1 Scope and application

●Short circuit protection
●overload protection
●Over-voltage and under-voltage protection
●Three-phase imbalance protection
●quarantine
●Electric energy measurement
●Remote closing and opening
●Timing closing and opening

NDB5E-80 series IOT miniature circuit breaker is applicable to low-voltage terminal power distribution in industrial, civil building, energy, communication and infrastructure construction fields.

2 Product picture

NDB5E-80 4P

3 Specification and model description

ND	B	5	E	-	80	□	□	/	□
1	2	3	4		5	6	7		8

S/N	Description of serial number	NDB5E-80
1	Enterprise code	ND
2	Product code:	B： miniature circuit breaker
3	Design S/N	5
4	Derived code number	E： IoT type
5	Current of shell frame	80（A）

6	Trip characteristics	B、C、D
7	Rated current	6A、10A、16A、20A、25A、32A、40A、50A、63A、80A
8	Number of poles	1P、2P、3P、4P

4 Main technical parameters

4.1 Electrical parameters

Table 1：NDB5E-80 Main Electrical Parameters

				
Product model	NDB5E-80 1P	NDB5E-80 2P	NDB5E-80 3P	NDB5E-80 4P
Applicable Standards	IEC60898-1 / GB/T10963.1			
Pass certification	CCC、CB、CE			
Number of poles of product	1P	2P	3P	4P
Rated operating voltage(V)	AC230/240		AC400/415	
Rated insulation voltage(V)	500			
Rated impulse withstand voltage(kV)	4			
InRated current(A)	6、10、16、20、25、32、40、50、63、80			
Rated short circuit breaking capacity(kA Valid value)	6			
Effective value (RMS)Rated operating short circuit breaking capacity(kA Valid value)	6			
Instantaneous trip characteristic	Type：B(3～5)In、Type：C(5～10)In、Type：D(10～14)In			
Power frequency withstand voltage	AC2500V 50Hz 1min			
Reference setting	30			

temperature(℃)	
Rated frequency(Hz)	50
Using Categories	A
Installation Category	II、III
Electrical life (time)	6000
Mechanical life (time)	10000
Wiring capacity	erminal block: tunnel terminal block; Terminal connection area: Minimum 1mm2, maximum 25mm2 Connecting screw: M5; rated torque: 2.0N · m;
Isolation function	Practical breaking indication; The green mark in the inspection window indicates that the contact is in the disconnected position;
Incoming line mode	Upper incoming line

4.2 Function and parameter setting

4.2.1 Overvoltage protection function

Applicable Products	1P/2P/4P	3P
Parameter setting	Setting range	
Protection value of action	265.0V-275.0V,step 0.1V	450.0V-480.0V,step 0.1V
Over voltage recovery	195.0V-253.0V，30s±5s Automatic closing	339.0V-440.0V，30s±5s Automatic closing
Trip setting time	T：3.0s-15.0s,step 0.1s	
Operating time	t = T ±5%	
Early warning threshold	U:242.0V-275.0V,step 0.1V	U:420.0V-480.0V, step 0.1V
Early warning return	Threshold minus 5V	
Early warning output	3s,Status Setting,Gateway Reading	
Function Options	Off/Pre-Alarm/Protection/Pre-Alarm+Protection	
Remarks	Automatic reclosing is allowed for 3 times within 10 minutes. If overvoltage fault occurs again, automatic reclosing and locking will be stopped. With locking as the starting point, automatic reclosing or on-site manual closing is allowed after 10 minutes to release the locking.	

4.2.2 Undervoltage protection function

Applicable Products	1P/2P/4P	3P
Parameter setting	Setting range	
Protection value of action	161.0V-180V,step 0.1V	266.0V-313.0V,step 0.1V

Under voltage recovery	195.0V-253.0V，30s±5s Automatic closing	339.0V-440.0V，30s±5s Automatic closing
Trip setting time	T：0.6s-6s,step 0.1s	
Operating time	t = T ±5%	
Early warning threshol	U: 161.0V-219.V,step 0.1V	U: 266.0V-380.0V,step 0.1V
Early warning return	Threshold+5V	
Early warning output	3s， Status Setting, Gateway Reading	
Function Options	Off/Pre-Alarm/Protection/Pre-Alarm+Protection	
Remarks	Automatic reclosing is allowed for 3 times within 10 minutes. If overvoltage fault occurs again, automatic reclosing and locking will be stopped. With locking as the starting point, automatic reclosing or on-site manual closing is allowed after 10 minutes to release the locking	

4.2.3 Lack of phase protection function

Applicable Products	3P	4P
Parameter setting	Setting range	
Protection value of action	50.0V-171.0V,step 0.1V	50.0V-103.5V,step 0.1V
Trip setting time	T：3.0s-30.0s,step 0.1V	
Operating time	t = T ±5%	
Early warning threshol	50.0V-171.0V,step 0.1V	U: 50.0V-103.5V,step 0.1V
Early warning return	U*0.95	
Early warning output	3s，Status Setting, Gateway Reading	
Function Options	Off/Pre-Alarm/Protection/Pre-Alarm+Protection	
Remarks	Manual closing is required after fault opening	

4.2.4 Voltage imbalance protection function

Applicable Products	3P/4P
Parameter setting	Setting range
Protection value of action	2%-30% Ue,step 1%Ue
Trip setting time	T：0.2s-60.0s,step 0.1s
Operating time	t = T ±5%
Early warning threshol	2%-30% Ue
Early warning return	Threshold minus 0.2%
Early warning output	3s，Status Setting, Gateway Reading
Function Options	Off/Pre-Alarm/Protection/Pre-Alarm+Protection
Remarks	Manual closing is required after fault opening

4.2.5 Current imbalance function

Applicable Products	3P/4P
Parameter setting	Setting range
Protection value of action	30%-100% [(IABC-Iavg)/Iavg]

Trip setting time	T：0.2s-60.0s,step 0.1s
Operating time	t = T ±5%
Early warning threshol	20%-80% [(IABC-Iavg)/Iavg]
Early warning return	Threshold minus 0.2%
Early warning output	3s，Status Setting, Gateway Reading
Function Options	Off/Pre-Alarm/Protection/Pre-Alarm+Protection
Remarks	Current imbalance is the difference between the value of each phase current and the average value of three-phase current divided by the average current, that is, each phase current (IABC-Iavg) / Iavg. Manual closing is required after fault opening

