



Quick Guide VLT[®] Micro Drive



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1.1 Safety

1.1.1 Warnings

HIGH VOLTAGE!

Adjustable frequency drives contain high voltage when connected to AC line power. Installation, start-up, and maintenance should be performed by qualified personnel only. Failure to perform installation, start-up, and maintenance by qualified personnel could result in death or serious injury.

High Voltage

Adjustable frequency drives are connected to hazardous AC line voltage. Extreme care should be taken to protect against shock. Only trained personnel familiar with electronic equipment should install, start, or maintain this equipment.

Touching the electrical parts may be fatal - even after the equipment has been disconnected from line power. Also make sure that other voltage inputs have been disconnected (linkage of DC intermediate circuit). Be aware that there may be high voltage on the DC link even when the LEDs are turned off. Before touching any potentially live parts of the adjustable frequency drive, wait at least 4 minutes for all M1, M2 and M3 sizes. Wait at least 15 minutes for all M4 and M5 sizes.

UNINTENDED START!

When the adjustable frequency drive is connected to AC line power, the motor may start at any time. The adjustable frequency drive, motor, and any driven equipment must be in operational readiness. Failure to be in operational readiness when the adjustable frequency drive is connected to AC line power could result in death, serious injury, equipment, or property damage.

Unintended Start

When the adjustable frequency drive is connected to the AC line power, the motor may be started by means of an external switch, a serial bus command, an input reference signal, or a cleared fault condition. Use appropriate cautions to guard against an unintended start.

Leakage Current (>3.5mA)

Follow national and local codes regarding protective grounding of equipment with a leakage current > 3.5mA.

Adjustable frequency drive technology implies high frequency switching at high power. This will generate a leakage current in the ground connection. A fault current in the Adjustable frequency drive at the output power terminals might contain a DC component which can charge the filter capacitors and cause a transient ground current. The ground leakage current depends on various system configurations including RFI filtering, shielded motor cables, and Adjustable frequency drive power.

EN/IEC61800-5-1 (Power Drive System Product Standard) requires special care if the leakage current exceeds 3.5mA. Grounding must be reinforced in one of the following ways:

- Ground wire of at least 10mm².
- Two separate ground wires both complying with the dimensioning rules.

See EN 60364-5-54 § 543.7 for further information.

Using RCDs

Where residual current devices (RCDs), also known as ground leakage circuit breakers (ELCBs), are used, comply with the following:

Use RCDs of type B only which are capable of detecting AC and DC currents.

Use RCDs with an inrush delay to prevent faults due to transient ground currents.

Dimension RCDs according to the system configuration and environmental considerations.

Motor Thermal Protection

Motor overload protection is possible by setting Parameter 1-90 Motor thermal protection to the value ETR trip. For the North American market: Implemented ETR function provide class 20 motor overload protection, in accordance with NEC.

Installation at High Altitudes

For altitudes above 6,600 feet [2 km], please contact Danfoss regarding PELV.

1.1.2 Safety Instructions

- Make sure the adjustable frequency drive is properly grounded.
- Do not remove AC line input connections, motor connections or other power connections while

the adjustable frequency drive is connected to line power.

- Protect users against supply voltage.
- Protect the motor against overloading according to national and local regulations.
- The ground leakage current exceeds 3.5 mA.
- The [OFF] key is not a safety switch. It does not disconnect the adjustable frequency drive from line power.

1.2 Introduction

1.2.1 Available Literature

NOTE!

This Quick Guide contains the basic information necessary for installing and running the adjustable frequency drive.

If more information is needed, the literature below can be downloaded from:

http://www.danfoss.com/BusinessAreas/DrivesSolutions/ Documentations

| Title | Literature |
|--|-------------|
| | no. |
| VLT Micro Drive FC 51 Instruction Manual | MG.02.AX.YY |
| VLT Micro Drive FC 51 Quick Guide | MG.02.BX.YY |
| VLT Micro Drive FC 51 Programming Guide | MG.02.CX.YY |
| FC 51 LCP Mounting Instruction | MI.02.AX.YY |
| FC 51 De-coupling Plate Mounting Instruction | MI.02.BX.YY |
| FC 51 Remote Mounting Kit Mounting Instruction | MI.02.CX.YY |
| FC 51 DIN Rail Kit Mounting Instruction | MI.02.DX.YY |
| FC 51 IP21 Kit Mounting Instruction | MI.02.EX.YY |
| FC 51 Nema1 Kit Mounting Instruction | MI.02.FX.YY |

X = Revision Number, Y = Language code

1.2.2 Approvals



1.2.3 IT Line power

NOTE!

IT Line power

Installation on an isolated line power source, i.e., IT line power.

Max. supply voltage allowed when connected to line power: 440V.

As an option, Danfoss offers recommended line filters for improved harmonics performance.

1.2.4 Avoid Unintended Start

While the adjustable frequency drive is connected to line power, the motor can be started/stopped using digital commands, bus commands, references or via the LCP.

- Disconnect the adjustable frequency drive from line power whenever personal safety considerations make it necessary to avoid unintended start of any motors.
- To avoid unintended start, always activate the [OFF] key before changing parameters.

1.2.5 Disposal Instructions



Equipment containing electrical components may not be disposed of together with domestic waste.

It must be separately collected with electrical and electronic waste according to local and currently valid legislation.

1.3 Installation

1.3.1 Before Commencing Repair Work

- 1. Disconnect FC 51 from line power (and external DC supply, if present.)
- 2. Wait for 4 minutes (M1, M2 and M3) and 15 minutes (M4 and M5) for the DC link to discharge.
- 3. Disconnect DC bus terminals and brake terminals (if present).
- 4. Remove motor cable.

1.3.2 Side-by-Side Installation

The adjustable frequency drive can be mounted side-byside for IP20 rating units and requires 3.4 in. [100 mm] clearance above and below for cooling. Please refer to the specifications near the end of this document for details on environmental ratings for the adjustable frequency drive.

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1.3.3 Mechanical Dimensions

A template for drilling can be found on the flap of the packaging.

