

# i-Route

Invendis iRoute is one among the various models of IoT products in the iSense series. It is a ruggedized intelligent hardware which is capable of aggregating controllers which are connected over an IP and intelligently route them to Invendis NOC software – iTOC. It is also capable of interfacing to third party NOC applications by utilizing Invendis Middleware iDS.

iRoute is designed to establish communication channel to centralized server as well as decipher data. It can also be positioned as a gateway that can be utilized for remote access into controllers such as rectifiers and other IP devices.

iRoute features provide direct access to compatible site passive equipment controllers to user using the available smart data communication technology. The feature is designed to provide option of making configuration changes or to monitor the site equipment at any time from the Operations Centre

The smart feature will enable the request coming in from remote user to pass to end equipment making iRoute as a bridge for the communication. The feature requires a static IP over SIM network or an Ethernet connectivity with fixed IP or a VPN for secured communication between the server and the site equipment.

**IIoT for  
Telecom Towers,  
Distributed Energy &  
Sub metering**

**Contact us:**  
**+91 80 2668 1681**



[www.invendis.com](http://www.invendis.com)



[sales@invendis.com](mailto:sales@invendis.com)



230, 1st Cross, 38th Main, BOOHBCS Layout, BTM 2nd Stage,  
Bangalore – 560 068, Karnataka,





# i -Route



## Application

- Industrial and Telecom Suitable.
- Aggregating multiple IP devices
- iRoute as a bridging devices on ground to centralized cloud
- System Health Check



## Features

- Pre-built Linux OS with file system
- 10/100Mbps Ethernet port onboard
- GSM/ GPRS – Dual SIM onboard
- RS-485 port
- USB 2.0 console port
- Built in Routing feature

RTC	RTC with battery back-up
LED	3 onboard LED
Generic Serial communication ports	RS485 – 1 Number.
Console Port	USB
Wireless Communication – On board	Dual SIM 4G GSM / GPRS module with external antenna
Wired Communication – On board	Ethernet 10/100 - 2 LAN Port Ethernet 10/100 – 1 WAN Port
Power supply	10V to 15V DC or 20 to 60 Volts DC
Operational Temperature	0°C to 60°C
Storage temperature	-20°C to 85°C
Humidity	95% non-condensing
Protocols	Modbus RTU/ ASCII, TCP/IP, SNMP
Features Supported	Open VPN, SSH, Port Forwarding
GSM Features	
4G LTE	Category - Cat-4 Frequency Bands -B1, B3, B7, B8, B20, B28
3G	Technology supported - HSPA+, UMTS Frequency Bands - B1, B8
2G	Technology supported - EDGE, GSM, GPRS Frequency Bands - 900, 1800
DATA SPEED	Peak Download Rate – 150Mbps Peak Upload Rate - 50 Mbps
CORES	ARM® Cortex™- A7 (1.3GHz) Telecom Core - Dual QDSP6 (600MHz)
Embedded Platform	Linux Distribution - Yocto, LTSI
HARDWARE	CF3™ Form Factor Snap-in socket Dimensions22x23x2.5mm Antenna: Diversity Antenna: MIMO

WAN / Dual SIM 4G GSM / GPRS module with external antenna

SIM + Ethernet

Connectivity

WAN, LAN + RS485

Ports

Open VPN, SSH, Port Forwarding

Features Supported

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# iRoute 21.01 LTE

## DC POWER INPUT

- 9-30V Wide DC input @1A (non-isolated)
- Accidental reverse voltage, ESD (IEC61000-4-2 level 4), EFT (IEC61000-4-4 level 2) and Surge (IEC61000-4-5 level 2) protected.
- Internal Overvoltage, Over current protection
- Internal circuitry to enable remote power ON/OFF of 12V rail.

## ETHERNET INTERFACES

- Five port 10/100 Mbps Ethernet Switch
- 1 WAN and 4 LAN ( Configurable)
- ESD (IEC61000-4-2 level 4), EFT (IEC61000-4-4 level 2) and Surge (IEC61000-4-5 level 2) protected.
- Connection by means of standard RJ-45 connector

## WLAN INTERFACES

- 2T2R 802.11 b/g/n 2.4 GHz
- 300Mbps Wi-Fi AP with Encryption
- Frequency range: 2.4GHz~2.497GHz
- Security: WEP/TKIP/AES/WPS/WPA/WPA2
- WEP 64/128, WPA, WPA2 Engine
- TX output power: +16.5dBm
- One external antenna

## USB 2.0 INTERFACE ( OPTIONAL)

- One USB 2.0 full speed capable Host interface
- Standard USB 2.0 Type A Host connector

## RTC

- On board RTC
- On board coin cell battery backup

## CONFIGURATION RELATED

- Over the air Kernel upgrades.
- Web Based Configuration

## NETWORKING RELATED

- Supports Multiple WANs with failover support
- Supports Dual SIM and priority switchover
- Supports IPSEC and OpenVPN
- Embedded web server support
- HTTP, FTP support
- Firewall support
- Dynamic DNS
- Telnet/SSH for remote login