4.2.6 Phase sequence protection function

Applicable Products	3P/4P
Parameter setting	Setting range
Protection value of action	Judging ABC,A 0°,B -120°,C 120°
Trip setting time	T：3.0s-30.0s,step 0.1s
Operating time	t = T ±5%
Early warning threshol	Judging ABC,A 0°,B -120°,C 120°
Early warning return	non
Early warning output	3s，Status Setting, Gateway Reading
Function Options	Off/Pre-Alarm/Protection/Pre-Alarm+Protection
Remarks	Manual closing is required after fault opening

4.2.7 Zero phase loss protection function

Applicable Products	1P/2P/4P
Parameter setting	Setting range
Trip setting time	T：0.5s-60.0s,step 0.1s
Operating time	t = T ±5%
Function Options	Off/ Protection
Remarks	Manual closing is required after fault opening

4.2.8 Overpower protection function

Applicable Products	1P/2P/3P/4P
Parameter setting	Setting range
Protection value of action	5%P-300%P（P=In*Ue）,step 1%P
Trip setting time	T：6s-60s,step 0.1s
Operating time	t = T ±5%
Early warning threshol	5%P-240%P（P=In*Ue）,step 1%P
Early warning return	Threshold minus 0.1kW
Early warning output	3s，Status Setting, Gateway Reading
Function Options	Off/Pre-Alarm/Protection/Pre-Alarm+Protection

Remarks	Set the upper power limit, and open the protection after reaching the set value. Manual closing is required in case of failure

4.2.9 Electronic overload protection function

Applicable Products	1P/2P/3P/4P
Parameter setting	Setting range
Protection value of action	Ir:（0.4-1.0）In,step 0.1In
Trip setting time	Tr：3.0s-30.0s,step 0.1s
Operating time	$t=(1.5\ Ir/I)^2*Tr$，±5%
Early warning threshol	Ip:（0.32-0.8）In,step 0.1In
Early warning output	3s，Status Setting, Gateway Reading
Early warning return	Ip*0.95
Function Options	Protection/Pre-Alarm+Protection
Remarks	Non-closable, manual closing required in case of failure

4.2.10 Monitoring function

Monitoring parameters	accuracy
Current monitoring	Level 0.5:(1A-In)
Phase voltage monitoring	Level 0.5:（Phase voltage 185-255V）
Line voltage monitoring	Level 0.5:（Line voltage 320V-440V）
Power factor monitoring	（-0.5~0.5）±0.02
Power monitoring (active/reactive/apparent)	Level 1
Energy monitoring (active/reactive/apparent)	Level 1：(current：1A-In，voltage：(0.85-1.1))Ue， power factor：cosφ=1.0）
Forward/reverse electric energy measurement	±2%
PCB temperature monitoring	±2℃（-25℃~+55℃）
Frequency measurement 50Hz	(45.0-55.0)±0.2Hz、Separate display of phase voltage and line voltage frequency (Phase voltage: 185-255V; line voltage: 320V-440V)

4.2.11 Control function

control function	Remote closing function	≤3s
	Remote opening function	≤2s
Timing control	support	

4.2.12 Interactive function of Internet of Things

Internet of Things interactive function	Internet of Things management platform	Control authority by level through Internet or private network management
	Local Edge Calculations	Upload of voltage, current, electric energy and other data

	Query of locally stored fault data	Alarm records:10、Fault recording:10、Displacement information:30
	Remote upgrade function	Support upgrading of remote push program

4.3 Ex-factory setting value of protection function

Parameter setting	Factory setting value			
Protection functions	Protection value of action	Early warning threshold	Function Default	Trip setting time
Overvoltage protection function	275.0V（1P、2P、4P） 480.0V（3P）	253.0V（1P、2P、4P） 440V（3P）	open	3.0s
Undervoltage protection function	161V（1P、2P、4P） 266V（3P）	207.0V（1P、2P、4P） 360.0V（3P）	open	3.0s
Overpower limit protection function	100%P（1P、2P） 300%P（3P、4P）	80%P（1P、2P） 240%P（3P、4P）	close	15.0s
Lack of phase protection function	50V（3P、4P）	50V（3P、4P）	open	3.0s
Voltage imbalance protection function	20%（3P、4P）	15%（3P、4P）	close	3.0s
Current imbalance function	60%（3P、4P）	40%（3P、4P）	close	5.0s
Phase sequence protection function	Judging ABC,A 0°,B -120°,C 120°（3P、4P）	Judging ABC,A 0°,B -120°,C 120°（3P、4P）	close	3.0s
Zero phase loss protection function	——	——	close	3.0s
Electronic overload protection function	In	0.8In	open	30.0s

5 Working conditions

5.1 Ambient temperature range of NDB5E-80 product

- Service ambient temperature:-25℃～+55℃
- Altitude above sea level：≤2000m,no derating required
- Relative air humidity:≤95%
- Resistant to wet air
- Resistant to the effects of salt mist and oil mist
- In the medium without explosion hazard, and the medium is not enough to corrode the metal and damage the insulation gas and conductive dust
- In a place free from rain and snow

5.2 Capacity reduction coefficient of NDB5E-80 product under different altitude conditions

Table 2 Derating factor for NDB5E-80 product at different altitudes

Altitude above	Rated	Maximum	Rated power	Rated impact	Rated short

sea level H(km)	operation current	working capacity voltage	frequency Withstand voltage	Withstand voltage	circuit breaking capacity and electrical life
2	In	Ue	1.00	1.00	1.00
3	0.97In	0.89Ue	0.89	0.89	0.83
4	0.94In	0.76Ue	0.80	0.80	0.71
5	0.90In	0.68Ue	0.73	0.73	0.63

