Content

CT-1228 8 channels digital input/24VDC/NPN

1 Module features

◆ the module supports 8 channels digital input, and the input low level is valid. It could support NPN sensor.

◆ the module could collect digital output signal of field equipment (dry contact or active output).

◆ the module could be accessed to 2-wire or 3-wire digital sensor.

◆ the internal bus and field input of the module use opto-isolator.

◆ the module supports the input signal holding function, and the holding time can be set.

◆ the module carries 8 digigtal input channels with LED indicator on each channel.

◆ supports counting function after adding counting sub-module.

◆ each input channel of the module supports a 32-bit counter with the counting frequency <200Hz.

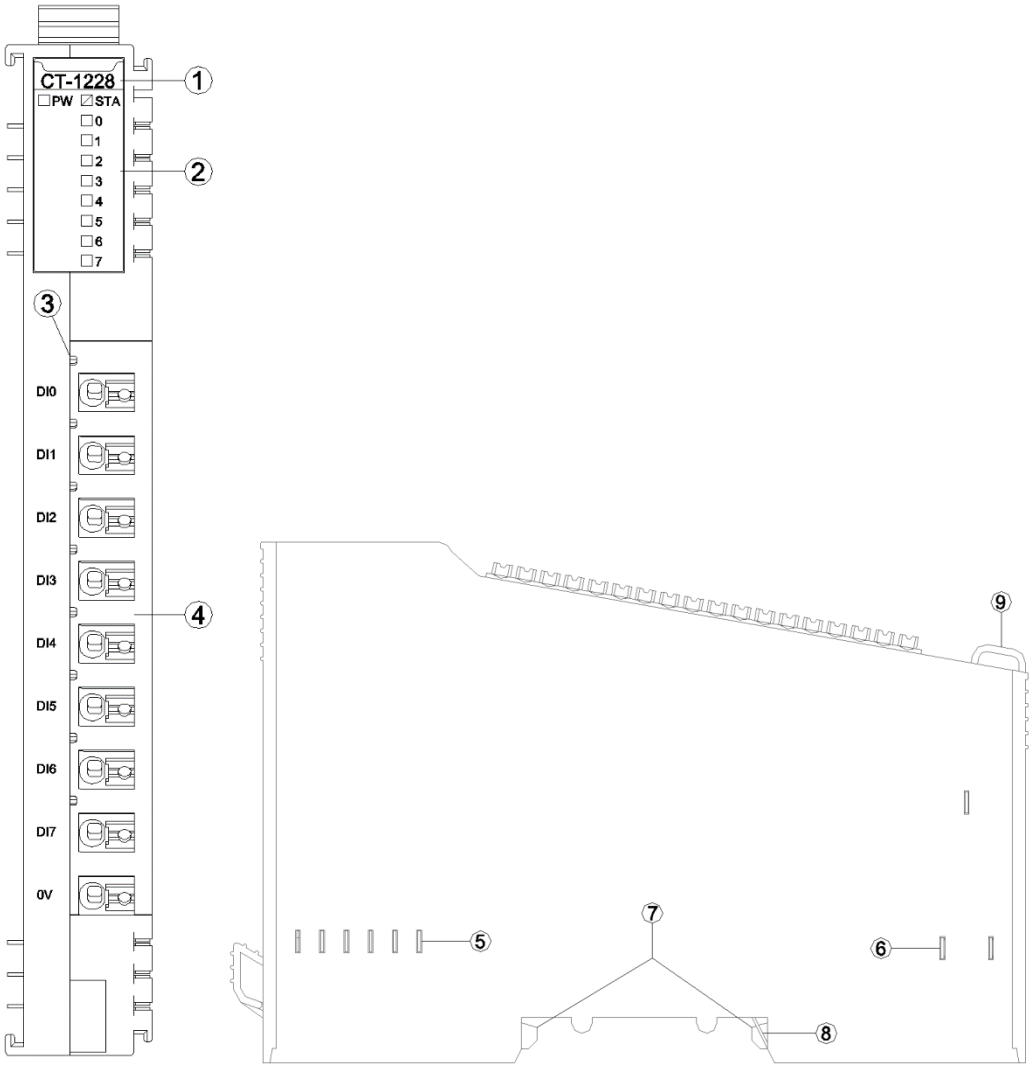
◆ the module could be set the digital signal input filtering time and the byte transmission order of the counter.

◆ each channel of the module could be set the counting mode and counting direction independently.

2 Technical parameters

General parameters	
Power Consumption	Max.85mA@5.0Vdc
Isolation	I/O to internal bus: opto-couple isolation (3KVrms)
Field Power	Nominal:24Vdc, Range:22-28Vdc
Wiring	Max.1.0mm² (AWG 17)
Mounting Type	35mm DIN-Rail
Size	115*14*75mm
Weight	65g
Environment Specification	
Operational Temperature	-40~85℃
Operational Humidity	5%-95% (No Condensation)
Ingress Protection Rating	IP20
Input parameters	
Channel Number	8 channels input
LED Indicator	8 channels input LED indicator
Turn-on voltage	Min.10Vdc to Max.28Vdc
Turn-off Voltage	Max.5Vdc
Turn-on current	Max.5mA/channel@28V
Input impedance	>7.5kΩ
Input delay	OFF to ON: Max.3ms ON to OFF: Max.2ms
Filter time	Default 10ms
Sample frequency	500Hz
Counter frequency	<200Hz

