

CT-623F 8-channels DI /24VDC/ source or sink type & 8-channels DO /24VDC/ source type

1 Module features

- ◆ The module supports 8-channel digital input, and supports source type and sink type two-way input. The input voltage is 0V/24VDC.
- ◆ The module supports 8-channel digital output, Output high level valid, and the output voltage is 24VDC.
- ◆ Module input channel can collect digital output signal of field equipment. (dry contact or active output)
- ◆ The module input channel can be connected to the 2-wire or 3-wire digital sensor.
- ◆ Module input channel supports 32-bit counter for each channel, the counting frequency < 200Hz.
- ◆ The input channel of the module supports the signal maintenance function, and the maintenance time can be set.
- ◆ The input channel of the module can set the digital signal input filtering time and the byte transfer order of the counter.
- ◆ The input channel of the module can set the counting mode and counting direction independently.
- ◆ Module output channel can drive field equipment .(relay, solenoid valve, etc.)
- ◆ The output channel of the module is equipped with short circuit, thermal shutdown and overvoltage protection functions.
- ◆ Module internal bus and field input and output , using Optocoupler isolation.
- ◆ Module has 16 digital input and output channel LED indicator light.

2 Technical parameters

General Parameters	
Power	Max.59mA@5.0Vdc
Isolation	I/O to internal bus: opto-coupler isolation (3KVrms)
Field Power	Nominal voltage: 24Vdc Input range: 19.2~28.8Vdc
Wiring	Max.: AWG 18
Installation	35mm DIN-Rail
Size	115*14*75mm
Weight	65g
Environment Specification	
Operating Temperature of Vertical Installation	-35°C~60°C
Operating Temperature of Horizontal Installation	-35°C~70°C
Relative Humidity	5~ 95%RH (No Condensation)
Storage Temperature	-40°C~85°C
Storage Humidity	5~ 95%RH (No Condensation)
Manufacturing Test Temperature	-40°C~75°C
Ingress Protection Rating	IP20
Vibration Resistance	Comply with IEC 61131-2 and EC 60068-2-6
Impact resistance	Comply with IEC 61131-2 and IEC 60068-2-27
EMC Performance	Comply with IEC 61131-2 and IEC 61000-4
Environmental Parameters	
Channel Number	8-channel source/sink type input
Indicator	8 channel input indicators
Open Voltage	High input: Min.10Vdc to Max.28Vdc (Common: 0Vdc) Low input: Min.0Vdc to Max.14Vdc (Common: 24Vdc)
Close Voltage	High input: Max.5Vdc (Common: 0Vdc) Low input: Min.19Vdc (Common: 24Vdc)
Open Current	Max.5mA/ channel @28V
Input Impedance	>7.5kΩ
Input Delay	OFF to ON: Max.3ms ON to OFF: Max.2ms
Prop Filter	Default: 10ms
Sampling Frequency	500Hz
Count Frequency	<200Hz
Output Parameter	
Channel Number	8 channel source type output
LED Indicator	8 channel output indicators

Rated Current	Typical value:0.5A
Leakage Current	Maximum value: 10uA
Output Impedance	<200mΩ
Output Delay	OFF to ON: Max.100us ON to OFF: Max.150us
Protection Function	Temperature protection: typical value 135°C Protection current: typical value 1.1A Short circuit protection support

WARNING

UNEXPECTED EQUIPMENT OPERATION

Do not exceed any of the ratings specified in the environmental and electrical characteristics table.

Failure to follow instructions specified by the manufacturer may result in serious consequences such as death, personal injury, or damage to equipment since the protection provided by the equipment may be impaired.

