

# CHNT

Empower the World



## IMU

Intelligent Measuring Unit

# ABOUT CHINT



## CHINT A leading global provider of smart energy solutions

CHINT was established 38 years ago in 1984 and built from the capital of approximately 8,000 US dollars. With our rapid development these years, CHINT has become the world's leading intelligent energy solutions provider for the whole industrial chain with the most complete product ranges. In 2021, our annual sales revenue exceeded 16.1 billion dollars and total assets of more than 16.2 billion.

Over two decades of global expansion, our business network covers more than 140 countries and regions worldwide in business industries of low-voltage electric, power transmission and distribution, smart technology, energy instruments and meters, green energy, solar and more. CHINT has more than 40,000 employees worldwide, creating more than 200,000 jobs in the industrial chains.

As the market localization progresses steadily, CHINT Global further establishes its supply chain through business integration and industrial upgrade. Optimizing the service system and project financing, providing innovatively integrated technical services for the global energy market, and a flexible working business model. energy, intelligent manufacturing and digital technology, CHINT has adopted "One Cloud & Two Nets" as the business strategy, takes "CHINT Cloud" as the carrier of intelligent technology and data application, and takes the lead in building the energy Internet of things (EIoT) and industrial Internet of things platforms (IIoT).

Focusing on the energy system of supply, storage, transmission, distribution and consumption, CHINT has core businesses of clean energy, energy distribution, big data and energy value-added services. Furthermore, CHINT's pillar businesses include photovoltaic equipment, energy storage, power transmission & distribution, low-voltage apparatuses, intelligent terminals, software development and control automation. By developing into a platform-based enterprise, CHINT provides a package of energy solutions for public institutions, industrial & commercial users and end-users, by building a regional smart energy operation ecosphere.

### Main Businesses



Clean Energy



Low-voltage Apparatus



Power Transmission and Distribution



Instrumentation and Apparatus



Smart Home



Intelligent Building



Intelligent Manufacturing



Industry Automation



Smart Heating



Smart Water



Home Electrical Apparatus



Energy Efficiency Management

# ABOUT CHINT ELECTRIC

CHINT Electric Co., Ltd is a subsidiary of CHINT Group Corporation. With the wide range of transmission and distribution products, as well as the systematic and professional solution, CHINT Electric has supplied products and EPC services to customers over 140 countries across different industrial sectors, including power utility, renewable energy, oil and gas, metallurgy, railway and so on. Now CHINT Electric Co., Ltd has become one of the main players for Power T&D equipment and EPC services in the world.

## Product Line

The product series is designed solely for the electrical systems with maximum voltage 750kV, covering around 2000 kinds of products within 150 series.

## Product Range

- Power Transformer (Up to 750kV)
- SVG Transformer (Up to 35kV)
- Dry-type Transformer (Up to 35kV)
- Reactor (Up to 252kV)
- GIS (Up to 252kV)
- Circuit Breaker and Disconnecter (Up to 252kV)
- MV & LV Switchgear Panels
- Surge Arrester and Insulator (Up to 1000kV)
- Current Transformer and Potential Transformer (Up to 500kV)
- Vacuum Circuit Breaker (Up to 12-40.5kV)
- Distribution Automation System
- Cable (Up to 36kV)
- Capacitor (Up to 110kV)



