

**JN5-CM-DNET**  
**Communication module user manual**

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## Chapter 1 Summary

JN5-CM-DNET can connect with DeviceNet by DeviceNet Extended Communication Module. To DeviceNet, JN5-CM-DNET DeviceNet Communication Module is a Group2 Only Slave device; it is a slave station of DeviceNet.

To Inverter, JN5-CM-DNET Communication Module connected with Inverter by RS485 communication port.

DIP switch SW1\_8 is required to be set OFF if JN5-CM-DNET Module is connected with the inverters of 510 series, while DIP switch SW1\_8 is required to be set ON if JN5-CM-DNET Module is connected with the inverters of 310 series.

The 510 series and 310 series have built-in RS485 interface so they can connect with different extended communication module by Modbus protocol, such as DeviceNet Communication module, Profibus Communication module. If Inverter connected with DeviceNet Communication module, it can't connected with other communication modules.

### 1.1 System Structural Diagram

It is the slave station of DeviceNet when JN5-CM-DNET Communication Module is connected with the inverter via RS485. Refer to Fig.1.1:

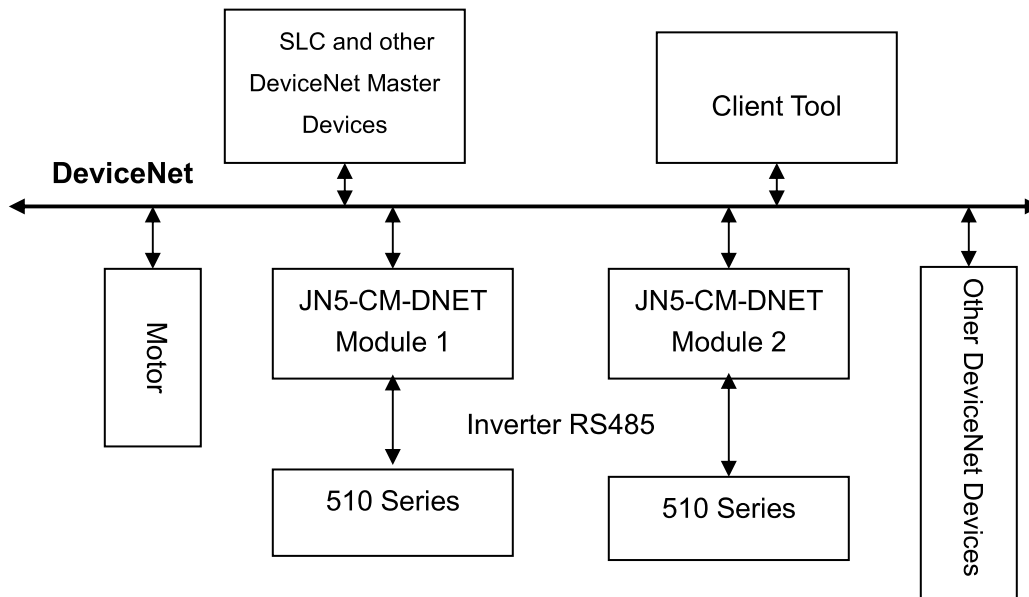


Figure1.1: Bus System Structure of DeviceNet

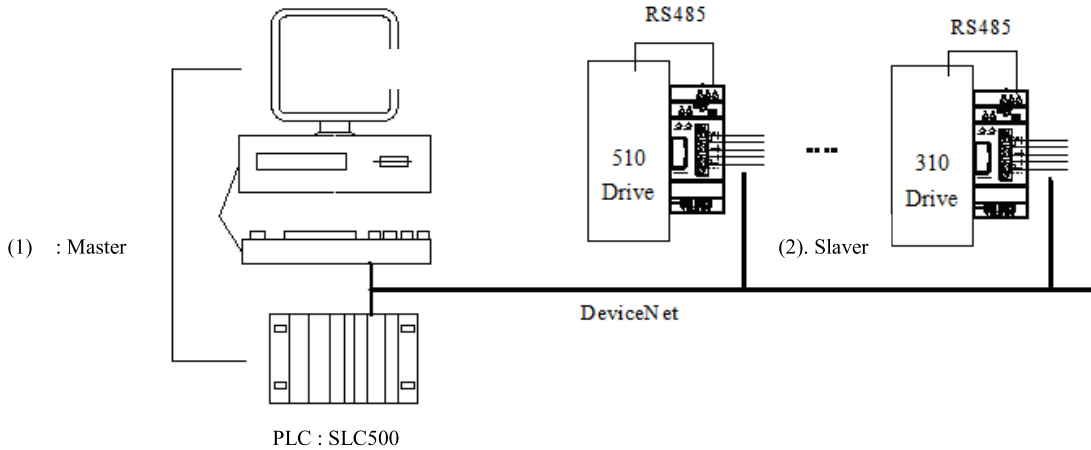


Figure1.2: JN5-CM-DNET system

### 1.2 Structure of the unit

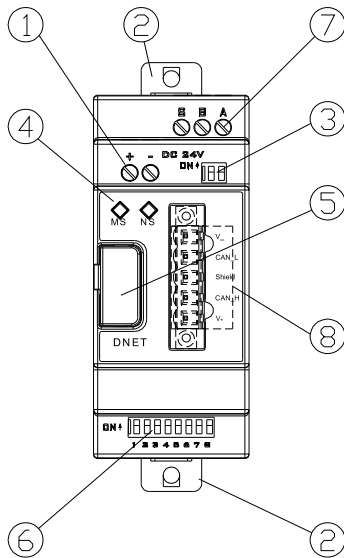


Figure1.3: Structure of the JN5-CM-DNET Extended Module

①	Power supply terminals
②	Retractable mounting feet
③	DIP Switch (2PIN : Selection of Network Terminating Resistor )
④	Module Status indicator/Network Status indicator
⑤	Press-button
⑥	DIP Switch (8PIN : Settings of Network ID and functions )
⑦	RS485
⑧	Terminals

### 1.3 Description of Communication Module

- **DeviceNet Communication**
  - Support Self-adjust Baud Rate
  - Support
  - Support duplicate MAC Id check
  - Support predefine master slave connection

- Support predefine explicit message connection
- Support predefine poll IO message connection
- Support explicit and IO message fragment

## Chapter 2 Installation

### 2.1 Installation and Dimensions

- Installation

JN5-CM-DNET Module can be installed vertically shown as the left side of Fig. 2.1. Fix the module to DIN rail and the rail is gripped accurately to the plastic groove. It is suggested to add clips at rail terminal to fix it. It is also suggested to install the screw M4 directly to JN5-CM-DNET module, shown as the right side of Fig.2.1.

