iWSN-9603 Series Quick Start

v1.5, Apr. 2023

Packing List

In addition to this guide, the package includes the following items



iWSN-9603 Series



Screw driver



Split Core CT



Rogowski Coil CT



4 M4*16L Mounting Screws

Note: The package of iWSN-9603-PCT-ME-IP33 doesn't include CTs, and the others are described below.

Model Name	iWSN-9603-160-ME-IP33 iWSN-9603-240-ME-IP33 iWSN-9603-360-ME-IP33	iWSN-9603-RCT500P-ME-IP33 iWSN-9603-RCT1000P-ME-IP33 iWSN-9603-RCT2000P-ME-IP33
Split Core CTs	6	None
Rogowski Coil CTs	None	6

Technical Support

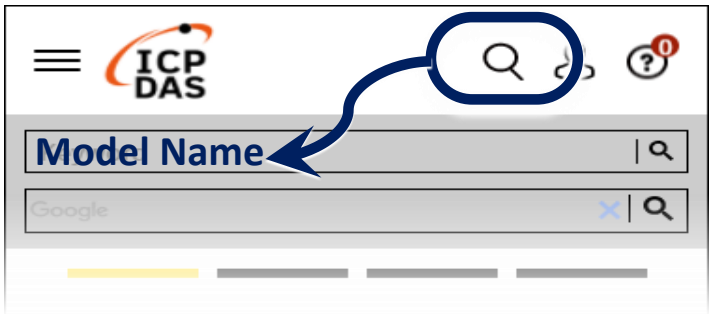
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www.icpdas.com

Resources

How to search for drivers, manuals and spec information on ICP DAS website.

- For Mobile Website

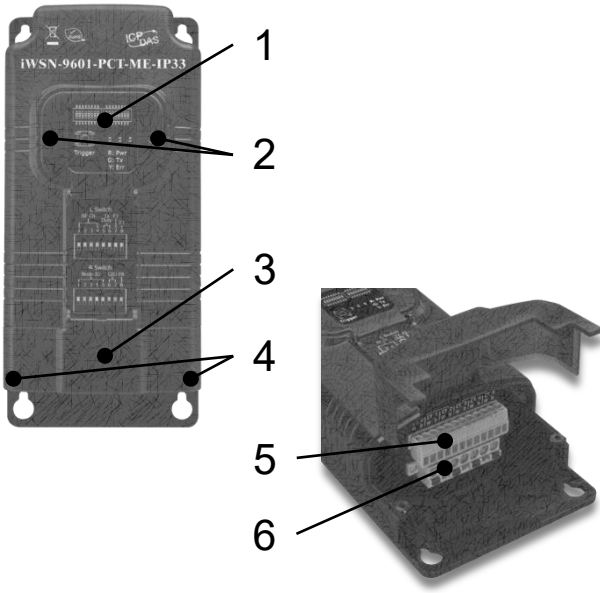


- For Desktop Website



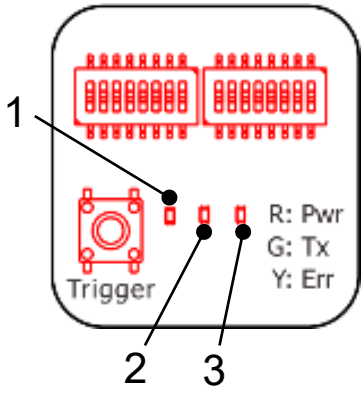
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1. Appearance



No.	Descriptions
1	LED panel cover. The LEDs statuses are shown here. Loosening two screws and opening the cover can configure the module by the DIP switches and trigger button.
2	The screws for LED panel cover.
3	Connector protector. Loosening two screws and open the protector can wire the CTs and voltage input cables into the module.
4	The screws for connector protector.
5	The connector for CT wiring
6	The connector for voltage input wiring

2. LED indicators



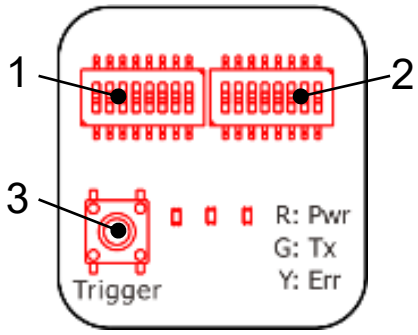
No.	Descriptions	Color
1	Power indicator (PWR)	Red
2	RF data transmission indicator (Tx)	Green
3	Error status indicator (Err)	Yellow

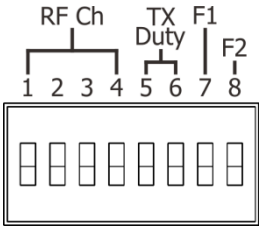
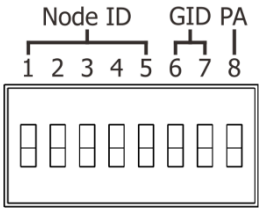
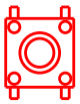
The meanings of the LED actions are described as follows.