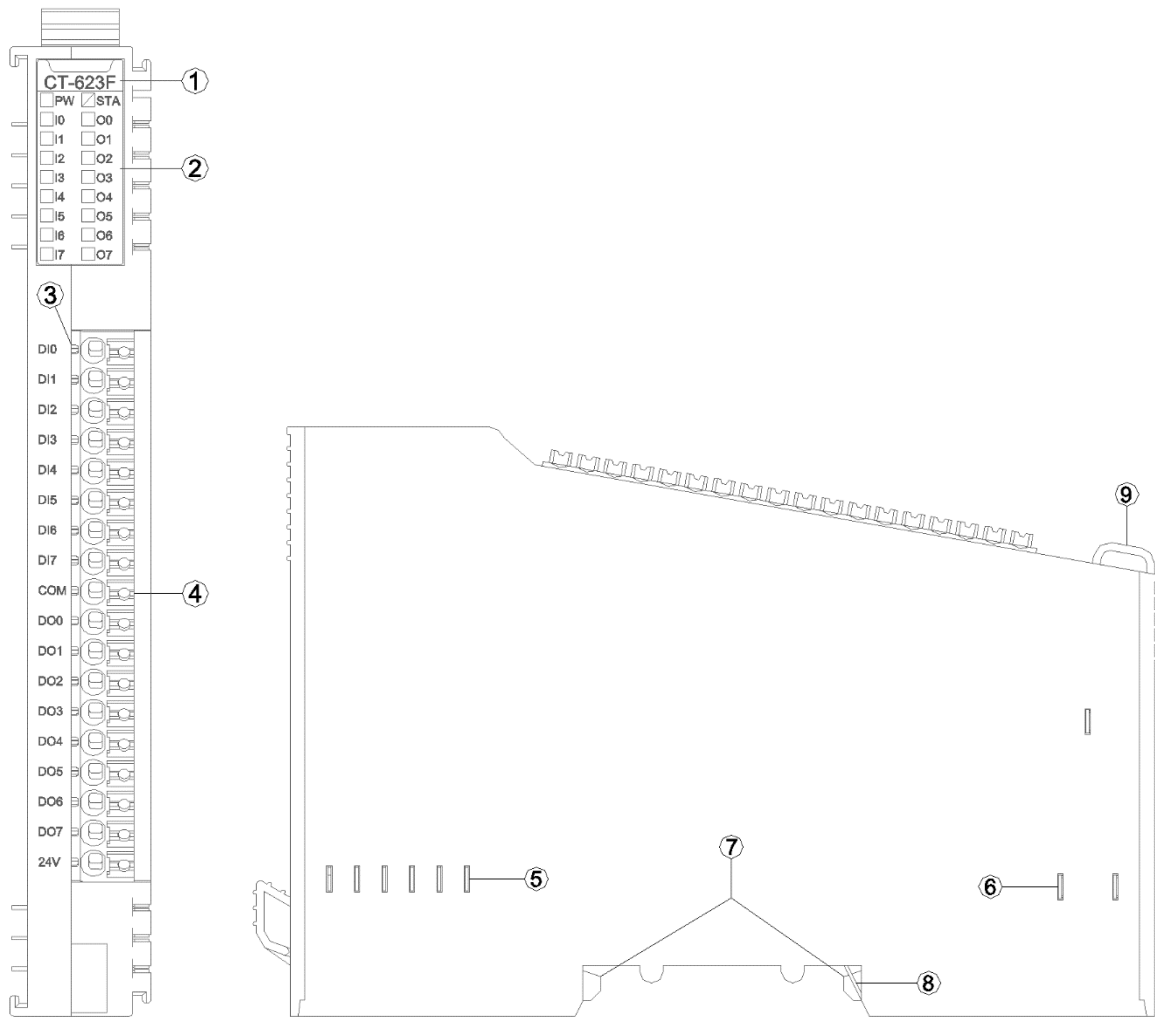
AVERTISSEMENT

FONCTIONNEMENT INATTENDU DE L'EQUIPEMENT

Ne dépassez aucune évaluation spécifiée dans le tableau de caractéristiques environnementales et électriques..

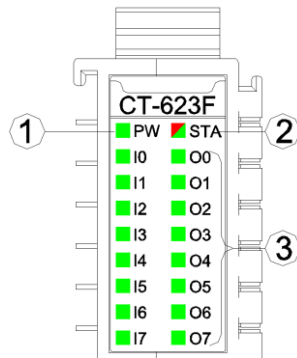
Le fait de ne pas suivre les instructions peut entraîner une défaillance de la protection fournie par l'équipement, ce qui peut entraîner des conséquences graves, comme des blessures ou des dommages à l'équipement.

