CHANGDA TONG
SCIENCE & TECHNOLOGY

T - PLC

3000 Series

PRODUCT
MANUAL

Tianjin Changdatong Technology Co., LTD

Founded in 2016, Tianjin Changdatong Technology Co., Ltd. is an innovative technology-based enterprise, integrating R&D, production, sales and service. The main products are programmable controllers, data acquisition modules, switches, industrial touch screens and big data platforms.

At present, the products have reached strategic cooperation with the world's top 500 enterprises and have been applied in many metallurgical enterprises. It is the first domestic enterprise to apply programmable controllers, data acquisition modules, switches, and industrial touch screens in the main process sections of metallurgy.

The company's vision and mission is to "become the backbone of the domestic independent industrial control product field".

Its market positioning is "to be a leading brand of completely independent domestic industrial control products, with the best cost-effective products".

Catalogue

T-M series PLC and remote IO modules

T-M-RIO Series Summary	2
CPU module 3515	7
CPU module 3517	9
T-3910 Power Supply AC 220V	11
T-3921 Power Supply DC 24V	12
T-3703 PN Slave	13
T-3703HS PN Slave	15
T-3704 EtherCAT Slave	17
T-3704HS EtherCAT Slave	19
T-3210	21
T-3210HS	23
T-3211	25
T-3216	27
T-3216HS	29
T-3220	31
T-3220HS	33
T-3221	35
T-3310S	37
T-3310SHS	41
T-3310	45
T-3312S	49

Catalogue

T-M series PLC and remote IO modules

T-3320SHS	51
T-3320	55
T-K004 slot backplane	59
T-K006 slot backplane	60
T-K008 slot backplane	61
T-K011 slot backplane	62
T-K015 slot backplane	63
T-000 Terminal Block	64

T-M series PLC and remote IO modules

T-M series PLC

• The CPU module is designed with multiple ARM processors working together, each with multiple cores

• Fanless, heatsink-free low-power design, more suitable for harsh environments

• Self-developed microkernel "true" real-time operating system, high system execution efficiency

• THE STORAGE ADOPTS NOR FLASH, WHICH CAN ENSURE THE STABILITY OF HARSH ENVIRONMENTS MORE THAN NAND FLASH OR ELECTRONIC DISK, AND THE CPU SUPPORTS LARGE-CAPACITY SD CARDS

• In large computing cases, edge computing units can be added for auxiliary operations, support standard LINUX, with HDMI display output

Advanced Bus Architecture

- Based on years of bus design experience, refer to the most advanced bus technology in the world, and design the bus architecture of the new one
- Passive general-purpose backplane, dual-bus redundant architecture
- The backplane bus supports hot-swap technology

T-M-RIO series

•It has a variety of I/O modules, including conventional input/output modules, process modules, etc., and a variety of innovative function modules to meet the needs of different applications.

•The distributed system is the basis of the automation system, and the individual components and corresponding distributed devices at the field level achieve fast data exchange through PROFINET and PROFIBUS and the programmable controller (PLC) on the upper level, which is an important part of the programmable controller system.

• The open PROFINET and PROFIBUS communication standards bring flexible connection methods to automation systems.

High Precision I/O

- T-M-RIO's I/O technology solution not only considers the advanced technology, but also pays more attention to the adaptability of harsh environments
- The analog I/O adopts high-precision AD/DA chip and high-precision op amp, which has strong anti-interference, and the hardware solution has undergone long-term field tests
- Fast I/O refresh speed of 3 ms (minimum program cycle)
- Relying on the application of metallurgical industry, design a complete set of remote IO solutions

T-M series PLC and remote IO module

Product Type	Product Description	Product Model
CPU	800MHZ CPU, 8M program, 32M data, 2 Ethernet, 2 serial ports, support self-designed real-time remote CE bus, support software redundancy	T-3515
CPU	1HZ CPU, 16M program, 64M data, 2 Ethernet, 2 serial ports, support self-designed real-time remote CE bus, support hard redundancy	T-3517
Back Plate Power	Backplane power supply, AC 220V	T-3910
Back Plate Power	Backplane power supply, DC 24V	T-3921
PN Station	Profinet communication slave	T-3703
PN Station	HS Profinet communication slave	T-3703HS
EtherCAT Communication	EtherCAT communication slave	T-3704
EtherCAT Communication	HS EtherCAT communication slave	T-3704HS
DI 8	8-channel DC24V digital input	T-3210
DI 8	HS 8-channel DC24V digital input	T-3210HS
DI 16	16-channel DC24V digital input	T-3211
SSI 1 DO 2	Counting and positioning module, 1 SSI (supports SSI absolute encoder)/2 DO	T-3216
SSI/INC 1 DO 2	HS counter and position module, 1 SSI (supports SSI absolute or incremental encoder)/2 DO	T-3216HS
DO 8	8-channel transistor digital output	T-3220
DO 8	HS 8-channel transistor digital output	T-3220HS
DO 16	16-channel transistor digital output	T-3221
AI 4	4-channel analog input	T-3310S
AI 4	HS 4-channel analog input	T-3310SHS
AI 8	8-channel analog input	T-3310
RTD 4	4-channel RTD analog input	T-3312S
AO 2	HS 2-channel analog output	T-3320SHS
AO 4	4-channel analog output	T-3320
Back Plate	4-slot backplane rack	T-K004
Back Plate	6-slot backplane rack	T-K006
Back Plate	8-slot backplane rack	T-K008
Back Plate	11-slot backplane rack	T-K011
Back Plate	15-slot backplane rack	T-K015
Terminal Block	Terminal Block	T-000

CPU Module T-3515

T-3515 with 2 Ethernet RJ45 port and 2 RS485 ports,and the power supply mode is backplane power supply

- Processor Frequency 800MHZ、Data Memory 32MB、Program Memory 8MB
- Built in lithium battery, Retentive Time 36 Months, Support up to 32G SD card
- Kernel supports hard floating-point, Boolean Execution Speed 0.01μs
- CPU module is equipped with dual gigabit Ethernet interface and dual RS485 interface
- The maximum I/O reading speed is 3ms (minimum program cycle)

Technical Specifications

CPU Performance		**Software Features**	
Memory Capacity	Program Memory:8M	Programing Language	IEC61131-3：LD，FBD，ST，CFC，IL，SFC
	Data Memory: 32M	Maximum Number of Ethernet Links	8 Links
	Retentive Memory: 1M	Programming Software Version	V 3.5
Memory Capacity	Specification: 3.7V Rated 1200mAh	Program Execution Mode	Continuous Task, Periodic Task, Event Task
	Retentive Time: 36 Months	**Communication Features**	
	Low Voltage Alarm: Supported	Communication Interface	2 RS485 Ports
Processor Frequency	800MHz		2 Ethernet RJ45 Port
Boolean Execution peed	0.01μs	Communication Protocol	Serial Communication, MODBUS RTU Protocol, Free Protocol
Maximum I/O	40000 Digit / 2500 Analog		Ethernet Communication, MODBUS TCP Protocol, Free Protocol
Maximum Communicatio n Expansion	512	Serial Communication Rate	2400bps～115200bps
Hot Plugging	Supported		
Redundancy	Support Ethernet port redundancy	Ethernet Communication Rate	100Mbps/1000Mbps
Backplane Current Consumption	300mA@24VDC，Max		
Structure and Installation		**Operation Environment**	
Dimensions	160mm(L)×107.5mm(H)×39mm(W)	Operation Temperature	0 ~ 60℃
Weight	390g	Storage Temperature	-40 ~ 70℃
Installation	Backplane Installation, Screw Fixed	Relative Humidity	5% ~ 95%, No Condensation

Construction

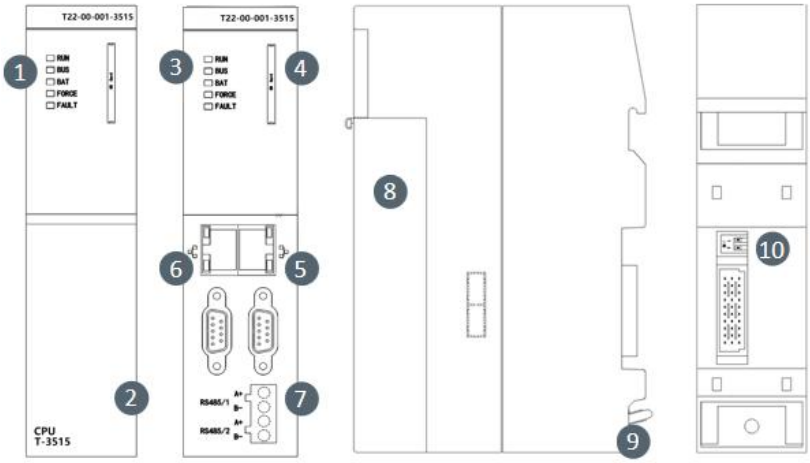


Figure 1 T-3515 Structure Diagram

① Order Number: T22-00-001-3515
② Name and Model: CPU T-3515
③ Status Indicators: RUN is the running indicator; BUS is the communication indicator; BAT is the battery status indicator; FORCE is the forced status indicator; FAULT is the fault indicator.
④ SD / TF Card Slot: Expand the SD / TF card slot and install the SD / TF Card vertically.
⑤ DIP Switch: RUN and STOP are used to control program running and stopping respectively.
⑥ Ethernet Communication Interface: The Ethernet RJ45 interface, which can be used for program download, communication with touch screen, host computer, cloud server, etc., supports Modbus TCP protocol / free protocol, and allows 8 clients to link at the same time.
⑦ RS485 communication interface: The two RS485 interfaces can be used to communicate with touch screen, upper computer and third-party instrument, and support Modbus RTU protocol / free protocol.
⑧ Module Front Cover Plate: Press down on the protruding part of the upper end of the module front cover plate to open the front cover plate.
⑨ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑩ 2P DIP Switch: 1-ON, restore default IP address. 2-ON, does not load applications. Both are valid for restart.

Indicator description

Indicator	Light On	Light Off
RUN (green)	Module Operation	Module Stop
BUS (green)	Normal Communication	Abnormal Communication
BAT (green)	Battery OK	Battery Low
FORCE (yellow)	Module is Forced	Module is Not Forced
FAULT (red)	Module Failure	Module OK

Notice:

1. The module supports hot plug;
2. Pluggable module terminals;
3. The backplane bus is a dual bus redundant architecture.

Redundant CPU Module T-3517

T-3517 with 2 Ethernet RJ45 port and 2 RS485 ports,and the power supply mode is backplane power supply

- Processor Frequency 1GHZ、Data Memory 64MB、Program Memory 16MB
- Built in lithium battery, Retentive Time 36 Months, Support up to 32G SD card
- Kernel supports hard floating-point, Boolean Execution Speed 10ns
- CPU module is equipped with dual gigabit Ethernet interface and dual RS485 interface
- The maximum I/O reading speed is 3ms (minimum program cycle)

Technical Specifications

CPU Performance		**Software Features**	
Memory Capacity	Program Memory:16M	Programing Language	IEC61131-3：LD，FBD，ST，CFC，IL，SFC
	Data Memory: 64M	Maximum Number of Ethernet Links	8 Links
	Retentive Memory: 1M	Programming Software Version	V 3.5
Memory Capacity	Specification: 3.7V Rated 1200mAh	Program Execution Mode	Continuous Task, Periodic Task, Event Task
	Retentive Time: 36 Months	**Communication Features**	
	Low Voltage Alarm: Supported	Communication Interface	2 RS485 Ports
Processor Frequency	1GHz		2 Ethernet RJ45 Port
Boolean Execution peed	0.01μs	Communication Protocol	Serial Communication, MODBUS RTU Protocol, Free Protocol
Maximum I/O	40000 Digit / 2500 Analog		Ethernet Communication, MODBUS TCP Protocol, Free Protocol
Maximum Communicatio n Expansion	512	Serial Communication Rate	2400bps～115200bps
Hot Plugging	Supported		
Redundancy	Support Ethernet port redundancy	Ethernet Communication Rate	100Mbps/1000Mbps
Backplane Current Consumption	300mA@24VDC，Max		
Structure and Installation		**Operation Environment**	
Dimensions	160mm(L)×107.5mm(H)×39mm(W)	Operation Temperature	0 ~ 60℃
Weight	392g	Storage Temperature	-40 ~ 70℃
Installation	Backplane Installation, Screw Fixed	Relative Humidity	5% ~ 95%, No Condensation

Construction

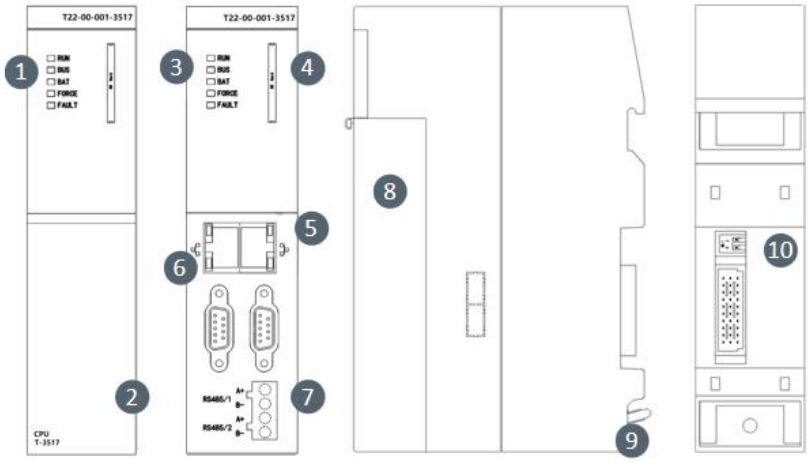


图1 T-3517结构图

① Order Number: T22-00-001-3517
② Name and Model: CPU T-3517
③ Status Indicators: RUN is the running indicator; BUS is the communication indicator; BAT is the battery status indicator; FORCE is the forced status indicator; FAULT is the fault indicator.
④ SD / TF Card Slot: Expand the SD / TF card slot and install the SD / TF Card vertically.
⑤ DIP Switch: RUN and STOP are used to control program running and stopping respectively.
⑥ Ethernet Communication Interface: The Ethernet RJ45 interface, which can be used for program download, communication with touch screen, host computer, cloud server, etc., supports Modbus TCP protocol / free protocol, and allows 8 clients to link at the same time.
⑦ RS485 communication interface: The two RS485 interfaces can be used to communicate with touch screen, upper computer and third-party instrument, and support Modbus RTU protocol / free protocol.
⑧ Module Front Cover Plate: Press down on the protruding part of the upper end of the module front cover plate to open the front cover plate.
⑨ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑩ 2P DIP Switch: 1-ON, restore default IP address. 2-ON, does not load applications. Both are valid for restart.

Indicator description

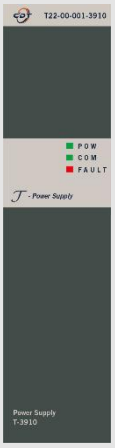
Indicator	Light On	Light Off
RUN（green）	Module Operation	Module Stop
BUS（green）	Normal Communication	Abnormal Communication
BAT（green）	Battery OK	Battery Low
FORCE（yellow）	Module is Forced	Module is Not Forced
FAULT（red）	Module Failure	Module OK

Notice:

1. The module supports hot plug;
2. Pluggable module terminals;
3. The backplane bus is a dual bus redundant architecture.

AC Power Supply Module T-3910

T-3910 is a AC power supply module , the input voltage is AC 220V



- Indicator： POW means 220V AC input power supply, 24V means 24V DC output, FAULT means fault.
- Terminal：Wiring according to the instruction above the terminal, L、N、 for positive , common and grounding respectively.
- Front cover：Press down the protruding part of the upper end of the front cover to open the front cover.
- Fixed screw：Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane.

