

CT-5122 2-channels encoder/SSI input

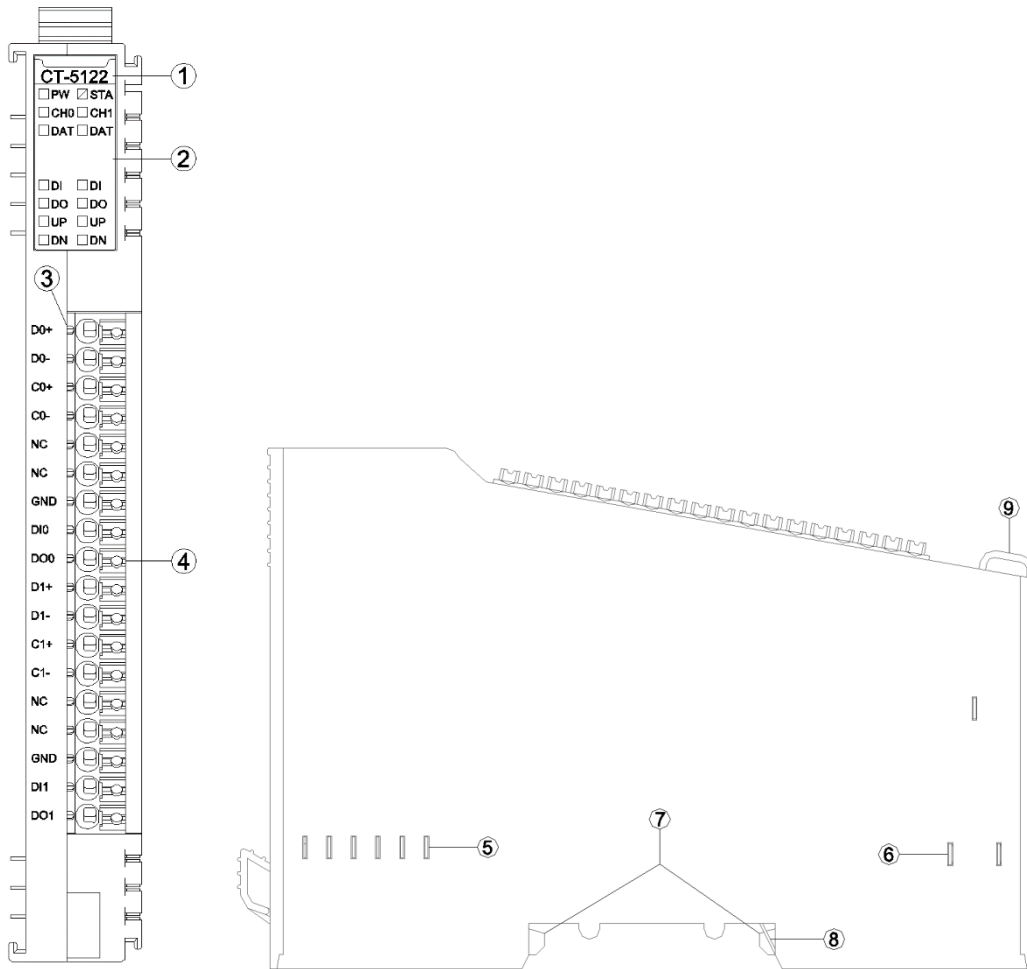
1 Module features

- ◆ the module supports two channels of SSI encoder input.
- ◆ each encoder channel supports SSI absolute encoder signal input.
- ◆ each encoder channel supports 1 digital input signal with an input voltage of 5Vdc or 24Vdc.
- ◆ each encoder channel supports 1 digital output signal with an output voltage of 5Vdc.
- ◆ the module internal bus and field input adopt magnetic isolation
- ◆ the module carries 16 LED indicators.
- ◆ the module supports the maximum clock frequency of 2MHz.
- ◆ the encoder reading interval time could be set.
- ◆ The data bit length and the start and end bit positions could be set.