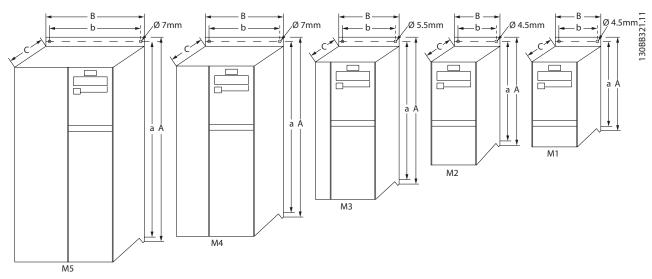


Figure 1.1 Mechanical Dimensions.

| | Power (HP [kW]) | | | Height (in [mm]) | | | · 1 | Depth ¹⁾ (in [mm]) | Max. Weight |
|------------------------|-----------------------------------|---|---|--|--|---|---|---|---|
| 1 X 200–240V | 3 X 200–240V | 3 X 380–480V | A | A (incl. decoupling plate) | a | В | b | с | lbs [Kg] |
| 0.24–1 [0.18– 0.75] | 0.34–1 [0.25– 0.75] | 0.5–1 [0.37– 0.75] | 5.91 [150] | 8.1 [205] | 5.53 [140.4] | 2.8 [70] | 2.17 [55] | 5.83 [148] | 2.43 [1.1] |
| 2 [1.5] | 2 [1.5] | 2–3 [1.5–2.2] | 6.93 [176] | 9.10 [230] | 6.55 [166.4] | 2.95 [75] | 2.32 [59] | 6.61 [168] | 3.53 [1.6] |
| 3 [2.2] | 3–5 [2.2–3.7] | 4–10 [3.0–7.5] | 9.41 [239] | 11.57 [294] | 8.90 [226] | 3.54 [90] | 2.72 [69] | 7.64 [194] | 6.61 [3.0] |
| | | 15–20 [11.0– 15.0] | 11.50 [292] | 13.68 [347.5] | 10.72 [272.4] | 4.92 [125] | 3.82 [97] | 9.49 [241] | 13.23 [6.0] |
| | | 25–30 [18.5– 22.0] | 13.19 [335] | 15.26 [387.5] | 12.40 [315] | 6.50 [165] | 5.5 [140] | 9.76 [248] | 20.94 [9.5] |
| | 0.24–1 [0.18– 0.75] 2 [1.5] | 1 X 200-240V 3 X 200-240V 0.24-1 [0.18- 0.75] 0.34-1 [0.25- 0.75] 2 [1.5] 2 [1.5] | 0.24-1 [0.18- 0.75] 0.34-1 [0.25- 0.75] 0.5-1 [0.37- 0.75] 2 [1.5] 2 [1.5] 2-3 [1.5-2.2] 3 [2.2] 3-5 [2.2-3.7] 4-10 [3.0-7.5] 15-20 [11.0- 15.0] 15-20 [11.0- 15.0] 2 [1.5] 25-30 [18.5- | 1 X 200-240V 3 X 200-240V 3 X 380-480V A 0.24-1 [0.18- 0.75] 0.34-1 [0.25- 0.75] 0.5-1 [0.37- 0.75] 5.91 [150] 2 [1.5] 2 [1.5] 2-3 [1.5-2.2] 6.93 [176] 3 [2.2] 3-5 [2.2-3.7] 4-10 [3.0-7.5] 9.41 [239] 15-20 [11.0- 15.0] 11.50 [292] 125-30 [18.5- 13.19 | I X 200-240V 3 X 200-240V 3 X 380-480V A A (incl. decoupling plate) 0.24-1 [0.18- 0.75] 0.34-1 [0.25- 0.75] 0.5-1 [0.37- 0.75] 5.91 [150] A (incl. decoupling plate) 2 [1.5] 2 [1.5] 2-3 [1.5-2.2] 6.93 [176] 9.10 [230] 3 [2.2] 3-5 [2.2-3.7] 4-10 [3.0-7.5] 9.41 [239] 11.57 [294] 15-20 [11.0- 15.0] 15.0 [292] 13.68 [347.5] 15 26 [387.5] 25-30 [18.5- 13.19 15.26 [387.5] | I X 200-240V 3 X 200-240V 3 X 380-480V A A (incl. decoupling plate) a 0.24-1 [0.18- 0.75] 0.34-1 [0.25- 0.75] 0.5-1 [0.37- 0.75] 5.91 [150] 8.1 [205] 5.53 [140.4] 2 [1.5] 2 [1.5] 2-3 [1.5-2.2] 6.93 [176] 9.10 [230] 6.55 [166.4] 3 [2.2] 3-5 [2.2-3.7] 4-10 [3.0-7.5] 9.41 [239] 11.57 [294] 8.90 [226] 1 15-20 [11.0- 15.0] 15.20 [11.0- 15.0] 11.50 [292] 13.68 [347.5] 10.72 [272.4] | $ \begin{array}{ c c c c c c } \hline \begin{tabular}{ c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$ | Interview [Imm] 1 X 200-240V 3 X 200-240V 3 X 380-480V A A (incl. decoupling plate) a B b 0.24-1 [0.18- 0.75] 0.34-1 [0.25- 0.75] 0.5-1 [0.37- 0.75] 5.91 0.75] 8.1 [205] 5.53 [140.4] 2.8 [70] 2.17 [55] 2 [1.5] 2 [1.5] 2-3 [1.5-2.2] 6.93 [176] 9.10 [230] 6.55 [166.4] 2.95 2.32 [59] 3 [2.2] 3-5 [2.2-3.7] 4-10 [3.0-7.5] 9.41 [239] 11.57 [294] 8.90 [226] 3.54 2.72 [90] [69] 3 [2.2] 3-5 [2.2-3.7] 4-10 [3.0-7.5] 9.41 [239] 11.57 [294] 8.90 [226] 3.54 2.72 [90] [69] 4 - 10 [3.0 - 7.5] [22] 13.68 [347.5] 10.72 4.92 3.82 [201 15-20 [11.0- 15.0] 11.50 13.19 15.26 [387.5] 12.40 6.50 5.51 | Interview [Imm]) [Imm]) 1 X 200-240V 3 X 200-240V 3 X 380-480V A A (incl. decoupling plate) a B b C 0.24-1 [0.18- 0.75] 0.34-1 [0.25- 0.75] 0.5-1 [0.37- 0.75] 5.91 0.75] 8.1 [205] 5.53 [140.4] 2.8 [70] 2.17 [55] 5.83 [148] 2 [1.5] 2 [1.5] 2-3 [1.5-2.2] 6.93 [176] 9.10 [230] 6.55 [166.4] 2.95 2.32 [166.4] 6.61 [168] 3 [2.2] 3-5 [2.2-3.7] 4-10 [3.0-7.5] 9.41 [239] 11.57 [294] 8.90 [226] 3.54 2.72 [90] 7.64 [194] 3 [2.2] 3-5 [2.2-3.7] 4-10 [3.0-7.5] 9.41 [239] 11.57 [294] 10.72 [226] 4.92 3.82 [90] 9.49 [241] 1 5 -20 [11.0- 15.0] 15.0 [29] 13.68 [347.5] 10.72 [272.4] 3.82 9.49 [241] 1 5 -20 [11.0- 15.0] 13.9 15.26 [387.5] 12.40 6.50 5.5 1 5 -20 [18.5- 13.19 15.26 [387.5] 12.40 6.50 5.5 |

Table 1.1 Mechanical Dimensions

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1.3.4 Electrical Installation in General

NOTE!