Technical Specifications

Power Supply			
Power	220V AC @50Hz		
Accepted Voltage Range	187～264V AC @50Hz		
Rated Current	160mA		
Security Protection	Input ,output over-voltage protection		
Structure and Installation		**Environment**	
Dimension	160mm(L)×107.5mm(H)×39mm(W)	Operation temperature	0~60℃
Weight	160g	Storage temperature	-40~70℃
Installation	Backplane installation, screw fixed	Relative humidity	5%～95%，no condensation

Construction

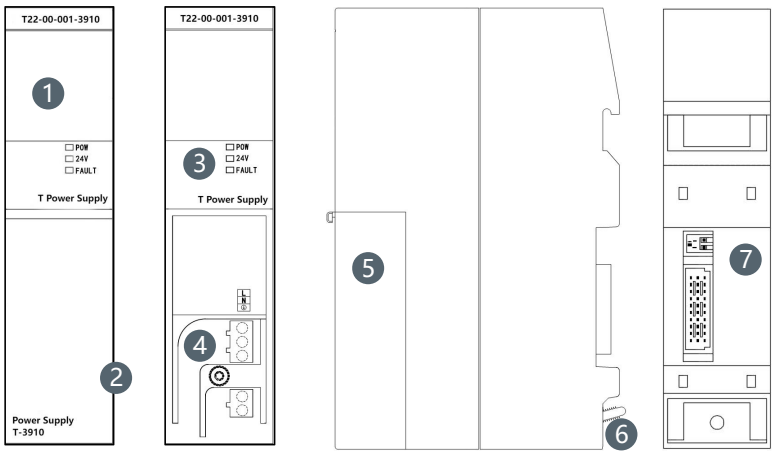


Figure 1 Structure figure of T-3910

① Order number: T22-00-001-3910
② Name and model: Power Supply T-3910
③ Indicator : POW means 220V AC input power supply, 24V means 24V DC output , FAULT means fault.
④ Terminal : Wiring according the instruction above the terminal, L、N、 for positive , common and grounding respectively.
⑤ Front cover: Press down the protruding part of the upper end of the front cover to open the front cover.
⑥ Fixed screw: Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane.
⑦ 2P DIP switch: reserved.

Notice:

1. Module terminals can be pluggable.
2. When connecting or removing a power module from the backplane, ensure that the power supply is disconnected.
3. After connecting the lines of the power module, ensure that the front cover of the module is covered, and leave the power lines in the place which is not easy to touch.

DC Power Supply Module T-3921

T-3921 is a DC power supply module , the input voltage is DC 24V

- Indicator： POW means 24V DC input power supply, 24V means 24V DC output power , FAULT means fault.
- Terminal： Wiring according to the instruction above the terminal, V+、V- is positive and negative terminal of 24V power supply,
  "✱" means no physical connection.
- Front cover: Press down the protruding part of the upper end of the front cover to open the front cover.
- Fixed screw: Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane.

Technical Specifications

Power Supply			
Power	24V DC		
Accepted Voltage Range	20.4～28.8V DC		
Rated Current	1500mA		
Security Protection	Input ,output over-voltage protection		
Structure and Installation		**Environment**	
Dimension	160mm(L)×107.5mm(H)×39mm(W)	Operation temperature	0~60℃
Weight	155g	Storage temperature	-40~70℃
Installation	Backplane installation, screw fixed	Relative humidity	5%～95%，no condensation

Construction

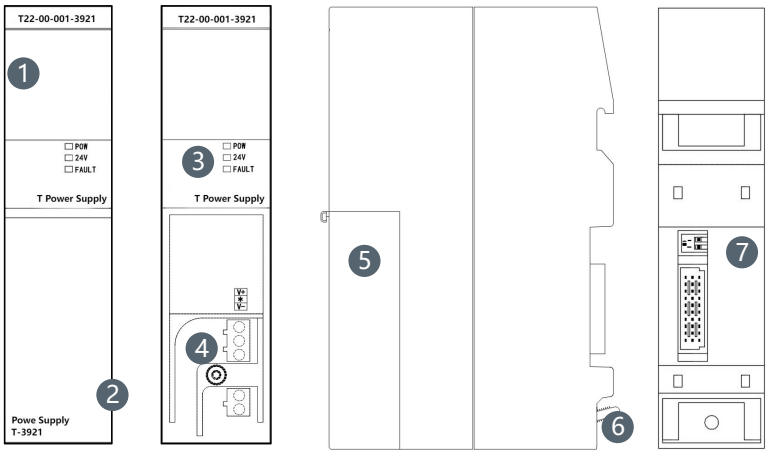


Figure 1 Structure figure of T-3921

① Order number: T22-00-001-3921
② Name and model: Power Supply T-3921.
③ Indicator : POW means 24V DC input power supply, 24V means 24V DC, FAULT means fault.
④ Terminal: Wiring according to the instruction above the terminal, V+、V- is positive and negative terminal of 24V power supply, "✱" means no physical connection.
⑤ Front cover: Press down the protruding part of the upper end of the front cover to open the front cover.
⑥ Fixed screw: Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane.
⑦ 2P DIP switch: reserved.

Notice:

1. Module terminals can be pluggable.
2. When connecting or removing a power module from the backplane, ensure that the power supply is disconnected.
3. After connecting the lines of the power module, ensure that the front cover of the module is covered, and leave the power lines in the place which is not easy to touch.

Profinet Slave Module T-3703

T-3703 is a Profinet communication slave module, integrating 2 RJ45 Ethernet interfaces, getting power from backplane

- Indicator : POW means power supply, BUS means communication status, FAULT means fault.
- Communication interfaces: 2 RJ45 Ethernet interfaces sharing 1 IP address, integrated switch function.
- Front cover: Press down the protruding part of the upper end of the front cover to open the front cover.
- Fixed screw: Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane

Technical Specifications

Communication Parameters			Power Parameters	
Interface	Type	RJ45	Expansion bus power supply (24V DC)	90mA
	Number	2	**Structure and Installation**	
Protocol	FROFINET IO	Real time communication (RT)	Dimension	160mm(L)×107.5mm(H)×39mm(W)
		Isochronous Real Time Communication (IRT)	Weight	160g
		Media Redundancy Protocol (MRP)	Protection level	IP20
		Device replacement without exchangeable medium	Installation	Backplane installation, screw fixed
Communication Rate		100Mbps/1000Mbps，self-adaptived	**Environment**	
Supports I/O modules		Up to 13 PCS	Operation temperature	0～60℃
Backplane communication time	High speed response	No support	Storage temperature	-40～70℃
	Refresh time	<1ms	Relative humidity	5%～95%，no condensation

Construction

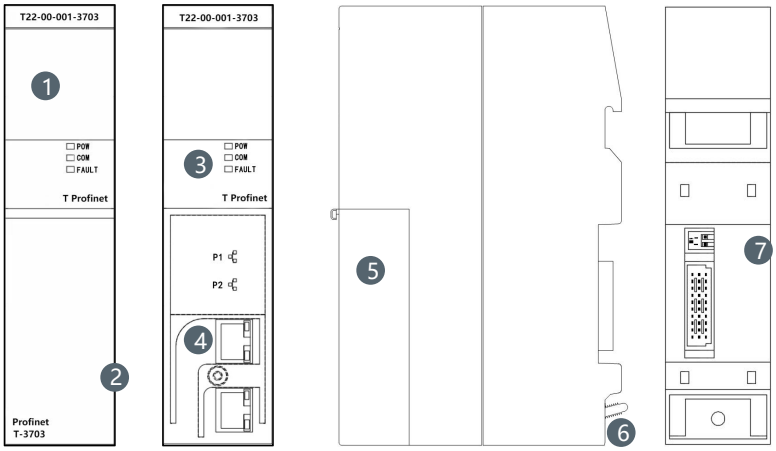


Figure 1 Structure figure of T-3703

① Order number: T22-00-001-3703
② Name and model: Profinet T-3703
③ Indicator: POW means power supply, COM means communication status, FAULT means fault.
④ Communication interface: 2 RJ45 Ethernet interface sharing 1 IP address, , integrated switch function.
⑤ Front cover: Press down the protruding part of the upper end of the front cover to open the front cover.
⑥ Fixed screw: Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane.
⑦ 2P DIP switch: reserved

Indicator Description

Indicator	Light On	Light Off
POW（green）	The power supply is normal	Abnormal power supply (missing or insufficient)
COM（green）	The communication with the master station is normal	Abnormal communication with the master (network disconnection or abnormal data exchange)
FAULT（red）	No normal communication with the master station is established, and the communication of the IO module is abnormal (the IO module is powered off or damaged)	The communication with the master station and the IO module is normal

Notice：

1. Module is hot pluggable.
2. High performance I/O modules are not supported.
3. It is recommended to use CAT 5E or CAT 6 network cables for module connection.

Profinet Slave Module T-3703HS

T-3703HS is a Profinet communication slave module, integrating 2 RJ45 Ethernet interfaces, getting power from backplane

- Indicator : POW means power supply, BUS means communication status, FAULT means fault.
- Communication interfaces: 2 RJ45 Ethernet interfaces sharing 1 IP address, integrated switch function.
- Front cover: Press down the protruding part of the upper end of the front cover to open the front cover.
- Fixed screw: Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane

Technical Specifications

Communication Parameters			Power Parameters	
Interface	Type	RJ45	Expansion bus power supply (24V DC)	90mA
	Number	2	**Structure and Installation**	
Protocol	FROFINET IO	Real time communication (RT)	Dimension	160mm(L)×107.5mm(H)×39mm(W)
		Isochronous Real Time Communication (IRT)	Weight	160g
		Media Redundancy Protocol (MRP)	Protection level	IP20
		Device replacement without exchangeable medium	Installation	Backplane installation, screw fixed
Communication Rate		100Mbps/1000Mbps，self-adaptived	**Environment**	
Supports I/O modules		Up to 9 PCS	Operation temperature	0～60℃
Backplane communication time	High speed response	Support	Storage temperature	-40～70℃
	Refresh time	250us	Relative humidity	5%～95%，no condensation

Construction

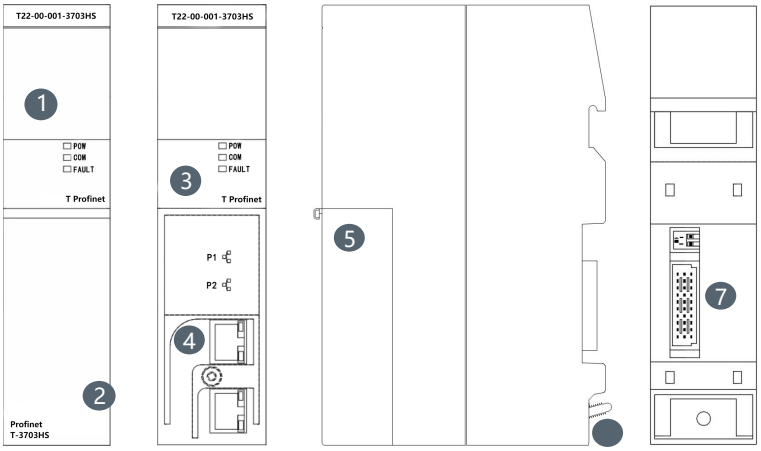


Figure 1 Structure figure of T-3703HS

① Order number: T22-00-001-3703HS
② Name and model: Profinet T-3703HS
③ Indicator: POW means power supply, COM means communication status, FAULT means fault.
④ Communication interface: 2 RJ45 Ethernet interface sharing 1 IP address, , integrated switch function.
⑤ Front cover: Press down the protruding part of the upper end of the front cover to open the front cover.
⑥ Fixed screw: Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane.
⑦ 2P DIP switch: reserved

Indicator Description

Indicator	Light On	Light Off
POW（green）	The power supply is normal	Abnormal power supply (missing or insufficient)
COM（green）	The communication with the master station is normal	Abnormal communication with the master (network disconnection or abnormal data exchange)
FAULT（red）	No normal communication with the master station is established, and the communication of the IO module is abnormal (the IO module is powered off or damaged)	The communication with the master station and the IO module is normal

Notice：

1. Module is hot pluggable.
2. It supports both high-performance and standard I/O modules.
3. It is recommended to use CAT 5E or CAT 6 network cables for module connection network cables.

EtherCAT Slave Module T-3704

T-3704 is a EtherCAT communication slave module, integrating 2 RJ45 Ethernet interfaces, getting power from backplane

- Indicator LEDs: POW means power supply, COM means communication, FAULT means fault.
- Communication interface: 2 RJ45 Ethernet interface are used for input and output respectively, and for cascade communication of multiple modules.
- Front cover: Press down the protruding part of the upper end of the front cover to open the front cover.
- Fixed screw: Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane.

Technical Specifications

Communication Parameters			Power Parameters	
Interface	Type	RJ45	Expansion bus power supply (24V DC)	90mA
	Number	2	**Structure and Installation**	
Protocol	Protocol	EtherCATprotocol	Dimension	160mm(L)×107.5mm(H)×39mm(W)
	Application layer protocols	ETG.5001.1 S(D)V0.1.1	Weight	160g
	Support Services	COE(PDO、SDO)	Protection level	IP20
	Physical layer	100BASE-TX	Installation	Backplane installation, screw fixed
	Communication rate	100Mbps	**Environment**	
	Transmission distance	Less than 100M between two nodes	Operation temperature	0～60℃
	EtherCAT frame length	44 bytes~1498 bytes		
	Process data	Max 1486 bytes for single Ethernet frame	Storage temperature	-40～70℃
	Number of slave	Support the number of master		
Backplane communication	High-speed response	Not supported	Relative humidity	5%～95%，no condensation
	Refresh time	<1ms		

Construction

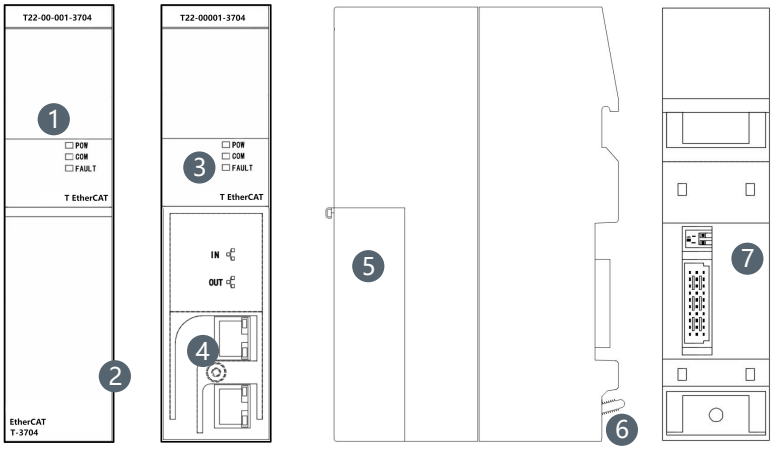


Figure 1 Structure figure of T-3704

① Order number: T22-00-001-3704
② Name and model: EtherCAT T-3704
③ Indicator: POW means power supply, COM means communication , FAULT means fault.
④ Communication interfaces: 2 RJ45 Ethernet interfaces are used for input and output respectively, and for cascade communication of multiple modules.
⑤ Front cover: Press down the protruding part of the upper end of the front cover to open the front cover.
⑥ Fixed screw: Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane.
⑦ 2P DIP switch: reserved.

Indicator Description

Indicator	Light On	Light Off
POW（green）	The power supply is normal	Abnormal power supply (missing or insufficient)
COM（green）	The communication with the master station is normal	Abnormal communication with the master (network disconnection or abnormal data exchange)
FAULT（red）	No normal communication with the master station is established, and the communication of the IO module is abnormal (the IO module is powered off or damaged)	The communication with the master station and the IO module is normal

Notice：

1. Module is hot pluggable.
2. High performance I/O modules are not supported.
3. It is recommended to use CAT 5E or CAT 6 network cables for module connection network cables.

EtherCAT Slave Module T-3704HS

T-3704HS is a EtherCAT communication slave module, integrating 2 RJ45 Ethernet interfaces, getting power from backplane

- Indicator LEDs: POW means power supply, COM means communication, FAULT means fault.
- Communication interface: 2 RJ45 Ethernet interface are used for input and output respectively, and for cascade communication of multiple modules.
- Front cover: Press down the protruding part of the upper end of the front cover to open the front cover.
- Fixed screw: Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane.

