



# BIOMETRIC AUTHENTICATION SYSTEM

PLC AND HMI





Biometric Authentication System is designed to enhance the security and access control of PLC (Programmable Logic Controller) and SCADA (Supervisory Control and Data Acquisition) systems. By integrating biometric authentication system, we provide a robust and reliable solution that ensures only authorized personnel can access critical industrial control systems.

The product is tested with all PLC'S and supports multiple interface options.

## FEATURES

- Fingerprint scanning is the sole method used for biometric authentication. Integration with existing PLC and SCADA systems for seamless implementation.
- Secure storage and encryption of biometric data.
- User management and access control functionalities.
- Real-time monitoring and logging of access events.
- Centralized administration and reporting capabilities.
- Finger print enrollment : Max 150 Users.
- Memory : 16GB.
- Communication : RS485 MODBUS RTU, MODBUS TCP, RS232, USB.
- Power supply : DC 24V.



## BENEFITS

- Higher level of security and access control for critical industrial control systems
- Prevention of unauthorized access and potential threats to PLC and SCADA systems
- Reduction in the risk of data breaches and sabotage
- Compliance with industry regulations and standards
- Elimination of password-related security vulnerabilities
- Centralized administration for easy user management and reporting purposes

## APPLICATIONS

Our Biometric Authentication System is suitable for a range of industries that rely on PLC and SCADA systems, including:

- Manufacturing facilities with automated production lines.
- Energy and utility organizations with power generation & distribution systems.
- Water treatment plants.
- Transportation and logistics companies with control and monitoring systems.
- Oil and gas refineries and petrochemical plants.
- 4M (Man, Machine, Material, Method) standard implementation.



### TECHNICAL SPECIFICATION

#### WIRED COMMUNICATION

##### Isolated RS485

- Isolation : 2500Vrms
- Duplex type / Protocol : Half Duplex / MODBUS RTU
- Number of receivers on bus : 32
- Data rate : 115 Kbps
- Connector type : Screw connector A, B, GND

##### Ethernet 10/100 Mbps

- Isolation : 1500 Vrms
- Protocol : MODBUS TCP
- Connector Type : RJ45

##### USB

- Chipset : FTDI
- Baud rate : 115 Kbps
- Connector Type : RJ45

##### Relay

- No. of Relay : 1 x
- Power Rating : 5 Amps 250v

#### FINGERPRINT SCANNER

- Fingerprint image input me: <0.3 seconds.
- Window area: 14x18 mm.
- Matching method: Comparison method (1: 1).
- Search method (1: N).
- Characteristic file: 256 bytes.
- Template file: 512 bytes.
- Storage capacity: 150 pieces.
- Security Level: Five (from low to high: 1,2,3,4,5).
- Fake rate (FAR): <0.001%.
- Refusal rate (FRR): <1.0%.
- Search me: <1.0 seconds (1: 1000 hours, mean value).
- Host interface: UART \ USB1.1.
- Working environment: Temperature: -20 °C - +40 °C Relave hu-  
midity: 40% RH-85% RH (no condensaon).
- Storage environment: Temperature: -40 °C - +85 °C Relave hu-  
midity: <85% H (no condensaon).



### MODBUS TCP MASTER / SLAVE

- |                         |                       |
|-------------------------|-----------------------|
| • Supported Function    | : 03 Holding Register |
| • Supported Data Format | : 16 Bit              |

### MODBUS RTU MASTER / SLAVE

- |                         |                       |
|-------------------------|-----------------------|
| • Supported baud rates  | : From 4800 to 115200 |
| • Supported Data Format | : 16 Bit              |
| • Number of data bits   | : 8 Bit               |
| • Number of stop bits   | : 1                   |
| • Parity bits           | : None, Even, Odd     |

### OPERATING ENVIRONMENT

- |                         |                     |
|-------------------------|---------------------|
| • Operation temperature | : 20 °C - + 70 °C   |
| • Working humidity      | : < 95% ( + 25 °C ) |