LED Actions	Descriptions
Red LED is always OFF	No power
Red LED is always ON	Working power is given
Both Green and Yellow LEDs are ON	Module is initializing
Both Green and Yellow flash 5 times per second	Detecting hardware errors during initializing.
Green LED is always ON, Yellow LED flashes quickly and periodically.	Invalid Node ID (Node ID 0 is reserved, and can't be used)
Green and yellow LEDs interactively flash 3 times afterwards turned ON simultaneously.	Detecting 50Hz AC frequency. The 60Hz won't have any indication.
Green and Yellow LEDs are OFF, afterwards Green LED flashes depended on the Tx duty or while receiving an RF command.	The module has finished the initialization, and starts to work.
Yellow LED flashes twice per second	Detecting errors during operating.

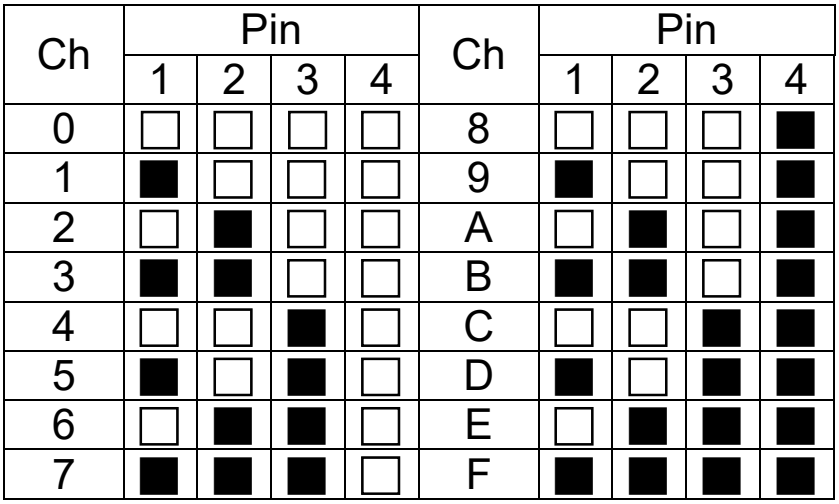
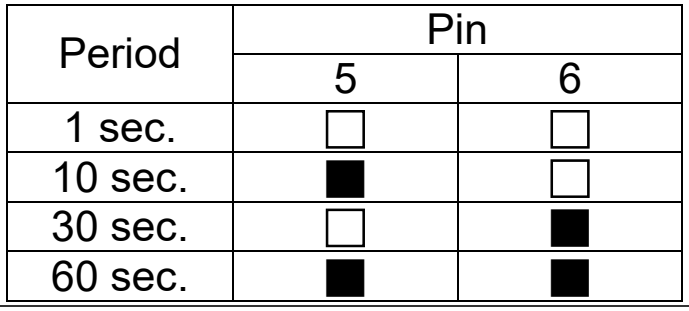
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3. DIP switch & trigger button



No.	Definitions	Descriptions
1		L Switch for configuring the RF channel, Tx period and AC wiring types.
2		R Switch for configuring the Node ID, RF group ID and the PA function.
3		Trigger button for forcing to transmit data once. Holding it 5 seconds will reset the module.

The Configurations and descriptions of L Switch and R Switch are as follows.

Items	Descriptions
RF Ch ■ : Up □ : Down	
TX Duty ■ : Up □ : Down	

Ch	Pin 1	2	3	4	Ch	Pin 1	2	3	4
0	□	□	□	□	8	□	□	□	■
1	■	□	□	□	9	■	□	□	■
2	□	■	□	□	A	□	■	□	■
3	■	■	□	□	B	■	■	□	■
4	□	□	■	□	C	□	□	■	■
5	■	□	■	□	D	■	□	■	■
6	□	■	■	□	E	□	■	■	■
7	■	■	■	□	F	■	■	■	■

Period	Pin 5	6
1 sec.	□	□
10 sec.	■	□
30 sec.	□	■
60 sec.	■	■

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Items	Descriptions

F1/F2

■ : Up
□ : Down

Wiring Type	Pin 7	Pin 8
3 Phase 4 Wire 3CT	□	□
3 Phase 3 Wire 3CT	■	□
Single Phase 2 Wire 1CT	□	■
3 Phase 3 wire 2CT / Single Phase 3 Wire 2CT	■	■

Node ID (NID)