3 Hardware interfaces



- ① Module Type
- ② State indicators
- ③ Channel indicators
- ④ Wiring Terminal and Marking
- ⑤ Internal Bus
- ⑥ Field Power
- ⑦ Buckle
- ⑧ Grounding Spring Sheet
- ⑨ Fixed Wiring Harness

3.1 LED indicators Definition



- ① Power indicator (green)
- ② Module state indicator (red/green)
- ③ Input/output channel indicators (green)

PW power indicator	Definition
ON	Internal bus power supply normal
OFF	Internal bus power supply failure
STA module state indicator	Definition
Green slow flash (2.5hz)	The internal bus of the module is not started
Red slow flash (2.5hz)	Module internal bus offline
Green normally on	Module works normally
Flash(2.5Hz) (RED/GREEN)	Operating mode
Flash(10Hz) (RED/GREEN)	Firmware upgrading
Red flashes twice	Module exception has been soft-restarted
I0-I7 input channel indicators	Definition
ON	input signal valid
OFF	input signal invalid
O0-O7 output channel indicators	Definition
ON	Output signal valid
OFF	Output signal invalid

! WARNING

UNEXPECTED EQUIPMENT OPERATION

By viewing the PW indicator, could determine the power supply status of a module. If the PW is steady green, the power supply is normal. Otherwise, the module cannot work properly.

When the module is initially powered on, there will be 3S for the backplane bus connection. After the backplane bus is initialized, STA is in the green steady state. If STA is in the green blinking state, it indicates that the backplane bus has not been initialized, and it needs to be powered off and restarted for re-initialization.

STA abnormal working state occurs during the normal operation of the module, please check the

firmware version information of all modules, and consult ODOT technical support for details.
If a module is upgraded, check that all modules are in the normal state after the upgrade.
Otherwise, an exception may occur.

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AVERTISSEMENT

FONCTIONNEMENT INATTENDU DE L'EQUIPEMENT

En regardant l'état de l'indicateur de PW, jugez l'état d'alimentation du module. Le feu vert PW reste allumé et l'alimentation est normale. Autrement, le module ne fonctionnera pas correctement.

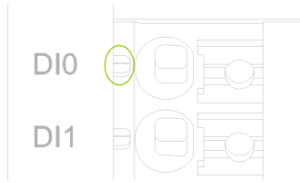
Lorsque le module est alimenté initialement, il y aura 3S pour la connexion de bus de backboard. STA est un état vert permanent après l'initialisation du bus de backboard. Si STA est en état de clignotement vert, cela signifie que l'initialisation du bus de backboard n'est pas passée et doit être redémarrée hors tension et réinitialisée.

L'état de fonctionnement anormal de STA se produit pendant le fonctionnement normal du module, veuillez vérifier les informations de version du firmware de tous les modules, et consulter le support technique ODOT pour plus de détails.

Si le module a une opération de mise à niveau, après l'achèvement de la mise à niveau, le besoin de vérifier que tous les modules sont dans l'état normal avant de courir, sinon il conduira à une exception.

Le fait de ne pas suivre les instructions peut entraîner une défaillance de la protection fournie par l'équipement, ce qui peut entraîner des conséquences graves, comme des blessures ou des dommages à l'équipement.

3.2 Field input channel LED indicator (red/green)



When the COM terminal is connected to a low level and the input channel signal is at a high level, the corresponding channel green indicator is on.

When the COM terminal is connected to a high level and the input channel signal is at a low level, the corresponding channel red indicator is on.

3.3 Field output channel LED indicator (green)



When the output signal of the output channel is valid, the corresponding channel indicator is on.

3.4 Terminal definition

Terminal Number	Symbol	Instruction
1	DI0	Signal input
2	DI1	
3	DI2	
4	DI3	
5	DI4	
6	DI5	
7	DI6	
8	DI7	
9	COM	Input common terminal
10	DO0	Signal output
11	DO1	
12	DO2	
13	DO3	
14	DO4	
15	DO5	
16	DO6	
17	DO7	
18	24V	Power input (<i>Note1</i>)

Note 1: when the red LED indicator beside the 24V wiring terminal lights up, it indicates that the fieldbus is powered on, then the maximum output current of each channel is 500mA, and the maximum sum of all output channel currents is 2A.

When the 24VDC power is supplied to the 24V wiring terminal separately, the sum of all the output channel currents is at the maximum of 4A (Whether the fieldbus is powered on or not, 24V wiring terminals can both be connected to 24VDC power supply).

WARNING

UNEXPECTED EQUIPMENT OPERATION

Calculate the maximum field power current consumption of a single module based on the actual field load. If the total field power current consumption of all I/O modules exceeds the power supply capacity of the field power supply, you must add an extra power expansion module. Otherwise, an output channel exception may occur.

