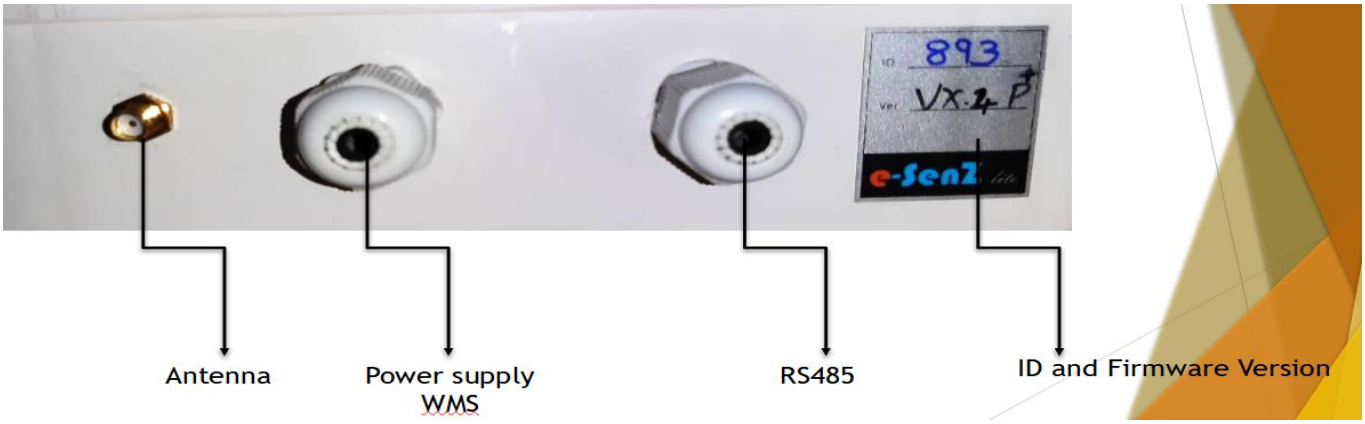
Esenz main Board

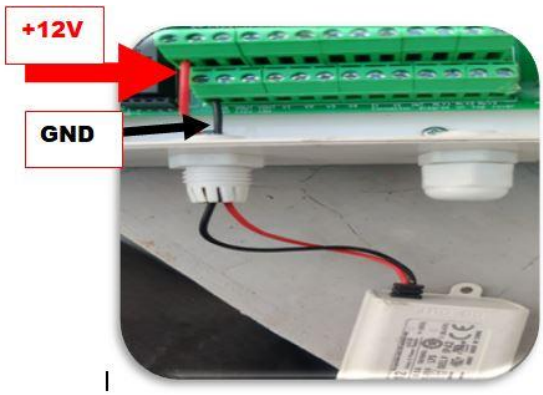
+12 V Pwr In: Input to the esenz device (From the SMPS given)
+ 12 V: Output voltage for sensors 12Volts
V1 Analog Input Ports – Voltage Input 0-5 Volts (Milli or Micro volts Not Supported)
V2, V3: Analog Input Ports – Voltage Input 0-12 Volts (Milli or Micro volts Not Supported)
I1, I2: Analog Input Ports - Current Input 4-20 milliamps
+12V relay – 12 Volts relay output +ve
-12V relay – 12 Volts relay output -ve

RS485 Board
D+ RS485: RS485 Data + Port
D- RS485: RS485 Data – Port
GND RS485: Ground connection for RS485

Power Supply to power up Esenz

Esenz comes with a 230V AC to 12V DC power supply (From Meanwell Company, one of the most reputed Power supply providers). 12V DC power supply is used to power the device. The power source for the e-SenZ (220 V AC - 12 VDC) is an open ended wire.To connect to the nearest power source or outlet, you will need additional cables (1 sq mm for Phase and Neutral) and Carry a TWO PIN connector to plug in the SMPS to the Power supply socket, two core cables
Note: It is advised to use a POWER SPD along with the Power supply to protect the device from electrical surges (In case of rural or remote with high Voltage /Current fluctuation kindly Use SPD compulsorily)

