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Emotron AMX Series Drive



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DEDICATED DRIVE



A CG Product

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Safety Instructions

Congratulations for choosing a product from CG Drives & Automation!

Before you begin with installation, commissioning or powering up the unit for the first time it is very important that you carefully study this Instruction manual.

Following symbols can appear in this instruction or on the product itself. Always read these first before continuing.

NOTE: Additional information as an aid to avoid problems.



CAUTION!

Failure to follow these instructions can result in malfunction or damage to the AC drive.



WARNING!

Failure to follow these instructions can result in serious injury to the user in addition to serious damage to the AC drive.



HOT SURFACE!

Failure to follow these instructions can result in injury to the user.

Handling the AC drive

Installation, commissioning, demounting, taking measurements, etc, of or on the AC drive may only be carried out by personnel technically qualified for the task.

Precautions to be taken with a connected motor

If work must be carried out on a connected motor or on the driven machine, the mains voltage must always be disconnected from the AC drive first. Wait at least 7 minutes before starting work.

Earthing

The AC drive must always be earthed via the mains safety earth connection.

Earth leakage current



CAUTION!

This AC drive has an earth leakage current, which does exceed 3.5 mA AC.

Therefore, the minimum size of the protective earth conductor on the supply side must comply with the local safety regulations for high leakage current equipment, which means that according to the standard IEC61800-5-1 the protective earth connection must be assured by one of following conditions:

PE conductor cross-sectional area shall for phase cable size < 16 mm² (6 AWG) be >10 mm² Cu (16 mm² Al) or use a second PE conductor with same area as original PE conductor.

For cable size above 16 mm² (6 AWG) but smaller or equal to 35mm² (2 AWG) the PE conductor cross-sectional area shall be at least 16mm²(6 AWG).

For cables >35 mm² (2 AWG) the PE conductor

A number of national, regional and local regulations govern handling, storage and installation of the equipment. Always observe current rules and legislation.

Opening the AC drive



WARNING!

Always switch off the mains voltage before opening the AC drive and wait at least 7 minutes to allow the capacitors to discharge.

Always take adequate precautions before opening the AC drive. Although the connections for the control signals and the switches are isolated from the main voltage, do not touch the control board when the AC drive is switched on.

Incorrect connection

The AC drive is not protected against incorrect connection of the mains voltage, and in particular against connection of the mains voltage to the motor outlets U, V and W. The AC drive can be damaged in this way. Risk for personal injury.

Cross-sectional area should be at least 50 % of the used phase conductor.

When the PE conductor in the used cable type is not in accordance with the above mentioned cross-sectional area requirements, a separate PE conductor should be used to establish this.

Residual current device (RCD) compatibility

This product can cause a DC current in the protective earthing conductor. Where a residual current-operated protective device (RCD) or a monitoring device (RCM) is used for protection in case of direct or indirect contact, only a Type B RCD/RCM is allowed on the supply side of this product. Use RCD of 300 mA minimum.

EMC Regulations

In order to comply with the EMC Directive, it is absolutely necessary to follow the installation instructions. All installation descriptions in this manual follow the EMC Directive.

Mains voltage selection

The AC drive may be ordered for use with the mains voltage range listed below.

AMX48: 230-480 V

Voltage tests (Megger)

Do not carry out voltage tests (Megger) on the motor, before all the motor cables have been disconnected from the AC drive.

Condensation

If the AC drive is moved from a cold (storage) room to a room where it will be installed, condensation can occur. This can result in sensitive components becoming damp. Do not connect the mains voltage until all visible dampness has evaporated.

Power factor capacitors for improving $\cos\theta$

Remove all capacitors from the motor and the motor outlet.

Precautions during Auto reset

When the automatic reset is active, the motor will restart automatically provided that the cause of the trip has been removed. If necessary, take the appropriate precautions.

Transport

To avoid damage, keep the AC drive in its original packaging during transport. This packaging is specially designed to absorb shocks during transport.

IT Mains supply

The AC drives can be modified for an IT mains supply, (non-earthed neutral), please contact your supplier for details.

Alarms

Never disregard an alarm. Always check and remedy the cause of an alarm.

Heat warning



HOT SURFACE!

Be aware of specific parts on the AC drive having high temperature.

DC-link residual voltage



WARNING!

After switching off the mains supply, dangerous voltage can still be present in the AC drive. When opening the AC drive for installing and/or commissioning activities wait at least 7 minutes. In case of malfunction, a qualified technician should check the DC-link or wait for one hour before dismantling the AC drive for repair.

DC bus discharge



WARNING!

Risk of electric shock. Dangerous voltage may exist for 7 minutes after removing power.

High fault current warning



ATTENTION!

The opening of the branch-circuit protective device may be an indication that a fault has been interrupted. To reduce the risk of fire or electric shock, current-carrying parts and other components of the controller should be examined and replaced if damaged. If burnout of the current element of an overload relay occurs, the complete relay must be replaced.

Users are requested to read this chapter carefully when installing, commissioning and repairing this product and perform the operation according to safety precautions as set forth in this chapter without fail. CG will bear no responsibility for any injury and loss because of any violation operation.

Safety Consideration

Table 1: Safety consideration

The use phase	Safety class	Considerations
Before Installation	⚠ Danger	◆ Do not install the product if the package is with water, or component is missing or broken. ◆ Do not install the product if the label on the package is not identical to that on the inverter.
	⚠ Caution	◆ Be careful of carrying or transportation. ◆ Do not use damaged product or inverter missing component. ◆ Do not touch control parts with bare hands. Risk of ESD hazard.
Installation	⚠ Danger	◆ Installation base shall be metal or other non-flammable material. ◆ Do not install inverter in explosive gas environment. ◆ Do not unscrew fixing bolts, especially red marked bolts.
	⚠ Caution	◆ Do not leave cable strips or screws in inverter. ◆ Install at a place with less vibration and no direct sunlight. ◆ Consider cooling space when two or more inverters are installed.
Wiring	⚠ Danger	◆ Wiring must be performed by authorized and qualified personnel. ◆ Circuit breaker should be installed between inverter and mains. ◆ Never connect power cables to output terminals U, V, W.

	⚠ Caution	◆ Signal wires should be away from main power lines. ◆ If motor cables exceed 100 m, output AC reactor is recommended.
Before Power-on	⚠ Danger	◆ Inverter shall be powered on only after front cover is assembled.
	⚠ Caution	◆ Verify input voltage and wiring connections before power-on.
After Power-on	⚠ Danger	◆ Do not open cover after power-on. ◆ Do not touch input/output terminals with bare hands.
	⚠ Caution	◆ Be careful of personal injury when auto tuning is running.
During Operation	⚠ Danger	◆ Non-professionals shall not detect signals during operation. ◆ Do not touch fan or discharge resistor.
	⚠ Caution	◆ Prevent foreign items from being left in device. ◆ Do not start/stop inverter by contactor ON/OFF.
Maintenance	⚠ Danger	◆ Maintenance and inspection shall only be performed by professionals. ◆ Maintain and inspect devices after power is off.

Configuration, Mounting Dimensions and Weight

Table 2: Configuration, Mounting dimensions and weight

Model No.	External and installation dimensions [mm (in)]						
	W	H	D	W1	H1	Install hole dia.	Weight (Kg)
48-004-20	95 (3.74)	262 (10.31)	168 (6.61)	60 (2.36)	243 (9.57)	5 (0.2)	1.45
48-006-20							
48-009-20							
48-013-20	104 (4.09)	279 (10.98)	181 (7.13)	68 (2.68)	262 (10.31)	5 (0.2)	2.45
48-017-20							2.5
48-025-20	131 (5.16)	315 (12.4)	190 (7.48)	85 (3.35)	297 (11.69)	5 (0.2)	3.4
48-032-20							3.5
48-038-20							3.65

*Enclosure height/Total height

*W1:- Mounting hole width

*H1:- Mounting hole height

For downloading AMX Instructions manuals (pdf)

in local language, see web page:

<http://www.emotron.com/downloads>

For downloading Eco-design information for Emotron-Drives, see web page: <http://ecodesign.emotron.com>

1. Introduction

Emotron AMX is intended for controlling the speed and torque of standard 3-phase asynchronous electrical motors.

NOTE: It is highly recommended to read detailed instruction manual on our website carefully before starting installation, connection or working with the AC Drive.

Users

This instruction manual is intended for:

- Installation engineers
- Maintenance engineers
- Service engineers

Motors

The AC Drive is suitable for use with standard 3-phase asynchronous motors. Under certain conditions, it is possible to use other type of motors. Contact your supplier for more details.

1.1. Delivery and unpacking

Check for any visible signs of damage. Inform your supplier immediately if any damage found. Do not install the AC Drive if damage is found.

Check that all items are present and that the type number is correct.

1.2. Warranty

The warranty applies when the equipment is installed, operated and maintained according to instructions in detailed instruction manual on our website. Duration of warranty is as per contract. Faults that arise due to faulty installation, usage beyond the IP class specified or non-recommended operation are not covered by the warranty.

1.3. Type code number

Table 3 gives an example of the type code numbering used on all AC Drives. With this code number, the exact type of the drive can be determined. This identification will be required for type specific information during mounting and installing. The code number is located on the product label, on the unit.

New type code for all AMX Drive sizes (004-253),

Table 3: Drive code

Type code	AMX	48	-004	-20	C	E	–	A	N	N	A	A	-
Position no	1	2	3	4	5	6	7	8	9	10	11	12	13

Table 4: Drive code position description

Position no.	Configuration	Type code		
1	AC Drive type	AMX		
2	Supply voltage	23 = 230 V mains 48 = 480 V mains		
3	Rated current (A) continuous	004 = 4.2 A 006 = 5.5 A 009 = 9.1 A 013 = 13 A 017 = 17 A 025 = 25 A	032 = 32 A 038 = 38 A 045 = 45 A 060 = 60 A 075 = 75 A 092 = 92 A	112 = 112 A
4	Protection class	20 = IP20 - Intended for mounting inside a cabinet		
5	Control panel	– = Blank panel C = Segment display D = Graphical display		
6	EMC option	– = Without EMC filter E = Standard EMC (Category C3) I = IT-Net		
7	Brake chopper option	– = No chopper B = Chopper built in D = DC+/- interface		
8	Brand label	A = Standard		
9	Option position 1	N = No option R = Relay board AD = Analog-Digital IO I = Insulated PTC-PT100 Board		
10	Option position 2*	N = No option RE = Relay Board Extension IE = Incremental Encoder Board RS = Resolver Board SC = SIN-COS Encoder Board		
11	Option position 3	N = No option P = Profibus Board IR = Insulated RS232-485 AB = ABCC Board E = Ethernet Board		
12	Software type	A = Standard software		
13	Approval/certification	CE = CE approved		

* Not available for model 004, 006 & 009

1.4. Standards

The AC Drives described in this instruction manual comply with the standards listed in Table 5. For the declarations of conformity and manufacturer's certificate, contact your supplier for more information or visit www.emotron.com / www.cgglobal.com.

1.4.1. Product standard for EMC

Product standard EN IEC 61800-3:2018.

The AC Drive is designed to meet the requirements according to category C3, for a motor cable length of maximum 80 m with optional built-in filter.



WARNING!

In a domestic environment, this product may cause radio interference, in which case it may be necessary to take adequate additional measures.



WARNING!

The standard AC drive, complying with category C4 or C3, is not intended to be used on a low-voltage public network which supplies domestic premises; radio interference is expected if used in such a network. Contact your supplier if you need additional measures.

Table 5: Standards

Market	Standard	Description
Europe	EMC Directive	2014/30/EU
	Low Voltage Directive	2014/35/EU
	WEEE Directive	2012/19/EU
	Eco-design Directive	2009/125/EC
	RoHS II Directive	2011/65/EU
All	EN 60204-1:2018	Safety of machinery - Electrical equipment of machines Part 1: General requirements.
	EN IEC 61800-3:2018	Adjustable speed electrical power drive systems Part 3: EMC requirements and specific test methods. EMC Directive: Declaration of Conformity and CE marking
	EN (IEC) 61800-5-1:2007 + A1:2017 + A11:2021	Adjustable speed electrical power drive systems Part 5-1. Safety requirements - Electrical, thermal and energy. Low Voltage Directive: Declaration of Conformity and CE marking
	IEC 60721-3-3:2019	Classification of environmental conditions – Air quality (chemical vapors) for units in operation - Standard requirement: Chemical gases Class 3C2, Solid particles Class 3S2 - Optional (with coated boards): Chemical gases Class 3C3, Solid particles Class 3S2
	EN 50581:2012	Restriction of hazardous substances

1.5. Dismantling and scrapping

The enclosures of the drives are made from recyclable material as Aluminium, Iron and Plastic. Our AC drives comply with RoHS II directive, and contain electronic waste (e-waste). Any local or national regulations in force for the disposal and recycling of e-waste must be complied with.

1.5.1. Disposal of old electrical and electronic equipment

This symbol on the product or on its packaging indicates that this product shall be taken to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling this product, please contact the local distributor of the product.



1.6. Glossary

1.6.1. Abbreviations and symbols

In this manual, the following abbreviations are used:

Table 6: Abbreviations

Abbreviation/Symbol	Description
DSP	Digital signals processor
AC Drive	Frequency converter
IGBT	Insulated Gate Bipolar Transistor
CP	Control panel, the programming and presentation unit on the AC drive
UInt	Communication format (Unsigned integer)
Int	Communication format (Integer)
Long	Communication format

1.6.2. Abbreviations and symbols

In this manual, the following definitions for current, torque and frequency are used:

Table 7: Definitions

Name	Description	Quantity
I_{IN}	Nominal input current of AC drive	A_{RMS}
I_{NOM}	Nominal output current of AC drive	A_{RMS}
I_{MOT}	Nominal motor current	A_{RMS}
P_{NOM}	Nominal power of AC drive	kW
P_{MOT}	Motor power	kW
T_{NOM}	Nominal torque of motor	Nm
T_{MOT}	Motor torque	Nm
f_{OUT}	Output frequency of AC drive	Hz
f_{MOT}	Nominal frequency of motor	Hz
n_{MOT}	Nominal speed of motor	rpm
I_{CL}	Maximum output current	A_{RMS}

Speed	Actual motor speed	rpm
Torque	Actual motor torque	Nm
Sync speed	Synchronous speed of the motor	rpm

2. Mounting

Before mounting it is recommended that the installation is planned out first.

- Be sure that the AC drive suits the mounting location.
- The mounting site must support the weight of the AC drive.
- Will the AC drive continuously withstand vibrations and/or shocks?
- Consider using a vibration damper.
- Check ambient conditions, ratings, required cooling air flow, compatibility of the motor etc.

3. Connections

Use detailed product manual for power and control section connections. In addition, it is highly recommended to refer details manual for safe operation of the product.



WARNING!

Always switch off the mains voltage and wait at least 7 minutes to allow the capacitors to discharge before connecting the control signals or changing position of any switches.

If the option External supply is used, switch off the mains to the option. This is done to prevent damage on the control board.

NOTE!

Using potentiometer for reference signal to Analog input: Possible potentiometer value in range of 1 k Ω to 10 k Ω (¼ Watt) linear, where we advise to use a linear 1 k Ω / ¼ W type potentiometer for best control linearity.

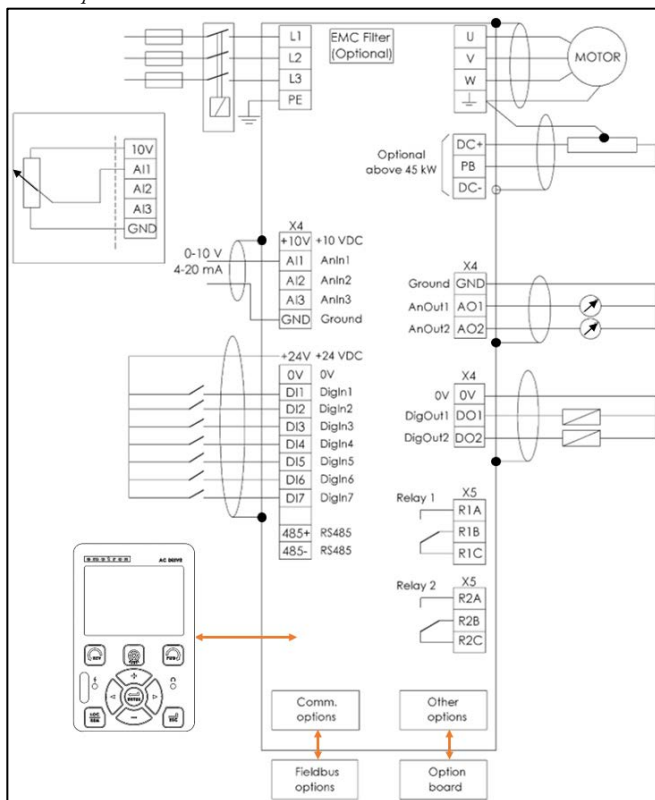


WARNING!

The relay terminals R2A, R2B R2C, R1A, R1B & R1C are single isolated. DO NOT mix SELV voltage with e.g. 230 VAC on these terminals. A solution when dealing with mixed SELV/system voltage signals is to install an additional I/O board option (refer chapter 13, section I/O board) and connect all SELV voltage signals to the relay terminals of this option board while connecting all 230 VAC signals to the control board relay terminals R2A, R2B R2C, R1A, R1B & R1C.

3.1. Connection example

Figure 1: Connection example



4. Operation via the Control Panel

This chapter describes how to use the control panel. The AC drive can be delivered with a control panel or a blank panel.

4.1. General

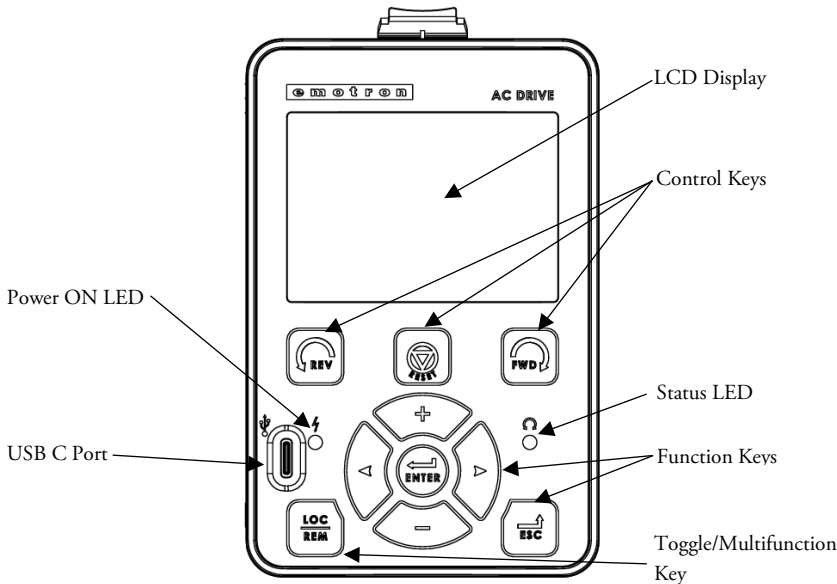
The control panel displays the status of the AC drive and is used to set all the parameters. It is also possible to control the motor directly from the control panel. The control panel can be built-in or located externally via serial communication. The AC drive can be ordered without the control panel. Instead of the control panel, there will be a blank panel.

NOTE!