## CELLULAR INTERFACES

- Two Mini PCI Express slots to connect 2G/3G/4G modules ( One optional)
- Optional GPS
- Interfaces
  - o USB 2.0 High speed interface (to the CPU)
  - o Single or optional Dual SIM
- One external antenna

## CPU & MEMORY

- MIPS24KEc CPU running at 580 MHz
- 32MB NOR Flash, 128MB DDR Memory

## LEDS

- Two LEDs for WAN interface cellular connectivity status indication
- Four LEDs for LAN interface status indication
- One LED for Wi-Fi interface status indication
- One programmable LED

## OS / PLATFORM RELATED

- Linux ported
- Built in Router software with web configuration
- Package Management for easy installation and un-installation of applications.
- Linux C SDK for application development (On Request)

## COMMUNICATION INTERFACES RELATED

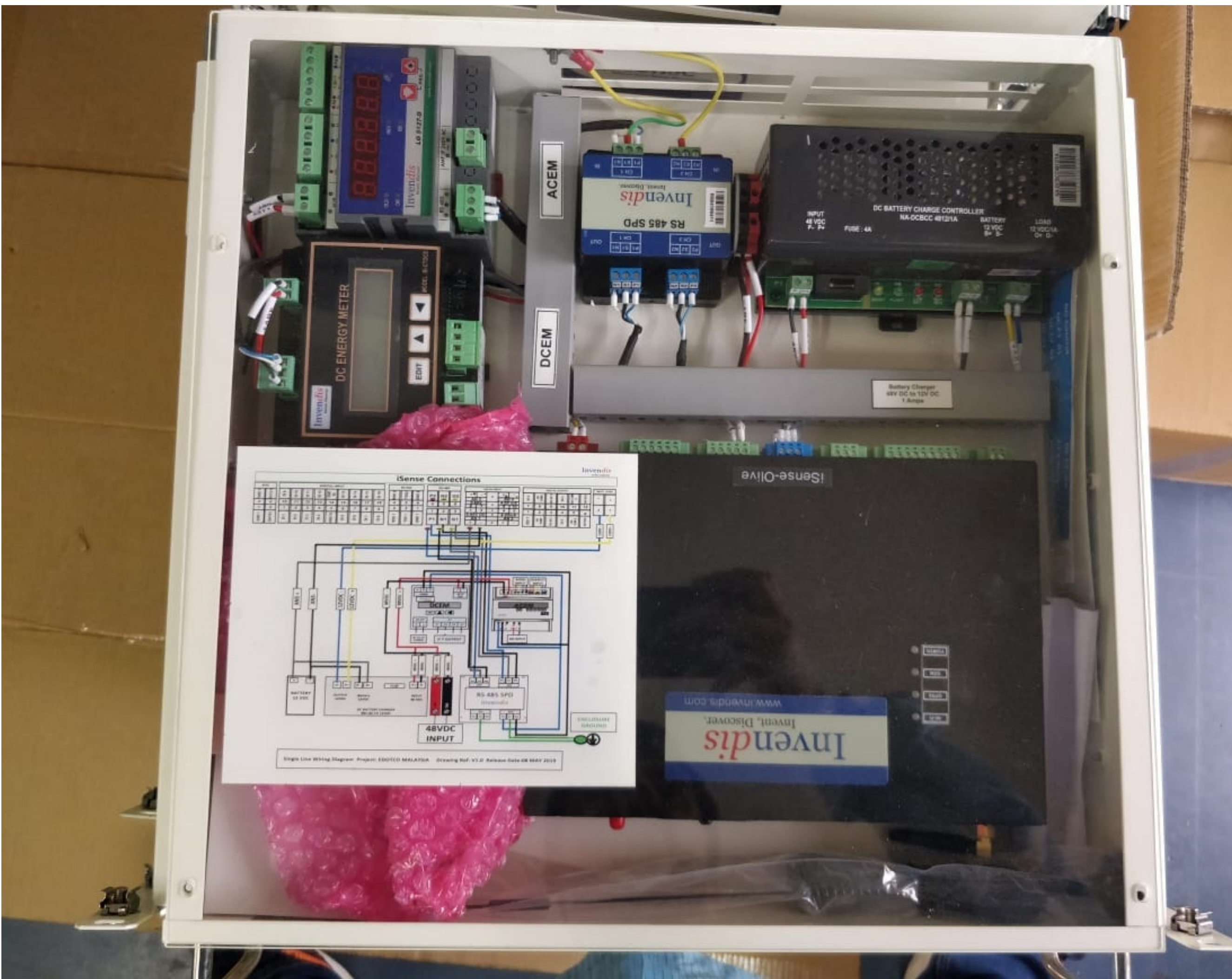
- Support for on board 2G/3G/4G
- Wi-Fi AP (access point) with encryption
- Configurable Ethernet Switch







# 19" Wall Mount Indoor Enclosure



Parameters Description	Values
Dimension	Width: 440mm, Height: 475mm, Depth: 85mm
Material	MS CRCA
Wall Thickness	1.2mm
Power Coating	White (RAL 9016)
Mounting	Wall Hanging
Cable Entry	From bottom of enclosure through grommets





