

Hitachi Inverter

SJ300/L300P, SJ700 Series

SJ-CO

(CANopen Interface Option)

INSTRUCTION MANUAL

SJ-CO

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1. Introduction

SJ-CO is a communication module controlling Hitachi L300P, SJ300 and SJ700 drives from CAN network. The module is mounted in the expansion bay. The module is powered through expansion connector which provides logical interface with the inverter and it is connectable to CAN-Bus through 5 pin connector. The CAN network can work up 1 Mbit/s. Two status leds describe the operating status.

The following operations are possible:

- Control and monitoring of the drive from CAN
- Start/Stop
- Direction
- Fault reset
- Speed control
- Acceleration/deceleration control
- Access to drive parameters

1.1. Specification

SJ-CO specifications

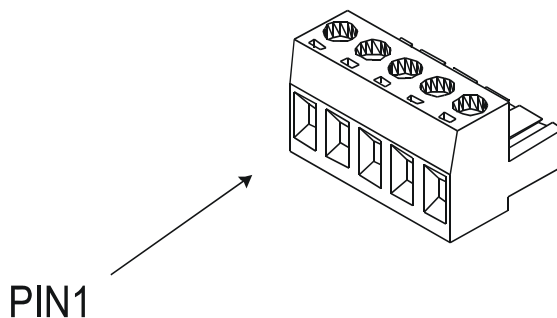
Power supply Voltage range Current range	Via Option port connector 4.75-5.25 VDC, 5 VDC nominal and 3.15-3.45 VDC, 3.3 VDC nominal to be defined
Indicators	1 green LED 1 red LED
Addressing	Via dip switches (7 digit) range [1, 127] Note: 0 – reserved
Baud rate	Via dip switches (3 digit) 1 Mbaud [0] down to 10Kbaud [7]
Serial port RS422 Connector	RJ45 (used for service)
Temperature Operating Storage	0 to 50 C° -10 to 70 C°
Humidity	20 to 85%, non condensing
Dimensions WxDxH	To be defined
Weight	To be defined

1.2. Mechanical drawings

To be defined.

1.3. Physical interface

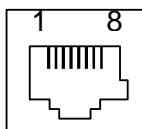
CAN bus interface



Standard CiA DR-303-1

Pin	Name	Description
1	CAN_GND	Ground
2	CAN_L	CAN_L bus line (dominant low)
3	(CAN_SHLD)	Optional CAN shield
4	CAN_H	CAN_H bus line (dominant high)
5	(CAN_V+)	Optional CAN external positive supply

RS422 (Service port)



Standard RJ45

Pin	Name	Description
1	+5V IN	Voltage supply for gateway
2	CHA+	Positive TX (RS422)
3	CHA-	Negative TX (RS422)
4	GND	Ground
5	CHB+	Positive RX (RS422)
6	CHB-	Negative RX (RS422)
7	GND	Ground
8	Not conn.	

1.4. Settings

Baud rate setting

Baud rate selection is made through dip-switch (see figure below).
Selection is made using three switch according to the following table.

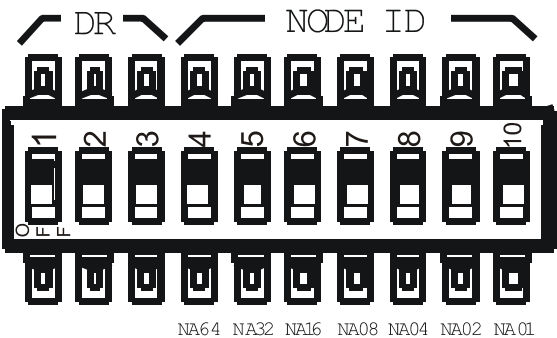
Baud rate	Switch n° 1	Switch n° 2	Switch n° 3
1 MB	OFF	OFF	OFF
800 KB	OFF	OFF	ON
500 KB	OFF	ON	OFF
250 KB	OFF	ON	ON
125 KB	ON	OFF	OFF
50 KB	ON	OFF	ON
25 KB	ON	ON	OFF
10 KB	ON	ON	ON

Node number

Node selection is made through dip-switch.
Selection is made using seven switch; address "0" is reserved for service.

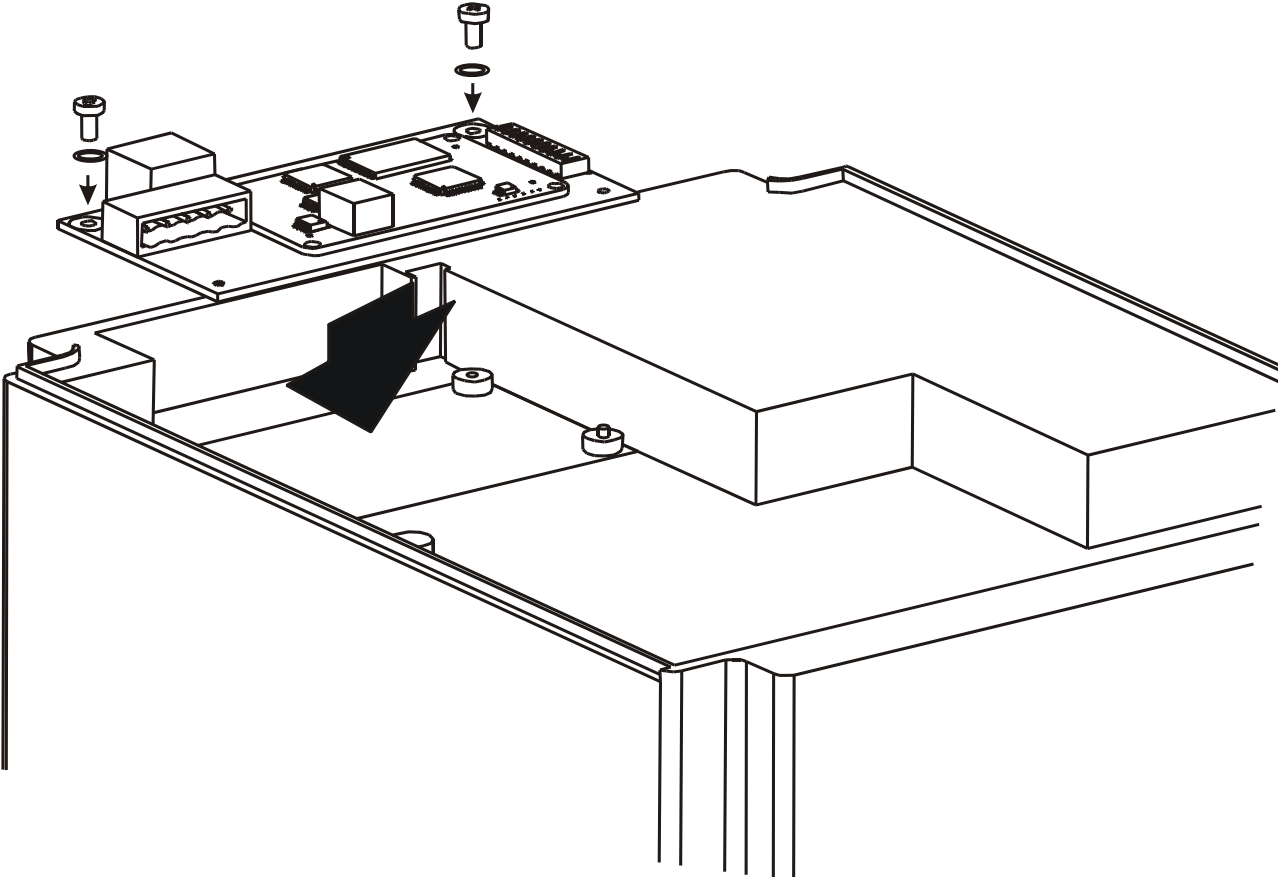
$$\text{Node ID} = \text{SW4} * 64 + \text{SW5} * 32 + \text{SW6} * 16 + \text{SW7} * 8 + \text{SW8} * 4 + \text{SW9} * 2 + \text{SW10} * 1$$

Note: SWX = Switch n° X.



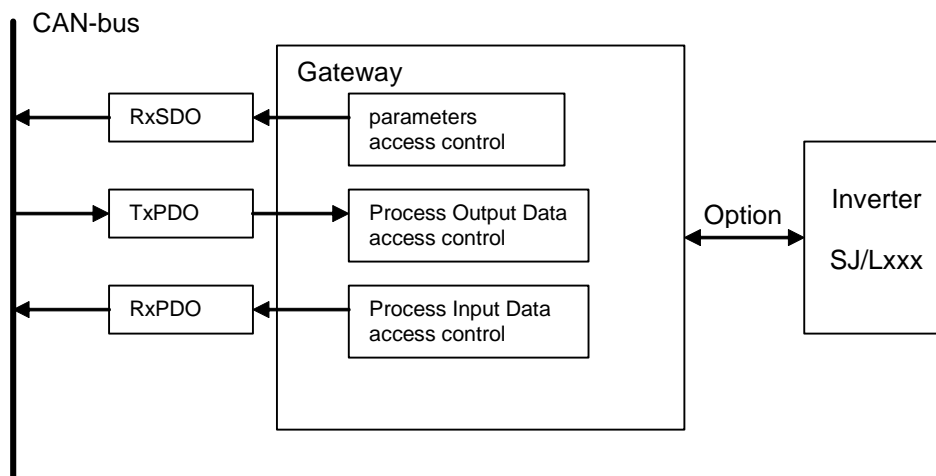
2. Installation

Install modules as described in the figure below.



