

## **CT-226F 16 channels digital output/24VDC/PNP**

### **1 Module features**

- ◆ The module supports 16 channels digital output, the output voltage is 24VDC and the output high level is valid.
- ◆ The module can drive field equipment (relay, solenoid valve, etc.)
- ◆ The internal bus and field output of the module both adopt electromagnetic isolation
- ◆ The module carries 16 digital output channel LED indicator
- ◆ The module has the function of thermal shutdown and over current protection
- ◆ The module supports short circuit protection and overload protection
- ◆ The module output channel loop power supply requires 24VDC external power supply.

## 2 Technical parameters

General Parameters	
Power	Max.60mA@5.0VDC
Isolation	The isolation voltage between the I/O channel and the system power supply: AC500V The isolation voltage between the I/O channel and the field power supply: AC500V Isolation voltage between the I/O channel and PE: AC 500V
Field Power	Nominal:24VDC, Range:20.4-28.8VDC Alarm when the voltage is lower than 15~17V
Wiring	Max.: AWG 18 Min.: AWG 24
Installation	35mm DIN-Rail
Size	115*14*75mm
Weight	80g
Environment Specification	
Operating Temperature of Horizontal Installation	-35°C~70°C
Operating Temperature of Vertical Installation	-35°C~60°C
Relative Humidity	< 95%RH (No Condensation)
Storage Temperature	-40°C~85°C
Storage Humidity	< 95%RH (No Condensation)
Manufacturing Test Temperature	-40°C~75°C
Ingress Protection Rating	IP20
Output Parameters	
Channel Number	16 channel sink type output
LED Indicator	16 channel output LED indicator
Rated Current	single channel output: Max.1000mA simultaneously output: Max.500mA
Leakage Current	Max. 5uA
On Resistance	Typical value: 200mΩ
Output Delay	OFF to ON: Max.100us ON to OFF: Max.150us
Protection Function	Over-temperature shut down: typical value 150°C Overcurrent protection: typical value 1.3~1.8A Short circuit protection: supported Channel independent protection
Output Type	Source / High-side output
Load type	General use and Resistive, Pilot Duty
EMC parameters	
Static Electricity	Air 8KV/ Contact 6KV
EFT	1KV