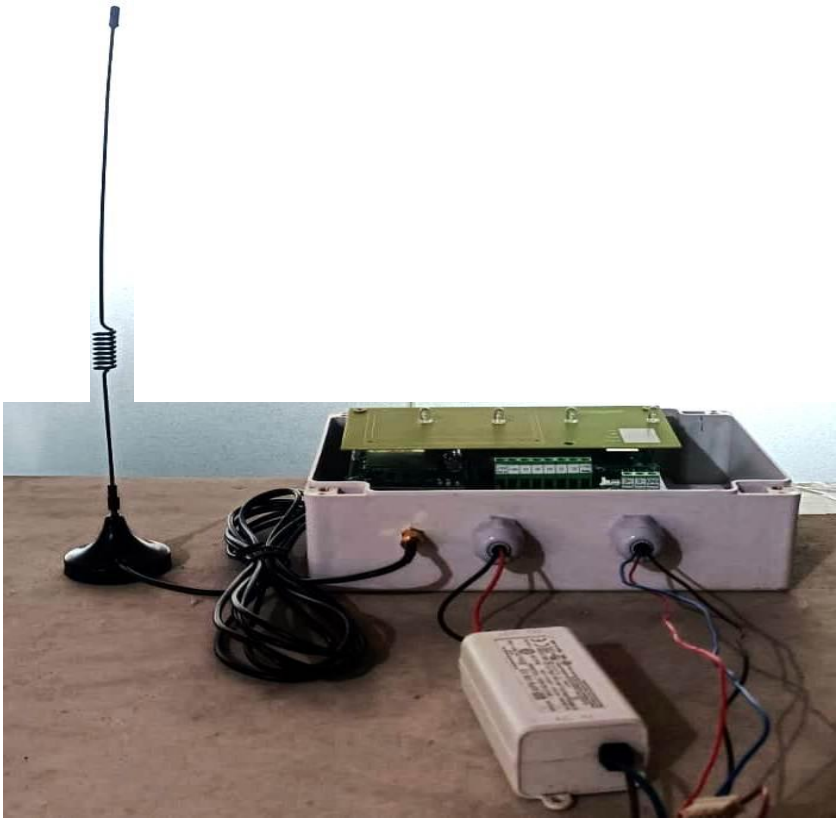




Internet Connectivity

The Esenz can be connected via 4G SIM card (With active internet) or with WIFI. (Ethernet or LAN facility is not available)

Please carry an active Internet Enabled SIM card with you if the installation is SIM Based
In case of WIFI, please provide the User ID and password at the site (Check the Wi-Fi range before installing the Esenz device)