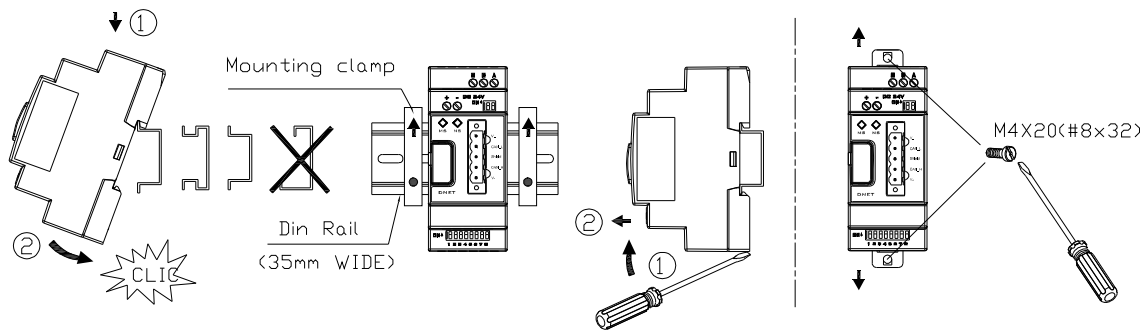


Figure 2.1: Fixed Installation

- Dimensions

Unit: mm ( 1 inch = 25.4mm )

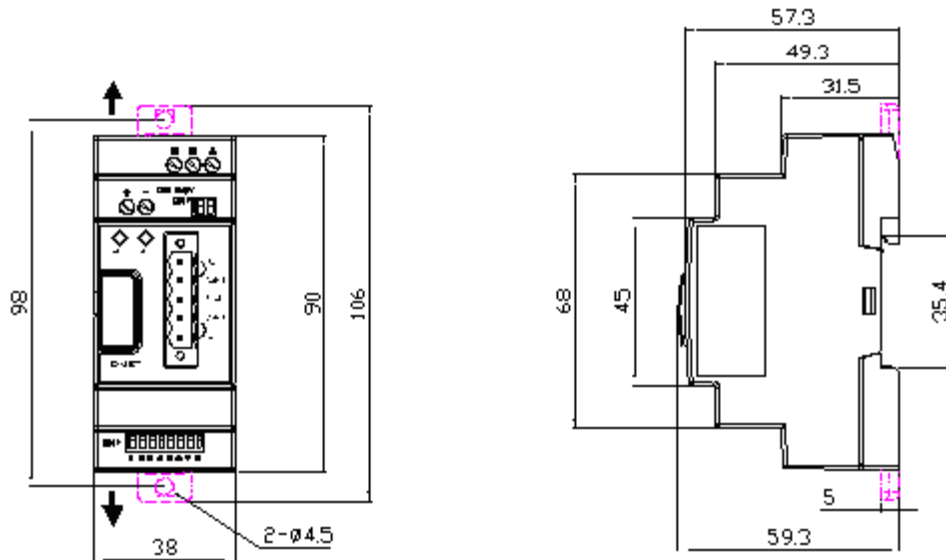


Figure 2.2: Dimensions

## 2.2 Connecting power supply

Network power supply and 24VDC backup power supply are applied to JN5-CM-DNET module.

Warning: Ensure the safe electrical isolation between Extra Low Voltage and 24V power supply.

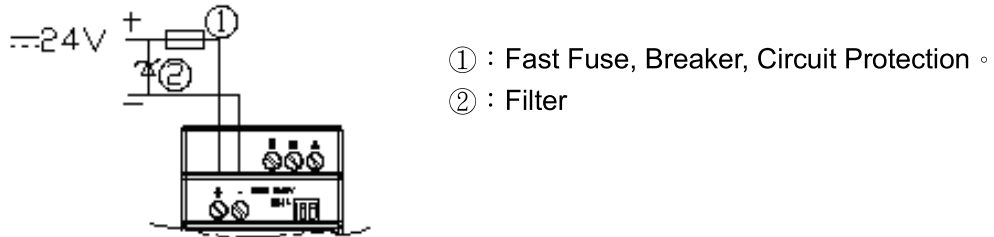


Figure2.3: Connection of Backup Power Supply

## 2.3 Connected with DeviceNet system

Using 5 pins connector connecting with device net bus system.

Using bus connector and cable defined by ODVA. The type of cable used determines the permissible maximum bus length and the transfer rate.

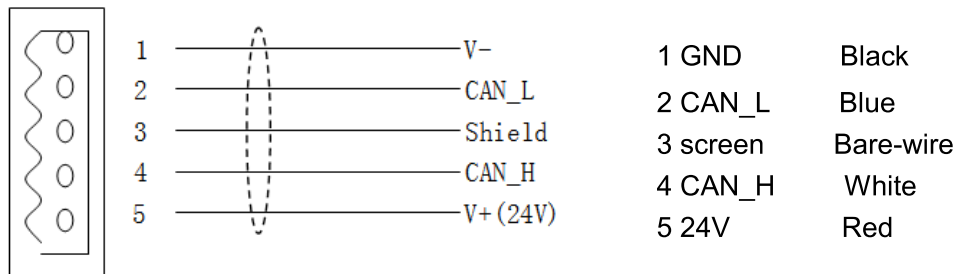


Figure2.4 connector defines

All pins must be connected accurately, it can ensure bus communication safety and accurately.