# Outdoor Enclosure

Pole Mount bracket Specs:

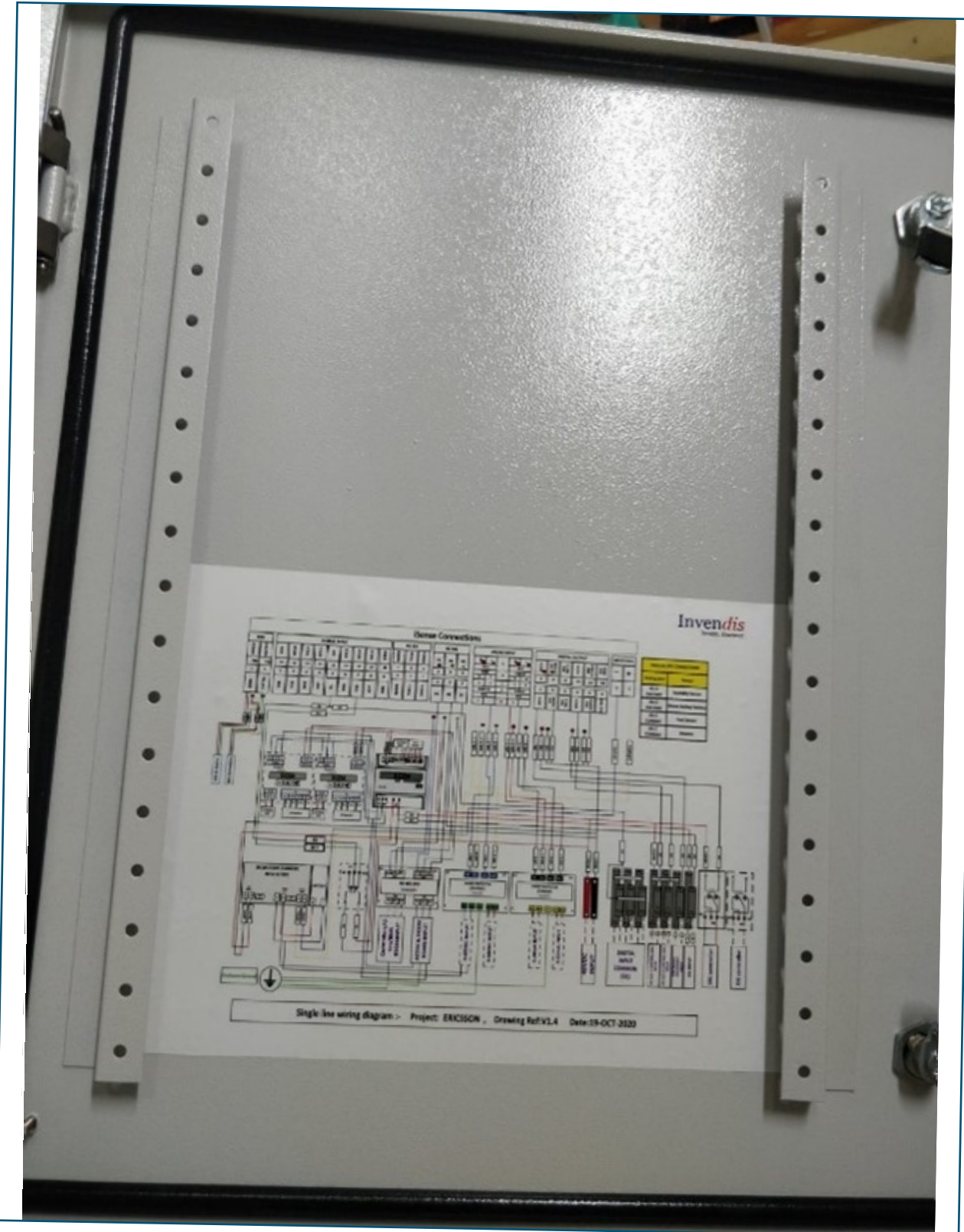
Sl. No.	Parameter Description	Value
1	Part	Pole Mount Bracket for RMS Enclosure
2	Design	SS U-Bolt to suite 3" to 4" pole dia
3	Material	SS Material
4	U-Bolt Dia	Dia – 8mm
5	Bracket to hole the Pole	As per photo below
6	Pole Size	3" to 4" Pole Dia
8	No. of U-Bolts	2 Numbers, one at the top and one at the bottom of the enclosure.



