User Manual

EPC-CM36-CANopen Communication Card

Version: A00

Applicable to: GK900 Series

Version Record

Version	Change Content
A00	First Edition Release

Disclaimer

The information in this product document is accurate and reliable at the time of release. Jiangsu GTAKE Electric Co., Ltd. reserves the right to change the product specifications described in this manual without prior notice.

Technical Support

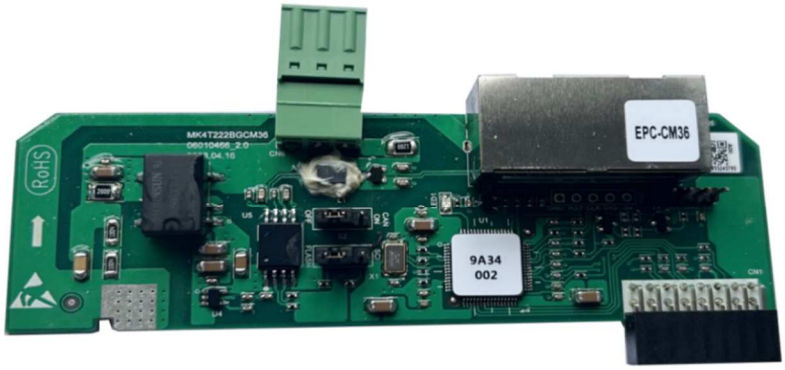
If you need assistance with product installation and configuration, please contact Jiangsu GTAKE Electric Co., Ltd.

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1. Product Introduction

1.1 Instructions Before Use and Product Appearance

1. Thank you for using the GTAKE CANopen communication card. This manual provides functional specifications, installation, basic operation, settings, and an introduction to the network protocol. To ensure correct installation and operation, please read this manual and the inverter's communication protocol section carefully before use.
2. This manual serves only as a guide for the operation of the CANopen communication card and related instructions; detailed content of the CANopen protocol is not covered here. If you wish to learn more about the CANopen protocol, please refer to relevant professional articles or books.
3. This communication card is defined as a CANopen **slave** communication card, intended for use on inverters that support CANopen communication.
4. The CANopen support of this communication card includes PDOs and SDOs (reading/writing manufacturer-defined object dictionaries).

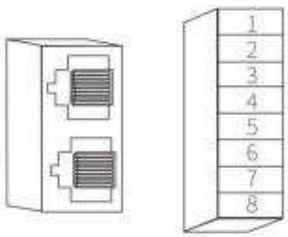


Product appearance of EPC-CM36

1.2 Terminal and Jumper Switch Configuration

1.2.1 Terminal Description

Terminal	Function Description
CN5	CANopen Communication Port - Dual RJ45 Interface
CN6	CANopen 3-PIN General Terminal - With Silkscreen Marking



CN5 Pin Configuration



CN6 Terminal Configuration

1.2.2 Jumper Switch Description

Jumper	Function Description	Default
S1	CM36 Program Function Selection **Flash:** Normal Mode **SCI:** Programming (Burn) Mode	Flash
S2	CANopen Communication Termination Resistor Selection **ON:** Termination Resistor Selected **OFF:** Termination Resistor Not Selected	OFF

1.3 Pin Definition and Additional Instructions

CN5 Pin Definition (For EPC-CM36)

Name	Function	Technical Specifications
Pin 7	CAN+	Rate: Max 1Mbps
Pin 5	CAN-	
Pin 2	DGND	Communication signal reference ground,

Name	Function	Technical Specifications
		internally isolated from GND

CN6 Pin Definition (For EPC-CM36)

Name	Function	Technical Specifications
Pin 3	CAN+	Rate: Max 1Mbps
Pin 2	CAN-	
Pin 1	DGND	Communication signal reference ground, internally isolated from GND

Additional Instructions:

The EPC-CM36-CANopen product adds CANopen bus communication functionality based on the GK900 platform, covering all products in this series. By adding CANopen communication functionality, the product can be connected to a high-speed CANopen communication network to achieve fieldbus control.

