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TechSolutions Labs Pvt. Ltd.
Energizing Quality and Accountability

CCMS

CENTRALISED CONTROL & MONITORING SYSTEM

www.istlabs.in | ravi@istlabs.in | (91) 88809 04999 | (971) 5891 79965

INTRODUCTION

- Switch ON and OFF the lights of a particular switching point and/or net worked switching points from Central Control Station.
- Control lights instantaneously or automatically throughout the year on basis of sunrise and sunset time depending on the geographical location of the switching point.
- GPRS based remote streetlight monitoring system with self- protection from short-circuit.
- Overvoltage protection.
- Overload protection
- Battery backup of 24 hours.

WHY CCMS ?

- Proper illumination gives better uniformity on the roads, leading to increased safety levels on the road.
- Economical utilisation of electricity.
- Ease of installation

Technical Specifications of IOT Group Control Unit for Streetlights Configuration: Unit with communication system and centralized control and monitoring (cluster / group control)

CONTROLLER AND METERING UNIT

- Schedule the timing of lights (pre-programmed based on astronomical clock or on field or through central control)
- ON / OFF Switch (on field or centrally)
- CCMS System to Capture the energy usage and other parameters at pre- determined interval and store data for 30 days
- Connects with a communication device
- Download data in field via mobile app or Mobile Dashboard.
- System protection against surges
- Upgrade firmware on field using a communication device via WIFI/GSM 4G LTE

ENCLOSURE

- Enclosure should be made of fire-retardant FRS/SMC/Steel material and with impact resistance of IK10& IP 65
- The enclosure has a standard lock and key for Operations.

COMMUNICATION MODULE

- Ability to Communicates securely with via cellular networks (GSM / GPRS).
- Secure Cloud server, for data storage and dashboard.
- Ability to give commands from a central level for switching ON/OFF scheduling etc. The software for IOT Group Control Unit UI should have provision for providing dimming in case same is provided in the lights.
- Two-way communicator helps in sending over the air (OTA) updates for Firmware.
- Ability Sends data regarding energy usage, ON/OFF status etc. from controller.
- Ability to remotely upgrade the IOT Group Control Unit firmware from central server.

SOFTWARE

- A web-based & mobile based software package with a detailed information dashboard containing the below.
    - Login Page
    - Summary Page
    - List of CCMS as per the categories defined in the summary page & Linked to it.
    - Panel data of individual CCMS linked to List of CCMS
    - Map view
    - Reports
    - Logout.

- Ability to Shows the status of each controller on the dashboard.
- Inter-operability of all support services related to IOT Group Control Units.
- Ability to schedule and switch ON/OFF controllers remotely through the dashboard
- Reports in form of matrix as well as graphical representation GIS location on Google Maps Interface
- Smart Analytics determines the fault detection at switching point level.
- Ability to generate different reports as and when required.
- Incorporate logics to determine fault detection at switching point level and power thefts and execute a user defined Standard Operating procedure to aid in issue remediation.

HARDWARE

- Controller is also compatible for remote communication using GPRS/GSM modem for operations like controller data downloading, & relay ON-OFF for maintenance purpose. Controller Records events like supply ON-OFF and relay ON-OFF for analysis etc. The controller is type tested in a NABL certified Lab.
- Digital in-built metering CLASS 1.0
- Switch ON and OFF the lights of a particular switching point and/or networked switching points from Central Control Station.
- Control lights instantaneously or automatically throughout the year on basis of Sunrise and sunset time depending on the geographical location of the switching point.
- GPRS based remote streetlight monitoring system with self-protection from short-circuit.
- Over voltage protection.
- Overload protection
- Battery backup of 24 hours.

RECOMMENDED SPECEFICATIONS OF CCMS

- Easy to install.
- Wireless system enables online Data compilation, analysis and reporting.
- Lights can be controlled (ON/OFF) from any central office via computer and mobile.
- Parameters like current & voltage can be analysed on existing system to set the limits of operation. • Energy consumption is also recorded
- Phase wise data is available to enable the load balancing among three phases
- High/Low Voltage Trip and Auto Reset
- GPS locater

CONTROL SWITCH

- Auto / Manual Switch (through APP)
- Auto Overload / Short Circuit Trip
- Auto High/ Low Voltage Trip and Resume in normal condition

ELECTRICAL OPERATION

- Operating Voltage Range 165-265 VAC 50 Hz and With Stands up to 440 VAC 50-60Hz.
- Maximum Contact Load as per selection of the needed load at 230 VAC.
- Switching Endurance Level 1000,000 cycles

SPECIFICATIONS

Single phase (240 Volt P-N, Whole Current, Class 1.0) electronic controller and energy controller compiled as per NABL tested.

Rating of the IOT Group Control units for each phase (including rating of safety equipment's - MCB, Latching Relay, etc.)

Controller is also compatible for remote communication using WIFI and GSM 4G LTE modem for operations like controller data downloading, & Latching relay ON-OFF for maintenance purpose. Controller Records events like supply ON-OFF and relay ON-OFF for analysis etc.

- The controller should be type tested in a NABL certified Lab
- The power supply should be 6KV surge protection certified

The controller should be interfaced with a communication module which would wirelessly transmit data recorded to a dedicated server or on cloud-based architecture. The communication module also commands to schedule and control the cluster of street lights

FEDER PANEL

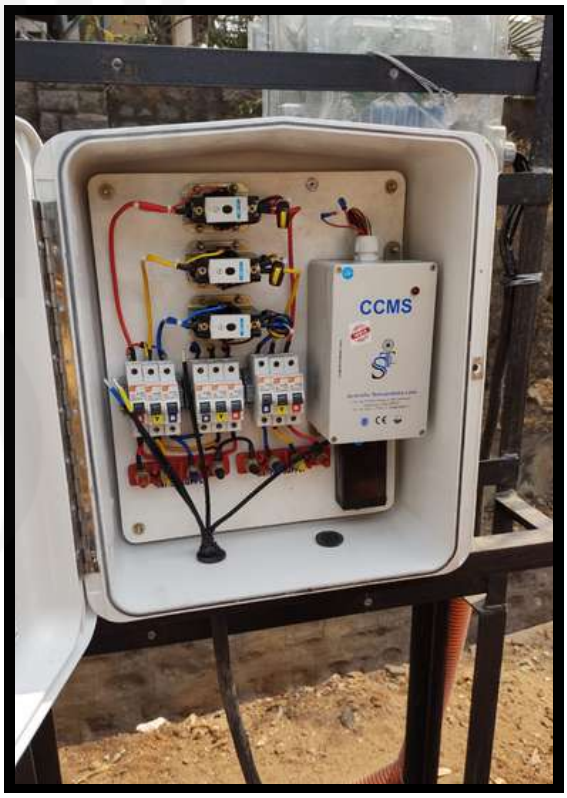
- FR Grade SMC Junction Box with 3mm thickness with stand up to 100°C
- Pole Mounting, Housing should be done using proper Clamps,
- Bolts, Nut and Washers
- Universal Panel Lock with extra lock option
- 2 Nos. of Cable Glands PG 29

PROTECTION

- Short Circuit Protection through MCBs
- Overload Protection through Measurement and control (User Settable Overload Current)
- Delay in Switching ON/OFF at 30 sec (User Settable)
- Automatic High / Low Voltage Protection >280VAC&< 180VAC (User Settable)
- Auto Restore at <270VAC&> 190VAC (User Settable)

MCB

- Protective MCB is for 25/32//50/63A and confirm to IS/IEC Standard



GENERAL SPECIFICATIONS

- Working Voltage: Three Phase 4 Wire
- 165V - 300V Phase to Neutral.
- Operating Temperature: 0 to 60°C Ambient.
- Package : IP65 Enclosure

FEATURES	PARAMETERS	RANGE MIN-MAX	ACCURACY
Line to Neutral Voltage	VR-N,VY-N, VB-N	50V-500V	+/- 1% Max
Line Current	AR, AY,AB	0A-60A	+/- 1% Max
Active Energy (KWH)	R,Y,B & TOTAL	0-99999.9	+/- 1%
Apparent Energy(KVAH)	R,Y,B & TOTAL	0-99999.9	+/- 1%
Reactive Energy (KVARH)	R,Y,B & TOTAL	0-99999.9	+/- 1%
Power Factor	R,Y,B & TOTAL	0-1	+/- 1%
Frequency	R,Y,B	45Hz-65Hz	+/- 1%

WEB BASED APPLICATION FOR REMOTE MONITORING AND CONFIGURATION

- CCMS has a web-server to receive and record all data from the streetlight controllers

- Reports such as energy saving report, lamp failure report, actual hours of operation, uptime (%), etc. can be generated on a daily basis from the data/readings received from the CCMS units.