 **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.**

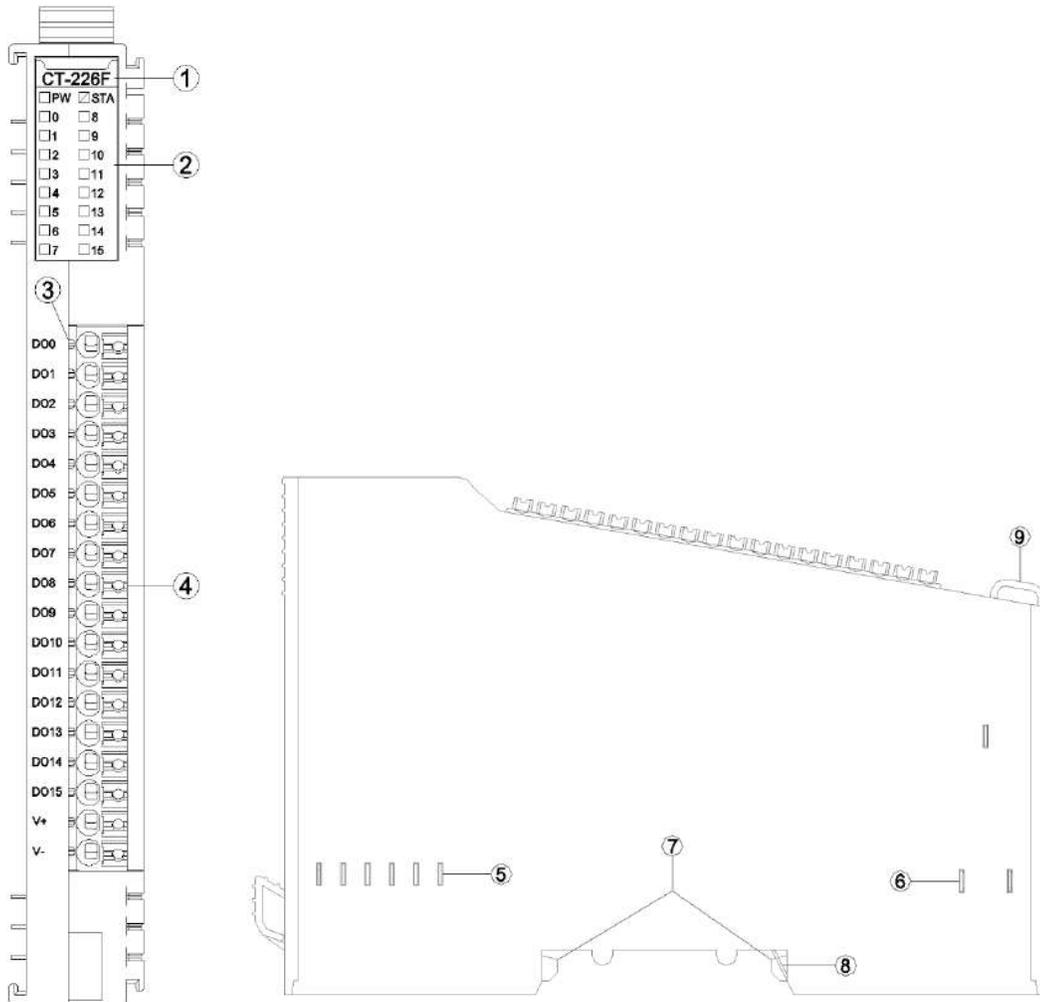
 **AVERTISSEMENT**

**FONCTIONNEMENT INATTENDU DE L'EQUIPEMENT**

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

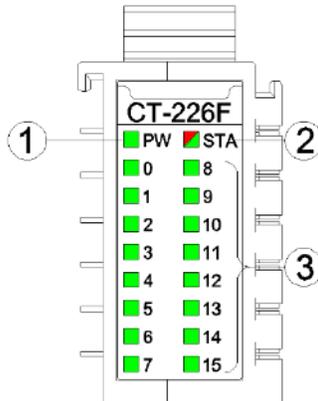
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### 3 Hardware interfaces



- 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 Output 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
0-15 channel indicator light	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'ÉQUIPEMENT

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.

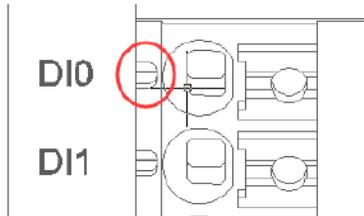
L'état de fonctionnement anormal de STA se produit pendant le fonctionnement normal du module, veuillez vérifier les informations de version du firmware de tous les modules, et consulter le support technique ODOT pour plus de détails.

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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graves, comme des blessures ou des dommages à l'équipement.

### 3.2 Field channel LED indicator (Green)



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

### 3.3 Terminal definition

Terminal Number	Symbol	Description
1	DI0	Signal output
2	DI1	
3	DI2	
4	DI3	
5	DI4	
6	DI5	
7	DI6	
8	DI7	
9	DI8	Signal output
10	DI9	
11	DI10	
12	DI11	
13	DI12	
14	DI13	
15	DI14	
16	DI15	
17	V+	Power input ( <i>Note</i> )
18	V-	Power input

**Note:**

When V+ and V- terminals are connected to the power supply at the same time, the sum of the current of all output channels is a maximum of 8A.

## 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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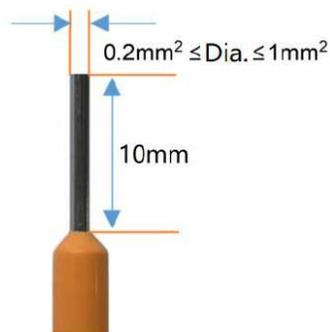
## **! AVERTISSEMENT**

### **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  $0.2\text{mm}^2$  and smaller than  $1\text{mm}^2$  (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  $0.2\text{mm}^2$  and less than or equal to  $1\text{mm}^2$  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.