Supported CANopen services include:

- **NMT:** Network Management System

- **SDO:** Service Data Object
- **PDO:** Process Data Object
- **Device Monitoring:** Including Node Guarding and Heartbeat
- **SYNC:** Synchronization Object

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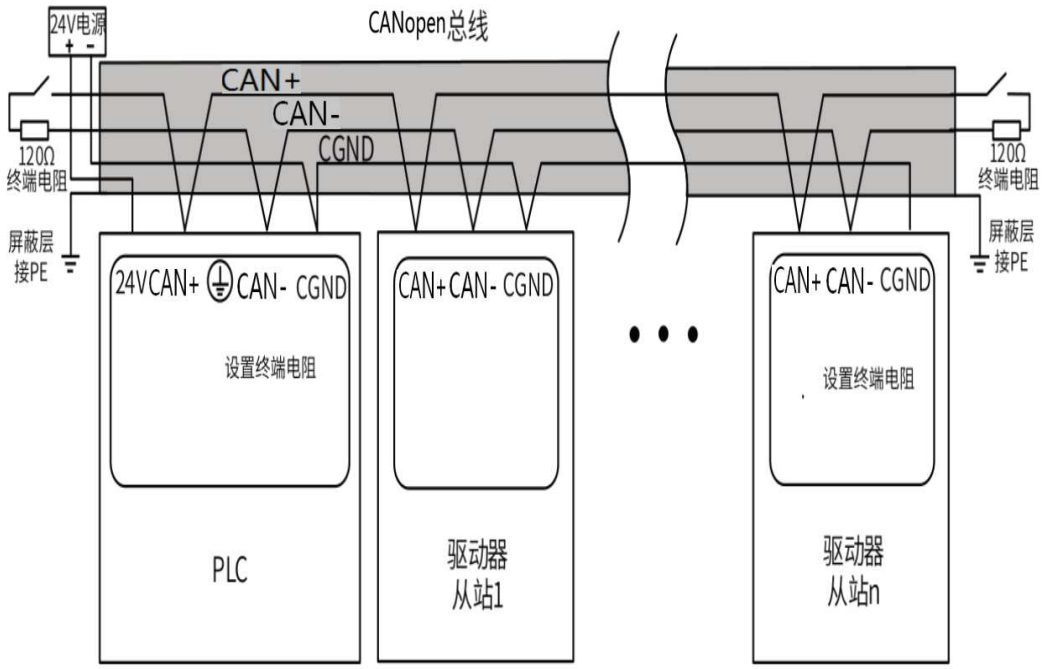
2. Multi-unit Network Wiring Instructions

This card is an expansion communication card supporting the CANopen protocol, with a network port interface. To connect the network port to the CANopen bus, you may need to use a suitable network port to CANopen converter (please prepare this yourself according to actual needs).

The connection topology of the CANopen bus should use a **daisy-chain** format; please refer to the diagram below for the specific connection method. To ensure signal transmission stability and anti-interference capability, it is recommended to use **shielded twisted pair cables** for the CANopen bus. specifically, **CAN+ and CAN- must be connected using a twisted pair**.

To prevent signal reflection, a **120Ω termination resistor** must be connected at both ends of the bus. At the same time, ensure that the reference grounds (CGND) of all node CANopen signals are connected

together to avoid interference caused by ground potential differences. **Be sure to use shielded twisted pair cables for connection; do not use single-ended network cables.**





Wiring Diagram showing PLC, Drive Slave 1... Slave n, 120Ω resistors at ends

Relationship between Bus Length and Baud Rate:

The transmission distance of the CANopen bus is directly related to the

baud rate and communication cable. The relationship between the maximum bus line length and baud rate is shown in the table below:

No.	Transmission Distance	Rate	Number of Nodes	Wire Diameter
1	25m	1Mbps	64	0.205mm²
2	95m	500kbps	64	0.34mm²
3	560m	100kbps	64	0.5mm²
4	1100m	50kbps	64	0.75mm²

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3. Inverter Settings

H0-00: Communication Mode Selection

- **Range:** 0 ~ 5
- Factory Value: 0
- Setting: Set to 5: CANopen (CM36)
- Note: Power cycle is required after changing the communication mode.

H0-01: SCI Port Communication Configuration

- **Range:** 0000 ~ 1135
- Factory Value: 0001
- Baud Rate Settings:
    - 0: 10 Kbps
    - 1: 20 Kbps
    - 2: 50 Kbps
    - 3: 125 Kbps
    - 4: 250 Kbps
    - 5: 500 Kbps
    - 6: 1 Mbps

H0-02: SCI Port Local Address

- **Range:** 0 ~ 247
- Factory Value: 1
- **Description:** Set the local address. 0 is the broadcast address; available addresses are 1 ~ 247.

b1-00: Run Command Reference Mode

- **Range:** 0 ~ 2
- Factory Value: 0
- Settings:
    - 0: Operation Panel Control

- 2: Communication Control

b1-01: Run Command and Frequency Reference Binding

- **Range:** 000 ~ DDD
- Factory Value: 000
- **Description:** This function defines the binding combination between the three run command reference modes and frequency reference modes for convenient synchronous switching.
- Setting: Set to B: Communication Input

Summary of Required Settings:

To use this product normally, two groups of parameters must be set on the inverter side: Communication Parameters and Control Command Parameters.