5.3 Pollution degree

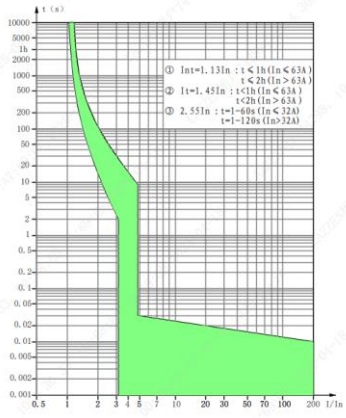
Pollution level2

5.4 IP code (Degree of protection provided by enclosures)

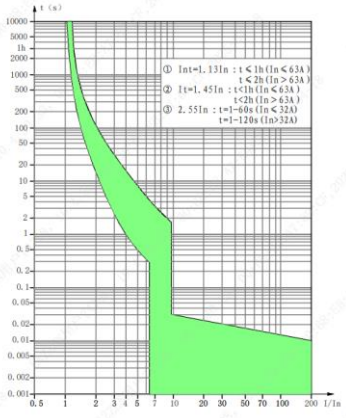
Body protection grade：IP20

6 Tripping characteristic

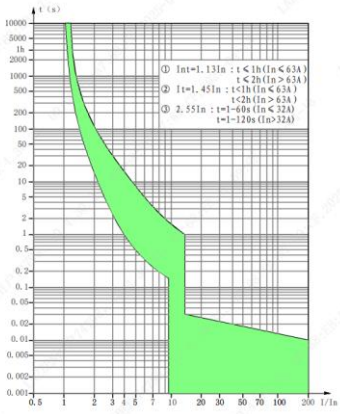
Type B（3～5）In



Type C（5～10）In



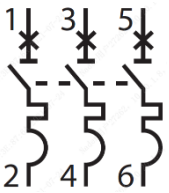
Type D（10～14）In



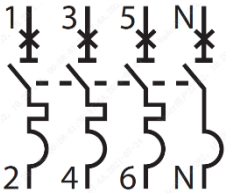
7 Electrical schematic diagrams

1P

2P

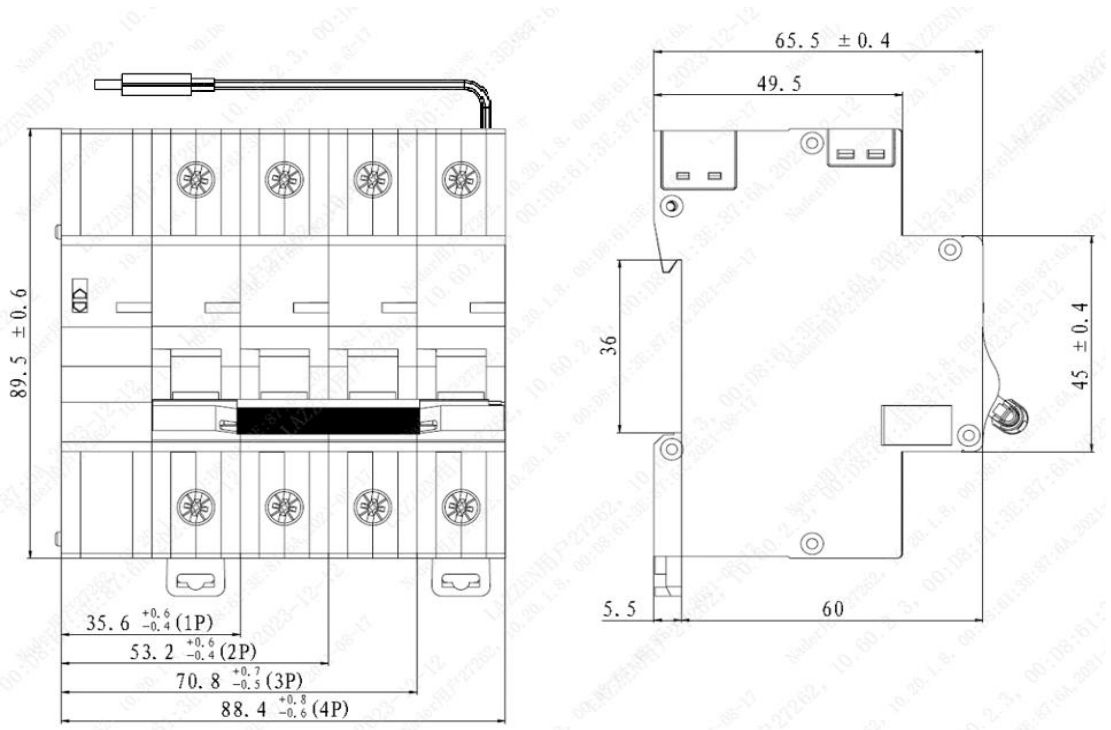


3P



4P

8 Product appearance and installation dimensions



9 Installation

Modular structure, easy to install on TH35mm × 7.5mm standard guide rail.

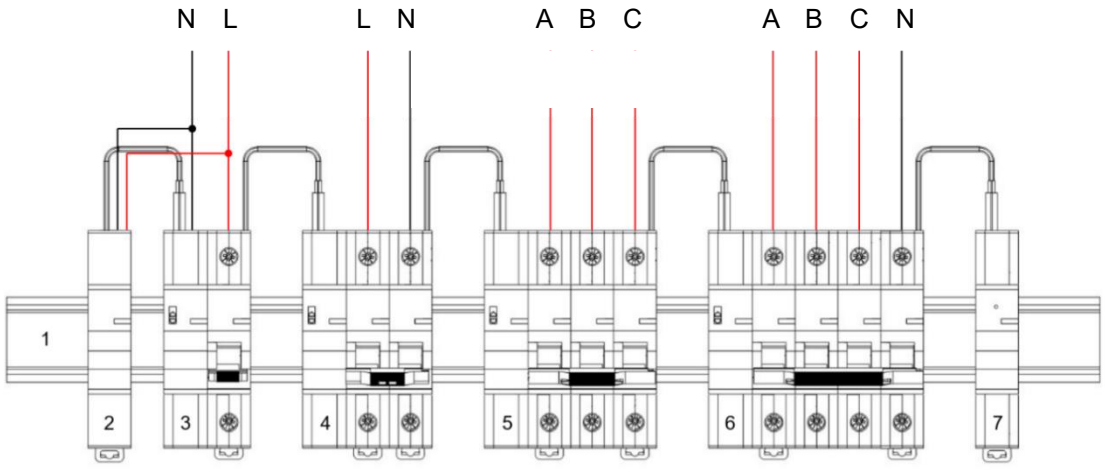


Figure annotation

No. 1 - Install guide rail TH35-7.5;

No. 2 - Power module (AC power supply). The wiring method shall be in accordance with the printed product identification, and the maximum wire diameter shall be ≤ 5mm ². The power supply shall be taken from the incoming terminal of the circuit breaker;

No. 3 - 1P IoT miniature circuit breaker;with an N-phase connection port on the electrical control side; needs to be connected to the N-phase for the purpose of detecting electrical parameters.