All cabling must comply with national and local regulations on cable cross-sections and ambient temperature. Copper conductors required, (140°–167°F [60°–75°C]) recommended.

| | Power (HP [kW]) Torque (Nm) | | | | | | | | | | |
|-----------------------|-----------------------------|------------------------|-----------------------|------|-------|---------------------|-------------------|--------|-------|--|--|
| Frame Size | 1 x 200–240V | 3 x 200–240V | 3 x 380–480V | Line | Motor | DC connection/Brake | Control Terminals | Ground | Relay | | |
| M1 | 0.24–1 [0.18– 0.75] | 0.34–1 [0.25– 0.75] | 0.5–1 [0.37– 0.75] | 1.4 | 0.7 | Spade ¹⁾ | 0.15 | 3 | 0.5 | | |
| M2 | 2 [1.5] | 2 [1.5] | 2-3 [1.5-2.2] | 1.4 | 0.7 | Spade ¹⁾ | 0.15 | 3 | 0.5 | | |
| M3 | 3 [2.2] | 3–5 [2.2–3.7] | 4–10 [3.0–7.5] | 1.4 | 0.7 | Spade ¹⁾ | 0.15 | 3 | 0.5 | | |
| M4 | | | 15–20 [11.0– 15.0] | 1.3 | 0.15 | 3 | 0.5 | | | | |
| M5 | | | 25–30 [18.5– 22.0] | 1.3 | 1.3 | 1.3 | 0.15 | 3 | 0.5 | | |
| ¹⁾ Spade c | onnectors (0.25 | in [6.3 mm] Fast | on plugs) | | | | | | | | |

Table 1.2 Tightening of Terminals

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1.3.5 Fuses

Branch circuit protection:

In order to protect the installation against electrical and fire hazards, all branch circuits in an installation, switch gear, machines, etc. must be short-circuited and overcurrent protected according to national/international regulations.

Short circuit protection:

Danfoss recommends using the fuses mentioned in the following tables to protect service personnel or other equipment in case of an internal failure in the unit or short-circuit on the DC link. The adjustable frequency drive provides full short circuit protection in case of a short-circuit on the motor or brake output.

Provide overload protection to avoid overheating of the cables in the installation. Overcurrent protection must always be carried out according to national regulations. Fuses must be designed for protection in a circuit capable of supplying a maximum of 100,000 A_{rms} (symmetrical), 480V maximum.

Non UL compliance:

If UL/cUL is not to be complied with, Danfoss recommends using the fuses mentioned in the table below, which will ensure compliance with EN50178/IEC61800-5-1: In case of malfunction, not following the fuse recommendation may result in damage to the adjustable frequency drive.

| | | | Ма | x. Fuses UL | | | |
|--------------|----------------|----------|----------|-------------|--------------------|--------------------|-------------------|
| FC 51 | Bussmann | Bussmann | Bussmann | Littel fuse | Ferraz- Shawmut | Ferraz- Shawmut | Max. fuses non-UL |
| 1 X 200-240\ | i | | | | • | | |
| kW | Type RK1 | Type J | Type T | Type RK1 | Type CC | Type RK1 | Type gG |
| 0K18 - 0K37 | KTN-R15 | JKS-15 | JJN-15 | KLN-R15 | ATM-R15 | A2K-15R | 16A |
| 0K75 | KTN-R25 | JKS-25 | JJN-25 | KLN-R25 | ATM-R25 | A2K-25R | 25A |
| 1K5 | KTN-R35 | JKS-35 | JJN-35 | KLN-R35 | - | A2K-35R | 35A |
| 2K2 | KTN-R50 | JKS-50 | JJN-50 | KLN-R50 | - | A2K-50R | 50A |
| 3 x 200-240V | r ⁱ | | | | • | | |
| 0K25 | KTN-R10 | JKS-10 | JJN-10 | KLN-R10 | ATM-R10 | A2K-10R | 10A |
| 0K37 | KTN-R15 | JKS-15 | JJN-15 | KLN-R15 | ATM-R15 | A2K-15R | 16A |
| 0K75 | KTN-R20 | JKS-20 | JJN-20 | KLN-R20 | ATM-R20 | A2K-20R | 20A |
| 1K5 | KTN-R25 | JKS-25 | JJN-25 | KLN-R25 | ATM-R25 | A2K-25R | 25A |
| 2K2 | KTN-R40 | JKS-40 | JJN-40 | KLN-R40 | ATM-R40 | A2K-40R | 40A |
| 3K7 | KTN-R40 | JKS-40 | JJN-40 | KLN-R40 | - | A2K-40R | 40A |
| 3 x 380-480V | r ⁱ | | | | • | | |
| 0K37 - 0K75 | KTS-R10 | JKS-10 | JJS-10 | KLS-R10 | ATM-R10 | A6K-10R | 10A |
| 1K5 | KTS-R15 | JKS-15 | JJS-15 | KLS-R15 | ATM-R15 | A2K-15R | 16A |
| 2K2 | KTS-R20 | JKS-20 | JJS-20 | KLS-R20 | ATM-R20 | A6K-20R | 20A |
| 3K0 | KTS-R40 | JKS-40 | JJS-40 | KLS-R40 | ATM-R40 | A6K405R | 40A |
| 4K0 | KTS-R40 | JKS-40 | JJS-40 | KLS-R40 | ATM-R40 | A6K-40R | 40A |
| 5K5 | KTS-R40 | JKS-40 | JJS-40 | KLS-R40 | - | A6K-40R | 40A |
| 7K5 | KTS-R40 | JKS-40 | JJS-40 | KLS-R40 | - | A6K-40R | 40A |
| 11K0 | KTS-R60 | JKS-60 | JJS-60 | KLS-R60 | - | A6K-60R | 63A |
| 15K0 | KTS-R60 | JKS-60 | JJS-60 | KLS-R60 | - | A6K-60R | 63A |
| 18K5 | KTS-R60 | JKS-60 | JJS-60 | KLS-R60 | - | A6K-60R | 80A |
| 22K0 | KTS-R60 | JKS-60 | JJS-60 | KLS-R60 | - | A6K-60R | 80A |