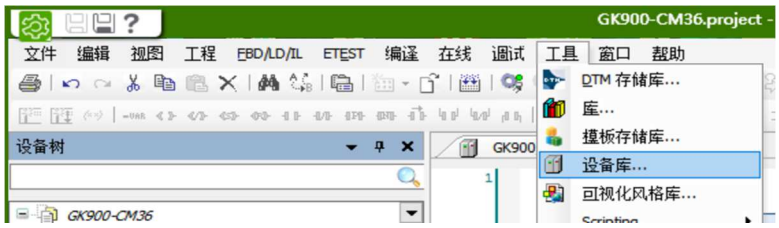
1. **Control Command Parameters:** Set **b1-00** (Command Source) to **2**; Set **b1-01** (Frequency Binding) to **b00**.
2. **Communication Parameters:** Set **H0-00** (Protocol Selection) to **5**.
3. Set **H0-01** (Baud Rate) as needed (e.g., 5 corresponds to 500K).
4. Set **H0-02** to the slave node address as needed.

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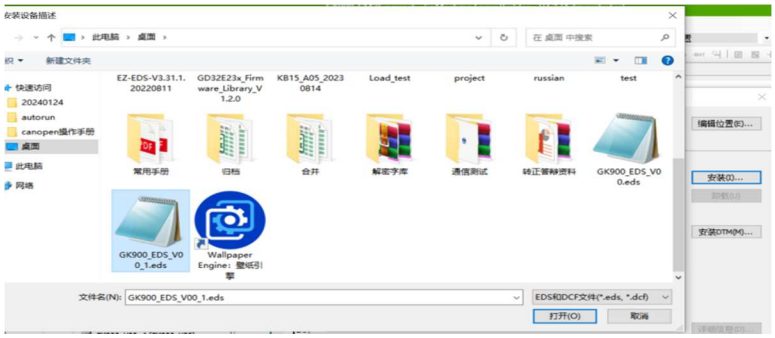
4. Master Device Settings

This manual uses a Schneider PLC as an example to introduce the CANopen protocol configuration on the master device side. For other models, please refer to their respective manuals.

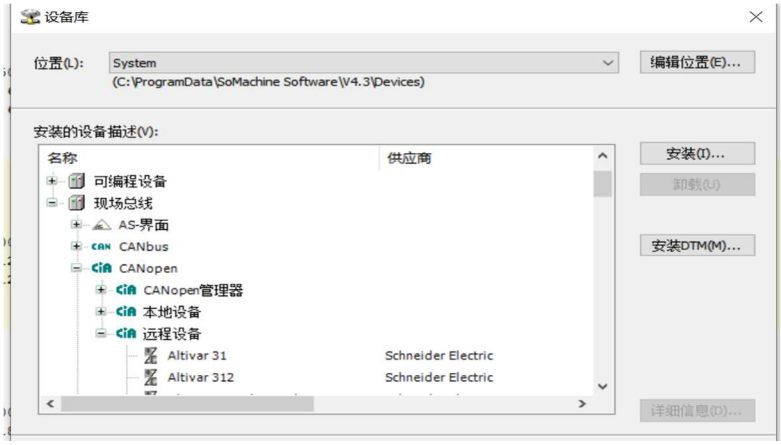
4.1 Installing the EDS File



1. After creating a new project, open **Tools** -> **Device Repository**.



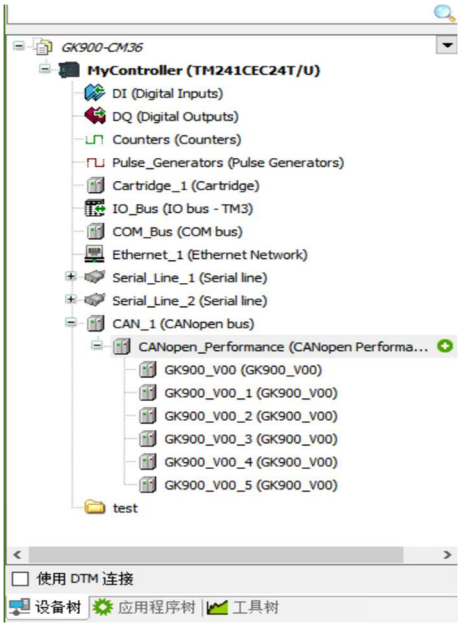
2. Click **Install**, select the EDS file (GK900_EDS_V00_1.eds), and the installation is complete.