Technical Specifications

Communication Parameters			Power Parameters	
Interface	Type	RJ45	Expansion bus power supply (24V DC)	90mA
	Number	2	**Structure and Installation**	
Protocol	Communication protocol	EtherCATprotocol	Dimension	160mm(L)×107.5mm(H)×39mm(W)
	Application layer protocols	ETG.5001.1 S(D)V0.1.1	Weight	160g
	Support Services	COE(PDO、SDO)	Protection level	IP20
	Physical layer	100BASE-TX	Installation	Backplane installation, screw fixed
	Communication rate	100Mbps	**Environment**	
	Transmission distance	Less than 100M between two nodes	Operation temperature	0～60℃
	EtherCAT frame length	44 bytes~1498 bytes		
	Process data	Max 1486 bytes for single Ethernet frame	Storage temperature	-40～70℃
	Number of slaves	Support the number of master		
Backplane communication time	High-speed response	Supported	Relative humidity	5%～95%，no condensation
	Refresh time	250us		

Construction

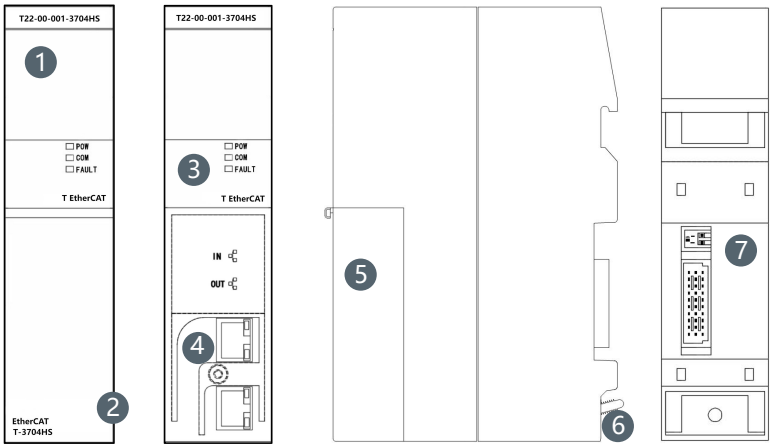


Figure 1 Structure figure of T-3704HS

① Order number: T22-00-001-3704HS
② Name and model: EtherCAT T-3704HS
③ Indicator: POW means power supply, COM means communication , FAULT means fault.
④ Communication interfaces: 2 RJ45 Ethernet interfaces are used for input and output respectively, and for cascade communication of multiple modules.
⑤ Front cover: Press down the protruding part of the upper end of the front cover to open the front cover.
⑥ Fixed screw: Use cross screwdriver to tighten the screw at the lower end of the module to fix the module on the backplane.
⑦ 2P DIP switch: reserved.

Indicator Description

Indicator	Light On	Light Off
POW（green）	The power supply is normal	Abnormal power supply (missing or insufficient)
COM（green）	The communication with the master station is normal	Abnormal communication with the master (network disconnection or abnormal data exchange)
FAULT（red）	No normal communication with the master station is established, and the communication of the IO module is abnormal (the IO module is powered off or damaged)	The communication with the master station and the IO module is normal

Notice：

1. Module is hot pluggable.
2. It supports both high-performance and standard I/O modules.
3. It is recommended to use CAT 5E or CAT 6 network cables for module connection network cables.

8 Digital Inputs Module T-3210

T-3210 integrates 8 digital input channels, getting power from backplane

- Input Signal:Voltage Range: 0 ~ 30V DC
- Input ON Signal：15 ~ 30V DC, Min Current: 3mA
- Input OFF Signal：0 ~ 5V DC, Max Current: 1mA
- Backplane Installation, Screw Fixed

Technical Specifications

Input Channel		Power Dissipation	
Number of Channels	8	Inquiry Power Supply（24V DC）	80mA
Input Type	Sink	Extension Bus Power Supply（24V DC）	50mA
	Source	**Structure and Installation**	
Input Electric Signal	Voltage Rating: 24V DC	Dimension	160mm(L)×107.5mm(H)×39mm(W)
	Voltage Range: 0 ~ 30V DC	Weight	270g
Input ON Signal	15 ~ 30V DC, Min Current: 3mA	Installation Method	Backplane Installation, Screw Fixed
		Protection level	IP20
Input OFF Signal	0 ~ 5V DC, Max Current: 1mA	**Environment**	
Input Signal Delay	<1ms (At Rated Input Voltage)	Operation Temperature	0 ~ 60℃
Isolation Type	Optical Isolation	Storage Temperature	-40 ~ 70℃
Isolation Voltage	1000V DC	Relative Humidity	5% ~ 95%, No Condensation

Construction

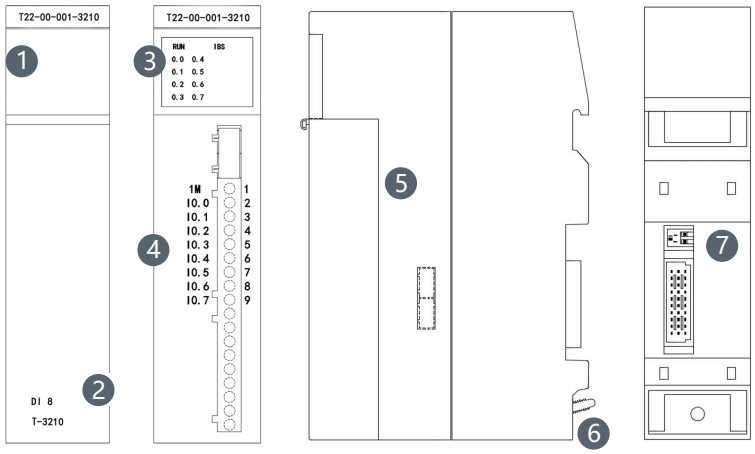


Figure 1T-3210 Structure Diagram

① Order Number: T22-00-001-3210
② Name and Model: DI 8 T-3210
③ Indicator : RUN displays the module running status; IBS displays bus communication status; 0.0 ~ 0.7 displays the input signal of corresponding channel.
④ Terminal: The terminal is composed of common terminal 1M and input terminals I0.0 ~ I0.7. The terminal 1M is the common terminal of I0.0 ~ I0.7. Source type or sink type connection can be used.
⑤ Front Cover : Press down the protruding part of the upper end of the front cover to open the front cover.
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2—OFF.

Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication
0.0 ~ 0.7	The input signal is 1	The input signal is 0

Terminal Definition and Description

Terminal Definition	Terminal Description
1M	Common Terminal of External Input
I0.0~I0.7	External Input

Wiring Diagram

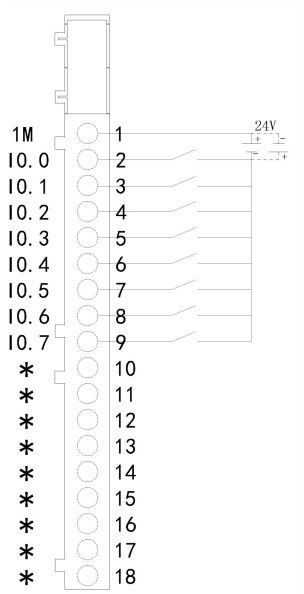


Figure 2 T-3210 Wiring Diagram

Notice:

1. The module supports hot plug.
2. The module wiring terminal is pluggable.

8 Digital Inputs Module T-3210HS

T-3210HS integrates 8 digital HS input channels, getting power from backplane

- Min bus cycle time 250us
- Input Signal： Voltage Range: 0 ~ 30V DC
- Input ON Signal：15 ~ 30V DC, Min Current: 3mA
- Input OFF Signal：0 ~ 5V DC, Max Current: 1mA
- Backplane Installation, Screw Fixed

Technical Specifications

Input Channel		Power Dissipation	
Number of Channels	8	Inquiry Power Supply（24V DC）	80mA
Input Type	Sink	Extension Bus Power Supply（24V DC）	50mA
	Source	**Structure and Installation**	
Input Electric Signal	Voltage Rating: 24V DC	Dimension	160mm(L)×107.5mm(H)×39mm(W)
	Voltage Range: 0 ~ 30V DC	Weight	270g
Input ON Signal	15 ~ 30V DC, Min Current: 3mA	Installation Method	Backplane Installation, Screw Fixed
		Protection level	IP20
Input OFF Signal	0 ~ 5V DC, Max Current: 1mA	**Environment**	
Minimum bus cycle time	250us	Operation Temperature	0 ~ 60℃
Isolation Type	Optical Isolation	Storage Temperature	-40 ~ 70℃
Isolation Voltage	1000V DC	Relative Humidity	5% ~ 95%, No Condensation

Construction

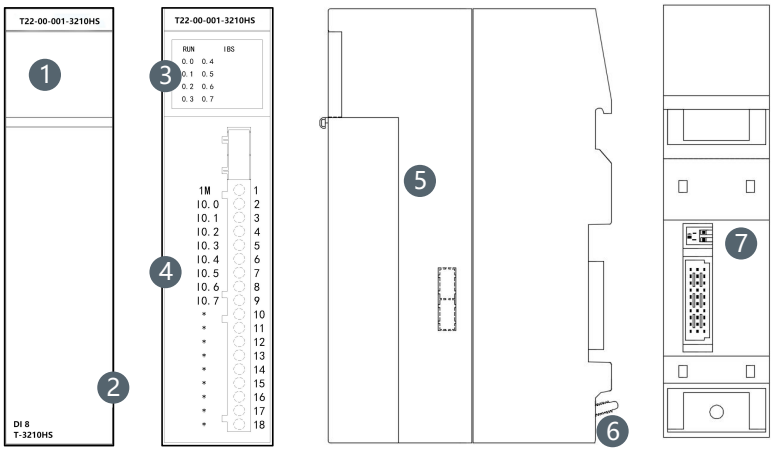


Figure 1T-3210HS Structure Diagram

① Order Number: T22-00-001-3210HS
② Name and Model: DI 8 T-3210HS
③ Indicator : RUN displays the module running status; IBS displays bus communication status; 0.0 ~ 0.7 displays the input signal of corresponding channel.
④ Terminal: The terminal is composed of common terminal 1M and input terminals I0.0 ~ I0.7. The terminal 1M is the common terminal of I0.0 ~ I0.7. Source type or sink type connection can be used.
⑤ Front Cover : Press down the protruding part of the upper end of the front cover to open the front cover.
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2—OFF.

Liquid Crystal Display (LCD) Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication
0.0 ~ 0.7	The input signal is 1	The input signal is 0

Terminal Definition and Description

Terminal Definition	Terminal Description
1M	Common Terminal of External Input
I0.0~I0.7	External Input

Wiring Diagram

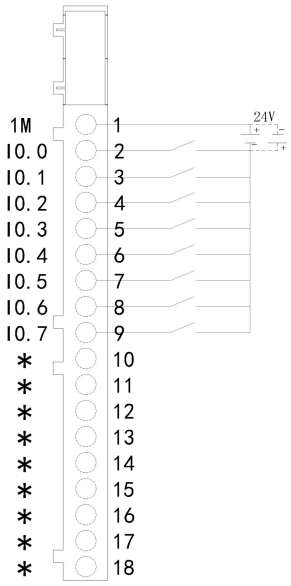


Figure 2 T-3210HS Wiring Diagram

Notice:

1. The module supports hot plug.
2. The module wiring terminal is pluggable.

16 Digital Inputs Module T-3211

T-3211 integrates 16 digital input channels, getting power from backplane

- Input Signal：Voltage Range: 0 ~ 30V DC
- Input ON Signal：15 ~ 30V DC, Min Current: 3mA
- Input OFF Signal：0 ~ 5V DC, Max Current: 1mA
- Backplane Installation, Screw Fixed

Technical Specifications

Input Channel		Power Dissipation	
Number of Channels	16	Inquiry Power Supply（24V DC）	80mA
Input Type	Sink	Extension Bus Power Supply（24V DC）	50mA
	Source	**Structure and Installation**	
Input Electric Signal	Voltage Rating: 24V DC	Dimension	160mm(L)×107.5mm(H)×39mm(W)
	Voltage Range: 0 ~ 30V DC	Weight	270g
Input ON Signal	15 ~ 30V DC, Min Current: 3mA	Installation Method	Backplane Installation, Screw Fixed
		Protection level	IP20
Input OFF Signal	0 ~ 5V DC, Max Current: 1mA	**Environment**	
Input Signal Delay	<1ms (At Rated Input Voltage)	Operation Temperature	0 ~ 60℃
Isolation Type	Optical Isolation	Storage Temperature	-40 ~ 70℃
Isolation Voltage	1000V DC	Relative Humidity	5% ~ 95%, No Condensation

Construction

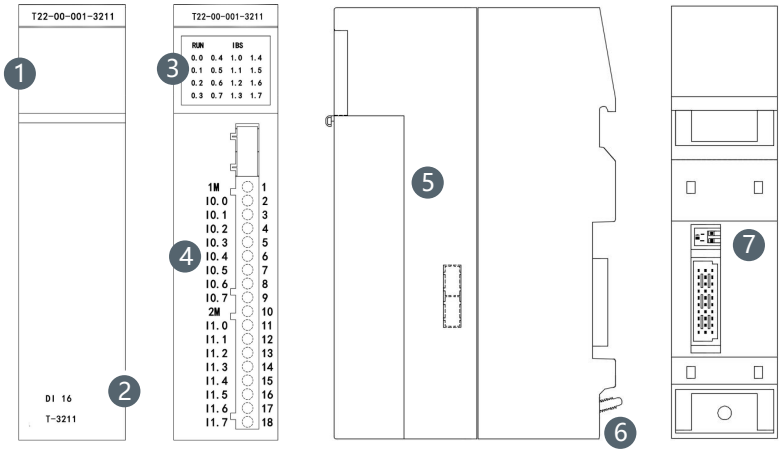


Figure 1 T-3211 Structure Diagram

① Order Number: T22-00-001-3211
② Name and Model: DI 16 T-3211
③ Indicator : RUN displays the module running status; IBS displays bus communication status; 0.0 ~ 1.7 displays the input signal of corresponding channel.
④ Terminal: The terminal is composed of common terminals 1M, 2M and input terminals I0.0 ~ I1.7. The terminal 1M is the common terminal of I0.0 ~ I0.7. The terminal 2M is the common terminal of I1.0 ~ I1.7. Source type or sink type connection can be used.
⑤ Front Cover : Press down on the protruding part of the upper end to open the front cover plate.
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2—OFF.

Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication
0.0 ~ 1.7	The input signal is 1	The input signal is 0

Terminal Definition and Description

Terminal Definition	Terminal Description	Terminal Definition	Terminal Description
1M	Common Terminal of External Input	2M	Common Terminal of External Input
I0.0 ~ I0.7	External Input	I1.0~I1.7	External Input

Wiring Diagram

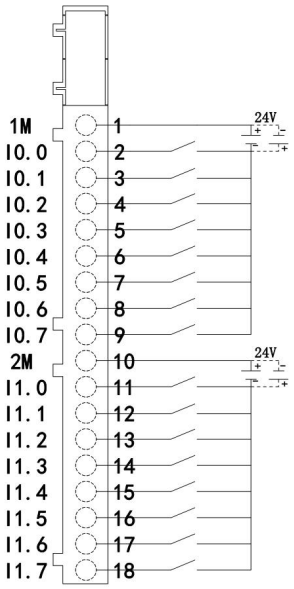


Figure 2 T-3211 Wiring Diagram

Notice:

1. The module supports hot plug.
2. The module wiring terminal is pluggable.

Positioning Module T-3216

T-3216 integrates 1 measuring channel and 2 source type digital output channels, getting power from backplane

- SSI encoder channel：SSI encoder signal DATA+/DATA- & CLK+、CLK-
- Incremental encoder count: encoder signal using RS422 standard: A+, A-, B+, B-, N+, N-
- Digital output channel ： DQ0/DQ1 24V DC Source type output
- Backplane Installation, Screw Fixed

Technical Specifications

Communication Parameters			Power Parameters	
Number of Channels		1 encoder channel (SSI absolute or RS422 incremental) 2 DO	Backplane Supply Voltage	24VDC
			Power Consumption	80mA
Encoder Power Supply		24V DC encoder power supply, short circuit proof	**Structure and Installation**	
Encoder Measurement Channel	Absolute value encoder	SSI encoder signals DATA+/DATA- and CLK+, CLK-	Dimension	160mm(L)×107.5mm(H)×39mm(W)
	Incremental type encoder	RS422 encoder signals A+, A-, B+, B-, N+, N-	Weight	160g
Digital Output Channels		2 x 24V DC source relay outputs	Installation Method	Backplane Installation, Screw Fixed
Digital Input Channels		1 channel 24VDC drain switch input Incremental encoder synchronization signal	Protection level	IP20
Isolation Type		Optical Isolation	**Environment**	
			Operation Temperature	0 ~ 60℃
Isolation Voltage		1000V DC	Storage Temperature	-40 ~ 70℃
			Relative Humidity	5% ~ 95%, No Condensation

Construction

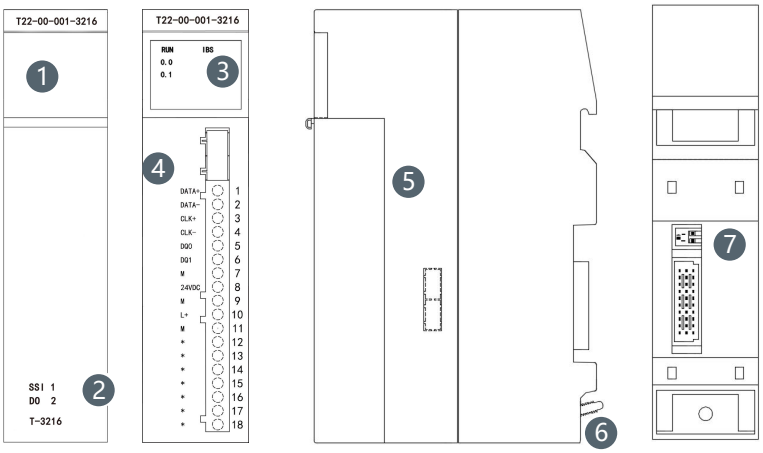


Figure 1 T-3216 Structure Diagram

① Order Number: T22-00-001-3216
② Name and Model : SSI T-3216
③ Indicator : RUN displays the module running status; IBS displays the module bus communication status; 0.0~0.1 display the corresponding channel output signal.
④ Terminal: The SSI DATA signal is composed of DATA+, DATA-, CLK+ and CLK-. The incremental encoder signal is composed of A+, A-, B+, B-, N+ and N-. The digital input and output channels are composed of DQ0, DQ1, DI and M, and M is the common end of digital input/output. 24VDC and M constitute the encoder power supply; The L+ and M modules provide power supply with DC24V input .
⑤ Front Cover: Press down on the protruding part of the upper end of the module front cover plate to open the front cover plate.
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2—OFF.

Indicator Description

Indicator	Light ON	Light OFF
RUN	Module runs	Module stops
IBS	Normal Communication	Abnormal Communication
0.0	Output terminal DQ0 status of 1	Output terminal DQ0 status of 0
0.1	Output terminal DQ1 status of 1	Output terminal DQ1 status of 0

Terminal Definition and Description

Terminal	Terminal description
DATA+	SSI data signal DATA+
DATA-	SSI data signal DATA-
CLK+	SSI clock signal CLK+
CLK-	SSI clock signal CLK-
A+	Incremental encoder signal A+
A-	Incremental encoder signal A-
B+	Incremental encoder signal B+
B-	Incremental encoder signal B-
N+	Incremental encoder signal N+
N-	Incremental encoder signal N-
DQ0	Digital output channel 1
DQ1	Digital output channel 2
DI	Digital Input DI
M	Digital output common point
24VDC	24V+ DC encoder power supply
M	24V- DC encoder power supply
L+	24V+ DC module power supply
M	24V- DC power supply voltage

Wiring Diagram

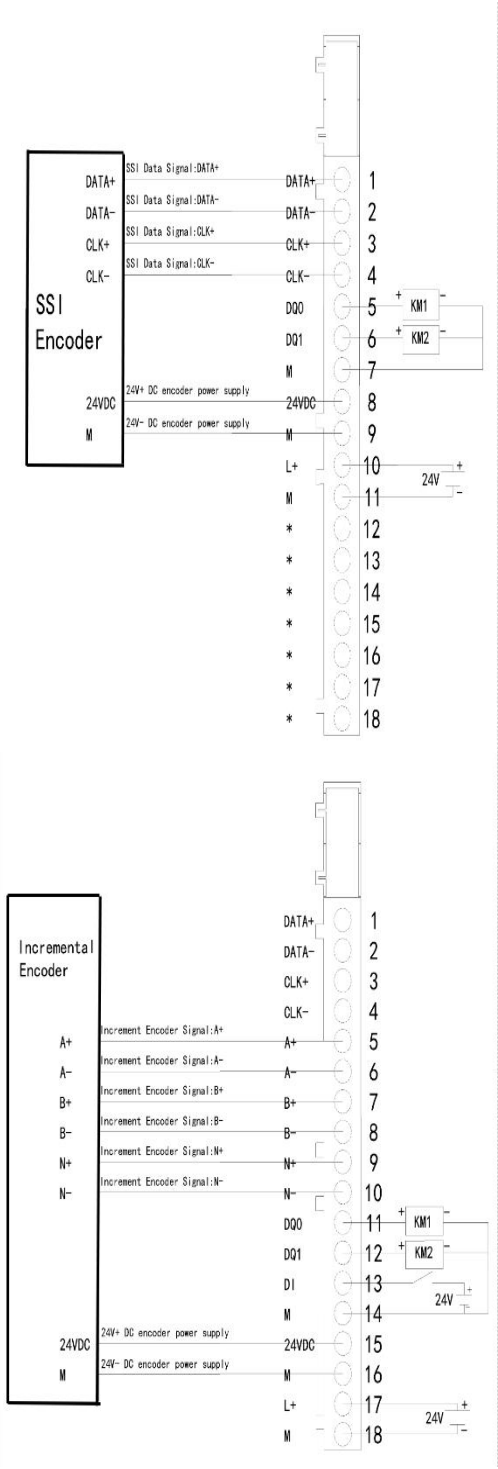


Figure 2 T-3216 wiring Diagram

Notice:

1. The module supports hot plug.
2. The module wiring terminal is pluggable.

Positioning Module T-3216HS

T-3216HS integrates 1 measuring channel and 2 source type digital output channels, getting power from backplane

- SSI encoder channel：SSI encoder signal DATA+/DATA- & CLK+、CLK-
- Incremental encoder count : encoder signals with RS422 standard: A+, A-, B+, B-, N+, N-
- Digital output channel: DQ0/DQ1 24V DC source output
- Backplane Installation, Screw Fixed

Technical Specifications

Communication Parameters			Power Parameters	
Number of Channels		1 encoder channel (SSI absolute or RS422 incremental) 2 DO	Backplane Supply Voltage	24VDC
			Power Consumption	80mA
Encoder Power Supply		24V DC encoder power supply, short circuit proof	**Structure and Installation**	
Encoder Measurement Channel	absolute	SSI encoder signals DATA+/DATA- and CLK+, CLK-	Dimension	160mm(L)×107.5mm(H)×39mm(W)
			Weight	160g
	Incremental	RS422 encoder signals A+, A-, B+, B-N+, N-	Installation Method	Backplane Installation, Screw Fixed
			Protection level	IP20
Digital Output Channels		2 x 24V DC source relay outputs	**Environment**	
Digital input signal		1 x 24V DC sink digital input, Incremental encoder synchronization signal	Operation Temperature	0～60℃
Isolation Type		Optical Isolation	Storage Temperature	-40～70℃
Isolation Voltage		1000V DC	Relative Humidity	5%～95%，No Condensation

Construction

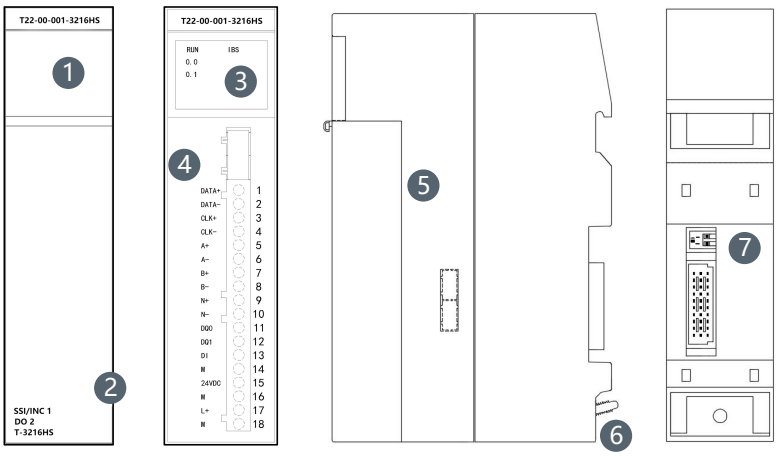


Figure 1 T-3216HS Structure Diagram

① Order number: T22-00-001-3216HS
② Name and Model : SSI/INC 1 DO 2 T-3216HS
③ Indicator : RUN display module operating status; IBS displays the bus communication status of the module; 0.0~0.1 displays the output signal of the corresponding channel
④ Terminal: SSI data signal is composed of DATA+, DATA-, CLK+, CLK-; Incremental encoder signals are composed of A+, A-, B+, B-, N+, N-; DQ0, DQ1, DI and M form digital input and output channels, and M is the digital input/output common terminal; 24VDC and M constitute the encoder power supply; The module power supply DC24V input is composed of L+ and M
⑤ Front Cover: Press down on the protruding part of the upper end of the module front cover plate to open the front cover plate.
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2--OFF

Indicator Description

Indicator	Light ON	Light OFF
RUN	Module runs	Module stops
IBS	Normal Communication	Abnormal Communication
0.0	Output terminal DQ0 status of 1	Output terminal DQ0 status of 0
0.1	Output terminal DQ1 status of 1	Output terminal DQ1 status of 0

Terminal Definition and Description

Terminal	Terminal description
DATA+	SSI data signal DATA+
DATA-	SSI data signal DATA-
CLK+	SSI clock signal CLK+
CLK-	SSI clock signal CLK-
A+	Incremental encoder signal A+
A-	Incremental encoder signal A-
B+	Incremental encoder signal B+
B-	Incremental encoder signal B-
N+	Incremental encoder signal N+
N-	Incremental encoder signal N-
DQ0	Digital output channel 1
DQ1	Digital output channel 2
DI	Digital input DI
M	Digital output common point
24VDC	24V+ DC encoder power supply
M	24V- DC encoder power supply
L+	24V+ DC module power supply
M	24V- DC power supply voltage

Wiring Diagram

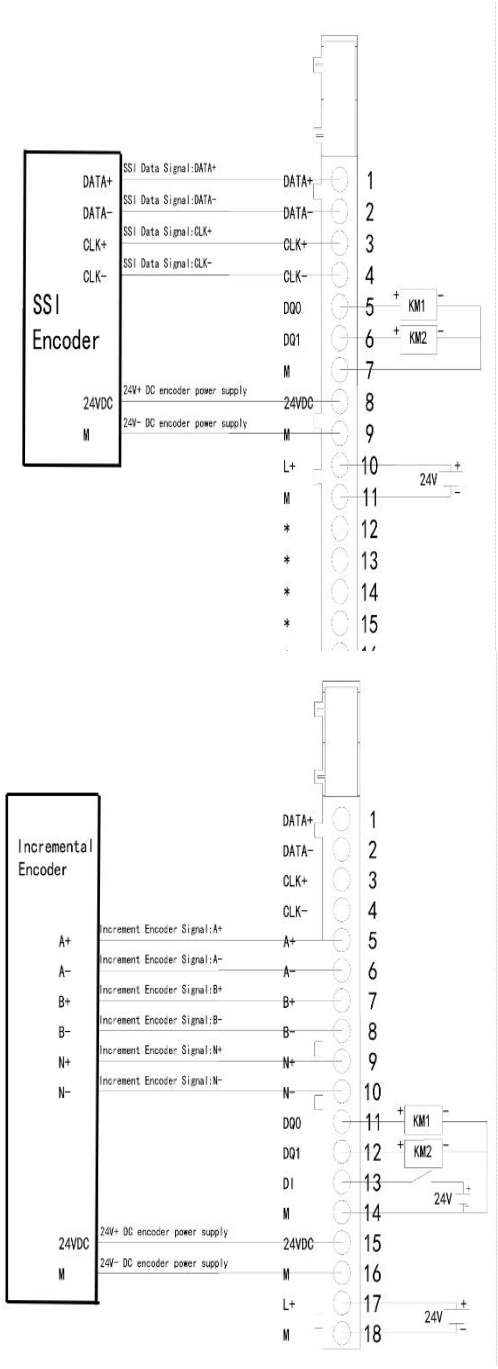


Figure 2 T-3216HS wiring Diagram

Notice:

1. The module supports hot plug.
2. The module wiring terminal is pluggable.

8 Transistor Digital Outputs Module T-3220

T-3220 integrates 8 transistor digital output channels, getting power from backplane

- Output Signal：Voltage Rating: 24V DC,Voltage Range: 20.4 ~ 28.8V DC
- Max Leakage Current：1mA
- Backplane Installation, Screw Fixed

Technical Specifications

Output Channel		Power Dissipation	
Number of Channel	8	External Power Supply（24V DC）	Calculation Based on Load
Output Mode	Transistor	Extension Bus Power Supply（24V DC）	50mA
Output Type	Source	**Structure and Installation**	
Output Signal	Voltage Rating: 24V DCVoltage Range: 20.4 ~ 28.8V DC	Dimension	160mm(L)×107.5mm(H)×39mm(W)
Max Output Current at Single Point	0.5A	Weight	251g
Max Leakage Current	1mA	Installation Method	Backplane Installation, Screw Fixed
		Protection level	IP20
Total Output Current of Common Terminal	<4A	**Environment**	
Surge current	<8A，100ms	Operation Temperature	0～60℃
Channel resistance	<0.2Ω		
Short Circuit Protection	Provided Internally	Storage Temperature	-40～70℃
Switching Delay	<1ms		
Isolation Type	Optical Isolation	Relative Humidity	5% ~ 95%, No Condensation
Isolation Voltage	1000V DC		

Construction

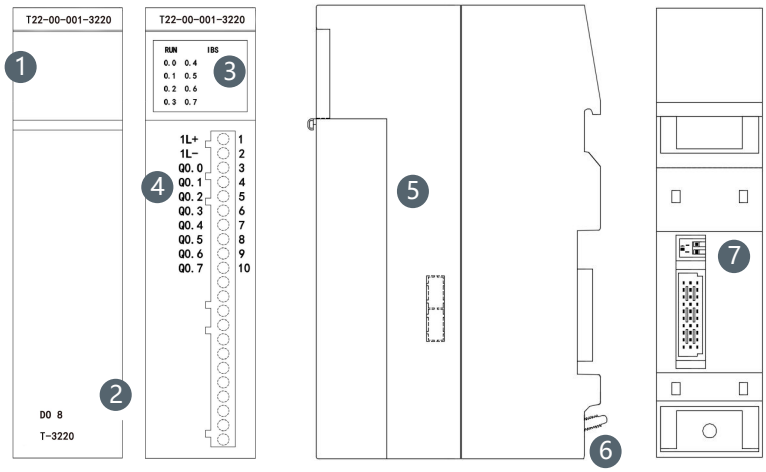


Figure 1 T-3220 Structure Diagram

① Order Number: T22-00-001-3220
② Name and Model: DO 8 T-3220
③ Indicator : RUN displays the operating status of the module; IBS displays the bus communication status of the module; 0.0~0.7 displays the output signal of the corresponding channel
④ Terminal: composed of power drive end 1L+, 1L- and output point Q, 1L+, 1L- is the power drive end of Q0.0～Q0.7, using source connection; "✱" indicates that this channel has no actual physical connection
⑤ Front cover: Press down on the upper protrusion of the module front cover to open the front cover
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2--OFF

Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication
0.0~0.7	The output signal is 1 (Logic)	The output signal is 0 (Logic)

Terminal Definition and Description

Terminal efinition	Terminal Description
1L+	Load Drive Power Supply DC +24V
1L-	Load Drive Power Supply GND
Q0.0~Q0.7	External Output

Wiring Diagram

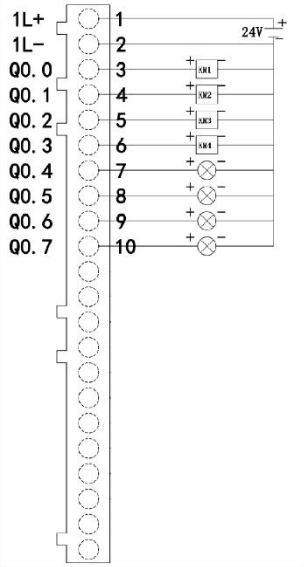


Figure 2 T-3220 Wiring Diagram

Notice:

1. The module supports hot plug.
2. The module wiring terminal is pluggable.
3. The module has builT-in protection against reverse wiring.