The AC drive can run without the control panel being connected. However, the settings must be such that all control signals are set for external use.

4.2. Control panel with display

Figure 2: Display unit



4.2.1. The display

The different areas in the display are described below:

Figure 3: Display dashboard information

[P0] Dashboard					
DC Volt	000.0	V			
Output Volt	000.0	V			
Output Crnt	000.0	A			
Speed	00000	rpm			
Output Freq	000.00	Hz			
IGBT Temp	000.0	C			
Trp	Acc	VHz-A	M1	MST	Key
D	E	F	G	H	I

Area A: Shows the Page number of dashboard there are total five page numbers (P0 to P4).

Area B: Shows the heading.

Area C: Shows the name of parameter, value and unit. In each page user can see the different parameters and user can select the sequence of parameters from menu number [110].

Area D*: Shows the Run, Stop, Trip etc, other details are in table.

The following status indications are possible:

Table 8: Status indication description

Digits	Description	Bit*
Stp	Motor is stopped	0
Run	Motor runs	1
Acc	Acceleration	2
Dec	Deceleration	3
Trp	Tripped	4
VL	Operating at voltage limit	5
SL	Operating at speed limit	7
CL	Operating at current limit	8
TL	Operating at torque limit	9
OT	Operating at temperature limit	10
I2T	Active I2T protection	11
LV	Operating at low voltage	12
Slp	Sleep mode	13
SPS	Spin start active	14

Area E: Shows parameters Accelerate (Acc) and Decelerate (Dec), and when motor is stop three dotted line shows (---).

Area F: Active control source.

Area G: Shows motor number from M1 to M2.

Area H: Shows drive reference source. Source can be selected from” [2141] Drive Ref Src”

Area I: Shows run stop source, can be selected from menu number [215] Run Stop Src.

4.2.2. Menu [100] Window

At every power-up, the dashboard is displayed. When the Enter key is pressed, the menu list appears, starting with menu [100]. Menu [100] displays the settings defined in menu [110] (1st line), menu [120] (2nd line), and menu [130] (3rd line).

Figure 4: Menu window

[100] Basic Settings					
[110] Dashboard					
[120] List View Type					
[130] About					
[140] MF Key Setting					
[150] User Login					
[160] Display Lines					
Trp	Acc	VHz-A	M1	MST	Key

4.2.3. Editing mode

During editing, preferred view will be displayed and cursor will appear after press the left or right key.

Figure 5: Edit window

[310] Set/View Ref					
[312] Set/View Mst Re					
		▲ 00000 ▼			
Trp	Acc	VHz-A	M1	MST	Key

4.2.4. Fault logger

Fault logger show the fault with trip code with fault name, maximum sixteen fault will be log.

Figure 6: Fault log window

[810] Trip Log 1					
[811] Trip Code					
		038 Over Current			
Trp	Acc	VHz-A	M1	MST	Key

4.2.5. LED indicators

The symbols on the control panel have the following functions:

Figure 7: LED indicator

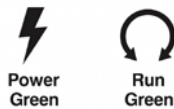


Table 9: LED indication description

Symbol	Function		
	ON	FLASHING	OFF
POWER (Green)	Power on	-----	Power off
TRIP (Red)	AC drive tripped	Warning / Limit	No warning or trip
RUN (Green)	Motor shaft rotates	Motor speed increase / decrease	Motor stopped

4.2.6. Control Keys

The control keys are used to give the Run, Stop or Reset commands directly. As default, these keys are disabled, set for remote control. Activate the control keys by selecting Keyboard in the menus “Ref Control [214]”, “Run/Stop Control [215]” and “Reset Ctrl [216]”. If the Enable function is programmed on one of the digital inputs, this input must be active to allow Run/Stop commands from the control panel.

	RUN L:	gives a start with left rotation
	STOP/RESET:	stops the motor or resets the AC drive after a trip
	RUN R:	gives a start with right rotation

NOTE: It is not possible to simultaneously activate the Run/Stop commands from the Keyboard and remotely from the terminal strip (terminals 1-22). Exception is the JOG-function which can give start command, see jog speed [348].

4.2.7. The Toggle and LOC/Rem key

This key has two functions: Toggle and switching between Loc/Rem function. Press one second to use the toggle function Press and hold the toggle key for more than five seconds to switch between Local and Remote function,

depending on the settings in [2171] and [2172]. When editing values, the toggle key can be used to change the sign of the value, see section 4.5.

Toggle Function

Using the toggle function makes it possible to easily step through selected menus in a loop. The toggle loop can contain a maximum of ten menus. As default, the toggle loop contains the menus needed for Quick Setup. You can use the toggle loop to create a quick-menu for the parameters that is most importance to your specific application.

NOTE: Do not keep the Toggle key pressed for more than five seconds without pressing either the +, - or Esc key, as this may activate the Loc/Rem function of this key instead. See menu [217].

Add a menu to the toggle loop

1. Go to the menu you want to add to the loop.
2. Press the Toggle key and keep it pressed while pressing the plus (+) key.

Delete a menu from the toggle loop

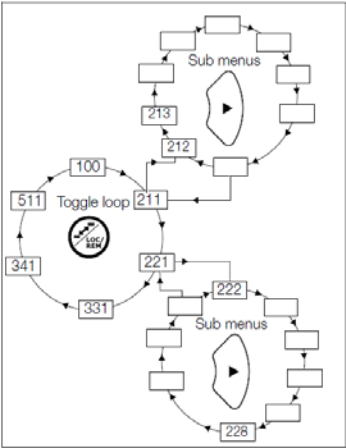
1. Go to the menu you want to delete using the toggle key.
2. Press the Toggle key and keep it pressed while pressing the minus (-) key.

Default toggle loop

Fig. xx shows the default toggle loop. This loop contains the necessary menus that need to be set before starting. Press Toggle to enter menu [211] then use the Next key to enter

the sub menus [212] to [21A] and enter the parameters. When you press the Toggle key again, menu [221] is displayed.

Figure 8: Toggle sequence



Loc/Rem function

The Loc/Rem function of this key is disabled as default. Enable the function in menu [2171] and/or [2172].

With the function Loc/Rem you can change between local and remote control of the AC drive from the control panel. The function Loc/Rem can also be changed via the DigIn, see menu “Digital inputs [520]”.

4.2.8. Function Keys

The function keys operate the menus and are used for programming and read-outs of all the menu settings.

	ENTER key:	- step to a lower menu level - confirm a changed setting
	ESCAPE key:	- step to a higher menu level - ignore a changed setting, without confirming
	PREVIOUS key:	- step to a previous menu within the same level - go to more significant digit in edit mode
	NEXT key:	- step to a next menu within the same level - go to less significant digit in edit mode
	- key:	- decrease a value - change a selection
	+ key:	- increase a value - change a selection
	TOGGLE and LOC/REM key:	- Toggle between menus in the toggle loop - Switching between local and remote control - Change the sign of a value

4.3. The menu structure

The menu structure consists of four levels:

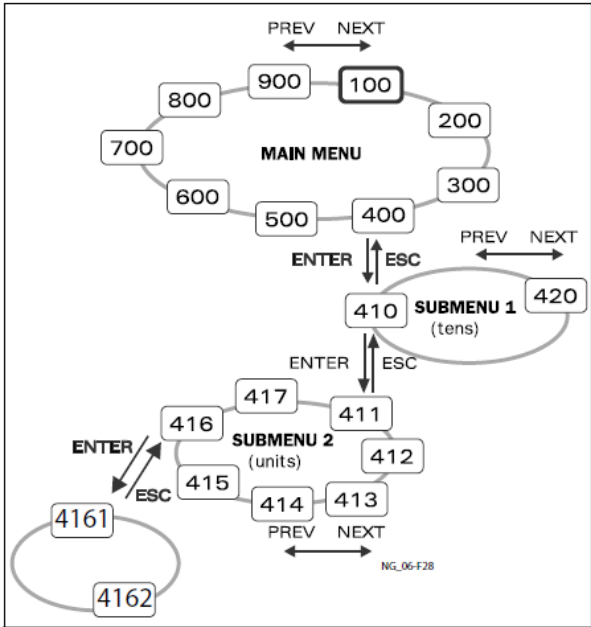
Table 10: Menu structure level

Main Menu 1 st level	The first character in the menu number.
2 nd level	The second character in the menu number
3 rd level	The third character in the menu number.
4 th level	The fourth character in the menu number.

This structure is consequently independent of the number of menus per level. For instance, a menu can have one selectable menu (Set/View Reference Value [310]), or it can have 17 selectable menus (menu Speeds [340]).

NOTE: If there are more than 10 menus within one level, the numbering continues in alphabetic order.

Figure 9: Menu structure sequence



4.3.1. The Main Menu

This section gives you a short description of the functions in the Main Menu.

[100] Basic Settings

It displays the actual process value as default. Programmable for many other read-outs.

[200] Main Setup

Main settings to get the AC drive operable. The motor data settings are the most important. Also option utility and settings.

[300] Process

Settings more relevant to the application such as Reference Speed, torque limitations, PID control settings, etc.

[400] Monitor / Protection

The monitor function enables the AC drive to be used as a load monitor to protect machines and processes against mechanical overload and underload.

[500] I/Os

All settings for inputs and outputs are entered here.

[600] Logic & Timers

All settings for conditional signals are entered here.

[700] Operation / Status

Viewing all the operational data like frequency, load, power, current, etc.

[800] View Trip Log

Viewing the last 16 trips in the trip memory.

[900] System Data

Electronic type label for viewing the software version and AC drive type.

5. Parameter List

This chapter lists the parameter list in the drive for easy reference. For detailed description of the functionality, please refer "User manual" of the product.

The symbols in the function code table are described as follows:

"Δ" means the value of this parameter can modified in stop and running status of drive.

"x" means the value of this parameter cannot modified when drive is running.

"●" means this parameter is read only.

Table 11: Drive parameter list

Menu	Parameter Name	Setting Range	Default	Attr.
[100]	Basic Settings			
[110]	Dashboard			
[111]	View Mode	0: Dashboard0 1: Dashboard1	0	Δ
[112]	Page 1			
[1121]	Line 1	0: Process Val 1: Speed 2: Torque % 3: Torque 4: Process Ref 5: Shaft Power 6: Elec Power 7: Output Crnt 8: Output Volt 9: Output Freq 10: DC Voltage 11: IGBT Temp 12: Motor Temp 13: Run Status 14: Run Time 15: Energy 16: Mains Time 17: Enc Speed 18: DC Crnt 19: Time 20: Date 21: Multi Step 22: Ex PID Ref1 23: Ex PID Ref2 24: Ex PID Ref3 25: Ex PID FB1 26: Ex PID FB2 27: Ex PID FB3	1	Δ
[1122]	Line 2	Same as [1121]	Same as [1121]	Δ
[1123]	Line 3	Same as [1121]	Same as [1121]	Δ
[1124]	Line 4	Same as [1121]	Same as [1121]	Δ
[1125]	Line 5	Same as [1121]	Same as [1121]	Δ
[1126]	Line 6	Same as [1121]	Same as [1121]	Δ
[113]	Page 2	Same as [112]	Same as [1121]	
[114]	Page 3	Same as [112]	Same as [1121]	
[115]	Page 4	Same as [112]	Same as [1121]	
[120]	List View Type	0: Normal 1: Extended	0	Δ
[140]	MF Key Fun	0: Default 1: Jog Fwd 2: Jog Rev	0	Δ
[150]	User Login			
[151]	Session ID	0 – FFFFFFFF		●

[152]	Timeout	0 – 3600 Second		●
[153]	Login Key	0 – FFFFFFFF		Δ
[154]	User Type	0: Basic 1: Advance 2: Service 3: GURU	0	●
[160]	Display Lines	4 - 6	5	Δ
[170]	Warn Msg PopUp	0: Off 1: On	1	Δ
[200]	Main Setup			
[210]	Operation			
[211]	Language	0: English	0	Δ
[212]	Select Motor	0: M1 1: M2 2: DigIn 3: Com	0	×
[213]	Drive Mode	0: VHz 1: Speed 2: Torque	0	×
[214]	Ref Ctrl	0: Rem 1: Key 2: Com	0	Δ
[215]	Run Stop Ctrl	0: Rem 1: Key 2: Com	0	Δ
[216]	Reset Ctrl	0: Rem 1: Key 2: Com 3: Rem+Key 4: Com+Key 5: Rem+Key+Com	1	Δ
[217]	Local / Rem			
[2171]	Loc Ref Ctrl	0: Standard 1: Remote 2: Keyboard 3: Com	0	Δ
[2172]	Loc Run Ctrl	Same as [2171]	Same as [2171]	Δ
[218]	Lock Code?			
[2181]	Lock/ Unlock	0 – 9999		Δ
[2182]	Login to Set	0 – 9999	0	Δ
[2183]	Set New	0 – 9999		Δ
[219]	Rotation	0: None 1: R 2: L 3: R+L	0	Δ
[21B]	Supply Volts	0: Not define 1: 100-110VAC 2: 220-240VAC 3: 380-415VAC 4: 440-480VAC	Depends on drive model	Δ

[21C]	Supply Type	0: AC 1: DC 2: AC+DC	0	Δ
[21D]	Jog Enable	0: Disable 1: Enable	0	Δ
[21E]	Fire Mode	0: Off 1: On 2: DigIn	0	Δ
[220]	Motor Data			
[221]	Motor Volt	100.0 to 700.0 V	Depends on drive model	×
[222]	Motor Freq	0.00 to 600.00 Hz	Depends on drive model	×
[223]	Motor Power	0 to 60000 W	Depends on drive model	×
[224]	Motor Crnt	0 to 600.0 A	Depends on drive model	×
[225]	Motor Speed	0 to 60000 rpm	Depends on drive model	×
[226]	Motor Poles	2 to 144	Depends on drive model	×
[227]	Motor CosΦ	0.45 to 1.00	0.7	×
[228]	Motor Vent	0: None 1: Self 2: Forced	1	×
[229]	Motor ID Run	0: Off 1: Short 2: Extended	0	×
[22A]	Motor Sound	0: E 1: F 2: G 3: H 4: Advanced	Depends on drive model	×
[22B]	Encoder			Δ
[22B1]	Encoder Enable	0: Off 1: On	0	×
[22B2]	Angle Offset	0-360 Degree		Δ
[22B3]	Encoder Type	0: Off 1: Incremental 2: SinCos	0	Δ
[22B4]	Enc Pulse	5 to 16384		×
[22B5]	Enc Speed	-10000 to 10000 rpm		Δ
[22B6]	Enc Puls Ctr	0 to 60000		Δ
[22E]	Motor PWM			Δ
[22E1]	PWM Fswitch	2000 – 8000 Hz		×
[22E2]	PWM Mode	0: Standard 1: Sine Filter	0	×
[22E3]	PWM Random	0: Off 1: On		×
[22E4]	SineFltr L1	0 – 65535 Henry		×
[22E5]	SineFltr C1	0 – 65535 Farad		×
[22G]	EncFault&SpdMon			Δ
[22G1]	Enc F Delay	0.01 to 10.00 S	0	×
[22G2]	Enc F Band	0 to 400 %		×
[22G3]	Max EncFCtr	0 to 10.00 S		×

[22H]	Phase order	0: Normal 1: Reverse	0	×
[22I]	Motor Type	0: ASYNC 1: PMSM	0	×
[22J]	PMSM Data			×
[22J1]	Bemf	100 to 700 V		×
[22J2]	Rs (mOhm/ph)	0.0 to 6000.0 mOhm		×
[22J3]	Lsd (mH/ph)	0.0 to 6000.0 mH		×
[22J4]	Lsq (mH/ph)	0.0 to 6000.0 mH		×
[22K]	Ctrl Set			
[22K1]	VHz Set	0: A 1: B	0	×
[22K2]	Spd/Trq Set	Same as [22K1]	Same as [22K1]	×
[230]	Motor Protect			
[231]	Mot I2T Type	0: Off 1: Trip 2: Limit T 3: Limit Spd	1	Δ
[232]	Mot I2T Crnt	0 to 150 %	100%	Δ
[233]	Mot I2T Time	60 to 1200 S	60S	Δ
[234]	Thermal Prot	0: Off 1: PT100 2: PT1000 3: PTC	0	Δ
[235]	Mot Class	0: A 100°C 1: E 115°C 2: B 120°C 3: F 140°C 4: F Nema 145°C 5: H 165°C	3	Δ
[236]	PT100 Input	0: PT100 1 1: PT100 2 2: PT100 1+2 3: PT100 3 4: PT100 1+3 5: PT100 2+3 6: PT100 1+2+3	0	Δ
[237]	Motor PTC	Same as [22B1]	Same as [22B1]	Δ
[238]	I2t Min Spd	-10000 to 10000 rpm	0	Δ
[239]	PT1000 Input	0: PT1000 1 1: PT1000 2 2: PT1000 1+2 3: PT1000 3 4: PT1000 1+3 5: PT1000 2+3 6: PT1000 1+2+3	0	Δ
[240]	Set Handling			
[242]	Copy Set	0: Off 1: M1>M2	0	×

		2: M2>M1 3: VHz-A>B 4: VHz-B>A 5: FOC-A>B 6: FOC-B>A		
[243]	Default Set	0: Off 1: M1 2: M2 3: M1 & M2 4: VHz-A 5: VHz-B 6: VHz-AB 7: FOC-A 8: FOC-B 9: FOC-AB 10: Factory	0	×
[244]	Copy To CP	0: No Copy 1: Copy	0	×
[245]	Load From CP	0: No Copy 1: Motor A 2: Motor B 3: Operation 4: IO 5: LogicFun 6: VHz A 7: VHz B 8: FOC A 9: FOC B 10: Process 11: EventLog 12: LoadMonitor	0	×
[246]	Erase Cp Config	0: Stop 1: Start	0	×
[250]	Trip Autoreset			
[251]	Auto Rst Ctrl			
[2511]	No of Trips	0 - 10	0	Δ
[2512]	Autores Enb	0: DigIn 1: On	0	Δ
[2513]	Clear Count	0: No 1: Yes	0	Δ
[252]	Drive Protect			
[2521]	Over Temp	0 - 3600 S	0	Δ
[2522]	Over Volt D	0 - 3600 S	0	Δ
[2523]	Over Volt G	0 - 3600 S	0	Δ
[2524]	Under Volt	0 - 3600 S	0	Δ
[2525]	Over Volt	0 - 3600 S	0	Δ
[2526]	Over Current	0 - 3600 S	0	Δ
[2527]	Input Ph Loss	0 - 3600 S	0	Δ
[253]	Motor Protect			
[2531]	Motor Lost	0 - 3600 S	0	Δ