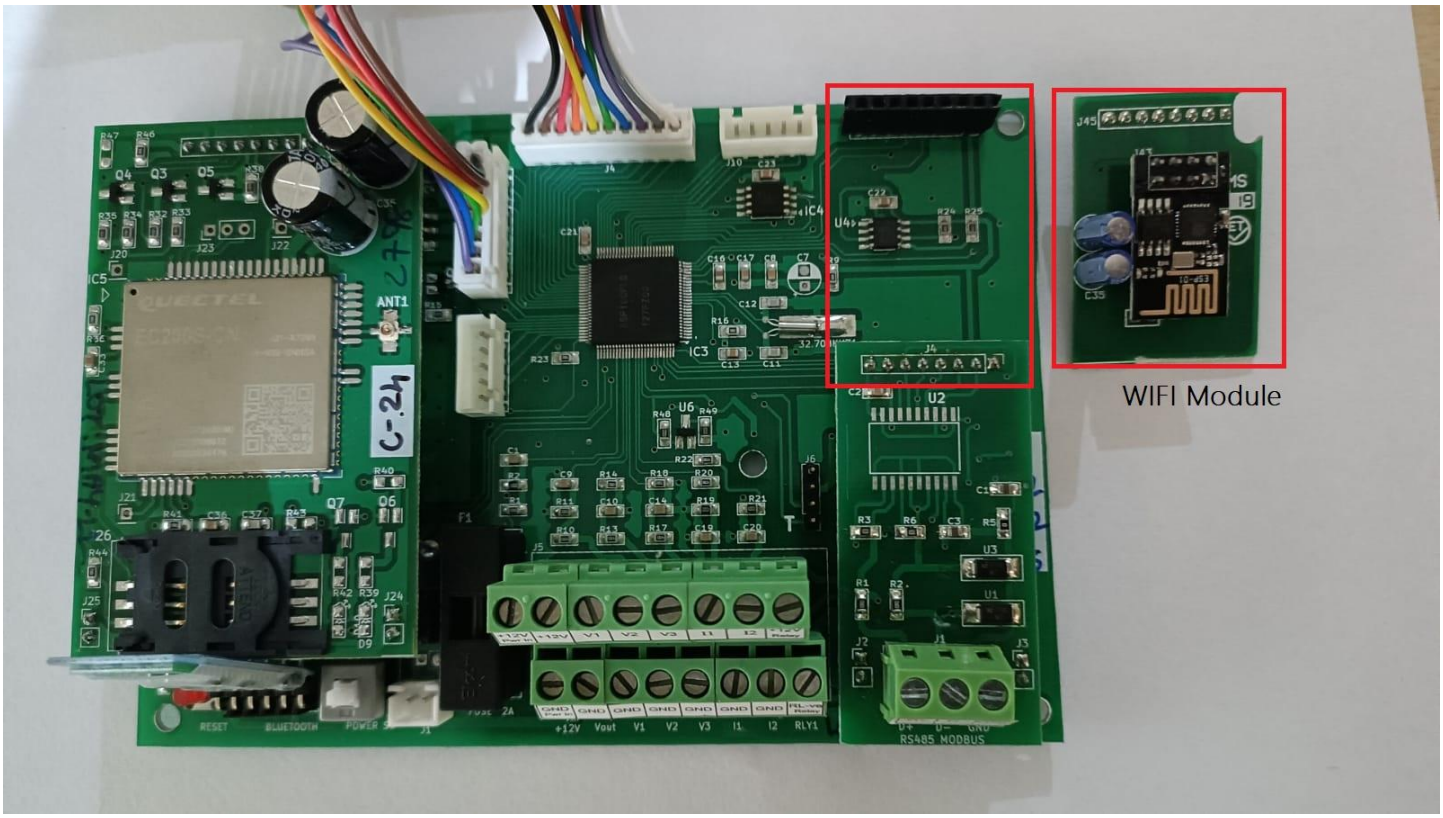


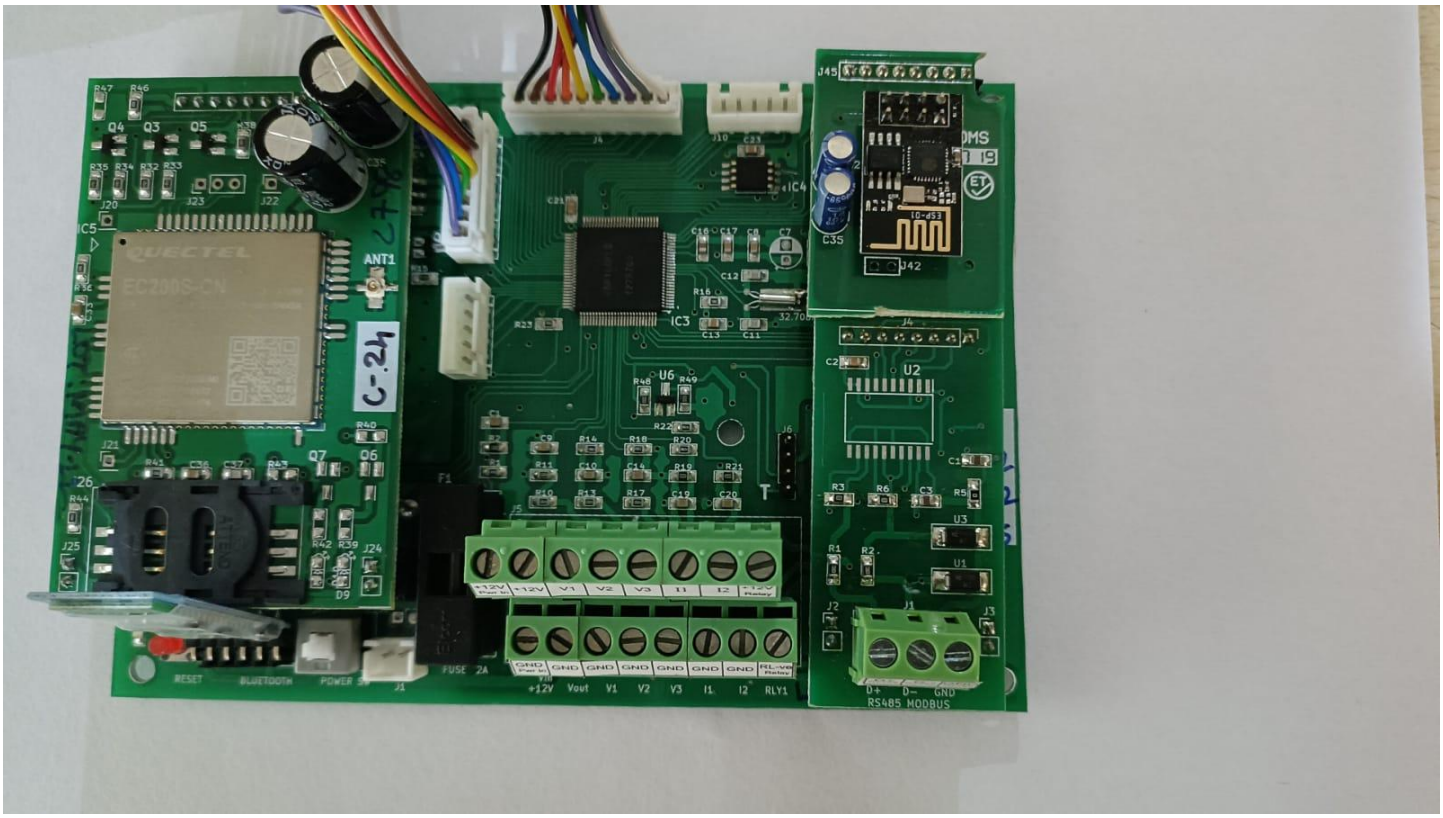
- As seen in the above picture, please attach the antenna.
- Additionally, position the antenna in a place where there is strong signal.

Connecting with SIM card

Remove the screw from the RMS top cover, then place the SIM card in the SIM Tray.
Be Gentle while Pulling the LID of the Tray and press it gently after the SIM is inserted.

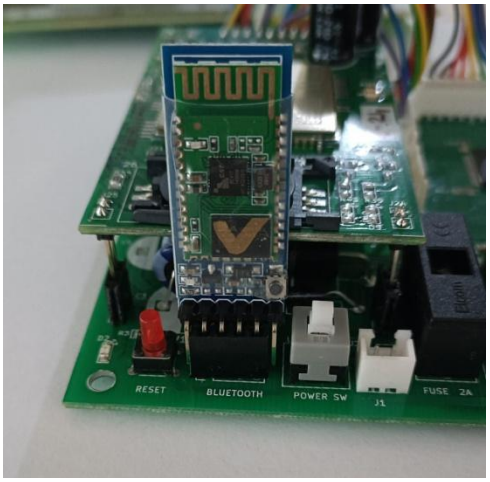
(Any 4G SIM with Active Internet can be used)





Insert The Pins of the WIFI Module into the WIFI slots , shown in Above Picture and Gently Press The same.

