



# MODBUS TCP I/O MODULE





# RDL TECHNOLOGIES

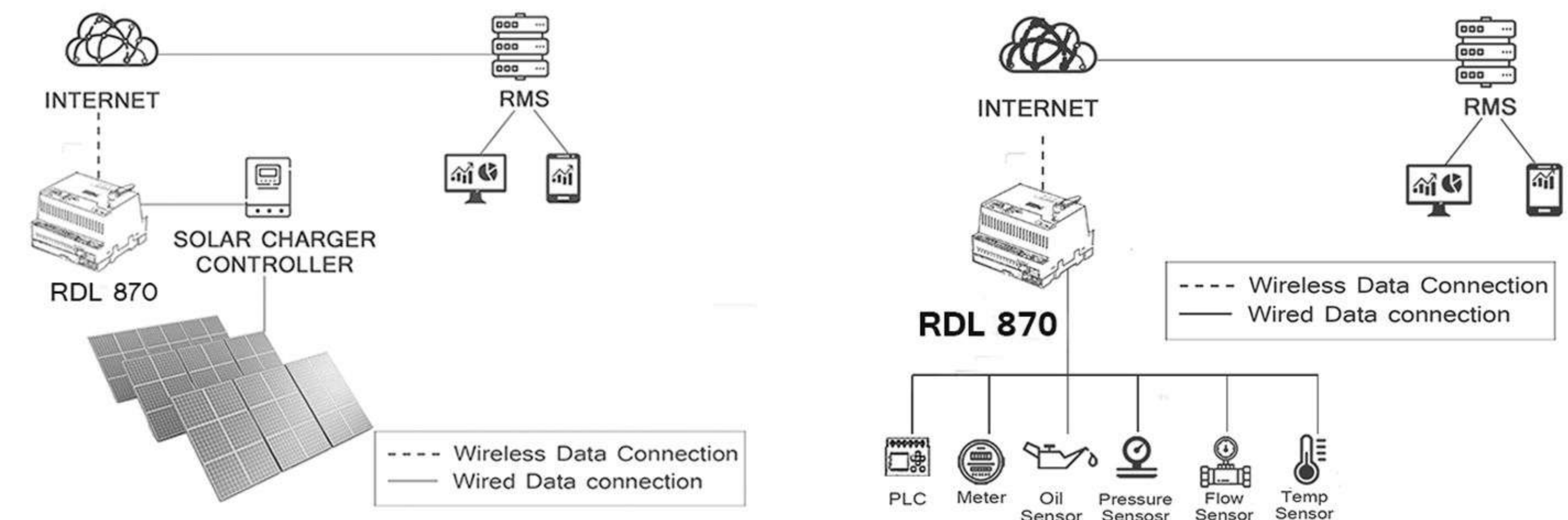
Modbus TCP IO Module product is designed to seamlessly integrate with the IoT and Analytical processing systems. Supporting Multiple IO Interfaces, Protocols, and Secure Data Logger communication are perfect for creating a custom Remote Monitoring Solution.

Modbus TCP IO Module can be used to build the custom industrial solution for monitoring and controlling PLC and SCADA, HMI, VFD Motors, Servo, Valves, Energy Meter, Actuators, Relays, Encoder, RFID and Finger Print Readers, Industrial Sensors and many more with below mentioned operational benefits.

## Features

- 12 x isolated Analog Input Channel 0-10V , 0-24v , 4-20mA.16-bit resolution and 860 SPS.
- 4x Isolated Digital Input 24V.
- 3x Isolated Digital Output 24V.
- 1x Relay (NO & C).
- 1x Isolated RS485 for MODBUS RTU Communication.
- 1x Isolated Ethernet 10 / 100Mbps MODBUS TCP Communication.
- 1x USB-Device Interface for Configuring, Monitoring and Download.
- 1x WiFi Wireless Communication.
- Configure and Read Multiple Slave IDs, Selectable Input Register Holding Register & Coil.
- Configurable Data Type and Conversion Method (INT, Long INT, FLOAT, Double Float & RawHex) UINT (ABCD (big-endian), DCBA (little-endian), CDAB, BADC).