### MEMORY SD CARD

- |                       |         |
|-----------------------|---------|
| • Memory              | : 16 GB |
| • Data Storing Format | : CSV   |

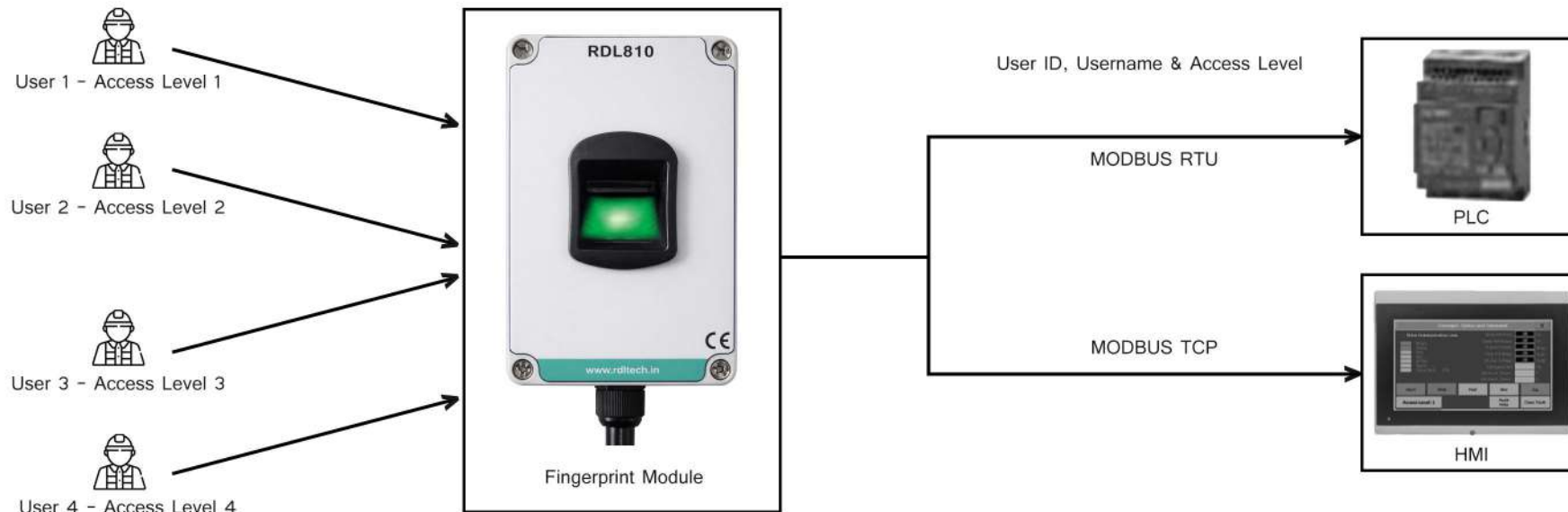
### PHYSICAL SPECIFICATION

- |                                   |                          |
|-----------------------------------|--------------------------|
| • Length x Height x Width (LxHxW) | : 110mm x 72.5mm x 110mm |
| • Weight                          | : 150g                   |
| • Mounting                        | : Wall / DIN Rail        |
| • Enclosure                       | : IP20                   |

### SUPPLY VOLTAGE

- |                                       |             |
|---------------------------------------|-------------|
| • Supply Input Voltage                | : 12V / 24V |
| • Permissible range, lower limit (DC) | : 9V        |
| • Permissible range, Upper limit (DC) | : 36V       |





Access control levels can be registered for each user. The biometric authentication device will provide the user's ID, username and access level to the PLC or HMI via MODBUS communication when the user has successfully authenticated.



### FINGERPRINT MODULE CONFIGURATION

**Biometric Authentication Module can be configured in 2 ways**

**Option 1 :** Configuring module using RDL Configuration Manager Software.



PC

Plug and play configuration Manager, that enable configuration of all input output ports, communication interfaces and parameters.

**Option 2 :** Configuring using your existing PLC or HMI over Modbus / RS232.



RS485 RTU



PLC

MODBUS  
TCP  
HMI



You can set up Fingerprint Enrollment and associated access control parameters through your current PLC or HMI using MODBUS RTU or TCP.