8 Transistor Digital Outputs Module T-3220HS

T-3220HS integrates 8 transistor digital output channels, getting power from backplane

- Bus cycle time min 250us
- Output Signal：Voltage Rating: 24V DC , Voltage Range: 20.4 ~ 28.8V DC
- Max Leakage Current：1mA
- Backplane Installation, Screw Fixed

Technical Specifications

Output Channel		Power Dissipation	
Number of Channel	8	External Power Supply（24V DC）	Calculation Based on Load
Output Mode	Transistor	Extension Bus Power Supply（24V DC）	50mA
Output Type	Source	**Structure and Installation**	
Output Signal	Voltage Rating: 24V DCVoltage Range: 20.4 ~ 28.8V DC	Dimension	160mm(L)×107.5mm(H)×39mm(W)
Single Point Max Output Current	0.5A	Weight	251g
Max Leakage Current	1mA	Installation Method	Backplane Installation, Screw Fixed
		Protection level	IP20
Total Output Current of Common Terminal	<4A	**Environment**	
Surge current	<8A，100ms	Operation Temperature	0～60℃
Channel resistance	<0.2Ω		
Short Circuit Protection	Provided Internally	Storage Temperature	-40～70℃
Min bus cycle time	250us		
Isolation Type	Optical Isolation	Relative Humidity	5% ~ 95%, No Condensation
Isolation Voltage	1000V DC		

Construction

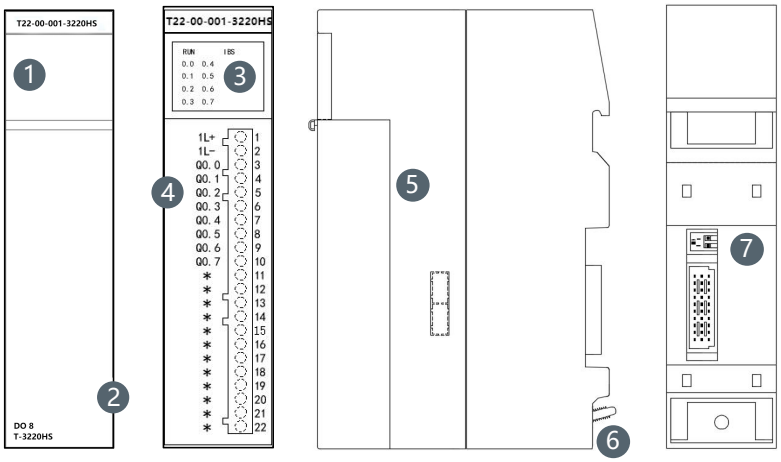


Figure 1 T-3220HS Structure Diagram

① Order Number: T22-00-001-3220HS
② Name and Model: DO 8 T-3220HS
③ Indicator : RUN displays the operating status of the module; IBS displays the bus communication status of the module; 0.0~0.7 displays the output signal of the corresponding channel
④ Terminal: composed of power drive end 1L+, 1L- and output point Q, 1L+, 1L- is the power drive end of Q0.0～Q0.7, using source connection; "✱" indicates that this channel has no actual physical connection
⑤ Front cover: Press down on the upper protrusion of the module front cover to open the front cover
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2--OFF

Liquid Crystal Display (LCD) Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication
0.0~0.7	The output signal is 1 (Logic)	The output signal is 0 (Logic)

Terminal Definition and Description

Terminal efinition	Terminal Description
1L+	Load Drive Power Supply DC +24V
1L-	Load Drive Power Supply GND
Q0.0~Q0.7	External Output

Wiring Diagram

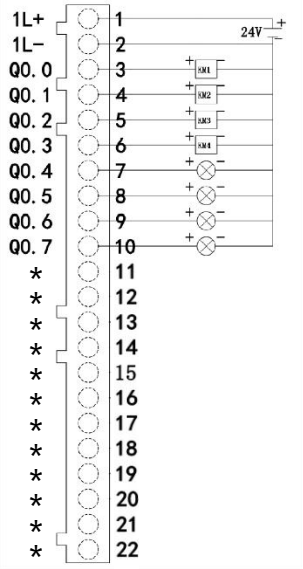


Figure 2 T-3220HS Wiring Diagram

Notice:

1. The module supports hot plug.
2. The module wiring terminal is pluggable.
3. The module has builT-in protection against reverse wiring.

16 Transistor Digital Outputs Module T-3221

T-3221 integrates 16 digital input channels, getting power from backplane

- Output Signal: Voltage Rating: 24V DC ,Voltage Range: 20.4 ~ 28.8V DC
- Max Leakage Current: 1mA
- Backplane Installation, Screw Fixed

Technical Specifications

Output Channel		Power Dissipation	
Number of Channel	16	External Power Supply (24V DC)	Calculation Based on Load
Output Mode	Transistor	Extension Bus Power Supply (24V DC)	50mA
Output Type	Source	**Structure and Installation**	
Output Signal	Voltage Rating: 24V DCVoltage Range: 20.4 ~ 28.8V DC	Dimension	160mm(L)×107.5mm(H)×39mm (W)
Single Point Max Output Current	0.5A	Weight	251g
Max Leakage Current	1mA	Installation Method	Backplane Installation, Screw Fixed
		Protection level	IP20
Total Output Current of Common Terminal	<4A	**Environment**	
Surge current	<8A, 100ms	Operation Temperature	0～60℃
Channel resistance	<0.2Ω		
Short Circuit Protection	Provided Internally	Storage Temperature	-40～70℃
Switching Delay	<1ms		
Isolation Type	Optical Isolation	Relative Humidity	5% ~ 95%, No Condensation
Isolation Voltage	1000V DC		

Construction

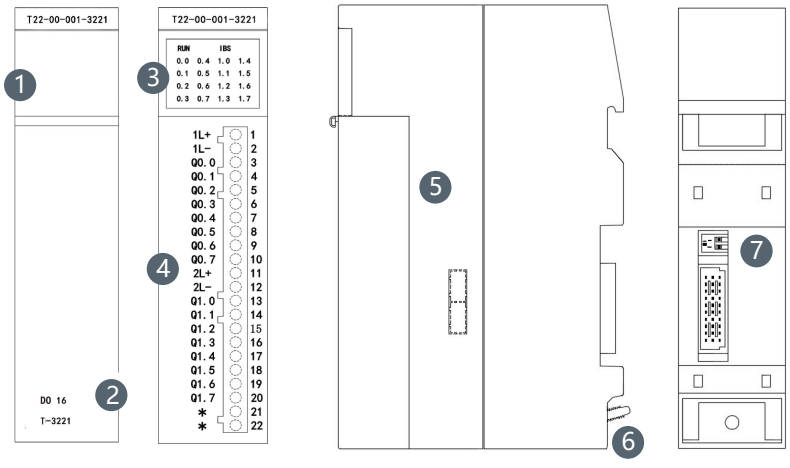


Figure 1 T-3221 Structure Diagram

① Order Number: T22-00-001-3221
② Name and Model: DO 16 T-3221
③ Indicator : RUN displays the operating status of the module; IBS displays the bus communication status of the module; 0.0~1.7 shows the output signal of the corresponding channel
④ Terminal: composed of power drive end 1L+, 1L-, 2L+, 2L- and output point Q, 1L+, 1L- for Q0.0~Q0.7 power drive end, 2L+, 2L- for Q1.0~Q1.7 power drive end, using source connection; "✱" indicates that there is no actual physical connection for this channel
⑤ Front cover: Press down on the upper protrusion of the module front cover to open the front cover
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2--OFF

Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication
0.0 ~ 1.7	The output signal is 1 (Logic)	The output signal is 0 (Logic)

Terminal Definition and Description

Terminal Definition	Terminal Description	Terminal Definition	Terminal Description
1L+	Load Drive Power Supply DC +24V	2L+	Load Drive Power Supply DC+24V
1L-	Load Drive Power Supply GND	2L-	Load Drive Power Supply GND
Q0.0 ~ Q0.7	External Output	Q1.0~Q1.7	External Output

Wiring Diagram

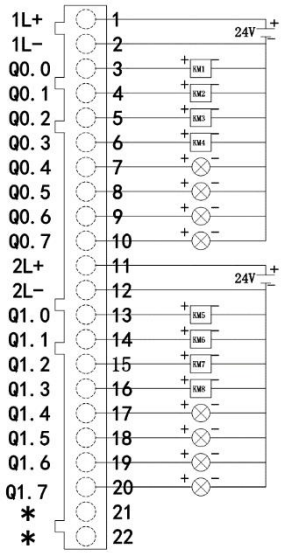


Figure 2 T-3221 Wiring Diagram

Notice:

1. The module supports hot plug.
2. The module wiring terminal is pluggable.
3. The module has builT-in protection against reverse wiring.

4 Analog Inputs Module T-3310S

The T-3310S integrates four analog input channels to detect analog input signals 4 ~ 20mA, 0~ 20mA, ±20mA, or 1 ~ 5V, 0~10V, ±10V.

- Indicator : RUN displays the running status, IBS displays the module bus communication status.
- Terminal: AI1+, AI1- are a set of analog input terminals (when entering voltage signals, AI1+ and AI1- are connected to the positive and negative terminals of the voltage signal respectively; When entering the current signal, AI1+ is used as the input end of the current signal, AI1- is used as the output end of the current signal), and the remaining groups are the same as above; "✱" indicates that there is no actual physical connection to this terminal.

Technical Specifications

Input Channel			**Power Dissipation**	
Number and Type of Channel		4 differential analog inputs	Extension Bus Power Supply（5V DC)	100mA
Input Signal	Current	4～20mA	Extension Bus Power Supply（24V DC)	20mA
		0～20mA	**Structure and Installation**	
	Voltage	0～10V	Dimension	160mm(L)×107.5mm(H)×39mm(W)
Input Accuracy		0.2%FS@25℃（FS means full range，@25℃ means at 25℃)	Weight	248g
A/D Conversion Time		<250us	Installation Method	Backplane Installation, Screw Fixed
			Protection level	IP20
Sample Refresh Time		1ms	**Environment**	
			Operation Temperature	0～60℃
Input impedance		100K (voltage); 40Ω (current)	Storage Temperature	-40～70℃
Isolation Voltage		Field and System: 1000V DC	Relative Humidity	5% ~ 95%, No Condensation

Construction

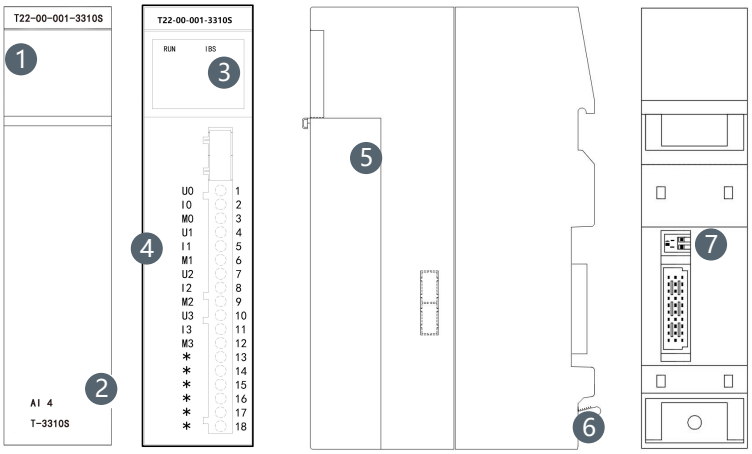


Figure 1 T-3310S Structure Diagram

① Order Number: T22-00-001-3310S
② Name and Model: AI 4 T-3310S
③ Indicator : RUN displays the operating status of the module; IBS displays the module bus communication status
④ Module terminals: Un, In, Mn (n is the channel) are a group of analog input terminals. When the voltage signal is input, Un and Mn are connected to the positive and negative end of the voltage signal respectively. When the current signal is input, In is the incoming end of the current signal, and Mn is the outgoing end of the current signal. The other groups were the same as above; ✱ indicates that the terminal is not physically connected
⑤ Front cover: Press down on the upper protrusion of the module front cover to open the front cover
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2--OFF

Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication

Input Signal A/D Range and Value

Terminal Definition	Terminal Description	Terminal Definition	Terminal Description
U0	Channel 1 voltage input	U1	Channel 2 voltage input
I0	Channel 1 current input+	I1	Channel 2 current input+
M0	The voltage and current common side of the first channel	M1	The voltage and current common side of the second channel
U2	Channel 3 voltage input	U3	Channel 4 voltage input
I2	Channel 3 Current Input+	I3	Channel 4 current input+

Input signal A/D correspondence

Current measurement range (0 to 20 mA and 4 to 20 mA)

Current measurement range		range	value	
0mA to 20mA	4mA to 20mA		Decimal value	Hexadecimal value
>23.52mA	>22.81mA	Overflow	>32767	7FFF
23.52mA	22.81mA	Overshoot range	32511	7EFF
			27649	6C01
20mA	20mA	Rated range	27648	6C00
10mA	12mA		13824	3600
0mA	4mA		0	0
		Undershoot range	-1	FFFF
-3.52mA	1.185mA		-4864	ED00
<-3.52mA	<1.185mA	underflow	<-32768	8000

Current Measurement Range (±20mA)

Current measurement range	range	The range of values corresponding to the range	
±20mA		Decimal value	Hexadecimal value
>23.52mA	Overflow	>32767	>7FFF
23.52mA	Overshoot range	32511	7EFF
		27649	6C01
20mA	Rated range	27648	6C00
10mA		13824	3600
0mA		0	0
-10mA		-13824	CA00
-20mA		-27648	9400
	Undershoot range	-27649	93FF
-23.52mA		-32512	8100
<-23.52mA	underflow	<-32768	<8000

Voltage measurement range (0 to 10 V and 1 to 5 V)

Current measurement range		range	value	
0 to 10V	1 to 5V		Decimal value	Hexadecimal value
>11.74V	>5.7V	Overflow	>32767	7FFF
11.74V	5.7V	Overshoot range	32511	7EFF
			27649	6C01
10V	5V	Rated range	27648	6C00
5V	3V		13824	3600
0V	1V		0	0
		Undershoot range	-1	FFFF
-0.88V	0.296V		-4864	ED00
<-0.88V	<1.185mA	underflow	<-32768	8000

Voltage Measurement Range (±10V)

Current measurement range	range	The range of values corresponding to the range	
±10V		Decimal value	Hexadecimal value
>11.76V	Overflow	>32767	>7FFF
11.76V	Overshoot range	32511	7EFF
		27649	6C01
10V	Rated range	27648	6C00
5V		13824	3600
0V		0	0
-5V		-13824	CA00
-10V		-27648	9400
	Undershoot range	-27649	93FF
-11.76V		-32512	8100
<-11.76V	underflow	<-32768	<8000

Wiring Diagram

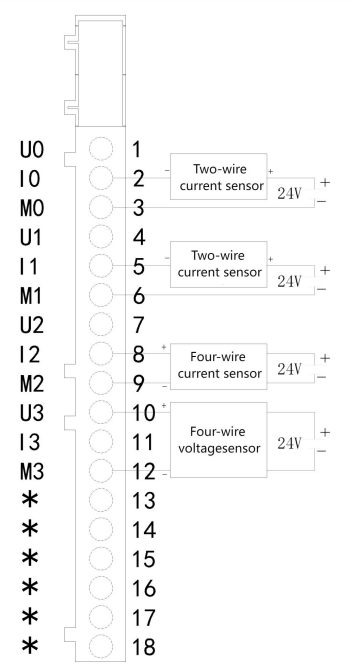


Figure 2 Schematic diagram of T-3310S wiring

caution:

1. The module supports live plugging and unplugging; The module terminal blocks are pluggable terminals.

4 Analog Inputs Module T-3310SHS

The T-3310SHS integrates four analog high-performance input channels for detecting analog input signals from 4 to 20mA, 0 to 20mA, ±20mA, or 1 to 5V, 0 to 10V, ±10V.