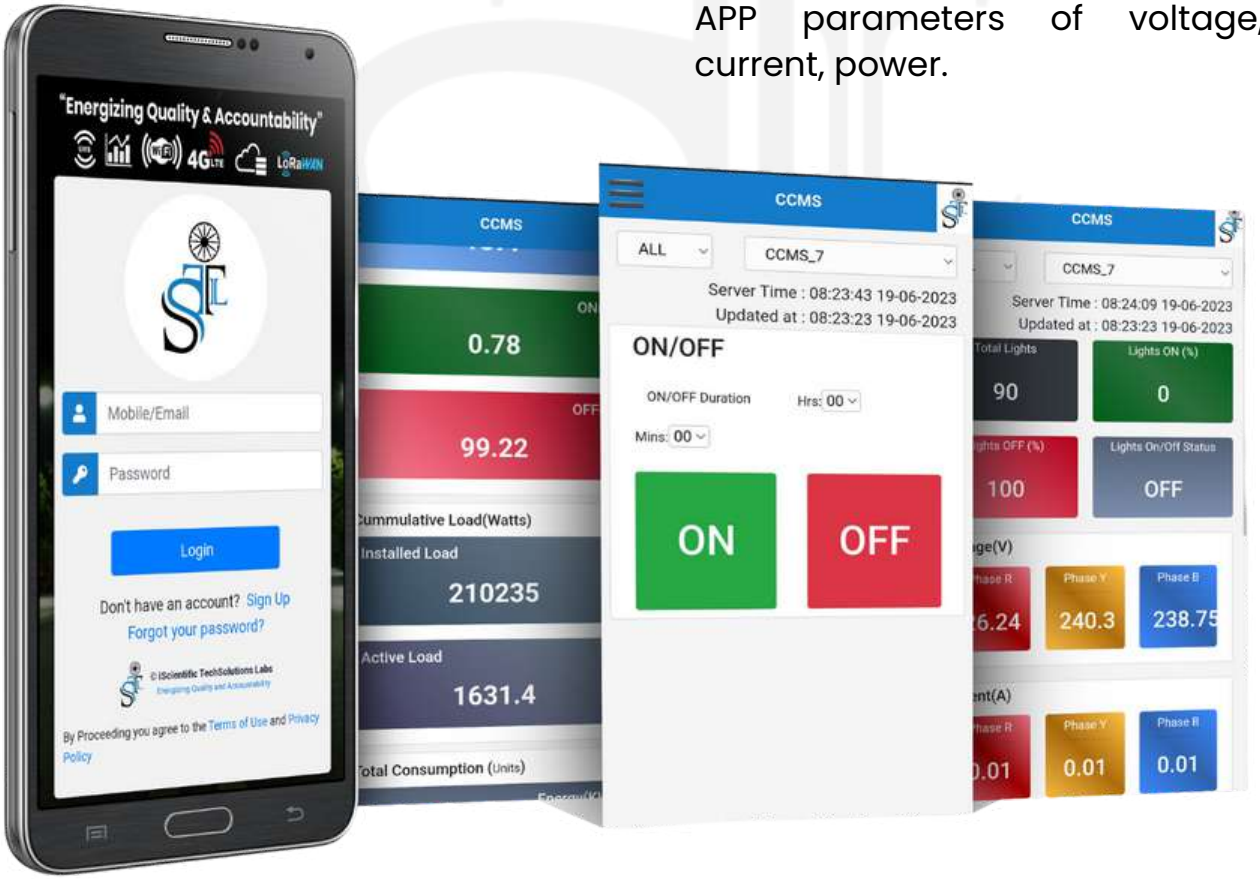
- Registers all fault conditions like excess voltage/current drawn, lamps failure, no-power supply, etc. through the instantaneous alert, messages sent by the CCMS unit.
- Total Load: Power consumption of all the street lights connected to switch points based on selection criteria like State/District/City.It is the real time total
- Total Meter Readings: It shows the accumulated power consumption of all the switch points.

LIVE METER READING

- Voltage each phase
- Current each phase
- PF each phase Metering
- KWH cumulative
- Metering KVAH

APP FOR CCMS

- There is android app for CCMS for manual ON/OFF instantly when your near to device the device has its PF each phase Metering own WIFI network.
- Procedure for communicating with app to device.
- Turn ON your WIFI in mobile you find a network labeled on CCMS box connect to it with login credentials.
- Open the CCMS app and you find a “CONNECT/ DISCONNECT” click on connect. You can see the values getting updated to it the APP parameters of voltage, current, power.



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PRODUCT IMAGES

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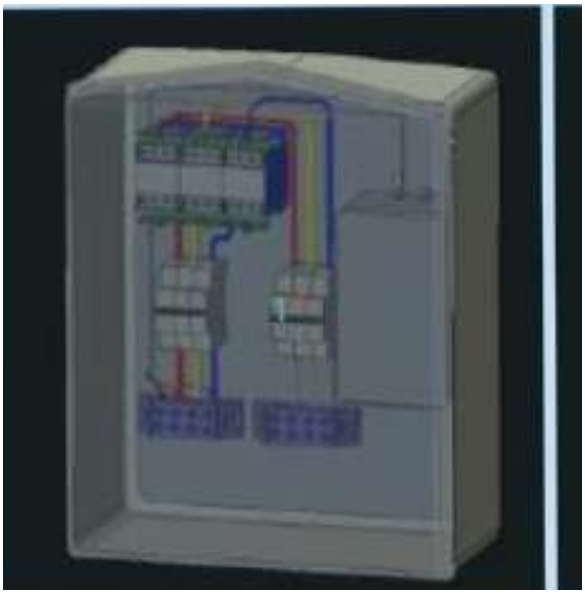

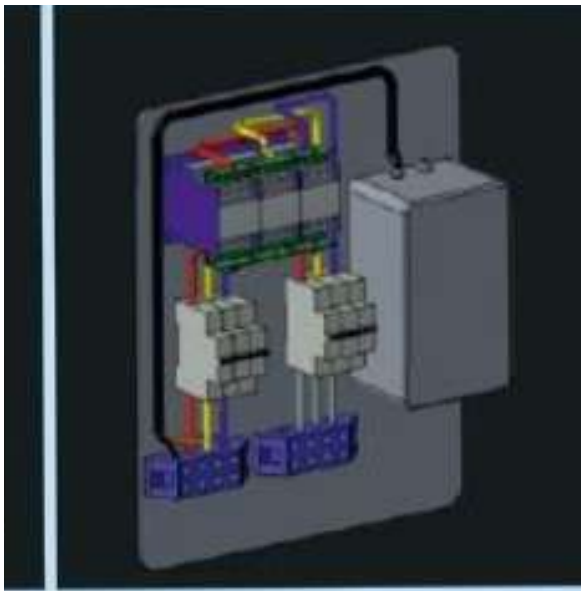

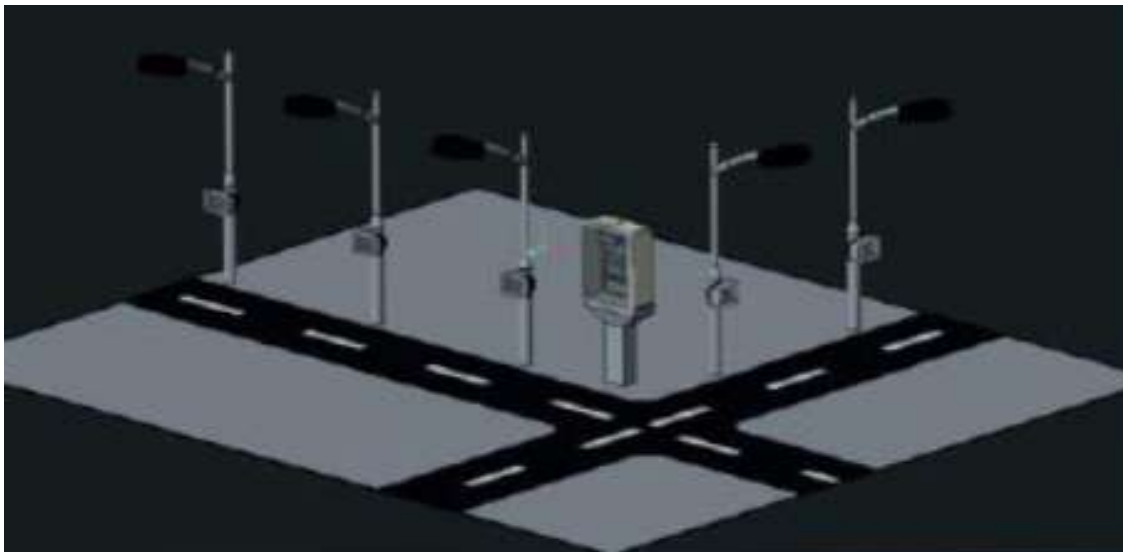


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AUTOMATIC STREET LIGHT
CONTROLLER
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REMOTE TEMINAL UNIT
POWER
ON/OFF
HAVELLS


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CCMS
INPUT SUPPLY
OUTPUT SUPPLY