3. Operation

After the installation and configuration, the module controls and monitors the drive following specifications proposed in CiA DSP-402 “CANopen Device Profile for Drives and Motion Control” (velocity mode profile), direct accessing, or following DSP-301 generic CANopen specification.



3.1. Principle of operation

The CANopen enables configuration and real time data exchange between peers on CAN network. The communication objects which participates in this data exchange are identified by COB-ID. The COB-ID consists of NodeID and the function code.

The final data destination are application objects which are all defined in the Device Object Dictionary. Every object in the Object Dictionary is identified by its unique 16-bit index, and objects that are of array/structure type use in addition a subindex for selecting the array/structure element. If there is an element of array/structure type the subindex 0 specifies the highest subindex used in that object.

Concerning profile data the Object Dictionary can be divided into three parts:

Index	Profile Area
1000-1FFF	Communication Profile Area
2000-5FFF	Manufacturer Specific Profile Area
6000-9FFF	Standard Profile Area

All objects can be accessed acyclically using the SDO protocol and some of them can also be accessed cyclically by using PDO transfer with configured PDO objects. PDO transfer is fast because it uses no protocol overhead (just 8 data bytes unconfirmed data transfer).

3.2. Service data object (SDO)

With Service Data Objects (SDOs) the access to entries of a device Object Dictionary is provided. The data transfer is performed by a kind of handshaking protocol – SDO protocol defined in the DS-301 standard. An object address (index and sub-index of the Object Dictionary) is used for selection which data set is to be transferred. The contents of the transferred data set are defined within the Object Dictionary. Only expedited transfer is supported.

The gateway provides one server SDO that is described by dictionary object 1200h with the following record:

Sub-Index	Type	Meaning
0h	UNSIGNED8	Number of supported entries in the record (default = 2)
1h	UNSIGNED32	COB-ID Client -> Server
2h	UNSIGNED32	COB-ID Server->Client

In the case of error in the SDO protocol execution the gateway will respond with standard abort code. Here is the table with possible abort code values:

Abort code	Meaning
0504 0001h	Client/server command specifier not valid or unknown.
0601 0001h	Attempt to write a read only object.
0601 0002h	Attempt to read a write only object.
0602 0000h	Object does not exist in the object dictionary.
0604 0000h	Object index is reserved.
0609 0011h	Sub-index does not exist.
0800 0020h	Data cannot be transferred or stored to the application – inverter not accessible.
0800 0021h	Data cannot be transferred or stored to the application because some other transfer process is in progress.

3.3. Cyclic communication (PDO process data exchange)

Real time data exchange is performed by means of "Process Data Objects (PDO)" and it is done with no protocol overhead. Concerning the trigger which starts the data transfer there are synchronous (triggered by SYNC message) and asynchronous (triggered by events) PDO transfers. There are received PDOs (RPDO) and transmit PDOs (TPDO). The gateway supports two TPDOs and two

RPDOs. Each PDO can exchange 8 data bytes, which can be composed of data of many device dictionary objects.

The PDOs correspond to entries in the device Object Dictionary and provide the interface to the application objects. Applying the SDO services to these objects configures these Object Dictionary entries.

Data type and mapping of application objects into a PDO is determined by a corresponding default PDO mapping structure within the Device Object Dictionary. For every PDO there are two definition objects, communication parameter object and mapping parameter object. These objects are by default located at the following indices in the Object Dictionary:

Index	Type	Object
1400h	20h	1st receive PDO communication parameter
1401h	20h	2nd receive PDO communication parameter
1600h	21h	1st receive PDO mapping parameter
1601h	21h	2nd receive PDO mapping parameter
1800h	20h	1st transmit PDO communication parameter
1801h	20h	2nd transmit PDO communication parameter
1A00h	21h	1st transmit PDO mapping parameter
1A01h	21h	2nd transmit PDO mapping parameter

Data type 20h is a record, which defines the PDO communication parameter, and it is of the following format:

Sub-Index	Type	Meaning
0h	UNSIGNED8	Number of supported entries in the record (default = 2)
1h	UNSIGNED32	COB-ID
2h	UNSIGNED8	transmission type

Data type 21h is a record, which defines the PDO mapping parameter and it is of the following format:

Sub-Index	Type	Meaning
0h	UNSIGNED8	Number of supported entries in the record (0-8)
1h – 8h	UNSIGNED32	Structure consisting of mapped object index (16 bit), subindex (8 bit) and object data length in bits (8 bit). For example 20010010h defines object 2001h, subindex 0h and data length of 16 bits (=word).

Data specified by mapping objects will be inserted into PDO from the byte 0 (first mapped object data followed by other).

4. Device Control

The gateway supports device control as specified by the DSP-402 drive control profile – velocity mode. The state machine execution and the format of control word and status word conform to the standard.

The state of the drive can be controlled by the control word and the state of the drive is shown in the status word. These two words are defined as a standard objects inside the Object Dictionary and can be accessed directly from the CAN-network by Process Data Objects (PDOs) and Service Data Objects (SDOs).

The state machine is controlled externally by the control word, external signals and internal signals like faults.

4.1. Profile standard dictionary objects

The gateway supports the following set of standard objects:

Index	Meaning	Format
6007h	abort_connection_option_code	Integer16
6040h	control word	Unsigned16
6041h	status word	Integer16
6042h	vl_target_velocity	Integer16
6043h	vl_velocity_demand	Integer16
6044h	vl_control_effort	Integer16
6046h	vl_velocity_min_max_amount	Struct
6048h	vl_velocity_acceleration	Struct
6049h	vl_velocity_deceleration	Struct
6060h	modes_of_operation	Integer8
6061h	modes_of_operation_display	Integer8

4.2. abort_connection_option_code (dictionary index 6007h)

This object controls the gateway action if the communication to the CAN bus is broken.

Value	Action
0	No action
1	Malfunction
2	Disable voltage
3	Quick stop
-1	Switch to local inverter commands (speed Control term., commands Input term.)
-2	Switch to local inverter commands (speed Keypad potent., commands Keypad)
-3	Switch to local inverter commands (speed F001 setting, commands Keypad)

4.3. Control word (dictionary index 6040h)

The bits used in the control word are:

Bit	Significance
0	Switch On
1	Enable Voltage
2	Quick Stop
3	Enable Operation
7	Reset Fault (raising edge)
14	Move Forwards
15	Move Backwards

4.4. Status word (dictionary index 0x6041)

Status word reports the inverter status. The used bits are the following:

Bit	Significance
0	Ready to switch on
1	Switched on
2	Operation enabled
3	Fault
4	Voltage disabled
5	Quick stop
6	Switch on disabled
9	Remote (*)
10	Target reached
11	Internal limit active
14	Moving forwards
15	Moving backwards

Note: (*) *The bit didn't take into account changes of control/setpoint source (A001/A002) made through operator panel (OPE).*

4.5. vl_target_velocity (dictionary index 6042h)

This parameter indicates the speed reference to the inverter in rpm (revolution per minutes).

Access rights: Read/Write.

Resolution: 1 [rpm].

Setting range: 0 – 24000 [rpm].

4.6. vl_velocity_demand (dictionary index 6043h)

This parameter specifies the speed supplied to the motor in rpm (revolution per minutes).

Access rights: Read.

Resolution: 1 [rpm].

4.7. vl_control_effort (dictionary index 6044h)

This parameter specifies the actual speed of the motor in rpm (revolution per minutes).
Access rights: Read.
Resolution: 1 [rpm].

4.8. vl_velocity_min_max_amount (dictionary index 6046h)

The object is array of two 32-bit words.

Sub 1

This parameter indicates minimum speed to the inverter in rpm (revolution per minutes).
Access rights: Read/Write.
Resolution: 1 [rpm].
Setting range: 1 – 24000 [rpm].

Sub 2

This parameter indicates maximum speed to the inverter in rpm (revolution per minutes).
Access rights: Read/Write.
Resolution: 1 [rpm].
Setting range: 1 – 24000 [rpm].

4.9. vl_velocity_acceleration (dictionary index 6048h)

This parameter specifies slope of the acceleration ramp. It is generated by the quotient of the delta speed and delta time sub parameters.

Sub 1

Delta speed:
Access rights: Read/Write.
Resolution: 1 [rpm].
Setting range: 1 – 24000 [rpm].

Sub 2

Delta time:
Access rights: Read/Write.
Resolution: 0.01 [s].
Setting range: 0.01 – 3600.00 [s].

4.10. vl_velocity_deceleration (dictionary index 6049h)

This parameter specifies slope of the deceleration ramp. It is generated by the quotient of the delta speed and delta time sub parameters.

Sub 1

Delta speed:
Access rights: Read/Write.
Resolution: 1 [rpm].
Setting range: 1 – 24000 [rpm].