- A/D conversion time< 100μs
- Sampling refresh time: 250μs
- Indicator : RUN displays the module running status; IBS displays the module bus communication status.
- Terminal: Un, In, Mn (n is the channel) is a set of analog input terminals, when the voltage signal is input, Un and Mn are connected to the positive and negative ends of the voltage signal respectively, and when the current signal is input, In is used as the inflow end of the current signal, and Mn is used as the outflow end of the current signal; "*" indicates that the terminal has no actual physical connection.

Technical Specifications

Input channel			Module power consumption	
Number and type of channels		4 channels	Expansion bus power supply (24V DC)	20mA
Input the signal	Current	4～20mA	Expansion bus power supply (5V DC)	100mA
		0～20mA	**Appearance and installation**	
		±20mA	Dimensions	160mm(L)×107.5mm(H)×39mm(W)
	voltage	1～5V	weight	248g
		0～10V	Installation:	Backplate mounted, screw-fastened
		±10V	Ingress protection	IP20
Input precision		0.2%FS@25°C (FS for full scale, @25°C for at 25°C)	**Working environment**	
			Operating temperature	0～60℃
A/D conversion time		<100μs	Storage temperature	-40～70℃
Sample refresh time		250μs		
Input impedance		100K (voltage), 40Ω (current)	relative humidity	5%～95%，No condensation
Isolation Voltage		Field and System: 1000V DC		

Construction

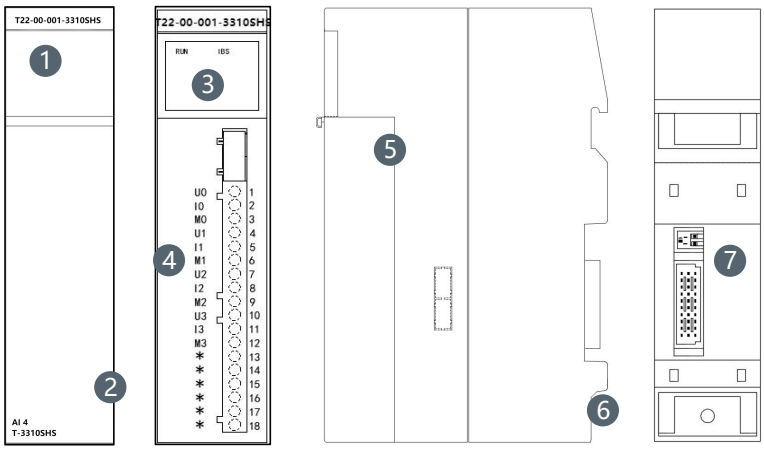


Figure 1 T-3310SHS Structure Diagram

① Order Number: T22-00-001-3310SHS
② Name and Model: AI 4 T-3310SHS
③ Indicator : RUN displays the operating status of the module; IBS displays the module bus communication status.
④ Terminal: Un, In, Mn (n is the channel) is a set of analog input terminals, when the input voltage signal, Un and Mn are connected to the positive and negative ends of the voltage signal respectively, and when the current signal is input, In is used as the inflow end of the current signal, and Mn is used as the outflow end of the current signal;
⑤ Front cover: Press down on the upper protrusion of the module front cover to open the front cover.
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2—OFF.

Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication

Input Signal A/D Range and Value

Terminal Definition	Terminal Description	Terminal Definition	Terminal Description
U0	Channel 1 voltage input	U1	Channel 2 voltage input
I0	Channel 1 current input+	I1	Channel 2 current input+
M0	The voltage and current common side of the first channel	M1	The voltage and current common side of the second channel
U2	Channel 3 voltage input	U3	Channel 4 voltage input
I2	Channel 3 Current Input+	I3	Channel 4 current input+
M2	The voltage and current common side of the third channel	M3	The voltage and current common terminal of the 4th channel

Input signal A/D correspondence

Current measurement range (0 to 20 mA and 4 to 20 mA)

Current measurement range		range	value	
0mA to 20mA	4mA to 20mA		Decimal value	Hexadecimal value
>23.52mA	>22.81mA	Overflow	>32767	7FFF
23.52mA	22.81mA	Overshoot range	32511	7EFF
			27649	6C01
20mA	20mA	Rated range	27648	6C00
10mA	12mA		13824	3600
0mA	4mA		0	0
		Undershoot range	-1	FFFF
-3.52mA	1.185mA		-4864	ED00
<-3.52mA	<1.185mA	underflow	<-32768	8000

Current Measurement Range (±20mA)

Current measurement range	range	The range of values corresponding to the range	
±20mA		Decimal value	Hexadecimal value
>23.52mA	Overflow	>32767	>7FFF
23.52mA	Overshoot range	32511	7EFF
		27649	6C01
20mA	Rated range	27648	6C00
10mA		13824	3600
0mA		0	0
-10mA		-13824	CA00
-20mA		-27648	9400
	Undershoot range	-27649	93FF
-23.52mA		-32512	8100
<-23.52mA	underflow	<-32768	<8000

Voltage measurement range (0 to 10 V and 1 to 5 V)

Current measurement range		range	value	
0 to 10V	1 to 5V		Decimal value	Hexadecimal value
>11.74V	>5.7V	Overflow	>32767	7FFF
11.74V	5.7V	Overshoot range	32511	7EFF
			27649	6C01
10V	5V	Rated range	27648	6C00
5V	3V		13824	3600
0V	1V		0	0
		Undershoot range	-1	FFFF
-0.88V	0.296V		-4864	ED00
<-0.88V	<1.185mA	underflow	<-32768	8000

Voltage Measurement Range (±10V)

Current measurement range	range	The range of values corresponding to the range	
±10V		Decimal value	Hexadecimal value
>11.76V	Overflow	>32767	>7FFF
11.76V	Overshoot range	32511	7EFF
		27649	6C01
10V	Rated range	27648	6C00
5V		13824	3600
0V		0	0
-5V		-13824	CA00
-10V		-27648	9400
	Undershoot range	-27649	93FF
-11.76V		-32512	8100
<-11.76V	underflow	<-32768	<8000

Wiring Diagram

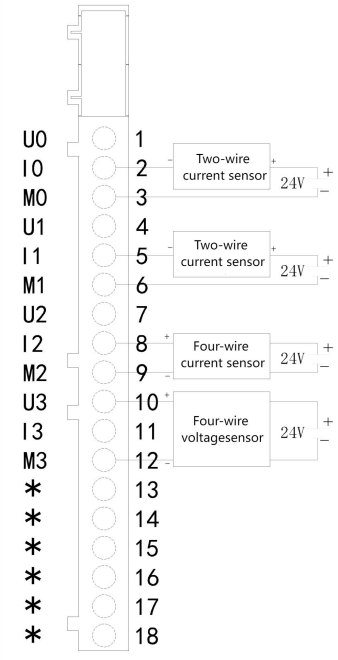


Figure 2 Schematic diagram of T-3310SHS wiring

caution:

1. The module supports live plugging and unplugging;
   The module terminal blocks are pluggable terminals.

8 Analog Inputs Module T-3310

The T-3310 integrates 8 analog input channels for detecting analog input signals 4~20mA, 0~20mA, ±20mA or 1~5V, 0~10V, ±10V.

- Indicator : RUN displays the running status; IBS displays the bus communication status.
- Terminal: Un, In, Mn (n is the channel) is a group of analog input terminals, when the input voltage signal, Un and Mn are connected to the positive and negative ends of the voltage signal respectively, when the input current signal, In is the inflow end of the current signal, Mn is the outflow end of the current signal; the rest of the groups are the same as the above;"✱" means that there is no actual physical connection of this terminal.

Technical Specifications

Input channel			Module power consumption	
Number and type of channels		8channels	Expansion bus power supply (24V DC)	20mA
Input the signal	current	4～20mA	Expansion bus power supply (5V DC)	100mA
		0～20mA	**Appearance and installation**	
		±20mA	Size	160mm(L)×107.5mm(H)×39mm(W)
	voltage	1～5V	weight	248g
		0～10V	Installation	Backplate mounted, screw-fastened
		±10V	Ingress protection	IP20
Input precision		0.2%FS@25°C (FS for full scale, @25°C for at 25°C)	**Working environment**	
			Operating temperature	0～60℃
A/D conversion time		<250μs	Storage temperature	-40～70℃
Sample refresh time		1ms		
Input impedance		100K (voltage), 40Ω (current)	relative humidity	5%~95%, no condensation
Isolation Voltage		Field and System: 1000V DC		

Construction

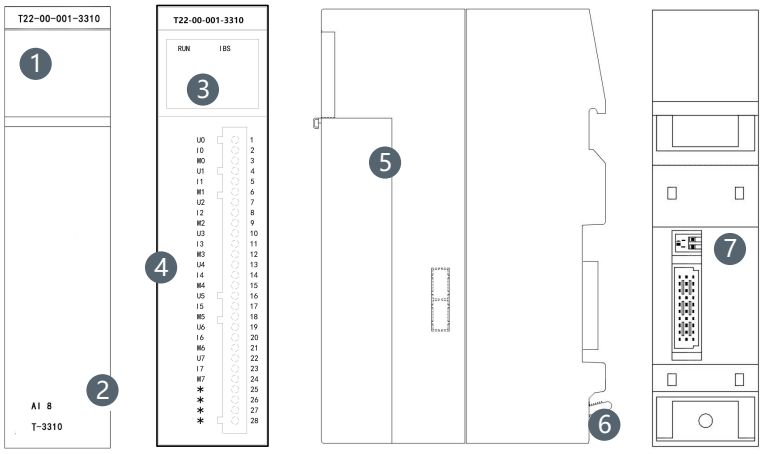


Figure 1 T-3310 Structure Diagram

① Order Number: T22-00-001-3310
② Name and Model: AI 8 T- 3310
③ Indicator : RUN displays the module running status; IBS displays the module bus communication status.
④ Terminals: Un, In, Mn (n is the channel) is a group of analog input terminals, when the voltage signal is input, Un, Mn are respectively connected to the positive and negative ends of the voltage signal, when the current signal is input, In is used as the inflow end of the current signal, Mn is the outflow end of the current signal; "✱" indicates that there is no physical connection to this terminal.
⑤ Front cover: Press down on the upper protrusion of the module front cover to open the front cover
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2--OFF

Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication

Terminal Definition and Description

Terminal Definition	Terminal Description	Terminal Definition	Terminal Description
U0	Channel 1 voltage input	I1	Channel 2 voltage input
I0	Channel 1 current input+	M1	Channel 2 current input+
M0	The voltage and current common side of the first channel	U3	The voltage and current common side of the second channel
U2	Channel 3 voltage input	I3	Channel 4 voltage input
I2	Channel 3 Current Input+	M3	Channel 4 current input+
M2	The voltage and current common side of the third channel	U5	The voltage and current common terminal of the 4th channel
U4	Channel 5 voltage input	I5	Channel 6 voltage input
I4	Channel 5 current input+	M5	Channel 6 current input+
M4	The voltage and current common terminal of the 5th channel	U7	The voltage and current common terminal of the 6th channel
U6	Channel 7 voltage input	I7	Channel 8 voltage input
I6	Channel 7 current input+	M7	Channel 8 current input+
M6	The voltage and current common terminal of the 7th channel	U1	The voltage and current common terminal of channel 8

Input signal A/D correspondence

Current measurement range (0 to 20 mA and 4 to 20 mA)

Current measurement range		range	value	
0mA to 20mA	4mA to 20mA		Decimal value	Hexadecimal value
>23.52mA	>22.81mA	Overflow	>32767	7FFF
23.52mA	22.81mA	Overshoot range	32511	7EFF
			27649	6C01
20mA	20mA	Rated range	27648	6C00
10mA	12mA		13824	3600
0mA	4mA		0	0
		Undershoot range	-1	FFFF
-3.52mA	1.185mA		-4864	ED00
<-3.52mA	<1.185mA	underflow	<-32768	8000

Current Measurement Range (±20mA)

Current measurement range	range	The range of values corresponding to the range	
±20mA		Decimal value	Hexadecimal value
>23.52mA	Overflow	>32767	>7FFF
23.52mA	Overshoot range	32511	7EFF
		27649	6C01
20mA	Rated range	27648	6C00
10mA		13824	3600
0mA		0	0
-10mA		-13824	CA00
-20mA		-27648	9400
	Undershoot range	-27649	93FF
-23.52mA		-32512	8100
<-23.52mA	underflow	<-32768	<8000

Voltage measurement range (0 to 10 V and 1 to 5 V)

Current measurement range		range	value	
0 to 10V	1 to 5V		Decimal value	Hexadecimal value
>11.74V	>5.7V	Overflow	>32767	7FFF
11.74V	5.7V	Overshoot range	32511	7EFF
			27649	6C01
10V	5V	Rated range	27648	6C00
5V	3V		13824	3600
0V	1V		0	0
		Undershoot range	-1	FFFF
-0.88V	0.296V		-4864	ED00
<-0.88V	<1.185mA	underflow	<-32768	8000

Voltage output range (±10V)

Current output range	range	The range of values corresponding to the range	
±10V		Decimal value	Hexadecimal value
>11.76V	Overflow	>32767	>7FFF
11.76V	Maximum output value	>32767	>7FFF
11.76V	Overshoot range	32511	7EFF
		27649	6C01
10V	Rated range	27648	6C00
5V		13824	3600
0V		0	0
-5V		-13824	CA00
-10V		-27648	9400
	Undershoot range	-27649	93FF
-11.76V		-32512	8100
-11.76V	underflow	<-32768	<8000

Wiring Diagram

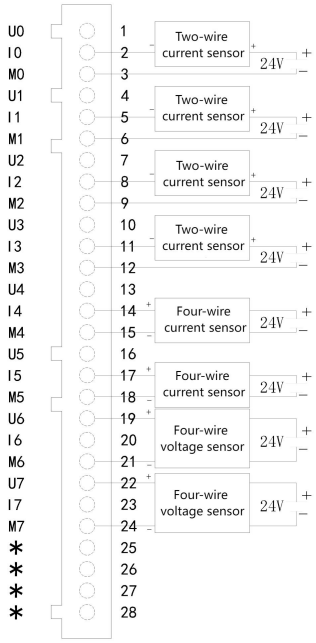


Figure 2 Schematic diagram of T-3310 wiring

caution:

1. The module supports live plugging and unplugging; The module terminal blocks are pluggable terminals.

4 RTD Inputs Module T-3312S

T-3312S integrates 4 differential RTD input channels, which are used to detect RTD input signals of Pt100

- Indicator : RUN displays the module running status; IBS displays the module bus communication status.
- Terminal: The terminal RA+,RA-, RA- are a group of RTD wiring terminals. Supports two wire and three wire connection modes. In the two-wire system, the two RA- are shorted, and RA+ and RA- are connected to the thermal resistance. When the three-wire system RTD, one end is connected to RA+, and the other end is connected to two RA- wires, and the remaining groups are the same as above; "✱" indicates that there is no actual physical connection to this terminal.