Overcurrent protection:

Table 1.3 Fuses

1.3.6 Connecting to Line Power and Motor

The adjustable frequency drive is designed to operate all standard three-phased asynchronous motors. The adjustable frequency drive is designed to accept mains/motor cables with a maximum cross-section of 4mm²/10 AWG (M1, M2 and M3) and maximum cross-section 16mm²/6 AWG (M4 and M5).

- Use a shielded/armored motor cable to comply with EMC emission specifications, and connect this cable to both the decoupling plate and the motor metal.
- Keep motor cable as short as possible to reduce the noise level and leakage currents.
- For further details on mounting of the decoupling plate, please see instruction MI. 02.BX.YY.
- Also see EMC-Correct Installation in Instruction Manual MG.02.AX.YY.

Step 1: First, mount the ground wires to the ground terminal.

Step 2: Connect the motor to terminals U, V and W.

Step 3: Mount line power supply to terminals L1/L, L2 and L3/N (3-phase) or L1/L and L3/N (single-phase) and tighten.

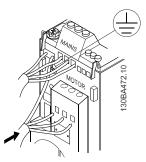


Figure 1.2 Mounting of Ground Cable, Line Power and Motor Wires

1.3.7 Control Terminals

All control cable terminals are located underneath the terminal cover in front of the adjustable frequency drive. Remove the terminal cover using a screwdriver.

NOTE!

See back of terminal cover for outlines of control terminals and switches.

NOTE!

Do not operate switches with power on the adjustable frequency drive.

Parameter 6-19 must be set according to Switch 4 position.

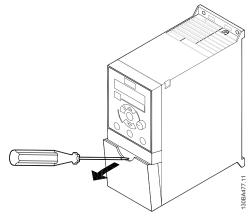


Figure 1.3 Removing Terminal Cover

| Switch 1: | *OFF = PNP terminals 29 | |
|----------------|---------------------------------------|--|
| | ON = NPN terminals 29 | |
| Switch 2: | *OFF = PNP terminal 18, 19, 27 and 33 | |
| | ON = NPN terminal 18, 19, 27 and 33 | |
| Switch 3: | No function | |
| Switch 4: | *OFF = Terminal 53 0-10 V | |
| | ON = Terminal 53 0/4-20 mA | |
| * = default se | tting | |

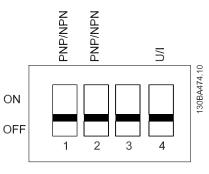


Table 1.4 Settings for S200 Switches 1-4

Figure 1.4 S200 Switches 1-4

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Figure 1.5 shows all control terminals of the adjustable frequency drive. Applying Start (term. 18) and an analog reference (term. 53 or 60) makes the adjustable frequency drive run.

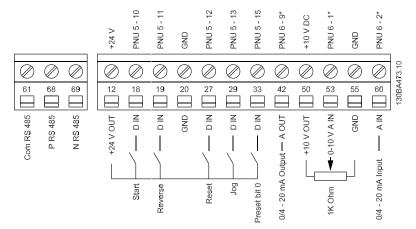


Figure 1.5 Overview of Control Terminals in PNP configuration and Factory Settings

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1.3.8 Power Circuit - Overview

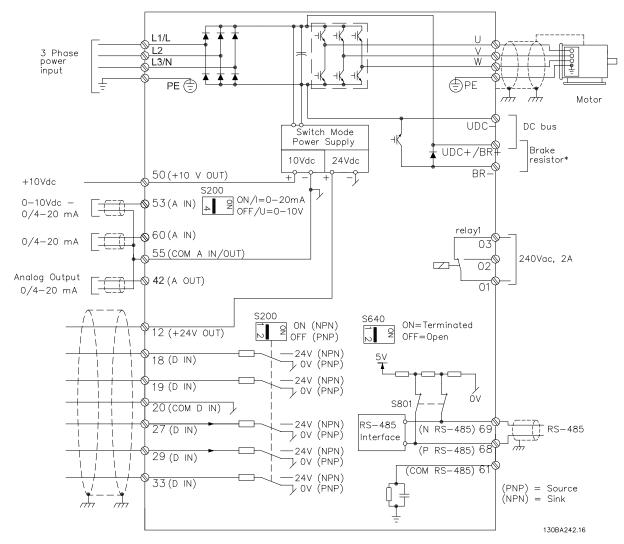


Figure 1.6 Diagram Showing all Electrical Terminals

* Brake (BR+ and BR-) are not applicable for frame M1.

Brake resistors are available from Danfoss. Improved power factor and EMC performance can be achieved by installing optional Danfoss line filters. Danfoss power filters can also be used for load sharing.

1.3.9 Load sharing/Brake

Use 0.25 in [6.3 m] insulated Faston plugs designed for high voltage for DC (load sharing and brake). Contact Danfoss or see instruction no. MI.50.Nx.02 for load sharing and instruction no. MI.90.Fx.02 for brake. Load sharing: Connect terminals -UDC and +UDC/+BR. Brake: Connect terminals -BR and +UDC/+BR (Not applicable for frame M1).

NOTE!

Voltage levels of up to 850V DC may occur between terminals

+UDC/+BR and -UDC. Not short circuit-protected.

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1.4 Programming

1.4.1 Programming with LCP

For detailed information on programming, please see Programming Guide, MG.02.CX.YY.

The adjustable frequency drive can also be programmed from a PC via RS485 com-port by installing the MCT-10 Set-up Software.