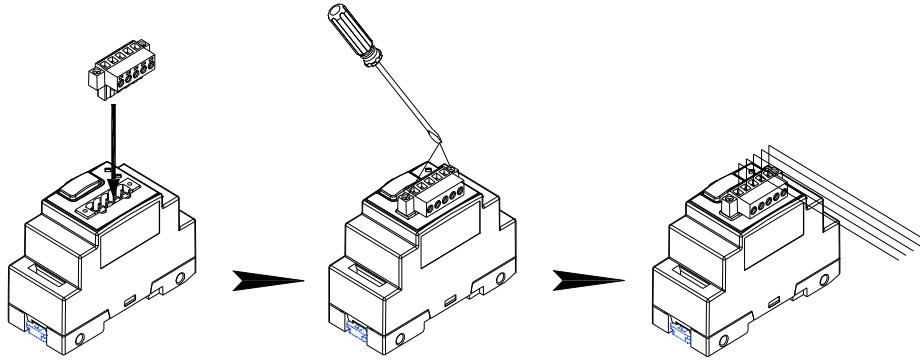


Figure 2.5: Installation of Terminal Blocks

## 2.4 Connected with Inverter by Modbus

Communication module setting is regular to be 19200bps of baud rates, 8bit of data bits, and 1bit of stop bits. The parity bits do not exist in this module. The communication protocol is ModBus RTU and ID is fixed at 1. Refer to the sections of communication parameters and interface usage in the user manuals of inverter 510 series and 310 series for more details of communication setting and wiring.

## 2.5 Terminating resistors

DeviceNet requires a terminating resistor to be installed at each end of the trunk. It is controlled by the 2-bit SW2 on the module to set in or not.

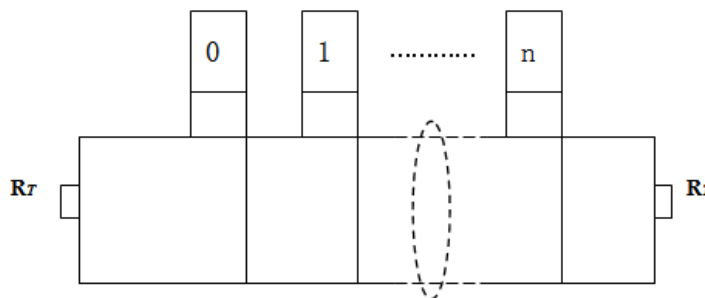


Figure2.6 terminating register  $R_T=120\Omega$

## 2.6 Baud rate and max transmit length

JN5-CM-DNET can support baud rate prescribed by ODVA.

- 125kbps
- 250kbps
- 500kbps

Bus maximum length is decided by cable type:

- thin cable
- thick cable
- flat cable

ODVA prescribes the cable transmission length:

Baud rate ( kbps )	Max length of cable ( m )		
	Thin cable	Thick cable	Flat cable
125	500	100	420
250	250	100	200
500	100	100	100

## Chapter3 Operation

### 3.1 Initial power up

JN5-CM-DNET can use net power, if power is lower because many devices in devicenet system and, it also can use DC power with itself.

Before power up, check that you have connected the power supply, the bus connection and the connection to the basic unit correctly.

If the JN5-CM-DNET unit is factory setting, the net address and baud rate of the station must be set.

### 3.2 Networking Settings

JN5-CM-DNET module is built in the function of automatic identification drive. Use DIP switch SW1\_8 (8PIN) to set up. Set SW1\_8 to be OFF if it is connected to the inverter of 510 series.

### 3.3 Network Address Settings and Self-adjust Baud Rate

In the net system, each device has one unique node address (MAC ID), user can set node address form 0 to 63, and each node MAC ID must be unique in the net system.

JN5-CM-DNET module use SW1.1~SW1.6 to setting node address.

JN5-CM-DNET communication module supports the self-adjust communication baud rate, three kinds of 123K, 250K and 500K in compliance with DeviceNet specifications. When device is at power on, the module is only connected to network and obtains the baud rate from the detection of network package. After the baud rate is self-adjusted, it is connected to DeviceNet in normal operating mode.

After powering on the device at the basis of hardware setting address, it is disabled when baud rate and network bits address are modified by network tool.

Setting value of DIP Switch SW1 (DIP Switch ON is 1):

Functions	DIP Switch position	DIP Switch status	Information
Address setting	SW1_6~SW1_1	000000	Net address is 0
		000001	Net address is 1
		000010	Net address is 2
		.....	.....
		111110	Net address is 62
		111111	Net address is 63
Function setting	SW1_8	0	Connect 510 series
		1	Connect 310 series
	SW1_7		Reserved

### 3.4 LED indicator

There are two LED indicators built in JN5-CM-DNET communication module to quickly determine and monitor its state and bus communication.

- Module status LED (MS)

Two colors LED (green and red) indicate JN5-CM-DNET module status, it can be used watch the device working correctly or not.

MS LED information:

LED status	Status	Information	Remark
Off	No exist	No power up	
Green and red flash	Self check	Power up self checking	
Green flash	Waiting	Connected with Inverter basic unit error	
Green on	Operation	The device is operating in a normal condition.	
Red flash	Recoverable Fault	Recoverable Fault.	Communication with Inverter basic unit error.
Red on	Unrecoverable Fault	The device has an unrecoverable fault; may need replacing.	Device hardware error.

- Net status LED (NS)

Two colors LED (green and red) indicate the status of net bus; it can be used watch JN5-CM-DNET status in the net.

NS LED information:

Net led (NS)	Status	Information	Remark
Off	No exist	No power up	
Off	Not on line	The device has not completed the Dup_MAC_ID test yet.	
Green flash	On line , but not connected	The device has passed the Dup_MAC_ID test, is on-line, but has no established connections to other nodes.	
Green on	On line and connected	The device is on-line and has connections in the established state.	
Red flash	Connection time out	IO connection time out	
Red on	Communication error	Dup_MAC_ID check error or Bus-off event.	
Red light flash	Communication fault and receive point-to-point protocol		Without supporting the fault packet message

## Chapter4 Communication module functions

### 4.1 Net Description

DeviceNet is a connection based protocol. That is data exchange among devices should be through connected cable.

Net stations can communication with IO message or explicit message.