Connecting with WiFI



Bluetooth Module to connect the Esenz with Your Mobile or Laptop

For connecting the Wi-Fi Please download the below App from the Google Play store (For Android Only)
https://play.google.com/store/apps/details?id=com.yantramicrosystems.testbluetooth

Steps after Downloading

Select Pair device in the mobile phone's Bluetooth settings after turning on the Bluetooth.
Afterward, choose the Esenz Bluetooth. To link Esenz Bluetooth and enter the Password 1234.
Open the App, Select the setting options and Select device as esenz from the drop down.

Set WiFi credentials , Set WIFI USER name and Password

MODBUS RS485 / WMS / Power supply Wiring Specs

RS485 shielded and armoured cable (0.5 Sq Mm) is advised for the Installation. However in case the distance is less than 50 Metres Normal two core cable or CAT 5/6 cable (0.5 Sq-mm) will suffice.

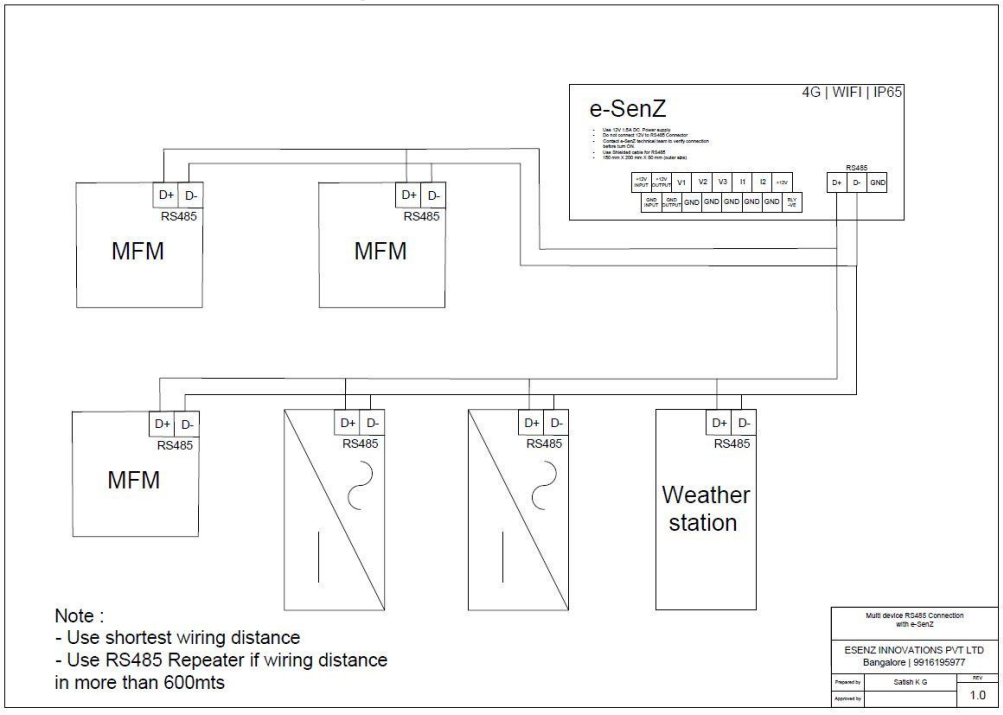
Normal Two core cable can be used to provide power supply to the esenz device (230V AC -12V DC SMPS is provided)

Place the RS485 cable in separate conduit and away from high voltage lines, Earthing lines and avoid joining the communication cables and sharp bends in cables, use Single cable with no or minimum joints to avoid data transmission issues. In some cases RS485 repeater Might be required in case of Long distance wiring or with sites with electrical Noise interference

All the MODBUS communication points will have to be connected to a single RS85 port in esenz.