Sub 2

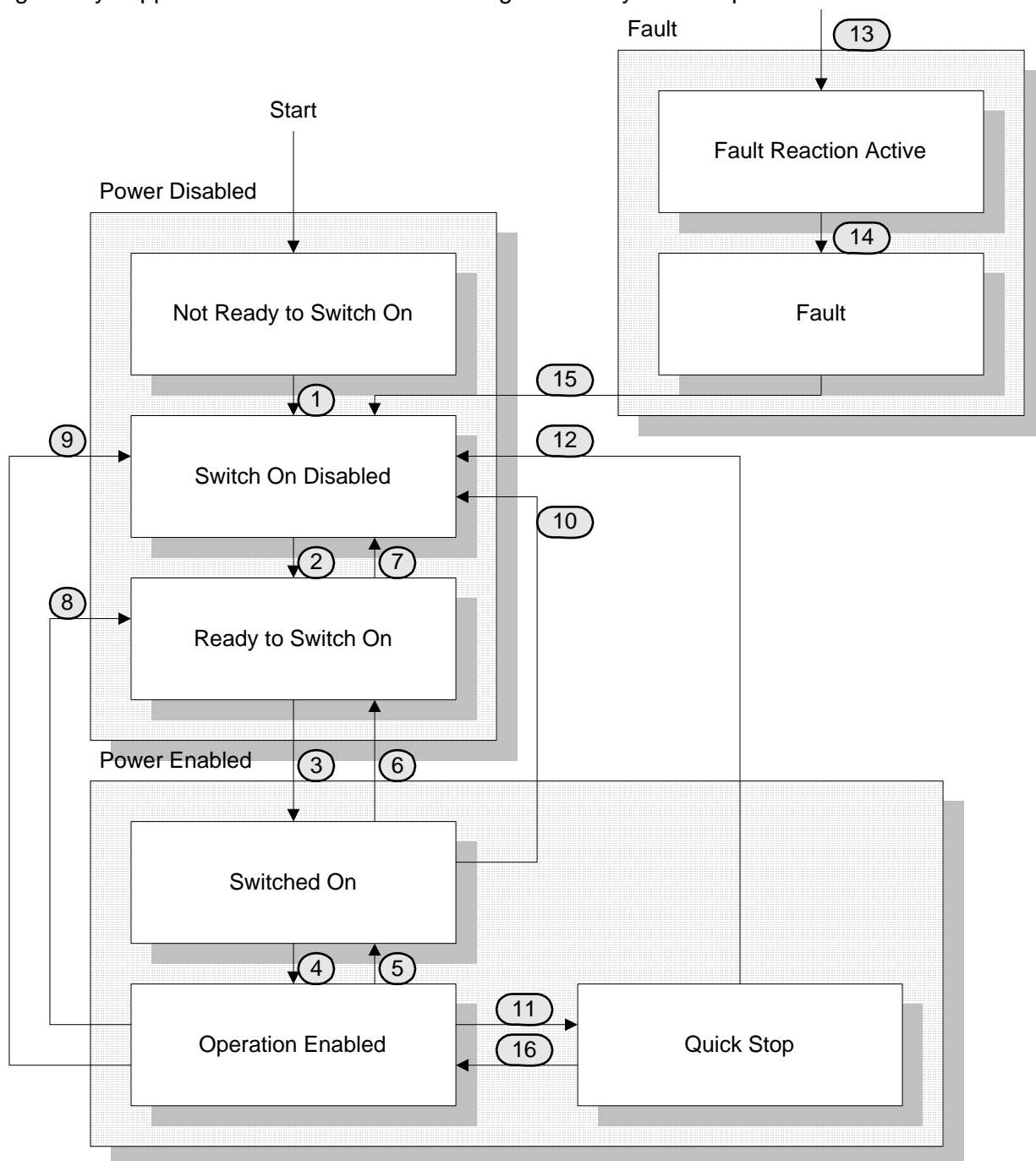
Delta time:
Access rights: Read/Write.
Resolution: 0.01 [s].
Setting range: 0.01 – 3600.00 [s].

4.11. modes_of_operation (dictionary index 6060h and 6061h)

Since the gateway supports only the velocity operation mode the value of this object is fixed to 2.

4.12. State machine

The gateway supports the state machine handling defined by DS-402 profile standard.



The following states are possible:

State	Meaning
Not Ready to Switch On	Power has been applied to the gateway. The drive function is disabled.
Switch On Disabled	Drive initialization is complete. The drive parameters have been set up. The drive function is disabled.
Ready to Switch On	The drive function is disabled.
Switched On	The drive function is disabled. If supported, power switched on.
Operation Enabled	No faults have been detected. The drive function is enabled and power is applied to the motor. (This corresponds to normal operation of the drive.)
Quick Stop Active	The Quick Stop function is being executed. The drive function is enabled and power is applied to the motor.
Fault Reaction Active	A non-fatal fault has occurred in the drive. The Quick Stop function is being executed. The drive function is enabled and power is applied to the motor.
Fault	A fault has occurred in the drive. The drive function is disabled. Fault reset should be done to re-enable the drive function

Description of state transitions:

Transition	Event	Action
1: Not ready to switch on -> Switch On Disabled	Reset	Drive initialization
2: Switch On Disabled -> Ready to Switch On	'Shutdown' command from host	None
3: Ready to Switch On -> Switched On	'Switch On' command from host	Power section switched on (or none if not supported)
4: Switched On -> Operation Enabled	'Enable Operation' command from host	The drive function is enabled
5: Operation Enabled -> Switched On	'Disable Operation' command from host	The drive operation will be disabled
6: Switched On -> Ready to Switch On	'Shutdown' command from host	The power section is switched off (or none if not supported)
7: Ready to Switch On -> Switch On Disabled	'Quick stop' command from host	None
8: Operation Enabled -> Ready to Switch On	'Shutdown' command from host	Motor coasts down (FRS)
9: Operation Enabled -> Switch On Disabled	'Disable Operation' command from host	Quick stop executed
10: Switched On -> Switch On Disabled	'Disable Voltage' or 'Quick Stop' command	Quick stop executed

	from host	
11: Operation Enabled -> Quick Stop Active	'Quick Stop' command from host	Quick stop executed
12: Quick Stop Active -> Switch On Disabled	'Quick Stop' is completed	The power section is switched off (or none if not supported)
13: All states -> Fault Reaction Active	A trip has occurred in the drive	Execute appropriate fault reaction (quick stop)
14: Fault Reaction Active -> Fault	The fault reaction is completed	The drive function is disabled
15: Fault -> Switch On Disabled	'Fault Reset' command from host	A reset of the fault condition is carried out if no fault exists
16: Quick Stop Active -> Operation Enable	'Enable Operation' command from host	The drive function is enabled

By manipulating bits in the control word the master can change the state of the slave.

Command/bit of the control word	Bit7 Fault Reset	Bit3 Enable Operation	Bit2 Quick Stop	Bit1 Disable Voltage	Bit0 Switch On	Transition
Shutdown	0	x	1	1	0	2,6,8
Switch On	0	x	1	1	1	3
Disable Voltage	0	x	x	0	x	7,9,10,12
Quick Stop	0	x	0	1	x	7,10,11
Disable Operation	0	0	1	1	1	5
Enable Operation	0	1	1	1	1	4,16
Fault Reset	0 -> 1	x	x	x	x	15

The gateway will accept the setpoint only in the Operation Enabled state. The control word that forces the gateway into Operation Enabled state has bits 0-3 set. When gateway is in the Operation Enabled state the direction control bits in control word (bits 14 and 15) are active.

In the case of inverter trip the state machine will go into the Fault State (indicated by status word bit 3 – Fault). In order to quit the Fault State the master has to generate a raising edge (0->1) on the control word bit 7 (Fault Reset).

The slave state is indicated in the status word.

State	Bit6 Switch On Disable	Bit5 Quick Stop	Bit3 Fault	Bit2 Operation Enabled	Bit1 Switched On	Bit0 Ready to Switch On
Not Ready to Switch On	0	X	0	0	0	0
Switch On Disabled	1	X	0	0	0	0
Ready To Switch On	0	1	0	0	0	1
Switched On	0	1	0	0	1	1
Operation Enabled	0	1	0	1	1	1
Fault	0	X	1	1	1	1
Fault Reaction Active	0	X	1	1	1	1
Quick Stop	0	0	0	1	1	1

4.13. List of Parameters

Parameter can be divided into three categories:

Index	Profile Area
1000-1FFF	Communication Profile Area
2000-5FFF	Manufacturer Specific Profile Area
6000-9FFF	Profile Standardized Area

4.14. Profile Standard Parameters

Index	Subindex	Meaning	Format
6007h		abort_connection_option_code	Integer16
6040h		Control word	Unsigned16
6041h		status word	Integer16
6042h		vl_target_velocity	Integer16
6043h		vl_velocity_demand	Integer16
6044h		vl_control_effort	Integer16
6046h		vl_velocity_min_max_amount	Struct
	0	Number of entries (= 2)	Integer8
	1	Min velocity value	Unsigned32
	2	Max velocity value	Unsigned32
6048h		vl_velocity_acceleration	Struct
	0	Number of entries (= 2)	Integer8
	1	Delta velocity	Unsigned32
	2	Delta time (sec)	Unsigned16
6049h		vl_velocity_deceleration	Struct
	0	Number of entries (= 2)	Integer8
	1	Delta velocity	Unsigned32
	2	Delta time (sec)	Unsigned16
6060h		Modes_of_operation	Integer8
6061h		Modes_of_operation_display	Integer8

4.15. Profile Standard Communication Objects

Parentheses (=x) indicate the initial value. For example the first PDO receive object (0x1600) is by default configured to receive control word (0x6040) and velocity standard setpoint (0x6042).