#### 4.1.1 IO message

IO message transmits application and process data in DeviceNet. The related IO message, sent via higher CAN identifier, is always sent from producer to consumer. The connection identifier provides the related information. The transmission is realized through the connected object which is setup before message transmitted.

The most important feature of IO message frame is transmission data through CAN data layer. The nod terminal judges the importance of the proceed data via the CAN message identifier.

#### 4.1.2 Explicit message

Explicit message is used on ordinary data exchange between two devices in DeviceNet. It is sent via lower CAN identifier. Explicit message is point and point transmitted with the typically request/response mode. It is commonly used in equipment configuration and trouble shooting. The transmission of the explicit message should be through connected objects. The Explicit message request specifies object, instance, property, and the called classified service through the path to the related object.

The most important feature of explicit message is the any parts of CAN identifier can not be used in explicit message transmission protocol. All the protocol should be included in CAN data layer which is used in connecting ID. Each Explicit message channel needs 2 CAN identifier, one is for request message, and the other is for response message. The identifier is already specified as the connection sets up.

#### 4.1.3 JN5-CM-DNET deviceNet function

- Support self-adjust baud rate
- Support duplicate nodes and check the packet
- Support predefine master slave connection
- Support predefine explicit message connection

Support predefine poll IO message connection

Support explicit and IO message fragment

### 4.2 JN5-CM-DNET Object Modeling

DeviceNet describes seeable data and function through the object modules. One DeviceNet equipment can be defined as a group which is based on a clear device module.

DeviceNet object module describes all the JN5-CM-DNET communication function which is the basic principal of the application layer.

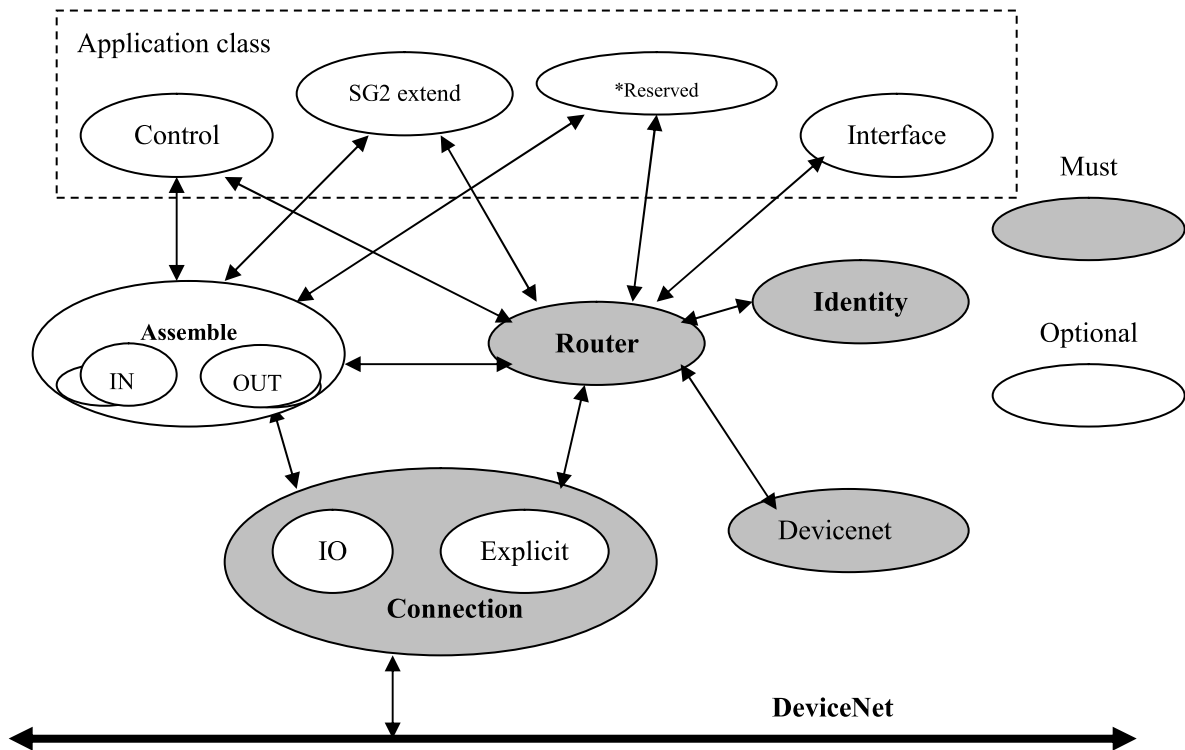


Figure 4.1 Communication module object modeling

JN5-CM-DNET object class:

Class code	Object class name	Instance number
0x01	Identity	1
0x02	Router	1
0x03	DeviceNet	1
0x04	Assemble	6
0x05	Connection	2
0x28	Motor	1
0x29	Control Supervisor	1
0x2A	AC Driver	1
0x64	Interface Object	1
0x65	Driver Object1	1
0x66	Driver Object2	1

The said object can be classified into 3 parts:

- Managing class
- Connection class
- Application class

#### 4.2.1 Managing class

Define the data and function of the device should be supported by all the equipments in the net.

##### ·Identity object class

Identity object (class code: 01hex) provides identification of and general information about the device. Such as vendor id, device type, device code, it also include device status, series number, slaver name.

##### ·Router object class

Router object (class code: 02hex) provides a messaging connection point through which a Client may address a service to any object class or instance residing in the physical device.

#### 4.2.2 Connection class

Define the message transmission in net.

##### ·Devicenet object class

All net devices must be support devicenet object (class code: 03hex). It provides the configuration and status of a DeviceNet port. DeviceNet product must support one (and only one) DeviceNet object per physical connection to the DeviceNet communication link.

##### ·Connection object class



All net devices must support at least one object instance. It provides operation net data by IO message or explicit message, producer/consumer data router and length.

### 4.2.3 Application class

Define the certain data and function of the equipment (application object, parameter object, and assemble object).

·**Application object class**

Extend object (class code: 28hex、2Ahex、65hex、66hex) provides the parameters of Inverter, it can be used in automation project.