Surge Arrester  
up to  
500kV



Insulator  
up to  
1000kV



GIS  
up to  
252kV



HGIS  
up to  
145kV



Dry-type  
Transformer  
up to  
35kV



MV & LV  
Switchgear  
Panels  
up to  
40.5kV



Power  
Transformer  
up to  
750kV



CT & PT  
up to  
245kV



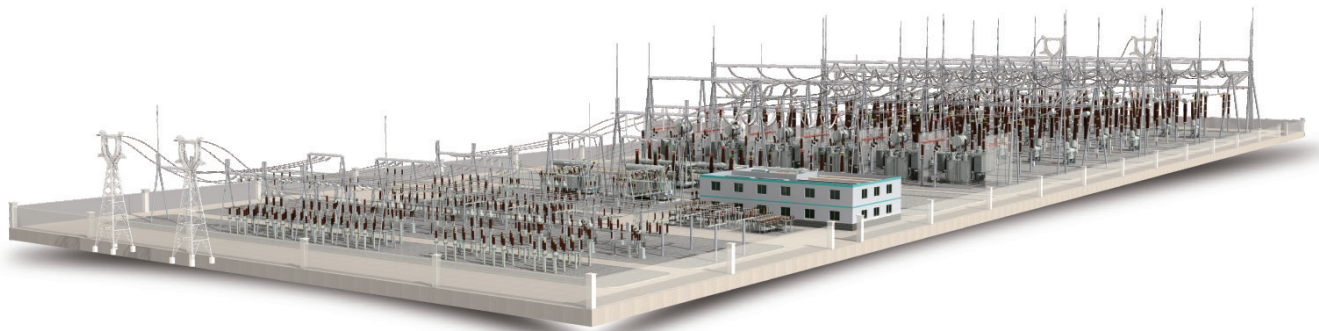
Circuit  
Breaker  
up to  
252kV



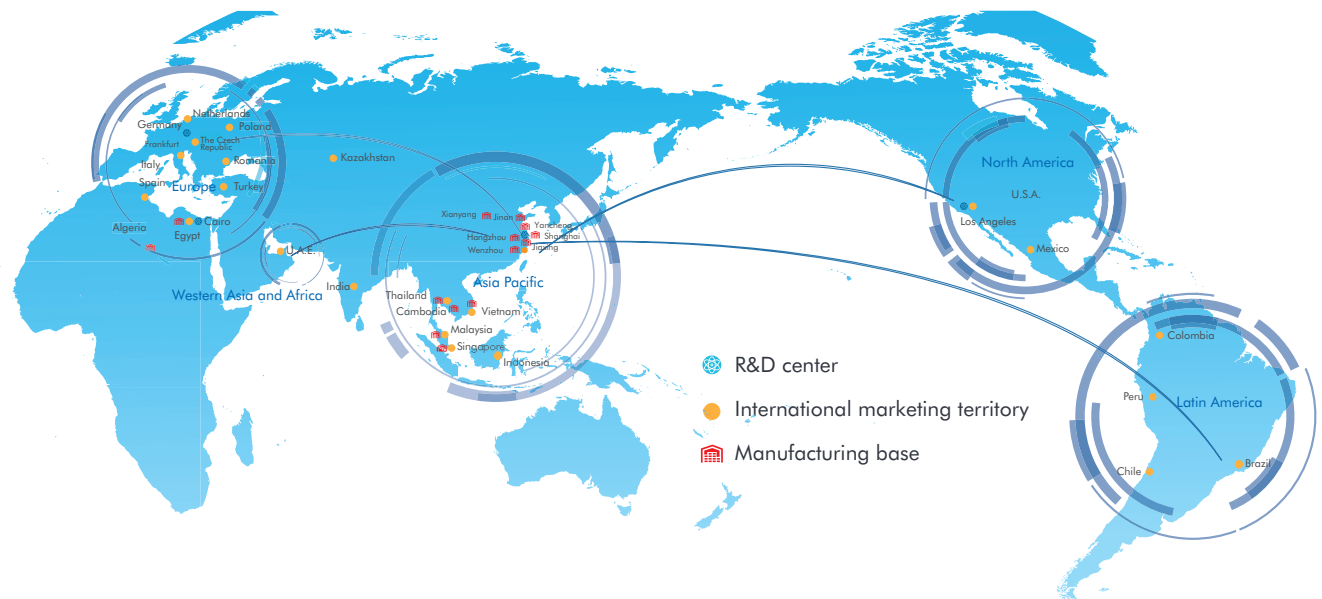
SVG  
up to  
35kV



Cable  
up to  
500kV



# GLOBAL FO OTRPRINT



**4** National R&D Centers: North America, Europe, Asia Pacific, North Africa

**6** International Marketing Territories: Asia Pacific, Western Asia and Africa, Europe, Latin America, North America, China

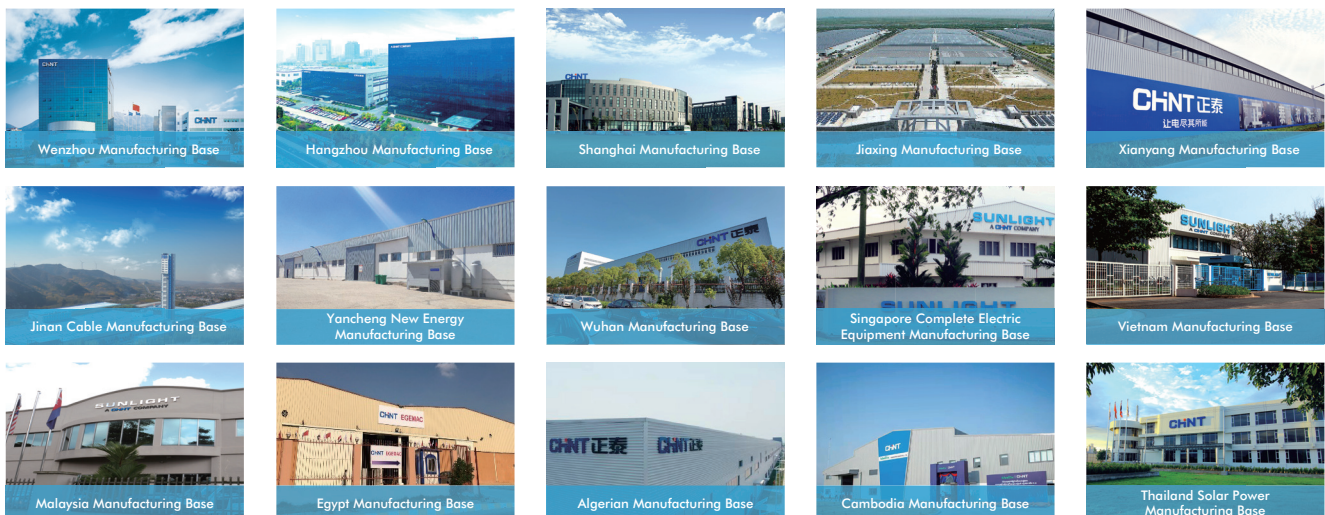
**14** Manufacturing Bases: China (Wenzhou, Hangzhou, Shanghai, Jiaxing, Xianyang, Jinan, Yancheng), Thailand, Singapore, Vietnam, Malaysia, Egypt, Algeria and Cambodia