Index	Sub-index	Meaning	Type
0x1000	0	Device type (=0x00010192)	Unsigned32
0x1001	0	Error register	Unsigned8

0x1005	0	COB-ID of sync PDO (0x80000080)	Unsigned32
0x1006	0	Communication cycle period	Unsigned32
0x1007	0	Synchronous window length	Unsigned32
0x1008	0	Manufacturer device name (=“SJCO”)	String
0x1009	0	Manufacturer hardware version (=“MBC9”)	String
0x100a	0	Software version (1.03)	String
0x100c	0	Guard time	Unsigned16
0x100d	0	Life time factor	Unsigned8
0x1014	0	COB-ID of emergency PDO (0x80000080)	Unsigned32
0x1018		Vendor ID	Struct
	0	Number of entries (=1)	Unsigned8
	1	Vendor ID (=0x15F)	Unsigned32
0x1200		Server SDO	Struct
	0	Number of entries (=2)	Unsigned8
	1	COB-ID Client -> Server (=NodeID+0x00000600)	Unsigned32
	2	COB-ID Server -> Client (=NodeID+0x00000580)	Unsigned32
0x1400		Receive PDO 1	
	0	Number of entries (=2)	Unsigned8
	1	COB-ID (=NodeID+0x00000200)	Unsigned32
	2	Transmission type (=254)	Unsigned8
0x1401		Receive PDO 2	
	0	Number of entries (=2)	Unsigned8
	1	COB-ID (=NodeID+0x00000300)	Unsigned32
	2	Transmission type (=254)	Unsigned8
0x1600		Receive PDO 1 Mapping	Struct
	0	Number of entries (=2)	Unsigned8
	1	Mapping 1 (=0x60400010)	Unsigned32
	2	Mapping 2 (=0x60420010)	Unsigned32
	3	Mapping 3	Unsigned32
	4	Mapping 4	Unsigned32
	5	Mapping 5	Unsigned32
	6	Mapping 6	Unsigned32
	7	Mapping 7	Unsigned32
	8	Mapping 8	Unsigned32
0x1601		Receive PDO 2 Mapping	Struct
	0	Number of entries (=0)	Unsigned8
	1	Mapping 1	Unsigned32
	2	Mapping 2	Unsigned32
	3	Mapping 3	Unsigned32
	4	Mapping 4	Unsigned32
	5	Mapping 5	Unsigned32
	6	Mapping 6	Unsigned32
	7	Mapping 7	Unsigned32
	8	Mapping 8	Unsigned32
0x1800		Transmit PDO 1 communication parameters	Struct
	0	Number of entries (=2)	Unsigned8
	1	COB-ID (=NodeID+0x00000180)	Unsigned32
	2	Transmission type (=254)	Unsigned8
0x1801		Transmit PDO communication parameters	Struct

	0	Number of entries (=2)	Unsigned8
	1	COB-ID (NodeID+0x00000280)	Unsigned32
	2	Transmission type (=254)	Unsigned8
0x1a00		Transmit PDO 1 Mapping	Struct
	0	Number of entries (=2)	Unsigned8
	1	Mapping 1 (=0x60410010)	Unsigned32
	2	Mapping 2 (=0x60440010)	Unsigned32
	3	Mapping 3	Unsigned32
	4	Mapping 4	Unsigned32
	5	Mapping 5	Unsigned32
	6	Mapping 6	Unsigned32
	7	Mapping 7	Unsigned32
	8	Mapping 8	Unsigned32
0x1a01		Transmit PDO 2 Mapping	Struct
	0	Number of entries (=0)	Unsigned8
	1	Mapping 1	Unsigned32
	2	Mapping 2	Unsigned32
	3	Mapping 3	Unsigned32
	4	Mapping 4	Unsigned32
	5	Mapping 5	Unsigned32
	6	Mapping 6	Unsigned32
	7	Mapping 7	Unsigned32
	8	Mapping 8	Unsigned32

4.16. Profile Manufacturer Objects

The profile manufacturer objects are represented according to their original values, without any normalization. For example, parameter 1 (output frequency at present) is represented as number 0-36000 what should be interpreted as 0.00 – 360.00 Hz. All manufacturer objects are simple variables (sub-index = 0). When writing to the inverter every parameter value is checked on min/max limits. If it is outside the range the min/max value is set instead.

Please check the inverter documentation for the min/max limits and normalization factors.

Index	Description	Code	Len	Address
	<i>Eeprom area</i>			
0x2001	1st setting Multispeed frequency 0	A020	4	0x0000
0x2002	2nd setting Multispeed frequency 0	A220	4	0x0004
0x2003	3rd setting Multispeed frequency 0	A320	4	0x0008
0x2004	Multispeed frequency 1	A021	4	0x000C
0x2005	Multispeed frequency 2	A022	4	0x0010
0x2006	Multispeed frequency 3	A023	4	0x0014
0x2007	Multispeed frequency 4	A024	4	0x0018
0x2008	Multispeed frequency 5	A025	4	0x001C
0x2009	Multispeed frequency 6	A026	4	0x0020
0x200A	Multispeed frequency 7	A027	4	0x0024
0x200B	Multispeed frequency 8	A028	4	0x0028

0x200C	Multispeed frequency 9	A029	4	0x002C
0x200D	Multispeed frequency 10	A030	4	0x0030
0x200E	Multispeed frequency 11	A031	4	0x0034
0x200F	Multispeed frequency 12	A032	4	0x0038
0x2010	Multispeed frequency 13	A033	4	0x003C
0x2011	Multispeed frequency 14	A034	4	0x0040
0x2012	Multispeed frequency 15	A035	4	0x0044
0x2013	1st Upper limiter frequency	A061	4	0x0048
0x2014	2nd Upper limiter frequency	A261	4	0x004C
0x2015	1st Lower limiter frequency	A062	4	0x0050
0x2016	2nd Lower limiter frequency	A262	4	0x0054
0x2017	1st Acceleration time 1	F002	4	0x0058
0x2018	2nd Acceleration time 1	F202	4	0x005C
0x2019	3rd Acceleration time 1	F302	4	0x0060
0x201A	1st Deceleration time 1	F003	4	0x0064
0x201B	2nd Deceleration time 1	F203	4	0x0068
0x201C	3rd Deceleration time 1	F303	4	0x006C
0x201D	Inverter code		1	0x0072
0x201E	1st Acceleration time 2	A092	4	0x0074
0x201F	2nd Acceleration time 2	A292	4	0x0078
0x2020	3rd Acceleration time 2	A392	4	0x007C
0x2021	1st Deceleration time 2	A093	4	0x0080
0x2022	2nd Deceleration time 2	A293	4	0x0084
0x2023	3rd Deceleration time 2	A393	4	0x0088
0x2024	Start frequency of O terminal	A011	4	0x008C
0x2025	End frequency of O terminal	A012	4	0x0090
0x2026	Start frequency of OI terminal	A101	4	0x009C
0x2027	End frequency of OI terminal	A102	4	0x00A0
0x2028	Jumping frequency 1	A063	4	0x00AC
0x2029	Jumping frequency 2	A065	4	0x00B0
0x202A	Jumping frequency 3	A067	4	0x00B4
0x202B	Frequency of stopping acceleration	A069	4	0x00B8
0x202C	1st Frequency of 2-stage acceleration	A095	4	0x00BC
0x202D	2nd Frequency of 2-stage acceleration	A295	4	0x00C0
0x202E	1st Frequency of 2-stage deceleration	A096	4	0x00C4
0x202F	Frequency of 2-stage deceleration	A296	4	0x00C8
0x2030	Frequency of frequency matching	b007	4	0x00CC
0x2031	Deceleration time of Non-stop operation at Instantaneous power failure	b053	4	0x00D0
0x2032	Arrival frequency at acceleration1	C042	4	0x00D4
0x2033	Arrival frequency at deceleration1	C043	4	0x00D8
0x2034	Arrival frequency at acceleration2	C045	4	0x00DC
0x2035	Arrival frequency at deceleration2	C046	4	0x00E0
0x2036	1st Base frequency	A003	2	0x00F0
0x2037	2nd Base frequency	A203	2	0x00F2
0x2038	3rd Base frequency	A303	2	0x00F4
0x2039	Jogging frequency	A038	2	0x00F6
0x203A	1st Maximum frequency	A004	2	0x00F8