REMOTE TEMINAL UNIT


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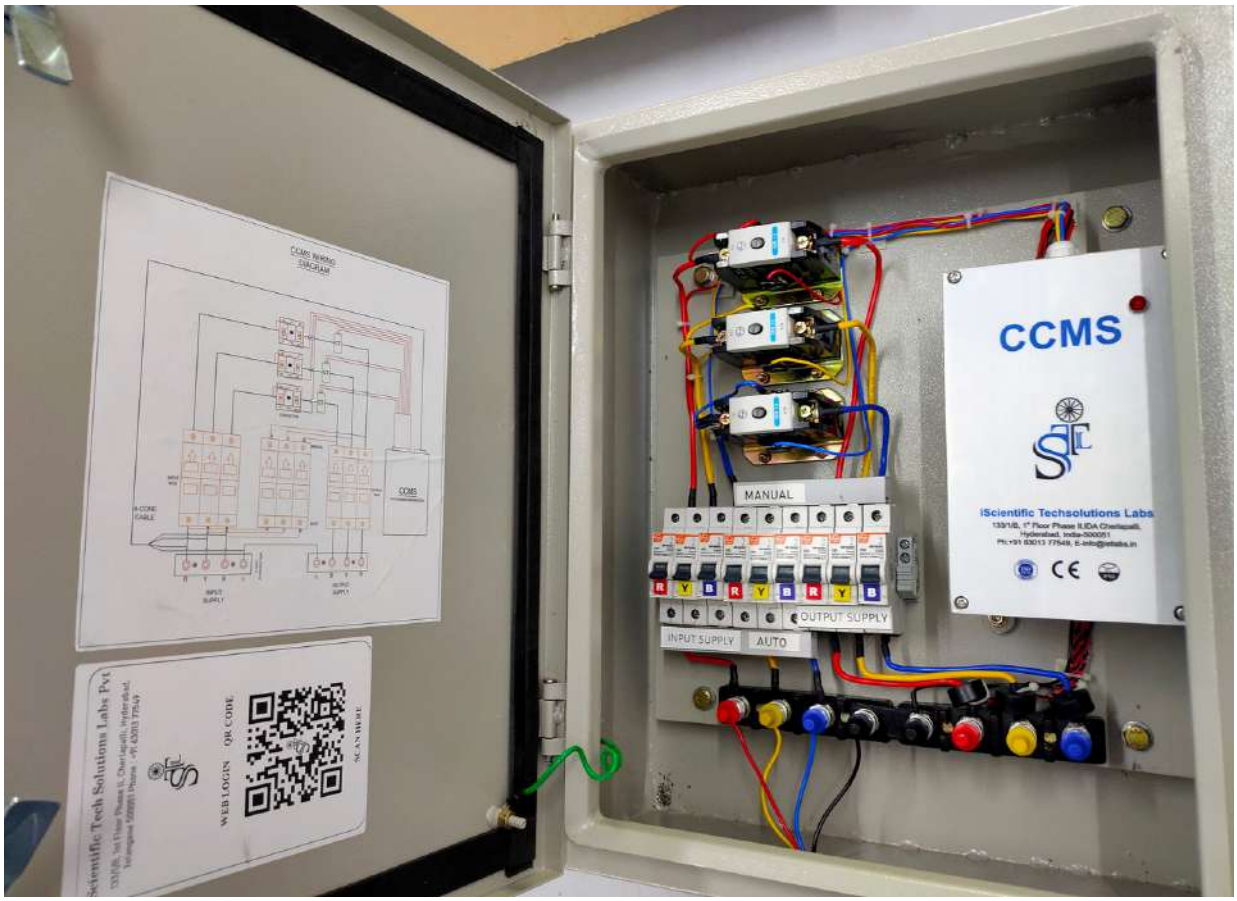
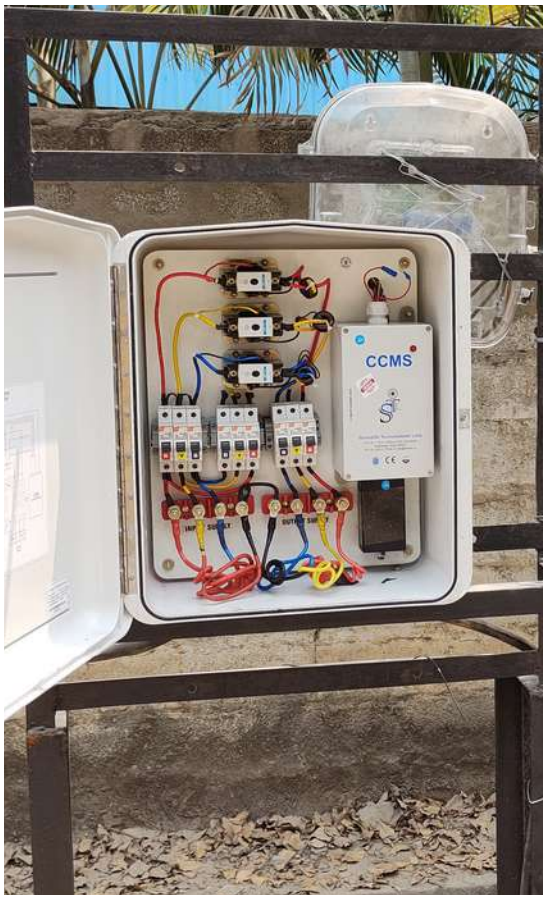

CCMS
iScientific Techsolutions Labs
MANUAL
AUTO
INPUT SUPPLY
OUTPUT SUPPLY
WEB LOGIN
QR CODE
SCAN HERE


CCMS


iScientificTechsolutionsLabsPvt.Ltd
Cherlapally,Hyderabad-500051
iSTL-KNR-CCMS
240V/05-60A/50Hz
CL-0.5/27°c
PLUG-IN; WAN/NAN
1600 Imp/kWh
Principal Unit : kWh
WiFi
MM/YYYY: 03/2023
iScientific TechSolutions Labs Pvt Ltd
Device ID:SPMS_47
WAN Comm.Cellular-4G
S.NO:CCMS-02

CCMS

Technical Specification

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TECHNICAL SPECIFICATIONS

S NO.	---	---
1	Lamp type	LED/SODIUM VAPOUR LAMP
2	Connection type	Single Phase (2 wire) / Three Phase (4 wire)
3	Maximum load handling capacity	8 kVA / Phase
4	Operation mode	ON / OFF
5	Communication module	GPRS 2G / 4G
6	Firmware update over the time	Yes
7	Precision real time clock (RTC)	Yes
8	Battery back-up for communication	Optional on request
9	Protective features	Short Circuit | Over / Under Voltage | Over Load
10	Operating voltage range	90 Vac - 415 Vac [Per Phase L-N]
11	Operating frequency	50 Hz
12	Isolator switch	32 A - 63 A Per Phase Isolator / Load Break Switch
13	Metering	NABL Certified Inbuilt energy meter with class 1.0 accuracy
14	Surge protection	CAT B - (6 kV / 3 kA) [Internal Surge Protection for Electronics]
15	Lamp protection voltage level	@ 160Vac - 280Vac Per Phase L-N
16	Load control component	Latch relay/Contactor
17	Load control capacity	Up to 32 A [1 Phase] / up to 63 A [3 Phase]
18	Output protection	up to 63A MCB per phase with 10kA short circuit rating
19	Rectification for nuisance MCB trips	Automatic Rectification
20	Door Temper Sensing	Yes
21	Weight	Varies based on Requirement
22	Enclosure	IP55/IP65 & IK10 CRCA MS enclosure
23	Mounting Type	Pole Mounting | Surface Mounting with Stand
24	Operating temperature	-10 to +55 degree centigrade
25	Internal storage	Last 7 days history & 1 year energy consumption report
26	Parameters measured	Voltage, Current, Active power, Power factor, Energy consumption, Lamp burning hours
27	Schedule configuration	Predefined schedule / Astronomical clock
23	Functionality mode	Auto / Manual
24	Threshold configuration	[Over/Under Voltage] - [Over/Under Current]
25	Configurable parameters	Alarm / Protection Thresholds and Device settings *
26	Faults / Alarms	Over / Under Voltage | Over / Under Current | Lamp Failure | Latch Failure Power Failure
27	Approvals	NABL Type Tested [Functional Test | EMI / EMC Test | Climate

Electrical Features as per Technical Specifications

S.No	Items	Specified Operating Range	Compliance
1	Connection type	System for Single Phase Switching	Complied
2	Voltage	240 volts P-N (+20% to -40% Vref) on each phase	Complied
3	Current	Based on the above mentioned CCMS ratings (Withstands 120% Imax), Starting current - 0.2%lb	Complied
4	Frequency	50Hz ±5% (47.5 to 52.5)Hz	Complied
5	Power Factor	Zero(lag)-Unity-Zero(Lead)	Complied
6	Accuracy	1	Complied
7	Withstand Voltage	440V up-to 5 minutes between Phase – Phase	Complied
8	Rating	Rating of the CCMS units for each phase (including rating of safety equipment's - MCB, Relay, etc.) should be Quantity of CCMS units in a GP - 32 Amps.	Complied

Functional Features:-

S.No	Function/Feature	Details	Compliance
		Input / Output	
1	Data	The CCMS unit Should be able to capture (record) and provide following parameters at variable time-intervals	Complied
		• Cumulative Active Energy	
		• Average Power Factor	
		• Power on hours	
		• Monthly Load on/off	
		Controller has the provision to store last 30 days data at one hour	
		interval. All these data are accessible for reading, recording by downloading through HHT (Hand Held Unit) through optical port or USB/Bluetooth given on controller front. For HHT, a smart	Complied
		phone-based solution for collecting/accessing data is also acceptable.	

2	RTC	The controller has a built-in calendar & clock, having an accuracy of +/- 1 minute per year or better, however meter may confirm to accuracy as per IS 13779. A separate internal Lithium battery back-up is provided for continuous operation of controller RTC for at least two years under controller un-powered conditions.	Complied
3	Tampers	Following tampers are logged with occurrence and restoration in FIFO manner: · Low Load · Overload · Low Power Factor · Under voltage · Over voltage · Magnet	Complied
4	Astronomical Calendar for switching operation	On the basis of latitude and longitude of the installation place controller itself decides switch on –off timings.	Complied
5	Maintenance Mode of switching	In case of any emergency or for maintenance purpose, switching can be done using keypad -before operation password has to be punched using keypad. For maintenance, the interface for data access should be available.	Complied
6	Switch Weld & Switch Fail events	When Switch "on" operation failed condition is logged as switch fail event and when Switch "off" operation fails condition is logged as switch weld event.	Complied
7	Switch on –off operation events	Switching events with the following reasons will be logged: 1 Timed operation- As per astronomical calendar 2 Unscheduled operation – In maintenance mode	Complied

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		3 Event based like on over current, overload switching Last 20 events will be logged in controller.	
8	Power on-off events	Last 20 power on-off events with power off duration will be logged.	Complied
9	Separate Energy Consumption registration for unscheduled	Last 20 events of maintenance mode with snap of energy register and date/time is logged in meter.	Complied
	Switch on period	In BCS, with these events, duration of these events and energy consumption during that period is also shown.	
10	Switching on Overload /Over current	Controller will continue monitor over current & overload condition against the threshold defined in controller and if condition persist for predefined time period (default 5 minutes) then disconnection of switch will be occurred.	Complied
		Controller will reconnect the switch after some predefined time interval (default 10 minutes) and will check again for the event condition, if condition persist again, switch will be disconnected again else will run normally.	Complied
		In case of disconnection, controller will try for defined trial count (default 5 count) and after that will disconnect the switch for long defined sleep period (default 30 minutes).	Complied
		After sleep period switch reconnect, activity will restart in same described manner. Every switching operation will be logged in meter.	Complied
11	LED	Flashing RED LED is provided on controller front.	Complied
12	Communication	Controller stored data can be downloaded through its optical port or USB using HHT (Hand held Unit) or directly by Laptop using Base computer software.	Complied
		Controller should be able to interface with the communication module through a serial port or through a smart device.	Complied

13	Programmable Scheduling	The schedule for light operations can be programmed on field or during installation overriding the astro-clock.	Complied
14	Operating temperature	0^0 C to 70^0 C	Complied
15	Storage temperature	-20^0 C to 80^0 C	Complied
16	Humidity	95% non-condensing	Complied

List of materials included in the streetlight controller for configuration – 1 and configuration-2and Configuration -3. Material per unit so as to ensure the entire specifications as given in the tender document are met.