[2532]	Locked Rotor	0 - 3600 S	0	Δ
[2533]	Motor I2t	0 - 3600 S	0	Δ
[2534]	PT100	0 - 3600 S	0	Δ
[2535]	PT1000	0 - 3600 S	0	Δ
[2536]	PTC	0 - 3600 S	0	Δ
[2539]	Over speed	0 - 3600 S	0	Δ
[253A]	Ext Mot Temp	0 - 3600 S	0	Δ
[253C]	Brk Fault	0 - 3600 S	0	Δ
[253D]	Encoder	0 - 3600 S	0	Δ
[254]	Comm & I/O			
[2541]	RS485 Com Err	0 - 3600 S	0	Δ
[2542]	Field Bus Err	0 - 3600 S	0	Δ
[2543]	Keypad Com Err	0 - 3600 S	0	Δ
[2544]	CP Port Com Err	0 - 3600 S	0	Δ
[2545]	HI Lost	0 - 3600 S	0	Δ
[2546]	AnIn<Offset	0 - 3600 S	0	Δ
[255]	Load Monitor			
[2551]	Min Load	0 - 3600 S	0	Δ
[2552]	Min Alrm Trip	0: Coast To Stop 1: Motor Decel	0	Δ
[2553]	Max Load	0 - 3600 S	0	Δ
[2554]	Max Alrm Trip	0: Coast To Stop 1: Motor Decel	0	Δ
[256]	Pump			
[2561]	Pump	0 - 3600 S	0	Δ
[258]	External Trips			
[2581]	Ext Trip 1	0 - 3600 S	0	Δ
[2582]	Ext Trip 2	0 - 3600 S	0	Δ
[2583]	Ext Trip 3	0 - 3600 S	0	Δ
[2584]	Ext Trip 4	0 - 3600 S	0	Δ
[260]	Serial Com			
[261]	Com Type	0: RS232/485 1: Fieldbus	0	Δ
[262]	RS232/485			
[2621]	Baud Rate	0: 2400 1: 4800 2: 9600 3: 19200 4: 38400 5: 57600 6: 115200	2	Δ
[2622]	Address	1 - 247	1	Δ
[264]	Com Fault			
[2641]	Com Fault Mode	0: Off 1: Trip 2: Warning	0	Δ
[2642]	Com Fault Time	0 - 15.0 S	0.5s	Δ
[2643]	RS485 Fault Mode	Same as [2641]	Same as [2641]	Δ
[2644]	RS485 Fault Time	0 - 15.0 S	0.5s	Δ

[2645]	Key Fault Mode	Same as [2641]	Same as [2641]	Δ
[2646]	Key Fault Time	0 -15.0 S	2s	Δ
[2647]	CP Port Mode	Same as [2641]	Same as [2641]	Δ
[2648]	CP Fault Time	0 -15.0 S	0	Δ
[280]	Terminal Ctrl			
[281]	Start/Stop			
[2811]	Mode	0: 2L Mode-A 1: 2L Mode-B 2: 3L Mode-A 3: 3L Mode-B 4: Pulse Mode	0	Δ
[2812]	Power-On Act	0: Normal 1: Power-Up Off 2: Every Start Off	0	Δ
[282]	Mot Pot			
[2821]	Function	Same as [5111]	Same as [5111]	Δ
[2822]	Operation	Same as [5119]	Same as [5119]	Δ
[2823]	Min	Same as [5115]	Same as [5115]	Δ
[2824]	Fun Min Val	-10000 to 10000		Δ
[2825]	Max	Same as [5115]	0	Δ
[2826]	Fun Max Val	-10000 to 10000		Δ
[2827]	Stop Act	0: Clear 1: Save	0	Δ
[2828]	Step Mode	0: Fixed 1: User	0	Δ
[2829]	User Step Val	0 to 1500 rpm	0.1%	Δ
[282A]	Fix Acc Time	5 to 3600.0 S	16s	Δ
[282B]	Fix Dec Time	5 to 3600.0 S	16s	Δ
[300]	Process			
[310]	Set/View Ref	-10000 to 10000 rpm	0	Δ
[320]	Procs Setting			
[321]	Proc Source	0: F(Rem) 1: Speed 2: F(Speed) 3: F(Com) 4: Freq 5: Torque 6: F(Torque)	1	Δ
[322]	Proc Unit	0: Off 1: % 2: °C 3: °F 4: bar 5: Pa 6: Nm 7: Hz 8: Rpm 9: m³/h 10: gal/h	0	Δ

		11: ft ³ /h 12: User Defined		
[323]	User Unit	-128 - +127		Δ
[324]	Process Min	0.000 – 100.00	000	Δ
[325]	Process Max	0.000 – 100.00	15	Δ
[326]	Ratio	0: Linear 1: Quadratic	0	Δ
[327]	F(Val) PrMin	0 - 10000 rpm	0	Δ
[328]	F(Val) PrMax	0 - 10000 rpm	1500rpm	Δ
[32A]	Prc Unit Res	0: S5D0 1: S4D1 2: S3D2 3: S3D1 4: S2D3	2	Δ
[330]	Start/Stop			
[331]	Ref Ramp Time			
[3311]	Acc Time 1	0.5 – 6000.0 S	10s	Δ
[3312]	Dec Time 1	0.5 – 6000.0 S	10s	Δ
[3313]	Acc Time 2	0.5 – 6000.0 S	10s	Δ
[3314]	Dec Time 2	0.5 – 6000.0 S	10s	Δ
[3315]	Acc Time 3	0.5 – 6000.0 S	10s	Δ
[3316]	Dec Time 3	0.5 – 6000.0 S	10s	Δ
[3317]	Acc Time 4	0.5 – 6000.0 S	10s	Δ
[3318]	Dec Time 4	0.5 – 6000.0 S	10s	Δ
[332]	Ramp Time SwOvr			
[3321]	Acc Sw Ovr Spd	0 to 60000 rpm	0	Δ
[3322]	Dec Sw Ovr Spd	Same as [3321]	Same as [3321]	Δ
[335]	Jog Ramp Time			
[3351]	Acc Time	0.5 – 6000.0 S	15s	Δ
[3352]	Dec Time	0.5 – 6000.0 S	15s	Δ
[337]	Curve Type	0: L Curve 1: S Curve	0	Δ
[339]	Start Mode	0: Fast 1: Normal	0	Δ
[33A]	Spin Start	0: OFF 1: ON 2: ENCODER	0	Δ
[33B]	Stop Mode	0: Ramp 1: Coast	0	Δ
[33C]	Mech Brake			
[33C1]	Release Time	0.00 – 3.00 S	0s	Δ
[33C2]	Release Spd	- 4x Sync. Speed to 4x Sync	0000rpm	Δ
[33C3]	Engage Time	0 – 3.00 S	0.00s	Δ
[33C4]	Ack Wait Time	0 – 3.00 S	0.00s	Δ
[33C5]	Fault Time	0.00 – 5.00 S	1.00s	Δ
[33C6]	Release Trq	-400 to +400 %	000%	Δ
[33G]	Vector Brake	Same as [21D]	0	Δ
[33J]	DC Hold			
[33J1]	DC Hold	Same as [22B1]	0	Δ

[33J2]	DC Hold Spd	0 - 250 rpm	10rpm	Δ
[33J3]	DC Hold Cur	0 – 100 %	30%	Δ
[340]	Speed			
[341]	Min Speed	0 - 10000 rpm	00000rpm	Δ
[342]	Stp < Min Spd	1 – 6000.0 S	0000.0s	Δ
[343]	Max Speed	0: Sync Speed	0	Δ
[344]	Skip Spd 1 Lo	0 - 10000 rpm	1500rpm	Δ
[345]	Skip Spd 1 Hi	0 - 10000 rpm	00000rpm	Δ
[346]	Skip Spd 2 Lo	0 - 10000 rpm	00000rpm	Δ
[347]	Skip Spd 2 Hi	0 - 10000 rpm	00000rpm	Δ
[348]	Jog Speed	0 - 10000 rpm	50rpm	Δ
[34A]	Over Spd Trp	0 - 150 %	110%	Δ
[34B]	Fallback Spd	0 - 10000 rpm	00000rpm	Δ
[34C]	Lower Spd	0 - 10000 rpm	00000rpm	Δ
[34D]	Lwr Spd Src	0: Default 1: Remote 2: User	0	Δ
[34E]	Upper Spd	0 - 10000 rpm	1500rpm	Δ
[34F]	Upr Spd Src	Same as [34D]	0	Δ
[350]	Torques			
[351]	Max Torque	0 – 400.0 %	100%	Δ
[352]	Torque Src	0: Set Val 1: Remote 2: Com	0	Δ
[353]	Torq Ramp Time	0 – 6000.0 S	1.0s	Δ
[354]	Flux Optim	0: Off 1: On (Imin) 2: On (n,T) 3: On (cosφ)	0	Δ
[357]	TL Trip	0 – 6553.5 S	0.0	Δ
[380]	Process PID			
[381]	PID Ctrl	0: Off 1: Normal 2: Invert	0	Δ
[383]	Kp	0 – 30.0	1.0	Δ
[384]	Ti	0 – 300.00 S	1.0s	Δ
[385]	Td	0 – 30.00 S	0.0s	Δ
[386]	PID < Min Spd	0 – 3600.0 S	0000.0s	Δ
[387]	PID Act Marg	0 - 10000 rpm	000.0rpm	Δ
[388]	PID Stdy Tst	0 – 3600.0 S	0000.0s	Δ
[389]	PID Stdy Marg	0 - 10000 rpm	000.00rpm	Δ
[3A0]	VHz Ctrl	The menu visible for drive mode [XXXX] VHz.		Δ
[3A1]	VHz Curve	0: Line 1: Brk-Line 2: Power 3: Full Sep 4: Half Sep 5: Power Inv	0	Δ

[3A2]	VHz Curve Power	0: P1.2 1: P1.4 2: P1.6 3: P1.8 4: P2.0	0	Δ
[3A3]	VHz Multipoint			
[3A31]	F1	0 – 600.00 Hz	000.00Hz	Δ
[3A32]	V1	0 – 100.0 %	000.0%	Δ
[3A33]	F2	0 – 600.00 Hz	000.00Hz	Δ
[3A34]	V2	0 – 100.0 %	000.0%	Δ
[3A35]	F3	0 – 600.00 Hz	000.00Hz	Δ
[3A36]	V3	0 – 100.0 %	000.0%	Δ
[3A37]	F4	0 – 600.00 Hz	000.00Hz	Δ
[3A38]	V4	0 – 100.0 %	000.0%	Δ
[3A4]	VHz Seperation			
[3A41]	Volt Source	0: Keyboard 1: AI1 2: AI2 3: AI3 4: Multi-Ref 5: HI 6: Ext PID 1 7: Ext PID 2 8: Ext PID 3	0	Δ
[3A42]	Volt Set Value	0 – 999.9 V	000.0v	Δ
[3A43]	Volt Rise Time	0 – 6000.0 S	0000.1v	Δ
[3A44]	Ratio	0 – 200.0	0.0	Δ
[3A5]	VHz Comp			
[3A52]	Us Drop Gain	0 – 100.0 %	000.0s	Δ
[3A6]	VHz Torque Boost			
[3A61]	Type	0: Off 1: Auto 2: Manual	0	Δ
[3A62]	Man Ref	0 - 250 %	00.0%	Δ
[3A63]	Man Freq Lmt	0 – 590.00 Hz	50.0Hz	Δ
[3B0]	FOC Ctrl	The menu visible for drive mode is Speed and Torque.		
[3B2]	PID Ctrl			
[3B21]	Lo Spd Ref	0 - 10000 rpm		Δ
[3B22]	Lo Spd Kp	6000		Δ
[3B23]	Lo Spd Ti	5 – 10.000		Δ
[3B24]	Hi Spd Ref	0 - 10000 rpm		Δ
[3B25]	Hi Spd Kp	6000		Δ
[3B26]	Hi Spd Ti	5 – 10.000		Δ
[3B4]	Comp & Gain			
[3B41]	Slip Comp	0 – 100.0 % S		Δ
[3B42]	Excit Gain	0 – 100.0 %		Δ
[3C0]	Ref Detection			
[3C1]	Ref Detect 1			

[3C11]	Ref Up Lmt	0 - 10000 rpm	0 rpm	Δ
[3C12]	Ref Low Lmt	0 - 10000 rpm	0 rpm	Δ
[3C2]	Ref Detect 2	Same as menu [3C1]	Same as menu [3C1]	
[3C3]	Ref Attain Diff	0 - 10000 rpm	0 rpm	Δ
[3F0]	Multi Ref			
[3F1]	Mode	0: One Cycle 1: Run Last Step 2: Repeat Cycle 3: Manual	0	Δ
[3F2]	Start Step	0: Last Step 1: 1st Step 2: 8th Step 3: 15th Step	0	Δ
[3F3]	Mem Retain	0: Clr on Pwr Off 1: Save on Pwr Off	0	Δ
[3F4]	Function	Same as [5111]	0	Δ
[3F5]	Operation	Same as [5119]	0	Δ
[3F6]	Fun Min	Same as [5115]	0	Δ
[3F7]	Fun Min Val	-10000 to 10000	Depends on function configuration	Δ
[3F8]	Fun Max	Same as [5115]	Same as [5115]	Δ
[3F9]	Fun Max Val	-10000 to 10000	Depends on function configuration	Δ
[3FB]	Step 1			
[3FB1]	Step Ref	-100.0 - +100.0 %	000.0%	Δ
[3FB2]	Step Run Time	0 - 6000.0 S	0000.0s	Δ
[3FB3]	Step Ramp Grp	0: Ramp G1 1: Ramp G2 2: Ramp G3 3: Ramp G4	0	Δ
[3FC]	Step 2	Same as [3FB]		
[3FD]	Step 3	Same as [3FB]		
[3FE]	Step 4	Same as [3FB]		
[3FF]	Step 5	Same as [3FB]		
[3FG]	Step 6	Same as [3FB]		
[3FH]	Step 7	Same as [3FB]		
[3FI]	Step 8	Same as [3FB]		
[3FJ]	Step 9	Same as [3FB]		
[3FK]	Step 10	Same as [3FB]		
[3FL]	Step 11	Same as [3FB]		
[3FM]	Step 12	Same as [3FB]		
[3FN]	Step 13	Same as [3FB]		
[3FO]	Step 14	Same as [3FB]		
[3FP]	Step 15	Same as [3FB]		
[3FQ]	Step 16	Same as [3FB]		
[400]	Monitor / Prot			
[410]	Load Monitor			
[411]	Alarm Sel	0: Off 1: Min	0	Δ

		2: Max 3: Min+Max		
[412]	Alarm Trip	Same as [411]	0	Δ
[413]	Ramp Alarm	0: Off 1: On	0	Δ
[414]	Alarm Start Dly	0 - 3600 S	2s	Δ
[415]	Load Type	0: Off 1: Basic 2: Load Curve 3: Load Curve R	0	Δ
[416]	Max Alarm			
[4161]	Margin	0 - 400.0 %	15%	Δ
[4162]	Delay	0 – 90.0 S	0.1%	Δ
[417]	Max Pre Alarm			
[4171]	Margin	0 - 400.0 %	10%	Δ
[4172]	Delay	0 – 90.0 S	0.1s	Δ
[418]	Min Pre Alarm			
[4181]	Margin	0 - 400.0 %	10%	Δ
[4182]	Delay	0 – 90.0 S	0.1s	Δ
[419]	Min Alarm			
[4191]	Margin	0 - 400.0 %	15%	Δ
[4192]	Delay	0 – 90.0 S	0.1%	Δ
[41A]	Auto Set Alrm	0: No 1: Yes	0	Δ
[41B]	Normal Load	0 - 400.0 %	100%	Δ
[41C]	Load Curve 1			
[41C1]	Speed	0 - 10000 rpm	00000rpm	Δ
[41C2]	Torque	0 - 400.0 %	100%	Δ
[41D]	Load Curve 2	Same as [41C]	Same as Load Curve1	
[41E]	Load Curve 3	Same as [41C]	Same as Load Curve1	
[41F]	Load Curve 4	Same as [41C]	Same as Load Curve1	
[41G]	Load Curve 5	Same as [41C]	Same as Load Curve1	
[41H]	Load Curve 6	Same as [41C]	Same as Load Curve1	
[41I]	Load Curve 7	Same as [41C]	Same as Load Curve1	
[41J]	Load Curve 8	Same as [41C]	Same as Load Curve1	
[41K]	Load Curve 9	Same as [41C]	Same as Load Curve1	
[41L]	Min Abs Margin	0 - 31.0 %	3%	Δ
[420]	Process Prot			
[421]	Bus UV Alrm			
[4211]	Flt Act	0: Coast to Stop 1: Stop Mode 2: Continue Run 3: Disable	0	Δ
[4212]	Flt Bckup Spd	0: Run Spd 1: Set Spd 2: Max Spd 3: Min Spd 4: Backup Spd	0	Δ
[422]	Motor I2T Alrm	Same as [421]	Same as [421]	

[423]	Inv OL Alrm			
[4231]	Detection	0: Always 1: Const Spd	0	Δ
[4232]	Report Fault	Same as [21D]	1	Δ
[4233]	Set Threshold	0 - 200.0 %	130%	Δ
[4234]	Dly Time	0 - 60.00 S	60.0s	Δ
[4235]	Flt Act	Same as [4211]	Same as [4211]	Δ
[4236]	Flt Bckup Spd	Same as [4212]	Same as [4212]	Δ
[424]	OverVolt Cld	Same as [S211]	1	Δ
[425]	Low Volt Or	Same as [S211]	1	Δ
[426]	Motor Lost Alrm			
[4261]	Threshold	5.0 - 100.0 %	20%	Δ
[4262]	Delay Time	0.1 - 100.0 S	5.0s	Δ
[4263]	Flt Act	Same as [4211]	Same as [4211]	Δ
[4264]	Flt Bckup Spd	Same as [4212]	Same as [4212]	Δ
[427]	Earth Flt Alrm			
[4271]	Enable	Same as [22B1]	Same as [22B1]	Δ
[4272]	I Leak Lmt	0 - 100 %	30%	Δ
[4273]	Test Time	10 - 999 uS	100uS	Δ
[428]	Rotor Lckd Alrm			
[4281]	Detection	0: Off 1: Trip	0	Δ
[429]	OP P Los Alrm			
[4291]	Flt Act	Same as [4211]	Same as [4211]	Δ
[4292]	Flt Bckup Spd	Same as [4212]	Same as [4212]	Δ
[42C]	External Trip Alrm	Same as [429]	Same as [429]	
[42D]	Mem Flt Alrm	Same as [429]	Same as [429]	
[42E]	Com Timeout Alrm	Same as [429]	Same as [429]	
[42G]	Run T Reach Alrm			
[42G1]	Flt Act	Same as [4211]	Same as [4211]	Δ
[42G2]	Flt Bckup Spd	Same as [4212]	Same as [4212]	Δ
[42H]	Tmp Discnct Alrm	Same as [42G]	Same as [42G]	
[42J]	Input Ph Loss	Same as [42G]	Same as [42G]	
[42K]	HI Lost	Same as [42G]	Same as [42G]	
[42L]	AI Lost	Same as [42G]	Same as [42G]	
[42M]	Ext Mot Temp	Same as [42G]	Same as [42G]	
[42N]	Opt PT100	Same as [42G]	Same as [42G]	Δ
[42O]	Opt PT1000	Same as [42G]	Same as [42G]	Δ
[42P]	Opt PTC	Same as [42G]	Same as [42G]	Δ
[430]	Ext Trip Txt			
[431]	Trip1 Txt	-128 to 127 (char)		Δ
[432]	Trip2 Txt	Same as [431]		Δ
[433]	Trip3 Txt	Same as [431]		Δ
[434]	Trip4 Txt	Same as [431]		Δ
[440]	Load Profile			
[441]	Peak Val Trackr			
[4411]	Fun	0: Disable 1: Current	1	Δ