Technical Specifications

Input Channel		Power Dissipation	
Number and Type of Channels	4	Extension Bus Power Supply (5V DC)	100mA
Type of input Signal	Pt100	Extension Bus Power Supply (24V DC)	20mA
Range of Signal	Pt100 (-100-600℃)	**Structure and Installation**	
		Dimension	160mm(L)×107.5mm(H)×39mm (W)
Input Accuracy	0.2%FS@25℃ (Voltage) (FS means full range, @25℃ means at 25℃	Weight	257g
Temperature resolution	0.1℃	Installation Method	Backplane Installation, Screw Fixed
		Protection level	IP20
Sample Refresh Time	10ms (All Channels)	**Environment**	
Differential Mode Suppression	Better than 50dB@50Hz	Operation Temperature	0 ~ 60℃
Temperature Drift	±50ppm/℃	Storage Temperature	-40 ~ 70℃
Testing for short circuit & Broken wiring	support	Relative Humidity	5% ~ 95%, No Condensation

Construction

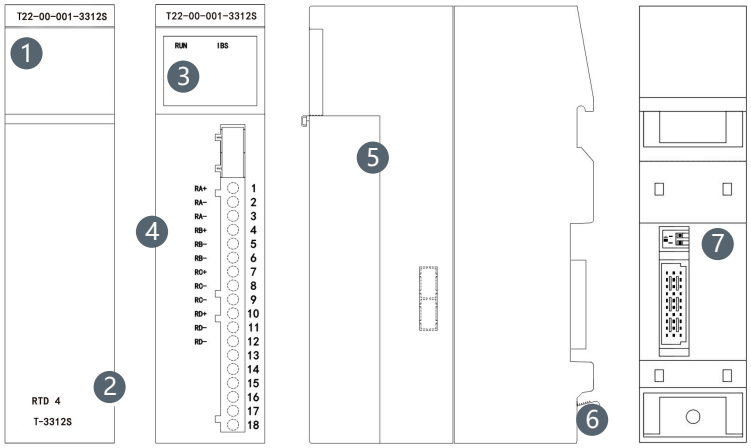


Figure 1 T-3312S Structure Diagram

① Order Number: T22-00-001-3312S
② Name and Model: RTD 4 T-3312S
③ Indicator : RUN displays the module running status; IBS displays the module bus communication status.
④ Terminal: The terminal RA+,RA-, RA- are a group of RTD wiring terminals. Supports two wire and three wire connection modes. In the two-wire system, the two RA- are shorted, and RA+ and RA- are connected to the thermal resistance. When the three-wire system RTD, one end is connected to RA+, and the other end is connected to two RA- wires, and the remaining groups are the same as above; "✱" indicates that there is no actual physical connection to this terminal.
⑤ Front cover: Press down on the upper protrusion of the module front cover to open the front cover
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2--OFF

Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication

Terminal Definition and Description

Input Signal	Range	Values Corresponding to the Range
Pt100	-100～600	-1000～6000

Input Signal A/D Range and Value

Terminal Definition	Terminal Description	Terminal Definition	Terminal Description
RA+	RTD Exciting terminal	RC+	RTD Exciting terminal
RA-	RTD Measuring terminal	RC-	RTD Measuring terminal
RA-	RTD Common point	RC-	RTD Common point
RB+	RTD Exciting terminal	RD+	RTD Exciting terminal
RB-	RTD Measuring terminal	RT-	RTD Measuring terminal
RB-	RTD Common point	RT-	RTD Common point

Wiring Diagram

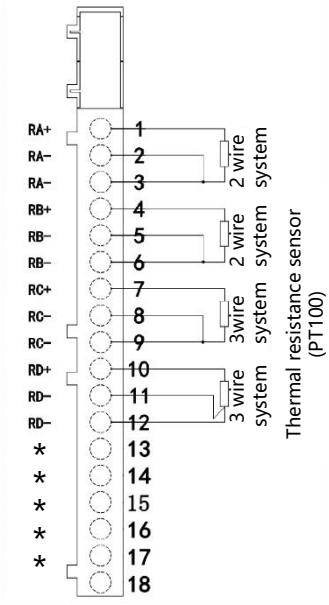


Figure 2 T-3312S Wiring Diagram

Notice:

1. The module supports hot plug.
2. The module wiring terminal is pluggable.

2 Analog Outputs Module T-3320SHS

The T-3320SHS integrates 2 analog output channels for outputting analog signals 4~20mA, 0~20mA, ±20mA or 1~5V, 0~10V, ±10V.

- Indicator : RUN displays the module running status; IBS displays the module bus communication status.
- Terminal: 24V and GND are the positive and negative terminals of the 24VDC power supply respectively; AOn+, AOn- are a group of analog output terminals (n represents the channel), AOn+ is the positive output terminal, AOn- is the negative output terminal; the rest of the groups are the same as the above;"✱" means that this terminal has no actual physical connection

Technical Specifications

Output Channel			Power Dissipation	
Number of channels		2 channels	Externally supplied power supply (24V DC)	80mA
Output signal	Current	4~20mA	Expansion bus power supply (5V DC)	100mA
		0~20mA	**Structure and Installation**	
		±20mA	Dimension	160mm(L)×107.5mm(H)×39mm(W)
	Voltage	1~5V	Weight	248g
		0~10V	Installation Method	Backplate mounted, screw-fastened
		±10V	Protection level	IP20
Output accuracy		0.5%FS@25°C (FS for full scale, @25°C for at 25°C)	**Environment**	
Settling time	Current/Voltage	<=20us	Operating temperature	0~60℃
Drive capacity	voltage	Min 2000Ω	Storage temperature	-40~70℃
	Generator	Max 600Ω		
Isolation withstand voltage		Field and System: 1000V DC	relative humidity	5%~95%, no condensation

Construction

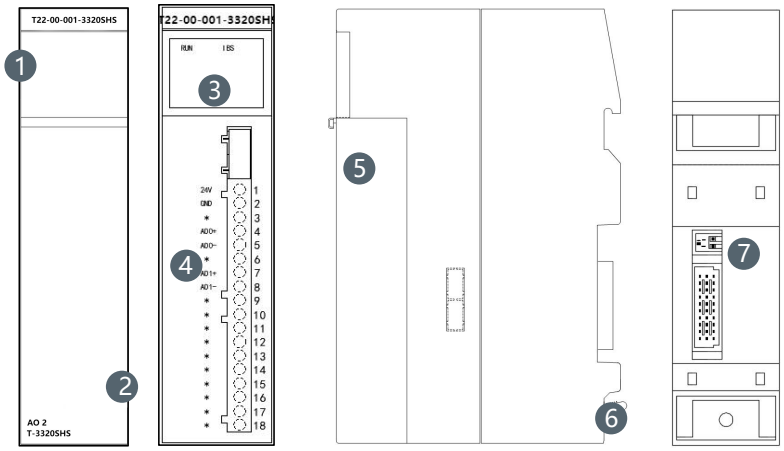


Figure 1 T-3320SHS Structure Diagram

① Order Number: T22-00-001-3320SHS
② Name and Model: AO 2 T-3320SHS
③ Indicator : RUN displays the module running status; IBS displays the module bus communication status.
④ Terminal: 24V and GND are the positive and negative terminals of the 24VDC power supply respectively; AOn+, AOn- are a group of analog output terminals (n represents the channel), AOn+ is the positive output terminal, and AOn- is the negative output terminal; the rest of the groups are the same as the above; "✱" means that this terminal has no actual physical connection
⑤ Front cover: Press down on the upper protrusion of the module front cover to open the front cover
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2--OFF

Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication

Terminal Definition and Description

Terminal Definition	Terminal Description	Terminal Definition	Terminal Description
24V	External 24VDC power supply positive electrode	GND	External 24VDC power supply negative
AO0+	Channel 1 outputs the positive end	AO1+	Channel 2 outputs the positive end
AO0-	Channel 1 outputs the negative end	AO1-	Channel 2 outputs the negative end

Output signal D/A correspondence

Current output range (4~20mA)

Current output range	range	The range of values corresponding to the range		value
4 to 20mA		Decimal value	Hexadecimal value	
22.81mA	Maximum output value	>32511	>7EFF	>117.589 %
22.81mA	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
20mA	Rated range	27648	6C00	100%
12mA		13824	3600	50%
4mA		0	0	0%
	Undershoot range	-1	FFFF	
0mA		-6912	E500	-25%
0mA	Minimum output value	<-6912	<E500	<-25%

Current output range (0~20mA)

Current output range	range	The range of values corresponding to the range		value
0 to 20mA		Decimal value	Hexadecimal value	
23.52mA	Maximum output value	>32511	>7EFF	>117.589%
23.52mA	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
20mA	Rated range	27648	6C00	100%
10mA		13824	3600	50%
0mA		0	0	0%
0mA	Minimum output value	<0	<0	<0%

Current output range (±20mA)

Current output range	range	The range of values corresponding to the range		value
±20mA		Decimal value	Hexadecimal value	
23.52mA	Maximum output value	>32511	>7EFF	>117.589%
23.52mA	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
20mA	Rated range	27648	6C00	100%
10mA		13824	3600	50%
0mA		0	0	0%
-10mA		-13824	CA00	-50%
-20mA		-27648	9400	-100%
	Undershoot range	-27649	93FF	
-23.52mA		-32512	8100	-117.593%
-23.52mA	Minimum output value	<-32512	<8100	<-117.593%

Voltage output range (1~5V)

Voltage output range	range	The range of values corresponding to the range		value
1 to 5V		Decimal value	Hexadecimal value	
5.7V	Maximum output value	>32511	>7EFF	>117.589%
5.7V	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
5V	Rated range	27648	6C00	100%
3V		13824	3600	50%
1V		0	0	0%
	Undershoot range	-1	FFFF	
0V		-6912	E500	-25%
0V	Minimum output value	<-6912	<E500	<-25%

Voltage output range (0~10V)

Current output range	range	The range of values corresponding to the range		value
0 to 10V		Decimal value	Hexadecimal value	
11.76V	Maximum output value	>32511	>7EFF	>117.589%
11.76V	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
10V	Rated range	27648	6C00	100%
5V		13824	3600	50%
0V		0	0	0%
0V	Minimum output value	<0	<0	<0%

Voltage output range (±10V)

Current output range	range	The range of values corresponding to the range		value
±10V		Decimal value	Hexadecimal value	
11.76V	Maximum output value	>32511	>7EFF	>117.589%
11.76V	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
10V	Rated range	27648	6C00	100%
5V		13824	3600	50%
0V		0	0	0%
-5V		-13824	CA00	-50%
-10V		-27648	9400	-100%
	Undershoot range	-27649	93FF	
-11.76V		-32512	8100	-117.593%
-11.76V	Minimum output value	<-32512	<8100	<-117.593%

Wiring Diagram

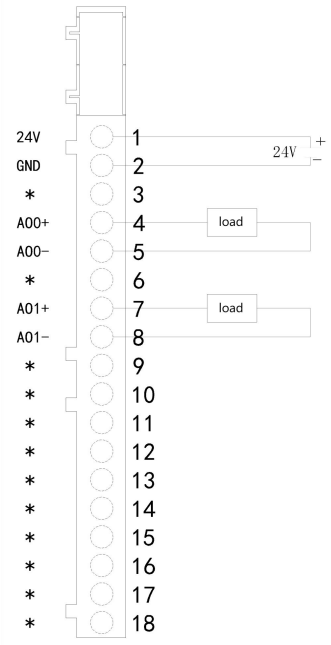


Figure 2 Schematic diagram of T-3320SHS wiring

Note:
The module supports live plugging and unplugging;
The module terminal blocks are pluggable terminals.

4 Analog Outputs Module T-3320

The T-3320 integrates 4 analog output channels for outputting analog signals 4~20mA, 0~20mA, ±20mA or 1~5V, 0~10V, ±10V.

- Indicator : RUN displays the module running status; IBS displays the module bus communication status.
- Terminal: 24V and GND are the positive and negative terminals of the 24VDC power supply respectively; AOn+, AOn- are a group of analog output terminals (n represents the channel), AOn+ is the positive output terminal, and AOn- is the negative output terminal; the rest of the groups are the same as the above; "✱" means that this terminal has no actual physical connection.

Technical Specifications

Output Channel			Power Dissipation	
Number of channels		2 channels	Externally supplied power supply (24V DC)	80mA
Output signal	Current	4~20mA	Expansion bus power supply (5V DC)	100mA
		0~20mA	**Structure and Installation**	
		±20mA	Dimension	160mm(L)×107.5mm(H)×39mm(W)
	Voltage	1~5V	Weight	248g
		0~10V	Installation Method	Backplate mounted, screw-fastened
		±10V	Protection level	IP20
Output accuracy		0.5%FS@25°C (FS for full scale, @25°C for at 25°C)	**Environment**	
Settling time	Current/Voltage	<=100us	Operating temperature	0~60℃
Drive capacity	voltage	Min 2000Ω	Storage temperature	-40~70℃
	Generator	Max 600Ω		
Isolation withstand voltage		Field and System: 1000V DC	relative humidity	5%~95%, no condensation

Construction

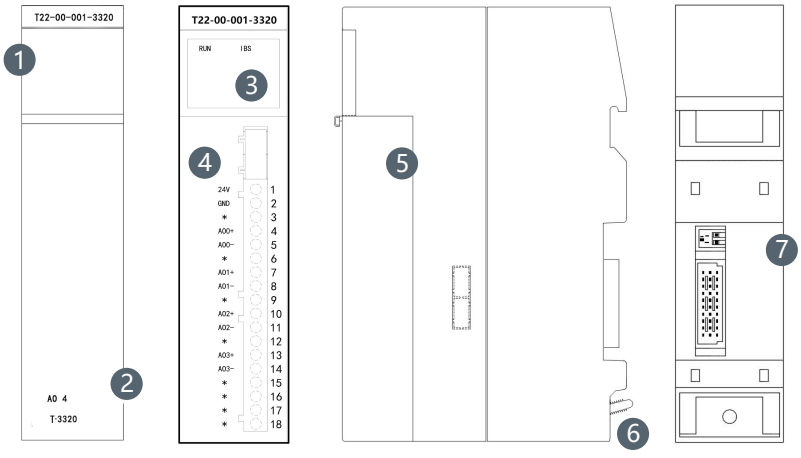


Figure 1 T-3320 Structure Diagram

① Order Number: T22-00-001-3320
② Name and Model: AO 4 T-3320
③ Indicator : RUN displays the module running status; IBS displays the module bus communication status.
④ Terminals: 24V and GND are the positive and negative terminals of the 24VDC power supply respectively; AOn+, AOn- are a group of analog output terminals (n represents the channel), AOn+ is the positive output terminal, and AOn- is the negative output terminal; the rest of the groups are the same as the above; "✱" means that this terminal has no actual physical connection.
⑤ Front cover: Press down on the upper protrusion of the module front cover to open the front cover
⑥ Fixing Screws: Tighten the screws from the lower end of the module with a cross screwdriver to fix the module on the installation backplane.
⑦ 2P DIP switch: 1--OFF/2—OFF.