2 Technical parameters

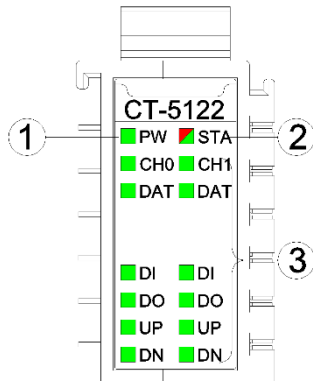
General Parameters	
Power	Max.60mA@5.0Vdc
Isolation	I/O to internal bus: magnetic isolation (3KVrms)
Field Power	Nominal:24Vdc, Range:20-28Vdc
Wiring	Max.1.0mm ² (AWG 17)
Mounting Type	35mm DIN-Rail
Size	115*14*75mm
Weight	65g
Environment Specification	
Operational Temperature	-40~85°C
Operational Humidity	5%-95% (No Condensation)
Ingress Protection Rating	IP20
Input Parameters	
Channel Number	2-channel encoder
LED Indicator	16 channel input LED indicator
Encoder signal type	Differential signal, 5V
Data frame length	10-40 bit
Position value length	Maximun of 32 bit
Position value format	Supports gray code or binary
Location value LSB/MSB	Settable
SSI encoder clock frequency	≤2MHz
DI turn-on voltage	Min.5Vdc to Max.28Vdc
DI turn-off voltage	Max.2.7Vdc
DI turn-on current	Max.5mA/channel@28V
DI input impedance	>10.0kΩ
DI input delay	OFF to ON: Max.3ms ON to OFF: Max.2ms
DO output voltage	5V, range ±10%
DO output current	Max.500mA
DO output sink current	Max.5uA

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

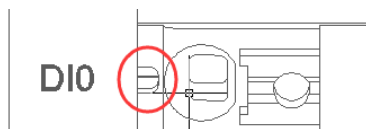
3.1 LED indicator definition



- ① Power LED indicator (green)
- ② Module State indicator LED (red/green)
- ③ Input channel indicator LED (green)

PW Power State	Definition
ON	Internal bus power supply normal
OFF	Internal bus power supply failure
STA Module State	Definition
Green slow flash (2.5 Hz)	Module internal bus is not started
Red slow flash (2.5 Hz)	Module internal bus offline
ON (GREEN)	Operation normal
Flash (2.5 Hz) (RED/GREEN)	updating mode
Flash (10 Hz) (RED/GREEN)	firmware update
Double Flash (RED)	Module exception has been soft-restarted
CH0 CH1 channel indicator LED	Definition
ON	Channel enable
DAT channel indicator LED	Definition
ON	The input data line is at high level when idle
OFF	The input data line is at low level when idle
DI input indicator	Definition
ON	Input signal high level
OFF	Input signal invalid
DO output indicator	Definition
ON	Output signal high level
OFF	Output signal invalid
UP indicator	Definition
ON	Encoder in positive rotation
OFF	Encoder is stationary or in contrarotation
DN indicator	Definition
ON	Encoder in contrarotation
OFF	Encoder is stationary or in positive rotation

3.2 Field channel LED indicator (Green)



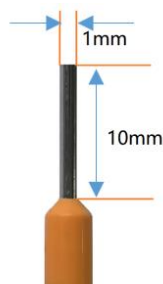
When the input signal of the input channel is valid, the corresponding field channel indicator is on (only the DI/DO wiring terminal of the encoder channel carries the indicator).