## RDL870 / DATASHEET



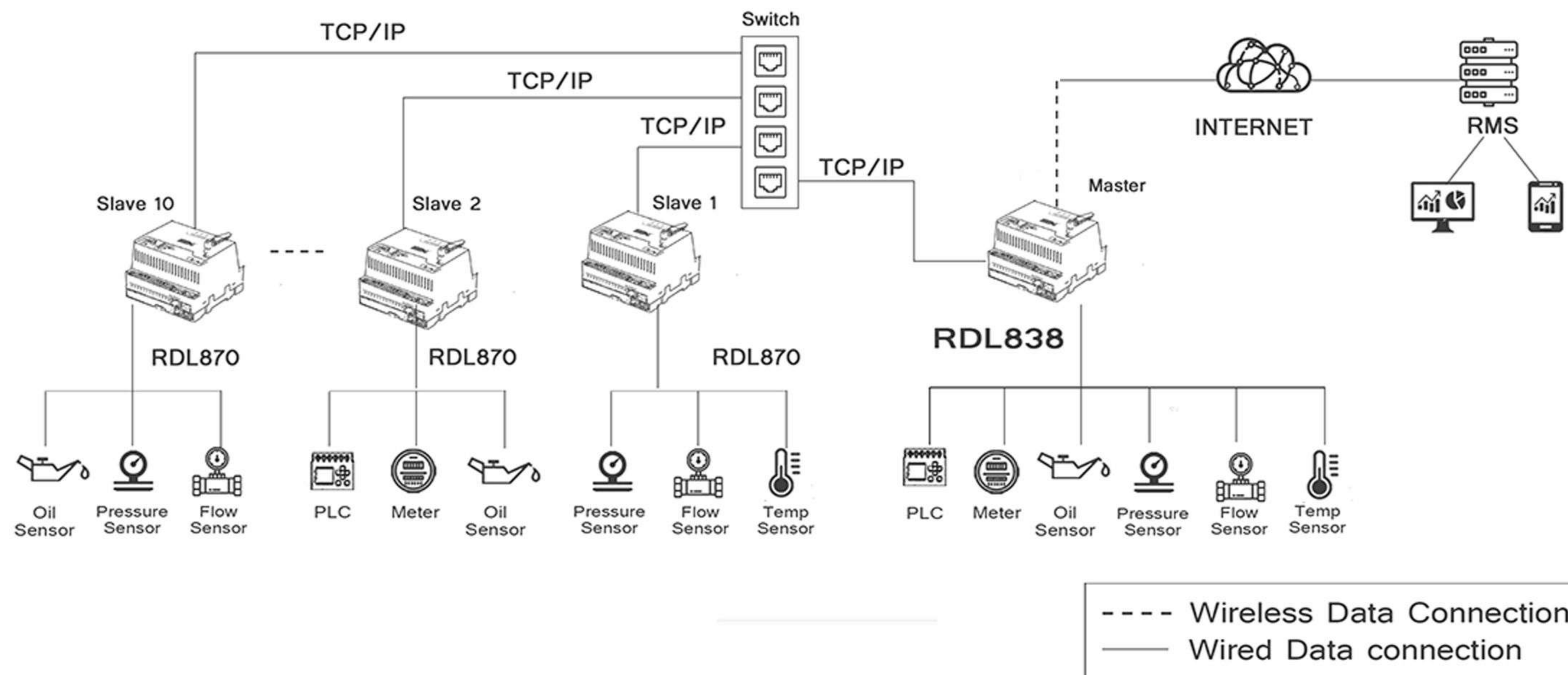
- Industrial Grade Design - Isolated & Protected IO and EMC / EMI Compliance.
- Configurable Scaling factor enabling option for Analog channel.
- Configurable WiFi Interface.
- Configurable Data Transferring Protocol JSON / MQTT and FTP.
- Support secure communication SSL.
- Auto Maintain socket/server connection.