This software can either be ordered using code number 130B1000 or downloaded from the Danfoss website: www.danfoss.com/BusinessAreas/DrivesSolutions/softwaredownload

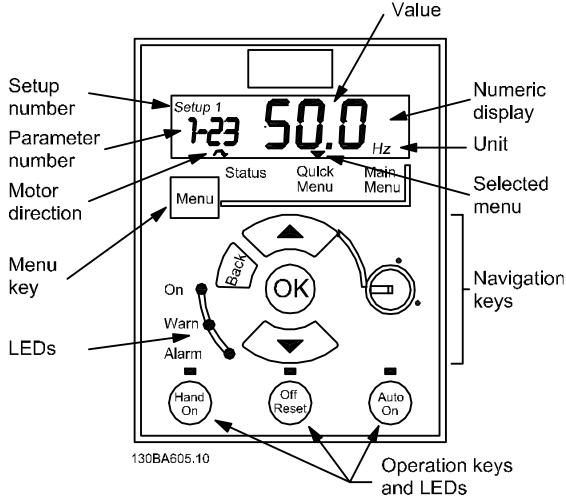


Figure 1.7 Description of LCP Buttons and Display

Use the [MENU] key to select one of the following menus:

Status: For readouts only.

Quick Menu: For access to Quick Menus 1 and 2, respectively.

Main Menu: For access to all parameters.

Navigation Keys:

[Back]: For moving to the previous step or layer in the navigation structure.

Arrows [▲] **[▼]**: For navigating between parameter groups, parameters and within parameters.

[OK]: For selecting a parameter and for accepting changes to parameter settings.

Operation Keys:

A yellow light above the operation keys indicates the active key.

[Hand on]: Starts the motor and enables control of the adjustable frequency drive via the LCP.

[Off/Reset]: Stops the motor (off). If in alarm mode the alarm will be reset.

[Auto on]: The adjustable frequency drive is controlled either via control terminals or serial communication. [Potentiometer] (LCP12): The potentiometer works in two

ways depending on the mode in which the adjustable frequency drive is running.

In *Auto Mode*, the potentiometer acts as an extra programmable analog input.

In *Hand on Mode* the potentiometer controls local reference.

