

CT-1314 4 channels digital input/220VAC

1 Module features

- ◆ The module supports 4 channels of digital input and 220V AC input.
- ◆ The module could collect the digital output signal of the field equipment (dry contact or active output).
- ◆ The module could be connected to 2-wire or 3-wire digital sensor.
- ◆ 4 channels of the module are isolated, isolation voltage between channels is 3000VAC.
- ◆ The internal bus of the module and the field input are isolated by optical coupling.
- ◆ The module supports input signal holding function, holding time can be set.
- ◆ The module carries with 4 digital input channel LED indicators.
- ◆ After adding the counting submodule, the count function is available.
- ◆ Each input channel of the module supports 32-bit counter, count frequency <10Hz.
- ◆ The module could be set the digital signal input filtering time and the counter byte transmission sequence.
- ◆ Each channel of the module could be independently set counting mode and counting direction.

2 Technical parameters

General Parameters	
Power Consumption	Max.33mA@5.0VDC/25°C
Isolation	The isolation voltage between the I/O channel and the system power supply: AC3000V Isolation voltage between the I/O channel and PE: AC 3000V Isolation voltage between I/O channels: AC 3000V
Field Power	\
Wiring	Max.: AWG 18 Min.: AWG 24
Installation Method	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
Input Parameters	
Channel Number	4 channel inputs
LED Indicator	4-channel input indicator 4 panel indicators 1 power indicator 1 dual-color indicator
Input Type	Conforms to IEC 61131-2 Type3 input type
Overvoltage category	OVC II
Opening Voltage	159VAC~264VAC
Turn-off Voltage	0VAC~40VAC
Nominal Voltage	230VAC
Opening Current	Min.7mA/channel@220VAC/25°C
Input Impedance	>32kΩ
Input Delay	OFF to ON:Max.8ms ON to OFF:Max.20.5ms
Filtering Time	Default 20ms
Counting Frequency	<10Hz

 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.