3 Hardware interfaces



① Module Type

② State indicator

③ Channel indicator

④ Wiring Terminal and identification

⑤ Internal Bus

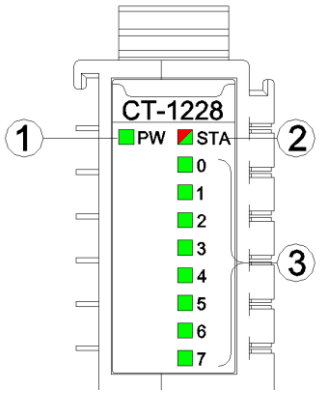
⑥ Field Power

⑦ Buckle

⑧ Grounding Spring Sheet

⑨ Fixed Wiring Harness

3.1 LED indicator definition



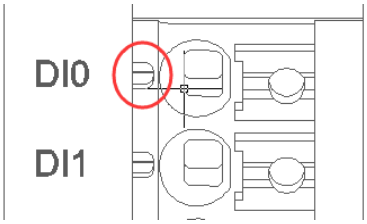
① Power LED indicator (green)

② Module State LED indicator (red/green)

③ Input channel LED indicator (green)

PW Power State (GREEN)	Definition
ON	Internal bus Power Normal
OFF	Internal bus Power Failure
STA Module State (RED/GREEN)	Definition
Green slow flash (2.5Hz)	Module internal bus is not started
Red slow flash (2.5Hz)	Module internal bus offline
ON (GREEN)	Operation normal
Flash(2.5Hz) (RED/GREEN)	Upgrading mode
Flash(10Hz) (RED/GREEN)	Firmware Update
Double Flash (RED)	Module Exception has been soft-restarted
0-7 channel LED indicator	Definition
ON	Input signal valid
OFF	Input signal invalid

3.2 Field channel LED indicator (Green)



When input signal of input channel is valid, the corresponding field channel LED indicator is on.

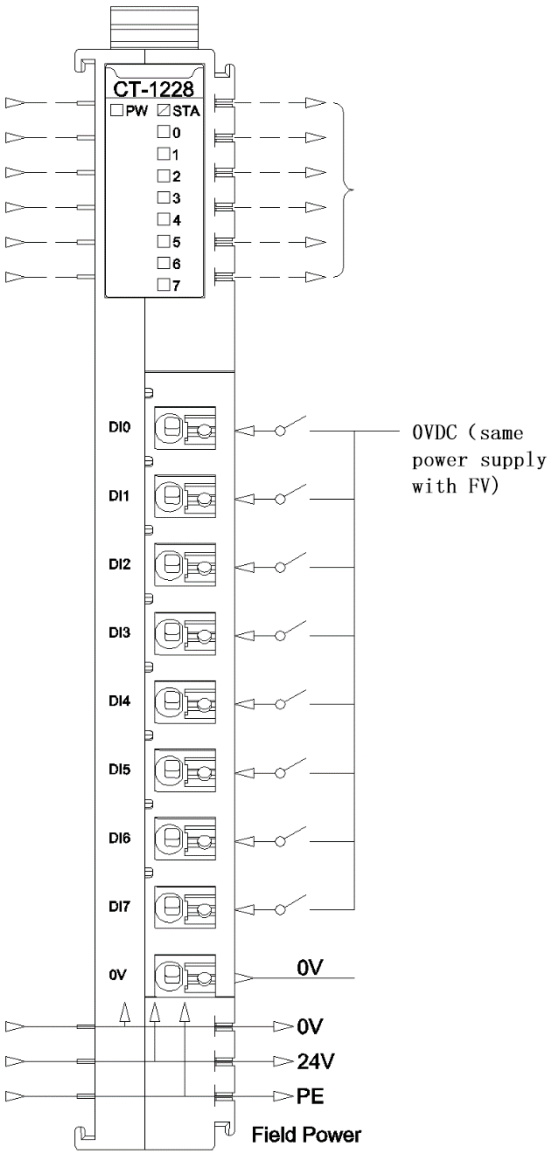
3.3 Terminal definition

Terminal Number	Symbol	Description
1	DI0	Signal input
2	DI1	
3	DI2	
4	DI3	
5	DI4	
6	DI5	
7	DI6	
8	DI7	
9	0V	Power V-

It is recommended to use cables with cores smaller than 1mm².

The cold-pressed terminal parameters are as follows:

4 Wiring


CT-1228
PW
STA
0
1
2
3
4
5
6
7
DI0
DI1
DI2
DI3
DI4
DI5
DI6
DI7
0V
0VDC (same power supply with FV)
0V
0V
24V
PE
Field Power

5 Process data definition

<8DI Input Status> 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	DI Ch#7	DI Ch#6	DI Ch#5	DI Ch#4	DI Ch#3	DI Ch#2	DI Ch#1	DI 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

<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 is 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 definitions

<8DI Input Status> Submodule configuration parameter definition

Configuration parameters								
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)		

Data description:

Input Filtering Time(ms)：Input filter time of Channel (ms) (Default: 10)

Input Holding Time(ms)： Signal input holding time of Channel (ms) (Default:0)

0：Disable

1：200ms

2：500ms

3：1000ms

4：1500ms

5：2000ms

6：3000ms

7：5000ms

<8DI Counter Submodule> Submodule configuration parameter definition

Configuration parameters								
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…4	Reserved							
Byte 5	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 transfer order of Channel count value (Default: 0)

0：AB-CD

1：BA-DC

2：CD-AB

3：DC-BA

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

0：storage is not supported

1：storage is supported

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 on the next power on. (Default: 1)

0：Disabled

1：Enable

Count Mode Ch#(0-7)：Count mode of the input channel. (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