		2: Speed 3: Frequency 4: Torque 5: DC Voltage 6: Op Voltage 7: Electrical Power 8: Speed Ref 9: Torque Ref 10: Proc PID Op 11: Proc PID Fbk		
[4412]	Filter Time	0.01 - 120.00 S	2.0s	Δ
[4413]	Val	-3276.7 - 3276.7 A	000.0A	●
[4415]	PVT Reset	Same as [2513]	Same as [2513]	Δ
[442]	ASM			
[4421]	Fun	Same as [4411]	Same as [4411]	Δ
[4422]	ASM 0-10%	0 - 100.0 %		●
[4423]	ASM 10-20%	0 - 100.0 %		●
[4424]	ASM 20-30%	0 - 100.0 %		●
[4425]	ASM 30-40%	0 - 100.0 %		●
[4426]	ASM 40-50%	0 - 100.0 %		●
[4427]	ASM 50-60%	0 - 100.0 %		●
[4428]	ASM 60-70%	0 - 100.0 %		●
[4429]	ASM 70-80%	0 - 100.0 %		●
[442A]	ASM 80-90%	0 - 100.0 %		●
[442B]	ASM 90-100%	0 - 100.0 %		●
[442C]	ASM Reset	Same as [2513]	Same as [2513]	Δ
[500]	I / Os			
[510]	Analog Input			
[511]	AIN 1			
[5111]	Function	0: Off 1: Spd Lwr 2: Spd Up 3: Max Torq 4: Process Ref 5: Process Val 6: EPID1_PrcsRef 7: EPID2_PrcsRef 8: EPID3_PrcsRef 9: EPID1_PrcsVal 10: EPID2_PrcsVal 11: EPID3_PrcsVal 12: VHz SepVoltRef 13: PumpPrsurFb	0	Δ
[5112]	Setup	0: 4-20mA 1: 0-20mA 2: User mA 3: User Bipol mA 4: 0-10V 5: 2-10V 6: User V	0	Δ

		7: User Bipol V 8: As DI		
[5113]	In Min	0-20.00mA, 0-10.00V	4.0A	Δ
[5114]	In Max	0-20.00mA, 0-10.00V	20.0.A	Δ
[5115]	Fun Min	0: Min 1: Max 2: User	0	Δ
[5116]	Fun Min Val	-10000.000 - 10000.000	If Menu [5115] is other than 2 it will not visible. Depends on source function configuration.	Δ
[5117]	Fun Max	Same as [5115]	Same as [5115]	Δ
[5118]	Fun Max Val	-10000.000 - 10000.000	If Menu [5117] is other than 2 it will not visible. Depends on source function configuration.	Δ
[5119]	Operation	0: Add 1: Sub 2: Min 3: Max	0	Δ
[511A]	Filter Time	0.001 -1.000 S	0.001 S	Δ
[512]	AIN 2	Same as [511]		
[513]	AIN 3	Same as [511]		
[514]	AIN B1 1	Same as [511]	Display if IO option board connected	
[515]	AIN B1 2	Same as [511]		
[516]	AIN B1 3	Same as [511]		
[517]	AIN B1 4	Same as [511]		
[520]	Digital Input			
[521]	DI 1			
[5211]	Fun	0: Off 1: Hi Spd 2: Lim Switch + 3: Lim Switch - 4: Ext. Trip1 5: Stop 6: Enable 7: Run R 8: Run L 9: Ext. Trip2 10: Reset 11: Terminal Up 12: Terminal Down 13: Up/Dn Set Clr 14: Pump 1 Feedb 15: Pump 2 Feedb 16: Pump 3 Feedb 17: Pump 4 Feedb 18: Pump 5 Feedb	8	Δ

		19: Pump 6 Feedb 20: Ext. Trip3 21: Ext. Trip4 22: Motor Set 23: Control Set 24: Mot Premag 25: Jog Right 26: Jog Left 27: Ext Mot Temp 28: Loc/Rem 29: Brk Ackn 30: Sleep 31: Timer 1 32: Timer 2 33: Timer 3 34: Timer 4 35: Three Wire Ctrl 36: Multi Ref Ter_1 37: Multi Ref Ter_2 38: Multi Ref Ter_3 39: Multi Ref Ter_4 40: Acl Dcl Det 1 41: Acl Dcl Det 2 42: Aux Freq Src Sel 43: Auto Ref Reset 44: Auto Ref Paused 45: DC Brk Cmd 46: Spd/Trq Ctrl Switch 47: PID Reset 48: Disable Tmr Out 49: Fire Mode 50: PumpClTrig 51: PumpClBlock		
[5212]	Pol	0: Low 1: High	0	Δ
[5213]	Dly Time	0.0 - 300.0 S		Δ
[522]	DI 2	Same as [521]	7	
[523]	DI 3	Same as [521]		
[524]	DI 4	Same as [521]		
[525]	DI 5	Same as [521]		
[526]	DI 6	Same as [521]		
[527]	DI 7	Same as [521]		
[528]	ADI 1	Same as [521]	Display if analog input setup as DI.	
[529]	ADI 2	Same as [521]		
[52A]	ADI 3	Same as [521]		
[52B]	DI B1 1	Same as [521]	Display if IO option board connected	
[52C]	DI B1 2	Same as [521]		
[52D]	DI B1 3	Same as [521]		
[52E]	DI B1 4	Same as [521]		
[530]	Analog Output		Same as [521]	

[531]	AO 1			
[5311]	Fun	0: Off 1: Process Val 2: Speed 3: Torque 4: Process Ref 5: Shaft Power 6: Frequency 7: Current 8: El Power 9: Output volt 10: DC Voltage 11: AnIn1 12: AnIn2 13: AnIn3 14: AnInOpt1 15: AnInOpt2 16: AnInOpt3 17: AnInOpt4 18: Speed Ref 19: Torque Ref 20: Freq Ref 21: AnMux1 22: AnMux2 23: IGBT Temp 24: MotTmpSensSup_1 25: MotTmpSensSup_2 26: VOLT10 27: HI 28: Ext PID 1 29: Ext PID 2 30: Ext PID 3	2	Δ
[5312]	Min	0.0 to 100.0 %	0%	Δ
[5313]	Max	0.0 to 100.0 %	100%	Δ
[5314]	Fc Min	0: Min 1: Max	0	Δ
[5315]	Fc Max	0: Min 1: Max	1	Δ
[5316]	Fltr Time	0.010 - 10.000 S		Δ
[5317]	Offset	- 100.0 - 100.0 %		Δ
[532]	AO 2	Same as [531]	3	
[533]	AO1 B1	Same as [531]	Display if IO option board connected	
[534]	AO2 B1	Same as [531]		
[540]	Digital Output			
[541]	DO 1			
[5411]	Fun	0: Off 1: Hi Spd 2: On 3: Run 4: Stop	14	Δ

		5: 0Hz 6: Ramp 7: At Process 8: At Max spd 9: No Trip 10: Trip 11: AutoRst Trip 12: Limit 13: Warning 14: Ready 15: T= Tlim 16: I>Inom 17: Brake 18: AnIn<Offset 19: Alarm 20: Pre Alarm 21: Max Alarm 22: Max PreAlarm 23: Min Alarm 24: Min PreAlarm 25: CA1 26: CA2 27: L1 28: L2 29: L3 30: L4 31: F1 32: F2 33: F3 34: F4 35: Operation 36: T1Q 37: T2Q 38: T3Q 39: T4Q 40: Sleeping 41: PumpSlave1 42: PumpSlave2 43: PumpSlave3 44: PumpSlave4 45: PumpSlave5 46: PumpSlave6 47: PumpMaster1 48: PumpMaster2 49: PumpMaster3 50: PumpMaster4 51: PumpMaster5 52: PumpMaster6 53: All Pumps 54: Only Master 55: Loc/Rem		
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		56: Standby 57: PTC Trip 58: PT100 Trip 59: Overvolt 60: Overvolt G 61: Overvolt D 62: Acc 63: Dec 64: I2t 65: V-Limit 66: C-Limit 67: Overtemp 68: Low voltage 69: DigIn 1 70: DigIn 2 71: DigIn 3 72: DigIn 4 73: DigIn 5 74: DigIn 6 75: DigIn 7 76: ManRst Trip 77: Com Error 78: External Fan 79: RunR 80: RunL 81: Com Active 82: Brk Fault 83: BrkNotEngage 84: Option 85: NOT1 86: NOT2 87: NOT3 88: NOT4 89: NOT5 90: NOT6 91: NOT7 92: NOT8 93: CTR1 94: CTR2 95: CLK1 96: CLK2 97: Enc Error 98: Spin Start 99: kWh-Pulses 100: ADI 1 101: ADI 2 102: ADI 3 103: Spd Lvl 1 104: Spd Lvl 2 105: At Min Spd 106: Spd Attain		
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		107: Drive Overload 108: Run Time 109: Auto Drive Ref 110: Spd Rng1 111: Spd Rng2 112: Fire Mode 113: PumpClAct 114: PumpClReq		
[5412]	Dly Time	0.0 - 6000.0 S	0s	Δ
[5413]	Pol	0: Low 1: High	0	Δ
[542]	DO 2	Same as [541]	9	
[550]	Relay			
[551]	Relay 1	Same as [541]		
[5511]	Fun	Same as [5411]	10	Δ
[5512]	Dly Time	0.0 - 6000.0 S	0s	Δ
[552]	Relay 2	Same as [551]	3	
[553]	Relay B1 1	Same as [551]	Display if relay option board 1 connected	
[554]	Relay B1 2	Same as [551]		
[555]	Relay B1 3	Same as [551]		
[556]	Relay B1 4	Same as [551]		
[557]	Relay B1 5	Same as [551]		
[558]	Relay B2 1	Same as [551]	Display if relay option board 2 connected	
[559]	Relay B2 2	Same as [551]		
[55A]	Relay B2 3	Same as [551]		
[55B]	Relay B2 4	Same as [551]		
[55C]	Relay B2 5	Same as [551]		
[560]	Digital VIO			
[561]	VIO1			
[5611]	Src	Same as [5411]	0	Δ
[5612]	Dest	Same as [5211]	0	Δ
[562]	VIO2	Same as [561]		
[563]	VIO3	Same as [561]		
[564]	VIO4	Same as [561]		
[565]	VIO5	Same as [561]		
[566]	VIO6	Same as [561]		
[567]	VIO7	Same as [561]		
[568]	VIO8	Same as [561]		
[570]	Analog VIO			
[571]	AVIO 1			
[5711]	Src Fun	Same as [5311]	0	Δ
[5712]	Dest Fun	Same as [5111]	0	Δ
[5713]	FC Min	Same as [5115]	Same as [5115]	Δ
[5714]	FC Min Val	-10000 to 10000	If Menu [5713] is other than 2 it will not visible. Depends on source function configuration.	Δ
[5715]	FC Max	Same as [5115]		Δ

[5716]	FC Max Val	-10000 to 10000	If Menu [5715] is other than 2 it will not visible. Depends on source function configuration.	Δ
[5717]	Operation	Same as [5119]		Δ
[572]	AVIO 2	Same as [571]	Same as [571]	
[573]	AVIO 3	Same as [571]	Same as [571]	
[580]	HI Spd Input			
[581]	Enable	Same as [21D]	0	Δ
[582]	Function	Same as [5111]	0	Δ
[583]	Min Input Freq	0.10 - 100.00 kHz	0.1kHz	Δ
[584]	Max Input Freq	0.10 - 100.00 kHz	100.0kHz	Δ
[585]	FC Min	Same as [5115]	0	Δ
[586]	FC Min Val	-10000 to 10000	If Menu[585] is other than 2 it will not visible.	Δ
[587]	FC Max	Same as [5115]	1	Δ
[588]	FC Max Val	-10000 to 10000	If Menu[587] is other than 2 it will not visible.	Δ
[589]	Operation	Same as [5119]	0	Δ
[58A]	Filter Time	0.100 - 10.000s	0.10s	Δ
[590]	HI Spd Output			
[591]	HO1			
[5911]	Enable	Same as [21D]	0	Δ
[5912]	Function	Same as [5311]	0	Δ
[5913]	Filter Time	0.010 - 10.000s	0.10s	Δ
[5914]	Min Freq	0.10 - 100.00 kHz	0.10kHz	Δ
[5915]	Max Freq	0.10 - 100.00 kHz	50.0kHz	Δ
[600]	Logic & Timers			
[610]	Analog Comp			
[611]	CA 1 Setup			
[6111]	Value	0: Process Val 1: Speed 2: Torque 3: Shaft Power 4: EI Power 5: Current 6: Output Volt 7: Frequency 8: DC Voltage 9: IGBT Temp 10: PT100-1 11: PT100-2 12: Energy 13: Run Time 14: Mains Time 15: AnIn1 16: AnIn2 17: AnIn3 18: OptAnIn1	1	Δ

		19: OptAnIn2 20: Process Ref 21: Process Err 22: OptPT100-1 23: OptPT100-2 24: OptPT100-3 25: AnMux1 26: AnMux2		
[6112]	Level Hi		300rpm	Δ
[6113]	Level Lo		200rpm	Δ
[6114]	Type	0: Hysteresis 1: Window	0	Δ
[6115]	Polar	0: Unipolar 1: Bipolar	0	Δ
[6116]	Set Dly	0 – 36000s	0s	Δ
[6117]	Reset Dly	0 – 36000s	0s	Δ
[6118]	Tmr Val	0 – 36000s	0s	Δ
[612]	CA 2 Setup	Same as [611]		
[620]	Analog Mux			
[621]	An Mux 1			
[6211]	In A	0: AnIn1 1: AnIn2 2: AnIn3	0	Δ
[6212]	In B	Same as [6211]	1	Δ
[6213]	Operator	0: Off 1: MIN(A,B) 2: MAX(A,B) 3: A+B 4: (A+B)/2 5: A-B 6: (A-B)/2 7: B-A 8: (B-A)/2 9: ABS(A-B) 10: ABS(A-B)/2	0	Δ
[622]	An Mux 2	Same as [621]		
[630]	Not Gate			
[631]	NOT1 Input	Same as [5411]	26	Δ
[632]	NOT2 Input	Same as [5411]	26	Δ
[633]	NOT3 Input	Same as [5411]	26	Δ
[634]	NOT4 Input	Same as [5411]	26	Δ
[635]	NOT5 Input	Same as [5411]	26	Δ
[636]	NOT6 Input	Same as [5411]	26	Δ
[637]	NOT7 Input	Same as [5411]	26	Δ
[638]	NOT8 Input	Same as [5411]	26	Δ
[640]	Logic Output			
[641]	Logic 1			
[6411]	L1 Expr	0: ((1.2).3).4 1: (1.2).(3.4)	0	Δ

[6412]	L1 Input 1	Same as [5411]	26	Δ
[6413]	L1 Op 1	0: & 1: + 2: ^ 3: .	0	Δ
[6414]	L1 Input 2	Same as [5411]	85	Δ
[6415]	L1 Op 2	Same as [6413]	0	Δ
[6416]	L1 Input 3	Same as [5411]	3	Δ
[6417]	L1 Op 3	Same as [6413]	3	Δ
[6418]	L1 Input 4	Same as [5411]	0	Δ
[6419]	L1 Set Dly	0.0 to 6000.0s	0000.0s	Δ
[641A]	L1 Res Dly	0.0 to 6000.0s	0000.0s	Δ
[641B]	L1 Tmr Val	0.0 to 6000.0s	0000.0s	Δ
[642]	Logic 2	Same as [641]		
[643]	Logic 3	Same as [641]		
[644]	Logic 4	Same as [641]		
[650]	Timer			
[651]	Timer1			
[6511]	Trig Fun	Same as [5411]	0	Δ
[6512]	Timer Mode	0: Delay 1: Alternate 2: On Time	0	Δ
[6513]	Delay Time	0 - 6000 S	10s	Δ
[6514]	Alt On	0 - 6000 S	10s	Δ
[6515]	Alt Off	0 - 6000 S	10s	Δ
[6516]	Extended Time			Δ
[652]	Timer2	Same as [651]		
[653]	Timer3	Same as [651]		
[654]	Timer4	Same as [651]		
[660]	Flip Flop			
[661]	Flip Flop 1			
[6611]	Mode	0: Reset 1: Set 2: Edge	0	Δ
[6612]	Set	Same as [5411]	0	Δ
[6613]	Reset	Same as [5411]	0	Δ
[6614]	Set Delay	0 - 36000.0 S	00000.0s	Δ
[6615]	Reset Delay	0 - 36000.0 S	00000.0s	Δ
[662]	Flip Flop 2	Same as [661]		
[663]	Flip Flop 3	Same as [661]		
[664]	Flip Flop 4	Same as [661]		
[670]	Counters			
[671]	Counter 1			
[6711]	Trig	Same as [5411]	0	Δ
[6712]	Reset	Same as [5411]	0	Δ
[6713]	High Val	0 - 10000	00000	Δ
[6714]	Low Val	0 - 10000	00000	Δ
[6715]	DecTimer	1 - 3600 S	0000	Δ
[6719]	Value	0 - 10000	00000	Δ

[672]	Counter 2	Same as [671]	0	
[680]	Clock Logic			
[681]	Clock 1			
[6811]	Time On	00:00:00 - 23:59:59	00:00:00	Δ
[6812]	Time Off	00:00:00 - 23:59:59	00:00:00	Δ
[6813]	Date On			Δ
[6814]	Date Off			Δ
[6815]	Weekday	Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday	SMTWTFS	Δ
[682]	Clock 2	Same as [681]		
[700]	Oper / Status			
[710]	Operation			
[711]	Process Val	Depends on selected Process source [321] and Process Unit [322].		●
[712]	Speed	-10000 to 10000 rpm		●
[713]	Torque %	0 to 400.0 %		●
[714]	Shaft Power	-32768 to 32767 kW		●
[715]	Elec Power	-32768 to 32767 kW		●
[716]	Output Crnt	0 to 999.9 A		●
[717]	Output Volt	0 to 999.9 V		●
[718]	Output Freq	0 to 599.00 Hz		●
[719]	DC Volt	0 to 999.9 V		●
[71A]	IGBT Temp	-20.0 to 150.0 °C		●
[71B]	PT100 Onbrd1	-20.0 to 150.0 °C		●
[71C]	PT100 Onbrd2	-20.0 to 150.0 °C		●
[71D]	PT100 B1			
[71D1]	PT100 B1 Ch-1	-100.0 to 300.0 °C		●
[71D2]	PT100 B1 Ch-2	-100.0 to 300.0 °C		●
[71D3]	PT100 B1 Ch-3	-100.0 to 300.0 °C		●
[71E]	Torque	-100.0 to +100.0 %		●
[71F]	Process Ref	- Depends on selected Process source [321] and Process Unit [322].		●
[71J]	DC Crnt	0 to 999.9 A		●
[71K]	PT1000 B1			
[71K1]	PT1000 B1 Ch-1	-100.0 to 300.0 °C		●
[71K2]	PT1000 B1 Ch-2	-100.0 to 300.0 °C		●
[71K3]	PT1000 B1 Ch-3	-100.0 to 300.0 °C		●
[71L]	PTC B1			
[71L1]	PTC B1 Ch-1	0.0 to 300.0 °C		●
[71L2]	PTC B1 Ch-2	0.0 to 300.0 °C		●
[71L3]	PTC B1 Ch-3	0.0 to 300.0 °C		●
[720]	Status			
[721]	VSD Status			
[7211]	Motor Set	Same as [212]	0	●
[7212]	Control Set	0: A 1: B	0	●