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1.5 Parameter Overview

| 0-XX Operation/Display | 1-05 Local Mode Configuration | Overview 1-7X Start Adjustments | 3-11 Jog Speed [Hz] |
|--|------------------------------------|-----------------------------------|---|
| -XX Operation/Display | [0] Speed Open-loop | - | 0.0–400.0Hz * 5.0Hz |
| - | | 1-71 Start Delay | |
| -03 Regional Settings | *[2] As config in par. 1-00 | 0.0–10.0s * 0.0s | 3-12 Catch up/slow Down Value |
| [0] International | 1-2X Motor Data | 1-72 Start Function | 0.00-100.0% * 0.00% |
| 1] US | 1-20 Motor Power [kW] [HP] | [0] DC hold / delay time | 3-14 Preset Relative Reference |
| -04 Oper. State at Power-up | [1] 0.09kW/0.12HP | [1] DC brake / delay time | -100.0-100.0% * 0.00 % 3-15 |
| Hand) | [2] 0.12kW/0.16HP | *[2] Coast / delay time | Reference Resource 1 |
| • | | | |
| 0] Resume | [3] 0.18kW/0.25HP | 1-73 Flying Start | [0] No function |
| Forced stop, ref = old | [4] 0.25kW/0.33HP | *[0] Disabled | *[1] Analog Input 53 |
| 2] Forced stop, ref = 0 | [5] 0.37kW/0.50HP | [1] Enabled | [2] Analog input 60 |
| -1X Set-up Handling | [6] 0.55kW/0.75HP | 1-8X Stop Adjustments | [8] Pulse input 33 |
| -10 Active Set-up | [7] 0.75kW/1.00HP | 1-80 Function at Stop | [11] Local bus ref |
| - | | - | |
| [1] Set-up 1 | [8] 1.10kW/1.50HP | *[0] Coast | [21] LCP Potentiometer |
| 2] Set-up 2 | [9] 1.50kW/2.00HP | [1] DC hold | 3-16 Reference Resource 2 |
| 9] Multi Set-up | [10] 2.20kW/3.00HP | 1-82 Min Speed for Funct. at Stop | [0] No function |
| -11 Edit Set-up | [11] 3.00kW/4.00HP | [Hz] | [1] Analog Input 53 |
| [1] Set-up 1 | | 0.0–20.0 Hz * 0.0 Hz | *[2] Analog input 60 |
| • | [12] 3.70kW/5.00HP | | |
| 2] Set-up 2 | [13] 4.00kW/5.40HP | 1-9XMotor Temperature | [8] Pulse input 33 |
| 9] Active Setup | [14] 5.50kW/7.50HP | 1-90 Motor Thermal Protection | *[11] Local bus ref |
| -12 Link Set-ups | [15] 7.50kW/10.00HP | *[0] No protection | [21] LCP Potentiometer |
| 0] Not Linked | [16] 11.00kW/15.00HP | [1] Termistor warning | 3-17 Reference Resource 3 |
| | | 0 | |
| [20] Linked | [17] 15.00kW/20.00HP | [2] Thermistor trip | [0] No function |
| -31 Custom Readout Min Scale | [18] 18.50kW/25.00HP | [3] Etr warning | [1] Analog Input 53 |
| .00–9999.00 * 0.00 | [19] 22.00kW/29.50HP | [4] Etr trip | [2] Analog input 60 |
| -32 Custom Readout Max Scale | [20] 30.00kW/40.00HP | 1-93 Thermistor Resource | [8] Pulse input 33 |
| | | | |
| .00-9999.00 * 100.0 | 1-22 Motor Voltage | *[0] None | *[11] Local bus ref |
| -4X LCP Keypad | 50–999V * 230–400V | [1] Analog input 53 | [21] LCP Potentiometer |
| -40 [Hand on] Key on LCP | 1-23 Motor Frequency | [6] Digital input 29 | 3-18 Relative Scaling Ref. Resource |
| 0] Disabled | 20–400Hz * 50Hz | 2-XX Brakes | *[0] No function |
| [1] Enabled | 1-24 Motor Current | 2-0XDC Brake | [1] Analog Input 53 |
| | | | - 5 . |
| -41 [Off / Reset] Key on LCP | 0.01–100.00A * Motortype dep. | 2-00 DC Hold Current | [2] Analog input 60 |
| 0] Disable All | 1-25 Motor Nominal Speed | 0–150% * 50% | [8] Pulse input 33 |
| [1] Enable All | 100–9999rpm * Motortype dep. | 2-01 DC Brake Current | [11] Local bus ref |
| 2] Enable Reset Only | 1-29 Automatic Motor Tuning | 0–150% * 50% | [21] LCP Potentiometer |
| | | | |
| -42 [Auto on] Key on LCP | (AMT) | 2-02 DC Braking Time | 3-4X Ramp 1 |
| 0] Disabled | *[0] Off | 0.0–60.0s * 10.0s | 3-40 Ramp 1 Type |
| [1] Enabled | [2] Enable AMT | 2-04 DC Brake Cut-in Speed | *[0] Linear |
| -5X Copy/Save | 1-3X Adv. Motor Data | 0.0–400.0Hz * 0.0Hz | [2] Sine2 ramp |
| | | | |
| -50 LCP Copy | 1-30 Stator Resistance (Rs) | 2-1X Brake Energy Funct. | 3-41 Ramp 1 Ramp up Time |
| [0] No copy | [Ohm] * Dep. on motor data | 2-10 Brake Function | 0.05–3600s * 3.00s (10.00s ¹⁾) |
| 1] All to LCP | 1-33 Stator Leakage Reactance (X1) | *[0] Off | 3-42 Ramp 1 Ramp-down Time |
| 2] All from LCP | [Ohm] * Dep. on motor data | [1] Resistor brake | 0.05-3600s * 3.00s (10.00s ¹⁾) |
| 3] Size indep. from LCP | 1-35 Main Reactance (Xh) | [2] AC brake | |
| | | | 3-5X Ramp 2 |
| -51 Set-up Copy | [Ohm] * Dep. on motor data | 2-11 Brake Resistor (ohm) | 3-50 Ramp 2 Type |
| [0] No copy | 1-5X Load Indep. Setting | 5-5000 * 5 | *[0] Linear |
| 1] Copy from setup 1 | 1-50 Motor Magnetization at 0 | 2-16 AC Brake, Max current | [2] Sine2 ramp |
| 2] Copy from setup 2 | Speed | 0–150% * 100% | |
| | | | 3-51 Ramp 2 Ramp-up Time |
| 9] Copy from Factory setup | 0-300% * 100% | 2-17 Over-voltage Control | 0.05–3600s * 3.00s (10.00 s ¹⁾) |
| -6X Password | 1-52 Min Speed Norm. Magnet. [Hz] | | 3-52 Ramp 2 Ramp-down Time |
| -60 (Main) Menu Password | 0.0–10.0Hz * 0.0Hz | [1] Enabled (not at stop) | $0.05-3600s * 3.00s (10.00 s^{1})$ |
| -999 *0 | 1-55 U/f Characteristic - U | [2] Enabled | 3-8X Other Ramps |
| -61 Access to Main/Quick Menu | 0-999.9V | 2-2* Mechanical Brake | |
| | | | 3-80 Jog Ramp Time |
| v/o Password | 1-56 U/f Characteristic - F | 2-20 Release Brake Current | 0.05-3600s * 3.00s (10.00s ¹⁾) |
| [0] Full access | 0–400Hz | 0.00-100.0A * 0.00A | 3-81 Quick Stop Ramp Time |
| 1] LCP:Read Only | 1-6X Load Depen. Setting | 2-22 Activate Brake Speed [Hz] | |
| 2] LCP:No Access | 1-60 Low Speed Load Compen- | 0.0–400.0Hz * 0.0Hz | 0.05–3600s * 3.00s (10.00s ¹⁾) |
| | sation | | 4-XX Limits / Warnings |
| -XX Load/Motor | | 3-XX Reference / Ramps | 4-1X Motor Limits |
| -0X General Settings | 0–199% * 100% | 3-0X Reference Limits | 4-10 Motor Speed Direction |
| -00 Configuration Mode | 1-61 High Speed Load Compen- | 3-00 Reference Range | [0] Clockwise |
| [0] Speed open-loop | sation | *[0] Min - Max | |
| | 0–199% * 100% | | [1] Counter-clockwise |
| 3] Process | | [1] -Max - +Max | *[2] Both |
| -01 Motor Control Principle | 1-62 Slip Compensation | 3-02 Minimum Reference | 4-12 Motor Speed Low Limit [Hz] |
| 0] U/f | -400-399% * 100% | -4999-4999 * 0.000 | 0.0–400.0Hz * 0.0Hz |
| [1] VVC+ | 1-63 Slip Compensation Time | 3-03 Maximum Reference | |
| | | | 4-14 Motor Speed High Limit [Hz |
| -03 Torque Characteristics | Constant | -4999-4999 * 50.00 | 0.1–400.0 Hz * 65.0 Hz |
| [0] Constant torque | 0.05–5.00s * 0.10s | 3-1X References | |
| 2] Automatic Energy Optim. | | 3-10 Preset Reference | |
| 57 11 1 | | -100.0–100.0% * 0.00% | 1 |
| | | | |

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4-16 Torque Limit Motor Mode 0-400% * 150% 4-17 Torque Limit Generator Mode 0–400% * 100% 4-5X Adj. Warnings **4-50 Warning Current Low** 0.00–100.00A * 0.00A 4-51 Warning Current High 0.00–100.00A * 100.00A 4-58 Missing Motor Phase Function [0] Off *[1] On 4-6X Speed Bypass **4-61 Bypass Speed From [Hz]** 0.0–400.0Hz * 0.0Hz 4-63 Bypass Speed To [Hz] 0.0–400.0Hz * 0.0Hz 5-1X Digital Inputs 5-10 Terminal 18 Digital Input [0] No function [1] Reset [2] Coast inverse [3] Coast and reset inv. [4] Quick stop inverse [5] DC brake inv. [6] Stop inv *[8] Start [9] Latched start [10] Reversing [11] Start reversing [12] Enable start forward [13] Enable start reverse [14] Jog [16-18] Preset ref bit 0-2 [19] Freeze reference [20] Freeze output [21] Speed up [22] Speed down [23] Setup select bit 0 [28] Catch up [29] Slow down [34] Ramp bit 0 [60] Counter A (up) [61] Counter A (down) [62] Reset counter A [63] Counter B (up) [64] Counter B (down) [65] ResetCounter B 5-11 Terminal 19 Digital Input See par. 5-10. * [10] Reversing 5-12 Terminal 27 Digital Input See par. 5-10. * [1] Reset 5-13 Terminal 29 Digital Input See par. 5-10. * [14] Jog 5-15 Terminal 33 Digital Input See par. 5-10. * [16] Preset ref bit 0 [26] Precise Stop Inverse [27] Start, Precise Stop [32] Pulse Input 5-4X Relays 5-40 Function Relay *[0] No opreation [1] Control ready [2] Drive ready [3] Drive ready, Remote [4] Enable / No warning [5] Drive running [6] Running / No warning [7] Run in range / No warning [8] Run on ref / No warning [9] Alarm