■ : Up
□ : Down

NID	Pin 1	2	3	4	5	NID	Pin 1	2	3	4	5
0	□	□	□	□	□	16	□	□	□	□	■
1	■	□	□	□	□	17	■	□	□	□	■
2	□	■	□	□	□	18	□	■	□	□	■
3	■	■	□	□	□	19	■	■	□	□	■
4	□	□	■	□	□	20	□	□	■	□	■
5	■	□	■	□	□	21	■	□	■	□	■
6	□	■	■	□	□	22	□	■	■	□	■
7	■	■	■	□	□	23	■	■	■	□	■
8	□	□	□	■	□	24	□	□	□	■	■
9	■	□	□	■	□	25	■	□	□	■	■
10	□	■	□	■	□	26	□	■	□	■	■
11	■	■	□	■	□	27	■	■	□	■	■
12	□	□	■	■	□	28	□	□	■	■	■
13	■	□	■	■	□	29	■	□	■	■	■
14	□	■	■	■	□	30	□	■	■	■	■
15	■	■	■	■	□	31	■	■	■	■	■

Group ID

■ : Up
□ : Down

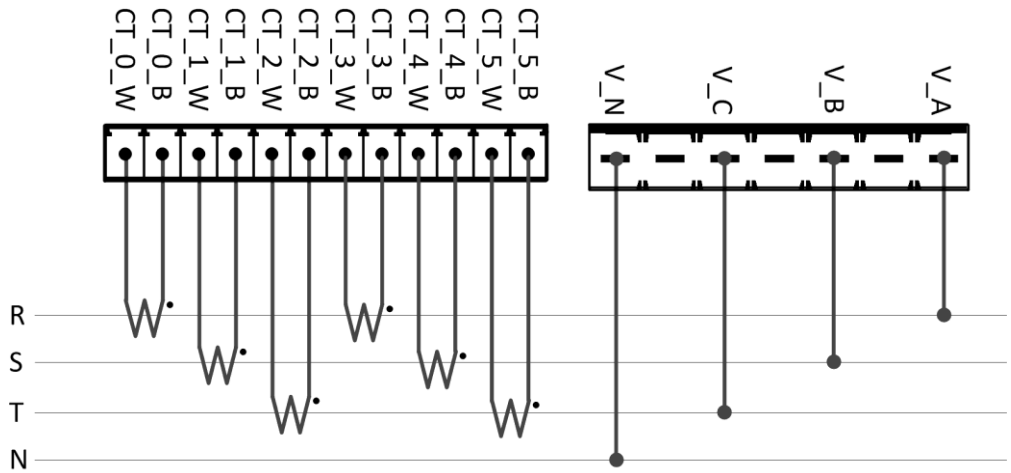
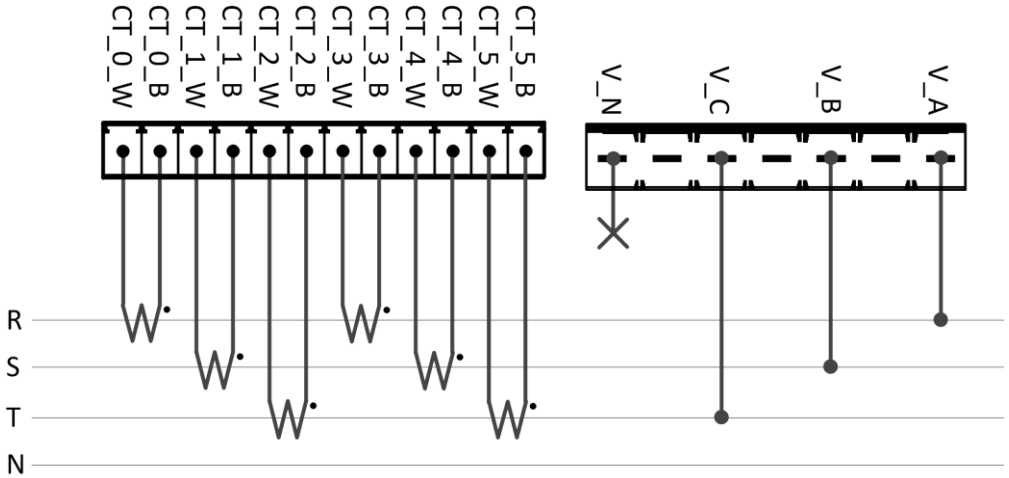
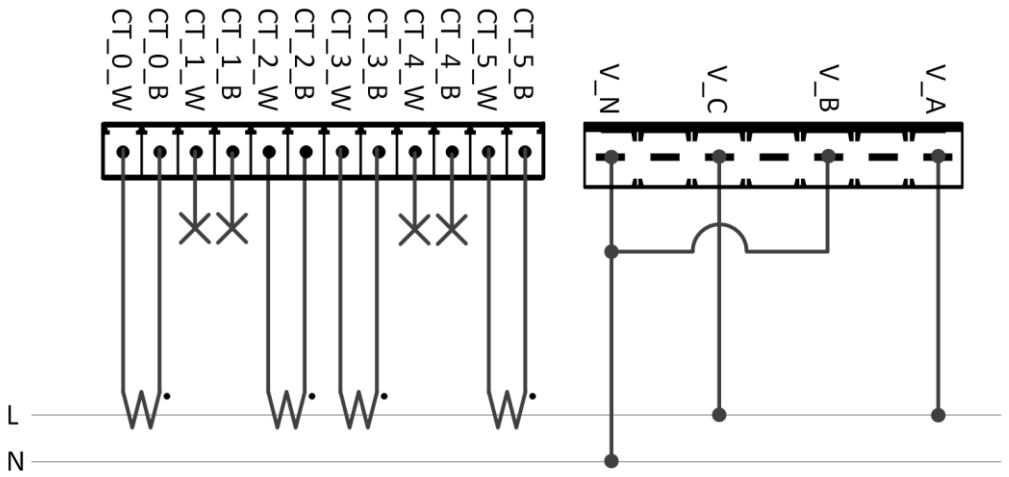
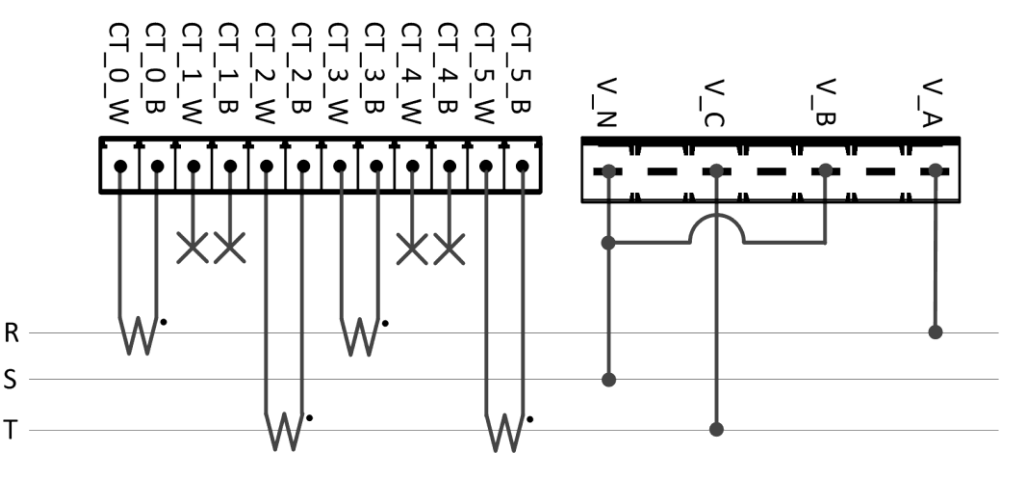
RF Group ID	Pin 6	Pin 7
0	□	□
1	■	□
2	□	■
3	■	■