0x203B	2nd Maximum frequency	A204	2	0x00FA
0x203C	3rd Maximum frequency	A304	2	0x00FC
0x203D	1st Primary resistor R1 of motor	H020	4	0x0100
0x203E	Primary resistor R1 of motor	H220	4	0x0104
0x203F	1st Secondary resistor R2 of motor	H021	4	0x0108
0x2040	2nd Secondary resistor R2 of motor	H221	4	0x010C
0x2041	1st Inductance L of motor	H022	4	0x0110
0x2042	2nd Inductance L of motor	H222	4	0x0114
0x2043	1st No load current I _o of motor	H023	4	0x0118
0x2044	2nd No load current I _o of motor	H223	4	0x011C
0x2045	1st Inertia J of motor	H024	4	0x0120
0x2046	2nd Inertia J of motor	H224	4	0x0124
0x2047	1st Primary resistor R1 of motor (Auto)	H030	4	0x0128
0x2048	2nd Primary resistor R1 of motor (Auto)	H230	4	0x012C
0x2049	1st Secondary resistor R2 of motor (Auto)	H031	4	0x0130
0x204A	2nd Secondary resistor R2 of motor (Auto)	H231	4	0x0134
0x204B	1st Inductance L of motor (Auto)	H032	4	0x0138
0x204C	2nd Inductance L of motor (Auto)	H232	4	0x013C
0x204D	1st No load current I _o of motor (Auto)	H033	4	0x0140
0x204E	2nd No load current I _o of motor (Auto)	H233	4	0x0144
0x204F	1st Inertia J of motor (Auto)	H034	4	0x0148
0x2050	2nd Inertia J of motor (Auto)	H234	4	0x014C
0x2051	1st Break point of manual torque boost	A043	2	0x0150
0x2052	2nd Break point of manual torque boost	A243	2	0x0152
0x2053	3rd Break point of manual torque boost	A343	2	0x0154
0x2054	Frequency of DC braking start	A052	2	0x0156
0x2055	Time of DC braking working	A055	2	0x0158
0x2056	Time of DC braking working for beginning of inverter running	A058	2	0x015A
0x2057	Width of jumping frequency 1	A064	2	0x015C
0x2058	Width of jumping frequency 2	A066	2	0x015E
0x2059	Width of jumping frequency 3	A068	2	0x0160
0x205A	Time of stopping to accelerate	A070	2	0x0162
0x205B	Integrate (I) gain of PID control	A073	2	0x0164
0x205C	Differential (D) gain of PID control	A074	2	0x0166
0x205D	Scale of PID control	A075	2	0x0168
0x205E	Response time of Energy saving function	A086	2	0x016A
0x205F	Waiting time of retry	b003	2	0x016E
0x2060	Level of 1st Electronic thermal protection	b012	2	0x0170
0x2061	Level of 2nd Electronic thermal protection	b212	2	0x0172
0x2062	Level of 3rd Electronic thermal protection	b312	2	0x0174
0x2063	Free electronic thermal frequency 1	b015	2	0x0176
0x2064	Free electronic thermal current 1	b016	2	0x0178
0x2065	Free electronic thermal frequency 2	b017	2	0x017A
0x2066	Free electronic thermal current 2	b018	2	0x017C
0x2067	Free electronic thermal frequency 3	b019	2	0x017E
0x2068	Free electronic thermal current 3	b020	2	0x0180
0x2069	Free V/F control frequency 1	b100	2	0x0182

0x206A	Free V/F control voltage 1	b101	2	0x0184
0x206B	Free V/F control frequency 2	b102	2	0x0186
0x206C	Free V/F control voltage 2	b103	2	0x0188
0x206D	Free V/F control frequency 3	b104	2	0x018A
0x206E	Free V/F control voltage 3	b105	2	0x018C
0x206F	Free V/F control frequency 4	b106	2	0x018E
0x2070	Free V/F control voltage 4	b107	2	0x0190
0x2071	Free V/F control frequency 5	b108	2	0x0192
0x2072	Free V/F control voltage 5	b109	2	0x0194
0x2073	Free V/F control frequency 6	b110	2	0x0196
0x2074	Free V/F control voltage 6	b111	2	0x0198
0x2075	Free V/F control frequency 7	b112	2	0x019A
0x2076	Free V/F control voltage 7	b113	2	0x019C
0x2077	Level of Overload restriction 1	b022	2	0x019E
0x2078	Constant value of Overload restriction 1	b023	2	0x01A0
0x2079	Level of Overload restriction 2	b025	2	0x01A2
0x207A	Constant value of Overload restriction 2	b026	2	0x01A4
0x207B	Display time of warning	b034	2	0x01A6
0x207C	Starting voltage of Nonstop operation for Instantaneous power failure	b051	2	0x01A8
0x207D	Starting voltage of OV-LAD stop at Nonstop operation for Instantaneous power failure	b052	2	0x01AA
0x207E	Frequency width of starting deceleration at Nonstop operation for Instantaneous power failure	b054	2	0x01AC
0x207F	Minimum frequency	b082	2	0x01AE
0x2080	Coefficient of converting frequency	b086	2	0x01B0
0x2081	Usage rate of BRD	b090	2	0x01B2
0x2082	On level of BRD	b096	2	0x01B4
0x2083	Level of Thermister error	b099	2	0x01B6
0x2084	Waiting time for establishing external braking condition	b121	2	0x01B8
0x2085	Waiting time for acceleration at external braking	b122	2	0x01BA
0x2086	Waiting time for stop at external braking	b123	2	0x01BC
0x2087	Waiting time for confirmation signal at external braking	b124	2	0x01BE
0x2088	Release frequency of external braking	b125	2	0x01C0
0x2089	Release current of external braking	b126	2	0x01C2
0x208A	1st Speed response gain	H005	2	0x01D2
0x208B	2nd Speed response gain	H205	2	0x01D4
0x208C	1st Stability gain	H006	2	0x01D6
0x208D	2nd Stability gain	H206	2	0x01D8
0x208E	3rd Stability gain	H306	2	0x01DA
0x208F	1st Proportional gain of speed control(PI control)	H050	2	0x01DC
0x2090	2nd Proportional gain of speed control(PI control)	H250	2	0x01DE
0x2091	1st Integral gain of speed control(PI control)	H051	2	0x01E0
0x2092	2nd Integral gain of speed control(PI control)	H251	2	0x01E2
0x2093	1st Proportional gain of speed control(P control)	H052	2	0x01E4
0x2094	2nd Proportional gain of speed control(P control)	H252	2	0x01E6
0x2095	1st Limiter of 0Hz control	H060	2	0x01E8
0x2096	2nd Limiter of 0Hz control	H260	2	0x01EA
0x2097	PI Proportion gain Change	H070	2	0x01EC

0x2098	PI Integral gain Change	H071	2	0x01EE
0x2099	P Proportion gain Change	H072	2	0x01F0
0x209A	Timer setting of communication timeout Whilst running (SJ-DN)	P044	2	0x01F2
0x209B	Motor poles setting for revolutions per minute (SJ-DN)	P049	1	0x01F4
0x209C	Inverter action when Idle mode detected (SJ-DN)	P048	1	0x01F5
0x209D	Inverter action When communication error (SJ-DN)	P045	1	0x01F6
0x209E	Polled I/O INPUT Instance number (SJ-DN)	P047	1	0x01F7
0x209F	Polled I/O OUTPUT Instance number (SJ-DN)	P046	1	0x01F8
0x20A0	Selection of AMI function	C029	1	0x01F9
0x20A1	Adjustment of AMI output	C087	1	0x01FA
0x20A2	Adjustment of Offset of AMI output	C088	1	0x01FB
0x20A3	Selection of Debug mode method	C091	1	0x01FD
0x20A4	Level1 of overload restriction warning	C041	2	0x0202
0x20A5	Level2 of overload restriction warning	C111	2	0x0204
0x20A6	Level over acceptable deviation of PID control	C044	2	0x0206
0x20A7	Level f detecting Zero speed	C063	2	0x0208
0x20A8	Warning Level of electronic thermal protection	C061	2	0x020C
0x20A9	Waiting time of communication start	C078	2	0x020E
0x20AA	Pulse number of the encoder	P011	2	0x0222
0x20AB	Stop position at Orientation mode	P014	2	0x0224
0x20AC	Speed at Orientation mode	P015	2	0x0226
0x20AD	Defining Area of completion of Orientation mode	P017	2	0x0228
0x20AE	Delay time of completion Orientation mode	P018	2	0x022A
0x20AF	The numerator of electric gear	P020	2	0x022C
0x20B0	The denominator of electric gear	P021	2	0x022E
0x20B1	Feed forward gain of position control	P022	2	0x0230
0x20B2	Loop gain of position control	P023	2	0x0232
0x20B3	Level of detecting over speed	P026	2	0x0234
0x20B4	Value of detecting over deviation	P027	2	0x0236
0x20B5	Selection of running direction for DIG-OPE	F004	1	0x023E
0x20B6	Selection of frequency command destination	A001	1	0x023F
0x20B7	Selection of running command destination	A002	1	0x0240
0x20B8	Selection of AT function	A005	1	0x0241
0x20B9	Selection of O2 terminal function	A006	1	0x0242
0x20BA	Starting rate of O terminal	A013	1	0x0243
0x20BB	End rate of O terminal	A014	1	0x0244
0x20BC	Selection of starting function of O terminal	A015	1	0x0245
0x20BD	Sampling number of fetching data from "O"	A016	1	0x0246
0x20BE	Starting rate of OI terminal	A103	1	0x0249
0x20BF	End rate of OI terminal	A104	1	0x024A
0x20C0	Selection of starting function of OI terminal	A105	1	0x024B
0x20C1	Selection of Multispeed method	A019	1	0x024F
0x20C2	Selection of Jogging method	A039	1	0x0250
0x20C3	Selection of 1st Torque boost Method	A041	1	0x0251
0x20C4	Selection of 2nd Torque boost Method	A241	1	0x0252
0x20C5	Value of 1st Manual torque boost	A042	1	0x0253
0x20C6	Value of 2nd Manual torque boost	A242	1	0x0254