### Application

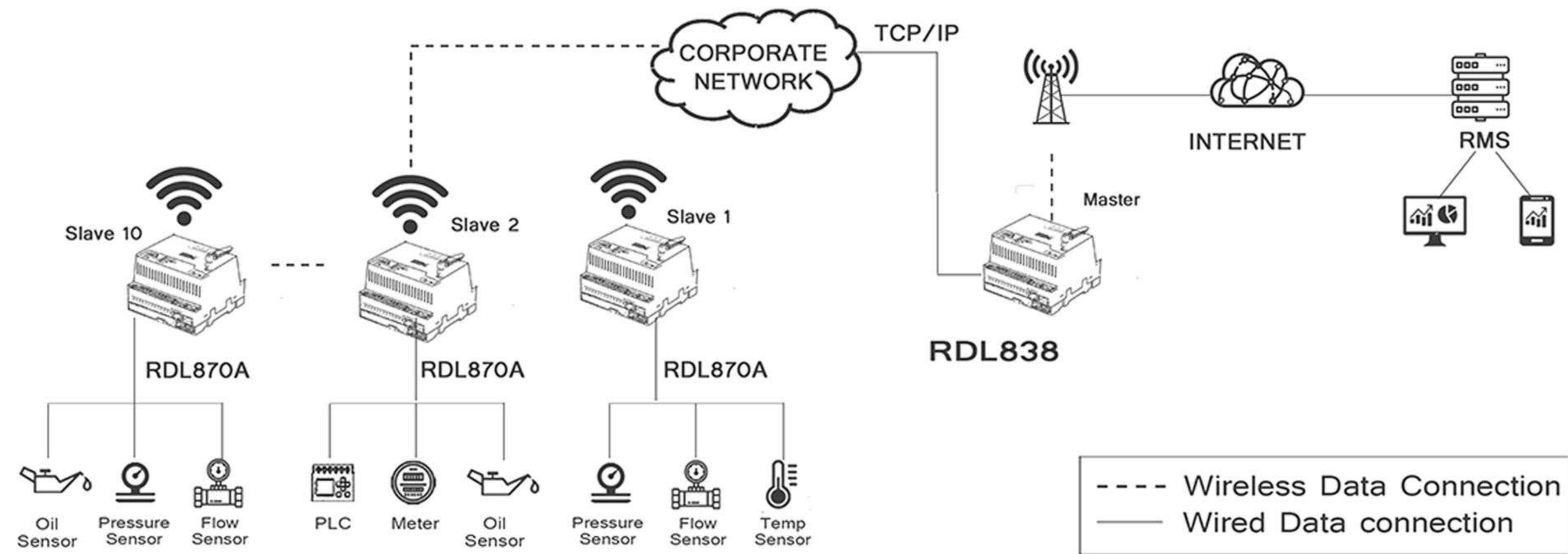
- Remote Monitoring System(RMS)
- Production and process monitoring
- Utility monitoring
- Condition monitoring
- Environment monitoring
- Industrial Smart grid
- Solar grid
- Cold Storage Monitoring
- District Metering.
- Water Treatment.
- Generator Monitoring.
- Green House.
- Warning Message in Case of Calamities.
- Standard SCADA Applications.