### BIOMETRIC ACCESS CONTROL SYSTEM - RDL810





### CUSTOM RETROFIT FINGERPRINT MODULE - RDL810A



Separate fingerprint reader, controller unit, and connectivity cable are included

#### Packages Include :

- Fingerprint access control system - 01
- Retrofit Fingerprint Module - 01
- Connectivity Cable - 1 mtrs
- Fingerprint Mounting Adapter

#### Note :

- Enquiry for extended connecting cable if more than 2 Mtrs required.



Custom Retrofit Fingerprint Module



### APPLICATION WIRING DIAGRAM - POTENTIAL CONTACT FREE INPUT TO PLC

#### Switching Machine Job Operation



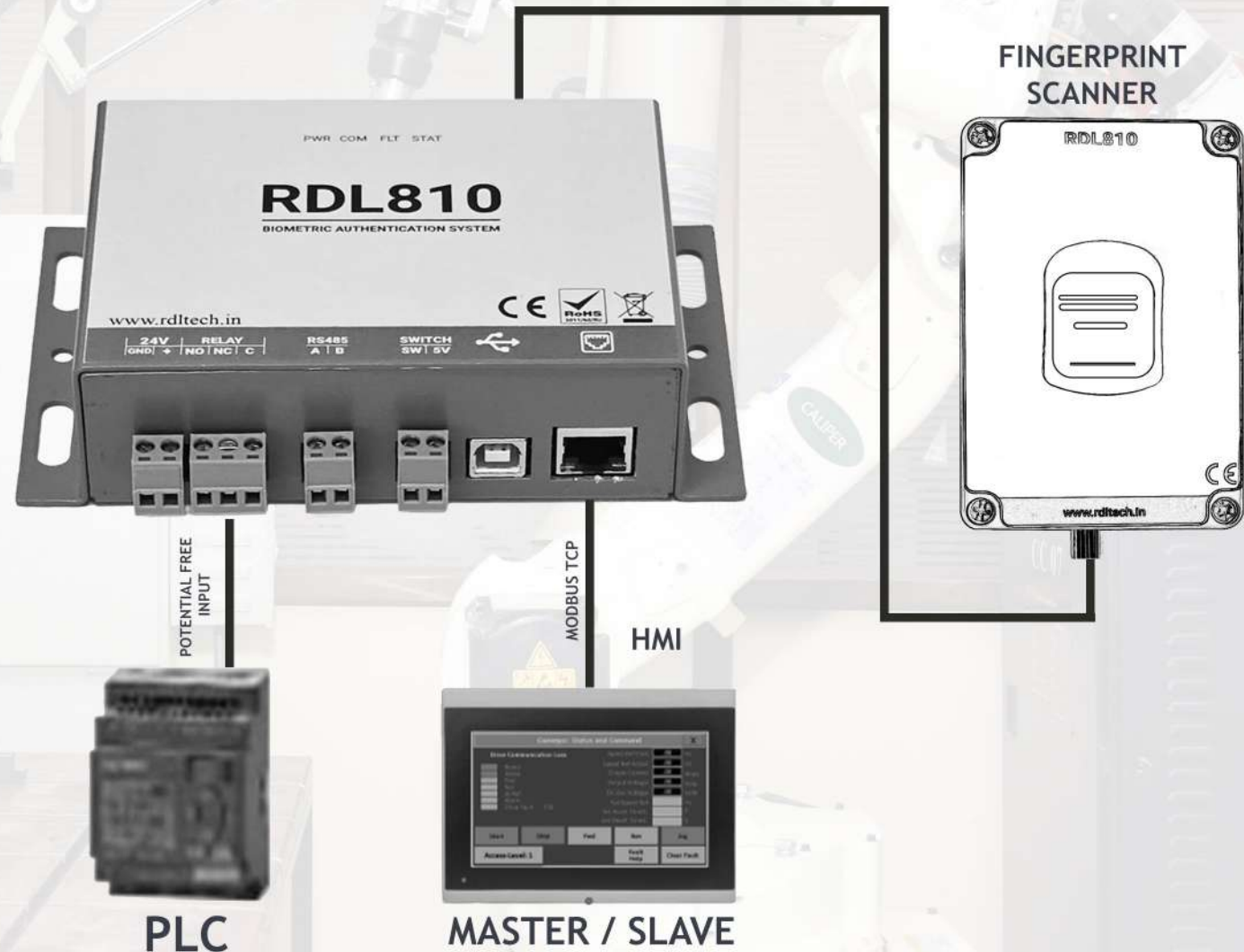
Privileged access to Machining Processes using different Tools and Materials.

