Content

CT-623F 8-channel digital input /24VDC/ source or sink type & 8-channel digital output /24VDC/ source type 2

1 Module features 2

2 Technical parameters 2

3 Hardware interfaces 4

4 Wiring 8

5 Process data definition 10

6 Configuration parameter definition 12

A Dimension drawing 15

CT-623F 8-channel digital input /24VDC/ source or sink type & 8-channel digital output /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.

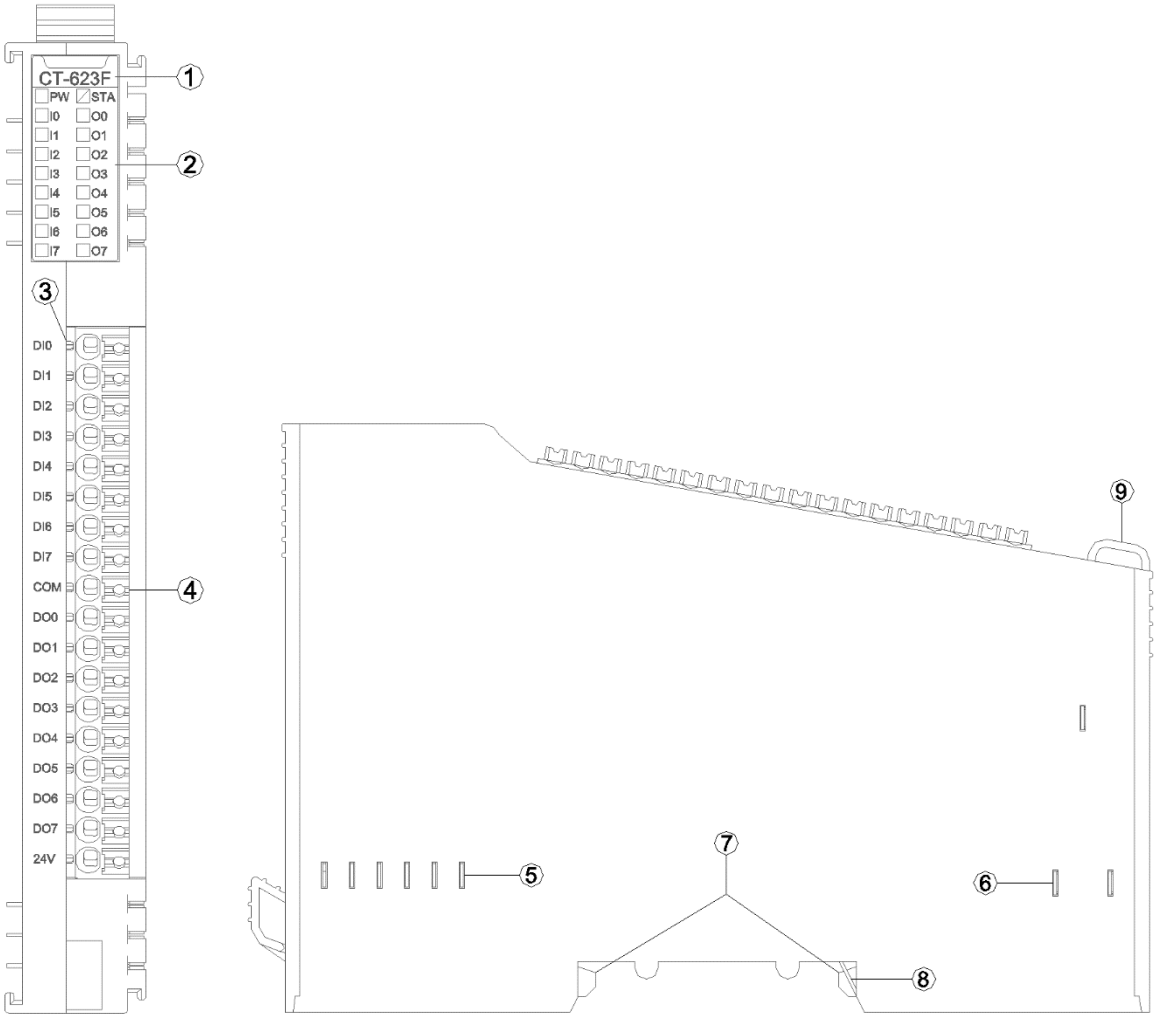
◆ Module internal bus and field input and output , using Optocoupler isolation.

◆ Module has 16 digital input and output channel LED indicator light.

