# ◆ 1 channel encoder input/ 24VDC(DF20-M-1CNT-EL-4)

➢ The module supports one channel of encoder input ,Input signal voltage 24VDC.

➢ The two LED indicators respectively indicate the normal operation and communication of the module.

➢ Field and system levels are Magnetic isolated.

➢ Transmitted with a resolution of 16 bits.

➢ Protection level IP20.
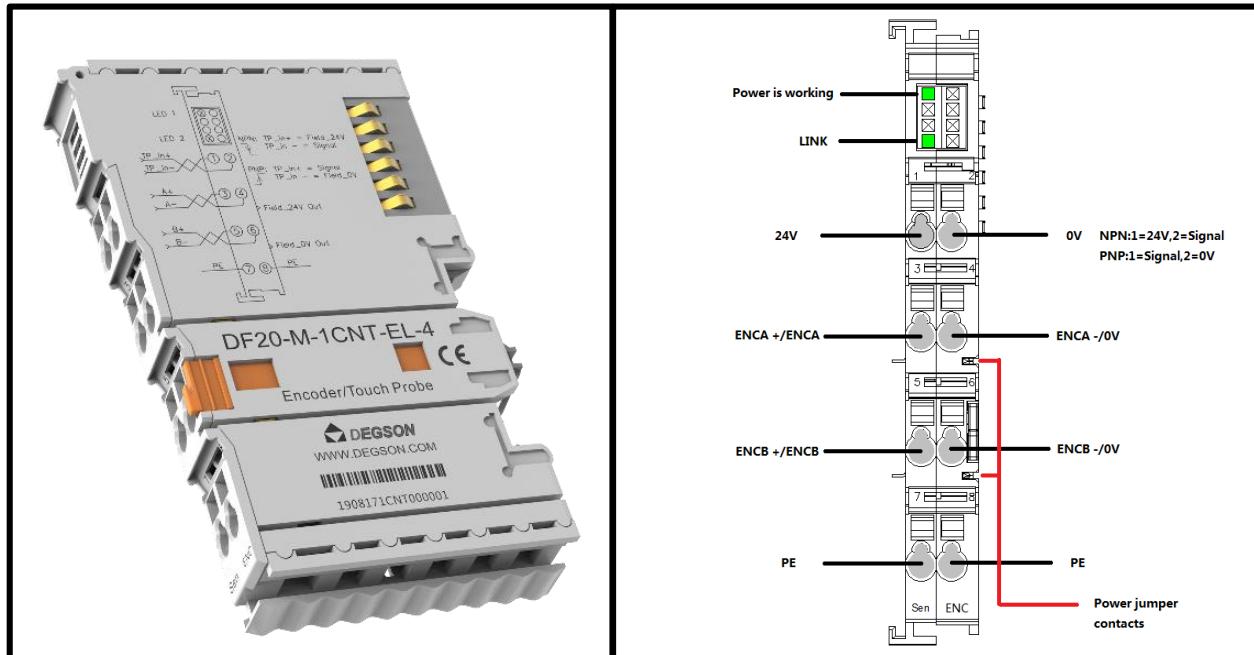
1.Specification

| Technical data	
Number of channels	1
Maximum frequency count	1Mhz
Input signal type	Incremental encoder
Input signal voltage	24VDC
Input connection type	4-line
Resolution [bit]	32 Bit
Precision	±1 pulse
Data size	12 Byte
Supply voltage (system)	5VDC；via data contacts
Current consumption	<30mA
Working voltage	24VDC（-15%～+20%）via power jumper contacts
Isolation	500Vsystem/field Magnetic isolation
Fault diagnosis	Yes
Reverse protection	Yes
Indicators	2 x LED Green
Number of incoming power jumper contacts	2
Number of outgoing power jumper contacts	2
Connection data	
Connection technology: inputs / outputs	8 xvia pluggable connector
Connection type 1	Inputs/Outputs
Area of wire	0.2～2.5mm^2/28～14AWG
Strip length	8～9mm/0.31～0.35inches
Mounting type	DIN-35 RAIL
Material Data	
Color	light gray
Housing material	Polycarbonate; polyamide 6.6
Conformity marking	CE
Environmental requirements	
Ambient temperature (operation)	-25～60℃
Surrounding air temperature (storage)	-40～85℃
Protection type	IP20
Pollution degree (5)	2，Per IEC 61131-2
Operating altitude	without temperature derating：0～2000m
Mounting position	Any
Relative humidity (without condensation)	5～95%RH
Vibration resistance	4g，Per IEC 60068-2-6
Shock resistance	15g，Per IEC 60068-2-27
EMC immunity to interference	Per EN 61000-6-2
EMC emission of interference	Per EN 61000-6-3
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43
Permissible pollutant concentration H2S at a relative humidity < 75%	10ppm
Permissible pollutant concentration SO 2 at a relative humidity < 75%	25ppm

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2.Hardware Interface

● **Wiring Terminal**
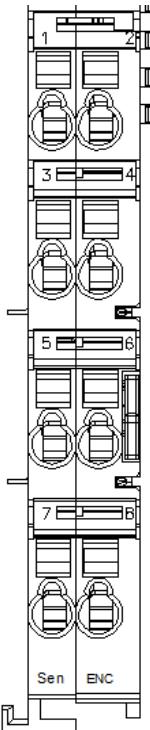
No.	Signal	Description
1	24V	NPN：No.1 connect 24V，No.2 connect low effective signal PNP：No.1 connect high effective signal，No.2 connect 0V
2	0V	
3	Quadrature encoder A+	24V input voltage , quadrature encoder
4	Quadrature encoder A-	
5	Quadrature encoder B+	
6	Quadrature encoder B-	
7	PE	Protect Earthing
8	PE	
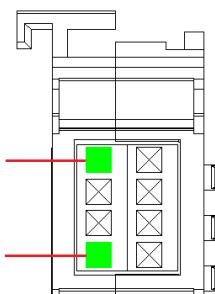
● **LED Indicator**