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## 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 mm<sup>2</sup>, inférieur ou égal à 1mm<sup>2</sup>, 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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 **WARNING**

**UNEXPECTED EQUIPMENT OPERATION**

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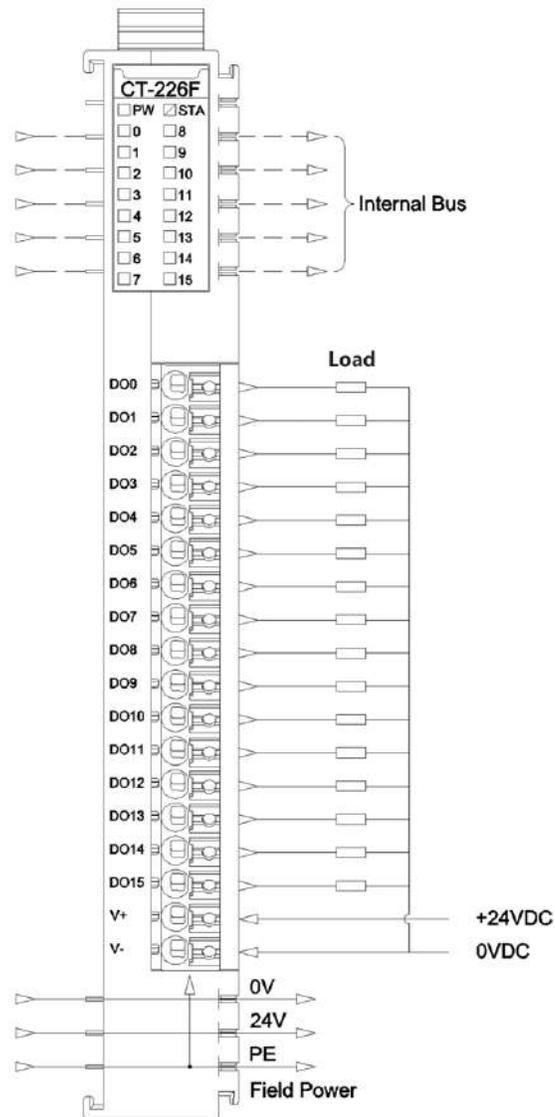
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## 4 Wiring



### 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

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
Byte 1	DO Ch#15	DO Ch#14	DO Ch#13	DO Ch#12	DO Ch#11	DO Ch#10	DO Ch#9	DO Ch#8

Data description:

**DI Ch#(0-15):** When the corresponding channel output signal is valid, the bit is 1, and when the input is invalid, it is 0.

0: Output signal invalid

1: Output signal valid

## 6 Configuration parameter definitions

Configuration parameters								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	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 1	Fault Action for Output Ch#15	Fault Action for Output Ch#14	Fault Action for Output Ch#13	Fault Action for Output Ch#12	Fault Action for Output Ch#11	Fault Action for Output Ch#10	Fault Action for Output Ch#9	Fault Action for Output Ch#8
Byte 2	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
Byte 3	Fault Value for Output Ch#15	Fault Value for Output Ch#14	Fault Value for Output Ch#13	Fault Value for Output Ch#12	Fault Value for Output Ch#11	Fault Value for Output Ch#10	Fault Value for Output Ch#9	Fault Value for Output Ch#8

Data description:

**Fault Action for Output Ch#(0-15):** Fault Output mode. When the IO module detects an internal bus exception and fails to communicate with the adapter. And the module will turn to offline mode, so the output data is processed in this way. (default: 0)

0: keep the last time output State.

1: output fault value.

**Fault Value for Output Ch#(0-15):** When the Fault Output mode is 1, this bit sets the Fault Output Value, and this setting value will be outputted when the internal bus of IO module is offline. (default: 0)

0: Output low level.

1: Output high level.

# A Dimension drawing