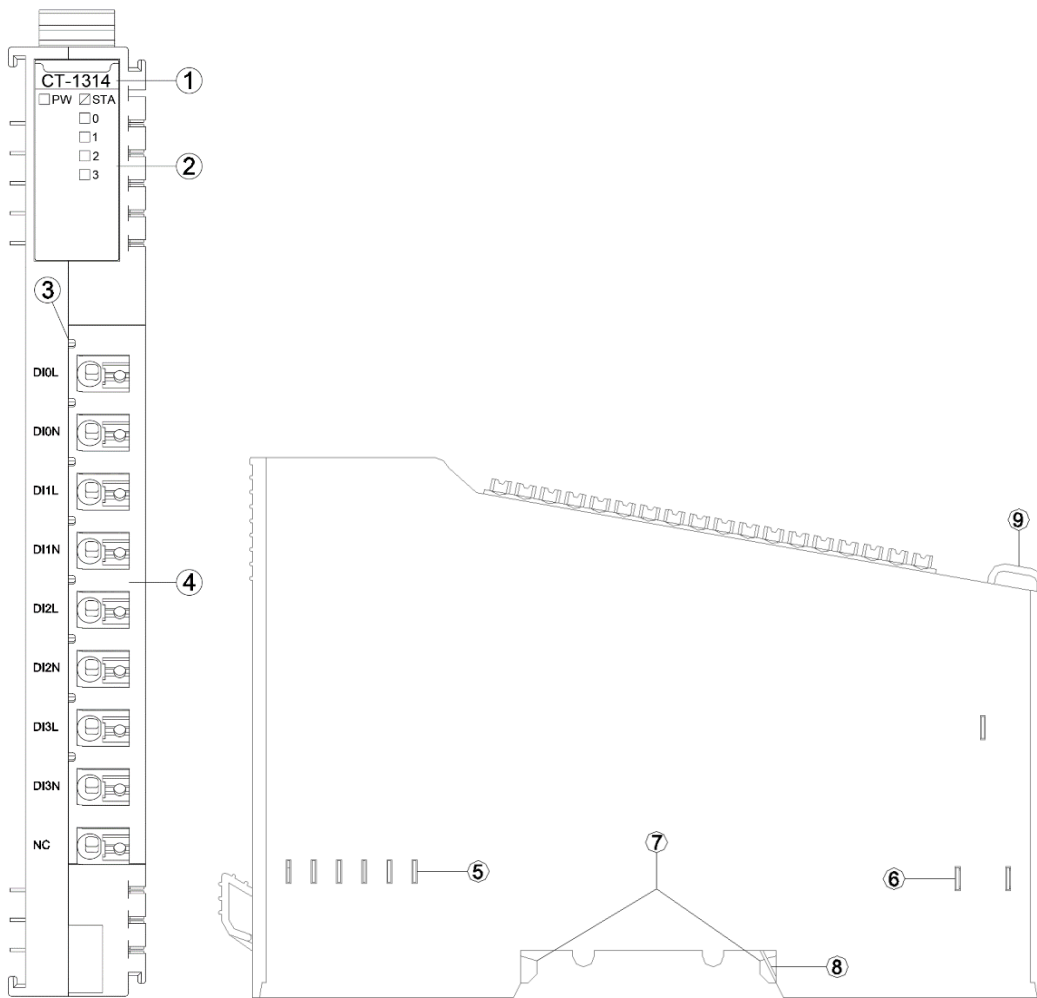
 AVERTISSEMENT

FONCTIONNEMENT INATTENDU DE L'EQUIPEMENT

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

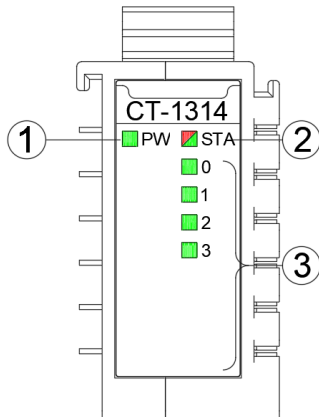
Le fait de ne pas suivre les instructions peut entraîner une défaillance de la protection fournie par l'équipement, ce qui peut entraîner des conséquences graves, comme des blessures ou des dommages à l'équipement.

3 Hardware interface



- 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	The internal bus power supply is normal
OFF	The internal bus power supply is abnormal
STA module state (RED/GREEN)	Definition
Green Slow Flashing (2.5Hz)	The module's internal bus is not started
Red Slow Flashing (2.5Hz)	The internal bus of the module is offline
On (GREEN)	Operation normal
Flash(2.5Hz) (RED/GREEN)	Upgrading mode
Flash(10Hz) (RED/GREEN)	Firmware Upgrading
Double Flash (RED)	Module exception and program has been soft-restarted
0-3 channel indicator (GREEN)	Definition
ON	The input signal is valid
OFF	The input signal is 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.

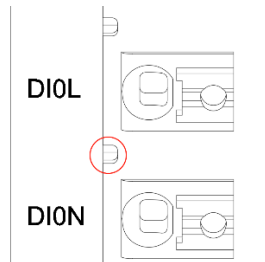
Lorsque le module est alimenté initialement, il y aura 3S pour la connexion de bus de backboard. STA est un état vert permanent après l'initialisation du bus de backboard. Si STA est en état de clignotement vert, cela signifie que l'initialisation du bus de backboard n'est pas passée et doit être redémarrée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

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3.2 Field channel LED indicator (Green)



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

3.3 Terminal definition

Terminal serial number	Symbol	Illustrate
1	DI0L	Channel 0
2	DI0N	
3	DI1L	Channel 1
4	DI1N	
5	DI2L	Channel 2
6	DI2N	
7	DI3L	Channel 3
8	DI3N	
9	NC	Not connected

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.

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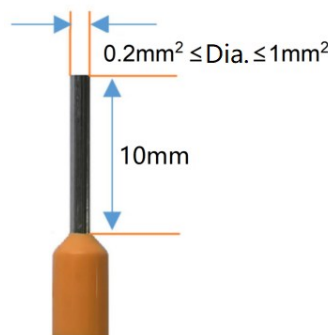
AVERTISSEMENT

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.