No. 4 - 2P IOT miniature circuit breaker;
No. 5 - 3P IOT miniature circuit breaker; Applicable only to triangular connections;
No. 6 - 4P IOT miniature circuit breaker;
No. 7 - Communication module, communication interface: RS485、4G、ETH、WiFi；
The upper and lower row products can be cascaded with cascade extension lines. Multiple products can share gateway module and power module. When executing one-key closing function under rated voltage, the product has a certain delay, and the maximum delay time is not more than 2s.

The maximum cascade number of multiple products is shown in the following table:

Product category	1P	2P	3P/4P	Mixed and matched combination
Number of cascades	32	24	16	16

10 Packaging and storage

1) Maximum package volume per box

Specification and model	NDB5E-80			
Number of poles	1P	2P	3P	4P
Quantity (set/box)	6	4	4	3

2) STORAGE OF

The storage temperature is - 40 ℃ ~+70 ℃; Relative air humidity shall not exceed 80%; Store in the warehouse without acid, alkali or other corrosive gases in the air. Under the above conditions, the storage period shall not exceed 18 months from the production date.

11 RoHS compliance

Product conforms to RoHS2.0.

NDB5E-80 products are in compliance with Directive 2011/65/EU and (EU) 2015/863 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

12 Accessories

12.1 List of attachments

S/N	Name	Specifications	Number	Remarks
1	N- line connection terminal	2P/3.5/BCP- 350-2-GY	1	1P, 3P (with N wire) product configuration

12.2 Optional accessories

DF-P6 power module	Loaded on the left side of NDB5E-80 IOT miniature circuit breaker, providing DC power supply for product operation;
DF-TMB RS485 gateway module	It is loaded on the right side of NDB5E-80 IOT miniature

	circuit breaker to provide data transmission;
DF-TMB ETH gateway module	It is loaded on the right side of NDB5E-80 IOT miniature circuit breaker to provide data transmission;
DF-TMB Wi-Fi Gateway Module	It is loaded on the right side of NDB5E-80 IOT miniature circuit breaker to provide data transmission;
DF-TMB 4G gateway module	It is loaded on the right side of NDB5E-80 IOT miniature circuit breaker to provide data transmission;
Cascade extension line	It is loaded between NDB5E-80 IOT miniature circuit breaker and used for cascade connection of upper and lower products;

12.3 Parameters of accessories

DF-P6 power module	
Photo of product	
input voltage	AC100-AC250V
Output capacity	DC12V，2.5A
Surge impact resistance	Common mode 4kV,Differential mode 2kV

DF-TMB gateway module				
Product model	DF-TMB RS485	DF-TMB ETH	DF-TMB WiFi	DF-TMB 4G
Photo of product				
input voltage	DC12V			
Antenna interface	/	/	SMA RF	
communication interface	RS485	ETH	WiFi	4G

Communication protocol	Modbus	MQTT
Function description	Transparent transmission or distribution of relevant data of circuit breaker via protocol	