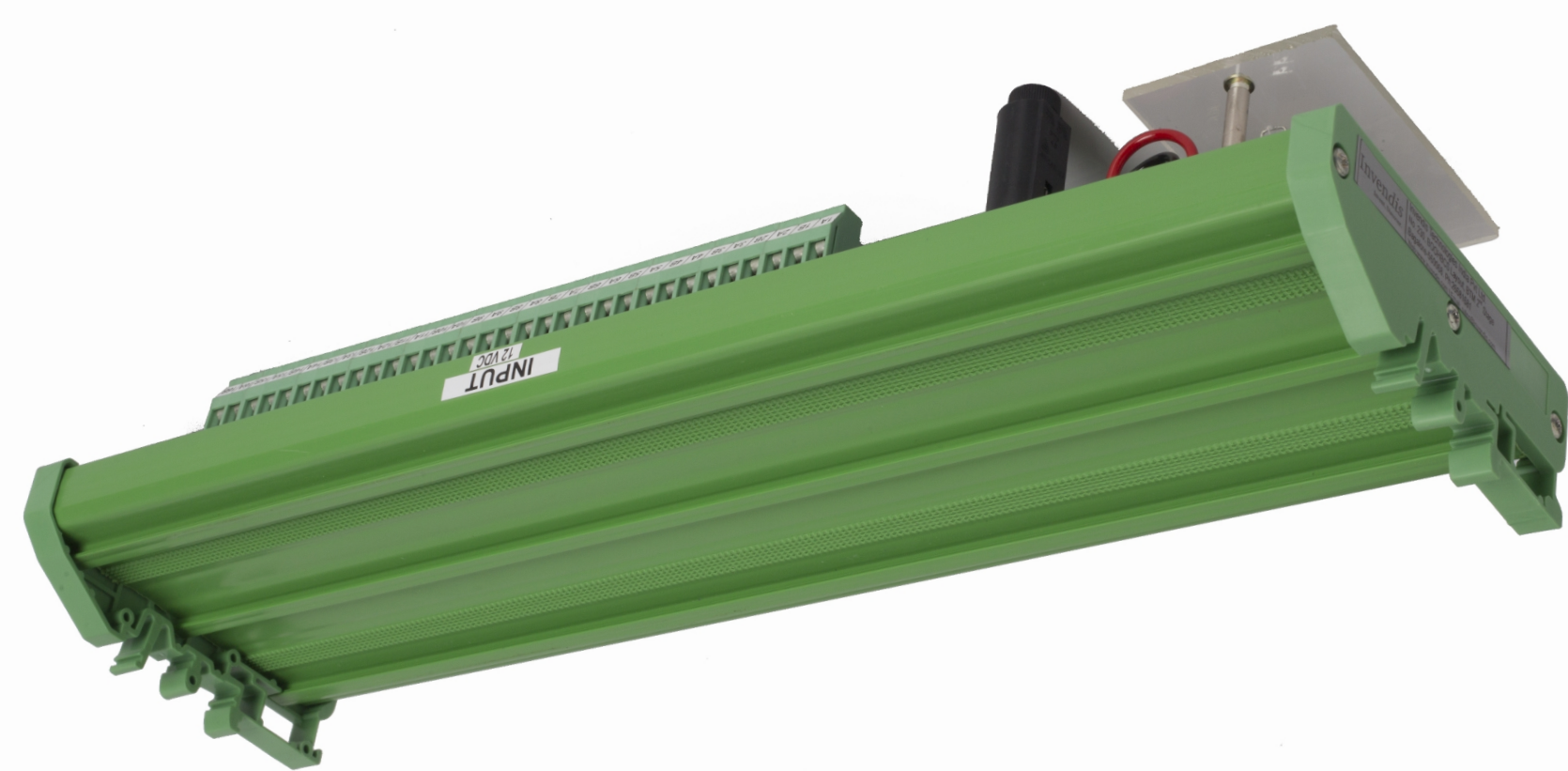
## MAINTENANCE

As CRCA has tendency of corrosion if the metal is exposed to environment, it is highly recommended to have maintenance activity done often as required based on site conditions and below maintenance activity to be carried out. The life of enclosure is a direct measure of timely maintenance carried out on the enclosure

- Painting of scratches or abrasion happened areas using spray paint as and when witnessed.
- The enclosure shall be kept dry and clean all the time.
- Draining of Water and aligning the enclosure if found water logging on any surface of enclosure.
- Any dent or damage to the box of any kind shall be attended immediately and rectified to an extent to avoid corrosion of enclosure.
- The door alignment is maintained ensuring the sealing of door from all angles to ensure water doesn't seep into the enclosure.
- The door is always kept closed expect for the time of maintenance.
- Any foreign metal or element which can cause rusting on the enclosure to be cleared off from the enclosure surface.