3.3 Terminal definition

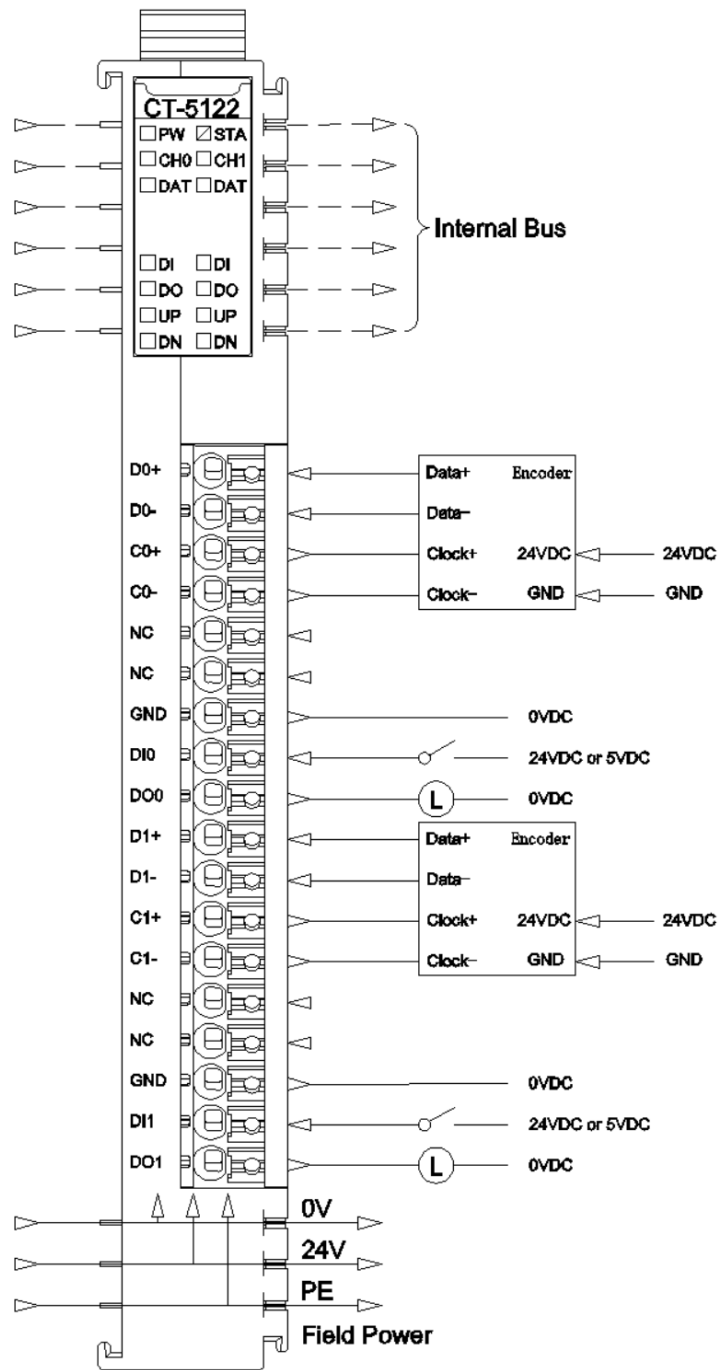
Terminal Number	Symbol	Description
1	D0+	CH0 encoder data input +
2	D0-	CH0 encoder data input -
3	C0+	CH0 encoder clock output +
4	C0-	CH0 encoder clock output -
5	NC	Not connected
6	NC	Not connected
7	GND	Signal ground
8	DI0	CH0 digital signal input
9	DO0	CH0 digital signal output
10	D1+	CH1 encoder input +
11	D1-	CH1 encoder data input -
12	C1+	CH1 encoder clock output +
13	C1-	CH1 encoder clock output -
14	NC	Not connected
15	NC	Not connected
16	GND	Signal ground
17	DI1	CH1 digital signal input
18	DO1	CH1 digital signal output

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

The cold-pressed terminal parameters are as follows:



4 Wiring



5 Process data definition

< 2 Analog Input(SSSI Encoder) > 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	Reserved				Encoder Count DOWN Ch#0	Encoder Count UP Ch#0	DI Ch#0	Data Line Status Ch#0
Byte 1	Reserved							
Byte 2	Reserved				Encoder Count DOWN Ch#1	Encoder Count UP Ch#1	DI Ch#1	Data Line Status Ch#1
Byte 3	Reserved							
Byte 4	Counter value Ch#0							
Byte 5								
Byte 6								
Byte 7								
Byte 8								
Byte 9								
Byte 10								
Byte 11								
Byte 12	Counter value Ch#1							
Byte 13								
Byte 14								
Byte 15								
Byte 16								
Byte 17								
Byte 18								
Byte 19								
Output Data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Reserved							DO Ch#0
Byte 1	Reserved							
Byte 2	Reserved							DO Ch#1
Byte 3	Reserved							

Data description:

Data Line Status Ch#(0-1): Indicates the idle status of the Data line of the corresponding channel (Normally, idle data is high level. If the value is 0, the polarity of the input signal is reversed, and the polarity of the input signal line needs to be switched) .