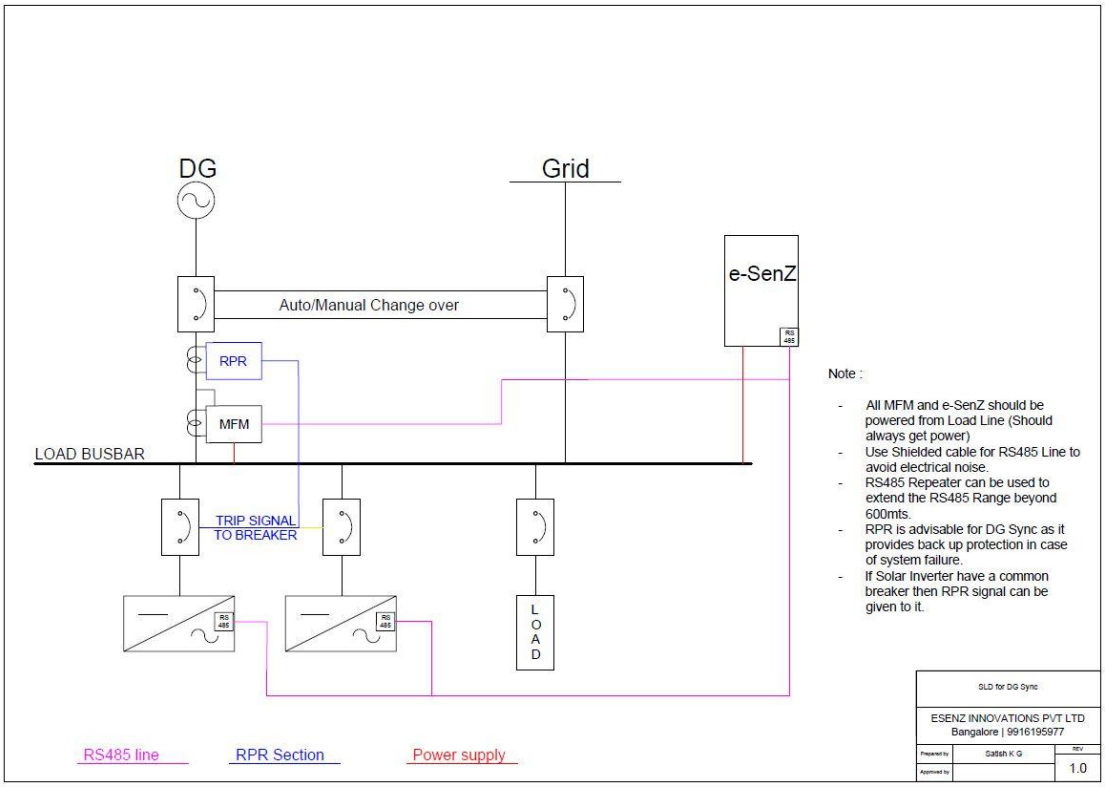
Note: It is advised to use a Communication **SPD** for the communication line for the longer life of the esenz Device

SLD FOR Remote Monitoring (Inverters, MFM, WMS)

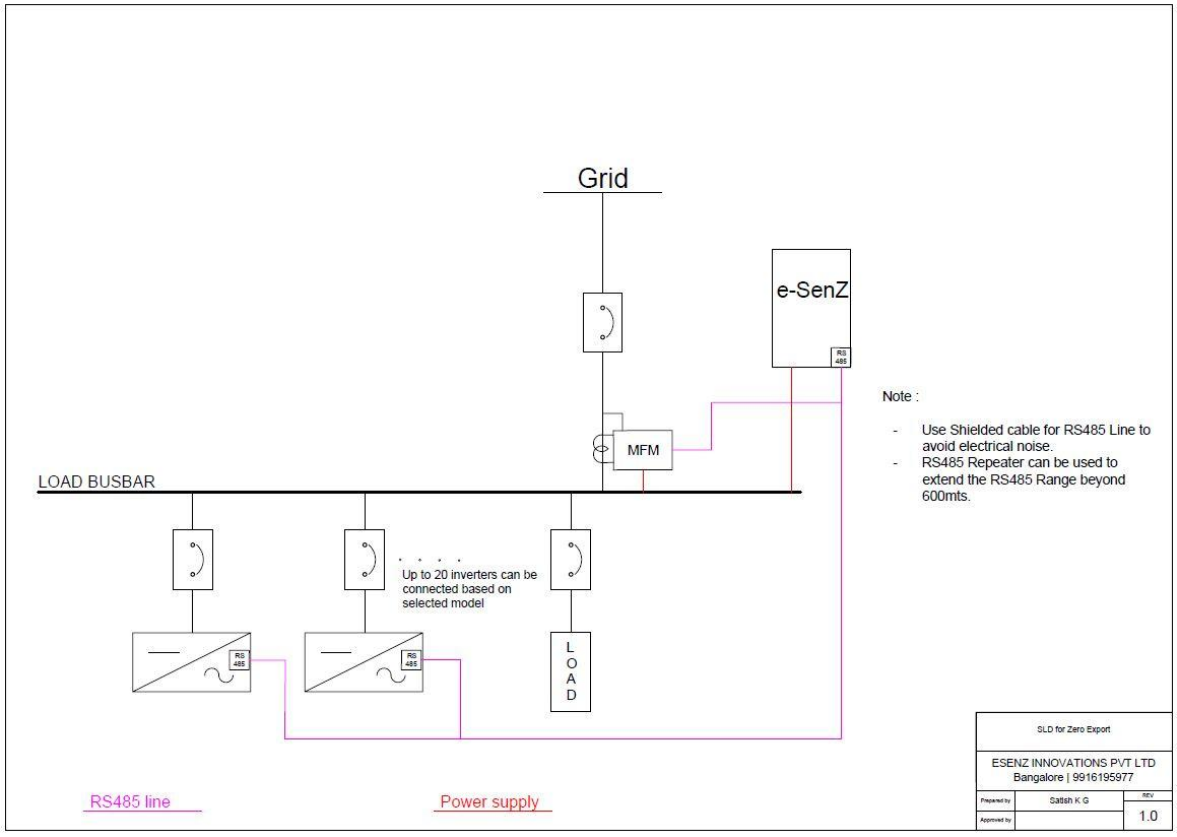


NOTE: All The Inverters, MFM, Meters should have RS485 port with MODBUS RTU Protocol