Finger Extractor		
No.	Particulars	Description
1	Motor	Permanents
2	Coil	24V
3	Chamfered Filter	16.250V/50A (max)
4	Controlgear Switch	1.1 HP
5	Filter	Variable type
6	Controlgear	1.1 HP
7	Controlgear	1.1 HP
8	Controlgear	1.1 HP
9	Controlgear	1.1 HP
10	Controlgear	1.1 HP

#### Mono Stable Biometric Switch



Accountable response to situations like emergency system with valves, shutdown & access control.



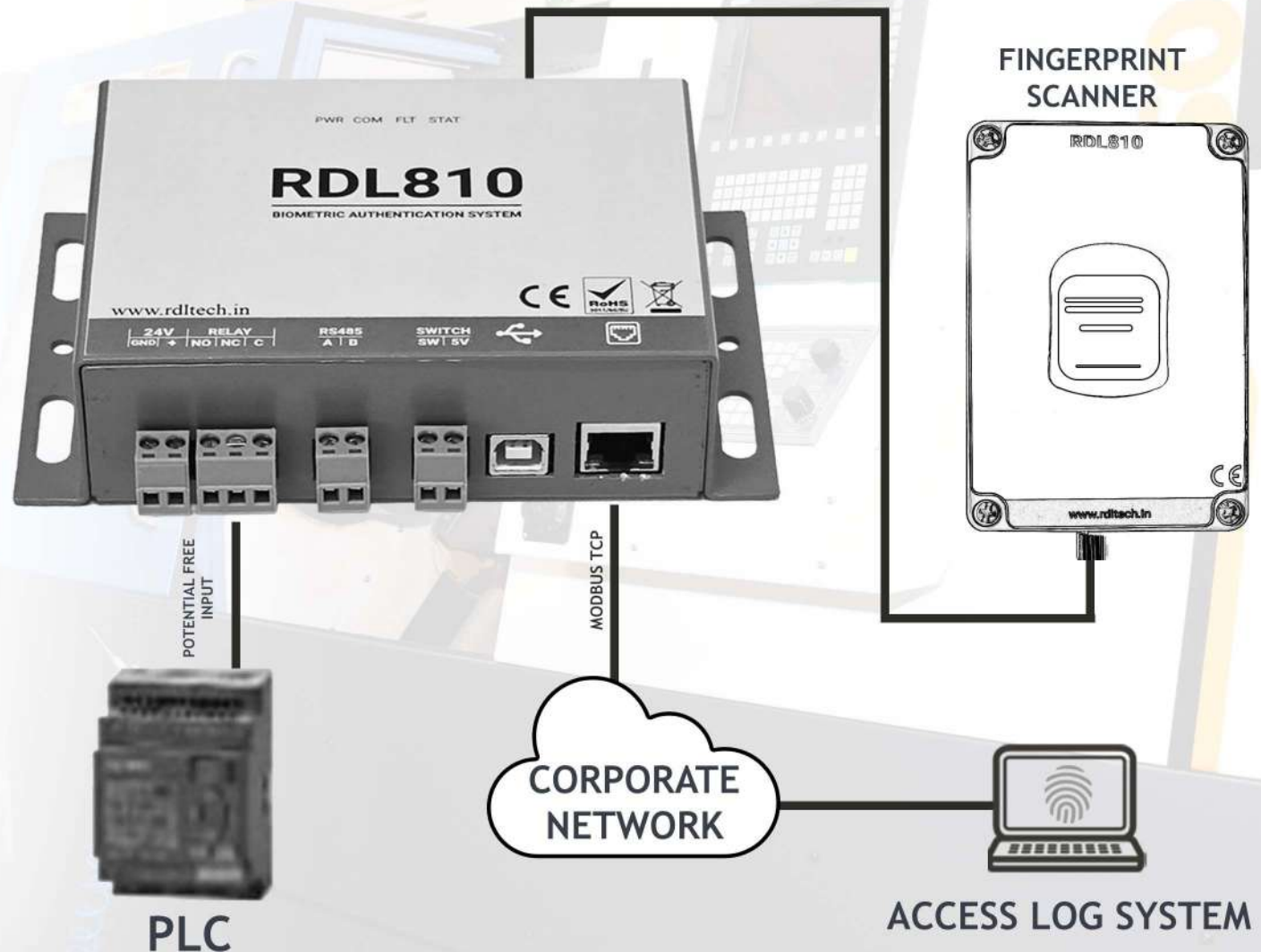