**20+** International Logistics Centers

**2300+** Sales Companies

## GLOBAL CAPACITY LAYOUT

The industrial manufacturing bases are mainly located in Wenzhou, Hangzhou, Shanghai, Jiaxing, Xianyang and Yancheng. Additionally, CHINT has set up factories in Thailand, Singapore, Vietnam, Malaysia, Egypt, Cambodia etc.





# R&D, QUALITY, SALES, LOGISTICS

## Main Advantages

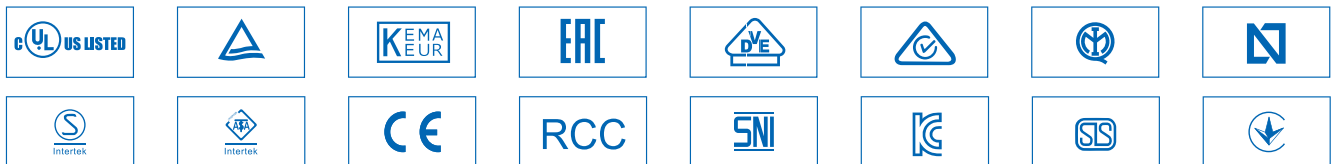
### Global R&D System

CHINT has established national R&D centers in North America, Europe, Asia Pacific, North Africa and other areas. We have explored the mode of Industry-University Research Institute Collaboration and Integration together with the universities and research institutions worldwide so as to integrate the global innovation resources and promote corporate R&D innovation and talent cultivation.

 <p>24 research institutes</p>	 <p>The average annual R&amp;D investment accounts for 4-12% of the revenue</p>	 <p>Over 6000 patents in total</p>
---	--	---

## Global Certification

The products have passed the standards and specifications in various regions around the world and obtained numerous international certifications



## Honors

- No. 1 in China's Top 100 Private Enterprises with Social Responsibility in 2021
- No. 92 in 2021 China's Top 500 Private Enterprises
- No. 244 in 2021 Top 500 Chinese Enterprises
- The intelligent manufacturing factory of low-voltage electrical appliances was selected as the national 2021 Intelligent Manufacturing Demonstration Factory



### Integrated Vertical R&D

By gathering the global industry elites to Provide safe and stable energy-saving green and advanced electric products.

### Great Quality System

Ensuring flaw-free and trouble-free products, the multi-dimensional and multilevel control is conducted through procurement, inspection, quality control and certification.

### One-stop Services

CHINT's concept is that it is not difficult to fulfill a high-quality logistics distribution at one time, while it is difficult to stay as accurate and prompt as the first-time. High-efficiency and high-precision accuracy are our requirement.

### 48-Hour Response

Providing end-to-end one-stop services for customers with complains, business consulting and technical support by solving problems immediately and including any possible problems in advance.

**5%** At least 5% of revenue is invested in research and development





### 3.Main Functions Description

#### 3.1 Measurement Function

<b>Current</b>	Phase current: $I_a$ 、 $I_b$ 、 $I_c$
	Neutral current (4P): $I_n$
	Ground fault current (4P): $I_g$
	Current unbalance: $\epsilon_i$ , $I_{ur}$
	Maximum phase current and neutral current
<b>Voltage</b>	Line voltage: $U_{ab}$ 、 $U_{bc}$ 、 $U_{ca}$
	Phase voltage: $U_{an}$ 、 $U_{bn}$ 、 $U_{cn}$
	Voltage unbalance: $\epsilon_u$ , $U_{ur}$ , $U_{nr}$
<b>Power</b>	Active power (kW): $P$ , three-phase and per phase
	Reactive power (kVAR): $Q$ , three-phase and per phase
	Apparent power (kVA): $S$ , three-phase and per phase
<b>Energy</b>	Active energy (kWh) three-phase and per phase
	Reactive energy (kVARh) three-phase and per phase
	Apparent energy (KVAh) three-phase and per phase
<b>Power Factor</b>	PF and $\cos\varphi$ (Per phase) three-phase and per phase
<b>Frequency</b>	F
<b>Harmonic</b>	Total harmonic distortion measurement THDi, THDu
<b>Temperature</b>	Measure the temperature at the outlet connection between the Module and the Molded Case.

#### 3.2 Power Freezing Function

Daily Electric Energy Freezing: When pass zero'o clock every day, freeze the current positive active power and total electric energy, reverse active power and total electric energy, positive reactive power and total electric energy, reverse reactive power and total electric energy, and record the current time identification (Month, Day, Hour and Minute).