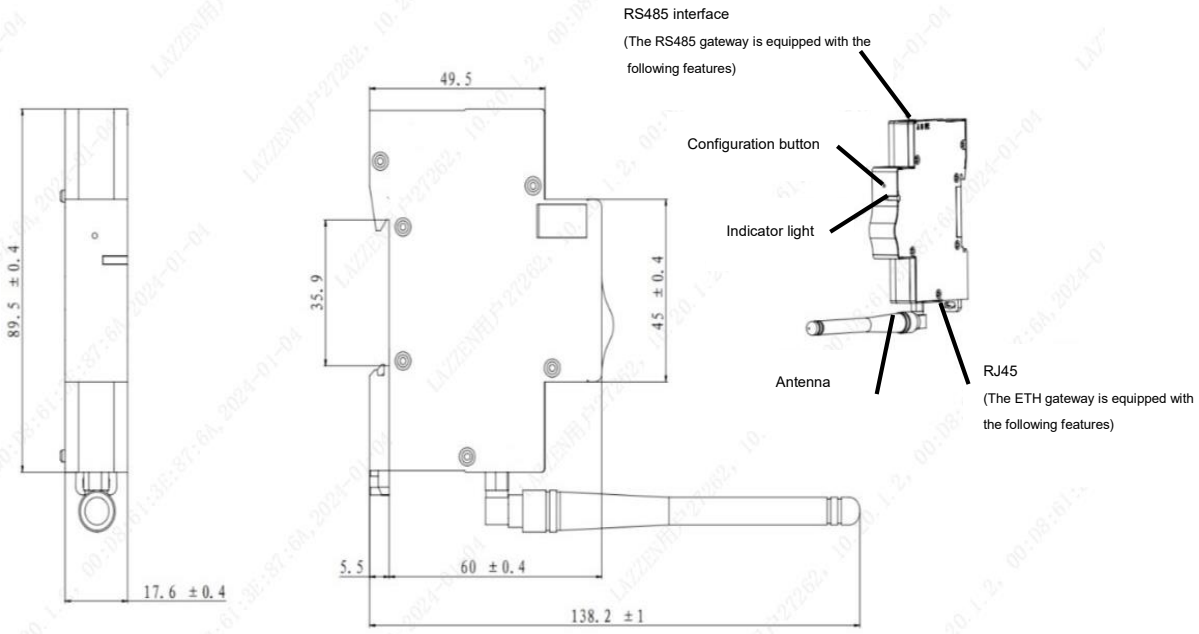
Cascade extension line	
Length	0.5m

12.4 Installation mode of accessories

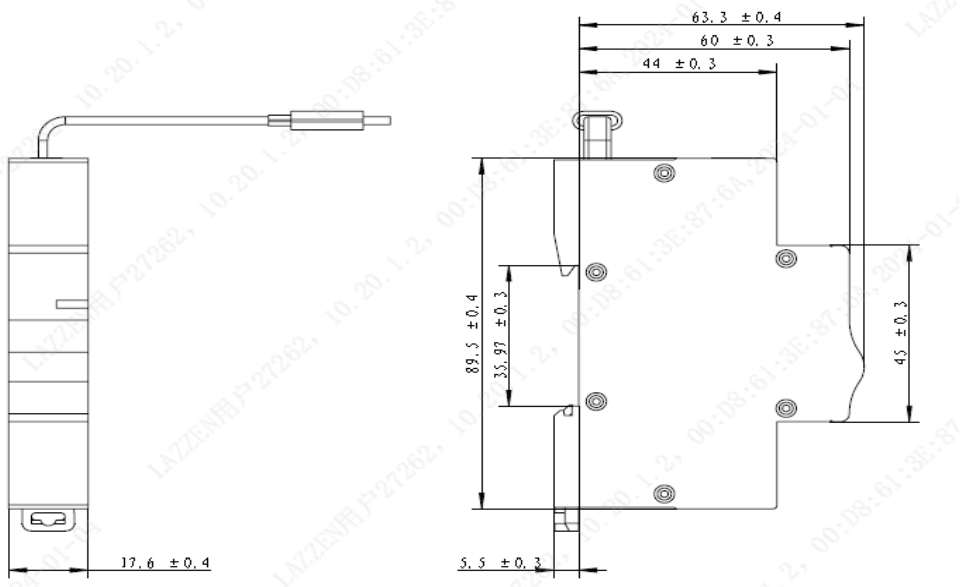
Modular structure,easy to install on TH35mm × 7.5mm standard guide rail.

S/N	name	specifications	picture	number	Remarks:
1	Gum rod antenna	SMA Inner needle, bend 108mm, frequency 2.4G/G ＞2DB，VSWR＜1.5		1	Equipped with 4G gateway and Wi-Fi gateway products, one of which can be selected according to the customer's installation environment
2	Patch Antenna	Frequency 824~2170MHz, line length 1m, SMA male			
3	Suction cup antenna	SMA internal pin, wire length 1.5m, frequency 2.4G/G ＞2DB，VSWR＜1.5			
4	Insert end	3P，3.5mm，BCD-350-3-GY		1	Factory standard configuration of power module and RS485 gateway products

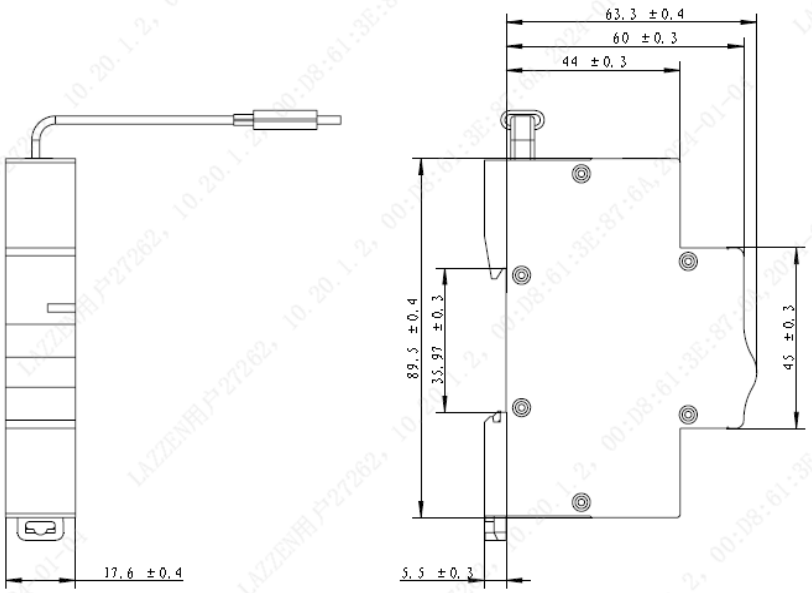
12.5 Annex Secondary Wiring Diagram



Outline and Installation Dimension Drawing of DF-TMB Gateway Module



Outline and Installation Dimension Drawing of DF-TMB



Outline and Installation Dimension Drawing of DF-P6 Power Supply Module

13 Use and Maintenance

13.1 State description of circuit breaker operation and fault indicator

S/N	state	explain
1	The green light flashes slowly after 30s (time interval of 2s)	RS485 no communication
2	Green light always on	Normal communication
3	The red and green lights flash at an interval of 1s	Local mode
4	The green light flashes twice and returns to the previous state after 1s	Opening and closing
5	The green lamp flashes for 10 times at an interval of 0.5s (registration) and then returns to the previous state	Registering Subdevices
6	The red light is normally on, and the state before the fault is recovered after manual closing	Over current protection
7	The red light flashes at an interval of 0.5s and returns to the state before the fault after manual closing	Short circuit protection
8	The red light flashes at an interval of 2s and returns to the state before the fault after manual closing	Electric leakage protection

13.2 Priority sequence of circuit breaker indicator

Short-circuit protection>leakage protection>overload long-time delay protection>gateway and circuit breaker address no fault status>remote mode opening/closing status>local mode>power-on, RS485 no communication status>remote mode no fault status.

13.3 Query of circuit breaker operation status

The fault, alarm and switch displacement generated during the operation of the circuit breaker can query the corresponding log records through Modbus communication protocol, for example, the fault record includes the number of fault records, fault type, fault time stamp, etc. Refer to the Operation Manual of Upper Computer of Intelligent Circuit Breaker for details.