[7213]	Inv Ref Src	Same as [214]	0	●
[7214]	Torque Src	Same as [352]	0	●
[7215]	Limit Fun	0: No Limit 1: VL 2: SL 3: CL 4: TL		●
[7216]	Drive Mode	Same as [213]	0	●
[7217]	Auto Rst Cnt	0 to 10		Δ
[722]	Warning	0: No Warn 1: OL Inv 2: Motor I2t 3: Over Volt A 4: Over Volt D 5: Over Volt 6: Over Temp 7: Under Voltage 8: RS485 9: Com Fld Bus 10: Com Key 11: Com CP Port 12: Load Loss 13: Min Pre Load 14: Max Pre Load 15: BrkNotEngage 16: HI Lost 17: AnIn<Offset 18: DC Ripple 19: Inspection	0	●
[723]	Digital Input			
[7231]	DI 1-7	0000000 - 1111111		●
[7238]	ADI 1-3	0000 - 1111		●
[724]	Digital Output			
[7241]	DO 1-2	00 - 11		●
[7242]	Relay 1-2	00 - 11		●
[725]	Analog In			
[7251]	AI 1	-100 - 100 %		●
[7252]	AI 2	-100 - 100 %		●
[7253]	AI 3	-100 - 100 %		●
[727]	Analog Out			
[7271]	AO 1	0 - 100.0 %		●
[7272]	AO 2	0 - 100.0 %		●
[728]	Flip Flop			
[7281]	FF1 Tmr Val	0 - 36000.0 S		●
[7282]	FF2 Tmr Val	0 - 36000.0 S		●
[7283]	FF3 Tmr Val	0 - 36000.0 S		●
[7284]	FF4 Tmr Val	0 - 36000.0 S		●
[72C]	VIO 1-8	00000000 - 11111111		●

[72D]	Run Status	0: OK 1: No Run cmd 2: No Enable cmd 3: Sleep 4: Pump Blocked 5: Trip 6: STO 7: Int Blocked 8: PEBBs nok 9: DC-link nok 10: PPU load/cpy 11: Opt search 12: Opt blocked		●
[72E]	Hi Spd In	-100 - 100.0 %		●
[72F]	Hi Spd Out			
[72F1]	HO 1	0 to 100.00 %		●
[72G]	Multi Step	0 -15		●
[72H]	Ext PID Ref			
[72H1]	PID Ref 1	-10000 to 10000 %		●
[72H2]	PID Ref 2	-10000 to 10000 %		●
[72H3]	PID Ref 3	-10000 to 10000 %		●
[72I]	Ext PID FB			
[72I1]	PID FB 1	-10000 to 10000 %		●
[72I2]	PID FB 2	-10000 to 10000 %		●
[72I3]	PID FB 3	-10000 to 10000 %		●
[72O]	Protection	0: No Fault 1: Motor I2t 2: PTC 3: Out Ph Loss 4: Locked Rotor 5: Ext Trip1 6: Max Load 7: Min Load 8: RS485 9: Com Fld Bus 10: Com Key 11: Com CP Port 12: PT100 13: PT1000 14: Pump 15: Ext Mot Temp 16: MechBrake Fault 17: OPTION 18: Over Temp 19: Over Current 20: Over Volt A 21: Over Volt D 22: Over Volt G 23: Over Volt 24: Over Speed		●

		25: Under Voltage 26: Short Circuit 27: In Ph Loss 28: Eeprom R/W 29: Encoder 30: Ext Trip2 31: AnIn<Offset 32: Ext Trip3 33: Ext Trip4 34: OL Inv 35: HI Lost 36: IGBT Temp Lost 37: Pre Charge 38: Load Loss 39: Cont Time Reached 40: Earth Fault 41: DC Ripple 42: SC Max Reached		
[72P]	Information	0: No Info 1: Press Start 2: Interrupted! 3: Test Running 4: Test Run OK! 5: Error 6: Stop First! 7: Config Copying 8: Completed 9: Config Loading 10: Data Not Avail 11: Keypad Lock 12: Keypad Unlock 13: Invalid 14: Match,Set New 15: Success 16: Ack SC Max 17: Trip Auto Reset Max		●
[72Q]	Relay B1			
[72Q1]	Relay B1 1-5	00000 - 11111		●
[72R]	Relay B2			
[72R1]	Relay B2 1-5	00000 - 11111		●
[72S]	DI B1			
[72S1]	DI B1 1-4	0000 - 1111		●
[72T]	AO B1			
[72T1]	AO B1 1	0 - 100.0 %		●
[72T2]	AO B1 2	0 - 100.0 %		●
[72U]	AI B1			
[72U1]	AI B1 1	-100 - 100 %		●
[72U2]	AI B1 2	-100 - 100 %		●
[72U3]	AI B1 3	-100 - 100 %		●
[72U4]	AI B1 4	-100 - 100 %		●

[72V]	HI B1			●
[72V1]	HI B1 1	-100 - 100.0 %		●
[72V2]	HI B1 2	-100 - 100.0 %		●
[730]	Stored Values			
[731]	Run Time	00:00:00 - 23:59:59		●
[732]	Rst Run Time	Same as [2513]	0	Δ
[733]	Set Run Time	0 - 6000 S	0000s	Δ
[734]	Mains Time	00:00:00 - 23:59:59		●
[735]	Energy	-999999999 to 999999999 W		●
[736]	Rst Energy	Same as [2513]	0	Δ
[740]	Short Circuit			
[741]	Max Reached	0: No 1: Yes	0	●
[742]	Ack Time	00:00:00 - 23:59:59		●
[800]	View Trip Log			
[810]	Trip Log 1			
[811]	Trip Code	Same as [720]		●
[812]	Process Val	Same as [711]		●
[813]	Speed	Same as [712]		●
[814]	Torque	Same as [713]		●
[815]	Shaft Power	Same as [714]		●
[816]	Elec Power	Same as [715]		●
[817]	Current	Same as [716]		●
[818]	Output Volt	Same as [717]		●
[819]	Frequency	Same as [718]		●
[81A]	DC Voltage	Same as [719]		●
[81B]	IGBT Temp	Same as [71A]		●
[81C]	PT100-1000 PTC			●
[81C1]	PT100/1000-1	Same as [71B]		●
[81C2]	PT100/1000-2	Same as [71C]		●
[81C3]	PT100 B1 Ch-1	Same as [71D1]		●
[81C4]	PT100 B1 Ch-2	Same as [71D1]		●
[81C5]	PT100 B1 Ch-3	Same as [71D1]		●
[81C6]	PT1000 B1 Ch-1	Same as [71D1]		●
[81C7]	PT1000 B1 Ch-2	Same as [71D1]		●
[81C8]	PT1000 B1 Ch-3	Same as [71D1]		●
[81C9]	PTC B1 Ch-1	Same as [71L1]		●
[81CA]	PTC B1 Ch-2	Same as [71L1]		●
[81CB]	PTC B1 Ch-3	Same as [71L1]		●
[81D]	VSD Status			
[81D1]	Motor Set	Same as [212]		●
[81D2]	Control Set	0: A 1: B		●
[81D5]	Trq Ref Src	Same as [352]		●
[81D6]	Run/Stop Src	Same as [214]		●
[81D7]	Limit Fun	Same as [7215]		●
[81D8]	Multi Step	0 -15		●

[81E]	DI Status			
[81E1]	DI 1-7	Same as [7231]		●
[81E2]	ADI 1-3	Same as [7238]		●
[81F]	DO Status			●
[81F1]	DigOut 1-2	Same as [724]		●
[81F2]	RlyOut 1-2	Same as [724]		●
[81G]	AI Status			
[81G1]	AI 1	Same as [725]		●
[81G2]	AI 2	Same as [725]		●
[81G3]	AI 3	Same as [725]		●
[81H]	AO Status			
[81H1]	AO 1	Same as [727]		●
[81H2]	AO 2	Same as [727]		●
[81I]	I/O B1			
[81I1]	Relay B1	Same as [72Q1]		●
[81I2]	Relay B2	Same as [72R1]		●
[81I3]	DI B1 1-4			
[81I4]	AI B1 1	Same as [72U1]		●
[81I5]	AI B1 2	Same as [72U2]		●
[81I6]	AI B1 3	Same as [72U3]		●
[81I7]	AI B1 4	Same as [72U4]		●
[81I8]	AO B1 1	Same as [72T1]		●
[81I9]	AO B1 2	Same as [72T1]		●
[81J]	Run Time	Same as [731]		●
[81K]	Mains Time	Same as [732]		●
[81L]	Energy	Same as [735]		●
[81N]	VIO Status	Same as [72C]		●
[81O]	HI Status	Same as [72E]		●
[81P]	HO Status	Same as [72F1]		●
[81Q]	Ext PID Ref			
[81Q1]	PID 1	Same as [72H1]		●
[81Q2]	PID 2	Same as [72H2]		●
[81Q3]	PID 3	Same as [72H3]		●
[81R]	Ext PID FB			
[81R1]	PID 1	Same as [72I1]		●
[81R2]	PID 2	Same as [72I2]		●
[81R3]	PID 3	Same as [72I3]		●
[820]	Trip Log 2	Same as [810]		●
[830]	Trip Log 3	Same as [810]		●
[840]	Trip Log 4	Same as [810]		●
[850]	Trip Log 5	Same as [810]		●
[860]	Trip Log 6	Same as [810]		●
[870]	Trip Log 7	Same as [810]		●
[880]	Trip Log 8	Same as [810]		●
[890]	Trip Log 9	Same as [810]		●
[8A0]	Trip Log 10	Same as [810]		●
[8B0]	Trip Log 11	Same as [810]		●
[8C0]	Trip Log 12	Same as [810]		●

[8D0]	Trip Log 13	Same as [810]		●
[8E0]	Extend Trip Log			
[8E1]	Trip Log 14			
[8E11]	Trip Code	Same as [720]		Δ
[8E13]	Run Time	00:00:00 - 23:59:59		Δ●
[8E2]	Trip Log 15	Same as [8E1]		●
[8E3]	Trip Log 16	Same as [8E1]		●
[8E4]	Trip Log 17	Same as [8E1]		●
[8E5]	Trip Log 18	Same as [8E1]		●
[8E6]	Trip Log 19	Same as [8E1]		●
[8E7]	Trip Log 20	Same as [8E1]		●
[8E8]	Trip Log 21	Same as [8E1]		●
[8E9]	Trip Log 22	Same as [8E1]		●
[8EA]	Trip Log 23	Same as [8E1]		●
[8EB]	Trip Log 24	Same as [8E1]		●
[8EC]	Trip Log 25	Same as [8E1]		●
[8ED]	Trip Log 26	Same as [8E1]		●
[8EE]	Trip Log 27	Same as [8E1]		●
[8EF]	Trip Log 28	Same as [8E1]		●
[8EG]	Trip Log 29	Same as [8E1]		●
[8EH]	Trip Log 30	Same as [8E1]		●
[900]	System Data			
[920]	VSD Data			
[921]	VSD Type			
[9211]	PB Type	0: AMX 1: AMR		●
[9212]	PB Volt	2: 480		●
[9213]	Gen	0: G0		●
[9214]	IP Rating	0: 2X		●
[9215]	Current	Depends on inverter model.		●
[9216]	Duty	0: NOR 1: HEV		●
[922]	Software			
[9221]	Version	-		●
[9222]	Build Date	-		●
[9223]	Build Time	-		●
[9224]	Build Id	-		●
[9225]	Mod Id	-		●
[923]	Unit Name			Δ
[924]	Hardware			
[9241]	CB HW Ver	-		●
[925]	Ctrl Panel			
[9251]	Sw Version	-		●
[9252]	Hw Version	-		●
[9253]	Build Id	-		●
[9254]	CP Key	-		●
[926]	OB Build Info			
[9261]	IO Build ID	-		●

[9262]	IO Sw Ver	-		●
[9263]	Rly Build ID	-		●
[9264]	Rly Sw Ver	-		●
[9265]	Enc Build ID	-		●
[9266]	Enc Sw Ver	-		●
[927]	Bootloader			
[9271]	Version	-		●
[9272]	Build Id	-		●
[930]	Clock			
[931]	Time	00:00:00 - 23:59:59		Δ
[932]	Date			Δ
[937]	WeekDay	0: Non 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday 7: Sunday		Δ
[940]	Inspection			
[941]	Interval	0 - 600 Hr		Δ
[942]	Act Cntr	0 - 600 Hr		Δ
[943]	Clear Cntr	0: No 1: Yes	0	Δ
[950]	Contact			
[951]	Company Name			Δ
[952]	Phone Number			Δ
[953]	Address Line 1			Δ
[954]	Address Line 2			Δ
[955]	Address Line 3			Δ
[956]	Email Name			Δ
[957]	Email Domain			Δ
[A00]	Oscilloscope			
[A10]	Source	0: Param 1: ModbusAdr	0	Δ
[A20]	Run Scope			Δ
[P00]	Pump Ctrl			
[P10]	Enable	Same as [22B1]	0	Δ
[P20]	No. Of Drives	0 - 6	2	Δ
[P30]	Mode	0: Sequence 1: Run Time 2: All	0	Δ
[P40]	Single Drv Ctrl			Δ
[P41]	Change Cond	0: Stop 1: Timer 2: Both	2	Δ
[P42]	Change Timer	0 - 3000 Hr	500Hr	Δ
[P43]	Drive On Change	0 - 6 Hr	0	Δ
[P44]	Upper Band	0 - 100 %	10%	Δ

[P45]	Lower Band	0 - 100 %	10%	Δ
[P46]	Start Delay	0 - 999 s	000s	Δ
[P47]	Stop Delay	0 - 999 s	000s	Δ
[P48]	Upr Band Lmt	0 - 100 %	000s	Δ
[P49]	Low Band Lmt	0 - 100 %	000%	Δ
[P4A]	Settle Start	0 - 999 s	000s	Δ
[P4B]	Trans Spd Start	0 - 100 %	000%	Δ
[P4C]	Settle Stop	0 - 999 s	60s	Δ
[P4D]	Trans Stop	0 - 100 s	60%	Δ
[P4E]	No Of BackUp	0 - 3	0	Δ
[P60]	Pump Time Ctrl			
[P61]	Pump1 Time/Rst			
[P611]	Run Time	00:00:00 - 23:59:59		Δ
[P612]	Rst Run Tm	Same as [2513]		Δ
[P62]	Pump2 Time/Rst			
[P621]	Run Time	00:00:00 - 23:59:59		Δ
[P622]	Rst Run Tm	Same as [2513]		Δ
[P63]	Pump3 Time/Rst			
[P631]	Run Time	00:00:00 - 23:59:59		Δ
[P632]	Rst Run Tm	Same as [2513]		Δ
[P64]	Pump4 Time/Rst			
[P641]	Run Time	00:00:00 - 23:59:59		Δ
[P642]	Rst Run Tm	Same as [2513]		Δ
[P65]	Pump5 Time/Rst			
[P651]	Run Time	00:00:00 - 23:59:59		Δ
[P652]	Rst Run Tm	Same as [2513]		Δ
[P66]	Pump6 Time/Rst			
[P661]	Run Time	00:00:00 - 23:59:59		Δ
[P662]	Rst Run Tm	Same as [2513]		Δ
[P70]	Pump Status			
[P71]	Pump 1	0: O 1: C 2: D 3: E		Δ
[P72]	Pump 2	Same as [P71]		Δ
[P73]	Pump 3	Same as [P71]		Δ
[P74]	Pump 4	Same as [P71]		Δ
[P75]	Pump 5	Same as [P71]		Δ
[P76]	Pump 6	Same as [P71]		Δ
[Q80]	PC Status			
[Q81]	PC State	0: Off 1: Requested 2: Active		Δ
[Q82]	AttemptCnt	0 - 15		Δ
[Q83]	ResetCnt	0 - 1		Δ
[Q84]	TotCnt	0 - 65535		Δ
[Q85]	TotCntSince	0 - 65535		Δ
[Q86]	TotCntReset	0 - 1		Δ

6. Troubleshooting, Diagnoses and Maintenance

6.1. Trips, warnings and limits

In order to protect the AC drive the principal operating variables are continuously monitored by the system. If one of these variables exceeds the safety limit an error/warning message is displayed. In order to avoid any possibly dangerous situations, the inverter sets itself into a stop Mode called Trip and the cause of the trip is shown in the display.

“Trip”

- * The AC drive stops immediately, the motor coasts to a standstill.
- * The Trip relay or output is active (if selected).
- * The Trip Red LED is ON in the CP.
- * The accompanying trip message is displayed.
- * The “TRIP” status indication is displayed in CP.
- * A trip message is displayed, and the trip status can also be checked in the “[72O] Protection” menu.
- * After reset command, the trip message will disappear.

“Warning”

- * The AC drive stops immediately, the motor coasts to a standstill.
- * The inverter is close to a trip limit. The Warning relay or output is active (if selected).
- * The Trip Red LED is flashing in the CP.

A warning message is displayed, and the warning status can also be checked in the “[722] Warning” menu.

“Information”

- * The AC drive not stops, the motor run.

An information message is displayed, and the information status can be checked in the “[72P] Information” menu.

“Limits”

- * The AC drive not stops, the motor run.
- * The inverter is limiting torque and/or frequency to avoid a trip.
- * The Limit relay or output is active (if selected).
- * One of the Limit status indications is displayed in the CP.

Table 12: List of trip and warning message

<i>Trip/Warning Messages</i>	<i>Selections</i>	<i>Warning Indicators</i>
OL Inv	Off/Warn/Trip	
Motor I2t	Off/Warn/Trip/Limit	I2t
Accel OV	Warn/Trip	
Decel OV	Warn/Trip	
OV	Warn/Trip	VL
OT	Warn/Trip	OT
Bus UV	Off/Warn/Trip	LV
In Ph Loss	Off/Trip	
Short Circuit	On	
Eeprom R/W	Off/Trip	
RS485	Off/Warn/trip	
Com Fld Bus	Off/Warn/trip	
Com Key	Off/Warn/trip	
Com CP Port	Off/Warn/trip	
Temp Det	Off/Trip	
Out Ph Loss	Off/Trip	
PID FB Loss	Off/Trip	
Ext 1	Off/Trip via DigIN	
Ext 2	Off/Trip via DigIN	
Ext 3	Off/Trip via DigIN	
Ext 4	Off/Trip via DigIN	
Pre Charge	Off/Warn/Trip	
Load Loss	Off/Warn/Trip/Limit	
Cont Time Reached	Warn/Trip	
Earth Fault	Warn/Trip	
Locked Rotor	Warn/Trip	
Min Load	Warn/Trip	
Max Load	Off/Warn/Trip	
MechBrake Fault	Off/Trip	
Encoder Fault	Via Option board	
Over Speed	On	
HI Lost	Off/Warn/Trip	
AnIn1 Lost	Off/Warn/Trip	
AnIn2 Lost	Off/Warn/Trip	
AnIn3 Lost	Off/Warn/Trip	
AnIn Opt1 Lost	Off/Warn/Trip	
AnIn Opt2 Lost	Off/Warn/Trip	
Over Current	On	
Ext Mot Temp	Trip via DigIN	

Table 13: List of information message

Information Messages	Selections
ID Run Intrpted	In Commission
ID Run Err	In Commission
ID Run On	In Commission
Config Copying	In CP loading
Above Max	On
Below Min	On

6.2. Trip conditions, causes and remedial action

The table later on in this section must be seen as a basic aid to find the cause of a system failure and to how to solve any problems that arise. An AC drive is mostly just a small part of a complete AC drive system. Sometimes it is difficult to determine the cause of the failure, although the AC drive gives a certain trip message it is not always easy to find the right cause of the failure. Good knowledge of the complete drive system is therefore necessary. Contact your supplier if you have any questions.