Failure to follow instructions specified by the manufacturer may result in serious consequences such as death, personal injury, or damage to equipment since the protection provided by the equipment may be impaired.

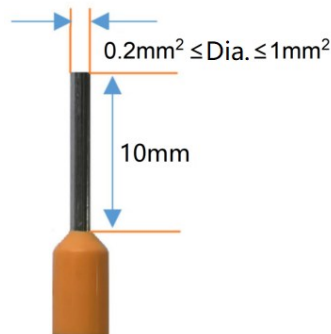
AVERTISSEMENT

FONCTIONNEMENT INATTENDU DE L'EQUIPEMENT

Calculez la consommation maximale de courant de champ d'un seul module en fonction de la charge de champ réelle. Si la consommation totale de courant de champ de tous les modules d'E/S dépasse la capacité d'alimentation de l'alimentation de champ, vous devez ajouter un module d'extension de puissance supplémentaire. Dans le cas contraire, une exception de canal de sortie peut se produire.

Le fait de ne pas suivre les instructions peut entraîner une défaillance de la protection fournie par l'équipement, ce qui peut entraîner des conséquences graves, comme des blessures ou des dommages à l'équipement.

When connecting a cold-pressed terminal, the terminal must be terminated and checked in strict accordance with the corresponding termination specifications or requirements, and connect the cold-pressed terminal according to the corresponding node serial number. The conductor should use copper conductor and the conductor core should be larger than 0.2mm^2 and smaller than 1mm^2 (AWG18~AWG24). Cold-pressed terminal parameters are as follows:



! WARNING

UNEXPECTED EQUIPMENT OPERATION

Strip the length of the conductor insulation layer is greater than 10mm to ensure reliable signal connection.

The wire needs to use copper wire and the wire core is greater than or equal to 0.2mm^2 and less than or equal to 1mm^2 to ensure reliable signal connection.

When connecting a cold-press terminal, connect the cold-press terminal strictly in accordance with the corresponding termination specifications or requirements, and connect the cold-press terminal according to the corresponding node serial number.

Do not power on cold-press terminals until they are properly connected or fully locked.

Failure to follow instructions specified by the manufacturer may result in serious consequences such as death, personal injury, or damage to equipment since the protection provided by the equipment may be impaired.

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FONCTIONNEMENT INATTENDU DE L'EQUIPEMENT

Dépouillez la longueur de la couche isolante du fil plus de 10mm pour assurer la connexion fiable du signal.

Le conducteur doit utiliser le fil de cuivre et le noyau de fil est supérieur ou égal à 0,2 mm², inférieur ou égal à 1mm², afin d'assurer la connexion fiable du signal.

Lorsque les terminaux de presse à froid sont terminés, ils doivent être terminés et visualisés en stricte conformité avec les spécifications ou les exigences correspondantes et terminés selon le numéro de série de noeud correspondant.

Il est interdit d'activer les bornes à froid avant qu'elles ne soient correctement articulées ou complètement verrouillées.

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DANGER

FIRE DANGER

Use the correct wiring rules only for the maximum current capacity of the I/O channel and power supply.

Failure to follow instructions specified by the manufacturer may result in serious consequences such as death, personal injury, or damage to equipment since the protection provided by the equipment may be impaired.