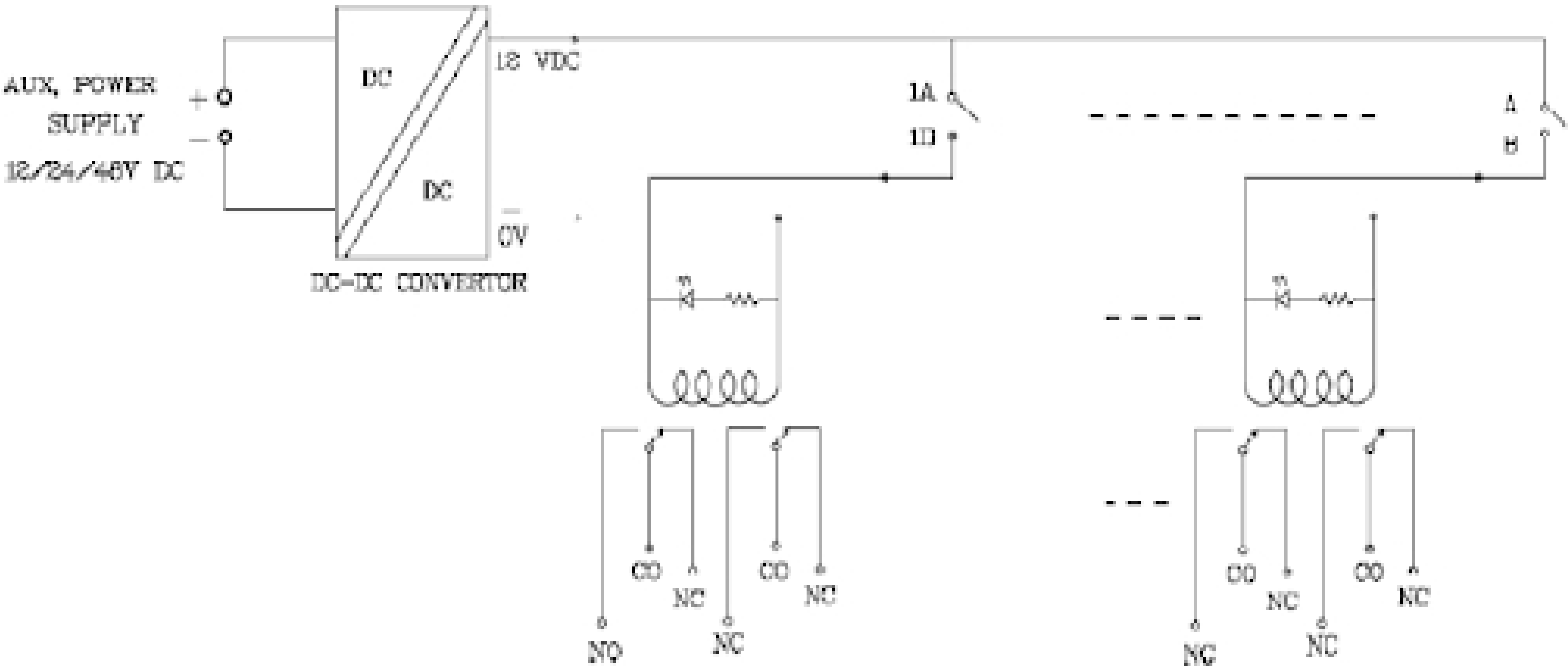
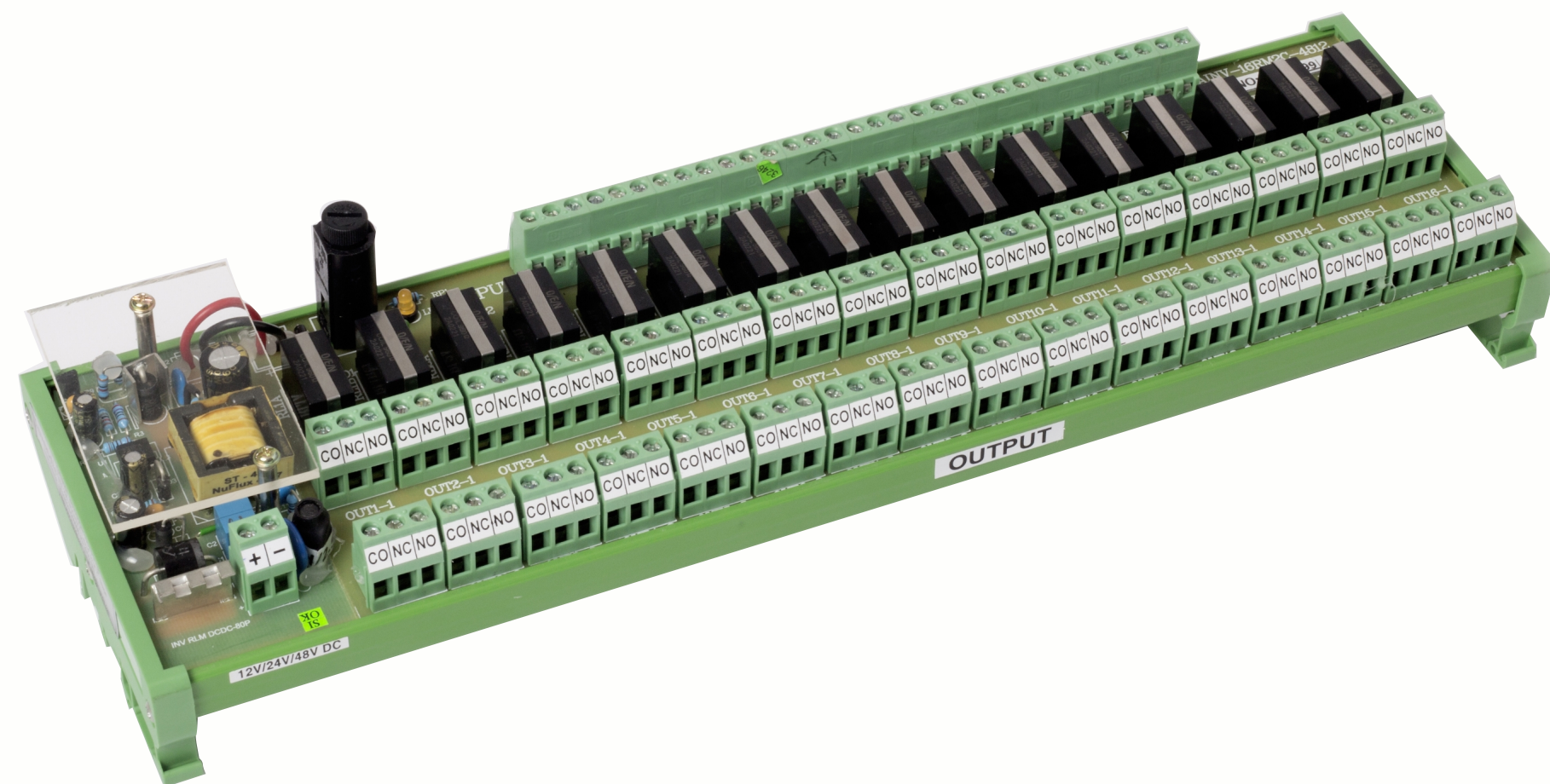