The Trip Log can be useful for determining whether certain trips occur at certain moments. The Trip Log also records the time of the trip in relation to the run time counter.



WARNING!

If it is necessary to open the AC drive or any part of the system (motor cable housing, conduits, electrical panels, cabinets, etc.) to inspect or take measurements as suggested in detailed instruction manual on our website, it is necessary to read and follow the safety instructions in the manual.

6.2.1. Technically qualified personnel

Installation, commissioning, demounting, making measurements, etc., of or at the AC drive may only be carried out by personnel technically qualified for the task.



6.2.2. Opening the AC drive



WARNING!

Always switch the mains voltage off if it is necessary to open the AC drive and wait at least 7 minutes to allow the capacitors to discharge.

WARNING!

In case of malfunctioning always check the DC-link voltage, or wait one hour after the mains voltage has been switched off, before dismantling the AC drive for repair.

The connections for the control signals and the switches are isolated from the mains voltage. Always take adequate precautions before opening the AC drive.

6.2.3. Precautions to take with a connected motor

If work must be carried out on a connected motor or on the driven machine, the mains voltage must always first be disconnected from the AC drive. Wait at least 7 minutes before continuing.

Table 14: Trip condition, their possible causes and remedial action

Warn/ Trip Code	Trip condition	Possible Cause	Remedy	Size**
W.001, T.001	Motor I2t	I2t value is exceeded. Overload on the motor according to the programmed I2t settings.	Check on mechanical overload on the motor or the machinery (bearings, gearboxes, chains, belts, etc.) Change the Motor I2t Current setting in menu group "[230] Motor protect".	
T.002	PTC	Motor thermistor (PTC) exceeds maximum level. NOTE: Only valid if option board PTC is used.	Check on mechanical overload on the motor or the machinery (bearings, gearboxes, chains, belts, etc.) Check the motor cooling system. Self-cooled motor at low speed, too high load. Set PTC, menu [234] to OFF	
T.003	Out Ph Loss	The cable connecting the AC drive and the motor is faulty. The AC drive's three-phase outputs are unbalanced when the motor is running. The drive board is faulty. The module is faulty.	Eliminate external faults. Check whether the motor Three- phase winding is normal. Contact the agent or CG.	
T.004	Locked Rotor	Torque limit at motor standstill: Mechanical blocking of the rotor.	Check for mechanical problems at the motor or the machinery connected to the motor Set locked rotor alarm to OFF in menu [4281] Detection.	
T.005	Ext Trip1	External input (DigIn 1-7) active: Active low function on the input. NOTE: Exact trip message is dependent on [431] Trip1 Text.	Check the equipment that initiates the external input Check the programming of the digital inputs DigIn 1-7.	
W.013, T.006	-Min Pre Load -Min Load	Min alarm level (underload) has been reached.	Check the load condition of the machine Check the monitor setting in menu [410] Load Monitor.	
W.014, T.007	-Max Pre Load	Max alarm level (overload) has been reached.	Check the load condition of the machine	

	-Max Load		Check the monitor setting in menu [410] Load Monitor.	
W.008, T.008	RS485	Error on serial communication Rs485(option)	Check cables and connection of the serial communication. Check all settings with regard to the serial communication. Restart the equipment including the AC drive.	
W.009, T.009	Com Fld Bus	Error on serial communication filed bus(option)	Check cables and connection of the serial communication. Check all settings with regard to the serial communication. Restart the equipment including the AC drive.	
W.010, T.010	Com Key	Error on serial communication key.	Check cables and connection of the serial communication. Check all settings with regard to the serial communication. Restart the equipment including the AC drive.	
W.011, T.011	Com CP Port	Error on serial communication with CP port.	Check cables and connection of the serial communication. Check all settings with regard to the serial communication. Restart the equipment including the AC drive.	
T.012	PT100	Motor PT100 elements exceeds maximum level. NOTE: Only valid if option board PT100 is used.	Check on mechanical overload on the motor or the machinery (bearings, gearboxes, chains, belts, etc.) Check the motor cooling system. Self-cooled motor at low speed, too high load. Set PT100 to OFF, menu [234]	
T.013	PT1000	Motor PT1000 elements exceeds maximum level. NOTE: Only valid if option board PT1000 is used.	Check on mechanical overload on the motor or the machinery (bearings, gearboxes, chains, belts, etc.) Check the motor cooling system. Self-cooled motor at low speed, too high load. Set PT100 to OFF, menu [234]	
T.014	Pump	No master pump can be selected due to error in feedback signalling. NOTE: Only used in Pump Control.	Check cables and wiring for Pump feedback signals Check settings with regard to the pump feedback digital inputs.	
T.015	Ext Mot Temp	External input (DigIn 1-7) active:	Check the equipment that initiates the external input	

		active low function on the input.	Check the programming of the digital inputs DigIn 1-7.	
W.015, T.016	- BrkNot Engage - Mech Brake Fault	Brake tripped on brake fault (not released) or Brake not engaged during stop.	Check Brake acknowledge signal wiring to selected digital input. Check programming of digital input DigIn 1-7, [520]. Check circuit breaker feeding mechanical brake circuit. Check mechanical brake if acknowledge signal is wired from brake limit switch. Check brake contactor. Check settings [33C], [33D], [33E], [33F].	
T.017	Option	If an Option specific trip occurs	Check the description of the specific option	
W.006, T.018	Over Temp	Heatsink temperature too high: Too high ambient temperature of the AC drive Insufficient cooling Too high current Blocked or stuffed fans	Check the cooling of the AC drive cabinet. Check the functionality of the built-in fans. The fans must switch on automatically if the heatsink temperature gets too high. At power up the fans are briefly switched on. Check AC drive and motor rating Clean fans Check / reduce switching frequency settings in [22A] Motor Sound or [22E1] PWM Fswitch.	
T.019	Over Current	Motor current exceeds the peak AC drive current: Too short acceleration time. Too high motor load Excessive load change Soft short-circuit between phases or phase to earth Poor or loose motor cable connections.	Check the acceleration time settings and make them longer if necessary. Check the motor load. Check on bad motor cable connections. Check on bad earth cable connection. Check on water or moisture in the motor housing and cable connections.	
W.003, T.020	Over Volt Acceleration	The input voltage is too high. An external force drives the motor during acceleration. The acceleration time is too short. The braking unit and braking resistor are not installed.	Adjust the voltage to normal range. Cancel the external force or install a braking resistor. Increase the acceleration time.	
W.004, T.021	Over Volt Deceleration	The input voltage is too high.	Adjust the voltage to normal range.	

		An external force drives the motor during deceleration. The deceleration time is too short. The braking unit and braking resistor are not	Cancel the external force or install the braking resistor. Increase the deceleration time.	
T.022	Over Volt Generation	Too high DC Link voltage: - Too short deceleration time with respect to motor/machine inertia. - Too small brake resistor malfunctioning Brake chopper	- Check the deceleration time settings and make them longer if necessary. - Check the dimensions of the brake resistor and the functionality of the Brake chopper (if used)	
W.005, T.023	Over Volt	Too high DC Link voltage, due to too high mains voltage	Check the main supply voltage Try to take away the interference cause or use other main supply lines.	
T.024	Over Speed	The actual speed of the equipment exceeded the configured over speed trip level (e.g., 110% of maximum speed). Incorrect configuration of the trip level in the settings menu. Faulty speed sensor or signal interference causing false high-speed readings (from Encoder). Sudden load changes or mechanical faults leading to speed surge.	Check and verify the configured over speed trip level in the settings menu. Adjust it if necessary based on operational limits. Inspect the speed sensor and wiring for faults or loose connections.	
W.007, T.025	Under Voltage	Too low DC Link voltage: Too low or no supply voltage Mains voltage dip due to starting other major power consuming machines on the same line.	Make sure all three phases are properly connected and that the terminal screws are tightened. Check that the mains supply voltage is within the limits of the AC drive. Try to use other mains supply lines if dip is caused by other machinery Use the function low voltage override [421].	
T.026	Short Circuit	The output circuit is grounded or short circuited. The connecting cable of the motor is too long. The module overheats. The internal connections become loose.	Eliminate external faults. Install a reactor or an output filter. Check the air filter and the cooling fan. Connect all cables properly. Contact the agent or CG.	

		The main control board is faulty The drive board is faulty. The inverter module is faulty.		
T.027	In Ph Loss	The cable connecting the AC drive and the motor is faulty. The AC drive's three-phase outputs are unbalanced when the motor is running. The drive board is faulty. The module is faulty.	Eliminate external faults. Check whether the motor Three-phase winding is normal. Contact the agent or CG.	
T.028	EEPROM R/W	The EEPROM chip is damaged.	Replace the main control board.	
T.029	Encoder	Lost encoder board, encoder cable or encoder pulses. Motor speed deviation in between reference and measured speed detected. NOTE: Only valid if option board Encoder is used.	Check encoder board. Check encoder cable and signals. Check motor operation. Check speed deviation settings "[22G] EncFault & SpdMon". Check torque limit setting [351] Disable encoder, set menu [22B3] to OFF.	
T.030	Ext Trip2	External input (DigIn 1-7) active: Active low function on the input. NOTE: Exact trip message is dependent on [432] Trip2 Text.	Check the equipment that initiates the external input Check the programming of the digital inputs DigIn 1-7.	
W.017 T.031	AnIn<Offset	An analogue input signal is below the configured minimum value.	Check cables and connections of the analogue inputs. Check the configured minimum values for the analogue inputs. Disable Flt Act in menu [42L].	
T.032	Ext Trip3	External input (DigIn 1-7) active: Active low function on the input. NOTE: Exact trip message is dependent on [433] Trip3 Text.	Check the equipment that initiates the external input Check the programming of the digital inputs DigIn 1-7.	
T.033	Ext Trip4	External input (DigIn 1-7) active: Active low function on the input.	Check the equipment that initiates the external input Check the programming of the digital inputs DigIn 1-7.	

		NOTE: Exact trip message is dependent on [434] Trip4 Text.		
W.001, T.034	OL Inv	The load is too heavy or locked-rotor occurs on the motor. The AC drive model is of too small power class.	Reduce the load and check the motor and mechanical condition. Select an AC drive of higher power class.	
W.016, T.035	HI Lost	The high-speed input signal value dropped below the configured minimum threshold. Incorrect configuration of minimum speed value in the system settings.	Check the actual input value and compare it with the configured minimum value. Verify and correct the minimum hi speed input setting in the configuration menu [586] FC Min Value.	
T.036	IGBT Temp Lost	The IGBT temperature sensor failure or cable break.	Contact for technical support.	
T.037	Pre Charge *	Loose or disconnected wiring to the pre-charge relay. Faulty pre-charge relay or damaged coil.	Inspect and secure all wiring connections to the pre-charge relay.	Frame 2 and Up
W.012, T.038	Load Loss	Phase loss or too great imbalance on the motor phases.	Check the motor voltage on all phases. Check for loose or poor motor cable connections If all connections are OK, contact your supplier Set motor lost alarm to OFF.	
T.039	Cont Time Reached	Set the running time to reach this function. The running time parameter (likely in configuration setting "[733] Cont Time") has been set too low.	Check and adjust the "[733] Cont Time" parameter to set an appropriate running time.	
T.040	Earth Fault	Ground leakage current exceeds the set reference. Faulty insulation or damaged cables. Improper grounding or loose earth connections. Moisture ingress in motor or cable terminations.	Inspect insulation resistance of cables and motor windings. Check grounding system for continuity and proper connection. Dry out any moisture-prone areas or replace damaged components. Adjust the menu [4272]Lkg Crnt Ref to a suitable value based on system design.	
W.018 T.041	DC Ripple	Excessive DC bus voltage ripple detected. Input phase imbalance or input phase loss causing unstable DC bus voltage.	Check input supply voltage and verify all input phases are present and balanced. Check DC bus capacitors for aging, leakage, or reduced capacitance.	

		Faulty rectifier circuit or damaged input components. Insufficient DC bus capacitance or degraded capacitors.	Verify incoming power quality and connections. Contact supplier if the issue persists.	
T.042	SC Max Reached	Short circuit protection limit has been reached. Motor cable short circuit or insulation failure. Motor winding fault.	Check motor cable connections for short circuit or insulation damage. Remove the fault condition and restart the drive. Contact supplier if the fault remains.	
W.019	Inspection	Drive operating hours have reached the configured inspection interval. The runtime counter has exceeded the value set in menu [941] Interval. Periodic maintenance inspection is required based on operating time.	Perform routine inspection and maintenance of the drive system. Verify drive operation and check for abnormal conditions. Reset the inspection warning using menu [943] after completing the inspection. Adjust the inspection interval in menu [941] if required.	

* = Frame number

** = If no size is mentioned in this column, the information is valid for all sizes.

7. Technical Data

7.1. Electrical specifications related to model

NOTE: Refer to motor manufacturers instruction manual for motor maintenance requirements.
Emotron AMX - IP20 version

Table 15: Typical motor power at mains voltage 230 V. AC drive main voltage range 230 - 480 V.

Model AMX	Max. output current [A]*	Normal duty (120%, 1 min every 10 min)			Heavy duty (150%, 1 min every 10 min)			Frame size
		Power @230V [kW]	Power @230V [HP]	Rated current [A]	Power @230V [kW]	Power @230V [HP]	Rated current [A]	
48-004-20	5	0.75	1	4.2	0.37	0.5	2.5	X1
48-006-20	7	1.1	1.5	5.5	0.75	1	4.2	
48-009-20	11	1.5	2	9.1	1.1	1.5	5.5	
48-013-20	16	2.2	3	13	1.5	2	9.1	X2
48-017-20	20	4	5	17	2.2	3	13	
48-025-20	30	5.5	7.5	25	4	5	17	X3
48-032-20	38	7.5	10	32	5.5	7.5	25	
48-038-20	44	7.5	10	37	7.5	10	32	

* Available during limited time and as long as allowed by drive temperature.

Table 16: Typical motor power at mains voltage 400 and 460 V. AC drive main voltage range 230 - 480 V.

Model AMX	Max. output current [A]*	Normal duty (120%, 1 min every 10 min)			Heavy duty (150%, 1 min every 10 min)			Frame size
		Power @400V [kW]	Power @460V [HP]	Rated current [A]	Power @400V [kW]	Power @460V [HP]	Rated current [A]	
48-004-20	5	1.5	2	4.2	0.75	1	2.5	X1
48-006-20	7	2.2	3	5.5	1.5	2	4.2	
48-009-20	11	3.7	5	9.1	2.2	3	5.5	
48-013-20	16	5.5	7.5	13	3.7	5	9.1	X2
48-017-20	20	7.5	10	17	5.5	7.5	13	
48-025-20	30	11	15	25	7.5	10	17	X3
48-032-20	38	15	20	32	11	15	25	
48-038-20	44	18.5	25	37	15	20	32	

7.2. General electrical specifications

Table 17: General electrical specifications

General	
Mains voltage: AMX48	380-480V +10%/-15% (-10% at 230 V)
Mains frequency:	45 to 65 Hz
Mains voltage imbalance:	max. +3.0% of nominal phase to phase input voltage
Input power factor:	0.95
Output voltage:	0–Mains supply voltage:
Output frequency:	0–590 Hz
Output switching frequency: *	1.5kHz to 6kHz, (default) 4 kHz upto 45kW (ND), 3kHz above 45kW (ND)
Efficiency at nominal load:	97% for models 004 to 032 98% for models 038 to 112
Control Signal Inputs: Analogue (differential)	
Analogue Voltage/current:	0±10 V / -20-20 mA via Jumper setting
Max input voltage:	+30 V/60 mA
Input impedance:	20 kohm (voltage)
Resolution:	470 ohm (current)
Hardware accuracy:	11 bits + sign
Non-linearity	1% type + 1 ½ LSB fsd 1½ LSB
Digital	
Input voltage:	High: >6 VDC, Low: <2 VDC
Max. input voltage:	+30 VDC
Input impedance:	2.4 kohm
Signal delay:	≤10 ms
Control signal outputs	
Analogue	
Output voltage/current:	0-10 V/0-20 mA via Jumper setting
Max. output voltage:	+13 V @5 mA cont.
Short-circuit current (∞):	+60 mA (voltage), +60 mA (current)
Output impedance:	0 ohm (voltage)
Resolution:	10 bit
Maximum load impedance for current:	500 ohm
Hardware accuracy:	1.9% type fsd (voltage), 2.5% type fsd (current)
Offset:	3 LSB
Non-linearity:	2 LSB
Digital	
Output voltage	High: >20 VDC @50 mA, >23 VDC open Low: <1 VDC @50 mA
Short circuit current(∞):	200 mA max (together with +24 VDC)
Relay	
Contacts	0.1 – 2 A/Umax 250 VAC or 42 VDC (30 VDC acc. to UL requirement) for general Purpose or Resistive use only.
RS-485 communication	
Differential voltage:	-7 V to 12 V
References	

+10VDC +24VDC	+10 VDC @10 mA Short-circuit current +40 mA max +24 VDC Short-circuit current +200 mA max (together with Digital Outputs)
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* Internally reduced to minimum 1.5 kHz if IGBT temperature is too high.

7.3. Operation at higher temperatures

7.3.1. Possible de-rating

De-rating of output current is possible with -1% / degree Celsius to max +5 °C (= max temp 55 °C) or -0.55% / %/ degree Fahrenheit to max +9 °F (= max temp. 131 °F)

7.4. Dimensions and Weights

Table 18: Mechanical specifications, AMX48 for IP20 module

Model No.	External and installation dimensions [mm (in)]						
	W	H	D	W1	H1	Install hole dia.	Weight (kg)
48-004-20	95 (3.74)	262 (10.31)	168 (6.61)	60 (2.36)	243 (9.57)	5 (0.2)	1.45
48-006-20							
48-009-20							
48-013-20	104 (4.09)	279 (10.98)	181 (7.13)	68 (2.68)	262 (10.31)	5 (0.2)	2.45
48-017-20							2.5
48-025-20	131 (5.16)	315 (12.4)	190 (7.48)	85 (3.35)	297 (11.69)	5 (0.2)	3.4
48-032-20							3.5
48-038-20							3.65

* Enclosure height/Total height

* W1:- Mounting hole width

* H1:- Mounting hole height

7.5. Environmental conditions

Table 19: Operation

Parameter	Normal Operation
Nominal ambient temperature	0 °C–50 °C (32 °F - 122 °F) See detailed manual for different conditions
Atmospheric pressure	86–106 kPa (12.5 - 15.4 PSI)
Relative humidity, according to IEC 60721-3-3	Class 3K4, 5...95% and non-condensing
Contamination, according to IEC 60721-3-3	No electrically conductive dust allowed. Cooling air must be clean and free from corrosive materials. Chemical gases, class 3C2. Solid particles, class 3S2.
Vibrations	According to IEC 60068-2-6, Sinusoidal vibrations: 10<f<57 Hz, 0.075 mm (0.00295 ft)

	57<f<150 Hz, 1g (0,035 oz)
Altitude	0–1000 m (0 - 3280 ft) 480V AC drives, with derating 1%/100 m (328 ft) of rated current up to 4000 m (13123 ft)

Table 20: Storage

Parameter	Storage condition
Temperature	-20 to +60 °C (-4 to + 140 °F)
Atmospheric pressure	86–106 kPa (12.5 - 15.4 PSI)
Relative humidity, according to IEC 60721-3-1	Class 1K4, max. 95% and non-condensing and no formation of ice.