## APPLICATION WIRING DIAGRAM - REMOTE ACCESS LOG SYSTEM

### Production Loss Escalation

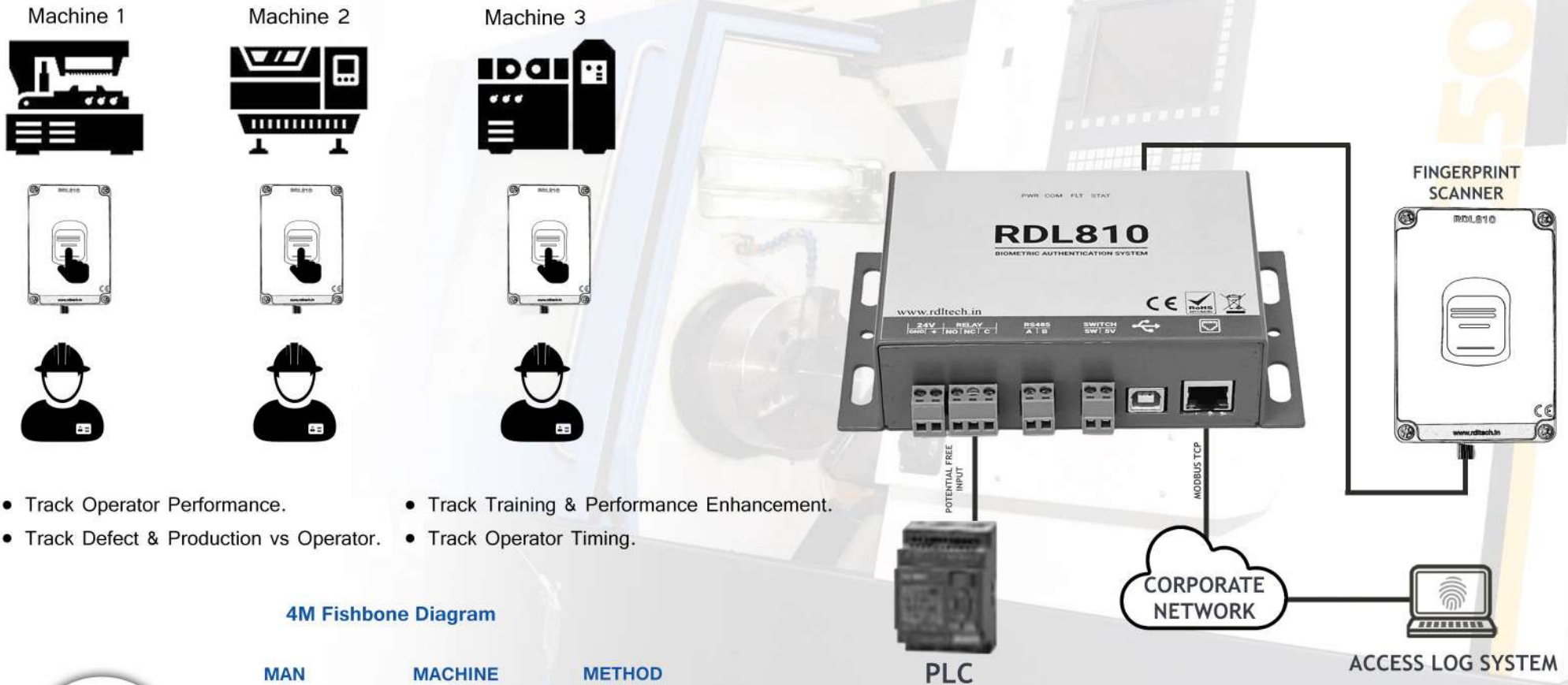


Accountability of floor managers during machine shutdowns, timely corrective actions to preventing losses.



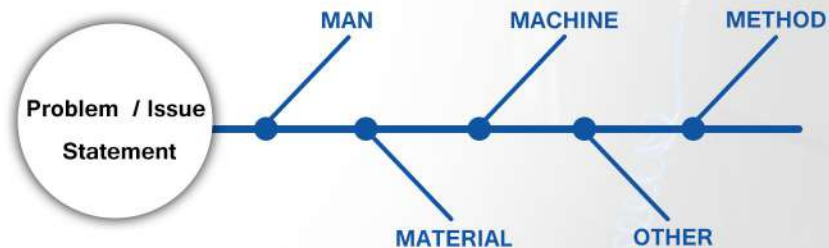


### APPLICATION WIRING DIAGRAM - OPERATOR MAPPING WITH MACHINE - 4M STANDARD (MATERIAL, METHOD, MACHINE, MAN)



- Track Operator Performance.