Monthly Electric Energy Freezing: When pass zero'o clock at the end of each month, freeze the current positive active power and total electric energy, reverse active power and total electric energy, positive reactive power and total electric energy, reverse reactive power and total electric energy, and record the current time identification (Month, Day, Hour and Minute).

Instant Electric Energy Freezing: Send the Freezing command, and the Energy Meter can freeze the positive active power and total electric energy, reverse active power and total electric energy, positive reactive power and total electric energy, reverse reactive power and total electric energy at that time, and record the current time identification (Month, Day, Hour and Minute).

#### 3.3 Event Alarm

Alarm and Event Recording Functions (Setting parameters through communication): A-phase overvoltage/B-phase overvoltage/C-phase overvoltage/A-phase undervoltage/B-phase undervoltage/C-phase undervoltage/Overfrequency/Underfrequency/Power factor exceeding the lower limit/Current imbalance/ Voltage imbalance/A-phase missing/B-phase missing/C-phase missing/Reverse power/Phase-sequence error/A-phase overtemperature/B-phase overtemperature/C-phase overtemperature/Voltage harmonic exceeding the limit/Current harmonic exceeding the limit/Power on after power loss (Only record without alarm).

When an event alarm occurs, the event and timestamp will be stored in the internal memory and can be read through the communication protocol. See Annex (IMU-M8 Communication Protocol).

#### 3.4 Advanced Protection Function

Advanced Protection Function (Setting parameters through communication): With switching function, can be set to OFF, When A-phase overvoltage/B-phase overvoltage/C-phase overvoltage/A-phase undervoltage/B-phase undervoltage/C-phase undervoltage/Overfrequency/Underfrequency/Power factor exceeding the lower limit/Current imbalance/Voltage imbalance/A-phase missing/B-phase missing/Cphase missing/Power reversed/Phase-sequence?error/A-phase overtemperature/B-phase overtemperature /C-phase overtemperature/Voltage harmonic exceeding the limit/Current harmonic exceeding the limit, when any protection function is triggered, the Output PWM Level will trigger the magnetic flux to the molded case shunt to realize the protection function.

When the advanced protection function occurs, the event and timestamp will be stored in the Internal memory and can be read through the communication protocol. See Annex (IMU-M8 Communication Protocol).

#### 3.5 Basic Communication Parameters

RS485 Communication: baud rate: 1200bps、2400bps、4800bps、9600bps、19200bps; The default value is 9600bps.

Data Bit: 8;

Parity Bit: No Parity or Even Parity; The default value is Even Parity. Stop Bit: 1;

#### 3.6 Impulse withstand voltage description

Table1 Impulse withstand voltage

Impulse withstand voltage $U_{imp}$ (kV)	Test voltage and corresponding altitude					Note
	U 1.2/50 kV					
	Altitude	200m	500m	1000m	2000m	
6	7.3	7.2	7	6.7	6	Please pull out controller module before conducting dielectric test
8	9.8	9.6	9.3	9	8	Please pull out controller module and disconnect voltage supply cable before conducting dielectric test

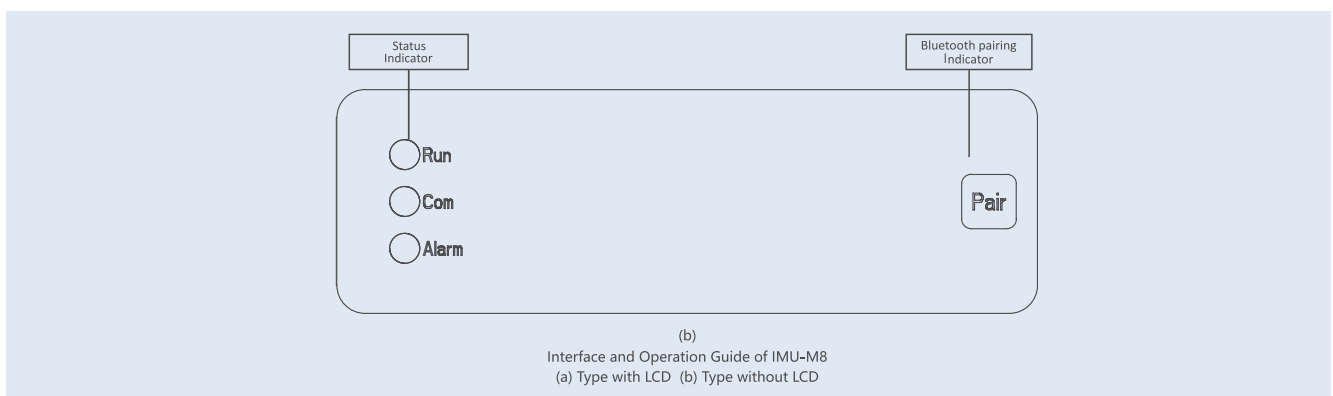
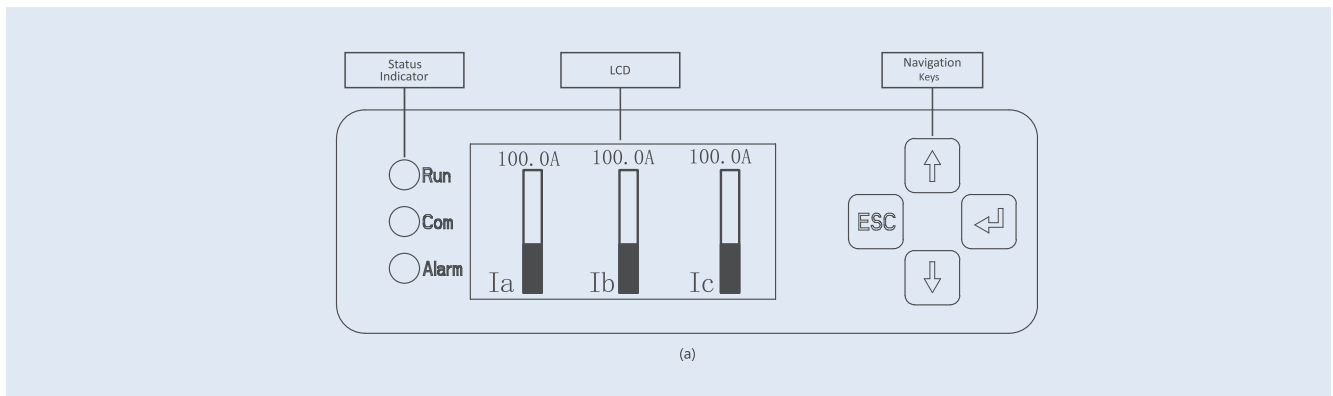
Table2 Accuracy