### APPLICATION DIAGRAM - CASCADING REMOTE IO MODULE

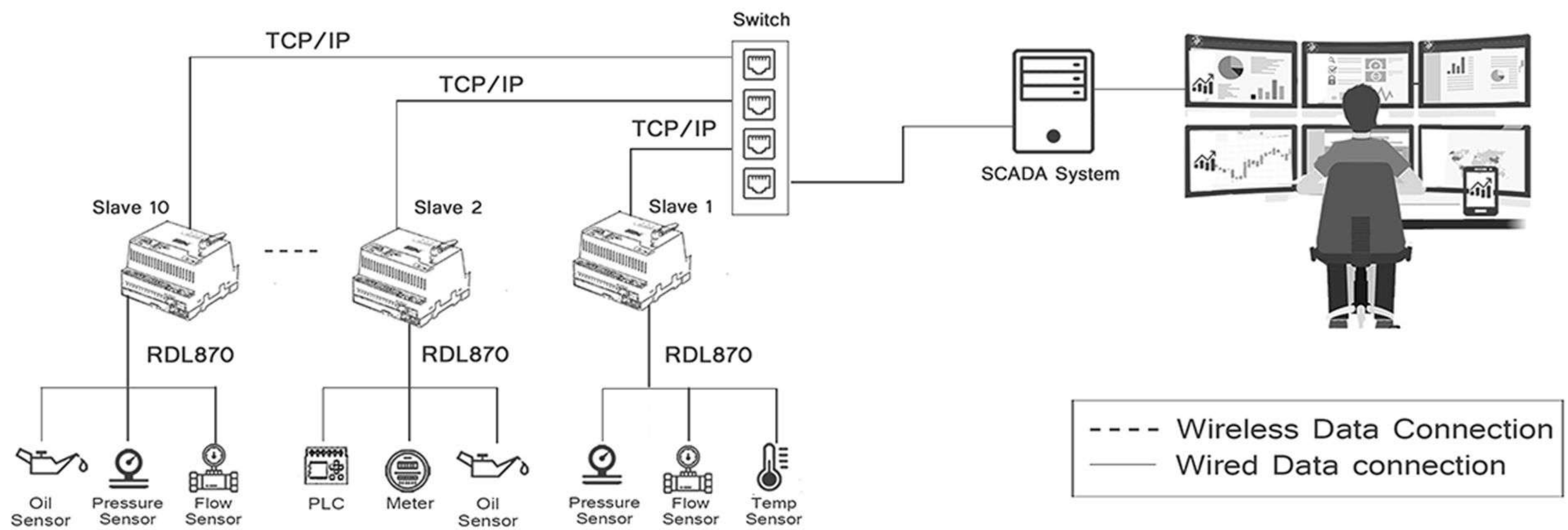




### APPLICATION DIAGRAM - CASCADING WiFi IO MODULE

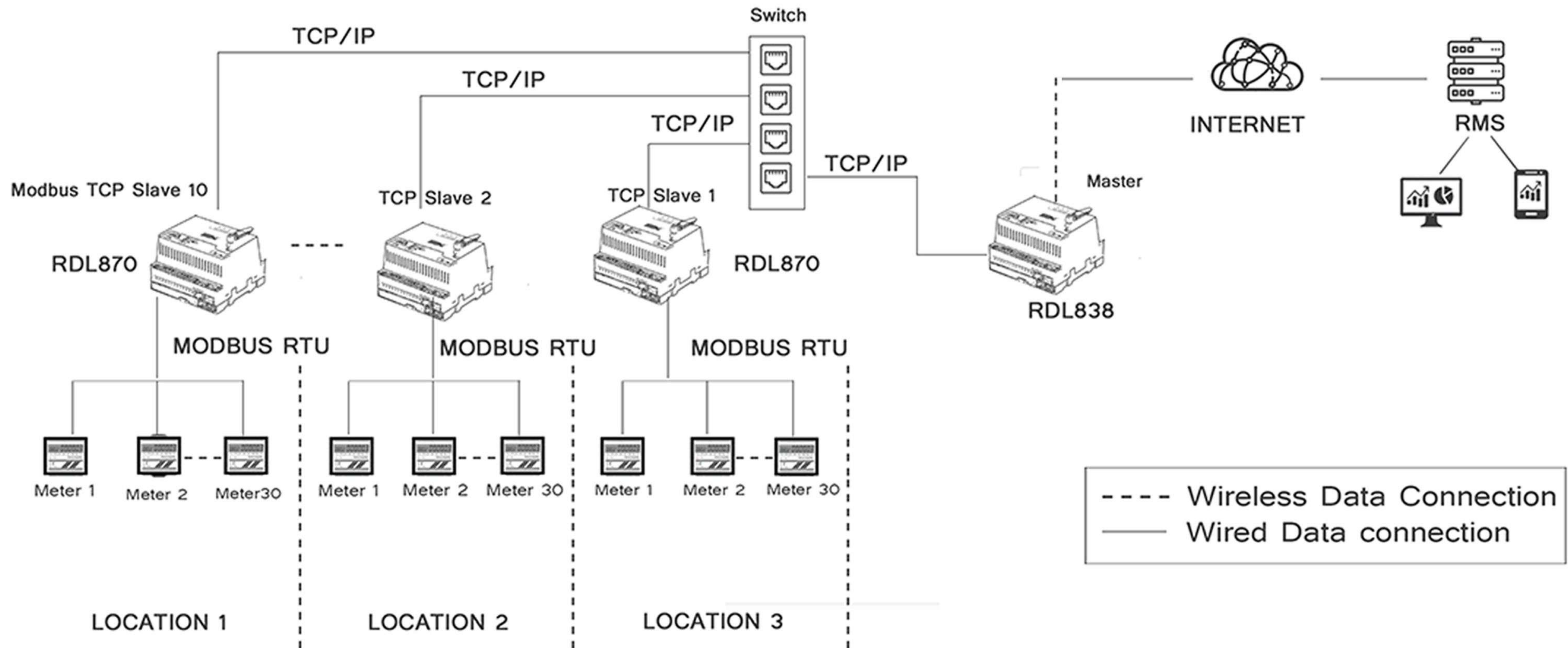


### APPLICATION DIAGRAM - SCADA REMOTE IO MONITORING





### APPLICATION DIAGRAM - ENERGY MONITORING SYSTEM





At no extra cost every Datalogger is shipped with Plug and Play Configuration Manager, that enable configuration of all Input-Output ports across Analog - Digital interfaces and also Communication parameter. Configuration Manager is designed to be operated with minimal training and technical expertise

The screenshot shows the 'Data Logger Configuration Manager' interface with the 'Analog' and 'Digital Input' tabs selected. The 'Analog' section includes a radio button for 'Sec' (selected), a text input for 'Analog Polling Interval: 10 (sec)', and a checked checkbox for 'Save Log ( Saves to SD Card)'. Below this are two tables for channel configuration. The first table is for main channels (1-4) and the second is for 'Extension ADC' (5-7). A 'Save' button with a green checkmark is visible at the bottom of the configuration area.

Channel	Resolution	Enable/Disab	Mode
1	16 bit	<input checked="" type="checkbox"/>	0-10V
2	16 bit	<input checked="" type="checkbox"/>	0-10V
3	16 bit	<input checked="" type="checkbox"/>	0-10V
4	16 bit	<input checked="" type="checkbox"/>	4-20mA

Channel	Resolution	Mode
5	16 bit	4-20mA
6	16 bit	4-20mA
7	16 bit	4-20mA

The screenshot shows the 'Data Logger Configuration Manager' interface with the 'Modbus R1' tab selected. A 'Read' button with a green checkmark is visible. Below it is a table with columns: S.No, Start Address, Offset, Type, Conversion, Length, and Enable/Disable. To the right of this table is another table with columns: Enable/Disable, Slave Id, and Action.