[10] Alarm or warning [12] Out of current range [13] Below current, low [14] Above current, high [21] Thermal warning [22] Ready, No thermal warning [23] Remote ready, No thermal warning [24] Ready, Voltage ok [25] Reverse [26] Bus ok [28] Brake,NoWarn [29] Brake ready/NoFault [30] BrakeFault (IGBT) [32] Mech.brake control [36] Control word bit 11 [51] Local ref. active [52] Remote ref. active [53] No alarm [54] Start cmd active [55] Running reverse [56] Drive in hand mode [57] Drive in auto mode [60-63] Comparator 0-3 [70-73] Logic rule 0-3 [81] SL digital output B 5-5X Pulse Input 5-55 Terminal 33 Low Frequency 20–4999Hz * 20Hz 5-56 Terminal 33 High Frequency 21-5000Hz * 5000Hz 5-57 Term. 33 Low Ref./Feedb. Value -4999-4999 * 0.000 5-58 Term. 33 High Ref./Feedb. Value -4999-4999 * 50.000 6-XX Analog In/Out 6-0X Analog I/O Mode 6-00 Live Zero Timeout Time 1-99s * 10s 6-01 Live Zero TimeoutFunction *[0] Off [1] Freeze output [2] Stop [3] Jogging [4] Max speed [5] Stop and trip 6-1X Analog Input 1 6-10 Terminal 53 Low Voltage 0.00-9.99V * 0.07V 6-11 Terminal 53 High Voltage 0.01-10.00V * 10.00V 6-12 Terminal 53 Low Current 0.00-19.99mA * 0.14mA 6-13 Terminal 53 High Current 0.01-20.00mA * 20.00mA 6-14 Term. 53 Low Ref./Feedb. Value -4999-4999 * 0.000 6-15 Term. 53 High Ref./Feedb. Value -4999-4999 * 50.000 6-16 Terminal 53 Filter Time Constant 0.01-10.00s * 0.01s 6-19 Terminal 53 mode *[0] Voltage mode [1] Current mode 6-2X Analog Input 2

6-22 Terminal 60 Low Current 0.00-19.99mA * 0.14mA 6-23 Terminal 60 High Current 0.01-20.00mA * 20.00mA 6-24 Term. 60 Low Ref./Feedb. Value -4999-4999 * 0.000 6-25 Term. 60 High Ref./Feedb. Value -4999-4999 * 50.00 6-26 Terminal 60 Filter Time Constant 0.01-10.00s * 0.01s 6-8X LCP potentiometer 6-80 LCP Potmeter Enable [0] Disabled *[1] Enable 6-81 LCP potm. Low Reference -4999–4999 * 0.000 6-82 LCP potm. High Reference -4999-4999 * 50.00 6-9X Analog Output xx 6-90 Terminal 42 Mode *[0] 0-20mA [1] 4-20mA [2] Digital Output 6-91 Terminal 42 Analog Output *[0] No operation [10] Output Frequency [11] Reference [12] Feedback [13] Motor Current [16] Power [20] Bus Reference 6-92 Terminal 42 Digital Output See par. 5-40 *[0] No Operation [80] SL Digital Output A 6-93 Terminal 42 Output Min Scale 0.00–200.0% * 0.00% 6-94 Terminal 42 Output Max Scale 0.00-200.0% * 100.0% 7-XX Controllers 7-2X Process Ctrl. Feedb 7-20 Process CL Feedback 1 Resource *[0] NoFunction [1] Analog Input 53 [2] Analog input 60 [8] PulseInput33 [11] LocalBusRef 7-3X Process PI Ctrl. 7-30 Process PI Normal/ Inverse Ctrl *[0] Normal [1] Inverse 7-31 Process PI Anti-windup [0] Disable *[1] Enable 7-32 Process PI Start Speed 0.0-200.0Hz * 0.0Hz 7-33 Process PI Proportional Gain 0.00-10.00 * 0.01 7-34 Process PI Integral Time 0.10-9999s * 9999s 7-38 Process PI Feed Forward Factor 0-400% * 0% 7-39 On Reference Bandwidth 0-200% * 5% 8-XX Comm. and Options 8-0X General Settings

8-01 Control Site *[0] Digital and ControlWord [1] Digital only [2] ControlWord only 8-02 Control Word Source [0] None *[1] FC RS485 8-03 Control Word Timeout Time 0.1–6500s * 1.0s 8-04 Control Word Timeout Function *[0] Off [1] Freeze Output [2] Stop [3] Jogging [4] Max. Speed [5] Stop and trip 8-06 Reset Control Word Timeout *[0] No Function [1] Do reset 8-3X FC Port Settings 8-30 Protocol *[0] FC [2] Modbus 8-31 Address 1-247 * 8-32 FC Port Baud Rate [0] 2400 Baud [1] 4800 Baud *[2] 9600 Baud For choose FC Bus in 8-30 *[3] 19200 Baud For choose Modbus in 8-30 [4] 38400 Baud 8-33 FC Port Parity *[0] Even Parity, 1 Stop Bit [1] Odd Parity, 1 Stop Bit [2] No Parity, 1 Stop Bit [3] No Parity, 2 Stop Bits 8-35 Minimum Response Delay 0.001-0.5 * 0.010s 8-36 Max Response Delay 0.100–10.00s * 5.000s 8-4X FC MC protocol set 8-43 FC Port PCD Read Configuration *[0] None Expressionlimit [1] [1500] Operation Hours [2] [1501] Running Hours [3] [1502] kWh Counter [4] [1600] Control Word [5] [1601] Reference [Unit] [6] [1602] Reference % [7] [1603] Status Word [8] [1605] Main Actual Value [%] [9] [1609] Custom Readout [10] [1610] Power [kW] [11] [1611] Power [hp] [12] [1612] Motor Voltage [13] [1613] Frequency [14] [1614] Motor Current [15] [1615] Frequency [%] [16] [1618] Motor Thermal [17] [1630] DC Link Voltage [18] [1634] Heatsink Temp. [19] [1635] Inverter Thermal [20] [1638] SL Controller State [21] [1650] External Reference [22] [1651] Pulse Reference [23] [1652] Feedback [Unit] [24] [1660] Digital Input 18,19,27,33 [25] [1661] Digtial Input 29 [26] [1662] Analog Input 53(V) [27] [1663] Analog Input 53(mA)