13.4 Introduction to RS485 Module Operation

Step1: Press and hold the Reset button, the red light flashes once and then release it, the green light flashes quickly (flashes once 0.5s),and the gateway is in the process of addressing; The green light flashes slowly (flashes once in 2s),and the addressing is completed;

Step2: Read gateway point list information (number and address of slave machines) according to Gateway Modbus-RTU Communication Protocol;(Gateway slave address: 0x00, default baud rate: 9600 bps, no check);

Step3: Read the information of each slave station according to the acquired slave station address and analyze it through NDB5E Series Communication Protocol.

Instruction Notes：

S/N	state	explain
1	Green, normally on	No slave detected
2	Green flashing (0.5s)	Is addressing
3	Green slow flashing (2s)	Normal communication status
4	Red, normally on	The gateway itself is faulty
5	Press and hold the Reset key until the red light flashes once and the green light flashes fast	Trigger address allocation
6	Press and hold the Reset key until the red light flashes twice and the green light flashes slowly	Triggering standard mode (single gateway addressing)
7	Press and hold the Reset key until the red light flashes for 3 times and the green light flashes slowly	Trigger non-standard mode (multiple gateway addressing)
8	Press and hold the Reset key until the red light flashes for 4 times and the green light is always on	Trigger gateway system restart

13.5 Introduction to WI-FI Module Operation

WI-FI Hotspot Mode：

Step1: Press and hold the Reset button, the red light flashes once, and then release it. The green light flashes quickly (flashes once 0.5s). The gateway is in the process of addressing; The green light flashes slowly (flashes once in 2s) and the address allocation is completed;

Step2: Press and hold the Reset button and the red light flashes twice and then release it to enter the hot spot mode;

Step3: Open the multi-gateway configuration tool to connect the serial port for parameter configuration.

RS485 Operating Instructions:

Step1: Press and hold the Reset button, the red light flashes once and then release it, the green light flashes quickly (flashes once 0.5s), and the gateway is in the process of addressing; The green light flashes slowly (flashes once in 2s), and the addressing is completed;

Step2: Read gateway point list information (number and address of slave machines) according to Gateway Modbus-RTU Communication Protocol;
(Gateway slave address: 0x00, default baud rate: 9600 bps, no check)

Step3: Read the information of each slave station according to the acquired slave station

address and analyze it through NDB5E Series Communication Protocol.

IOT mode (MQTT protocol)

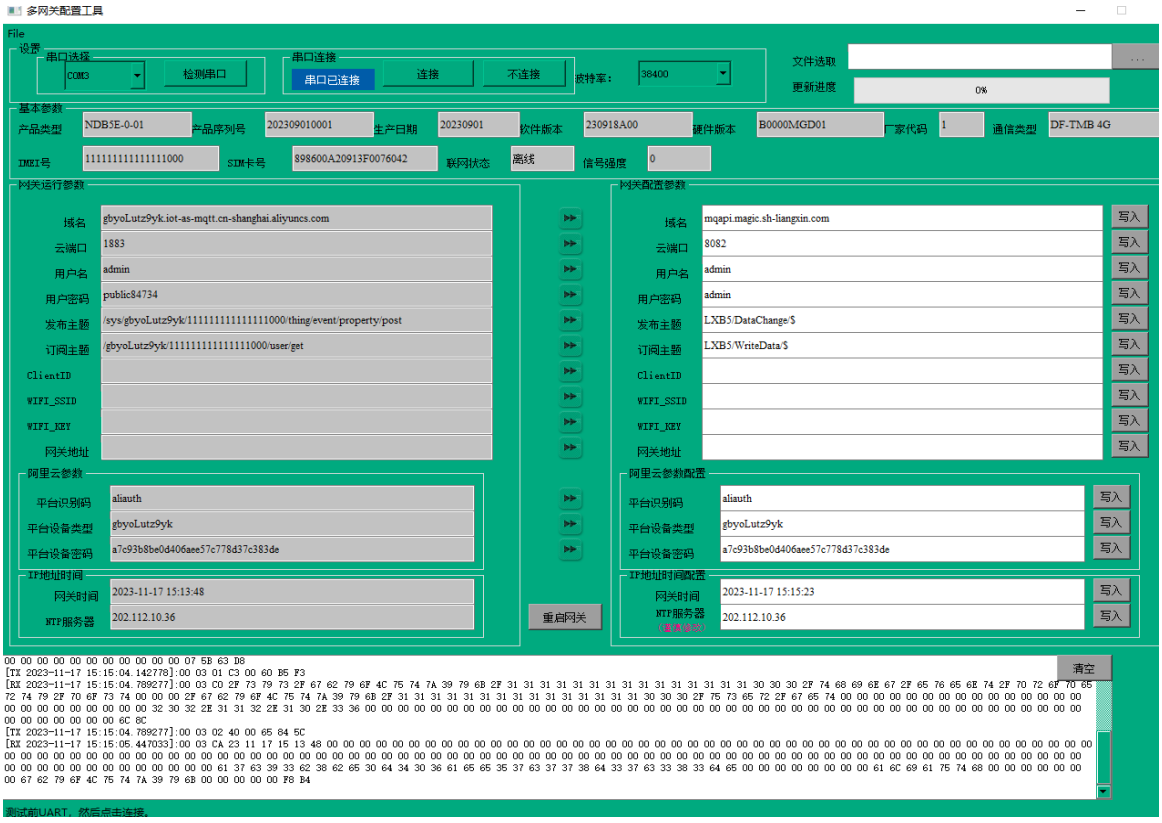
Step1: Press and hold the Reset button, the red light flashes once and then release it, the green light flashes quickly (flashes once 0.5s), and the gateway is in the process of addressing; The green light flashes slowly (flashes once in 2s), and the addressing is completed;

Step2: Press and hold the Reset button and the red light flashes twice and then release it to enter the hot spot mode;

Step3: Open the mobile phone to search for Wi-Fi, connect Wi-Fi with the name of Mac address and input the password. The initial password is 1234567890;

Step4:Open the multi-gateway configuration tool, set the cloud parameters in the parameter setting, and fill in the cloud parameters and router parameters;

Step5: Press and hold the button for three times, the red light flashes for three times, and then release it to enter the Internet of Things mode. Wait for 10s, if the parameter is set correctly, the green light flashes slowly (once per 1s); If the parameter is wrong and the red light is normally on, return to Step4 to confirm whether the parameter setting is correct.