WARNING!

If the device is stored for more than two years, the DC link capacitor of the devices must be reformed during commissioning.

The reforming procedure is described in manual “Capacitor reforming unit”.

7.6. Glands

According to IEC ratings

Use mains fuses of the type gL/gG conforming to IEC 269

Table 21: Fuses, cable cross-sections for AMX48 models

Model AMX	Nominal input current [A]	Maximum value fuse [A]	Cable Size (clamping range) *	
			Mains / Motor	Brake
48-004-20	5.2	6	8mm (0.31 in)	8mm (0.31 in)
48-006-20	6.8	10		
48-009-20	11.5	16		
48-013-20	16.3	20	10.5mm (0.41 in)	10.5mm (0.41 in)
48-017-20	21.5	25	12.7mm (0.5 in)	12.7mm (0.5 in)
48-025-20	28.2	40		
48-032-20	36.2	50		
48-038-20	43.3	63		

8. Communication Parameter

Table 22: Communication parameters

Menu No.	Menu Name	Modbus Instance/Device Net No.	Modbus format
100	Basic Settings		
110	Dashboard		
111	View Mode	49299	uint16
112	Page 1		
1121	Line 1	49303	uint16
1122	Line 2	49304	uint16
1123	Line 3	49305	uint16
1124	Line 4	49306	uint16
1125	Line 5	49307	uint16
1126	Line 6	49308	uint16
113	Page 2	[112] + 7	
114	Page 3	[112] + 14	
115	Page 4	[112] + 21	
120	List View Type	49302	uint16
140	MF Key Fun	49292	uint16
150	User Login		
151	SessionID	39905	Hex16
152	Timeout	39907	uint16
153	LoginKey	49994	Hex16
154	User Type	39908	uint16
160	Display Lines	49338	uint16
170	PopUp Warn Msg	47034	uint16
200	Main Setup		
210	Operation		
211	Language	49300	uint16
212	Select Motor	43001	uint16
213	Drive Mode	43096	uint16
214	Ref Ctrl	48653	uint16
215	Run Stop Ctrl	48451	uint16
216	Reset Ctrl	48452	uint16
217	Local / Rem		
2171	Loc Ref Ctrl	48646	uint16
2172	Loc Run Ctrl	48464	uint16
218	Lock Code?		
2181	Lock/ Unlock	49222	uint16
2182	Login to Set	49223	uint16
2183	Set New	49224	uint16
219	Rotation	48456	uint16
21B	Supply Volts	49220	uint16
21C	Supply Type	49221	uint16

21D	Jog Enable	48723	uint16
21E	Fire Mode	49124	uint16
220	Motor Data		
221	Motor Volt	43006	uint16
222	Motor Freq	43007	uint16
223	Motor Power	43008	uint16
224	Motor Crnt	43009	uint16
225	Motor Speed	43010	uint16
226	Motor Poles	43005	uint16
227	Motor Cos Φ	43011	uint16
228	Motor Vent	43003	uint16
229	Motor ID Run	43016	uint16
22A	Motor Sound	43004	uint16
22B	Encoder		
22B1	Encoder Enable	43018	uint16
22B2	Angle Offset	40006	uint16
22B3	Encoder Type	40123	uint16
22B4	Enc Pulse	43019	uint16
22B5	Enc Speed	30106	int16
22B6	Enc Puls Ctr	30107	int32
22E	Motor PWM		
22E1	PWM Fswitch	49151	uint16
22E2	PWM Mode	49156	uint16
22E3	PWM Random	49150	uint16
22E4	SineFltr L1	49158	uint16
22E5	SineFltr C1	49159	uint16
22G	EncFault&SpdMon		
22G1	Enc F Delay	43020	uint16
22G2	Enc F Band	43021	uint16
22G3	Max EncFCtr	43022	uint16
22H	Phase order	43017	uint16
22I	Motor Type	43002	uint16
22J	PMSM Data		
22J1	Bemf	43012	uint16
22J2	Rs (mOhm/ph)	43013	uint16
22J3	Lsd (mH/ph)	43014	uint16
22J4	Lsq (mH/ph)	43015	uint16
22K	Ctrl Set		
22K1	VHz Set	43077	uint16
22K2	Spd/Trq Set	43078	uint16
230	Motor Protect		
231	Mot I2T Type	47021	uint16
232	Mot I2T Crnt	47026	uint16
233	Mot I2T Time	47027	uint16
234	Thermal Prot	47022	uint16
235	Mot Class	47023	uint16
236	PT100 Input	47024	uint16
237	Motor PTC	47025	uint16

238	I2t Min Spd	47028	uint16
239	PT1000 Input	47031	uint16
240	Set Handling		
242	Copy Set	49296	uint16
243	Default Set	49297	uint16
244	Copy To CP	49295	uint16
245	Load From CP	49291	uint16
246	Erase Cp Config	49290	uint16
250	Trip Autoreset		
251	Auto Rst Ctrl		
2511	No of Trips	47851	uint16
2512	Autores Enb	47853	uint16
2513	Clear Count	47852	uint16
252	Drive Protect		
2521	Over Temp	47805	uint16
2522	Over Volt D	47804	uint16
2523	Over Volt G	47830	uint16
2524	Under Volt	47803	uint16
2525	Over Volt	47823	uint16
2526	Over Current	47816	uint16
2527	Input Ph Loss	47806	uint16
253	Motor Protect		
2531	Motor Lost	47811	uint16
2532	Locked Rotor	47817	uint16
2533	Motor I2t	47802	uint16
2534	PT100	47822	uint16
2535	PT1000	47828	uint16
2536	PTC	47829	uint16
2539	Over speed	47820	uint16
253A	Ext Mot Temp	47821	uint16
253C	Brk Fault	47824	uint16
253D	Encoder	47825	uint16
254	Comm & I/O		
2541	RS485 Com Err	47812	uint16
2542	Field Bus Err	47813	uint16
2543	Keypad Com Err	47814	uint16
2544	CP Port Com Err	47815	uint16
2545	HI Lost	47826	uint16
2546	AnIn<Offset	47827	uint16
255	Load Monitor		
2551	Min Load	47818	uint16
2552	Min Alrm Trip	46919	uint16
2553	Max Load	47819	uint16
2554	Max Alrm Trip	46920	uint16
256	Pump		
2561	Pump	47831	uint16
258	External Trips		
2581	Ext Trip 1	47807	uint16

2582	Ext Trip 2	47808	uint16
2583	Ext Trip 3	47809	uint16
2584	Ext Trip 4	47810	uint16
260	Serial Com		
261	Com Type	47001	uint16
262	RS232/485		
2621	Baud Rate	47002	uint16
2622	Address	47003	uint16
264	Com Fault		
2641	Com Fault Mode	47004	uint16
2642	Com Fault Time	47005	uint16
2643	RS485 Fault Mode	47006	uint16
2644	RS485 Fault Time	47007	uint16
2645	Key Fault Mode	47008	uint16
2646	Key Fault Time	47009	uint16
2647	CP Port Mode	47010	uint16
2648	CP Fault Time	47011	uint16
280	Terminal Ctrl		
281	Start/Stop		
2811	Mode	48699	uint16
2812	Power-On Act	48700	uint16
282	Mot Pot		
2821	Function	48701	uint16
2822	Operation	48702	uint16
2823	Min	48703	uint16
2824	Fun Min Val	48704	int16
2825	Max	48705	uint16
2826	Fun Max Val	48706	int16
2827	Stop Act	48707	uint16
2828	Step Mode	48708	uint16
2829	User Step Val	48709	uint16
282A	Fix Acc Time	48710	uint16
282B	Fix Dec Time	48711	uint16
300	Process		
310	Set/View Ref	48656	int16
320	Procs Setting		
321	Proc Source	48685	uint16
322	Proc Unit	48686	uint16
323	User Unit	48693	uint16
324	Process Min	48688	int16
325	Process Max	48689	int16
326	Ratio	48687	uint16
327	F(Val) PrMin	48690	uint16
328	F(Val) PrMax	48691	uint16
32A	Prc Unit Res	48692	int16
330	Start/Stop		
331	Ref Ramp Time		
3311	Acc Time 1	48601	uint16

3312	Dec Time 1	48605	uint16
3313	Acc Time 2	48602	uint16
3314	Dec Time 2	48606	uint16
3315	Acc Time 3	48603	uint16
3316	Dec Time 3	48607	uint16
3317	Acc Time 4	48604	uint16
3318	Dec Time 4	48608	uint16
332	Ramp Time SwOvr		
3321	Acc Sw Ovr Spd	48616	uint16
3322	Dec Sw Ovr Spd	48617	uint16
335	Jog Ramp Time		
3351	Acc Time	48720	uint16
3352	Dec Time	48721	uint16
337	Curve Type	48611	uint16
339	Start Mode	48460	uint16
33A	Spin Start	48459	uint16
33B	Stop Mode	48453	uint16
33C	Mech Brake		
33C1	Release Time	48469	uint16
33C2	Release Spd	48470	int16
33C3	Engage Time	48471	uint16
33C4	Ack Wait Time	48472	uint16
33C5	Fault Time	48473	uint16
33C6	Release Trq	48474	int16
33G	Vector Brake	48465	uint16
33J	DC Hold		
33J1	DC Hold	48461	uint16
33J2	DC Hold Spd	48462	uint16
33J3	DC Hold Cur	48463	uint16
340	Speed		
341	Min Speed	48659	uint16
342	Stp < Min Spd	48667	uint16
343	Max Speed	48658	uint16
344	Skip Spd 1 Lo	48660	uint16
345	Skip Spd 1 Hi	48661	uint16
346	Skip Spd 2 Lo	48662	uint16
347	Skip Spd 2 Hi	48663	uint16
348	Jog Speed	48722	uint16
34A	Over Spd Trp	48488	uint16
34B	Fallback Spd	48666	uint16
34C	Lower Spd	48649	uint16
34D	Lwr Spd Src	48647	uint16
34E	Upper Spd	48650	uint16
34F	Upr Spd Src	48648	uint16
350	Torque		
351	Max Torque	48668	uint16
352	Torque Src	48654	uint16
353	Torq Ramp Time	48619	uint16

354	Flux Optim	48466	uint16
357	TL Trip	48674	uint16
380	Process PID		
381	PID Ctrl	48676	uint16
383	Kp	48677	uint16
384	Ti	48678	uint16
385	Td	48679	uint16
386	PID < Min Spd	48680	uint16
387	PID Act Marg	48681	uint16
388	PID Stdy Tst	48682	uint16
389	PID Stdy Marg	48683	uint16
3A0	VHz Ctrl		
3A1	VHz Curve	48001	uint16
3A2	VHz Curve Power	48020	uint16
3A3	VHz Multipoint		
3A31	F1	48004	uint16
3A32	V1	48005	uint16
3A33	F2	48006	uint16
3A34	V2	48007	uint16
3A35	F3	48008	uint16
3A36	V3	48009	uint16
3A37	F4	48010	uint16
3A38	V4	48011	uint16
3A4	VHz Seperation		
3A41	Volt Source	48016	uint16
3A42	Volt Set Value	48017	uint16
3A43	Volt Rise TIme	48018	uint16
3A44	Half Sep Ratio	48019	uint16
3A5	VHz Comp		
3A52	Us Drop Gain	48013	uint16
3A6	VHz Torq Boost		
3A61	Type	48021	uint16
3A62	Man Ref	48002	uint16
3A63	Man Freq Lmt	48003	uint16
3B0	FOC Ctrl		
3B2	PID Ctrl		
3B21	Lo Spd Ref	48106	uint16
3B22	Lo Spd Kp	48102	uint16
3B23	Lo Spd Ti	48104	uint16
3B24	Hi Spd Ref	48107	uint16
3B25	Hi Spd Kp	48103	uint16
3B26	Hi Spd Ti	48105	uint16
3B4	Comp & Gain		
3B41	Slip Comp	48112	uint16
3B42	Excit Gain	48113	uint16
3C0	Ref Detection		
3C1	Ref Detect 1		
3C11	Ref Up Lmt	48670	int16

3C12	Ref Low Lmt	48671	int16
3C2	Ref Detect 2		
3C21	Ref Up Lmt	48672	int16
3C22	Ref Low Lmt	48673	int16
3C3	Ref Attain Diff	48669	int16
3F0	Multi Step Ref		
3F1	Mode	47544	uint16
3F2	Start Step	47545	uint16
3F3	Mem Retain	47546	uint16
3F4	Function	47548	uint16
3F5	Operation	47549	uint16
3F6	Fun Min	47550	uint16
3F7	Fun Min Val	47551	int16
3F8	Fun Max	47552	uint16
3F9	Fun Max Val	47553	int16
3FB	Step 1		
3FB1	Step Ref	47554	int16
3FB2	Step Run Time	47555	uint16
3FB3	Step Ramp Time	47556	uint16
3FC	Step 2	[3FB] + 3	
3FD	Step 3	[3FB] + 6	
3FE	Step 4	[3FB] + 9	
3FF	Step 5	[3FB] + 12	
3FG	Step 6	[3FB] + 15	
3FH	Step 7	[3FB] + 18	
3FI	Step 8	[3FB] + 21	
3FJ	Step 9	[3FB] + 24	
3FK	Step 10	[3FB] + 27	
3FL	Step 11	[3FB] + 30	
3FM	Step 12	[3FB] + 33	
3FN	Step 13	[3FB] + 36	
3FO	Step 14	[3FB] + 39	
3FP	Step 15	[3FB] + 42	
3FQ	Step 16	[3FB] + 45	
400	Monitor / Prot		
410	Load Monitor		
411	Alarm Sel	46567	uint16
412	Alarm Trip	46568	uint16
413	Ramp Alarm	46569	uint16
414	Alarm Start Dly	46570	uint16
415	Load Type	46571	uint16
416	Max Alarm		
4161	Margin	46572	uint16
4162	Delay	46573	uint16
417	Max Pre Alarm		
4171	Margin	46574	uint16
4172	Delay	46575	uint16
418	Min Pre Alarm		

4181	Margin	46576	uint16
4182	Delay	46577	uint16
419	Min Alarm		
4191	Margin	46578	uint16
4192	Delay	46579	uint16
41A	Auto Set Alrm	46580	uint16
41B	Normal Load	46581	uint16
41C	Load Curve1		
41C1	Speed	39701	uint16
41C2	Torque	46591	uint16
41D	Load Curve2		
41D1	Speed	39702	uint16
41D2	Torque	46592	uint16
41E	Load Curve3		
41E1	Speed	39703	uint16
41E2	Torque	46593	uint16
41F	Load Curve4		
41F1	Speed	39704	uint16
41F2	Torque	46594	uint16
41G	Load Curve5		
41G1	Speed	39705	uint16
41G2	Torque	46595	uint16
41H	Load Curve6		
41H1	Speed	39706	uint16
41H2	Torque	46596	uint16
41I	Load Curve7		
41I1	Speed	39707	uint16
41I2	Torque	46597	uint16
41J	Load Curve8		
41J1	Speed	39708	uint16
41J2	Torque	46598	uint16
41K	Load Curve9		
41K1	Speed	39709	uint16
41K2	Torque	46599	uint16
41L	Min Abs Margin	46600	uint16
420	Process Prot		
421	Bus UV Alrm		
4211	Flt Act	46901	uint16
4212	Flt Bckup Spd	46902	uint16
422	Motor I2T Alrm	[421] + 2	
423	Inv OL Alrm		
4231	Detection	46001	uint16
4232	Report Fault	46002	uint16
4233	Set Threshold	46003	uint16
4234	Dly Time	46004	uint16
4235	Flt Act	46905	uint16
4236	Flt Bckup Spd	46906	uint16
424	OverVolt Ctl	45601	uint16

425	Low Volt Or	45602	uint16
426	Motor Lost Alrm		
4261	Threshold	46013	uint16
4262	Delay Time	46014	uint16
4263	Flt Act	46915	uint16
4264	Flt Bckup Spd	46916	uint16
427	Earth Flt Alrm		
4271	Enable	45996	uint16
4272	I Leak Lmt	45997	uint16
4273	Test Time	45998	uint16
428	Rotor Lckd Alrm		
4281	Detection	47033	uint16
429	OP P Los Alrm		
4291	Flt Act	46907	uint16
4292	Flt Bckup Spd	46908	uint16
42C	External Trip Alrm	[429] + 2	
42D	Mem Flt Alrm	[429] + 4	
42E	Com Timeout Alrm	[429] + 6	
42G	Run T Reach Alrm		
42G1	Flt Act	46921	uint16
42G2	Flt Bckup Spd	46922	uint16
42H	Tmp Discnct Alrm	[42G] + 2	
42J	Input Ph Loss	[42G] + 4	
42K	HI Lost	[42G] + 6	
42L	AI Lost	[42G] + 8	
42M	Ext Mot Temp	[42G] + 10	
42N	Opt PT100	[42G] + 12	
42O	Opt PT1000	[42G] + 14	
42P	Opt PTC	[42G] + 16	
430	Ext Trip Txt		
431	Trip1 Txt	45900	uint16
432	Trip2 Txt	45916	uint16
433	Trip3 Txt	45932	uint16
434	Trip4 Txt	45948	uint16
440	Load Profile		
441	Peak Val Trackr		
4411	Fun	45850	uint16
4412	Filter Time	45851	uint16
4413	Val	39570	int16
4415	PVT Reset	45852	uint16
442	ASM		
4421	Fun	45853	uint16
4422	ASM 0-10%	39571	uint16
4423	ASM 10-20%	39572	uint16
4424	ASM 20-30%	39573	uint16
4425	ASM 30-40%	39574	uint16
4426	ASM 40-50%	39575	uint16

4427	ASM 50-60%	39576	uint16
4428	ASM 60-70%	39577	uint16
4429	ASM 70-80%	39578	uint16
442A	ASM 80-90%	39579	uint16
442B	ASM 90-100%	39580	uint16
442C	ASM Reset	45854	uint16
500	I / Os		
510	Analog Input		
511	AIN 1		
5111	Function	48771	uint16
5112	Setup	48772	uint16
5113	In Min	48773	int16
5114	In Max	48774	int16
5115	Fun Min	48775	uint16
5116	Fun Min Val	48776	int16
5117	Fun Max	48777	uint16
5118	Fun Max Val	48778	int16
5119	Operation	48779	uint16
511A	Filter Time	48780	int16
512	AIN 2	[511] + 10	
513	AIN 3	[511] + 20	
514	AIN B1 1	[511] + 30	
515	AIN B1 2	[511] + 40	
516	AIN B1 3	[511] + 50	
517	AIN B1 4	[511] + 60	
520	Digital Input		
521	DI 1		
5211	Fun	48901	uint16
5212	Pol	48902	uint16
5213	Dly Time	48903	uint16
522	DI 2	[521] + 3	
523	DI 3	[521] + 6	
524	DI 4	[521] + 9	
525	DI 5	[521] + 12	
526	DI 6	[521] + 15	
527	DI 7	[521] + 18	
528	ADI 1	[521] + 21	
529	ADI 2	[521] + 24	
52A	ADI 3	[521] + 27	
52B	DI B1 1	[521] + 30	
52C	DI B1 2	[521] + 33	
52D	DI B1 3	[521] + 36	
52E	DI B1 4	[521] + 39	
530	Analog Output		
531	AO 1		
5311	Fun	46181	uint16
5312	Min	46182	uint16
5313	Max	46183	uint16