SLD FOR DG SYNC

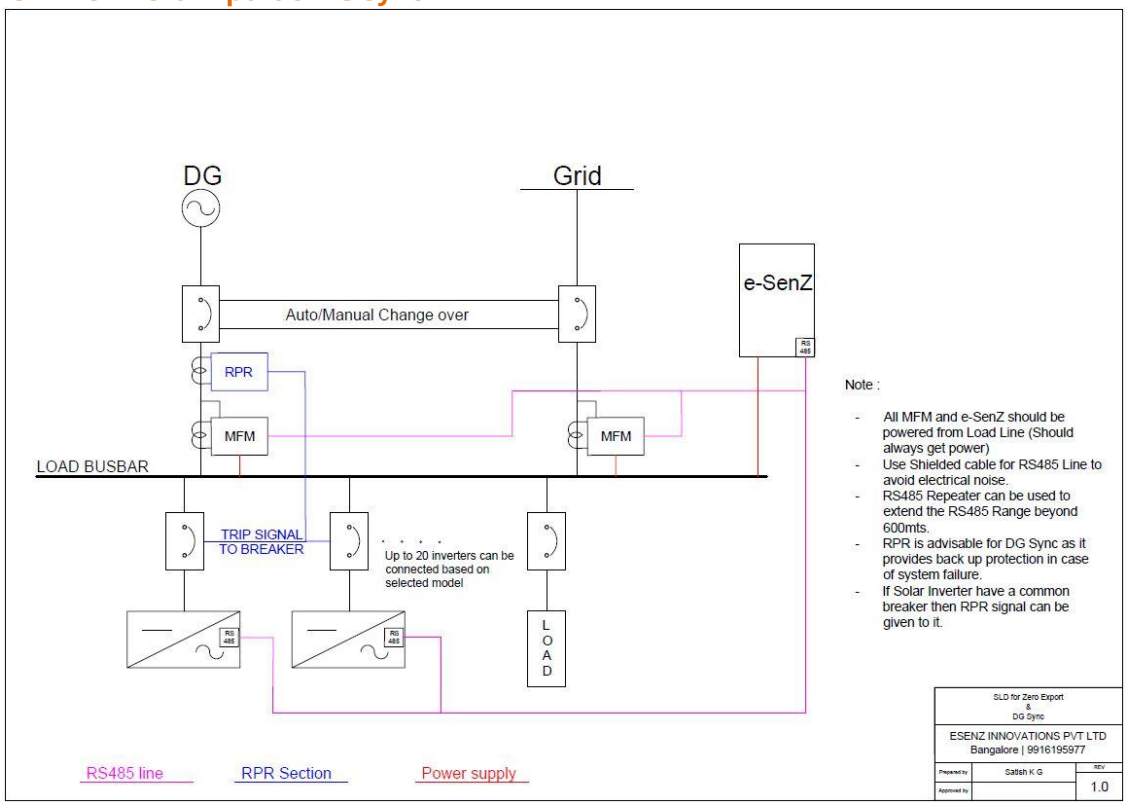


SLD FOR Zero Export



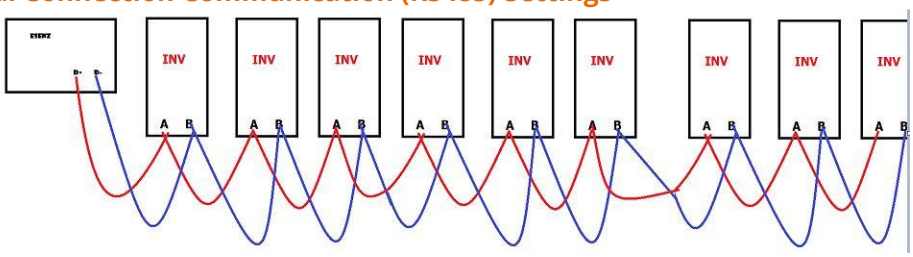
NOTE: All The Inverters, MFM, Meters should have RS485 port with MODBUS RTU Protocol. Bidirectional MFM with RS485 is Compulsory (Meters should show Energy Value in KWH, Power and current Import / Export Registers should be given by MFM and Power +/- ve have to provided in order for the ZED to work)