1	IP 65 or better enclosure box with min. IK-10 impact resistance	Complied
2	Miniature Circuit Breaker (MCB)	Data Sheet Attached
3	Class 1.0 accuracy Energy Meter with IS-13779	NABL Certified/Certificate Attached
4	Switched Mode Power Supply (SMPS)	5/12-1A SMPS
5	Digital/ Mechanical Timer (during bypass mode)	Digital Timer
6	Battery of required Ah (coin cell (rtc)-220 mAh or equivalent	YES
7	GSM/GPRS Module	Included In PCB
8	Microcontroller Module	Included in PCB
9	Contactor/ Latching Relay	Contactor/ Latching Relay
10	Door Tamper Switch	Provided
11	Access through Hand held unit device (HHT) - 2 nos. per District or a smart device.	Android APP

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DASHBOARD

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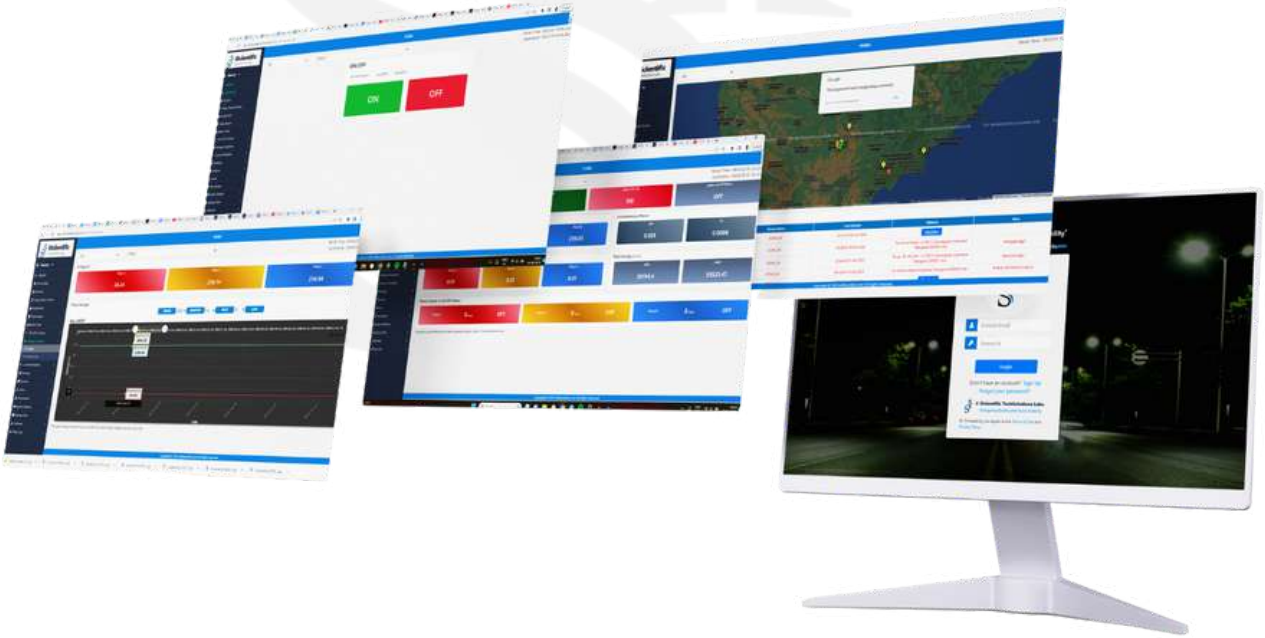
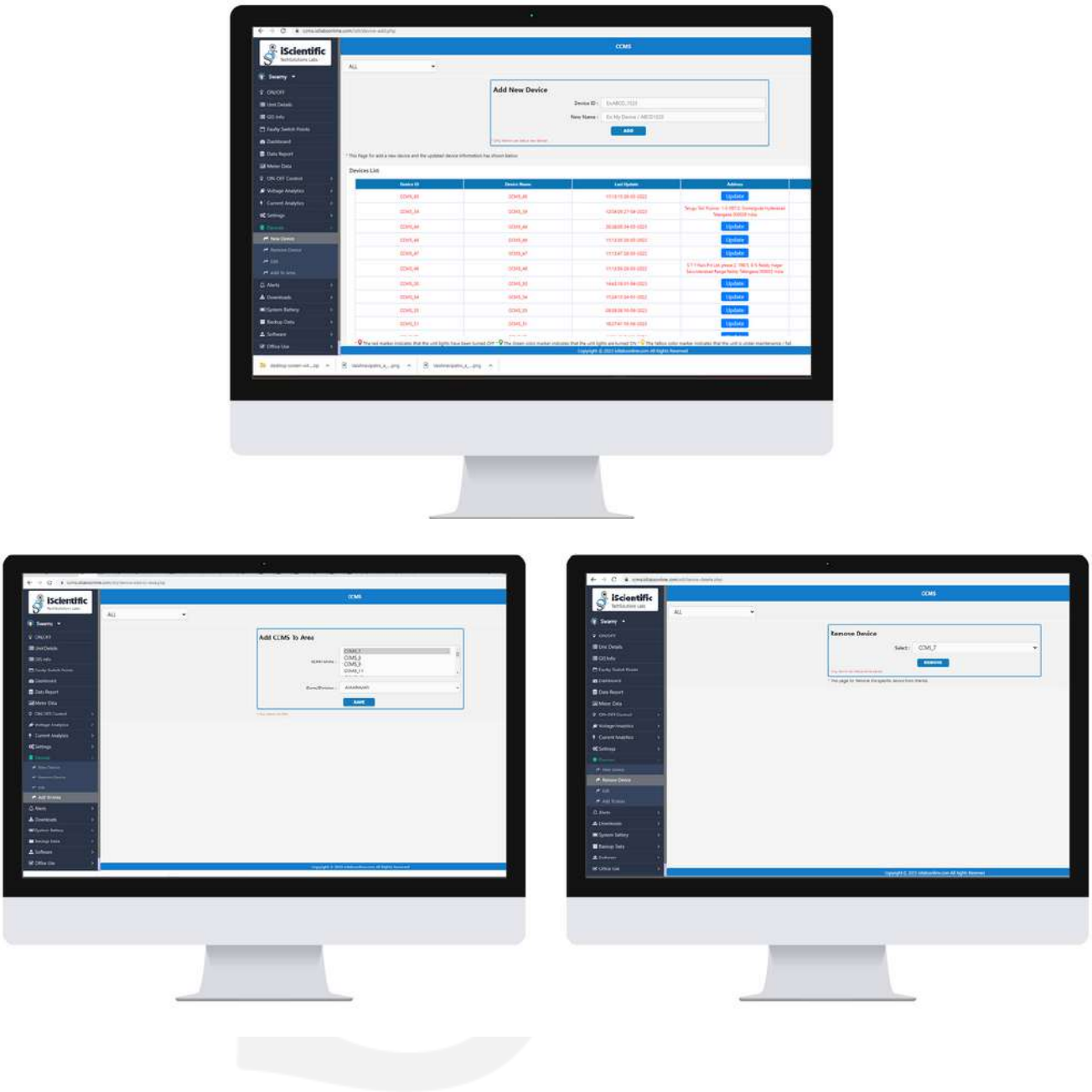
LOGIN AND PROGRAMMABLE TELEGRAM ALERTS/NOTIFICATIONS

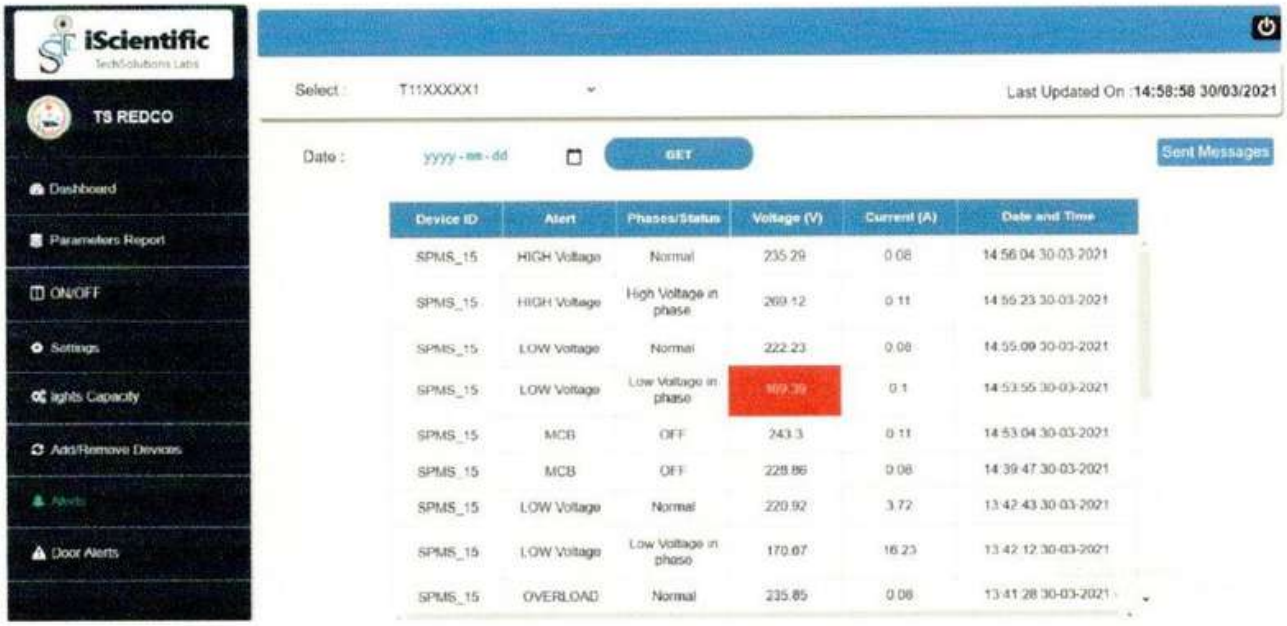


ADD/REMOVE DEVICE:



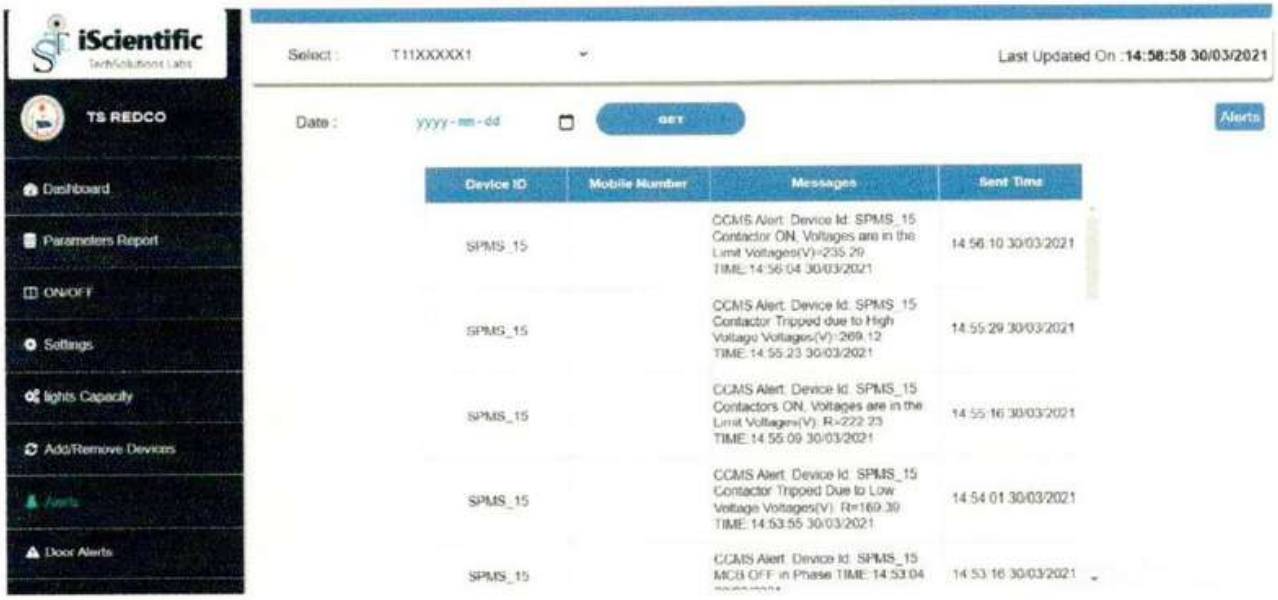
This page to add a new device, removes the device, change the device name and update the mobile number for alerts

ALERTS



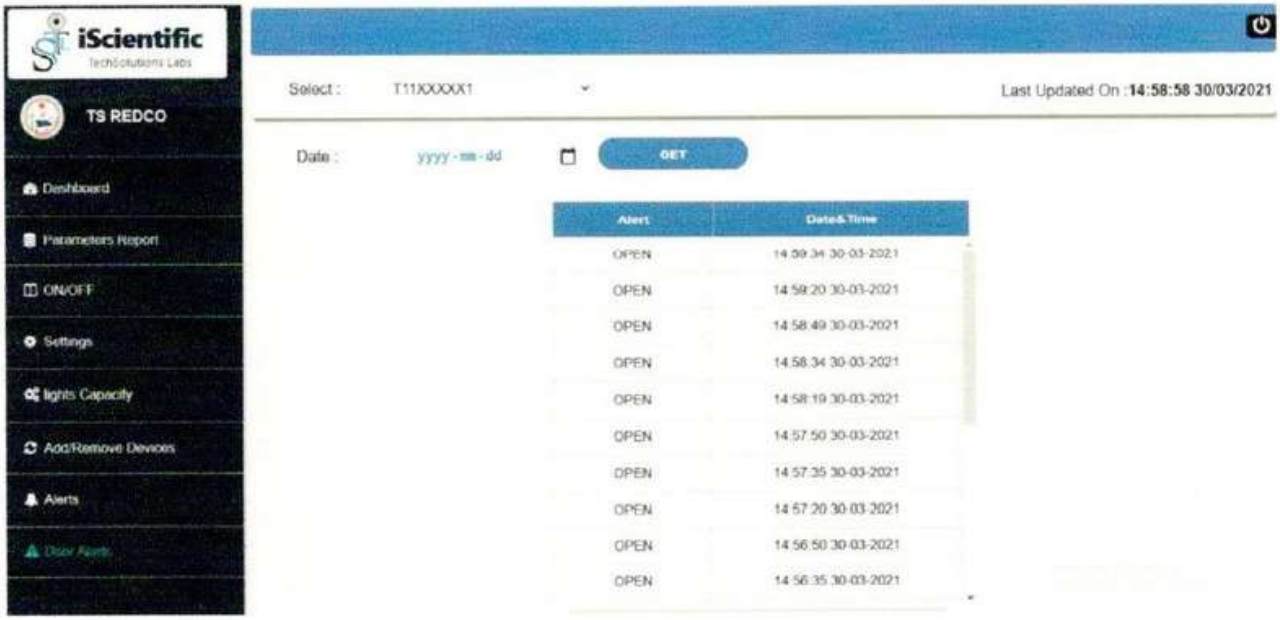
This page displays a history of alerts such a high/low voltage, overload and MCB on/off

SENT MESSAGE HISTORY



It displays the history of the message sent

DOOR ALERT



This page display the door open and close events

COMPLAINTS PAGE

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GRIEVANCE REDRESSAL

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User calls to Toll Free Number
1800-xxx-xxxx

Interactive Voice Response Service (IVRS) starts with mentioning it as a complaint redressal service and asks user to select language of choice by pressing predefined keys for language selection from options given.

LAYER 1

Language Selection

Press 1 for Telugu
Press 2 for English
Press 3 for Hindi

After user selects language of their choice from options given, it asks user to enter device ID for which complaint needs to be registered.

Device ID will be self-understandable code to understand district where device is installed.

The first digit will be cluster ID, the second digit will be district numbering according to alphabetical order. The next five digits will be serial number on device box. In this way, device ID will be 7-digit code.

LAYER 2

Enter Device ID and press **'#"** after it

Device ID will be composed of :

1st Digit will be **Cluster ID**
2nd digit will be **District Number** according to alphabetical order
Next 5 digits will be **Serial Number on Device ID**

After user enters Device-ID and presses '#', the inputs are sent to servers for verification of the device ID.

If the entered device ID is found wrong, user is asked to enter it again. This process is repeated only once.

If the entered device ID is verified true from server, user is asked to select one of the pre-feed issues they are facing or record the complaint in their voice, which will be stored in the server.

LAYER 3

Select issue you are facing with device or **press 4** to record complaint in your voice

Press 1 if device is **"Switched off"**
Press 2 if device is **"Missing"**
Press 3 if device is **"Damaged"**
Press 4 to **" Record a complaint"**