5314	FcMin	46184	uint16
5315	FcMax	46185	uint16
5316	Fltr Time	46186	uint16
5317	Offset	46187	int16
532	AO 2	[531] + 10	
533	AO1 B1	[531] + 20	
534	AO2 B1	[531] + 30	
540	Digital Output		
541	DO 1		
5411	Fun	48841	uint16
5412	Dly Time	48842	uint16
5413	Pol	48843	uint16
542	DO 2	[541] + 4	
550	Relay		
551	Relay 1		
5511	Fun	48849	uint16
5512	Dly Time	48850	uint16
552	Relay 2	[551] + 4	
553	Relay B1 1	[551] + 8	
554	Relay B1 2	[551] + 12	
555	Relay B1 3	[551] + 16	
556	Relay B1 4	[551] + 20	
557	Relay B1 5	[551] + 24	
558	Relay B2 1	[551] + 28	
559	Relay B2 2	[551] + 32	
55A	Relay B2 3	[551] + 36	
55B	Relay B2 4	[551] + 40	
55C	Relay B2 5	[551] + 44	
560	Digital VIO		
561	VIO1		
5611	Src	48957	uint16
5612	Dest	48958	uint16
562	VIO2	[561] + 2	
563	VIO3	[561] + 4	
564	VIO4	[561] + 6	
565	VIO5	[561] + 8	
566	VIO6	[561] + 10	
567	VIO7	[561] + 12	
568	VIO8	[561] + 14	
570	Analog VIO		
571	AVIO 1		
5711	Src Fun	48981	uint16
5712	Dest Fun	48982	uint16
5713	FC Min	48983	uint16
5714	FC Min Val	48984	int16
5715	FC Max	48985	uint16
5716	FC Max Val	48986	int16
5717	Operation	48987	uint16

572	AVIO 2	[571] + 7	
573	AVIO 3	[571] + 14	
580	HI Spd Input		
581	Enable	48944	uint16
582	Function	48945	uint16
583	Min Input Freq	48946	uint16
584	Max Input Freq	48947	uint16
585	FC Min	48948	uint16
586	FC Min Val	48949	int16
587	FC Max	48950	uint16
588	FC Max Val	48951	int16
589	Operation	48952	uint16
58A	Filter Time	48953	uint16
590	HI Spd Output		
591	HO1		
5911	Enable	48973	uint16
5912	Function	48974	uint16
5913	Filter Time	48975	uint16
5914	Min Freq	48976	uint16
5915	Max Freq	48977	uint16
600	Logic & Timers		
610	Analog Comp		
611	CA 1 Setup		
6111	Value	46151	uint16
6112	Level Hi	46152	int16
6113	Level Lo	46153	int16
6114	Type	46154	uint16
6115	Polar	46155	uint16
6116	Set Dly	46156	uint16
6117	Reset Dly	46157	uint16
6118	Tmr Val	46158	uint16
612	CA 2 Setup	[611] + 10	
620	Analog Mux		
621	An Mux 1		
6211	In A	46701	uint16
6212	In B	46702	uint16
6213	Operator	46703	uint16
622	An Mux 2	[621] + 3	
630	Not Gate		
631	NOT1 Input	46750	uint16
632	NOT2 Input	46751	uint16
633	NOT3 Input	46752	uint16
634	NOT4 Input	46753	uint16
635	NOT5 Input	46754	uint16
636	NOT6 Input	46755	uint16
637	NOT7 Input	46756	uint16
638	NOT8 Input	46757	uint16
640	Logic Output		

641	Logic 1		
6411	L1 Expr	46801	uint16
6412	L1 Input 1	46802	uint16
6413	L1 Op 1	46803	uint16
6414	L1 Input 2	46804	uint16
6415	L1 Op 2	46805	uint16
6416	L1 Input 3	46806	uint16
6417	L1 Op 3	46807	uint16
6418	L1 Input 4	46808	uint16
6419	L1 Set Dly	46809	uint16
641A	L1 Res Dly	46810	uint16
641B	L1 Tmr Val	46811	uint16
642	Logic 2	[641] + 11	
643	Logic 3	[641] + 22	
644	Logic 4	[641] + 33	
650	Timer		
651	Timer1		
6511	Trig Fun	46601	uint16
6512	Timer Mode	46602	uint16
6513	Delay Time	46603	uint16
6514	Alt On	46604	uint16
6515	Alt Off	46605	uint16
6516	Extended Time	46606	uint16
652	Timer2	[651] + 6	
653	Timer3	[651] + 12	
654	Timer4	[651] + 18	
660	Flip Flop		
661	Flip Flop 1		
6611	Mode	43600	uint16
6612	Set	43601	uint16
6613	Reset	43602	uint16
6614	Set Delay	43603	uint32
6615	Reset Delay	43605	uint32
662	Flip Flop 2	[661] + 11	
663	Flip Flop 3	[661] + 22	
664	Flip Flop 4	[661] + 33	
670	Counters		
671	Counter 1		
6711	Trig	46850	uint16
6712	Reset	46851	uint16
6713	High Val	46852	uint16
6714	Low Val	46853	uint16
6715	DecTimer	46854	uint16
6719	Value	46855	uint16
672	Counter 2	[671] + 10	
680	Clock Logic		
681	Clock 1		
6811	Time On	43670	uint32

6812	Time Off	43672	uint32
6813	Date On	43674	uint32
6814	Date Off	43676	uint32
6815	Weekday	43678	uint32
682	Clock 2	[681] + 9	
700	Oper / Status		
710	Opeartion		
711	Process Val	30001	int16
712	Speed	30002	int16
713	Torque %	30003	int16
714	Shaft Power	30004	int16
715	Elec Power	30005	int16
716	Output Crnt	30006	uint16
717	Output Volt	30007	uint16
718	Output Freq	30008	uint16
719	DC Volt	30009	uint16
71A	IGBT Temp	30010	int16
71B	PT100 Onbrd1	30011	int16
71C	PT100 Onbrd2	30012	int16
71D	PT100 B1		
71D1	PT100 B1 Ch-1	30014	int16
71D2	PT100 B1 Ch-2	30015	int16
71D3	PT100 B1 Ch-3	30016	int16
71E	Torque	30013	int16
71F	Process Ref	30039	int16
71J	DC Crnt	30017	uint16
71K	PT1000 B1		
71K1	PT1000 B1 Ch-1	30018	int16
71K2	PT1000 B1 Ch-2	30019	int16
71K3	PT1000 B1 Ch-3	30020	int16
71L	PTC B1		
71L1	PTC B1 Ch-1	30021	uint16
71L2	PTC B1 Ch-2	30022	uint16
71L3	PTC B1 Ch-3	30023	uint16
720	Status		
721	VSD Status		
7211	Motor Set	30048	uint16
7212	Control Set	30043	uint16
7213	Inv Ref Src	30042	uint16
7214	Torque Src	30044	uint16
7215	Limit Fun	30045	uint16
7216	Drive Mode	30046	uint16
7217	AutoRst Cnt	30047	uint16
722	Warning	30024	uint16
723	Digital Input		
7231	DI 1-7	30032	uint16
7238	ADI 1-3	30033	uint16
724	Digital Output		

7241	DO 1-2	30027	uint16
7242	Relay 1-2	30028	uint16
725	Analog In		
7251	AI 1	30058	int16
7252	AI 2	30059	int16
7253	AI 3	30060	int16
727	Analog Out		
7271	AO 1	30061	uint16
7272	AO 2	30062	uint16
728	Flip Flop		
7281	FF1 Tmr Val	39541	uint32
7282	FF2 Tmr Val	39543	uint32
7283	FF3 Tmr Val	39545	uint32
7284	FF4 Tmr Val	39547	uint32
72C	VIO 1-8	30029	uint16
72D	Run Status	30084	uint16
72E	Hi Spd In	30025	int16
72F	Hi Spd Out		
72F1	HO 1	30026	uint16
72G	Multi Ref		
72G1	Step	30071	uint16
72G2	Cycle Complete	30072	uint16
72G3	First Cycle	30073	uint16
72G4	Auto Pause	30074	uint16
72G5	Auto Reset	30075	uint16
72G6	Valid Step	30076	uint16
72G7	Invalid Setting	30077	uint16
72H	EPID Reference		
72H1	EPID 1 Ref	30065	int16
72H2	EPID 2 Ref	30066	int16
72H3	EPID 3 Ref	30067	int16
72I	EPID Feedback		
72I1	EPID 1 Fb	30068	int16
72I2	EPID 2 Fb	30069	int16
72I3	EPID 3 Fb	30070	int16
72O	Protection	30085	uint16
72P	Information	30086	uint16
72Q	Relay B1		
72Q1	Relay B1 1-5	30030	uint16
72R	Relay B2		
72R1	Relay B2 1-5	30031	uint16
72S	DI B1		
72S1	DI B1 1-4	30034	uint16
72T	AO B1		
72T1	AO B1 1	30063	uint16
72T2	AO B1 2	30064	uint16
72U	AI B1		
72U1	AI B1 1	30035	int16

72U2	AI B1 2	30036	int16
72U3	AI B1 3	30037	int16
72U4	AI B1 4	30038	int16
72V	HI B1		
72V1	HI B1 1	30039	int16
72V2	HI B1 2	30040	int16
730	Stored Values		
731	Run Time	30095	uint32
732	Rst Run Time	40001	uint16
733	Set Run Time	45995	uint16
734	Mains Time	30101	uint32
735	Energy	30104	int32
736	Rst Energy	40002	uint16
740	Short Circuit		
741	Max Reached	30091	uint16
742	Ack Time	30092	uint32
800	View Trip Log		
810	Trip Log 1		
811	Trip Code	32001	uint16
812	Process Val	32002	int16
813	Speed	32003	int16
814	Torque	32004	uint16
815	Shaft Power	32005	int16
816	Elec Power	32006	int16
817	Current	32007	uint16
818	Output Volt	32008	uint16
819	Frequency	32009	uint16
81A	DC Voltage	32010	uint16
81B	IGBT Temp	32011	int16
81C	PT100-1000 PTC		
81C1	PT100/1000-1	32012	int16
81C2	PT100/1000-2	32013	int16
81C3	PT100 B1 Ch-1	32014	int16
81C4	PT100 B1 Ch-2	32015	int16
81C5	PT100 B1 Ch-3	32016	int16
81C6	PT1000 B1 Ch-1	32058	int16
81C7	PT1000 B1 Ch-2	32059	int16
81C8	PT1000 B1 Ch-3	32060	int16
81C9	PTC B1 Ch-1	32061	uint16
81CA	PTC B1 Ch-2	32062	uint16
81CB	PTC B1 Ch-3	32063	uint16
81D	VSD Status		
81D1	Motor Set	32019	uint16
81D2	Control Set	32020	uint16
81D5	Trq Ref Src	32023	uint16
81D6	Run/Stop Src	32024	uint16
81D7	Limit Fun	32025	uint16
81D8	Multi Step	32026	uint16

81E	DI Status		
81E1	DI 1-7	32017	uint16
81E2	ADI 1-3	32018	uint16
81F	DO Status		
81F1	DigOut 1-2	32027	uint16
81F2	RlyOut 1-2	32028	uint16
81G	AI Status		
81G1	AI 1	32029	int16
81G2	AI 2	32030	int16
81G3	AI 3	32031	int16
81H	AO Status		
81H1	AO 1	32034	uint16
81H2	AO 2	32035	uint16
81I	I/O B1	39507	
81I1	Relay B1	32064	uint16
81I2	Relay B2	32065	uint16
81I3	DI B1 1-4	32022	uint16
81I4	AI B1 1	32032	int16
81I5	AI B1 2	32033	int16
81I6	AI B1 3	32039	int16
81I7	AI B1 4	32040	int16
81I8	AO B1 1	32036	uint16
81I9	AO B1 2	32037	uint16
81J	Run Time	32041	uint32
81K	Mains Time	32043	uint32
81L	Energy	32045	int32
81N	VIO Status	32049	uint16
81O	HI Status	32050	int16
81P	HO Status	32051	uint16
81Q	Ext PID Ref		
81Q1	PID 1	32052	int16
81Q2	PID 2	32053	int16
81Q3	PID 3	32054	int16
81R	Ext PID FB		
81R1	PID 1	32055	int16
81R2	PID 2	32056	int16
81R3	PID 3	32057	int16
820	Trip Log 2	[810] + 75	
830	Trip Log 3	[810] + 150	
840	Trip Log 4	[810] + 225	
850	Trip Log 5	[810] + 300	
860	Trip Log 6	[810] + 375	
870	Trip Log 7	[810] + 450	
880	Trip Log 8	[810] + 525	
890	Trip Log 9	[810] + 600	
8A0	Trip Log 10	[810] + 675	
8B0	Trip Log 11	[810] + 750	
8C0	Trip Log 12	[810] + 825	

8D0	Trip Log 13	[810] + 900	
8E0	Extend Trip Log		
8E1	Trip Log 14		
8E11	Trip Code	33001	uint16
8E13	Run Time	33002	uint32
8E2	Trip Log 15	[8E1] + 3	
8E3	Trip Log 16	[8E1] + 6	
8E4	Trip Log 17	[8E1] + 9	
8E5	Trip Log 18	[8E1] + 12	
8E6	Trip Log 19	[8E1] + 15	
8E7	Trip Log 20	[8E1] + 18	
8E8	Trip Log 21	[8E1] + 21	
8E9	Trip Log 22	[8E1] + 24	
8EA	Trip Log 23	[8E1] + 27	
8EB	Trip Log 24	[8E1] + 30	
8EC	Trip Log 25	[8E1] + 33	
8ED	Trip Log 26	[8E1] + 36	
8EE	Trip Log 27	[8E1] + 39	
8EF	Trip Log 28	[8E1] + 42	
8EG	Trip Log 29	[8E1] + 45	
8EH	Trip Log 30	[8E1] + 48	
900	System Data		
920	VSD Data		
921	VSD Type		
9211	PB Type	30901	uint16
9212	PB Volt	30902	uint16
9213	Gen	30903	uint16
9214	IP Rating	30904	uint16
9215	Current	30905	uint16
9216	Duty	30906	uint16
922	Software		
9221	Version	30907	uint16
9222	Build Date	30909	uint32
9223	Build Time	30911	uint32
9224	Build Id	30915	Hex16
9225	Mod Id	30917	Hex16
923	Unit Name	45964	uint16
924	Hardware		
9241	CB HW Ver	30920	uint16
925	Ctrl Panel		
9251	Sw Version	30973	uint16
9252	Hw Version	30974	uint16
9253	Build Id	30975	Hex16
9254	CP Key	30977	uint16
926	OB Build Info		
9261	IO Build ID	40100	Hex16
9262	IO Sw Ver	40102	uint16
9263	Rly Build ID	40110	Hex16

9264	Rly Sw Ver	40112	uint16
9265	Enc Build ID	40120	Hex16
9266	Enc Sw Ver	40122	uint16
927	Bootloader		
9271	Version	30921	uint16
9272	Build Id	30922	Hex16
930	Clock		
931	Time	49261	uint32
932	Date	49263	uint32
937	WeekDay	49265	uint32
940	Inspection		
941	Interval	40004	uint16
942	Act Cntr	30938	uint16
943	Clear Cntr	40005	uint16
950	Contact		
951	Name	40201	uint16
952	Phone Number	40217	uint16
953	Add1	40227	uint16
954	Add2	40243	uint16
955	Add3	40259	uint16
956	Email	40275	uint16
957	URL	40291	uint16
958	About	39801	uint16
A00	Oscilloscope		
A10	Source	49251	uint16
A20	Run Scope	49252	uint16
P00	Pump Ctrl		
P10	Enable	46515	uint16
P20	No. Of Drives	46516	uint16
P30	Mode	46517	uint16
P40	Single Drv Ctrl		
P41	Change Cond	46518	uint16
P42	Change Timer	46519	uint16
P43	Drive On Change	46520	uint16
P44	Upper Band	46521	uint16
P45	Lower Band	46522	uint16
P46	Start Delay	46523	uint16
P47	Stop Delay	46524	uint16
P48	Upr Band Lmt	46525	uint16
P49	Low Band Lmt	46526	uint16
P4A	Settle Start	46527	uint16
P4B	Trans Spd Start	46528	uint16
P4C	Settle Stop	46529	uint16
P4D	Trans Stop	46530	uint16
P4E	No Of BackUp	46537	uint16
P50	Multi Drv Ctrl		
P51	Slave ID		
P511	Slave1 ID	46553	uint16

P512	Slave2 ID	46554	uint16
P513	Slave3 ID	46555	uint16
P514	Slave4 ID	46556	uint16
P515	Slave5 ID	46557	uint16
P516	Slave6 ID	46558	uint16
P52	Drive Start Dly	46560	uint16
P53	Drive Stop Dly	46561	uint16
P54	Pump Max Spd	46562	uint16
P55	Pump Min Spd	46563	uint16
P60	Pump Time Ctrl		
P61	Pump1 Time/Rst		
P611	Run Time	30401	uint32
P612	Rst Run Tm	46538	uint16
P62	Pump2 Time/Rst		
P621	Run Time	30403	uint32
P622	Rst Run Tm	46539	uint16
P63	Pump3 Time/Rst		
P631	Run Time	30405	uint32
P632	Rst Run Tm	46540	uint16
P64	Pump4 Time/Rst		
P641	Run Time	30407	uint32
P642	Rst Run Tm	46541	uint16
P65	Pump5 Time/Rst		
P651	Run Time	30409	uint32
P652	Rst Run Tm	46542	uint16
P66	Pump6 Time/Rst		
P661	Run Time	30411	uint32
P662	Rst Run Tm	46543	uint16
P70	Pump Status		
P71	Pump 1	46531	uint16
P72	Pump 2	46532	uint16
P73	Pump 3	46533	uint16
P74	Pump 4	46534	uint16
P75	Pump 5	46535	uint16
P76	Pump 6	46536	uint16

- * The date parameter took 32 bit. The data format is –
 - o Year: 0 – 6 bit
 - o Month: 7 – 10 bit
 - o Day: 11 – 15 bit
 - o Week Day: 23 – 25bit
- * The tome parameter took 32 bit. The data format is-
 - o Second: 0 - 5 bit
 - o Minute: 6 – 11bit
 - o Hour: 12 – 30 bit
- * The menu is identical to the corresponding menu, the Modbus address mapping followed, For example, parameter AI2 [512] follows the same structure as AI1 [511]. The Modbus address for AI1

Function [5111] parameter is 48771, and the Modbus address for AI2 Function [5121] is derived by adding an offset of 10 to AI1 Function [5111].

- AIN 1 → Function [5111] Modbus Address: 48771
- AIN 2 → Function [5121] Modbus Address: [511]+ 10 -> 48771 + 10 = 48781