Instruction Notes：

S/N	state	explain
1	Green, normally on	No slave detected
2	Green flashing (0.5s)	Is addressing
3	Green slow flashing (2s)	Wi-Fi connection platform mode
4	Red, normally on	The gateway itself is faulty
5	Fast red flashing	Initialization/data communication exception

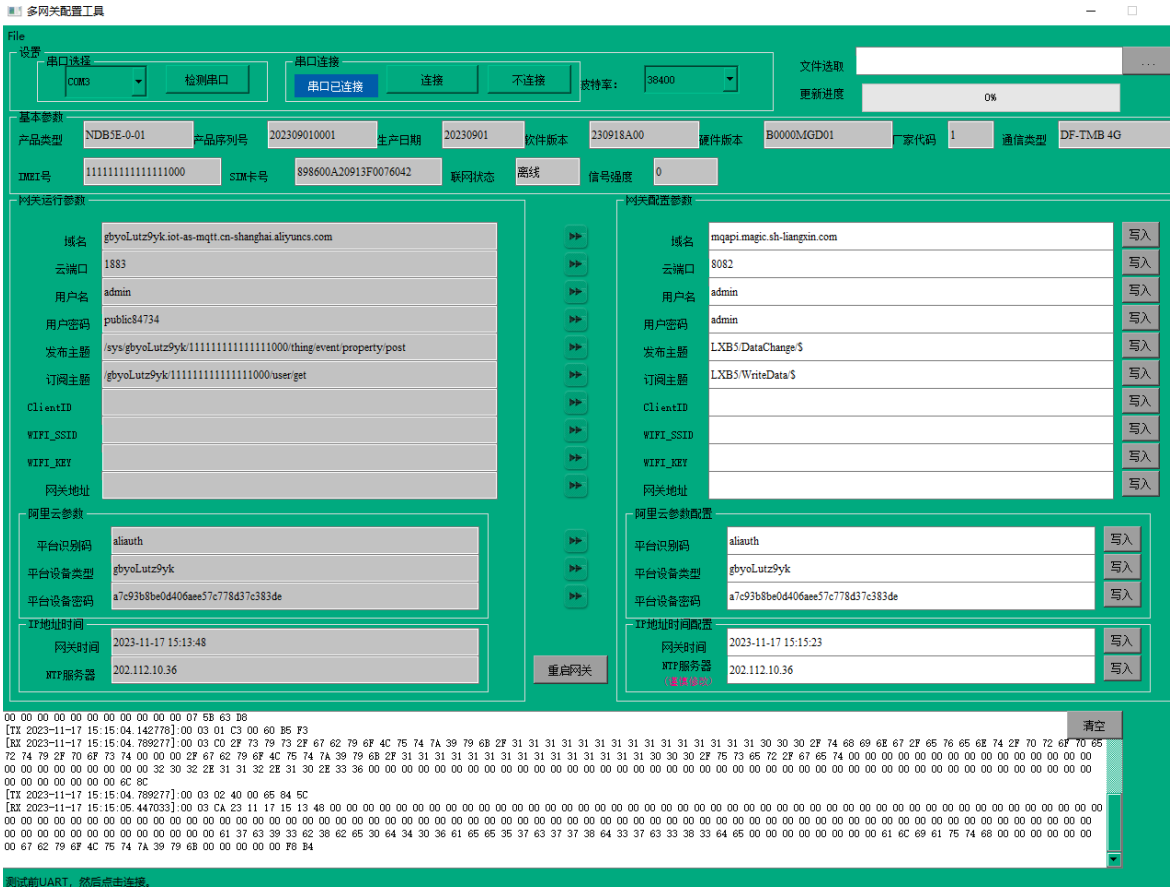
6	Red slow flashing (2s)	Wi-Fi hotspot mode (reserved function)
7	Press and hold the Reset key until the red light flashes once and the green light flashes fast	Trigger address allocation
8	Press and hold the Reset key until the red light flashes twice and the green light flashes slowly	Trigger Wi-Fi hotspot mode (reserved function)
9	Press and hold the Reset key until the red light flashes for 3 times and the green light flashes slowly	Wi-Fi connection platform mode
10	Press and hold the Reset key until the red light flashes for 4 times and the green light is always on	Trigger gateway system restart

13.6 Introduction to 4G Module Operation

Step1: Obtaining an 18-bit IMEI device number of a 4G gateway through a multi-gateway configuration tool, such as "867881049xxxx000";

Step2: Register the equipment according to the IMEI equipment number through the multi-gateway configuration tool, and record the 32-bit cloud platform password corresponding to the equipment;

Step3: Lower circuit breaker address registration: use the thimble to continuously press the button through the small hole for 3 seconds, release the LED when it turns red, and the LED will turn green and flash for 0.5 seconds; The address registration is completed, and the gateway enters the normal working mode (green light flashes slowly for 2 seconds). The address of the first circuit breaker close to the gateway is 100, and the circuit breaker address increases by 1 in sequence from left to left;



Note: The gateway factory default registers 1 circuit breaker. When only 1 lower circuit breaker is installed, Step3 can be ignored; When installing multiple lower circuit breakers, re-address registration shall be carried out according to Step 3: Conduct a re-location registration.