S.No	Start Address	Offset	Type	Conversion	Length	Enable / Disable
1	10	0	Holding Reg...	Integer	2	<input checked="" type="checkbox"/>
2	14	0	Holding Reg...	Integer	2	<input checked="" type="checkbox"/>
3	16	0	Holding Reg...	Integer	2	<input checked="" type="checkbox"/>
4	18	0	Holding Reg...	Integer	2	<input checked="" type="checkbox"/>
5	20	0	Holding Reg...	Integer	2	<input checked="" type="checkbox"/>
6	22	0	Holding Reg...	Integer	2	<input checked="" type="checkbox"/>
7	24	0	Holding Reg...	Integer	2	<input checked="" type="checkbox"/>
8	26	0	Holding Reg...	Integer	2	<input checked="" type="checkbox"/>
9	28	0	Holding Reg...	Integer	2	<input checked="" type="checkbox"/>
10	30	0	Holding Reg...	Integer	2	<input checked="" type="checkbox"/>

Enable / Disable	Slave Id	Action
<input checked="" type="checkbox"/>	1	Save Up
<input type="checkbox"/>		Down
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		



### SPECIFICATION

#### ISOLATED SWITCHABLE ANALOG INPUTS

• Number of analog inputs	4
• Type of analog inputs	Isolated 3700 Vrms
• Range of voltage measurement	0-10v
• Range of current measurement	0-20mA / 4-20mA
• Switching of voltage / current mode	Software controlled
• Resolution/Sampling	16 bit/860 SPS
• Protection of analog inputs	ESD, Transient

#### ISOLATED DIGITAL INPUTS / COUNTER

• Number of digital inputs	4
• Type of digital input	Isolated with Interrupted WET / DRY connection supported.
• Max Input voltage range	0-28V.
• Logic HIGH trigger voltage	>12V.
• Logic LOW trigger voltage	<10V.
• Maximum trigger frequency	5Khz.
• Protection of digital outputs	ESD, Transient.

#### ISOLATED DIGITAL OUTPUTS

• Number of digital outputs	3
• Type of digital output	Isolated / PWM
• Output voltage range	Open collector output 24V
• Maximum current per output	100 mA
• Maximum switching frequency	5Khz
• Protection of digital outputs	ESD, Transient

#### ISOLATED ANALOG INPUT 0-24V

• Number of analog inputs	4
• Type of analog inputs	Isolated 3700 Vrms
• Range of voltage measurement	0-10v
• Resolution/ Sampling	16 bit/860 SPS
• Protection of analog inputs	ESD, Transient

#### ISOLATED ANALOG INPUT 0-20MA

• Number of analog inputs	4
• Type of analog inputs	Isolated 3700 Vrms
• Range of current measurement	0-20mA / 4-20mA
• Resolution/ Sampling	16 bit/860 SPS
• Protection of analog inputs	ESD, Transient



### MODBUS TCP MASTER

• Supported functions	01, 03, 04
• Supported data formats	INT 8/16 Bit, Doble INT 32 Bit, 64 Bit Unsigned INT, Float (ABCD big-endian), DCBA (little-endian), CDAB, BADC), HEX

### WIRELESS COMMUNICATION

• Wi-Fi	802.11 b/g/n/e/1 (802.11n @ upto 150 Mbit/s.
• Protocol	JSON, MQTT & FTP.
• Security	SSL

### MEMORY FRAM

• Memory	25Kb
• Write Cycle	1 Trillion

### MODBUS RTU MASTER

• Supported baud rates	From 4800 to 115200
• Supported functions	01, 03, 04
• Supported data formats	INT 8/16 Bit, Doble INT 32 Bit, 64 Bit Unsigned INT, Float (ABCD (big-endian), DCBA (little-endian), CDAB, BADC), Hex
• Number of data bits	7 or 8
• Number of stop bits	1 or 2
• Parity bits	None, Even, Odd

### OPERATING ENVIRONMENT

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





### WIRED COMMUNICATION

Isolated RS485	
• Isolation	2500 Vrms
• 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	115kbps
• Connector Type	USB B