LED Indicator	State		Definition
1	Green:ON		Power Normal
	Green:OFF		Power Failure
2	Power-on	Green:ON	Module is being initialized
		Green:OFF	Module initialization is complete
	Running	Green: Flash	The module runs normally
		Green:OFF	Module operating fault

● **Wiring**
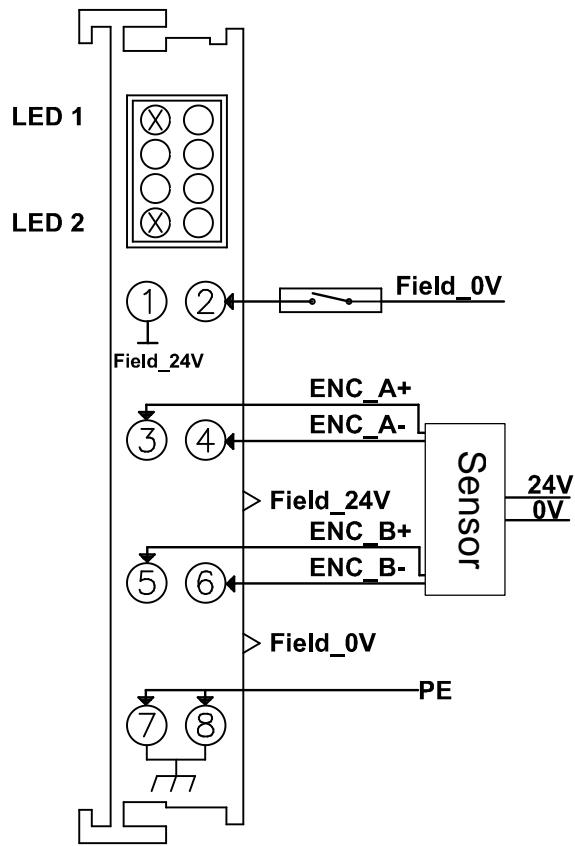
A+/A-&B+/B- Differential signal   A/B signal
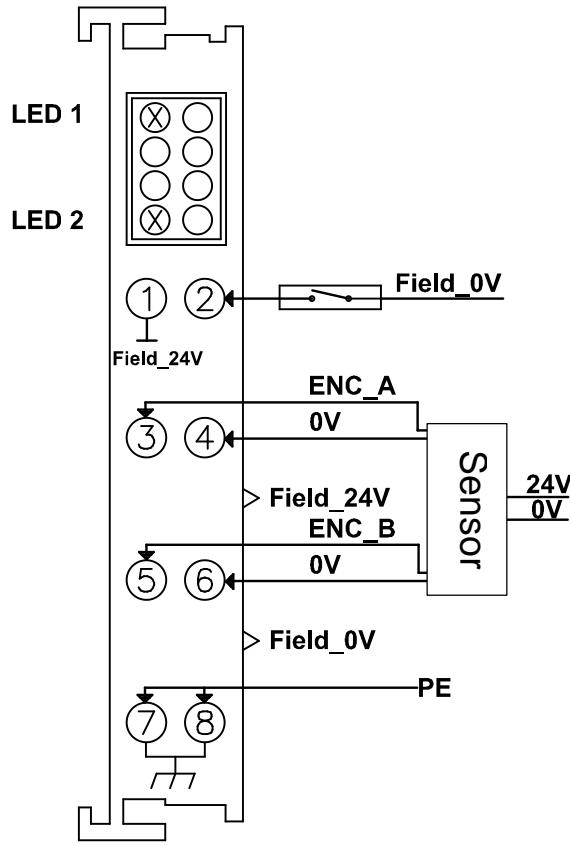
In the left figure, the input A+/A- and B+/B- of the incremental encoder correspond to pins 3, 4, 5

and 6; The electron probe input corresponds to pin 1 and pin 2. The module supports NPN

switch input by default, that is, pin 1 is connected to 24V inside and pin 2 is connected to low

effective signal outside. 7, 8 pin to the safety ground.

In the right figure, the input A and B of the incremental encoder correspond to pins 3 and 5; Pins

4 and 6 connected to the sensor 0V; The electron probe input corresponds to pin 1 and pin 2.

The module supports NPN switch input by default, that is, pin 1 is connected to 24V inside and

pin 2 is connected to low effective signal outside. 7, 8 pin to the safety ground.

3.Process data definition

DF20-M-1CNT-EL-4 Module process data definition

Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
				Output data					
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	Command data								Uint16
Byte 1									
				Input data					
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Data type
Byte 0	State data								Uint16
Byte 1									
Byte 2	Encoder data is 16 bits high								Int32
Byte 3									
Byte 4	Encoder data is 16 bits lower								
Byte 5									
Byte 6	The electron probe is 16 bits high								Int32
Byte 7									
Byte 8	The electron probe latch is 16 bits lower								
Byte 9									

Output data definition

Byte 0	0x012B：Sampling command
	0x012C：This command is used to clear
Byte 1	sampling data
	Other data：Idle command

Input data definition

Byte 0	0x010B：State of sampling
	0x010C：Data zeroing status
Byte 1	0x010E：State of error
	0x0109：Idle state
Byte 2	
Byte 3	
Byte 4	Data range：-2147483648~2147483647
Byte 5	
Byte 6	
Byte 7	
Byte 8	Data range：-2147483648~2147483647
Byte 9	

4.Machinery installation

● **Dimension drawing**

The installation size is shown in the following figure (unit: mm):