# Alarm Multiplexer

Parameter Description	Value with units
No. of Alarm Input Ports	8
No. of output for each alarm input	2
Power Input	48V -12V DC through onboard DC-DC Converter
Relay	12V, 2A@30VDC, 1A@125V AC
Operate Set Time	6 ms max
Release Time	5 ms max
Operating Temperature	0-55° C
Relative humidity	Max. 90%(Non-condensing)
Housing	Din Rail Mount on "Omega" / "C" channel







# Cables



## 2 CORE CABLE - 0.5SQM

2 Core Cable (Copper Cable)

0.5Sq. Mm, Multi-Strand, Copper cable

Application

iSense Power Cable, Generator Control cable, ACEM Tariff 2 cable, DCEM Power Cable, DCEM CT cable etc.

- iSense Power cable
- Generator Sensing cable
- Generator Control cable
- Grid Control cable
- DC Energy Meter Hall Sensor Power Cable
- Fuel Sensor Cable
- Remote Battery Test -Contactor Control Cable



## 2 CORE SHIELDED CABLE - 0.4SQM

2 Core Shielded Cable(Copper Cable)

0.4Sq.mm, Multi Strand, Copper cable with Milar sheet shield covered on two of the cores with overall covered by an insulation layer

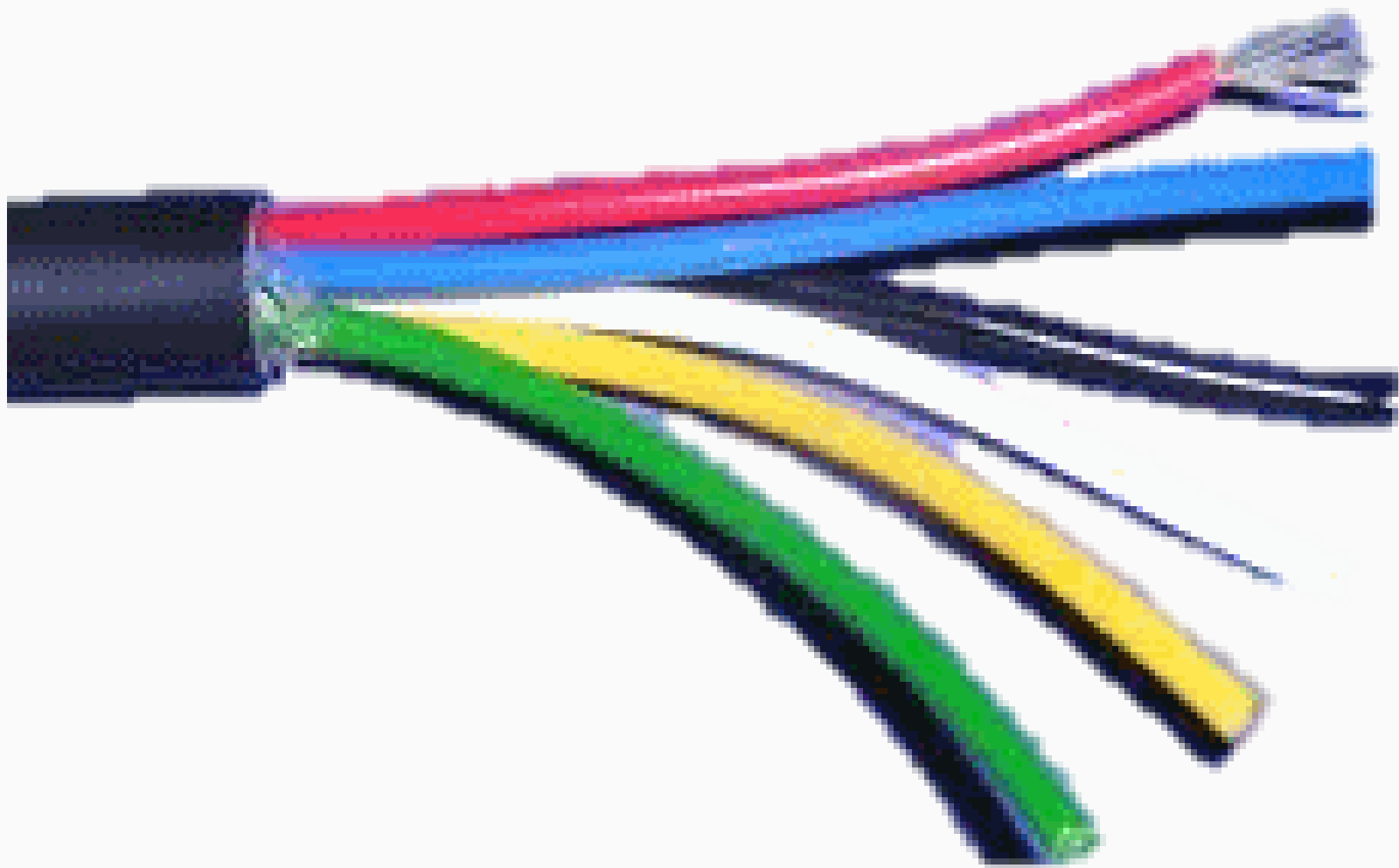
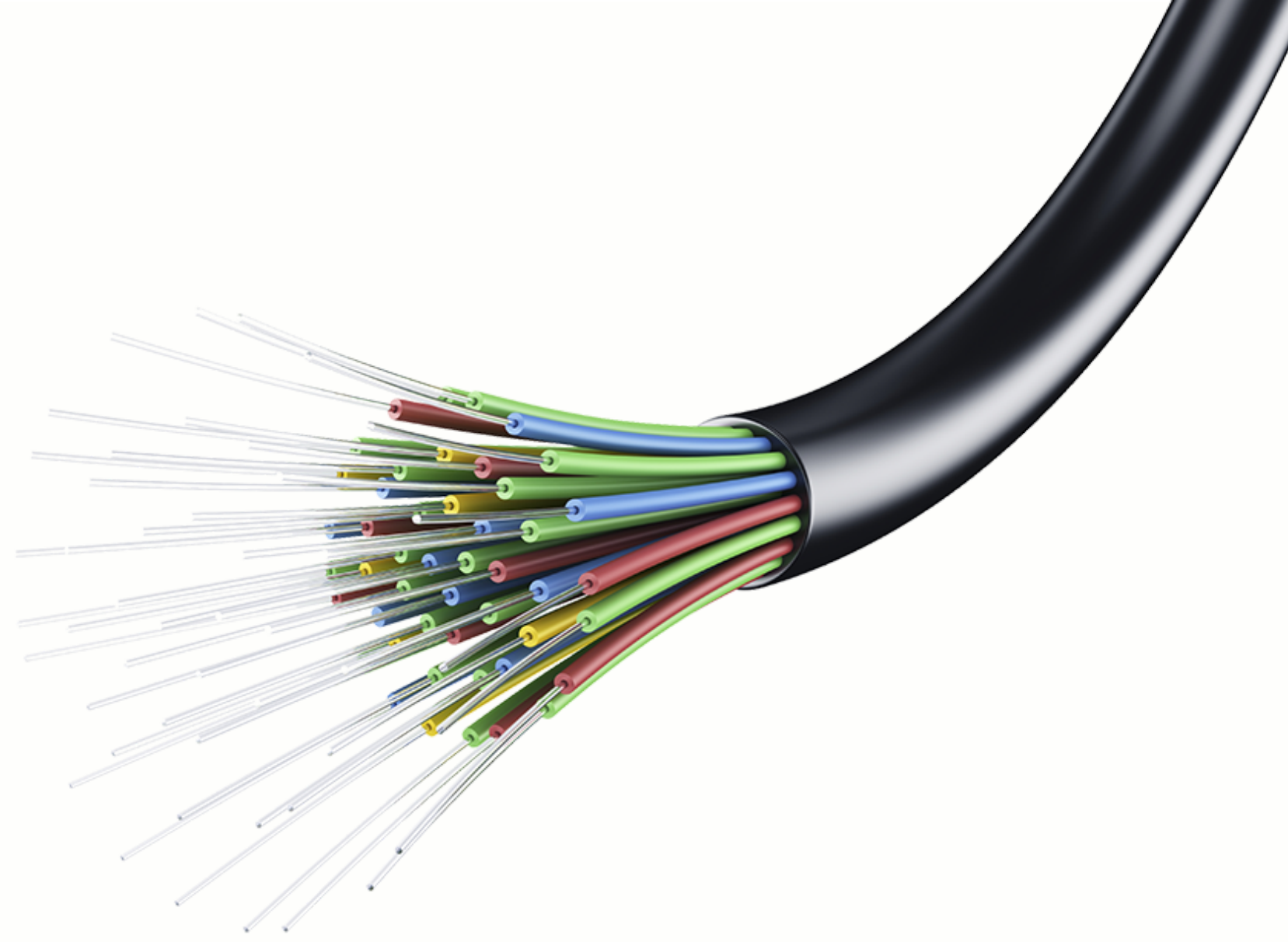
Application

RS485 Communication cable. DG Controller, Power Meter etc.