- Track Defect & Production vs Operator.
- Track Training & Performance Enhancement.
- Track Operator Timing.

4M Fishbone Diagram



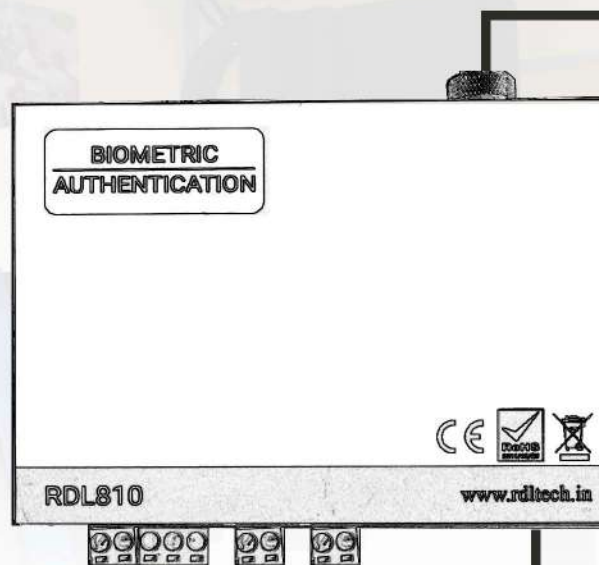


### APPLICATION WIRING DIAGRAM - ANDON - BIOMETRIC AUTHENTICATION BASED SIGNAL RESET

#### Down Time Escalation



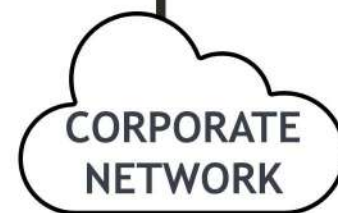
Track service teams response time towards break downs, reducing down time and improved productivity.