·**Assemble object class**

Assemble object (class code: 04hex) allocates and manages the internal resources associated with both I/O and Explicit Messaging Connections.

## 4.3 Object Class Define

### 4.3.1 Identity Object

Class code : 0x01

The Identity Object is required on all DeviceNet devices. It provides product identification and general information.

#### Class attribute

Attribute ID	Access rule	Name	Data type	Description of Attributes and Semantics	Default value	Byte number
1	Get	Class Revision	UINT	Revision of this class	1	2

#### Instance

Attribute ID	Access rule	Name	Data type	Description of Attributes and Semantics	Default value	Byte number
1	Get	Vendor ID	UINT	Identification of each vendor by number.	8988	2
2	Get	Device Type	UINT	Indication of general type of product.	0x0C	2
3	Get	Product Code	UINT	Indication of a particular product of an individual vendor.	0x07	2
4	Get	Revision	STRUCT	Revision of the item the identity object represents.		2
		Major	USINT	Major revision.	0x02	1

		Minor	USINT	Minor revision.	0x01	1
5	Get	Status	WORD	Present state of the device as represented by the state transition diagram. 0 = Nonexistent 1 = Device Self testing 2 = Standby 3 = Operational 4 = Recoverable Fault 5 = Major Unrecoverable Fault	0x00	2
6	Get	Serial	UDINT	Serial number of number.	0x12345678	4
7	Get	Product Name	STRUCT	Product Name		32
			BYTE	Length	11	1
			STRING	Name	JN5-CM-D NET	11
8	Get	State	USINT	Device status	0x00	1

Class Service

Service code	Service Name	Description
0x0E	Get Attribute Single	Returns the contents of the specified attribute.

Instance Service

Service code	Service Name	Description
0x0E	Get Attribute Single	Returns the contents of the specified attribute.
0x05	Reset	Invokes the Reset service for the device.

4.3.2 Router Object

Class code : 0x02

The Message Router Object provides a messaging connection point through which a Client may address a service to any object class or instance residing in the JN5-CM-DNET devices.

Class Attribute

Attribute ID	Access rule	Name	Data type	Description of Attributes and Semantics	Default value	Byte number
1	Get	Class Revision	UINT	Revision of this class	1	2

Class Service

Service code	Service Name	Description
0x0E	Get Attribute Single	Returns the contents of the specified attribute.

Instance Attributes

No.

Instance Service

No.

### 4.3.3 DeviceNet Object

Class code : 0x03

The DeviceNet Object contains information about the JN5-CM-DNET DeviceNet interface configuration.

#### Class Attribute

Attribute ID	Access rule	Name	Data type	Description of Attributes and Semantics	Default value	Byte number
1	Get	Class Revision	UINT	Revision of this class	2	2

#### Instance Attribute

Attribute ID	Access rule	Name	Data type	Description of Attributes and Semantics	Default value	Byte number
1	Get	Mac ID	USINT	Node Address, Range 0~63	63	1
2	Get	Baud Rate	USINT	Baud rate setting 0 125K 1 250K 2 500K	0	1
5	Get	Allocation	STRUCT	Allocate Master/Slave Connection Set		2
		Choice	BYTE	Indicates which Connections from the Predefined Master/Slave Connection Set is to be allocated/configured for use by the Master.	0x00	1

		My Master	USINT	MAC ID of Master	0xFF	1
8	Get	Mac Switch Value	USINT	Actual value of Node		1

Class Service

Service code	Service Name	Description of service
0x0E	Get Attribute Single	Returns the contents of the specified attribute.

Instance Service

Service code	Service Name	Description of service
0x0E	Get Attribute Single	Returns the contents of the specified attribute.
0x4B	Allocate Master Slave Connection Set	Requests the use of the Predefined Master/Slave Connection Set.
0x4C	Release Master Slave Connection Set	Indicates that the specified Connections within the Predefined Master/Slave Connection Set are no longer desired. These Connections are to be released (Deleted).

**4.3.4 Connection Object**

Class code : 0x05

The Connection Class allocates and manages the internal resources associated with both I/O and Explicit Messaging Connections.

**Class Attribute**

Attribute ID	Access rule	Name	Data type	Description of Attributes and Semantics	Default value	Byte number
1	Get	Class Revision	UINT	Revision of this class	1	2

**Instance 1 : Explicit Message Connection**

Attribute ID	Access rule	Name	Data type	Description of Attributes and Semantics	Default value	Byte number
--------------	-------------	------	-----------	---	---------------	-------------

				<b>Semantics</b>		
1	Get	State	USINT	0 = non-existent 3 = established 5 = Deferred Delete	00	1
2	Get	Instance Type	USINT	Indicates either I/O or Messaging Connection: 0 explicit connection, 1 IO connection	00	1
3	Get	Transport Class Trigger	BYTE	Defines behavior of the Connection	0x83	1
4	Get	Produced Conxn ID	UINT	Placed in CAN Identifier Field when the Connection transmits, ***** is MAC ID	10*****011	2
5	Get	Consumed Conxn ID	UINT	CAN Identifier Field value that denotes message to be received, ***** is MAC ID	10*****100	2
6	Get	Initial Comm Characteristics	BYTE	Defines the Message Group across which productions and consumptions associated with this Connection occur.	0x21	1
7	Get	Produced Conxn Size	UINT	Maximum number of bytes transmitted across this connection.	40	2
8	Get	Consumed Conxn Size	UINT	Maximum number of bytes received across this connection.	40	2
9	Get/Set	Expected Packet Rate	UINT	Defines timing associated with this connection.	2500 (ms)	2
12	Get/Set	Watchdog Timeout Action	USINT	Defines how to handle Inactivity/Watchdog timeouts: 1Auto delete, 3 Deferred delete	3	1
13	Get	Produced Conxn Path Length	USINT	Number of bytes in the produced connection path attributes.	0	2
14	Get	Produced Conxn	SEG	Specifies the	Null	6