0x20C7	Value of 3rd Manual torque boost	A342	1	0x0255
0x20C8	Selection of 1st Control method	A044	1	0x0256
0x20C9	Selection of 2nd Control method	A244	1	0x0257
0x20CA	Selection of 3rd Control method	A344	1	0x0258
0x20CB	Gain of output voltage	A045	1	0x0259
0x20CC	Selection of DC braking method	A051	1	0x025A
0x20CD	Delay time of DC braking start	A053	1	0x025B
0x20CE	Power of DC braking(end of running)	A054	1	0x025C
0x20CF	Selection of edge/level action of DC braking trigger	A056	1	0x025D
0x20D0	Power of DC braking(start of running)	A057	1	0x025E
0x20D1	Carrier frequency of DC braking	A059	1	0x025F
0x20D2	Selection of PID control presence	A071	1	0x0260
0x20D3	Proportional(P) gain of PID control	A072	1	0x0261
0x20D4	Selection of feedback destination for PID control	A076	1	0x0262
0x20D5	Selection of AVR function	A081	1	0x0263
0x20D6	Selection of Motor voltage	A082	1	0x0264
0x20D7	Selection of operation mode	A085	1	0x0265
0x20D8	Selection of 1st 2-stage accel/decel Method	A094	1	0x0266
0x20D9	Selection of 2nd 2-stage accel/decel Method	A294	1	0x0267
0x20DA	Selection of acceleration pattern	A097	1	0x0268
0x20DB	Selection of deceleration pattern	A098	1	0x0269
0x20DC	Curve constant of acceleration	A131	1	0x026A
0x20DD	Curve constant of deceleration	A132	1	0x026B
0x20DE	Selection of retry method	b001	1	0x0270
0x20DF	Acceptable time for Instantaneous power failure	b002	1	0x0271
0x20E0	Selection of method(action) at instantaneous power and under voltage	b004	1	0x0272
0x20E1	Retry number of instantaneous power and under voltage	b005	1	0x0273
0x20E2	Selection of fail phase function	b006	1	0x0274
0x20E3	Selection of characteristic of 1st electronic thermal protection	b013	1	0x0275
0x20E4	Selection of characteristic of 2nd electronic thermal protection	b213	1	0x0276
0x20E5	Selection of characteristic of 3rd electronic thermal protection	b313	1	0x0277
0x20E6	Selection of method of overload restriction1	b021	1	0x0279
0x20E7	Selection of method of overload restriction2	b024	1	0x027A
0x20E8	Selection of method of Software lock	b031	1	0x027B
0x20E9	Selection of Display	b037	1	0x027C
0x20EA	Selection of method of Torque limiter	b040	1	0x0280
0x20EB	Level of torque limiter in forward and drive (1st quadrant)	B041	1	0x0281
0x20EC	Level of torque limiter in reverse and regenerative (2nd quadrant)	b042	1	0x0282
0x20ED	Level of torque limiter in reverse and drive (3rd quadrant)	b043	1	0x0283
0x20EE	Level of torque limiter in forward and regenerative (4th quadrant)	b044	1	0x0284
0x20EF	Selection of LAD stop by torque	b045	1	0x0285
0x20F0	Selection of running direction limitation	b035	1	0x0286
0x20F1	Selection of preventive of reverse running	b046	1	0x0287

0x20F2	Selection of method of reducing voltage start	b036	1	0x0288
0x20F3	Selection of Non stop operation at instantaneous power failure	b050	1	0x028A
0x20F4	Adjustment of AM(analog monitor)	b080	1	0x028B
0x20F5	Adjustment of FM(digital monitor)	b081	1	0x028C
0x20F6	Carrier frequency(PWM frequency)	b083	1	0x028D
0x20F7	Selection of Initialization	b084	1	0x028E
0x20F8	Selection of initialized data	b085	1	0x028F
0x20F9	Selection of STOP key function	b087	1	0x0290
0x20FA	Selection free run function	b088	1	0x0291
0x20FB	Selection of action at stop	b091	1	0x0292
0x20FC	Selection of action of cooling fan	b092	1	0x0294
0x20FD	Selection of BRD function	b095	1	0x0295
0x20FE	Selection of Thermister function	b098	1	0x0296
0x20FF	Selection of external braking function	b120	1	0x0297
0x2100	Selection of function in Intelligent input 1	C001	1	0x0299
0x2101	Selection of function in Intelligent input 2	C002	1	0x029A
0x2102	Selection of function in Intelligent input 3	C003	1	0x029B
0x2103	Selection of function in Intelligent input 4	C004	1	0x029C
0x2104	Selection of function in Intelligent input 5	C005	1	0x029D
0x2105	Selection of function in Intelligent input 6	C006	1	0x029E
0x2106	Selection of function in Intelligent input 7	C007	1	0x029F
0x2107	Selection of function in Intelligent input 8	C008	1	0x02A0
0x2108	Selection of a(NO) or b(NC) contact in Intelligent input 1	C011	1	0x02A1
0x2109	Selection of a(NO) or b(NC) contact in Intelligent input 2	C012	1	0x02A2
0x210A	Selection of a(NO) or b(NC) contact in Intelligent input 3	C013	1	0x02A3
0x210B	Selection of a(NO) or b(NC) contact in Intelligent input 4	C014	1	0x02A4
0x210C	Selection of a(NO) or b(NC) contact in Intelligent input 5	C015	1	0x02A5
0x210D	Selection of a(NO) or b(NC) contact in Intelligent input 6	C016	1	0x02A6
0x210E	Selection of a(NO) or b(NC) contact in Intelligent input 7	C017	1	0x02A7
0x210F	Selection of a(NO) or b(NC) contact in Intelligent input 8	C018	1	0x02A8
0x2110	Selection of a(NO) or b(NC) contact in FW input	C019	1	0x02A9
0x2111	Selection of UP/DOWN function	C101	1	0x02AA
0x2112	Selection of RESET function	C102	1	0x02AB
0x2113	Selection of frequency matching function at RESET	C103	1	0x02AC
0x2114	Selection of function in Intelligent output 11	C021	1	0x02AD
0x2115	Selection of function in Intelligent output 12	C022	1	0x02AE
0x2116	Selection of function in Intelligent output 13	C023	1	0x02AF
0x2117	Selection of function in Intelligent output 14	C024	1	0x02B0
0x2118	Selection of function in Intelligent output 15	C025	1	0x02B1
0x2119	Selection of function in Alarm relay output	C026	1	0x02B2
0x211A	Selection of FM function	C027	1	0x02B3
0x211B	Selection of AM function	C028	1	0x02B4
0x211C	Adjustment of offset of AM	C086	1	0x02B5
0x211D	Selection of a(NO) or b(NC) contact in Intelligent output 11	C031	1	0x02B6
0x211E	Selection of a(NO) or b(NC) contact in Intelligent output 12	C032	1	0x02B7
0x211F	Selection of a(NO) or b(NC) contact in Intelligent output	C033	1	0x02B8

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0x2120	Selection of a(NO) or b(NC) contact in Intelligent output 14	C034	1	0x02B9
0x2121	Selection of a(NO) or b(NC) contact in Intelligent output 15	C035	1	0x02BA
0x2122	Selection of a(NO) or b(NC) contact in Alarm relay output	C036	1	0x02BB
0x2123	Selection of output mode of overload warning signal	C040	1	0x02BC
0x2124	Level of over torque in forward and drive (1st quadrant)	C055	1	0x02BD
0x2125	Level of over torque in reverse and regenerative (2nd quadrant)	C056	1	0x02BE
0x2126	Level of over torque in reverse and drive (3rd quadrant)	C057	1	0x02BF
0x2127	Level of over torque in forward and regenerative (4th quadrant)	C058	1	0x02C0
0x2128	Selection of Alarm code	C062	1	0x02C2
0x2129	Selection of Data command	C070	1	0x02C3
0x212A	Selection of communication speed for RS485	C071	1	0x02C4
0x212B	Selection of Inverter address for RS 485	C072	1	0x02C5
0x212C	Selection of bit length of data for RS485	C073	1	0x02C6
0x212D	Selection of parity (odd or even) for RS485	C074	1	0x02C7
0x212E	Selection of stop bit for RS485	C075	1	0x02C8
0x212F	Selection of Auto-tuning presence	H001	1	0x02CB
0x2130	Selection of Motor constant for 1st motor	H002	1	0x02CC
0x2131	Selection of Motor constant for 2nd motor	H202	1	0x02CD
0x2132	Selection of Motor capacity for 1st motor	H003	1	0x02CE
0x2133	Selection of Motor capacity for 2nd motor	H203	1	0x02CF
0x2134	Selection of Motor poles for 1st motor (*)	H004	1	0x02D0
0x2135	Selection of Motor poles for 2nd motor	H204	1	0x02D1
0x2136	Selection of Control Mode	P012	1	0x02D2
0x2137	Selection of method of Pulse lines input	P013	1	0x02D3
0x2138	Set of Orientation direction	P016	1	0x02D4
0x2139	Selection of location of electric gear	P019	1	0x02D5
0x213A	Selection of action at option1 error	P001	1	0x02D6
0x213B	Selection of action at option2 error	P002	1	0x02D7
0x213C	Selection of feedback option	P010	1	0x02D8
0x213D	Selection of Available of compensation of secondary resistor	P025	1	0x02DA
0x213E	Acc/Dec input mode selection	P031	1	0x02DB
0x213F	Stop position setting input mode selection	P032	1	0x02DC
0x2140	Set of Accumulated time during running		4	0x0344
0x2141	Set of Accumulated time during power ON		4	0x0348
0x2142	Adjusting value of Thermister	C085	2	0x034E
0x2143	Adjustment of O terminal	C081	2	0x0350
0x2144	Adjustment of O2 terminal	C083	2	0x0352
0x2145	Adjustment of OI terminal	C082	2	0x0354
0x2146	Adjustment of Zero of O terminal	C121	2	0x0358
0x2147	Adjustment of Zero of O2 terminal	C123	2	0x035A
0x2148	Adjustment of Zero of OI terminal	C122	2	0x035C
0x2149	Accumulated number of Trip(error)	d080	2	0x0360
0x214A	Pointer of history of last trip(error)		1	0x0363