Items	Measurement Range	Accuracy
<b>Current</b>	$0.01 \leq I < 0.05 I_n$ $0.05 I_n \leq I < 1.2 I_n$	$\pm 1\%$ $\pm 0.5\%$
<b>Voltage</b>	$0.7 U_n \leq U \leq 1.3 U_n$	$\pm 0.5\%$
<b>Power</b>	$0.05 I_n \leq I < 0.1 I_n$ (1L) $0.1 I_n \leq I \leq 1.2 I_n$ (1L, 0.5L, 0.8C)	$\pm 3\%$ $\pm 2\%$
<b>Energy</b>	Total and quadrant reactive energy(forward and reverse)	Class 2
	Total and quadrant active energy(forward and reverse)	Class 0.5S
<b>Power Factor</b>	$\cos\phi$	$\pm 10\%$
<b>Frequency</b>	f	$\pm 0.1\text{Hz}$
<b>Temperature</b>	T1 T2 T3 TN	$\pm 2^\circ\text{C}$

Note: The accuracy above are test under room temperature.

### 4.Controller Introduction

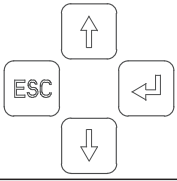



Interface of IMU-M8 Series Intelligent Measuring Unit



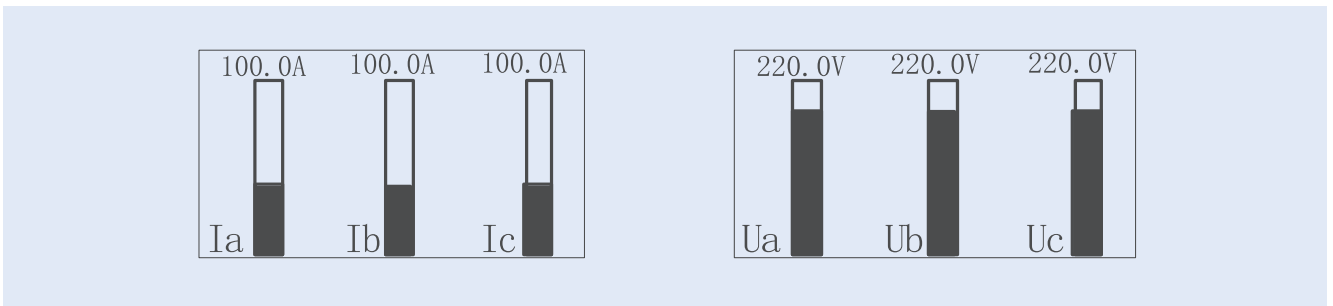


Operation: Operation Status Indicator(Green). In working status, the Green Indicator keeps flashing. Communication: Communication Status Indicator(Yellow). When receiving or sending data, the Yellow Indicator keeps flashing.

Alarm: Alarm Status Indicator(Red). When over-voltage and under-voltage faults occur, the Red Alarm Indicator is ON. After the fault is eliminated, the Indicator is OFF.

Navigation Keys		
	 "Direction" key	Press the key of PageUp/PageDown to set parameter value to increase or decrease.
	 "OK" key	Enter the Parameter Interface and confirm the modified value or status. Long press the key (3 sec) to start the wireless pairing function.
	ESC "ESC" key	Cancel or return to the previous menu
	Pair Wireless Pairing key	Long press the key (3 sec) to start the Wireless pairing function.