		Path		Application object whose data is to be produced by this connection object.		
15	Get	Consumed Conxn Path Length	USINT	Number of bytes in the Consumed connection path attribute.	0	2
16	Get	Consumed Conxn Path	SEG	Specifies the Application Object that is to receive the data consumed by this connection Object.	Null	6
17	Get	Production Inhibit Time	UINT	Defines minimum time between new data production.	0	2

**Instance 2: Poll IO message connection**

Attribute ID	Access rule	Name	Data type	Description of Attributes and Semantics	Default value	Byte number
1	Get	State	USINT	State of the object: 00Nonexistent, 01Configuring, 03Established, 04TimedOut	00	1
2	Get	Instance Type	USINT	Indicates either I/O or Messaging Connection: 0 explicit connection, 1 IO connection	01	1
3	Get	Transport Class Trigger	BYTE	Defines behavior of the Connection	0x83	1
4	Get	Produced Conxn ID	UINT	Placed in CAN Identifier Field when the Connection transmits, ***** is MAC ID	01111*****	2
5	Get	Consumed ConxnID	UINT	CAN Identifier Field value that denotes message to be received, ***** is MAC ID	10*****101	2
6	Get	Initial Comm Characteristics	BYTE	Defines the Message Group across which	0x01	1

				productions and consumptions associated with this Connection occur		
7	Get	Produced Conxn Size	UINT	Maximum number of bytes transmitted across this connection.	4, the maximum value is 8.	2
8	Get	Consumed Conxn Size	UINT	Maximum number of bytes received across this connection.	4, the maximum value is 8.	2
9	Get/Set	Expected Packet Rate	UINT	Defines timing associated with this connection.	0 (ms)	2
12	Get	Watchdog Timeout Action	USINT	Defines how to handle Inactivity/Watchdog timeouts: 0 Transition to timed out. 2 Auto Reset.	0	1
13	Get	Produced Conxn Path Length	USINT	Number of bytes in the produced connection path attributes.	6	2
14	Get	Produced Conxn Path	SEG	Specifies the Application object whose data is to be produced by this connection object. Input assemble default is 6.	20,04//24,46/ /30,03(hex)	6
15	Get	Consumed Conxn Path Length	USINT	Number of bytes in the Consumed connection path attribute.	6	2
16	Get	Consumed Conxn Path	SEG	Specifies the Application object that is to receive the data consumed by this connection object. Output assemble default is 36.	20,04//24,14/ /30,03(hex)	6
17	Get	Production Inhibit Time	UINT	Defines behavior of the Connection	0	2

**Common services**

Service code	Implemented for		Service name
	Class	Instance	
0x05	Yes *1	Yes *2	Reset

0x0E	Yes	Yes	Get attribute single
0x10	No	Yes	Set attribute single

\*1To class: reset all connections to non-exist state.

\*2To instance: Used to reset the Inactivity/Watchdog Timer associated with a Connection Object. When a Connection in the Timed Out or Deferred Delete state receives a Reset request it also transitions back to the Established state.

### 4.3.5 Assemble Object

- Class code : 0x04

It provides assembled controlling IO states of 510 and 310 series.

#### ● Class Attribute

Attribute ID	Access rule	Name	Data type	Description of Attributes and Semantics	Default value	Byte number
1	Get	Class Revision	UINT	Revision of this class	1	2

- Instance **70** , **71** , **110** Attributes (Input assemble, default is 70)

Attribute ID	Access rule	Name	Data type	Description
3	Get	Date Stream	STRUCT of : WORD	Inverter status data

- Instance **20** , **21** , **100** Attributes (Output assemble, default is 20)

Attribute ID	Access rule	Name	Data type	Description
3	Get/Set	Date Stream	STRUCT of : WORD	Inverter control data

#### Class Service

Service code	Service Name	Description of service
0x0E	Get Attribute Single	Returns the contents of the specified attribute.

#### Instance Service

Service code	Service Name	Description of service
0x0E	Get Attribute Single	Returns the contents of the specified attribute.
0x10	Set Attribute Single	Modifies an attribute



## IO Assemble Data Define

The default IO Assemble is 6 (input assemble) and 6 (out assemble). Configuration is effectual after the device is replacing.

- Base inputs assemble 70

BYTE	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0					Faulted			Running1
1								
2	Actual Speed low byte (SpeedActual) *3							
3	Actual Speed high byte (SpeedActual) *3							

- Base inputs assemble 71

BYTE	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0				Warning	Faulted	Ready	Running2	Running1
1	Drive State *1							
2	Actual Speed low byte (SpeedActual) *3							
3	Actual Speed high byte (SpeedActual) *3							

- Base inputs assemble 110

BYTE	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0				Warning	Faulted	Ready	Running2	Running1
1			S6	S5	S4	S3	S2	S1
2							R2A	R1A
3								
4	Actual Frequency low byte (ActualFrequency)							
5	Actual Frequency high byte (ActualFrequency)							
6	Actual torque low byte (TorqueActual)							
7	Actual torque high byte (TorqueActual)							

- Base inputs assemble 20

BYTE	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0					FaultRst			Run1
1								
2	Reference Speed low byte (SpeedRef) *3							
3	Reference Speed high byte (SpeedRef) *3							

- Base inputs assemble 21

BYTE	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0					FaultRst		Run2	Run1
1								
2	Reference Speed low byte (SpeedRef) *3							
3	Reference Speed high byte (SpeedRef) *3							

● Extend input assemble 100

BYTE	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0				Jog *2	FaultRst	Force Fault	Run2	Run1
1			S6 Ctrl	S5 Ctrl	S4 Ctrl	S3 Ctrl	S2 Ctrl	S1 Ctrl
2							R2A Ctrl	R1A Ctrl
3								
4	Reference Frequency low byte (RefFrequency)							
5	Reference Frequency high byte (RefFrequency)							
6	Reference torque low byte *1							
7	Reference torque high byte *1							

\*1: Not Support temporarily

\*2: Parameter JOG operation is not supported in A510.

\*3: Ref Frequency is the example of actual assembly.

### 4.3.6 Motor Parameters Object ( Motor )

Class code : 0x28

Motor parameters are controlled by the nameplate in the inverter of 510 and 310 series.

- Motor Object operation is not supported in S310.