2 Technical parameters

General Parameters	
Power	Max.85mA@5.0Vdc
Isolation	I/O to internal bus: opto-coupler isolation (3KVrms)
Field Power	Nominal voltage: 24Vdc Input range: 22~28Vdc
Wiring	I/O wiring: Max.1.5mm ²(AWG 16)
Installation	35mm DIN-Rail
size	115*14*75mm
Weight	65g
Environment Specification	
Working temperature	-40~85℃
Environmental humidity	5%-95% (No Condensation)
Protection grade	IP20
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℃ Protection current: typical value 1.1A Short circuit protection support

3 Hardware interfaces



① Module Type

② State indicators

③ Channel indicators

④ Wiring Terminal and Marking

⑤ Internal Bus

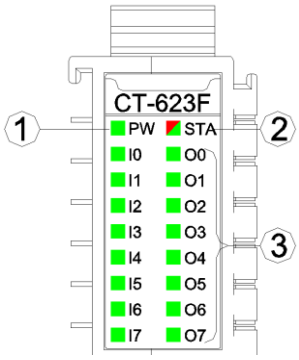
⑥ Field Power

⑦ Buckle

⑧ Grounding Sheet

⑨ Fixed Wiring Harness

3.1 LED indicators Definition



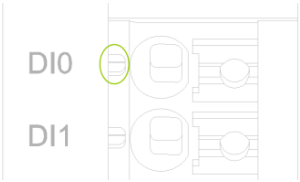
① Power indicator (green)

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

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

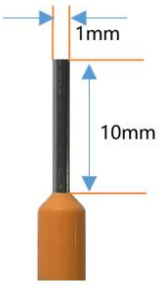
Terminal Number	Symbol	Instruction
1	DI0	Signal input
2	DI1	
3	DI2	
4	DI3	
5	DI4	
6	DI5	
7	DI6	
8	DI7	
9	COM	Input common terminal
10	DO0	Signal output
11	DO1	
12	DO2	
13	DO3	
14	DO4	
15	DO5	
16	DO6	
17	DO7	
18	24V	Power input (*Note1*)

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.

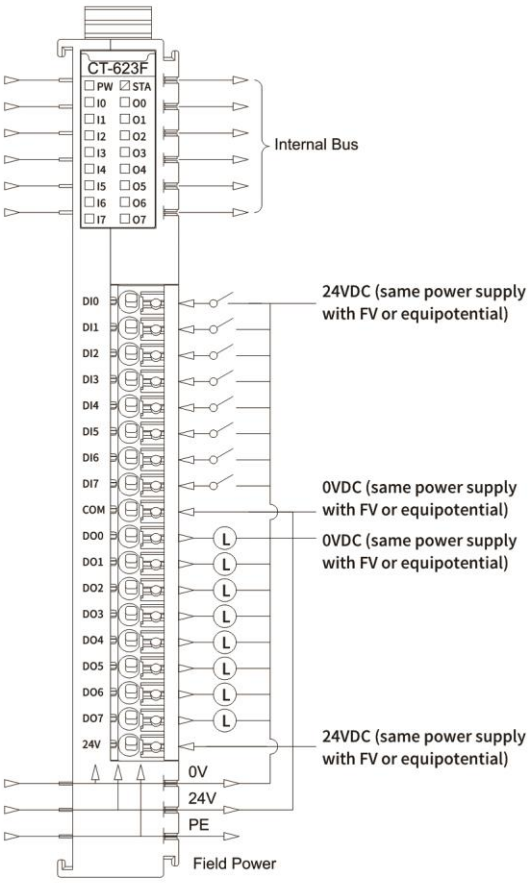
When the 24VDC power is supplied to the 24V wiring terminal separately, the sum of all the output channel currents is at the maximum of 4A (Whether the fieldbus is powered on or not, 24V wiring terminals can both be connected to 24VDC power supply).

It is recommended to use cables with cores smaller than 1mm ².

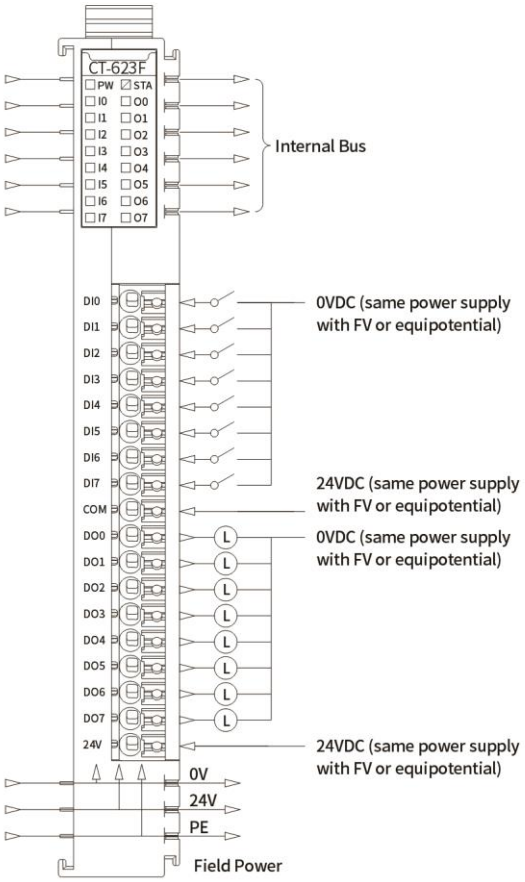
The cold-pressed terminal parameters are as follows:



4 Wiring



High level


CT-623F
PW
STA
I0
I1
I2
I3
I4
I5
I6
I7
O0
O1
O2
O3
O4
O5
O6
O7
Internal Bus
DI0
DI1
DI2
DI3
DI4
DI5
DI6
DI7
COM
DO0
DO1
DO2
DO3
DO4
DO5
DO6
DO7
24V
0VDC (same power supply with FV or equipotential)
24VDC (same power supply with FV or equipotential)
0VDC (same power supply with FV or equipotential)
24VDC (same power supply with FV or equipotential)
0V
24V
PE
Field Power

Low level

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								

Byte 16	Counter Value Ch#4							
Byte 17								
Byte 18								
Byte 19								
Byte 20	Counter Value Ch#5							
Byte 21								
Byte 22								
Byte 23								
Byte 24	Counter Value Ch#6							
Byte 25								
Byte 26								
Byte 27								
Byte 28	Counter Value Ch#7							
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 attribute, 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)

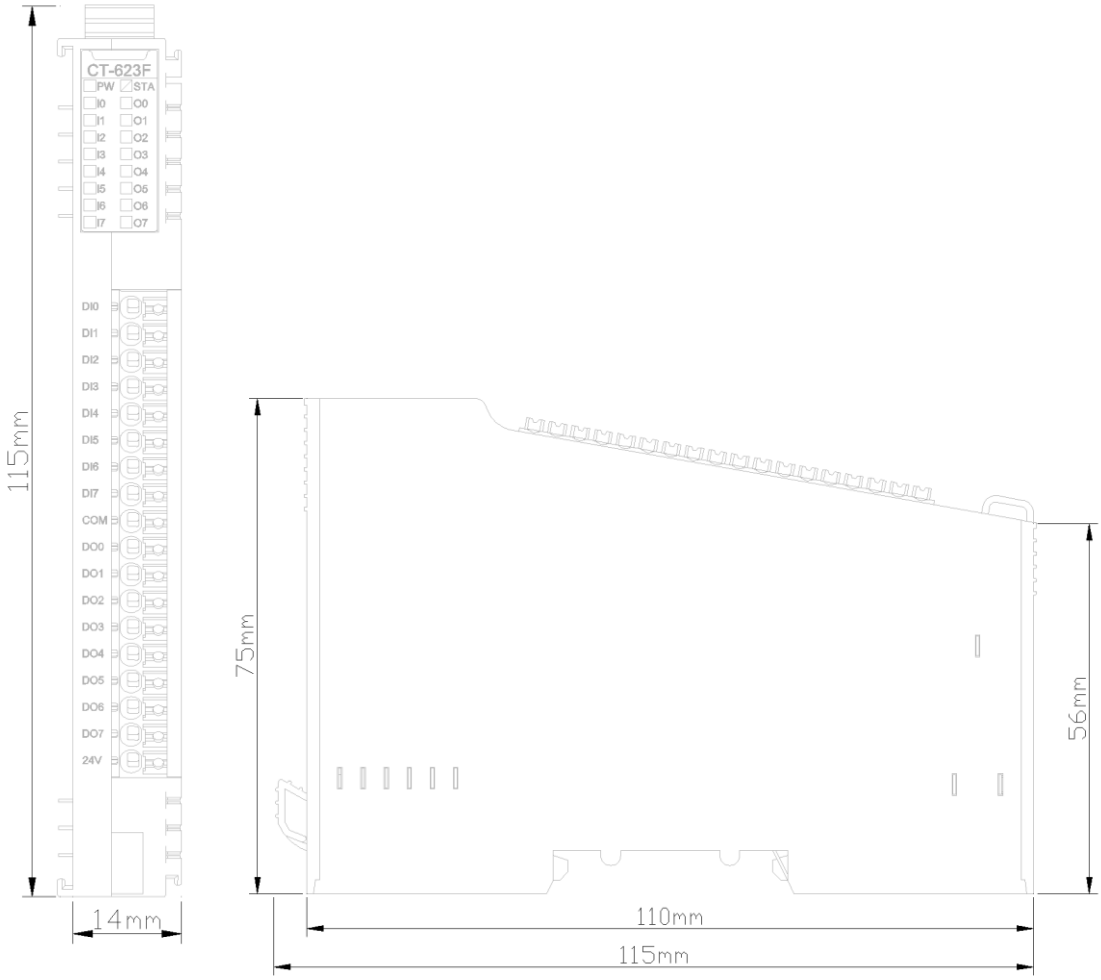
0: Rising edge count

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

A Dimension drawing