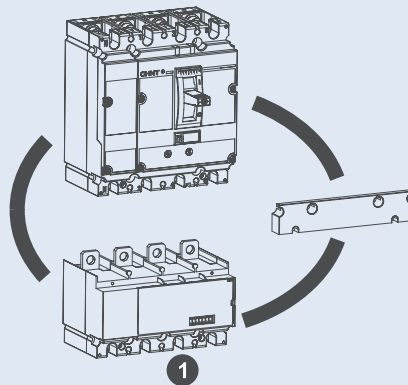
Current voltage cycle display interface:



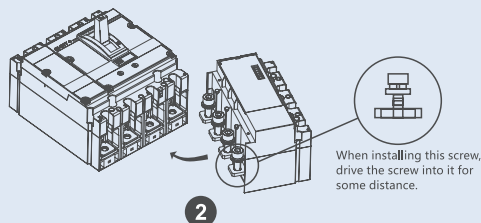
If there is no operation on the display interface within 1min,screen turned off automatically.

### 5.Installation

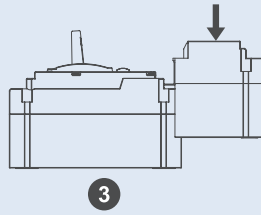
General structure chart



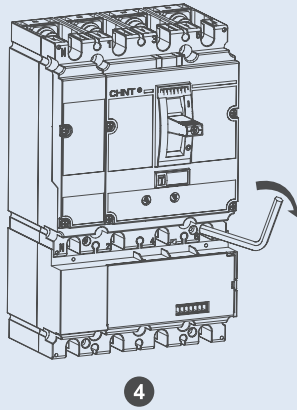
Connecting installation



Staggered installation

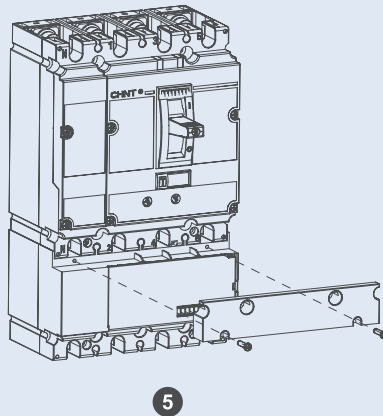


Screw fastening



Product model	Screw specification	Torque (N.m)
IMU22-M8	M8x20	11
IMU23-M8	M10x30	25

Cover plate installation



Product model	Screw specification	Torque (N.m)
IMU22-M8	ST2.9x19	1.5
IMU23-M8	ST2.9x16	1.5

6.Overall and installation dimension

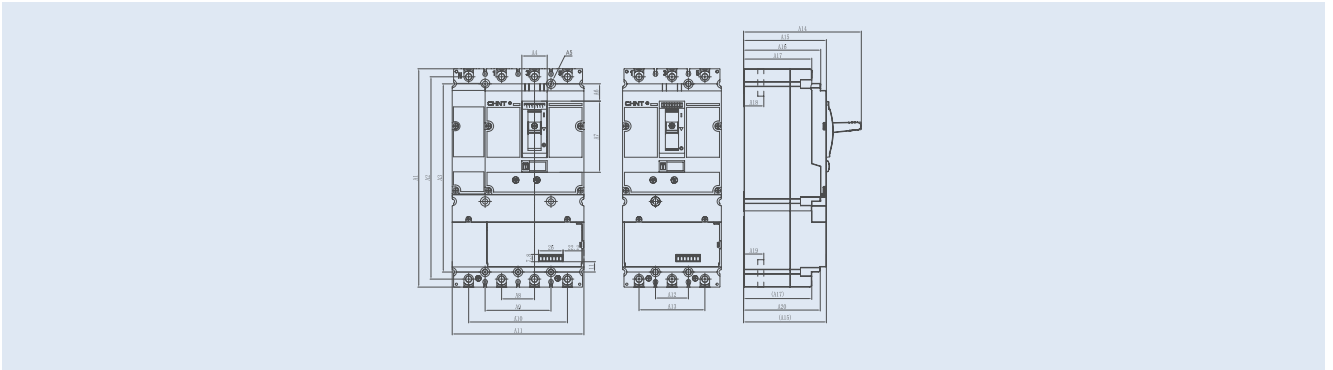
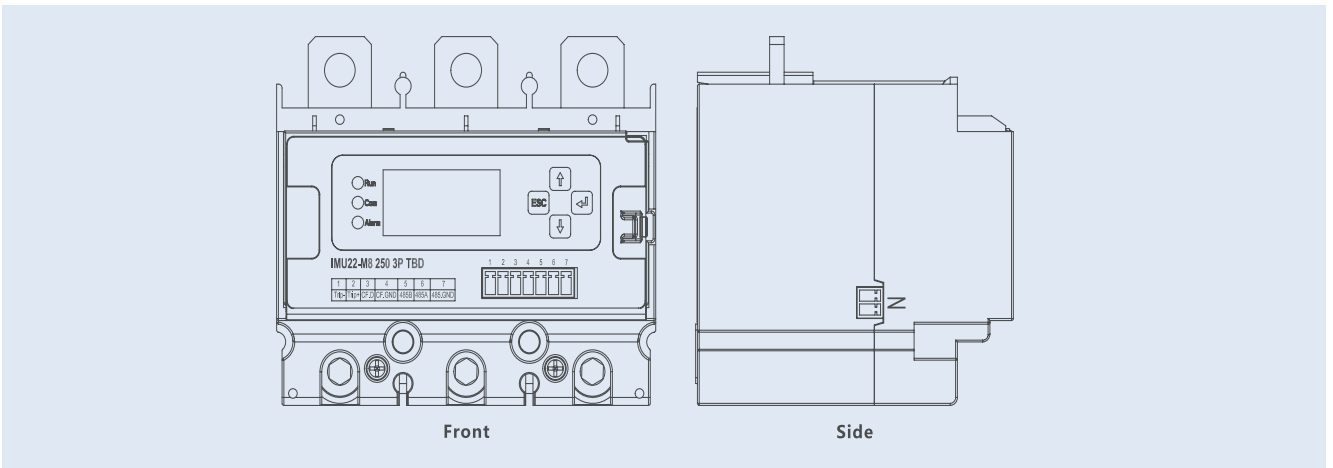