#### Instance Attributes

Attribute ID	Access rule	Name	Data type	Description	Default value	Number of bytes
6	Get/Set	RatedCurrent	UINT	Rated Current : 0.1A	00	2
7	Get/Set	RateVoltage	UINT	Rated Voltage : 0.1V	2200	2
9 *1	Get/Set	RateFreq	UINT	Rated Frequency : 0.1Hz	500	2
15	Get/Set	BaseSpeed	UINT	RPM Speed	1500	2

\*1 Parameter RateFreq operation is not supported in L510.

#### Instance Service

Service code	Service Name	Description
0x0E	Get Attribute Single	-
0x10	Set Attribute Single	-

### 4.3.7 Control Supervisor

Class code : 0x29

The class describes the behavior of 310 and 510 control devices.

Instance Attributes

Attribute ID	Access rule	Name	Data type	Description of Attributes and Semantics	Default value	Byte number
3	Get/Set	Run1	BOOL	1 = Run 0 = Stop	0	1
4	Get/Set	Run2	BOOL	1 = Reversal 0 = Forward	0	1
5 *1	Get/Set	NetCtrl	BOOL	1 = Network Control 0 = Site Control	1	1
7	Get	Runing1	BOOL	1 = During running 0 = Stop	0	1
8	Get	Runing2	BOOL	1 = During running in reverse direction 0 = During running in forward direction	0	1
9	Get	Ready	BOOL	1 = Ready 0 = Unready	0	1
10	Get	Fault	BOOL	1 = Fault 0 = Normal	0	1
11	Get	Warning	BOOL	1 = Warning 0 = Normal	0	1
12	Get/Set	FaultRst	BOOL	0->1 = Fault Reset 0 = No Action	0	1
13	Get	FaultCode	UINT	Failure Record	0	2
14	Get	WarnCode	UINT	Warning Cause Record	0	2
15 *1	Get	CtrlFromNet	BOOL	Current Control State 1 = Network Control 0 = Site Control	1	1
16	Get/Set	DNFaultMode	UINT	Network Failure 0->1 = Fault + Stop 0 = No Action	0	1
17	Get/Set	ForceFault	BOOL	0->1 Force 0 = No Action	0	1
100 *2	Get/Set	Jog	BOOL	1 = Jog (positive) 0 = No Action	0	1

\*1: Network control is the selection of main operation command source to be communication control; site control is the command source to be others (not communication control). When NetCtrl is set to be site control, the setting value of main operation command source is the default (refer to parameter 00-02 in the inverter of 510

series and 00-03 in 310 series).

\*2: Parameter Jog operation is not supported in A510.

#### Instance Service

Service code	Service Name	Description
0x0E	Get Attribute Single	-
0x10	Set Attribute Single	-

### 4.3.8 AC Driver

Class code : 0x2A

The description of operating parameters in the inverter of 510 and 310 series:

#### Instance Attributes

Attribute ID	Access rule	Name	Data type	Description	Default value	Byte number
4 *1	Get/Set	NetRef	BOOL	1 = Reference Frequency of Network Settings 0 = Reference Frequency of Site Settings	1	1
6	Get/Set	DriveMode	USINT	0 = Control Modes 0 = External Modes	0	1
7	Get	SpeedActual	INT	Output Speed (RPM)	0	2
8	Get/Set	SpeedRef	INT	Setting Speed (RPM)	150	2
9	Get	CurrentActual	INT	Output Current : 0.1A	0	2
11	Get	TorqueActual	INT	Output Torque : Nm	0	2
17	Get	OutputVoltage	INT	Output Voltage : 0.1V	0	2
29 *1	Get	RefFromNet	BOOL	Current Frequency Control Modes: 1 = Reference Frequency of Network Settings 0 = Reference Frequency of Site Settings	0	1

\*1: Reference frequency of network settings is the selection of main frequency command source to be the communication control; reference frequency of site settings is the command source to be others (not communication control). When NetRef is set to be site settings, the setting value of reference frequency command source is the default (refer to parameter 00-05).

#### Instance Service

Service code	Service Name	Description
0x0E	Get_Attribute_Single	-
0x10	Set_Attribute_Single	-

### 4.3.9 Interface Object

Class code : 0x64

The description of communication module parameters:

Instance Service

Attribute ID	Access rule	Name	Data type	Description	Default value	Byte number
1	Get/Set	In Asm Cfg	USINT	Input Assembly Settings		1
				70 , 71 , 110	70	
2	Get/Set	Out Asm Cfg	USINT	Output Assembly Settings		1
				20 , 21 , 100	20	
3	Get	Nonvolatile Node Address	USINT	Node Address 0~63	63	1
4	Get	Nonvolatile Baud Rate	USINT	Baud rate setting 0 = 125K 1 = 250K 2 = 500K	0	1
5	Get	Soft Ver	Struct of	Software Version		2
			USINT		1	
			USINT		1	
6	Get	DRVType	USINT	Inverter modes 0 A510/F510 1 E510 2 L510 3 N310 4 E310 5 S310	0	1
7	Get	DRVSoftVer	INT	Software version of module connecting to the inverter	0	2

Instance Service

Service code	Service Name	Description of service
0x0E	Get Attribute Single	Returns the contents of the specified attribute.
0x10	Set Attribute Single	Modifies an attribute

### 4.3.10 Inverter extend-1 Object

Class code : 0x65

The class describes the parameters of 310 and 510 series.