SLD FOR Zero Export & DG Sync



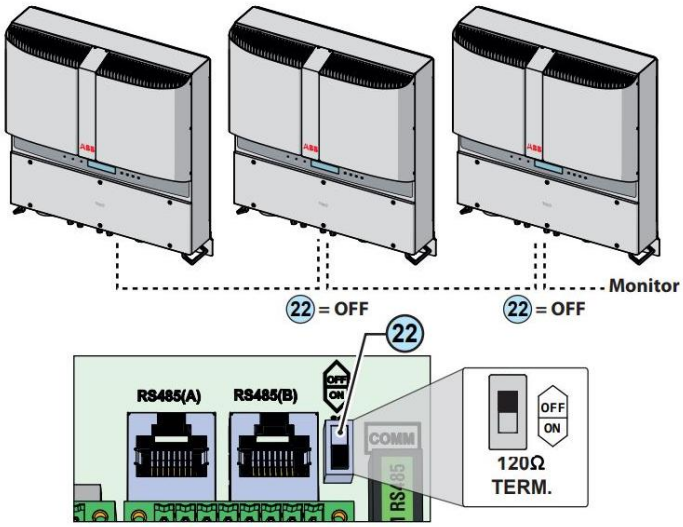
NOTE: All The Inverters, MFM, Meters should have RS485 port with MODBUS RTU Protocol. Bidirectional MFM with RS485 is Compulsory (Meters should show Energy Value in KWH, Power and current Import / Export Registers should be given by MFM and Power +/- ve have to provided in order for the ZED to work)

Serial Connection Communication (RS485) Settings



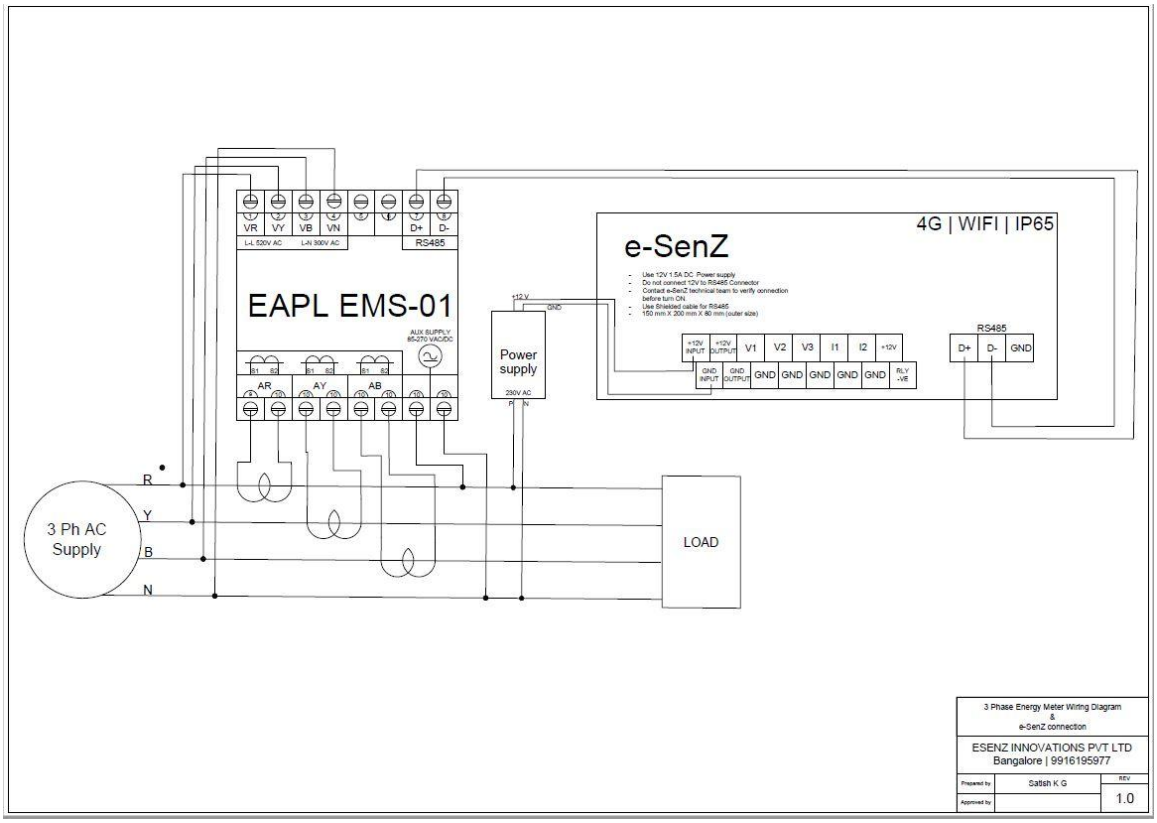
An RS485 communication line is located on the inverter and is used to link numerous inverters together ("daisy-chain") or to connect the inverter to the e-Senz monitoring device. The line can also be used to save configurations for the specific advanced configuration programme.

Connect all the units of the RS485 chain in accordance with the “daisychain” arrangement (“in-out”) observing the correspondence between signals, and deactivate the termination resistance of the communication line.
Please turn OFF the 120Ω Switch.