POTENTIAL FREE INPUT

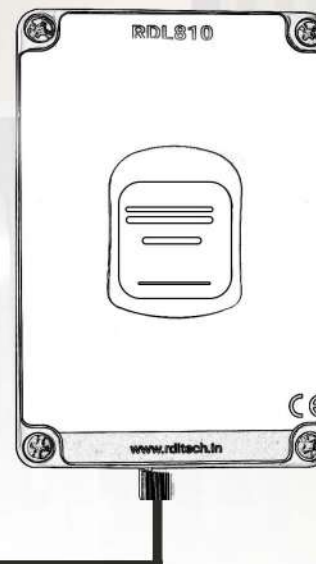


MODBUS TCP



ACCESS LOG SYSTEM

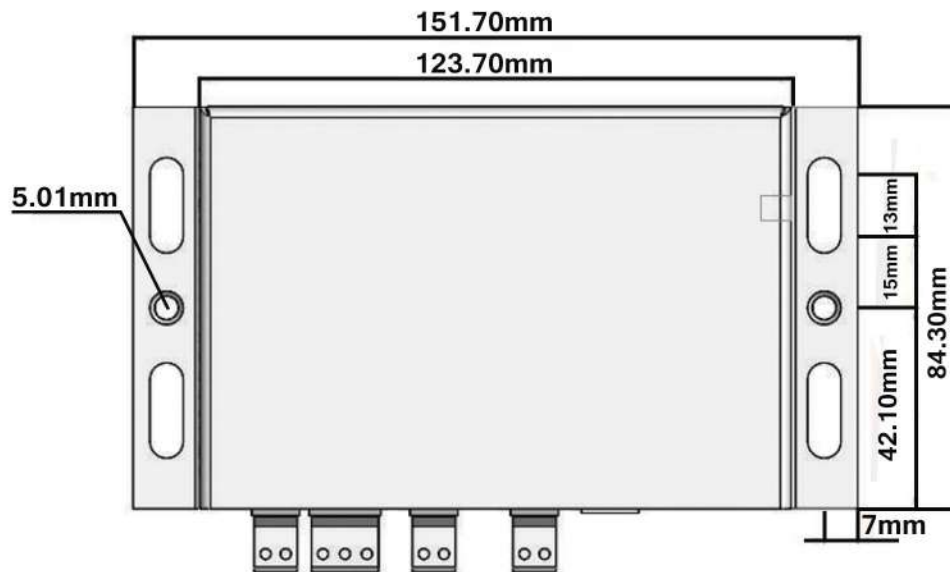
FINGERPRINT SCANNER



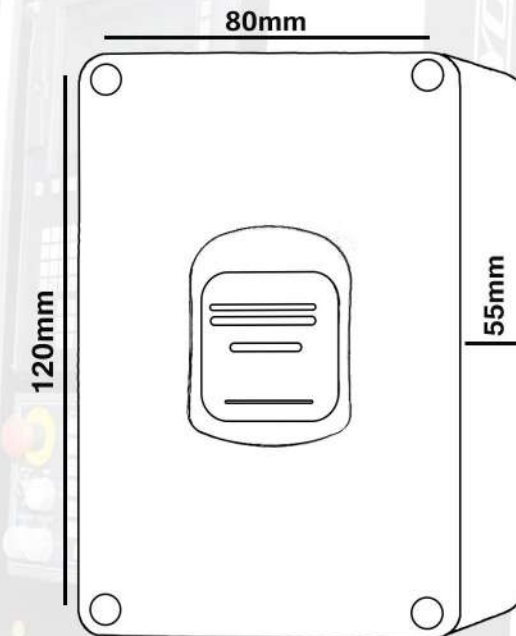


### DIMENSIONS

#### Biometric Controller Unit



#### Finger Print Scanner



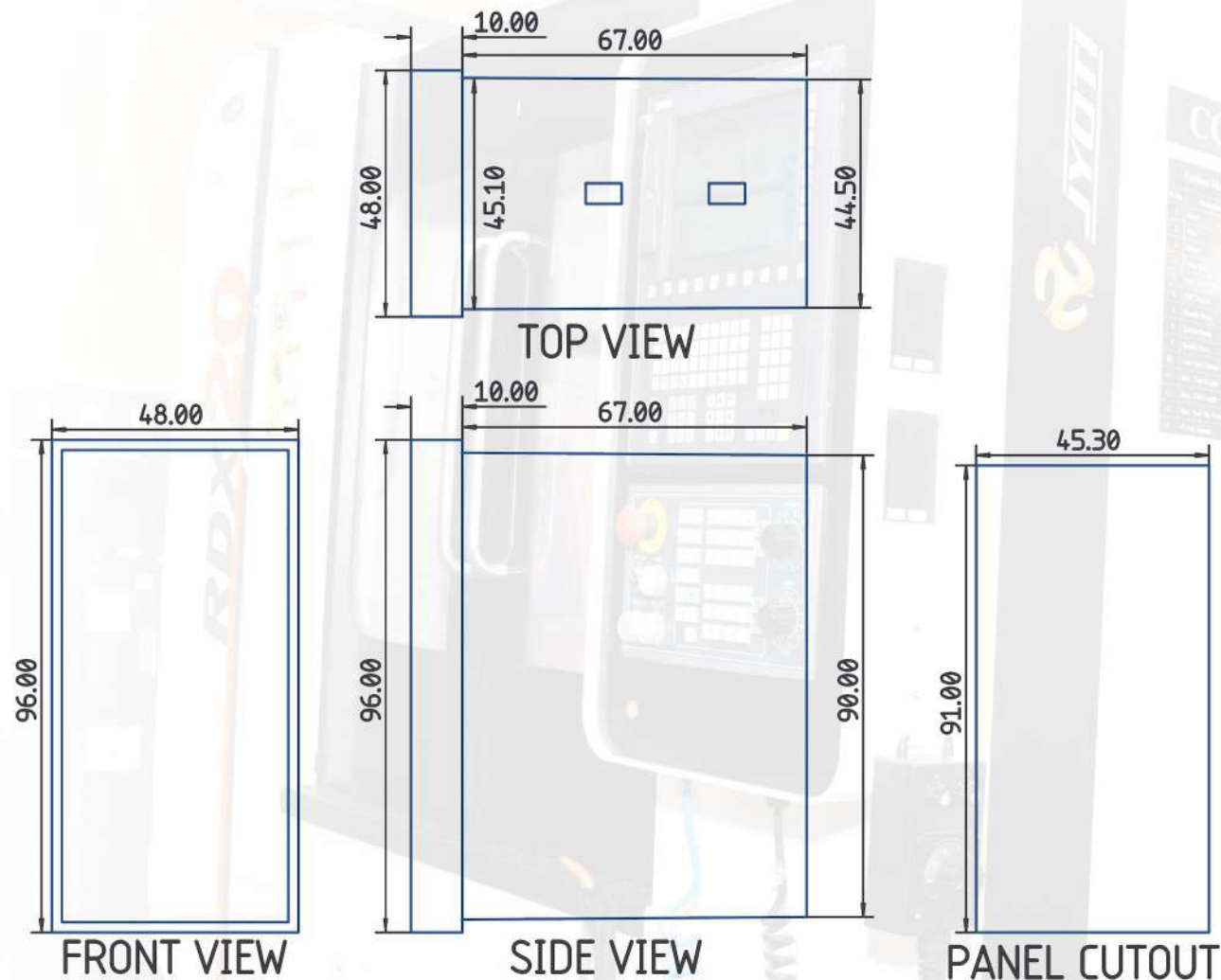


RDL810D



\* All Dimension in mm

### DIMENSIONS





### ORDER INFORMATION

	RDL810	RDL810A
RS485 RTU	✓	✓
MODBUS TCP	✓	✓
RELAY	✓	✓
FINGERPRINT READER WITH IP65 ENCLOSURE	✓	NA
ENCLOSURE TYPE - PANEL MOUNT	NA	✓



**We Ship Worldwide**

**Our Shipping Partner**



**We Accept**



Note:

1. Unless otherwise specified, all parameters in this datasheet were measured at 25°C and 75% humidity.
2. All index testing procedures in this datasheet are based on our company's corporate standards.
3. We offer product customization, OEM and ODM Services; please contact the sales team @ [sales@rdltech.in](mailto:sales@rdltech.in).
4. We Ship Worldwide.
5. Specifications are subject to change without prior notice.
6. For additional information on Product and to buy online @ [www.researchdesignlab.com](http://www.researchdesignlab.com)

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