- Generator Communication Cable
- Rectifier Controller Communication Cable
- DC Energy Meter Hall Sensor Output Cable







6 CORE FLEX CABLE

0.5 Sq. mm, 6 Core Flex Cable, 6 Cores should be of Red, Yellow, Blue, Black, Green and White colors and all these individual cores to be covered by a thick insulation

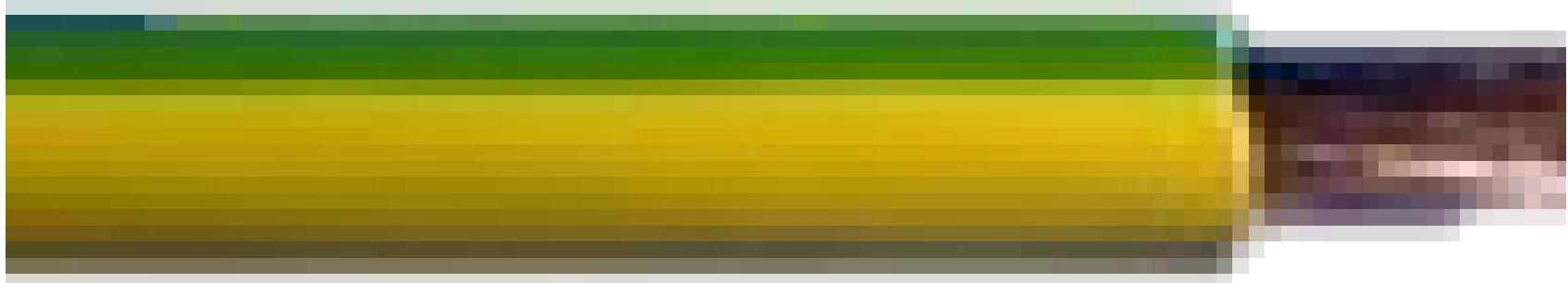
AC Energy meter- Mains Current Sensing Cable



SINGLE CORE CABLE

4 Sq. mm Multi Strand, single core Cable (Copper Cable)  
Application  
Aircon Power Control Cable.

Aircon Control Power Cable



6/10 SQM MULTI STRAND

6/10 Sq. mm Multi Strand Yellow Green Earth Cable  
Earth Cable



MULTI STRANDED - SINGLE CORE CABLE

0.5 Sq. mm, 6 Core Flex Cable, 6 Cores should be of Red, Yellow, Blue, Black, Green and White colors and all these individual cores to be covered by a thick insulation

BMS Cable



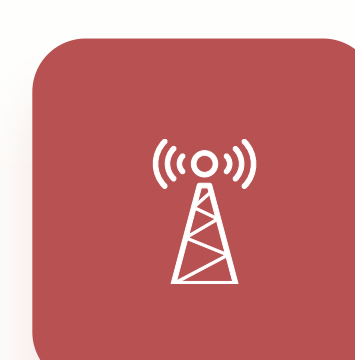


## What we do



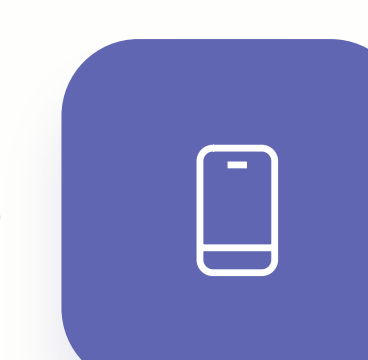
### Innovative products

We manufacture agnostic IoT, M2M & AI hardware & software products. Our hardware products can be installed in all weather conditions whereas our software can be deployed in VM and in all environments.



### Smart & Secure sites

Our products are used to make remote site equipment smart as well as to secure them with advance alarming & notifications transmitted on near real-time basis.



### Empower Field Force

We improve field force productivity with smart mobile applications and empower them with technology to directly access and control site equipment on the go.

#### OUR SOLUTIONS HAVE SERVICED

140,000+

Telecom Towers

250MW+

Solar Portfolio

15+

Global MNO/ Tower CO

22+

Countries

500,000+

Connected Assets

20,000+

Enterprise Users

Invendis designs develops and markets the most widely usable remote monitoring systems and services to global infrastructure companies to enable them to monitor, control, maintain and manage their distributed infrastructure assets efficiently

We at Invendis Technologies India Pvt. Ltd. recognizes that Information Security and assets are the responsibility of each one of us in the organization. We are committed to creating a secure ecosystem that will enable us to secure information against unauthorized changes, tampering, destruction, or loss by implementing the "Information Security Management System".

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