Table 3 Outline and Installation Sizes

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
IMU22-M8/3P	232	215	200	27	4Xφ5.5	18.8	75.3	-	-	-
IMU22-M8/3P					7Xφ5.5			35	70	105
IMU22-M8/3P	355	327	301	51.8	6Xφ5.5	27.5	114	-	-	-
IMU22-M8/3P					9Xφ5.5			45	90	135
	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
IMU22-M8/3P	105	35	70	125	88	82	72.5	22.5	22.5	81.5
IMU22-M8/3P	140	-	-	-						
IMU22-M8/3P	140	45	90	171	113	108	96	27	27	106
IMU22-M8/3P	185	-	-	-						

7.Introduction of terminal



The left side 2PIN terminals (either pin, interval distance is 3.5mm) are N pole of TT or TN system, and the IT system has no terminal interface. The interval of 7 PIN at front side is 3.5mm.

Table4 description of PIN

Terminal No.	Terminal Code	Terminal Function
1	Trip-	Flux negative
2	Trip+	Flux positive
3	CF.D	Active energy pulse
4	CF.GND	Active energy pulse GND
5	485B	Communication interface: 485B
6	485A	Communication interface: 485A
7	485.GND	Communication interface: GND

Remarks:

1. IMU-M8 is applicable to the power grid with 50Hz and rated voltage of 415V and below.
2. For TT or TN system, the N line on the secondary y terminal of 3P product must be connected in order to work normally.



## Asia Pacific

### China | Global HQ

Zhejiang CHINT Electrics Co., Ltd.

Address: A3 Building, No. 3655 Sixian Road, Songjiang Shanghai 201614.  
Tel: +86 21 5677 7777  
Fax: +86 21 5677 7777  
Email: global-sales@chintglobal.com  
Website: www.chintglobal.com

### Singapore | Asia Pacific HQ

CHINT Global Pte Ltd

Address: 8 Kallang Avenue, #04-06/09 Aperia Office Tower 1, Singapore 339509.  
Tel: +65 6329 3110  
Fax: +65 6329 3159  
Website: www.chintglobal.com

Sunlight Electrical Pte Ltd

Address: 1 Third Chin Bee Road, Singapore 618679.  
Tel: +65 6741 9055  
Fax: +65 6265 4586  
Email: sales@sunlightgroup.com  
Website: www.sunlightgroup.com

### India

CHINT India Energy Solution Private Limited

Address: Discovery Tower, Plot No. A-17, Ground Floor Industrial Area Sector 62 Noida, India 201309.  
Tel: +91 1202 9750 57  
Email: marketing@chint.co.in  
Website: www.chint.co.in

### Philippines

CHINT Electric Co., Ltd

Address: Unit 201, Taipan Place, F. Ortigas Jr. Road, Ortigas Center, Pasig City, Metro Manila, Philippines.  
Tel: +63 967 273 0174 / +63 977 017 6320  
Email: liq07@chintglobal.com / wencell@chintglobal.com  
Website: www.chintglobal.com

### Indonesia

PT. CHINT Indonesia

Address: Kompleks Prima Center 1, Blok C9-10, Jl. Pesing Poglar Jl. Pool PPD No. 11, RT.9/RW.2, Cengkareng, Jakarta Barat.  
Tel: +62 21 5436 3000  
Email: sales@chint-indonesia.com  
Website: www.chint-indonesia.com

### Vietnam

CHINT Vietnam Holding Co., Ltd

Address: So 2Bis-4-6, Le Thanh Ton, P. Ben Nghe Quan 1, Ho Chi Minh, Vietnam.  
Tel: +84 0283 8270 015  
Email: marketing.vn@chintglobal.com  
Website: www.chintglobal.vn