PA

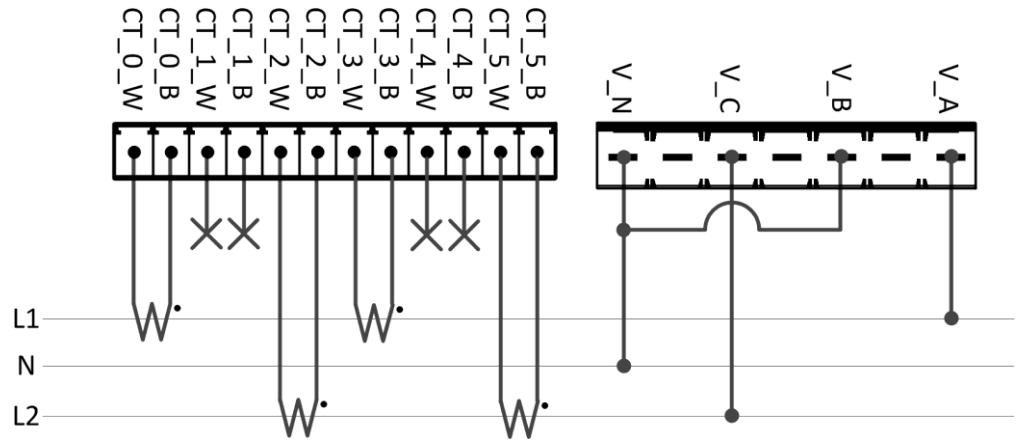
■ : Up
□ : Down

PA Function	Pin 8
Enable (only for factory test)	■
Disable	□

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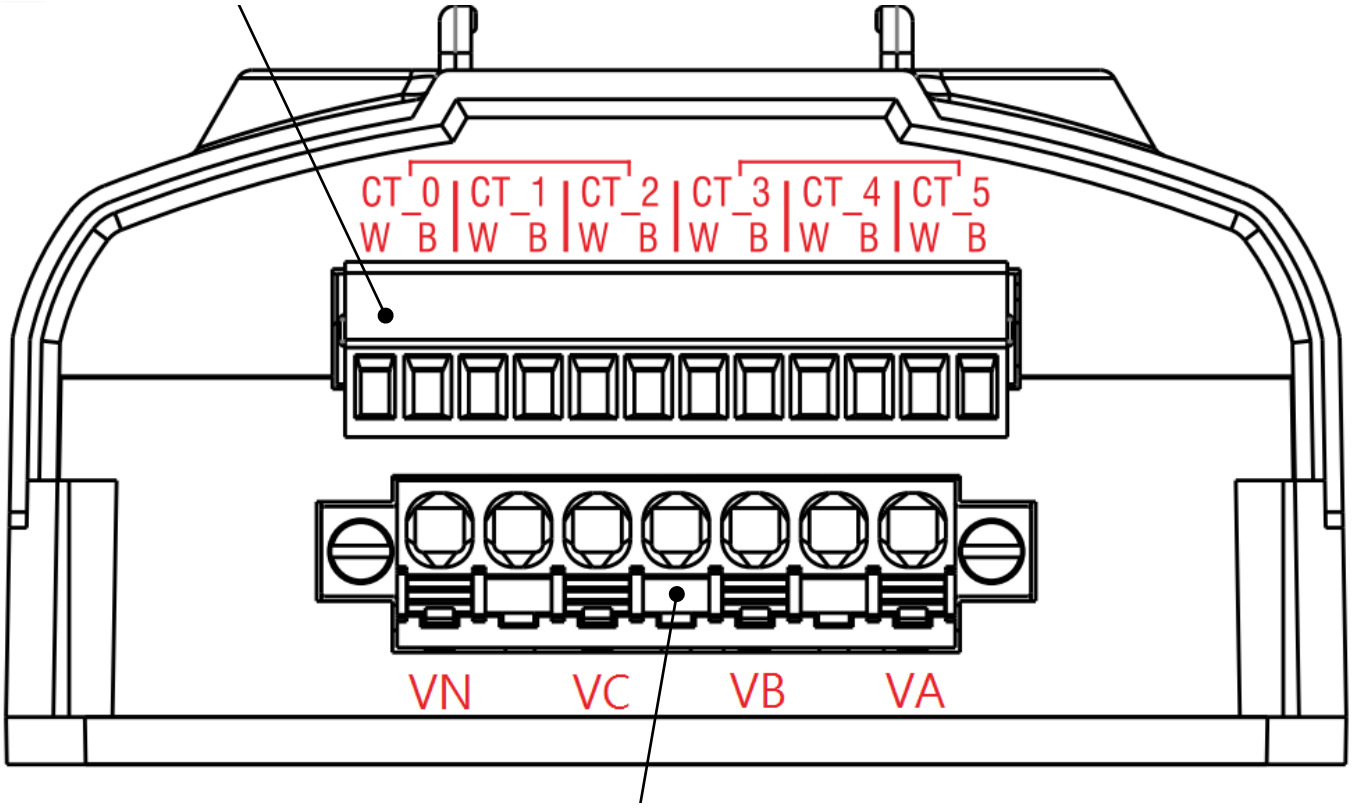
Wiring Types	Wiring Methods
3 Phase 4 Wire 3CT ■ : Up □ : Down Pin: 7 □ 8 □	
3 Phase 3 Wire 3CT ■ : Up □ : Down Pin: 7 ■ 8 □	
Single Phase 2 Wire 1CT ■ : Up □ : Down Pin: 7 □ 8 ■	
3 Phase 3 wire 2CT ■ : Up □ : Down Pin: 7 ■ 8 ■	

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Wiring Types	Wiring Methods
Single Phase 3 Wire 2CT ■ : Up □ : Down Pin: 7 ■ 8 ■	

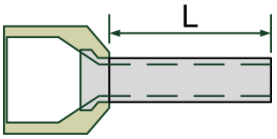
4. Pin assignments

CT input connector. The CT_0/1/2 and CT_3/4/5 are for two 3-phase AC circuits, which the pins marked with character 'W' and 'B' are for wiring the white (or red) and black cables of the CT separately.