### SUPPLY VOLTAGE

• Supply Input Voltage	12V / 24V
• Permissible range, Lower limit (DC)	9V
• Permissible range, Upper limit (DC)	36V

### RTC

• Battery Backup	3.3V
• Accuracy	+/- 3.5ppm From -40 to +85 °C

### PROCESSOR

• WiFi Chipset	Xtensa® 32-bit LX7 dual-core, 32 BIT, up to 240 MHz
• IO controller Chipset	ARM® Cortex® 32 Bit 200 Mhz

### ELECTROMAGNETIC COMPATIBILITY

• ESD	IEC/EN 61000-4-2	Contact + 6KV Air +8KV	Criteria A
• EFT	IEC/EN 61000-4-4	+ 2KV	Criteria A

### PHYSICAL SPECIFICATION

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



### ADDITIONAL ACCESSORIES

#### IP65 / 66 ENCLOSURE



#### SPECIFICATIONS

- Dimension (LxWxH) 280mmx190mmx130mm
- Flammability Rating: UL 94 HB
- Impact Resistance (EN 62262): IK07
- Temperature c -5 to 60c
- Electrical Insulation: Totally Insulated
- NEMA Class: NEMA 1, 4, 4X, 12, 13
- Mounting: Wall Mount/DIN Rail

#### ORDER CODE

- RDL871 : Enclosure with sufficient space for fixing Data Logger.
- RDL871A : Enclosure with 14.8V 10000mAh Battery Pack & sufficient space for mounting Data Logger.
- RDL871B : Enclosure with 80-240VAC 2 Amps & sufficient space for mounting Data Logger

#### POWER SUPPLY 2.5 AMPS 24V

Order Code: RDL873



#### SPECIFICATION

• Output Voltage	24 Volt
• Amps	2 Amps
• Input Voltage (AC/DC)	85-264VAC
• Mounting	DIN rail

#### EXTERNAL 4G / LTE ANTENNA

Order Code: RDL333



#### SPECIFICATION

• Frequency (MHz)	2400 2500 MHz
• Gain	3 dBi
• Impedance ( )	50
• VSWR	<2.0

#### EXTERNAL WiFi ANTENNA

Order Code: RDL872



#### SPECIFICATION

• Connector	IPX female to SMA-KY
• Frequency (Hz)	2.4 GHz
• Gain(dB)	<3
• VSWR	<1.5

Note: Additional Accesories need to be Order Separately. For More Additional Accessories Please Contact us Directly.



### ADDITIONAL ACCESSORIES

#### IoT STARTER KIT ENERGY MONITORING KIT



#### PACKAGE INCLUDES

• Data Logger	RDL838	1 Nos
• SMPS	24V 2 Amps	1 Nos
• Energy Meter	3 phase, Modbus RS485	1 Nos
• CT Coil	50 Amps	3 Nos
• SDK	Open Source Web SDK	
• Protocol	JSON/MQTT	

#### ORDER CODE

• WiFi	RDL874
• 4G / LTE	RDL874A

Note: Additional Accesories need to be Order Separately. For More Additional Accessories Please Contact us Directly.

#### IoT STARTER KIT ENERGY MONITORING KIT



#### PACKAGE INCLUDES

• Data Logger	RDL838	1 Nos
• SMPS	24V 2 Amps	1 Nos
• Fuel Level Sensor Module	Modbus RS485	1 Nos
• Oil Level Sensor	Modbus RS485	
• Temperature Sensor 4 - 20 mA	50°C to 400°C	
• SDK	Open Source Web SDK	
• Protocol	JSON/MQTT	

#### ORDER CODE

• WiFi	RDL875
• 4G / LTE	RDL875A



**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 can offer product customization; please contact the sales team directly for more information.
4. Specifications are subject to change without prior notice:
5. For additional information on Product please refer to [www.rdltech.in](http://www.rdltech.in)
5. Buy online @ [www.researchdesignlab.com](http://www.researchdesignlab.com)

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