0: Data line level is low when idle

1: Data line level is high when idle

DI Ch#(0-1): The position is 1 when the corresponding channel input signal is valid, and 0 when the input is invalid.

0: Input signal invalid

1: Input signal valid

Encoder Count UP Ch#(0-1): The encoder counts up and in positive rotation.

Encoder Count DOWN Ch#(0-1): The encoder counts down and in contrarotation.

Counter Value Ch#(0-1): Pulse count value, 32 - bit signed integer, automatically clear after overflow.

Capture value Ch#(0-1): Pulse capture value, 32-bit signed integer, and when DI is set to capture, the pulse count value will be captured to the capture value at the selected edge.

DO Ch#(0-1): The position is 1 when the corresponding channel output signal is valid, and 0 when the output is invalid.

0: Output signal invalid

1: Output signal valid

6 Configuration parameters definition

<2 Analog Input(SSSI Encoder)> 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					16Bit Data Format	32Bit Data Format	
Byte 1	Reserved		Frame Bit Length Ch#0					
Byte 2	Reserved				SSI CLK Frequency Ch#0			
Byte 3	SSI Interval Time Ch#0							
Byte 4								
Byte 5	Reserved							Gray Conversion Ch#0
Byte 6	Reserved		LSB Bit of Position Value Ch#0					
Byte 7	Reserved		MSB Bit of Position Value Ch#0					
Byte 8	Reserved							Counter Storage Ch#0
Byte 9	Reserved							DI Function Selection Ch#0
Byte 10	Reserved						Capture Mode Ch#0	
Byte 11 ... Byte 30	Reserved							
Byte 31	Reserved		Frame Bit Length Ch#1					
Byte 32	Reserved				SSI CLK Frequency Ch Ch#1			
Byte 33	SSI Interval Time Ch#1							
Byte 34								
Byte 35	Reserved							Gray Conversion Ch#1
Byte 36	Reserved		LSB Bit of Position Value Ch#1					
Byte 37	Reserved		MSB Bit of Position Value Ch#1					
Byte 38	Reserved							Counter Storage Ch#1
Byte 39	Reserved							DI Function Selection Ch#1
Byte 40	Reserved						Capture Mode Ch#1	
Byte 41 ...	Reserved							

Byte 60	
---------	--

Data description:

16Bit Data Format: Byte transfer order of channel state. (Default: 0)

0: A-B

1: B-A

32Bit Data Format: The byte transfer order of a channel count value. (Default: 0)

0: AB-CD

1: BA-DC

2: CD-AB

3: DC-BA

Frame Bit Length Ch#(0-1): SSI frame length of encoder. (Default value: 13) The value ranges from 10 to 40.

SSI CLK Frequency Ch#(0-1): The clock frequency when data is read. (Default: 1)

0:125KHz

1: 250KHz

2: 500KH

3: 1.0MHz

4: 1.5MHz

5: 2.0MHz

SSI Interval Time Ch#(0-1): Interval time (unit: 100us) the value range could be set 1 ~ 65535.

Gray Conversion Ch#(0-1): Gray Code Conversion enabled (default: 1)

0: Disable

1: Enable

LSB Bit of Position Ch#(0-1): LSB bit number of position value. The value range is 0 ~ 39 (default: 0)

MSB Bit of Position Ch#(0-1): The MSB bit number of the position value. The value range is 1 ~ 40 (default: 12)

Counter Storage Ch#(0-1): Enable storage. When the storage function is enabled, the

IO module will save the count value to the non-volatile memory in real time, and load the last saved count value at the next power-on. (Default: 1)

0: Disable

1: Enable

DI Function Selection Ch#(0-1): DI function selection (Default: 0)

0: Normal DI function

1: Pulse capture function

Capture Mode Ch#(0-1): Capture mode (default: 0)

0: Rising edge capture

1: Falling edge capture

2: Double edge capture

A Dimension drawing