Voltage input connector. The pins VA/ VB/ VC/ VN are for the phase R/S/T/N of 3-phase power separately. Because the pins VA and VB are also for the working power, the iWSN-9603 series module can work normally only if the voltage between VA and VB is in the range of 100VAC - 480VAC.

When connecting the wire to CT and voltage input connectors, the twin cord end terminal must be used, and the dimensions are recommended as the table.

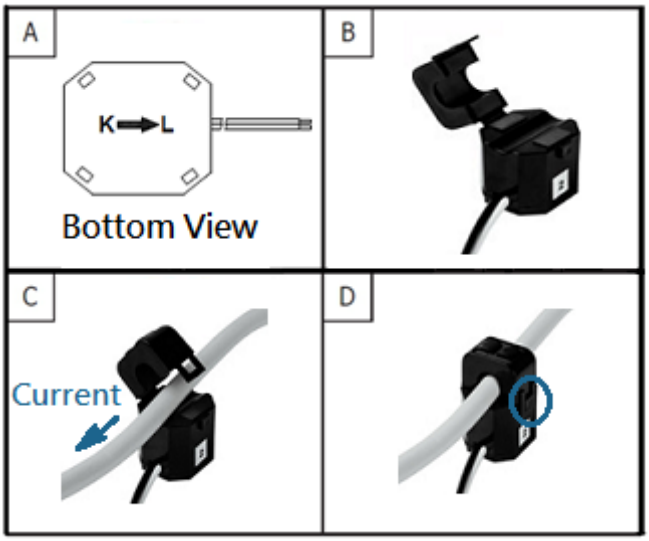


Connector Type	CT	Voltage
L (mm)	6 ~ 7	12 ~ 13

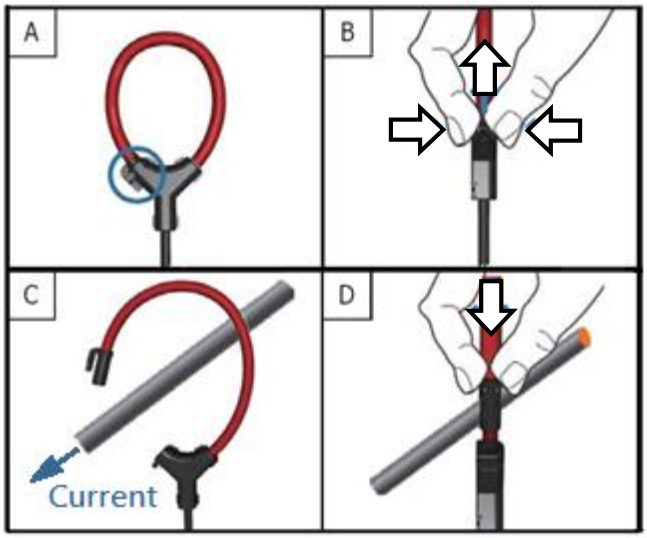
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5. CT installation

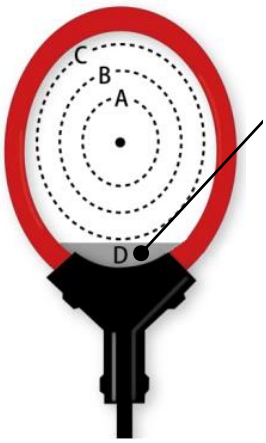
K→L on the bottom of split CT indicates the current direction. If the real current direction is different from the mark K→L, the negative value of power factor will be obtained. The Rogowski CT doesn't have the mark for current direction; however both of the split and Rogowski CTs can fit the real current direction by following the part C of the installation figure below. After finishing the CT installation, please confirm if the safety lock buckle of the CT is locked correctly.



Split CT Installation



Rogowski CT Installation



Beside the CT specification, the accuracy of Rogowski CT is also depended on the location of the measured AC cable. Users must avoid putting the measured AC cable into zone D, so that the smaller measurement error can be obtained.

Zone	A	B	C	D
Error	1%	3%	5%	>5%

The iWSN-9603 series modules can only be used with the specific CTs. Only the model name iWSN-9603-PCT-ME-IP33 doesn't include CTs. Please check the accessories of the product website or contact to the ICP DAS distributor to purchase the CTs for this model if necessary. Different model name provides different size of CTs, There are described below.