WARNING

UNEXPECTED EQUIPMENT OPERATION

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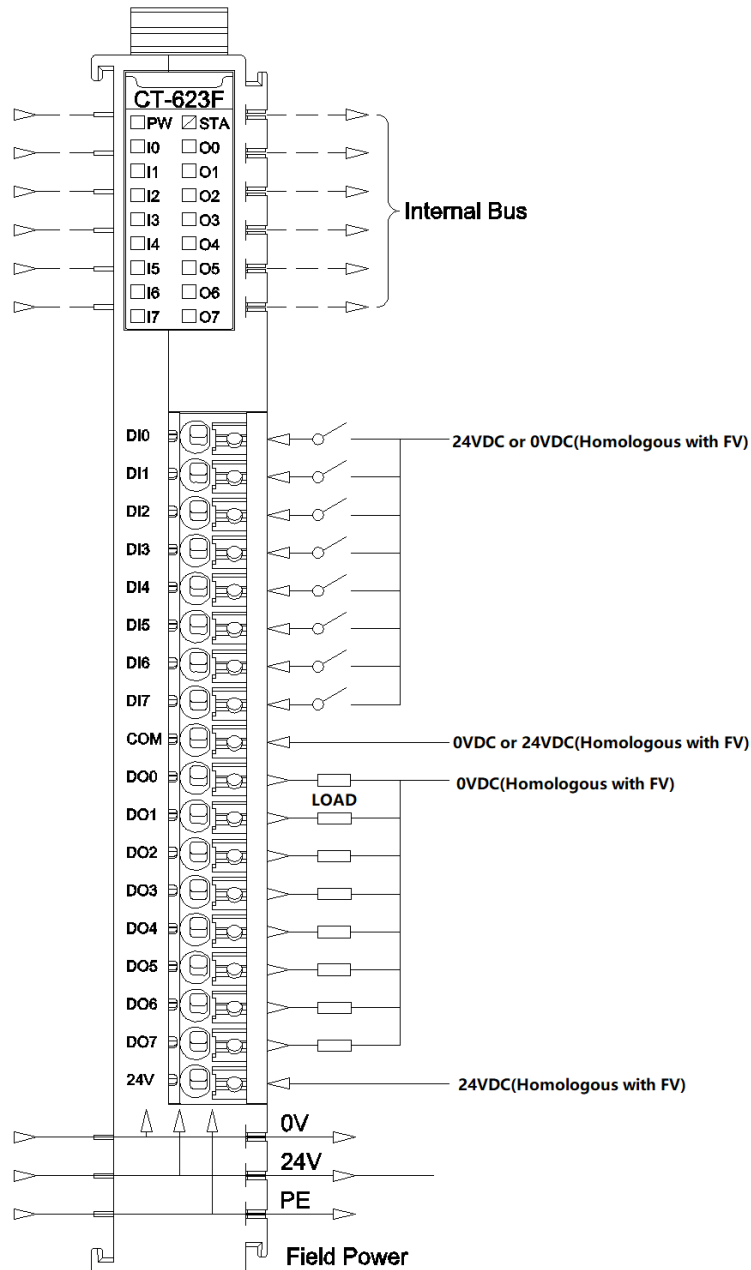
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4 Wiring



NOTICE

EQUIPMENT INOPERABLE

Do not crimp the spring terminal with more than the maximum pressure specified for the terminal. Otherwise, the resilience of the spring terminal may be damaged and the terminal rebound may be affected.

Do not press the spring terminal with a sharp tool when removing cable from the channel. Otherwise, the spring terminal will be damaged.

Failure to follow these instructions may result in equipment damage.

5 Process data definition

<8DI&8DO IO State> Submodule procedure data definition

Input data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DI Ch#7	DI Ch#6	DI Ch#5	DI Ch#4	DI Ch#3	DI Ch#2	DI Ch#1	DI Ch#0
Output data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	DO Ch#7	DO Ch#6	DO Ch#5	DO Ch#4	DO Ch#3	DO Ch#2	DO Ch#1	DO Ch#0

Data description:

DI Ch#(0-7): When the corresponding channel input signal is valid, the bit is 1, and when the input is invalid, it is 0.

0: Input signal invalid

1: Input signal valid

DO Ch#(0-7): when this bit is 1, the corresponding channel output signal is valid, the output is high level, and the output is invalid when it is 0.

0: Output signal invalid

1: Output signal valid

<8DI Counter Submodule> Submodule process data definition.

Input data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Counter Value Ch#0							
Byte 1								
Byte 2								
Byte 3								
Byte 4	Counter Value Ch#1							
Byte 5								
Byte 6								
Byte 7								
Byte 8	Counter Value Ch#2							
Byte 9								
Byte 10								
Byte 11								
Byte 12	Counter Value Ch#3							
Byte 13								
Byte 14								

Byte 15	Counter Value Ch#4							
Byte 16								
Byte 17								
Byte 18								
Byte 19	Counter Value Ch#5							
Byte 20								
Byte 21								
Byte 22								
Byte 23	Counter Value Ch#6							
Byte 24								
Byte 25								
Byte 26								
Byte 27	Counter Value Ch#7							
Byte 28								
Byte 29								
Byte 30								
Byte 31								
Output data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Counter Reset Ch#7	Counter Reset Ch#6	Counter Reset Ch#5	Counter Reset Ch#4	Counter Reset Ch#3	Counter Reset Ch#2	Counter Reset Ch#1	Counter Reset Ch#0

Data description:

Counter Value Ch#(0-7): count value, 32-bit unsigned integer, automatically zeroing after overflow.