Instruction Notes:

S/N	state	explain
1	Green, normally on	No slave detected
2	Green flashing (0.5s)	Is addressing
3	Green slow flashing (2s)	Normal communication status
4	Red, normally on	The gateway itself is faulty
5	Fast red flashing	Initialization/data communication exception
6	Press and hold the Reset key until the red light flashes once and the green light flashes fast	Trigger address allocation
7	Press and hold the Reset key until the red light flashes for 4 times and the green light is always on	Trigger gateway system restart

Special note

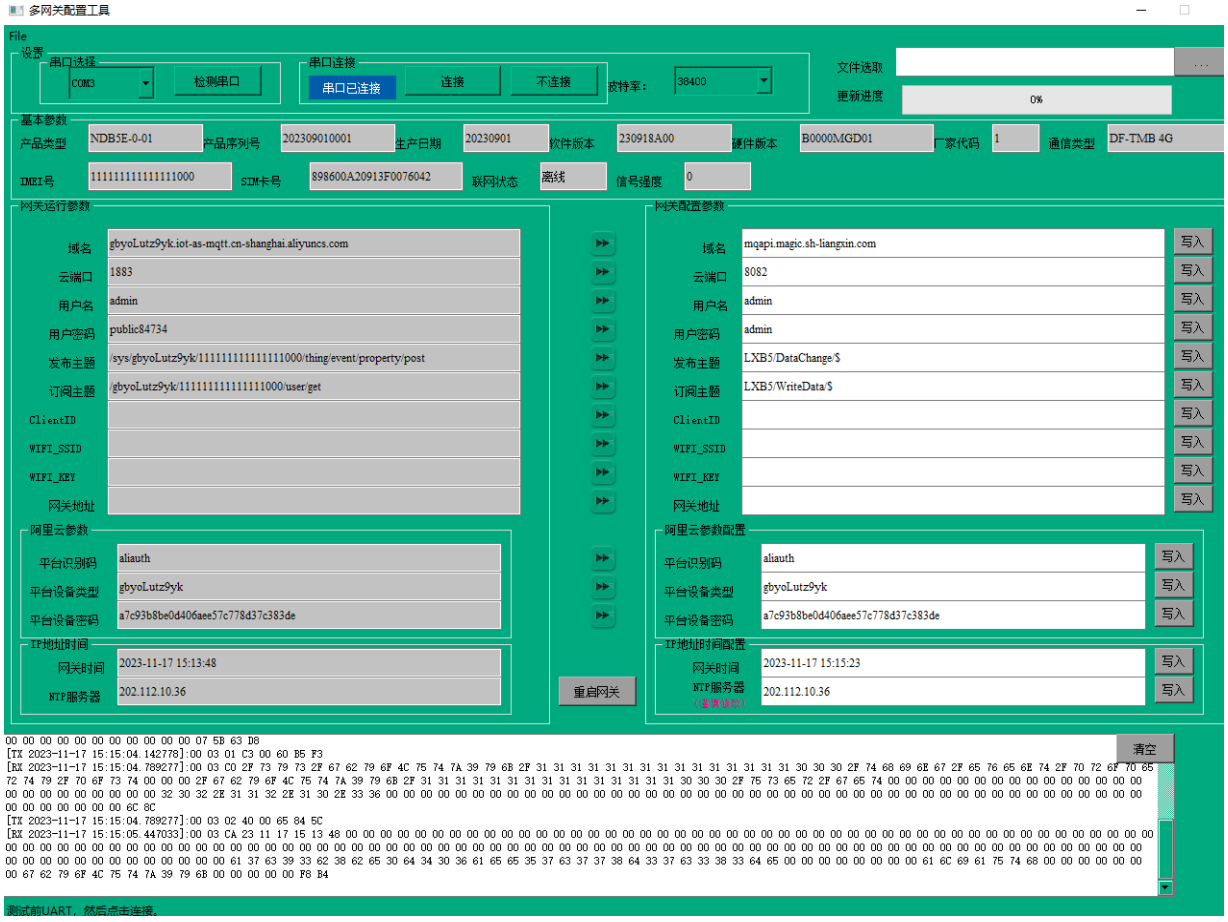
Press and hold the button (the 4th red light flashing of the LED ends), release it, the gateway chip r estarts, the slave is reset, and the circuit breaker is reconnected. It needs to be re addressed (the red li ght flashes once). After addressing, the modbus address of the circuit breaker starts from the circuit bre aker near the gateway side, and to the left, it is 0x64, 0x65,,, and 1 respectively.

13.7 Introduction to ETH module operation

Introduction to ETH Module Operation

Step1: Press and hold the Reset button, the red light flashes once and then release it, the green light flashes quickly (flashes once 0.5s), and the gateway is in the process of addressing; The red light flashes slowly (flashes once in 2s), and the addressing is completed;

Step2: Scan the QR code of the gateway body to obtain the gateway MAC address. According to the platform to be accessed, use the multi-gateway configuration tool to write the cloud platform access parameters related to the gateway, such as access domain name IP、 Port ClientID、 Subject Topic, User Name, Password and other parameters;



Step3: When the parameters are configured, the device connects the network cable to the router, and the green light flashes slowly (flashes once in 2s), indicating that the registration and networking are successful.

Instruction Notes:

S/N	state	explain
1	Green, normally on	No slave detected
2	Green flashing (0.5s)	Is addressing
3	Green slow flashing (2s)	Normal communication status
4	Red, normally on	The gateway itself is faulty
5	Fast red flashing	Initialization/data communication exception
6	Press and hold the Reset key until the red light	Trigger address allocation

	flashes once and the green light flashes fast	
7	Press and hold the Reset key until the red light flashes for 4 times and the green light is always on	Trigger gateway system restart

14 Notice

Precautions

1) Over-voltage, undervoltage, function factory default off, can be opened remotely;

2) Remote opening and closing are not allowed under local mode;

3) When the overvoltage and undervoltage protection is switched off, it will automatically switch on after the voltage recovers and can be remotely switched on and off;

4) Under the remote mode, the remote automatic closing is not allowed after manual opening;

5) Remote automatic closing is not allowed after the fault protection is opened (except overvoltage and undervoltage protection);

6) Party B shall be responsible for product quality problems caused by privately disassembling the product or commissioning the characteristics of circuit breaker;

7) Do not touch the exposed part of non-insulated parts of the circuit breaker with hands under power-on state;

8) The wiring shall be reliable to prevent misoperation of the circuit breaker or burning of the wiring terminal due to abnormal heat at the wiring terminal;

15 Order Instructions

Ordering specifications

Please specify the specifications and order quantities of IOT miniature circuit breaker, power module and communication module;

For example:

Order 60 Internet of Things residual current trip breakers with rated current of 80A, trip characteristic of C, and number of poles of 2P. 6 power modules. 6 RS485 communication modules.

IOT miniature circuit breaker: NDB5E-80 C80/2,60 Sets;

Power module: DF-P6， 6 Sets;

RS485 communication module: DF-TMB RS485,6 Sets;