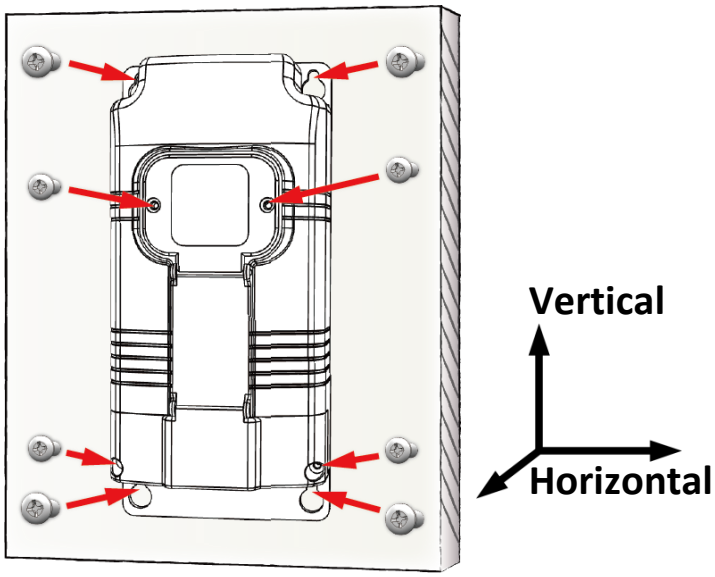
Unit: mm

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Model Name	Type and Rating	Size A	Size B
iWSN-9603-PCT-ME-IP33	Split CT, Max. 400 A	-	-
iWSN-9603-160-ME-IP33	Split CT, 100 A	15.7	29
iWSN-9603-240-ME-IP33	Split CT, 200 A	23.6	45.2
iWSN-9603-360-ME-IP33	Split CT, 400 A	35.7	57.5
iWSN-9603-RCT500P-ME-IP33	Rogowski CT, 500 A	55	68.5
iWSN-9603-RCT1000P-ME-IP33	Rogowski CT, 500 A	80	93.5
iWSN-9603-RCT2000P-ME-IP33	Rogowski CT, 500 A	105	118.5

6. Module Installation

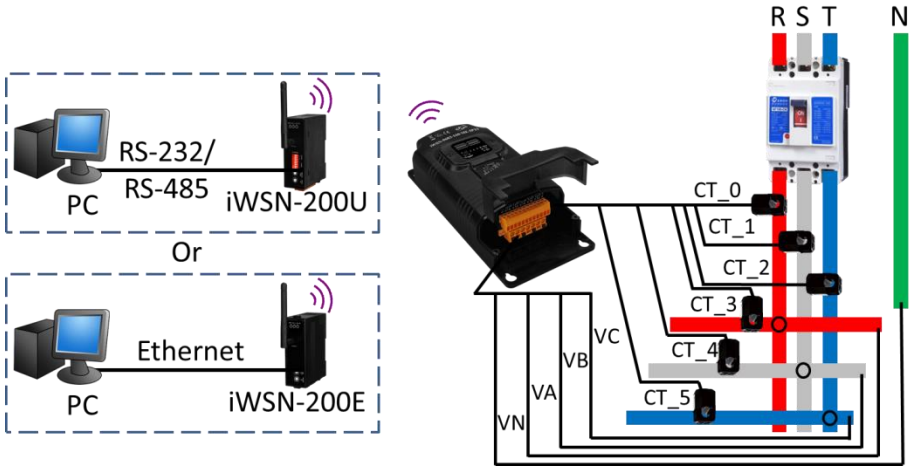
The iWSN-9603 series provide the IP33 rating enclosure which can effectively prevent the modules from the influence of the fire sprinkler systems. Users need to install the module vertically and screws up the LED panel cover and connector protector properly to guarantee the IP33 rating performance.



7. Operations

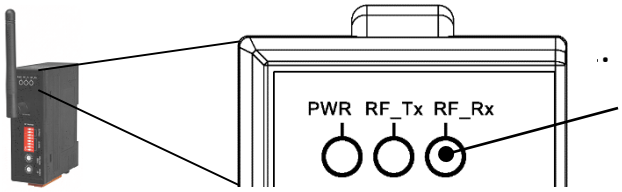
Users can prepare a PC and iWSN-200U (or iWSN-200E) for data collection of iWSN-9603 series modules.

1. Configure the RF channel and Group ID of iWSN-200U/E to the same configuration of the iWSN-9603 series modules.
2. Set the Node ID (1 ~ 31), wiring type and Tx duty, and finish the wiring connection. The Node ID must be unique in a sub-network (the same RF channel and group ID). The architecture, for example, may be as follows.



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3. Turn ON the iWSN-200U/E and iWSN-9603 series module to start the data collection. The RF_Rx LED of the iWSN-200U/E flashing once indicates the iWSN-200U/E has received one message from the iWSN-9603 series module.