3. Check if the installation was successful in **Fieldbus** -> **CANopen** -> **Remote Device**.

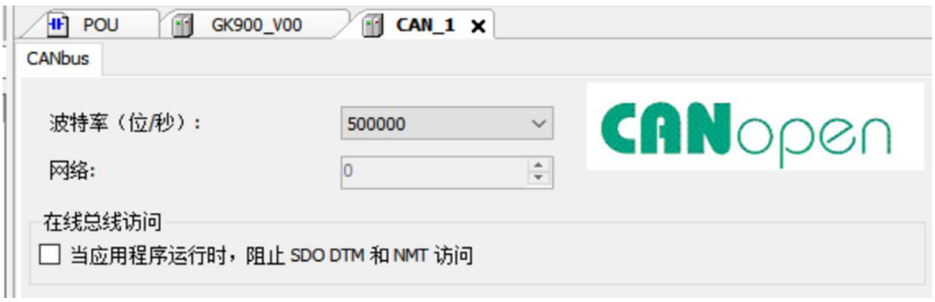


4.2 Communication Parameter Settings





1. Add a new device in the CANopen protocol module of the device tree.

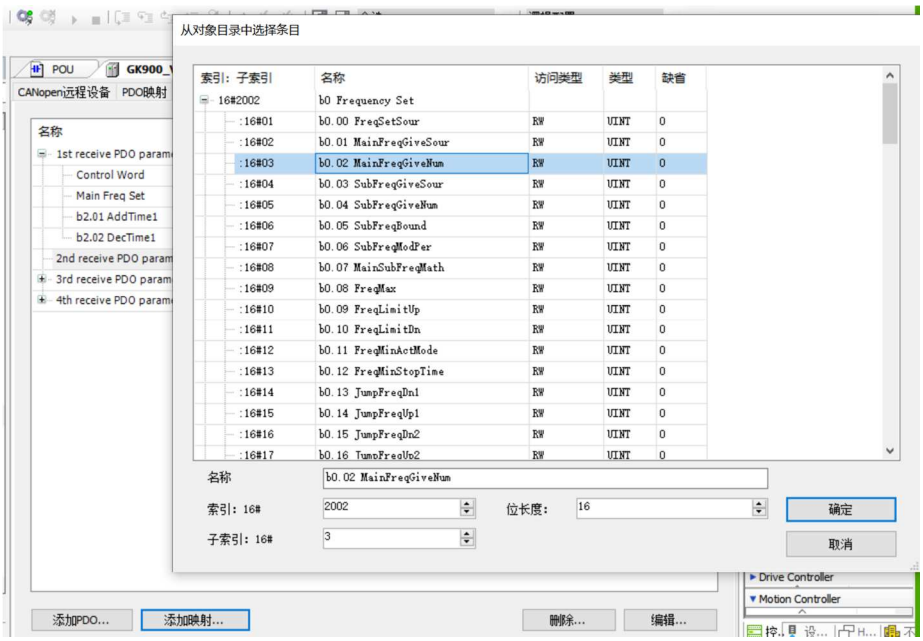


2. Set the **Baud Rate** and enable the SDO function for testing.



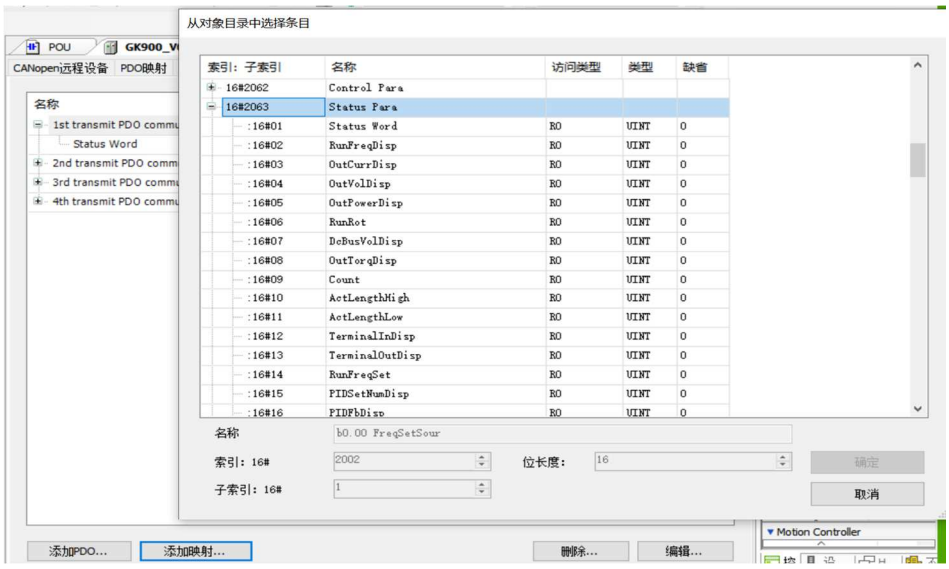
3. Set the **Node ID** (Slave Station) and enable "Expert Settings".