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CCMS ENERGY CONTROLLER

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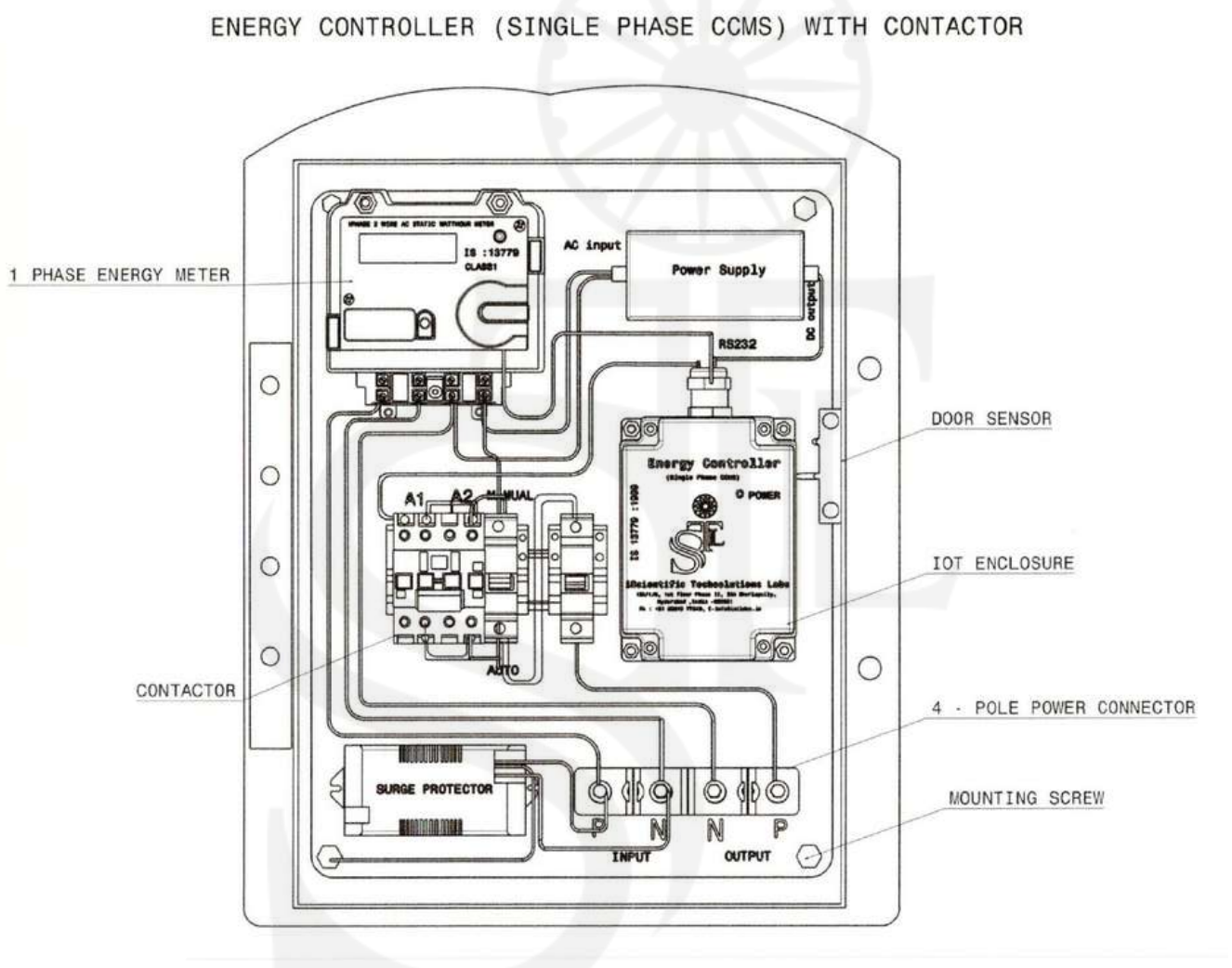
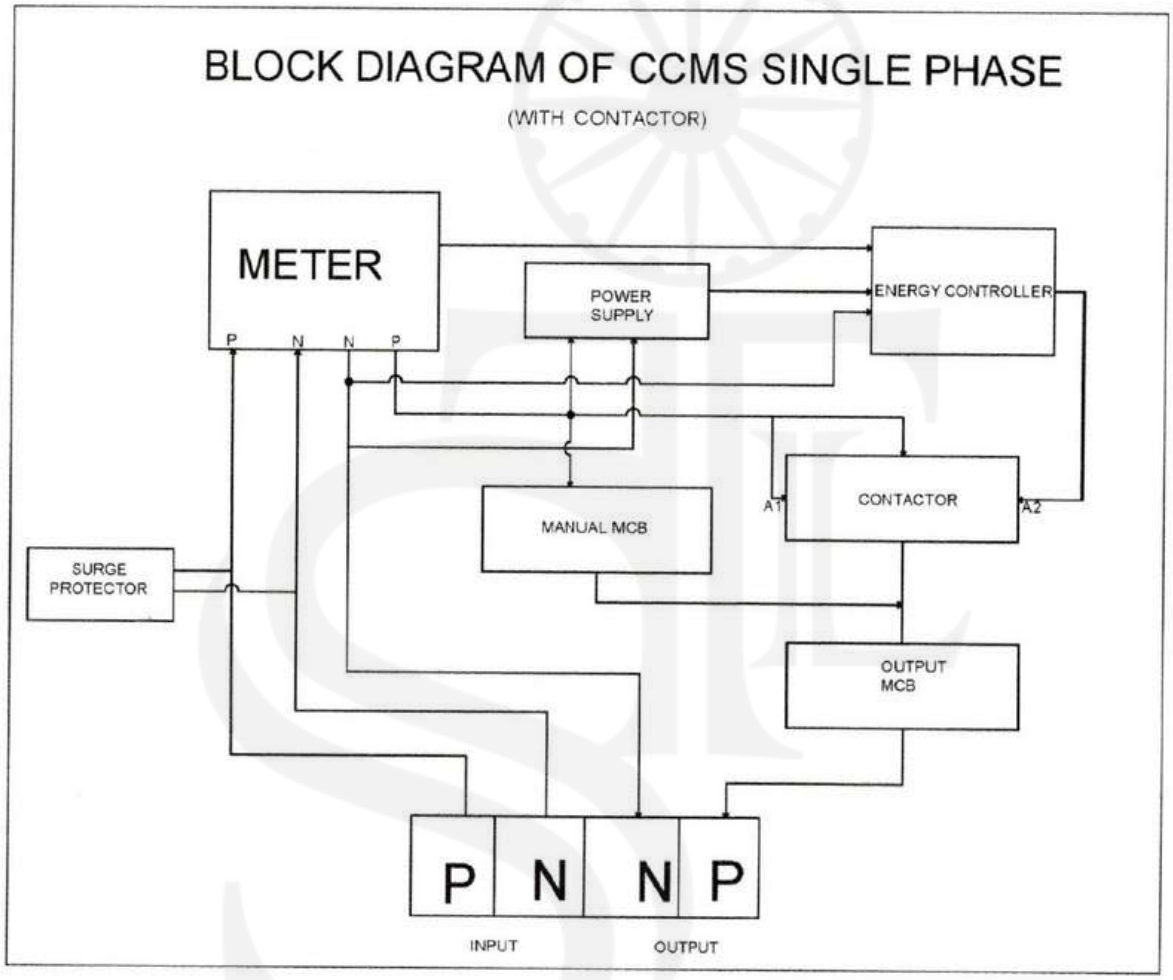
CCMS ENEGRY CONTROLLER