Indicator Description

Indicator	Light On	Light Off
RUN	Module Operation	Module Stop
IBS	Normal Communication	Abnormal Communication

Terminal Definition and Description

Terminal	Terminal Description	Terminal	Terminal Description
24V	positive end of the external 24VDC power supply	GND	Negative end of external 24VDC power supply
AO0+	Channel 1 outputs the positive end	AO1+	Channel 2 outputs the positive end
AO0-	Channel 1 outputs the negative end	AO1-	Channel 2 outputs the negative end
AO2+	Channel 3 outputs the positive end	AO3+	Channel 4 outputs the positive end
AO2-	Channel 3 outputs the negative end	AO3-	Channel 4 outputs the negative end

Output signal D/A correspondence

Current output range (4~20mA)

Current output range	range	The range of values corresponding to the range		value
4 to 20mA		Decimal value	Hexadecimal value	
22.81mA	Maximum output value	>32511	>7EFF	>117.589%
22.81mA	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
20mA	Rated range	27648	6C00	100%
12mA		13824	3600	50%
4mA		0	0	0%
	Undershoot range	-1	FFFF	
0mA		-6912	E500	-25%
0mA	Minimum output value	<-6912	<E500	<-25%

Current output range (0~20mA)

Current output range	range	The range of values corresponding to the range		value
0 to 20mA		Decimal value	Hexadecimal value	
23.52mA	Maximum output value	>32511	>7EFF	>117.589%
23.52mA	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
20mA	Rated range	27648	6C00	100%
10mA		13824	3600	50%
0mA		0	0	0%
0mA	Minimum output value	<0	<0	<0%

Current output range (±20mA)

Current output range	range	The range of values corresponding to the range		value
±20mA		Decimal value	Hexadecimal value	
23.52mA	Maximum output value	>32511	>7EFF	>117.589%
23.52mA	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
20mA	Rated range	27648	6C00	100%
10mA		13824	3600	50%
0mA		0	0	0%
-10mA		-13824	CA00	-50%
-20mA		-27648	9400	-100%
	Undershoot range	-27649	93FF	
-23.52mA		-32512	8100	-117.593%
-23.52mA	Minimum output value	<-32512	<8100	<-117.593%

Voltage output range (1~5V)

Current output range	range	The range of values corresponding to the range		value
1 to 5V		Decimal value	Hexadecimal value	
5.7V	Maximum output value	>32511	>7EFF	>117.589%
5.7V	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
5V	Rated range	27648	6C00	100%
3V		13824	3600	50%
1V		0	0	0%
	Undershoot range	-1	FFFF	
0V		-6912	E500	-25%
0V	Minimum output value	<-6912	<E500	<-25%

Voltage output range (0~10V)

Current output range	range	The range of values corresponding to the range		value
0 to 10V		Decimal value	Hexadecimal value	
11.76V	Maximum output value	>32511	>7EFF	>117.589%
11.76V	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
10V	Rated range	27648	6C00	100%
5V		13824	3600	50%
0V		0	0	0%
0V	Minimum output value	<0	<0	<0%

Voltage output range (±10V)

Current measurement range	range	The range of values corresponding to the range		value
±10V		Decimal value	Hexadecimal value	
>11.76V	Overflow	>32767	>7FFF	>117.589%
11.76V	Overshoot range	32511	7EFF	117.589%
		27649	6C01	
10V	Rated range	27648	6C00	100%
5V		13824	3600	50%
0V		0	0	0%
-5V		-13824	CA00	-50%
-10V		-27648	9400	-100%
	Undershoot range	-27649	93FF	
-11.76V		-32512	8100	-117.593%
<-11.76V	Minimum output value	<-32512	<8000	<-117.593%

Wiring Diagram

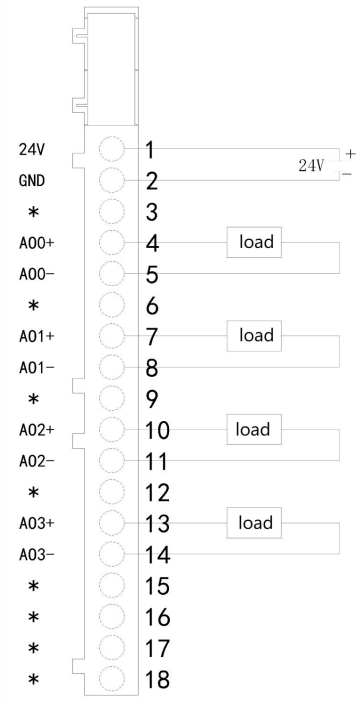


Figure 2 Schematic diagram of T-3320 wiring

Note:
The module supports live plugging and unplugging;
The module terminal blocks are pluggable terminals.

4 slot backplane T-K004

Technical Specifications

Outline and Installation		Environment condition	
Dimensions	163mm(L)	Operation Temperature	0～60℃
Weight	110g	Storage Temperature	-40～70℃
Installation Method	Screw Fixed	Relative Humidity	5%～95%，No Condensation

Construction

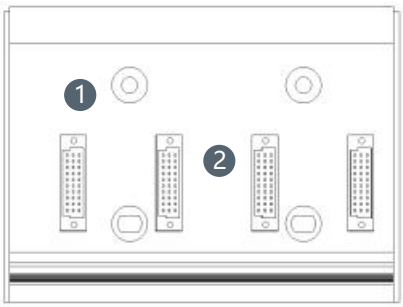


Figure 1 T-K004 Structure Diagram

① Backplane installation hole：Screw hole to fix the backplane
② Module slot：For the installation of T-M-RIO Module

Module installation

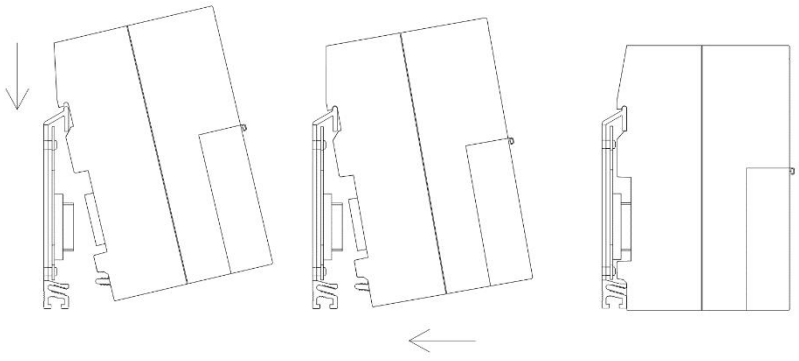


Figure 2 T-K004 Module installation

- the backplane should be inserted from top
- The bottom of module should be matched to the slot
- Screw tightly and no need too much strength, in case damage the module.。

Notice：

1. The backplane bus is a dual bus redundant architecture.
2. Each backplane requires a power supply module to power the RIO modules installed on that backplane, and multiple power modules can be installed at the same time if backup power supply is required for redundant power supply.

6 slot backplane T-K006

Technical Specifications

Outline and Installation		Environment condition	
Dimensions	242mm(L)	Operation Temperature	0～60℃
Weight	130g	Storage Temperature	-40～70℃
Installation Method	Screw Fixed	Relative Humidity	5%～95%，No Condensation

Construction

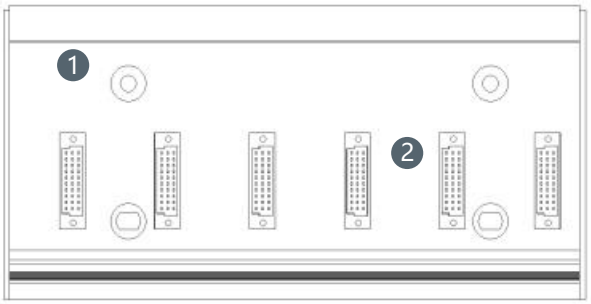


Figure 1 T-K006 Structure Diagram

① Backplane installation hole：Screw hole to fix the backplane
② Module slot：For the installation of T-M-RIO Module

Module installation

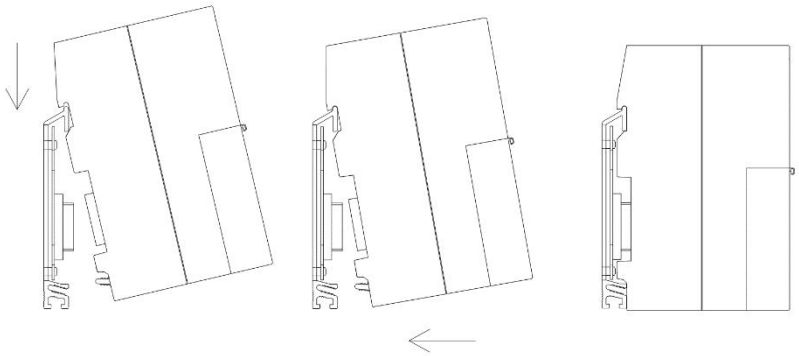


Figure 2 T-K006 Module installation

- the backplane should be inserted from top
- The bottom of module should be matched to the slot
- Screw tightly and no need too much strength, in case damage the module.

Notice：

1. The backplane bus is a dual bus redundant architecture.
2. Each backplane requires a power supply module to power the RIO modules installed on that backplane, and multiple power modules can be installed at the same time if backup power supply is required for redundant power supply.

8 slot backplane T-K008

Technical Specifications

Outline and Installation		Environment condition	
Dimensions	321mm(L)	Operation Temperature	0～60℃
Weight	150g	Storage Temperature	-40～70℃
Installation Method	Screw Fixed	Relative Humidity	5%～95%，No Condensation

Construction

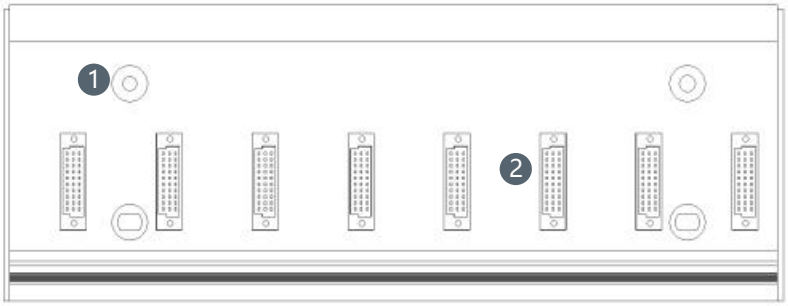


Figure 1 T-K008 Structure Diagram

① Backplane installation hole：Screw hole to fix the backplane
② Module slot：For the installation of T-M-RIO Module

Module installation

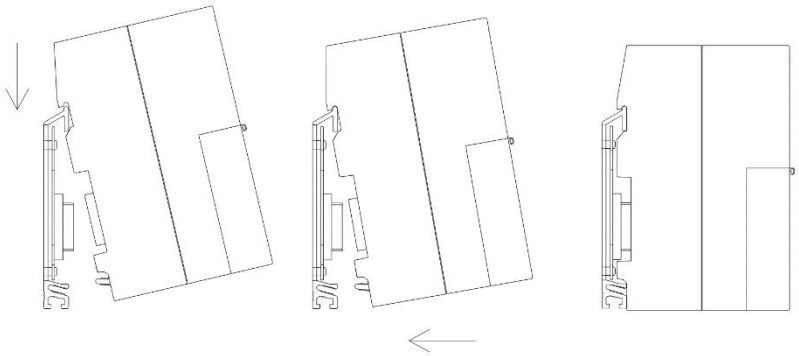


Figure 2 T-K008 Module installation

- the backplane should be inserted from top
- The bottom of module should be matched to the slot
- Screw tightly and no need too much strength, in case damage the module.

Notice：

1. The backplane bus is a dual bus redundant architecture.
2. Each backplane requires a power supply module to power the RIO modules installed on that backplane, and multiple power modules can be installed at the same time if backup power supply is required for redundant power supply.

11 slot backplane T-K011

Technical Specifications

Outline and Installation		Environment condition	
Dimensions	439.5mm(L)	Operation Temperature	0～60℃
Weight	180g	Storage Temperature	-40～70℃
Installation Method	Screw Fixed	Relative Humidity	5%～95%，No Condensation

Construction

Figure 1 T-K011 Structure Diagram

① Backplane installation hole：Screw hole to fix the backplane
② Module slot：For the installation of T-M-RIO Module

Module installation

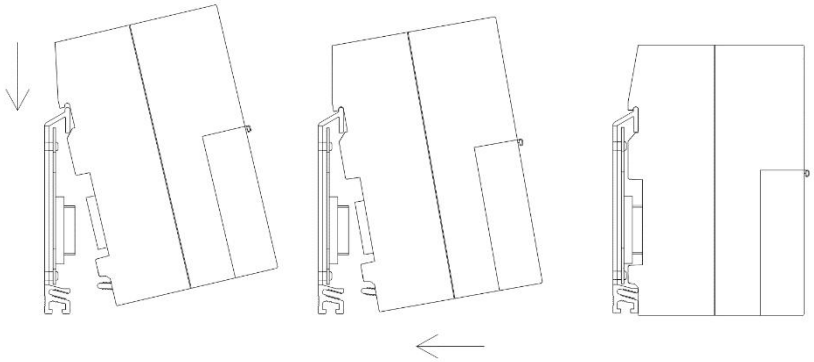


Figure 2 T-K011 Module installation

- the backplane should be inserted from top
- The bottom of module should be matched to the slot
- Screw tightly and no need too much strength, in case damage the module.

Notice：

1. The backplane bus is a dual bus redundant architecture.
2. Each backplane requires a power supply module to power the RIO modules installed on that backplane, and multiple power modules can be installed at the same time if backup power supply is required for redundant power supply.

15 slot backplane T-K015

Technical Specifications

Outline and Installation		Environment condition	
Dimensions	597.5mm(L)	Operation Temperature	0～60℃
Weight	220g	Storage Temperature	-40～70℃
Installation Method	Screw Fixed	Relative Humidity	5%～95%，No Condensation

Construction

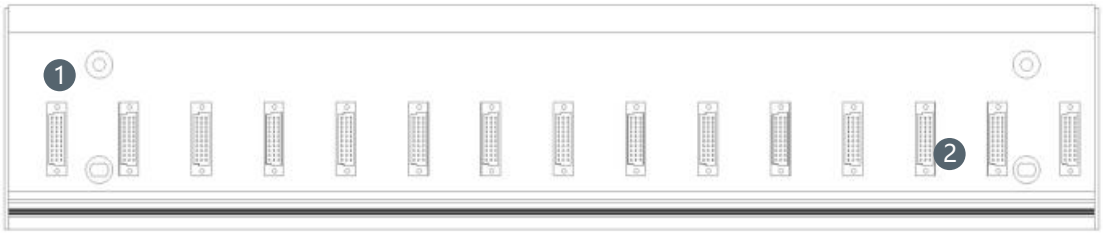


Figure 1 T-K0015 Structure Diagram

① Backplane installation hole：Screw hole to fix the backplane
② Module slot：For the installation of T-M-RIO Module

Module installation

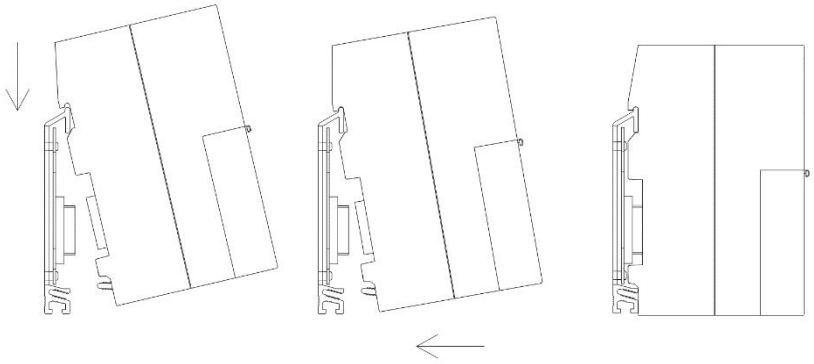


Figure 2 T-K015 Module installation

- the backplane should be inserted from top
- The bottom of module should be matched to the slot
- Screw tightly and no need too much strength, in case damage the module.

Notice:

1. The backplane bus is a dual bus redundant architecture.
2. Each backplane requires a power supply module to power the RIO modules installed on that backplane, and multiple power modules can be installed at the same time if backup power supply is required for redundant power supply.

Terminal Block T-000

Technical Specifications

Outline and Installation		Environment condition	
Dimensions	160mm(L)×107.5mm(H)×39mm(W)	Operation Temperature	0～60℃
Weight	160g	Storage Temperature	-40～70℃
Installation Method	Screw Fixed	Relative Humidity	5%～95%, No Condensation

Construction

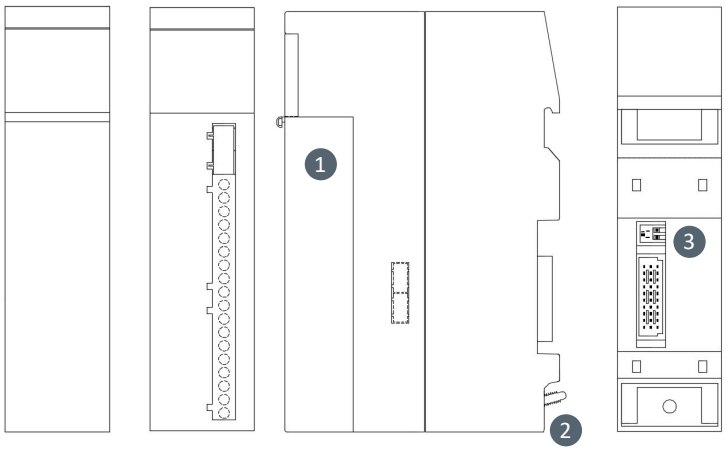


Figure 1 T-000 Structure Diagram

- the backplane should be inserted from top .
- The bottom of module should be matched to the slot .
- Screw tightly and no need too much strength, in case damage the module.

Notice:

1. The module supports hot plug.
2. The module wiring terminal is pluggable.

Address: Unit 601,602, Building 2, Zhongxing Industrial Base, No. 2 East 7th Road, Tianjin Pilot Free Trade Zone (Airport Economic Zone)
Tel: 022-854745517
Email: CDT_Tech@163.com
Website: www.cdt-tech.cn