4.3 Communication Mapping Settings



索引：子索引	名称
16#2002	b0 Frequency Set
16#2003	b1 Run/Stop Para
16#2004	b2 Acc/Dec Para
16#2005	C0 Digital Input
16#2006	C1 Digital Output
16#2007	C2 Analog Input
16#2008	C3 Analog Output
16#2009	C4 AI Correction
16#200A	d0 Motor1 Para
16#200B	d1 Motor1 VF Para
16#200C	d2 Motor1 VC Para
16#200D	d3 Motor2 Para
16#200E	d4 Motor2 VF Para
16#200F	d5 Motor2 VC Para
16#2010	d6 Resreve
16#2011	E0 Enhancements
16#2012	E1 Protection Para
16#2013	F0 PID Para

1. **Receive PDO Mapping:** In the Receive PDO mapping options, set the parameter mappings that need to be changed by the master device. Select the main group from the name, click "Add Mapping", and refer to the product function code table.
    - Group **b0** corresponds to index **16#2002**.
    - **Control Word** corresponds to index **16#2062**.



2. **Transmit PDO Mapping:** In the Transmit PDO mapping options, set

the parameter mappings that need to be monitored.

- **Status Word** corresponds to index **16#2063**.



3. **Enable PDOs:** Select the PDO settings that need to be enabled in the PDO mapping options.



4. **I/O Mapping:** In the CANopen I/O mapping options, assign the selected PDO parameters to global variables in the master device to operate and monitor parameters within the master device.

Note: After changing the PDO mapping, please click "Reset Communication" in the window; otherwise, the mapping cannot be updated to the communication card in time.



5. PDO Mapping Table

Parameter	Object Index	Sub-Index	Name
B0.00	16#2002	16#01	Frequency setting mode
B0.01		16#02	Frequency main setting mode
B0.02		16#03	Frequency main setting digital setting
B0.03		16#04	Frequency auxiliary setting mode
B0.04		16#05	Frequency auxiliary setting digital setting
B0.05		16#06	Frequency auxiliary setting range selection
B0.06		16#07	Frequency auxiliary setting coefficient
B0.07		16#08	Main/Auxiliary frequency

Parameter	Object Index	Sub-Index	Name
			setting operation relationship
B0.08		16#09	Maximum output frequency
B0.09		16#10	Upper limit frequency
B0.10		16#11	Lower limit frequency
B0.11		16#12	Action selection when frequency setting is below lower limit
B0.12		16#13	Stop delay time when frequency setting is below lower limit
B0.13		16#14	Jump frequency 1 lower limit
B0.14		16#15	Jump frequency 1 upper limit
B0.15		16#16	Jump frequency 2 lower limit

Parameter	Object Index	Sub-Index	Name
B0.16		16#17	Jump frequency 2 upper limit
B0.17		16#18	Jump frequency 3 lower limit
B0.18		16#19	Jump frequency 3 upper limit
B0.19		16#20	Jog running frequency
U0.00	16#201F	16#01	Running frequency
U0.01		16#02	Set frequency
U0.02		16#03	Bus voltage
U0.03		16#04	Output voltage
U0.04		16#05	Output current
U0.05		16#06	Output torque
U0.06		16#07	Output power
U0.07		16#08	Main frequency setting mode
U0.08		16#09	Auxiliary frequency setting

Parameter	Object Index	Sub-Index	Name
			mode
U0.09		16#10	Main setting frequency
U0.10		16#11	Auxiliary setting frequency
U0.11		16#12	Inverter status
U0.12		16#13	AI1 input voltage
U0.13		16#14	AI2 input voltage
U0.14		16#15	AI3 input voltage
U0.15		16#16	AI4 input voltage
U0.16		16#17	AO1 output
U0.17		16#18	AO2 output
U0.18		16#19	DI high-frequency pulse frequency
U0.19		16#20	Digital input terminal status