Single Phase



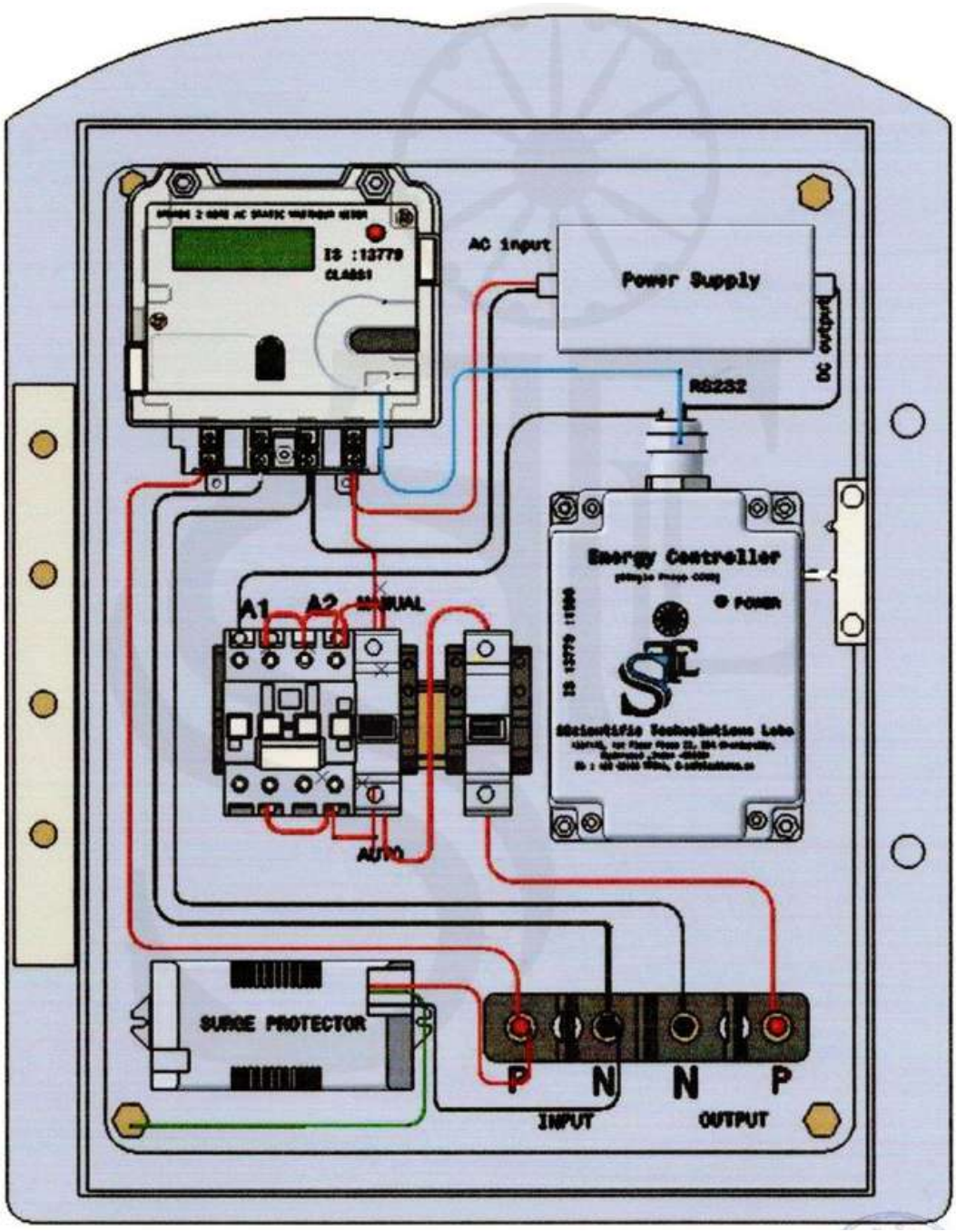
CCMS SINGLE PHASE

Block Diagram



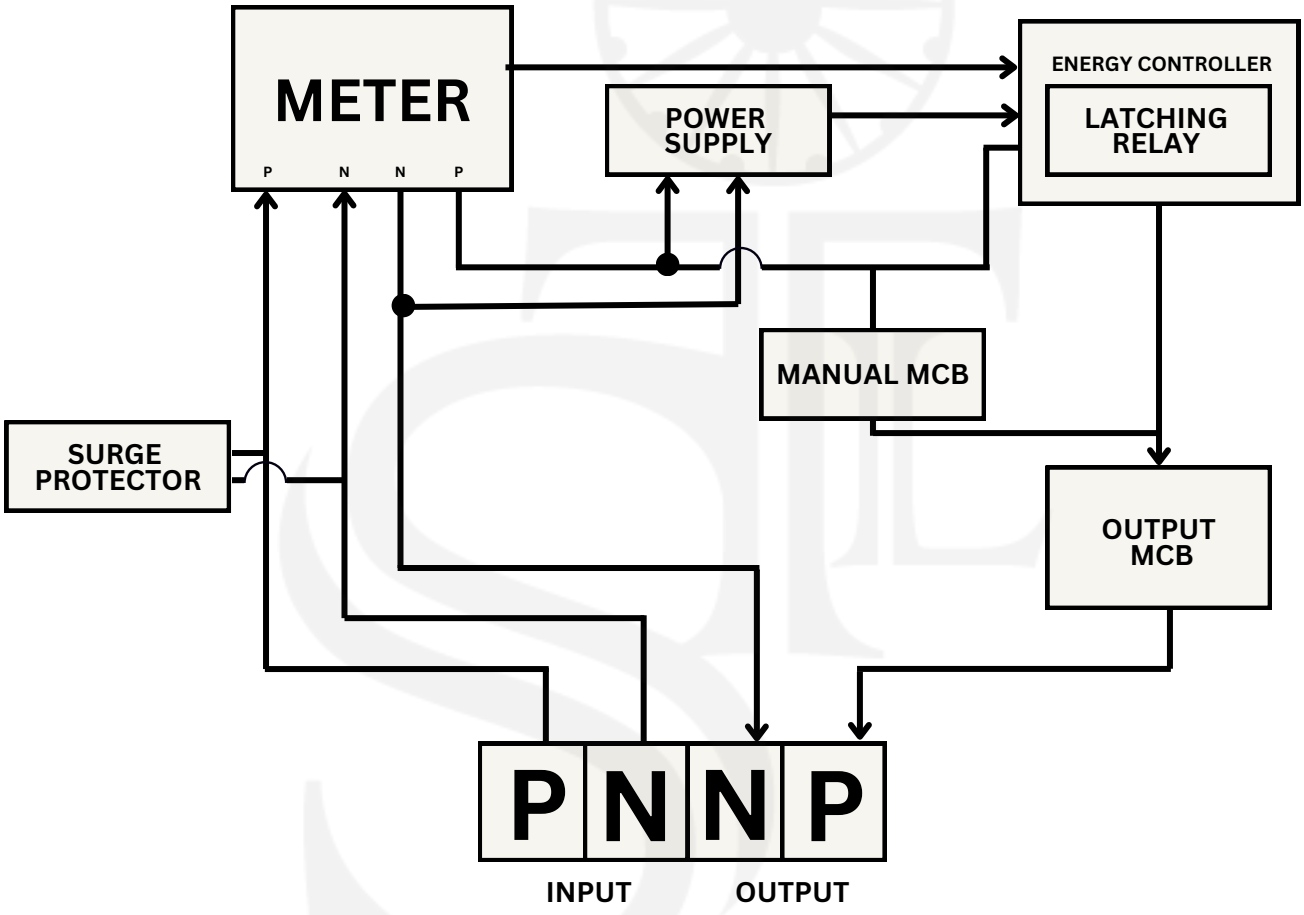
ENEGRY CONTROLLER

Diagram



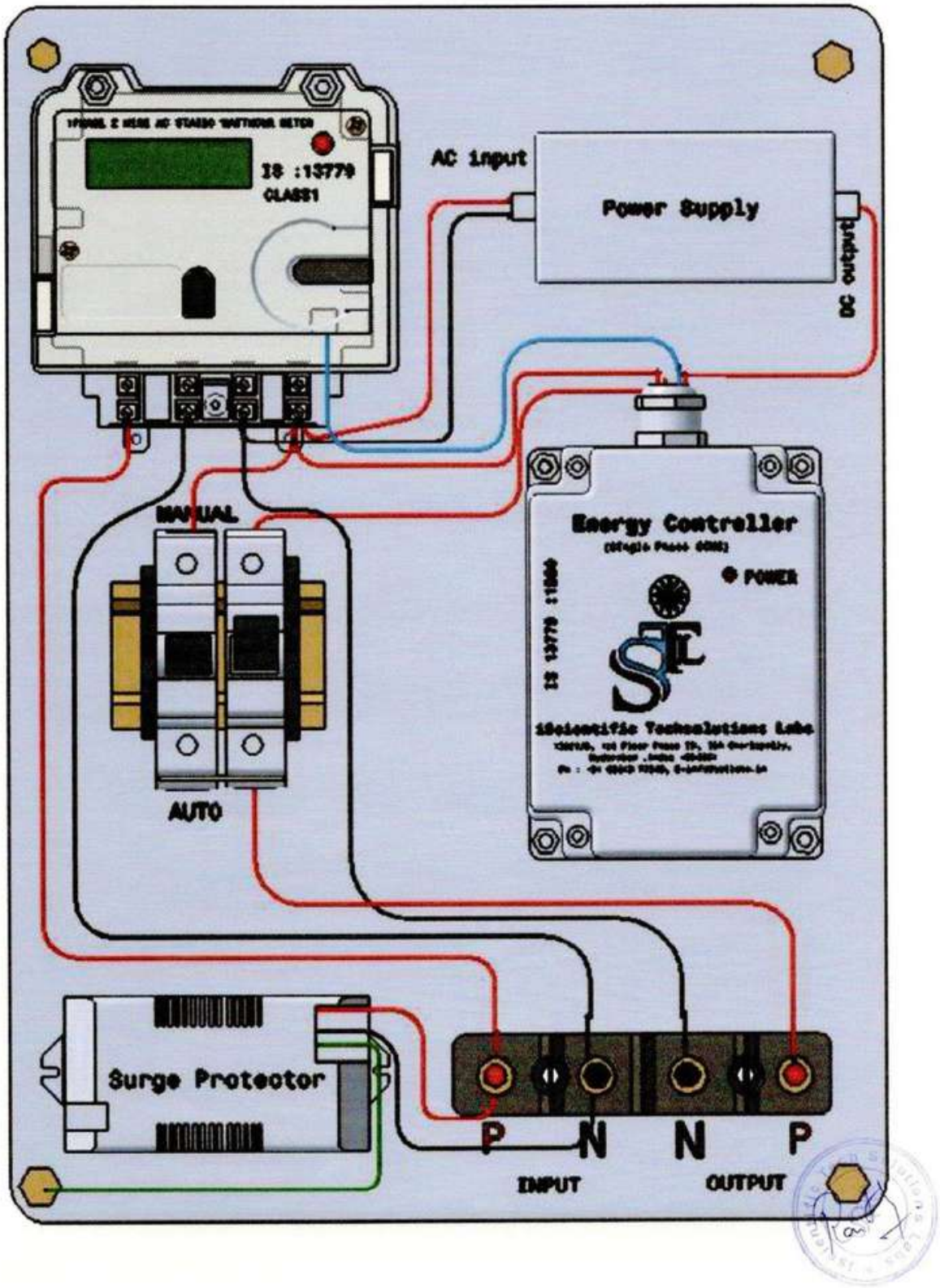
CCMS SINGLE PHASE
(WITH LATCHING RELAY)