Sunlight Electrical (VN) Co., Ltd

Address: 20 Doc Lap Ave, VSIP, Thuan An City, Binh Duong Province, Vietnam.  
Tel: +84 0274 3743 505  
Email: sales.sev@sunlightgroup-vn.com.vn  
Website: www.sunlightvietnam.com.vn

### Cambodia

CHINT (Cambodia) Power Equipment Co., Ltd

Address: No.15, St. 542, Sangkat Boeung Kok 1, Khan Toul Kork, Phnom Penh, Cambodia.  
Tel: +855 23 231 077  
Email: lbin3@chintglobal.com  
Website: www.chintglobal.com

SchneiTec CHINT Co., Ltd

Address: Ansor Kdam Village, Sna Ansa Commune, Krakor District, Pursat Province, Cambodia  
Tel: +855 09 5353 268  
Email: liubin@schneitec-chint.com.kh / info@schneitec-chint.com.kh  
Website: www.schneitec-chint.com.kh

## Latin America

### Brazil

CHINT Elétricos América do Sul Ltda.

Add: Av. Paulista, 1765 - Edifício Scarpa - Conjunto 22, Bela Vista - CEP 01311-200 - São Paulo - SP  
Tel.: +55 (11) 3266-7786  
E-mail: chintbr@chint.com

### Peru

CHINT LATAM (PERU) S.A.C.

Add: Av. Camino Real No.348, Torre El Pilar, Oficina 603, San Isidro, Lima 27, Peru  
Tel: +51 1 763 4917  
Email: chintlatamperu@chint.com

### Ecuador

CHINT ELECTRICS (HONG KONG) LIMITED (Ecuador Branch)

Add.: Calle: REP.DEL SALVADOR Número: 10-84 Intersección: AV NACIONES UNIDAS  
Edificio: CENTRO COMERCIAL MANSION BLANCA  
E-mail: lufz@chintglobal.com

## Europe

### Italy

**CHINT Italia Investment Srl**

Add: Via Bruno Maderna 7 30174 Venezia  
Tel: +39 041.446614  
Fax +39 041.5845900  
E-mail: info@chint.it

### Spain

**CHINT Electrics S.L.**

Add: Calle José Echegaray, Num 8.Parque Empresarial Las RozasEdificio 3,  
Planta Baja, Oficina 7-8.C.P: 28232 Las Rozas (Madrid)  
Tel: +34 91 645 03 53  
E-mail: info@chint.eu

### Czech Republic

**NOARK Electric Europe s.r.o.**

Add: Sezemická 2757/2, 193 00 Prague 9  
Tel: +420 226 203 120  
Email: europe@noark-electric.com

### Turkey

**CHINT Turca Elektrik Sanayi VE Ticaret Anonim Sirketi**

Add: Zmrutevler Mahallesi Ural Sokak No. 22/18 NAS PLAZA B Block KAT 1,  
Maltepe, Istanbul  
Tel: +90216 621 00 55  
Fax: +90216 621 00 50  
E-mail: fatura@chint.com.tr

## West Asia & Africa

### Egypt

**CHINT Electrics (Egypt) Co., Ltd**

Add: Building B16 - Smart village, Abu Rawash - Giza, Egypt  
Tel: +20 1097173769  
P.O BOX : 00202  
Email: chinteg@chintglobal.com

### Kenya

**ZHENGTAI ELECTRICS(KENYA) CO., LIMITED**

Add: OFFICE 1A, 8TH FLOOR, KISM TOWERS, LR No. 209/945/1- NGONG  
ROAD - NAIROBI, KENYA  
Tel: +254113958911  
Email: zhangyuans@chint.com

### U.A.E

**CHINT MIDDLE EAST AND AFRICA DMCC**

Add: Unit No: 2101, 21085,2109 , Jumeirah business center 1, Cluster G,  
Jumeirah Lakes Towers, Dubai, UAE  
Tel: +97145571532  
P.O BOX: 337555  
E-mail: global-sales@chint.com

### Nigeria

**CHINT POWER & ENERGY SERVICES CO., LIMITED**

Add: 3RD FLOOR TOWER 2, CHURGATE BUILDING , VICTORIA ISLAND, LAGOS  
Tel: +234 8110728119  
E-mail: czjie@chintglobal.com

## North America

### United States

**NOARK Electric (USA) Inc**

Add: 2188 Pomona Blvd., Pomona, CA 91768  
Tel: 626-330-7007  
Fax: 626-330-8035  
E-mail: nasales@noark-electric.com

### Mexico

**CHINT SOLAR MEXICO S DE RL DE CV**

Add: Miguel Cervantes Saavedra 169 Piso 11 Col. Granada Del. Miguel Hidalgo  
C.P. 11520 CDMX, México  
Tel: +52 1-55-8881-6127  
E-mail: marie.casillas@chint-mexico.com

**CHINT GLOBAL PTE. LTD.**

Building A3, 3655 SiXian Road,  
Songjiang District, Shanghai, China

Tel: +86-21-5677 7777 Web: [www.chintglobal.com](http://www.chintglobal.com)E-mail: [global-sales@chintglobal.com](mailto:global-sales@chintglobal.com)**A CHINT COMPANY**