Counter Reset Ch#(0-7): when the data bit changes from 0 to 1 (rising edge), the input counter of the corresponding channel will be cleared.

Note: The maximum counting frequency of the input channel is 200Hz. When the input signal exceeds this frequency, the counting result may be inconsistent with the actual value.

6 Configuration parameter definition

<8DI&8DO IO State> Submodule configuration parameter definition

Configuration parameter								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Input Filtering Time(ms)							
Byte 1								
Byte 2	Reserved					Input Holding Time(ms)		
Byte 3	Fault Action for Output Ch#7	Fault Action for Output Ch#6	Fault Action for Output Ch#5	Fault Action for Output Ch#4	Fault Action for Output Ch#3	Fault Action for Output Ch#2	Fault Action for Output Ch#1	Fault Action for Output Ch#0
Byte 4	Fault Value for Output Ch#7	Fault Value for Output Ch#6	Fault Value for Output Ch#5	Fault Value for Output Ch#4	Fault Value for Output Ch#3	Fault Value for Output Ch#2	Fault Value for Output Ch#1	Fault Value for Output Ch#0

Data description:

Input Filtering Time(ms): Channel input filtering time, unit: ms. (Default: 10)

Input Holding Time(ms): Channel input signal holding time, unit: ms. (Default: 0)

0: Disable

1: 200ms

2: 500ms

3: 1000ms

4: 1500ms

5: 2000ms

6: 3000ms

7: 5000ms

Fault Action for Output Ch#(0-7): Fault Output mode. When the IO module detects an internal bus exception and fails to communicate with the adapter, the module enters offline mode, the output data will be processed in this way. (Default: 0)

0: keep the last time output state.

1: output fault value.

Fault Value for Output Ch#(0-7): When the fault output mode is 1, the bit sets the fault output value, which is output when the IO module internal bus is offline. (Default:

0)

0: output low level.

1: output high level.

<8DI Counter Submodule> Submodule configuration parameter definition

Configuration parameter								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Reserved				Storage Enable	Storage Function	32Bit Data Format	
Byte 1	Count Mode Ch#3		Count Mode Ch#2		Count Mode Ch#1		Count Mode Ch#0	
Byte 2	Count Mode Ch#7		Count Mode Ch#6		Count Mode Ch#5		Count Mode Ch#4	
Byte 3	Count Direction Ch#7	Count Direction Ch#6	Count Direction Ch#5	Count Direction Ch#4	Count Direction Ch#3	Count Direction Ch#2	Count Direction Ch#1	Count Direction Ch#0

Data description:

32Bit Data Format: Byte transmission order of channel count values (Default: 0).

0: AB-CD

1: BA-DC

2: CD-AB

3: DC-BA

Storage Function: storage Function is support or not, read only, and this value is the actual value of the module when uploading device parameters.

0: storage is not support

1: storage is support

Storage Enable: Storage enable, when the Storage Function enables, the IO module will save the count value in real time to non-volatile memory, and load the last saved count value when it is powered on next time. (Default: 1)

0: Disabled

1: Enable

Count Mode Ch#(0-7): Input channel count mode. (Default: 0)

0: Rising edge count

1: Falling edge count

2: Double edge count

Count Direction Ch#(0-7): The counting direction of the input channel. (Default: 0)

0: Count up

1: Count down

WARNING

UNEXPECTED EQUIPMENT OPERATION

Adjust the parameters according to the site conditions. If the parameters are improperly set, the output signal will be incorrect.

Failure to follow instructions specified by the manufacturer may result in serious consequences such as death, personal injury, or damage to equipment since the protection provided by the equipment may be impaired.

AVERTISSEMENT

FONCTIONNEMENT INATTENDU DE L'EQUIPEMENT

Les paramètres peuvent être ajustés en fonction des conditions du site. Si les paramètres ne sont pas réglés correctement, il en résultera un signal de sortie erroné.

Le fait de ne pas suivre les instructions peut entraîner une défaillance de la protection fournie par l'équipement, ce qui peut entraîner des conséquences graves, comme des blessures ou des dommages à l'équipement.

A Dimension drawing