Block Diagram



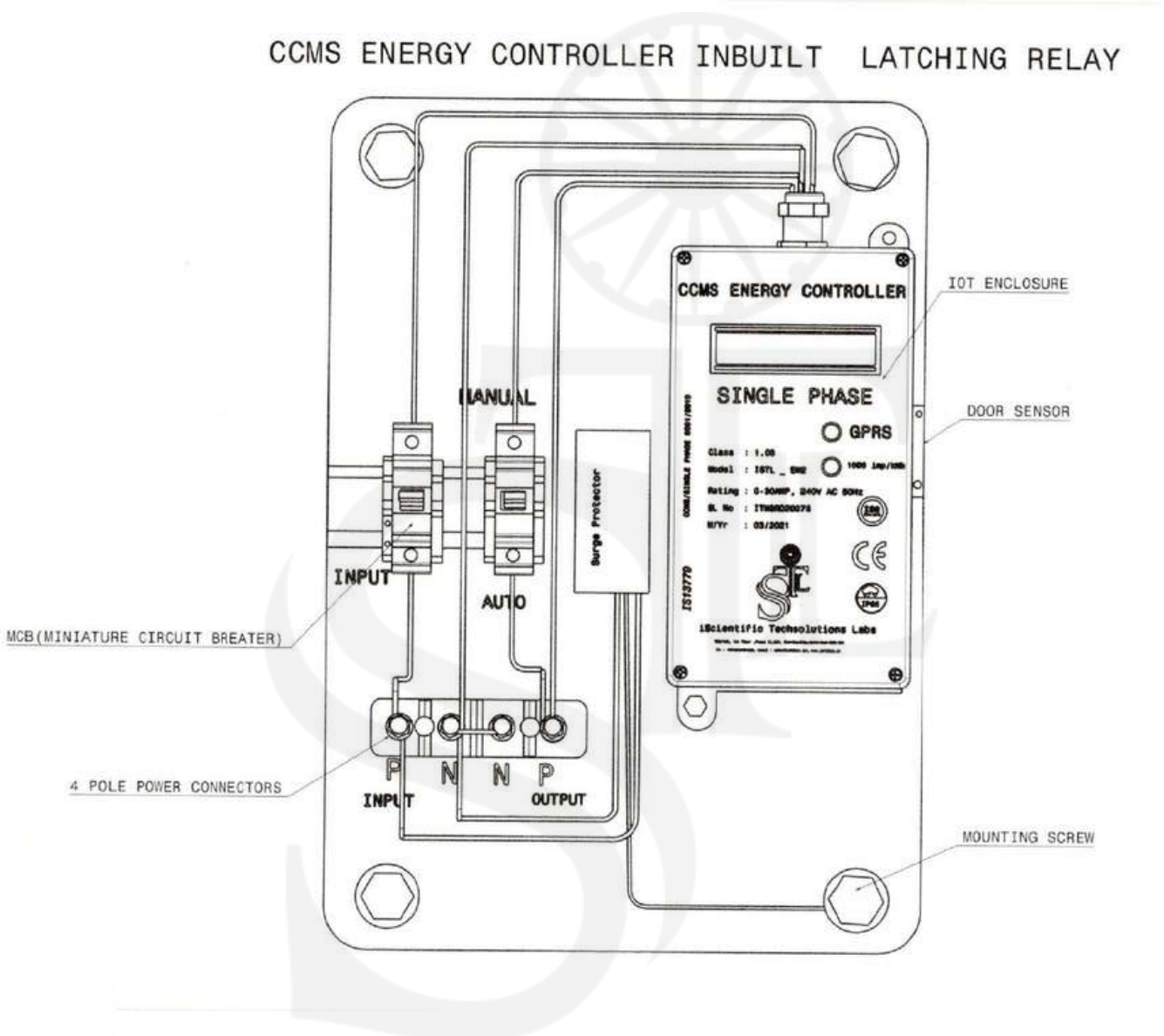
CCMS ENEGRY CONTROLLER

Diagram



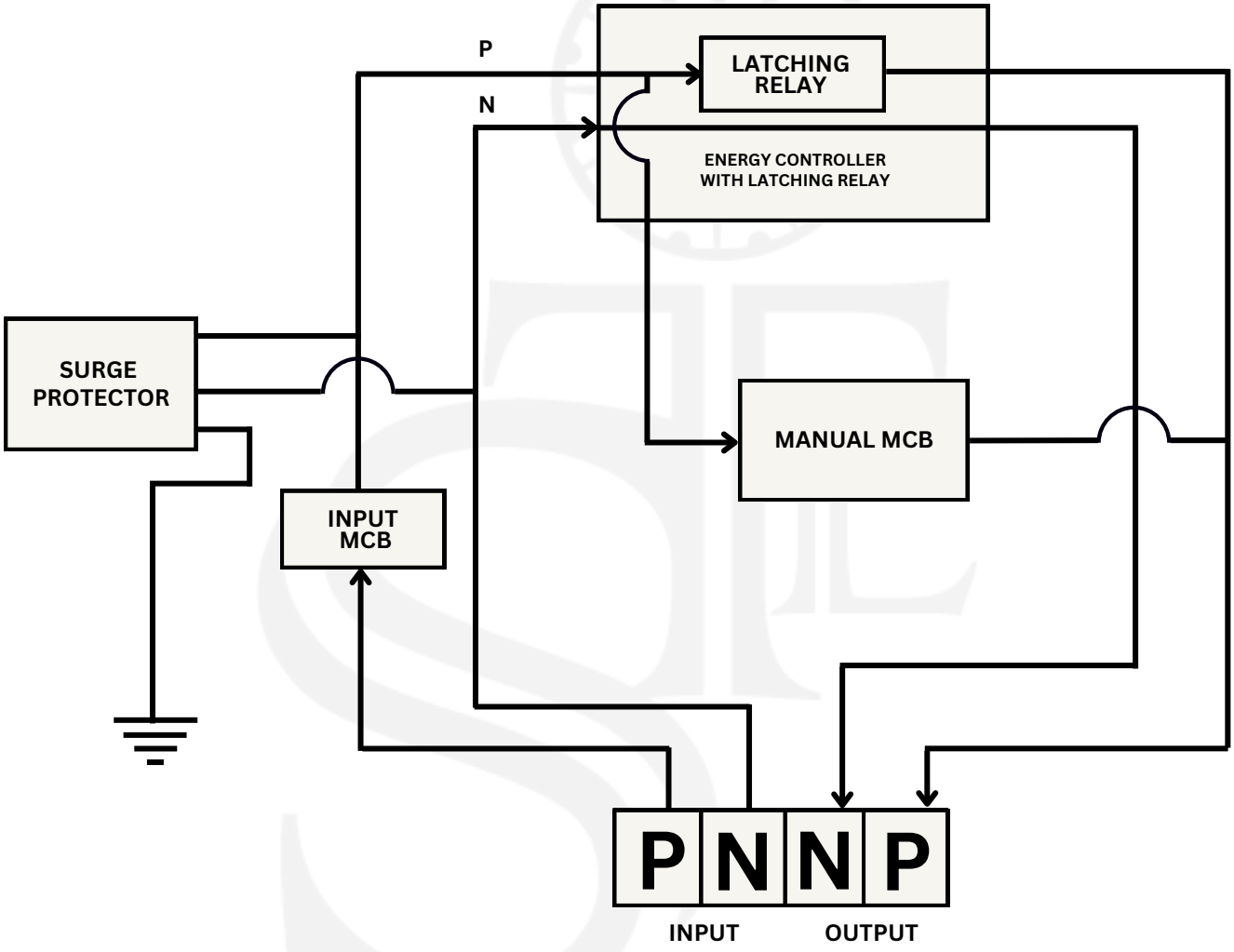
CCMS ENEGRY CONTROLLER

Block Diagram



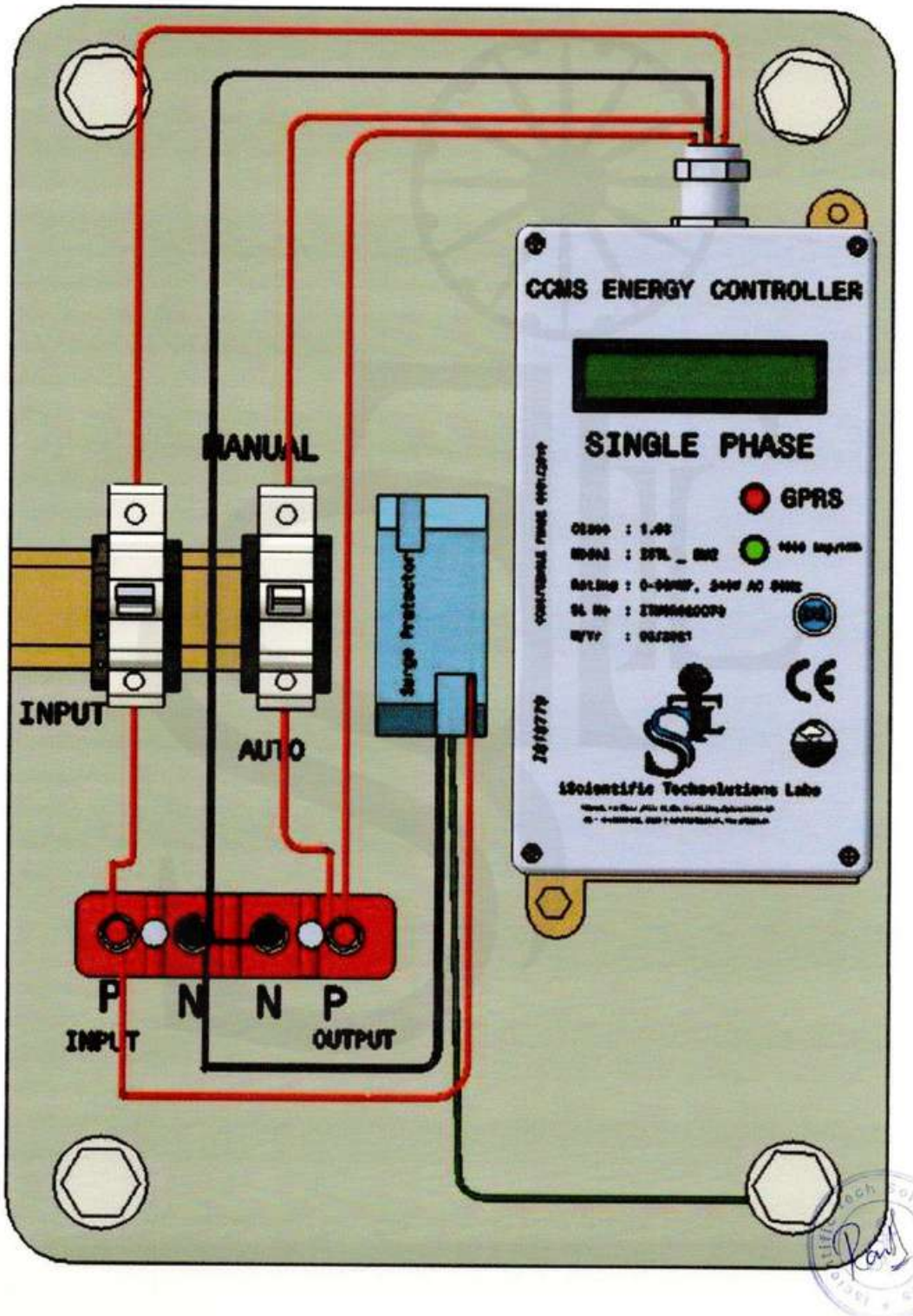
CCMS SINGLE PHASE

Block Diagram



CCMS ENEGRY CONTROLLER

Single Phase



At ISTLABS believe that

At the end of the day we are accountable to ourselves, our success is a result of what we do!

For Full Product Presentation feel free to Contact us
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