Parameter	Object Index	Sub-Index	Name
Control Parameters - 0x6200	16#2062	16#01	Control Command Word
Control Parameters - 0x6201		16#02	Frequency main setting mode setting
Control Parameters - 0x6202		16#03	Frequency auxiliary setting mode setting
Control Parameters - 0x6203		16#04	Main frequency setting
Control Parameters - 0x6204		16#05	Auxiliary frequency setting
Control		16#06	Multi-step frequency setting

Parameter	Object Index	Sub-Index	Name
Parameters - 0x6205			
Control Parameters - 0x6206		16#07	PLC frequency setting
Control Parameters - 0x6207		16#08	PID digital setting percentage
Control Parameters - 0x6208		16#09	PID feedback percentage
Control Parameters - 0x6209		16#10	Motoring torque limit
Control Parameters		16#11	Braking torque limit

Parameter	Object Index	Sub-Index	Name
- 0x620A			
Control Parameters - 0x620B		16#12	Torque setting
Control Parameters - 0x620C		16#13	Torque control forward speed limit
Control Parameters - 0x620D		16#14	Torque control reverse speed limit
Control Parameters - 0x620E		16#15	Analog AO1 channel output function setting
Control Parameters - 0x620F		16#16	Analog AO2 channel output function setting

Parameter	Object Index	Sub-Index	Name
Control Parameters - 0x6210		16#17	Digital DO channel output function setting
Control Parameters - 0x6211		16#18	Slave frequency setting ratio setting
Control Parameters - 0x6212		16#19	Virtual terminal communication setting
Control Parameters - 0x6213		16#20	Acceleration time 1
Control Parameters - 0x6214		16#21	Deceleration time 1
Status		16#01	Running Status Word 1

Parameter	Object Index	Sub-Index	Name
Parameters - 0x6300			
Status Parameters - 0x6301		16#02	Current running frequency
Status Parameters - 0x6302	16#2063	16#03	Output current
Status Parameters - 0x6303	16#2063	16#04	Output voltage
Status Parameters - 0x6304		16#05	Output power
Status Parameters		16#06	Running speed (RPM)

Parameter	Object Index	Sub-Index	Name
- 0x6305			
Status Parameters - 0x6306		16#07	Bus voltage
Status Parameters - 0x6307		16#08	Output torque
Status Parameters - 0x6308		16#09	External counter
Status Parameters - 0x6309		16#10	Reserved
Status Parameters - 0x630A		16#11	Reserved

Parameter	Object Index	Sub-Index	Name
Status Parameters - 0x630B		16#12	Digital input terminal status
Status Parameters - 0x630C		16#13	Digital output terminal status
Status Parameters - 0x630D		16#14	Running frequency setting
Status Parameters - 0x630E		16#15	PID setting
Status Parameters - 0x630F		16#16	PID feedback
Status		16#17	Set acceleration time 1

Parameter	Object Index	Sub-Index	Name
Parameters - 0x6310			
Status Parameters - 0x6311		16#18	Set deceleration time 1
Status Parameters - 0x6312		16#19	AI1 input voltage
Status Parameters - 0x6313		16#20	AI2 input voltage
Status Parameters - 0x6314		16#21	AI3 input voltage
Status Parameters		16#22	AI4 input voltage

Parameter	Object Index	Sub-Index	Name
- 0x6315			
Status Parameters - 0x6316		16#23	X5
Status Parameters - 0x6317		16#24	1st Run Fault
Status Parameters - 0x6318		16#25	2nd Run Fault
Status Parameters - 0x6319		16#26	3rd Run Fault
Status Parameters - 0x631A		16#27	Running display parameters

Parameter	Object Index	Sub-Index	Name
Status Parameters - 0x631B		16#28	Stop display parameters
Status Parameters - 0x631C		16#29	Inverter control mode reference
Status Parameters - 0x631D		16#30	Frequency reference mode
Status Parameters - 0x631E		16#31	Frequency main reference mode
Status Parameters - 0x631F		16#32	Frequency main reference digital setting
Status		16#33	Frequency auxiliary reference

Parameter	Object Index	Sub-Index	Name
Parameters - 0x6320			mode
Status Parameters - 0x6321		16#34	Frequency auxiliary reference digital setting
Status Parameters - 0x6322		16#35	Inverter status word 2
Status Parameters - 0x6323		16#36	Inverter current fault