0x214B	Factor and Status of Trip1		4	0x0364
0x214C	Frequency of Trip1		4	0x0368
0x214D	Output current of Trip1		2	0x036C
0x214E	PN voltage (DC voltage) of Trip1		2	0x036E
0x214F	Accumulated time during running of Trip1		4	0x0370
0x2150	Accumulated time during power ON of Trip1		4	0x0374
0x2151	Factor and Status of Trip2		4	0x0378
0x2152	Frequency of Trip2		4	0x037C
0x2153	Output current of Trip2		2	0x0380
0x2154	PN voltage (DC voltage) of Trip2		2	0x0382
0x2155	Accumulated time during running of Trip2		4	0x0384
0x2156	Accumulated time during power ON of Trip2		4	0x0388
0x2157	Factor and Status of Trip3		4	0x038C
0x2158	Frequency of Trip3		4	0x0390
0x2159	Output current of Trip3		2	0x0394
0x215A	PN voltage (DC voltage) of Trip3		2	0x0396
0x215B	Accumulated time during running of Trip3		4	0x0398
0x215C	Accumulated time during power ON of Trip3		4	0x039C
0x215D	Factor and Status of Trip4		4	0x03A0
0x215E	Frequency of Trip4		4	0x03A4
0x215F	Output current of Trip4		2	0x03A8
0x2160	PN voltage (DC voltage) of Trip4		2	0x03AA
0x2161	Accumulated time during running of Trip4		4	0x03AC
0x2162	Accumulated time during power ON of Trip4		4	0x03B0
0x2163	Factor and Status of Trip5		4	0x03B4
0x2164	Frequency of Trip5		4	0x03B8
0x2165	Output current of Trip5		2	0x03BC
0x2166	PN voltage (DC voltage) of Trip5		2	0x03BE
0x2167	Accumulated time during running of Trip5		4	0x03C0
0x2168	Accumulated time during power ON of Trip5		4	0x03C4
0x2169	Factor and Status of Trip6		4	0x03C8
0x216A	Frequency of Trip6		4	0x03CC
0x216B	Output current of Trip6		2	0x03D0
0x216C	PN voltage (DC voltage) of Trip6		2	0x03D2
0x216D	Accumulated time during running of Trip6		4	0x03D4
0x216E	Accumulated time during power ON of Trip6		4	0x03D8
0x216F	Selection of Area code of inverter	C195	1	0x03F1
0x2170	Selection of Capacity code of inverter	C196	1	0x03F2
0x2171	Selection of Voltage of inverter	C197	1	0x03F3
0x2172	Selection of Changeover of inverter mode	C198	1	0x03F4
	External RAM			
0x2201	Output frequency	d001	4	0x0400
0x2202	Feedback data of PID control	d004	4	0x0404
0x2203	Value of conversion of frequency	d007	4	0x0408
0x2204	(debug mode) Output frequency after Vector control	d101	4	0x040C
0x2205	Accumulated time during running	d016	4	0x0410
0x2206	Accumulated time during Power ON	d017	4	0x0414

0x2207	Set frequency(Hz) / PID Setpoint (%)	F001	4	0x0420
0x2208	Output current	d002	2	0x042C
0x2209	Status of Input terminal	d005	2	0x042E
0x220A	Input electric power	d014	2	0x0432
0x220B	(debug mode) MCU Version	d106	2	0x0438
0x220C	(debug mode) DC voltage	d102	2	0x043C
0x220D	(debug mode) On time of BRD running	d103	2	0x043E
0x220E	(debug mode) Used rate of electronics thermal protection	d104	2	0x0440
0x220F	Status of output terminal	d006	2	0x0446
0x2210	Output voltage	d013	2	0x0448
0x2211	Direction of present running	d003	1	0x044A
0x2212	Upper input information of terminal for RS485		4	0x045C
0x2213	Lower input information of terminal for RS485		4	0x0460
0x2214	Set frequency for RS485		4	0x0464
0x2215	Analog data from attached potentiometer for setfrequency		2	0x0470
0x2216	run command for operater		1	0x0472
0x2217	run command for RS485		1	0x0473
	<i>Internal RAM</i>			
0x2301	Status of Inverter		4	0x8E10
0x2302	Setting frequency		4	0x8E14
0x2303	Output frequency		4	0x8E1C
0x2304	Direction of setting revolution		1	0x8E20
0x2305	Direction of output revolution		1	0x8E21
0x2306	Output information of terminal		4	0x8E24
0x2307	Upper input information of terminal		4	0x8E28
0x2308	Lower input information of terminal		4	0x8E2C
0x2309	Rated Output Current A)		2	0x8E34
0x230A	Status of SET function		1	0x8E64
0x230B	Terminal frequency (after select function)		4	0x8F28
0x230C	Terminal frequency (O input only)		4	0x8FA0
0x230D	Terminal frequency (OI input only)		4	0x8FA4
0x230E	Terminal frequency (O2 input only)		4	0x8FA8
0x230F	Real frequency by Encorder for V2 mode		4	0x8FBC
0x2310	Torque Limit value by O2input		1	0x8FDA
0x2F00	eeprom write flag		1	0x044B
	<i>SJ700 additions to eeprom area</i>			
0x2400	Automatic torque boost voltage gain	A046	2	0xA300
0x2401	Automatic torque boost voltage gain, 2nd motor	A246	2	0xA302
0x2402	Automatic torque boost slip gain	A047	2	0xA304
0x2403	Automatic torque boost slip gain, 2nd motor	A247	2	0xA306
0x2404	Eazy-sequence function enable	A017	1	0xA308
0x2405	Reverse PID action	A077	1	0xA309
0x2406	PID output limit	A078	2	0xA30A
0x2407	ADD direction select	A146	1	0xA317
0x2408	ADD frequency	A145	4	0xA318

0x2409	Input1 selection for calculate function	A141	1	0xA31C
0x240A	Input2 selection for calculate function	A142	1	0xA31D
0x240B	Calculation symbol	A143	1	0xA31E
0x240C	Acceleration elevator-curve ratio 1 setting	A150	1	0xA31F
0x240D	Acceleration elevator-curve ratio 2 setting	A151	1	0xA320
0x240E	Deceleration elevator-curve ratio 1 setting	A152	1	0xA321
0x240F	Deceleration elevator-curve ratio 2 setting	A153	1	0xA322
0x2410	Selection of automatic restart mode on over-current / over-voltage	b008	1	0xA323
0x2411	Number of restarts on under-voltage trip events	b009	1	0xA324
0x2412	Retry wait time before motor restart on over-current / over-voltage	b010	1	0xA325
0x2413	Active frequency matching scan start frequency selection	b030	1	0xA326
0x2414	Over-current trip suppression	b027	1	0xA327
0x2415	Initial display code selection	b038	1	0xA328
0x2416	User-selected function data auto setting function enable	b039	1	0xA329
0x2417	Display gain setting for accurate power	b079	2	0xA32A
0x2418	Over-voltage suppression mode selection	b130	1	0xA32D
0x2419	Over-voltage suppression voltage setting	b131	2	0xA32E
0x241A	Acceleration late at over-voltage suppression	b132	2	0xA330
0x241B	Standard value setting for digital current monitor (FM)	C030	2	0xA332
0x241C	Low current warning output level setting	C039	2	0xA334
0x241D	Low current warning output mode selection	C038	1	0xA336
0x241E	Cooling fin over-heat warning output level setting	C064	1	0xA337
0x241F	PID FBV function high limit	C052	2	0xA338
0x2420	PID FBV function low limit	C053	2	0xA33A
0x2421	Communication error time-out	C077	2	0xA33C
0x2422	Communication error select	C076	1	0xA33E
0x2423	Communication protocol select	C079	1	0xA33F
0x2424	FM output gain	C105	2	0xA340
0x2425	AM output gain	C106	2	0xA342
0x2426	AMI output gain	C107	2	0xA344
0x2427	AM output bias	C109	1	0xA347
0x2428	AMI output bias	C110	1	0xA348
0x2429	Input1 select for logic output1	C142	1	0xA349
0x242A	Input2 select for logic output1	C143	1	0xA34A
0x242B	Logic function1 select	C144	1	0xA34B
0x242C	Input1 select for logic output2	C145	1	0xA34C
0x242D	Input2 select for logic output2	C146	1	0xA34D
0x242E	Logic function2 select	C147	1	0xA34E
0x242F	Input1 select for logic output3	C148	1	0xA34F
0x2430	Input2 select for logic output3	C149	1	0xA350
0x2431	Logic function3 select	C150	1	0xA351
0x2432	Input1 select for logic output4	C151	1	0xA352
0x2433	Input2 select for logic output4	C152	1	0xA353
0x2434	Logic function4 select	C153	1	0xA354
0x2435	Input1 select for logic output5	C154	1	0xA355
0x2436	Input2 select for logic output5	C155	1	0xA356