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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.

! AVERTISSEMENT

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 $0,2\text{ mm}^2$, inférieur ou égal à 1mm^2 , 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.

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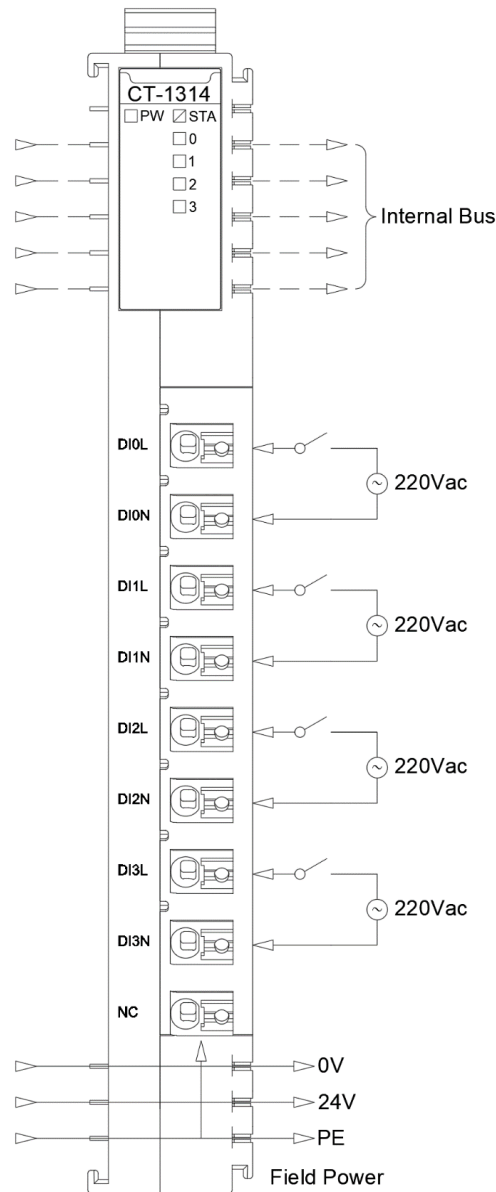
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4 Wiring



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

<4DI Input Status > Submodule process data definition

Enter the data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Reserved				DI Ch#3	DI Ch#2	DI Ch#1	DI Ch#0

Data Description:

DI Ch# (0-3): When the input signal of the corresponding channel is valid, this bit is forced to 1, and when the input is invalid, it is 0.

0: The input signal is invalid, and the input signal voltage range is 0-40VAC

1: The input signal is valid, and the input signal voltage range is 159-264VAC

<4DI Counter Submodule > Counter 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								
Output data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Reserved				Counter Reset Ch#3	Counter Reset Ch#2	Counter Reset Ch#1	Counter Reset Ch#0

Data Description:

Counter Value Ch#(0-3): Count value, 32-bit unsigned integer, automatically zeroing after overflow.

Counter Reset Ch# (0-3): When the data bit changes from 0 to 1 (rising edge), the input counter of the corresponding channel is zeroing.

Note: the maximum counting frequency of the input channel is 10Hz. When the input signal exceeds this frequency, the counting result may be inconsistent with the actual value.

6 Configuration parameter definitions

<4DI Input Status > Submodule configuration parameter definition

Configure 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)	
Byte 3	Reserved							

Data Description:

Input Filtering Time (ms): Input filter time of channel (ms) (Default: 20)

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

<4DI Counter Submodule > Submodule configuration parameter definition

Configure 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	Reserved				Count Direction Ch#3	Count Direction Ch#2	Count Direction Ch#1	Count Direction Ch#0
Byte 3	Reserved							

Data Description:

32Bit Data Format: Byte transmission sequence 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, 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: Disable
- 1: Enable

Count Mode Ch#(0-3):Count mode of the input channel. (Default: 0).

- 0: Rising edge count
- 1: Falling edge count
- 2: Bilateral edge count

Count Direction Ch#(0-3): The counting direction of the input channel. (Default: 0)

- 0: Count up
- 1: Count down

A Dimensional drawing