. The flash of RF_Rx LED indicates the iWSN-200U/E gets the data from iWSN-9603 series module

4. Users can use the PC with iWSN Utility to get the data or directly access the iWSN-200U/E registers via Modbus RTU/TCP protocol, about the definitions of the Modbus register please refer to the iWSN-200U/E user manual.

8. Product Specifications

Model Name	iWSN-9603-PCT -ME-IP33	iWSN-9603-160 -ME-IP33 iWSN-9603-240 -ME-IP33 iWSN-9603-360 -ME-IP33	iWSN-9603-RCT500P -ME-IP33 iWSN-9603-RCT1000P -ME-IP33 iWSN-9603-RCT2000P -ME-IP33
EMS Protection			
EFT(IEC 61000-4-4)	+/- 500 V		
ESD(IEC 61000-4-2)	+/- 4 kV Contact		
LED Indicators			
Status	1 for Power, 1 for Tx, and 1 for Error		
AC Power Measurement			
Wiring	3P4W-3CT, 3P3W-2CT, 3P3W-3CT, 1P2W-1CT, 1P3W-2CT		
Loops	4 (Single phase) / 2 (Three phase)		
Input Voltage	Three phase 4 wire x1, 100 - 480 VAC (58 - 277 VAC single phase)		
Input Current	Max. 400 A	-160: Max. 100 A -240: Max. 200 A -360: Max. 400 A	-RCT500P: Max. 500 A -RCT1000P: Max. 1000 A -RCT2000P: Max 2000 A
Input Frequency	50/60 Hz		
Wh Accuracy (PF=1)	Better than 2%	Better than 1%	Better than 1%
Power Parameter Measurement	True RMS voltage (Vrms), True RMS current (Irms), Active Power (kW), Active Energy (kWh), Power Factor (PF), Frequency, and timestamp (YYYY/MM/DD HH:MM:SS)		

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Categories	CAT III		
Data Update Rate	1, 10, 30, or 60 seconds		
Antenna			
Type	Built-in Omni-directional antenna		
Power			
Consumption	3 W		
Input Type	Three phase 100 - 480 VAC (58 - 277 VAC single phase)		
CT			
Includes CTs	0 (*Note)	6	
CT Type	Split core CT		Rogowski CT
Max. Current	Depended on the selection (Max. 400 A)	-160: Max. 100 A -240: Max. 200 A -360: Max. 400 A	-RCT500P: Max. 500 A -RCT1000P: Max. 1000 A -RCT2000P: Max 2000 A
Inside Diameter	Depended on the selection (Max. 36 mm)	-160: 16 mm -240: 24 mm -360: 36 mm	-RCT500P: 50 mm -RCT1000P: 85 mm -RCT2000P: 105 mm
Leading Cable	8 m		4 m
RF			
Channels	0 ~ 15		
Group ID	0 ~ 3		
Radio Frequency	433.1000 ~ 434.6000 MHz		
Transmission Power	9±1 dBm (Typical)		
Transmission Distance (LoS)	100 m		
Node ID	1 ~ 31		
Working Duty	1, 10, 30, or 60 seconds		
Mechanical			
Dimensions (mm)	85 x 184 x 47 (W x L x H)		
Installation	Wall-mount		
Ingress Protection Rating	IP33		
Environment			
Operating Temper.	-30 °C ~ +50 °C		
Storage Temper.	-40 °C ~ +55 °C		
Humidity	10 ~ 90% RH, Non-condensing		
Altitude	Max. 2000 m		

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Note: Please check the accessories of the product website or contact to the ICP DAS distributor to purchase the CTs for this model if necessary.

Caution



1. Danger

The meter contains hazardous voltages, and should never be disassembled. Failing to follow this practice will result in serious injury or death. Any work on or near energized meters, meter sockets, or other metering equipment could induce a danger of electrical shock. It is strongly recommended that all work should be performed only by qualified industrial electricians and metering specialist. ICP DAS assumes no responsibility if your electrical installer does not follow the appropriate national and local electrical codes.

2. Warning

ICP DAS assumes no liability for any damage resulting from the use of this product. ICP DAS reserves the right to change this manual at any time without notice. The information furnished by ICP DAS is believed to be accurate and reliable. However, no responsibility is assumed by ICP DAS for its use, not for any infringements of patents or other rights of third parties resulting from its use.

3. Product Warranty & Customer Support

ICP DAS warrants all products free from defects in material and workmanship for a period of one year from the date of shipping. During the warranty period, we will, at our position, either repair or replace any product that proves to be defective. To report any defect, please contact ：+886-3-597-3366 or service@icpdas.com. Please have the model name, serial number and a detailed problem description available when you call. If the problem concerns a particular reading, please have all meter readings available. When returning any merchandise to ICP DAS, a return SN. is required.

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