Instance Attributes

Attribute ID	Access rule	Name	Data type	Description of Attributes and Semantics	Default value	Byte number
1	Get	DCOutputVoltage	INT	DC output voltage 0.1V	0	2
2	Get	PIDFeedback	UINT	PID feedback : 0.01	0	2
3	Get	PIDInput	UINT	PID input : 0.01	0	2
4	Get	A1_IN	UINT	Analogy input1 0.1	0	2
5	Get	A2_IN	UINT	Analogy input 2 0.1	0	2
6	Get	S1FromNet	BOOL	Status of S1 input	0	1
7	Get	S2FromNet	BOOL	Status of S2 input	0	1
8	Get	S3FromNet	BOOL	Status of S3 input	0	1
9	Get	S4FromNet	BOOL	Status of S4 input	0	1
10	Get	S5FromNet	BOOL	Status of S5 input	0	1
11	Get	S6FromNet	BOOL	Status of S6 input	0	1
12	Get	R1AFromNet	BOOL	Status of R1A	0	1
13	Get	R2AFromNet	BOOL	Status of R2A	0	1
14	Get/Set	S1Ctrl	BOOL	S1 Control input	0	1
15	Get/Set	S2 Ctrl	BOOL	S2 Control input	0	1
16	Get/Set	S3 Ctrl	BOOL	S3 Control input	0	1
17	Get/Set	S4Ctrl	BOOL	S4 Control input	0	1
18	Get/Set	S5 Ctrl	BOOL	S5 Control input	0	1
19	Get/Set	S6 Ctrl	BOOL	S6 Control input	0	1
20	Get/Set	R1A Ctrl	BOOL	R1A Control	0	1
21	Get/Set	R2A Ctrl	BOOL	R2A Control	0	1
22	Get	ActualFrequency	UINT	Output frequency 0.01Hz		2
23	Get/Set	RefFrequency	UINT	Setting Frequency (0.01Hz)	500	2
24	Get	RefFreqFromNet	UINT	Reflected Setting Frequency (0.01Hz)		2
25	Get	RefSpeedFromNet	UINT	Reflected Setting Speed (RPM)		2

Instance Service

Service code	Service Name	Description of service
0x0E	Get Attribute Single	Returns the contents of the specified attribute.
0x10	Set Attribute Single	Modifies an attribute

### 4.3.11 Inverter extend-2 Object

Class code : 0x66

The description of specific functions in the inverter of TECO 510 series:

**Instance Properties: 0~x, in correspondence with the code of parameter groups in the inverter of 510 series.**

Attribute ID	Access rule	Name	Data type	Description	Default value	Numbers of Bytes
1	Get/Set				0	2
...	Get/Set				0	2
n	Get/Set				0	2

**Property ID: 0~n, in correspondence with the parameter code in the inverter of 510 series.**

For example, if the instance property of parameter 00-05 (selection of main frequency command source) is 0, the property ID is 5.

Refer to manuals of 510 series and Modbus communication protocol for more details of instance properties, numbers of property ID and access rule.

Instance Service

Service code	Service Name	Description of service
0x0E	Get Attribute Single	Returns the contents of the specified attribute.
0x10	Set Attribute Single	Modifies an attribute

## 4.4 EDS file

Electronic Data Documentation (EDS) is included in the user files, describing the configuration data and common interface.

EDS offers all the necessary information of accessing and changing the device. EDS is used for the user configuration tool , easy to update and seldom required to correct the configuration software tool.

Please contact your vendor for the document of EDS 《231C000C00070100.eds》 .

Key information of EDS is as follows:

[Device]

VendCode = 8988;                   \$ Vendor Code  
VendName = "Taian-tech";

```

ProdType          = 12;
ProdTypeStr       = "Communication Adapter";
ProdCode          = 7;
MajRev            = 1;
MinRev            = 1;
ProdName          = "JN5-CM-DNET";
Catalog           = "A510-Axxxx";

```

## [IO\_Info]

```

Default          = 0x0001;

PollInfo         = 0x0001,
                  1,
                  1;

$ StrobelInfo     = 0x0000, 2, 1;
$ COSInfo         = 0x0000, 2, 1;
$ CyclicInfo      = 0x0000, 2, 1;

Input1           = 4,
                  0,
                  0x0001,
                  "Basic Input Assemble 70",
                  6, "20 04 24 46 30 03",
                  "Drive Monitoring data";

Input2           = 4,
                  0,
                  0x0001,
                  "Extended Input Assemble 71",
                  6, "20 04 24 47 30 03",
                  "Drive Monitoring data";

Input3           = 8,
                  0,
                  0x0001,
                  "Extended Input Assemble 110",
                  6, "20 04 24 6E 30 03",
                  "Drive Monitoring data";

Output1          = 4,
                  0,
                  0x0001,

```



```
        "Basic Output Assemble 20",  
        6, "20 04 24 14 30 03",  
        "Drive Control data";  
  
Output2 = 4,  
          0,  
          0x0001,  
          "Extended Output Assemble 21",  
          6, "20 04 24 15 30 03",  
          "Drive Control data";  
  
Output3 = 8,  
          0,  
          0x0001,  
          "Extended Output Assemble 100",  
          6, "20 04 24 64 30 03",  
          "Drive Control data";
```

## Chapter5 Diagnostics fast

### LED indicator Diagnosis

Module status LED	Explanation	Correct or prevent fault
Off	No power	Power up
Green on	Normal operation status	No
Green flash	No connected with Inverter basic unit	Connected with Inverter correctly.
Red flash	Connect with Inverter but communication error.	Set Inverter IO number correctly.
Red on	Device hardware error.	Use a new module.

Net status LED	Explanation	Correct or prevent fault
Off	No power	Power up. Add other device in the net.
	The device is a single node in the net.	
	Baud rate is in self-adjusting	
Green on	Normal operation mode, and connected with master.	No
Green flash	Normal operation mode, but not connected with master or had be set free	No
Red flash	IO connection time out, waiting green flash after a few seconds.	No
Red on	·Dup_mac_id check error ·Communication error and restart	Replace node address and power up again.
	Normal operation mode, and connected with master.	No

## Appendix

### Technical parameters:

<b>Basic parameters</b>		
Size	length× width× high	mm
weight		g
<b>Ambient</b>		
Operation temperature		°C
Storage temperature		°C
Operation humidity		%
<b>Power supply</b>		
Power supply voltage		
<b>LED indicator</b>		
Module status LED	colors	green/red
Net status LED	colors	green/red
<b>Devicenet</b>		
Connector		5 pins
Isolation		
Function		Only group2 slaver
Max baud rate	kbps	500
Bus termination resistors	Ω	120
Bus address		0~63

### EDS file

Please contact vendor for the document of EDS 《231C000C00070100.eds》 .