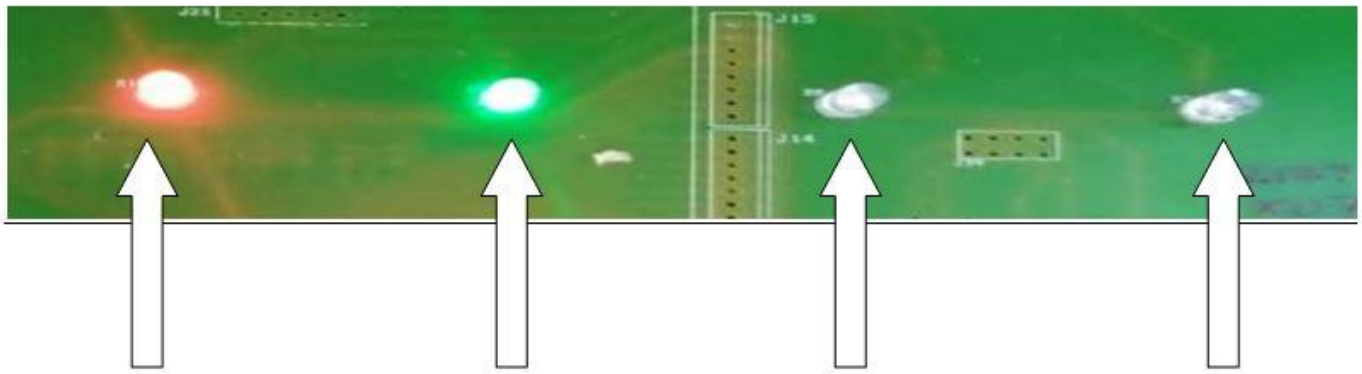


Set a different RS485 address on each inverter of the chain. No inverter should have “Auto” as its address. An address can be chosen freely from out of 2 to 20. The address on the inverter is set through the display and the pushbutton panel
When using an RS485 connection, if one or more inverters are added later to the system, you must remember to return to OFF position the switch of the termination resistance.

SLD FOR MFM connection (EAPL MFMs)


EAPL EMS-01
VR
VY
VB
VN
D+
D-
RS485
L-L 520V AC
L-N 300V AC
AUX SUPPLY 85-370 VAC/DC
AR
AY
AB
S1
S2
Power supply
+12V
GND
230V AC
P
N
e-SenZ
4G | WIFI | IP65
Use 12V 1.5A DC Power supply
Do not connect 12V to RS485 Connector
Contact e-SenZ technical team to verify connection before turn ON
Use Shielded cable for RS485
150 mm X 200 mm X 80 mm (outer size)
+12V INPUT
+12V OUTPUT
V1
V2
V3
I1
I2
+12V
GND INPUT
GND OUTPUT
GND
RLY -VE
RS485
D+
D-
GND
3 Ph AC Supply
R
Y
B
N
LOAD
3 Phase Energy Meter Wiring Diagram & e-SenZ connection
ESENZ INNOVATIONS PVT LTD
Bangalore | 9916195977
Prepared by
Satish K G
Approved by
REV
1.0

Esenz LED's and their meanings **applicable only to Lite model**



POWER supply LED | GPRS Status LED | MSG Pending LED | ACQUIRE Data LED

LED status
- PWR supply will blink 3 times is sim not detected
- MSG pending will blink fast when modem is being reset
- GPRS blinking patter

OFF - modem communication error
2 blinks - sim not detected
3 blinks - not connected to network
4 blinks - connected to network but unable to start bearger (no internet or very low signal strength)
5 blinks - unable to connect to server (our server issue or no internet)

ESENZ LCD Display

1. Type of the Network and its Status If it is Displaying WF then it is in Wifi Mode
2. Esenz ID

3. Time
4. Date
5. Number of data packet scanned by the Esenz
6. Inverters total Power
7. Number of data need to transmit from esenz to Server

How to change SIM mode to WIFI mode?

In order to switch the esenz mode from SIM to WiFi, please press the RESET button three times. If you click the RESET button three times, Esenz will switch from Wifi to SIM mode if it enters that mode again.

Items required to be carried at the Site for Installation of esenz Products.

Laptop with good Internet Connectivity for team viewer

Multimeter

SIM card with internet/Wifi router

2PIN Plug with 2core Cable to power Esenz

Crimping tool

CAT5/6 or RS485 cable to connect MODBUS devices

And other Generic equipments Like wire cutter , Allen key Set, Screw driver Set, Cutting pliers , Tester, Insulation tape, hammer, Gloves, rubber boots, Wall screws with plastic plugs etc.

IMPORTANT NOTE:

Esenz Innovations pvt ltd will not be responsible for any delay in installation, Damage/ electrical Hazard to person during installation.

Esenz Innovations pvt ltd will not be responsible for Damage to the Site or The Instruments / Equipments at the site caused due to wrong Connection by the technician.

Esenz Innovations pvt ltd will not be responsible for any Reverse power to the Grid or DG Due to the wrong Meter connection, wrong wiring, Wrong CT/PT being used or if the RS485 Communication cable connected to the esenz is disconnected or damaged or if the esenz Device is turned off .

Esenz support time for Installation

Working Hours - **MON to SAT** 10AM – 7PM (Please do installation, when there is ample sunlight, to see the Generation Data)
All Sundays and Central Govt Holidays are Non Working Days.
For Installations Please Call – 9986495977, 9886434160
Mail – Sales@esenzinnovations.com