0x2437	Logic function5 select	C156	1	0xA357
0x2438	Input1 select for logic output6	C157	1	0xA358
0x2439	Input2 select for logic output6	C158	1	0xA359
0x243A	Logic function6 select	C159	1	0xA35A
0x243B	Terminal11 ON delay	C130	2	0xA35C
0x243C	Terminal11 OFF delay	C131	2	0xA35E
0x243D	Terminal12 ON delay	C132	2	0xA360
0x243E	Terminal12 OFF delay	C133	2	0xA362
0x243F	Terminal13 ON delay	C134	2	0xA364
0x2440	Terminal13 OFF delay	C135	2	0xA366
0x2441	Terminal14 ON delay	C136	2	0xA368
0x2442	Terminal14 OFF delay	C137	2	0xA36A
0x2443	Terminal15 ON delay	C138	2	0xA36C
0x2444	Terminal15 OFF delay	C139	2	0xA36E
0x2445	Output relay ON delay	C140	2	0xA370
0x2446	Output relay OFF delay	C141	2	0xA372
0x2447	Motor speed constant, 1st motor	H005	4	0xA374
0x2448	Motor speed constant, 2nd motor	H205	4	0xA378
0x2449	0Hz SLV start boost value, 1st motor	H061	2	0xA37C
0x244A	0Hz SLV start boost value, 2nd motor	H261	2	0xA37E
0x244B	P-PI gain exchanging time setting	H073	2	0xA380
0x244C	Mechanical gear ratio numerator setting	P028	2	0xA398
0x244D	Mechanical gear ratio denominator setting	P029	2	0xA39A
0x244E	Torque source setting for torque control	P033	1	0xA39C
0x244F	Torque character selection at O2	P035	1	0xA39D
0x2450	Torque setting	P034	1	0xA39E
0x2451	Torque bias source setting for torque control	P036	1	0xA3A0
0x2452	Torque bias character selection at O2	P038	1	0xA3A1
0x2453	Torque bias setting	P037	2	0xA3A2
0x2454	Speed limit (forward) setting on torque control	P039	4	0xA3A4
0x2455	Speed limit (reverse) setting on torque control	P040	4	0xA3A8
0x2456	Active frequency matching scan current level	b028	2	0xA3AC
0x2457	Active frequency matching scan-time constant	b029	2	0xA3AE
0x2458	Filter time constant setting on pulse input	P055	2	0xA3B0
0x2459	Bias setting on pulse input	P056	1	0xA3B2
0x245A	Limit setting on pulse input	P057	1	0xA3B3
0x245B	Frequency scall setting on pulse input	P058	1	0xA3B4
0x245C	Retry wait time before motor restart on over-current/ over-voltage	b011	2	0xA3B6
0x245D	Absolute position 0 setting	P060	4	0xA3B8
0x245E	Absolute position 1 setting	P061	4	0xA3BC
0x245F	Absolute position 2 setting	P062	4	0xA3C0
0x2460	Absolute position 3 setting	P063	4	0xA3C4
0x2461	Absolute position 4 setting	P064	4	0xA3C8
0x2462	Absolute position 5 setting	P065	4	0xA3CC
0x2463	Absolute position 6 setting	P066	4	0xA3D0
0x2464	Absolute position 7 setting	P067	4	0xA3D4
0x2465	Position range?forward? setting	P072	4	0xA3D8

0x2466	Position range?reverse? setting	P073	4	0xA3DC
0x2467	Absolute home position return speed (low) setting	P070	2	0xA3E0
0x2468	Absolute home position return speed (high) setting	P071	2	0xA3E2
0x2469	Absolute home position search mode selection	P068	1	0xA3E4
0x246A	Absolute home position search direction selection	P069	1	0xA3E5
0x246B	Automatic carrier reducing function enable	b089	1	0xA3EC
0x246C	WCO upeer level setting	b060	1	0xA3ED
0x246D	WCO lower level setting	b061	1	0xA3EE
0x246E	WCO hysteresis width setting	b062	1	0xA3EF
0x246F	WCOI upeer level setting	b063	1	0xA3F0
0x2470	WCOI lower level setting	b064	1	0xA3F1
0x2471	WCOI hysteresis width setting	b065	1	0xA3F2
0x2472	WCO2 upeer level setting	b066	1	0xA3F3
0x2473	WCO2 lower level setting	b067	1	0xA3F4
0x2474	WCO2 hysteresis width setting	b068	1	0xA3F5
0x2475	Position bias setting	P024	2	0xA3F6
0x2476	PID feed-forward source setting	A079	1	0xA3FD
0x2477	Terminal 1 sampling times setting	C160	1	0xA400
0x2478	Terminal 2 sampling times setting	C161	1	0xA401
0x2479	Terminal 3 sampling times setting	C162	1	0xA402
0x247A	Terminal 4 sampling times setting	C163	1	0xA403
0x247B	Terminal 5 sampling times setting	C164	1	0xA404
0x247C	Terminal 6 sampling times setting	C165	1	0xA405
0x247D	Terminal 7 sampling times setting	C166	1	0xA406
0x247E	Terminal 8 sampling times setting	C167	1	0xA407
0x247F	Terminal FW sampling times setting	C168	1	0xA408
0x2480	Binary input (CF1?4, CP1?CP3) latch time setting	C169	1	0xA409
0x2481	Exchanged value setting during WCO ON	b070	1	0xA40A
0x2482	Exchanged value setting during WCOI ON	b071	1	0xA40B
0x2483	Exchanged value setting during WCO2 ON	b072	1	0xA40C
0x2484	Thermistor (on board) input tuning	C089	2	0xA554
0x2485	Thermistor (on fin) input tuning	C090	2	0xA556
0x2486	User parameter U00 setting for Eazy-Sequence function	P100	2	0xA760
0x2487	User parameter U01 setting for Eazy-Sequence function	P101	2	0xA762
0x2488	User parameter U02 setting for Eazy-Sequence function	P102	2	0xA764
0x2489	User parameter U03 setting for Eazy-Sequence function	P103	2	0xA766
0x248A	User parameter U04 setting for Eazy-Sequence function	P104	2	0xA768
0x248B	User parameter U05 setting for Eazy-Sequence function	P105	2	0xA76A
0x248C	User parameter U06 setting for Eazy-Sequence function	P106	2	0xA76C
0x248D	User parameter U07 setting for Eazy-Sequence function	P107	2	0xA76E
0x248E	User parameter U08 setting for Eazy-Sequence function	P108	2	0xA770
0x248F	User parameter U09 setting for Eazy-Sequence function	P109	2	0xA772
0x2490	User parameter U10 setting for Eazy-Sequence function	P110	2	0xA774
0x2491	User parameter U11 setting for Eazy-Sequence function	P111	2	0xA776
0x2492	User parameter U12 setting for Eazy-Sequence function	P112	2	0xA778
0x2493	User parameter U13 setting for Eazy-Sequence function	P113	2	0xA77A
0x2494	User parameter U14 setting for Eazy-Sequence function	P114	2	0xA77C
0x2495	User parameter U15 setting for Eazy-Sequence function	P115	2	0xA77E

0x2496	User parameter U16 setting for Eazy-Sequence function	P116	2	0xA780
0x2497	User parameter U17 setting for Eazy-Sequence function	P117	2	0xA782
0x2498	User parameter U18 setting for Eazy-Sequence function	P118	2	0xA784
0x2499	User parameter U19 setting for Eazy-Sequence function	P119	2	0xA786
0x249A	User parameter U20 setting for Eazy-Sequence function	P120	2	0xA788
0x249B	User parameter U21 setting for Eazy-Sequence function	P121	2	0xA78A
0x249C	User parameter U22 setting for Eazy-Sequence function	P122	2	0xA78C
0x249D	User parameter U23 setting for Eazy-Sequence function	P123	2	0xA78E
0x249E	User parameter U24 setting for Eazy-Sequence function	P124	2	0xA790
0x249F	User parameter U25 setting for Eazy-Sequence function	P125	2	0xA792
0x24A0	User parameter U26 setting for Eazy-Sequence function	P126	2	0xA794
0x24A1	User parameter U27 setting for Eazy-Sequence function	P127	2	0xA796
0x24A2	User parameter U28 setting for Eazy-Sequence function	P128	2	0xA798
0x24A3	User parameter U29 setting for Eazy-Sequence function	P129	2	0xA79A
0x24A4	User parameter U30 setting for Eazy-Sequence function	P130	2	0xA79C
0x24A5	User parameter U31 setting for Eazy-Sequence function	P131	2	0xA79E
0x24A6	break frequency setting	b127	2	0xA1C4
	SJ700 additions to External RAM			
0x2220	cumulative power monitor	d015	4	0x40FC
0x2221	encoder detected frequency monitor	d008	4	0x4100
0x2222	maximum DC bus voltage monitor	d109	2	0x410C
0x2223	torque set monitor	d009	2	0x410E
0x2224	torque bias monitor	d010	2	0x4110
0x2225	fin temperature monitor	d018	2	0x4112
0x2226	motor temperature monitor (external thermistor)	d019	2	0x4114
0x2227	program counter (eazy-sequence program)	d023	2	0x4116
0x2228	program number (eazy-sequence program)	d024	2	0x4118
0x2229	life expectancy warning monitor	d022	1	0x411D
0x222A	user monitor 1	d025	4	0x4120
0x222B	user monitor 2	d026	4	0x4124
0x222C	user monitor 3	d027	4	0x4128
0x222D	pulse counter	d028	4	0x412C
0x222E	position set monitor	d029	4	0x4130
0x222F	position monitor	d030	4	0x4134
0x2230	temperature monitor (on board thermistor)	d110	2	0x4138
0x2231	Maximum temperature monitor (on board thermistor)	d111	2	0x413A

Note:

(*) Motor poles num changes are taken into account only if made outside "Operation enabled" status machine.

4.17. Led operations

Green	Red	Meaning
ON	OFF	NORMAL condition. CANbus ok. Inverter is in remote mode.
ON	ON	CANbus DISCONNECT.
BLINKING	OFF	INVERTER COMM. BROKEN
BLINKING	ON	CANbus DISCONNECT.
OFF	OFF	FAULT. Check Inverter/gateway supply.
OFF	ON	WARNING: if address switches are in 00 position, the gateway is in CONFIGURATION MODE and it cannot work.