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| [29] (1663] Analog Output 42 [ma] [10] Integerence [29] (1623] Courtup A High [20] Action 23 (1623] Courtup A High [21] (1721] Courtup A (1ma) [2] Readback [20] ReadCourtup A (1ma) [20] Action 20 (1ma) [23] (1721] Courtup A (1ma) [2] Readback [20] ReadCourtup A (1ma) [20] Action 20 (1ma) [23] (1721] Courtup A (1ma) [2] Readback [20] ReadCourtup A (1ma) [20] Action 20 (1ma) [23] (1722] Courtup A (1ma) [2] Robin 20 (1ma) [21] Readback [20] ReadCourtup A High [20] ACK General Status [23] (1232] Courtup A (1ma) [2] Robin 20 (1ma) [21] Readback [20] ReadCourtup A High [20] Ack [21] Readback [21] Readback [22] Rek [23] Readback [23] Readback [23] Readback [24] Rek [26] Rek <t< th=""><th></th><th></th><th></th><th></th></t<> | | | | |
|---|------------------------------|-------------------------------|---------------------------------|---|
| [10] (1663) Freq. input 33 [Hz] [1] Reference [1] Sort Digital Output Birgh <i>I 64X Const Readouts</i> [13] (1672) Fourter B [60] ResetCounterA [60] ResetCounterA [60] ResetCounterA [33] (1672) Counter B [61] Motor/Soreer <i>I 44X Signed Functions</i> [6-0X General Status [34] (1692) Counter B [61] Motor/Soreer <i>I 44X Signed Functions</i> [60] ResetCounterA [35] (1692) Warning Word [1] Motor/Solage [0] 2 kHz [14] Motor/Solage [0] 2 kHz [35] [1692] Warning Word [1] Analogipput50 [1] Analogipput50 [2] 8 kHz [200-2000, * 0.00% [36] [1694] Ext. Status Word [30] Counter A [0] 0[rif [200-2000, * 0.00% * 0.00% [31] Logicfor [31] Comperator Operator [1] 0 [| [28] [1664] Analog Input 60 | 13-10 Comparator Operand | [33] Set Digital Output B Low | 15-51 Adjustable Frequency Drive |
| [11] Torij Relay Output (bin] [21] Reactions [61] RestCounter A [60] Control Word [32] Torig Counter A [6] MotorCurrent [14] XX Special Functions [600 Control Word [33] Torig Counter B [6] MotorCurrent [14] XX Special Functions [600 Control Word [35] Torig Counter B [6] MotorCurrent [14] XX Special Functions [1600 Control Word [35] Torig Counter B [6] MotorCurrent [14] XX Special Functions [1601 Rest:Counter B [35] Torig Counter A [13] Analoginput53 [11] 4 kHz [1602 Reference W [35] Torig Counter A [13] Analoginput53 [11] 4 kHz [1603 Status Word [31] Counter A [30] Counter A [31] Counter B [11] 1 4 kHz [1603 Status Word [31] Counter B [31] Counter B [11] 1 0 n [1603 Status Word [1604 Status Word [31] Counter B [31] Counter B [11] Nonring [1612 Status Word [1604 Status Word [32] CogicOr [331 Counter B [11] Norming [1612 Motor Voltage [1623 Status Word [33] Status Status Status Word [341 Status Norming [1624 Motor Voltage [1624 Motor V | | | | |
| [12] [1672] Counter & [13] MotorSpeed [161] ResetCounter8 15-00 Control Word [13] [1673] Counter B [14] MotorCurrent [142] Kirgon Alarm Word [16] MotorPower [140] Kirgon Alarm Word [16] ResetCounter8 0-045FFF [13] [1673] Counter B [12] Analoginput60 [12] Astalgon Press 15-01 Reference 96 2000.0% + 0.0% 8-50 Coasting Select [13] Analoginput60 [2] 8 kHz 000.0% + 0.0% 000.0% + 0.0% [1] Bus [2] LogicAnd [3] CounterA [0] Off 000.0% + 0.0% 000.0% + 0.0% [2] LogicAnd [3] CounterA [0] Off 000.0% + 0.0% 000.0% + 0.0% [3] LogicCr [3] LogicAnd [1] CounterA [1] Off 000.0% + 0.0% See par. 8-50 * [3] LogicCr [3] LogicAnd [1] Orapattor Operator 14-12 Function at line imbalance 16-10 Power [kW] See par. 8-50 * [3] LogicCr [3] LogicCr [3] LogicCr 1999-9999 * 0.0 14-22 KTip Reset 16-11 Power [kW] See par. 8-50 * [3] LogicCr 13-20 SL Controler Timer [10] Manual reset 16-13 Precuency [Hz] See par. 8-50 * [3] LogicCr 13-20 | | | | |
| [33] [1672] Counter 8 [4] MotorCurrent <i>I+XX Special Functions</i> 0-0XFFFF [34] [1690] Marming Word [7] MotorVoltage <i>I+401 Switching</i> 16-01 Reference [Unit] [36] [1694] Ex. Status Word [8] DCLinkVoltage [10] Z+Hz 1600 Reference 8: <i>S-XD Diptal/Bus</i> [12] Analoginput53 [11] 4 kHz 200.0-200.0% * 0.0% <i>S-SD Qasting Select</i> [13] Analoginput53 [11] 4 kHz 200.0-200.0% * 0.0% [10] Bus [20] AlmNumber [14] 6 kHz not available for MS 200.0-200.0% * 0.0% [21] LogicAnd [30] CounterA [10] Of 16-05 Demotor 14.04 Jule [96] [21] LogicAn [31] CounterB "(11] On 16-06 Dewer IkWI 8-52 Derake Select "[11] Approximately equals "(10] Trip 16-12 Motor Sattus 8-52 Derake Select "13.2 Comparator Value [2] Disabled 16-12 Motor Sattus 8-53 Satt Select "13.2 Comparator Value [2] Disabled 16-12 Motor Sattus 8-54 Select "13.2 Controller Timer "(10] Munala reset 16-13 Motor Sattus 8-55 Preset References Belect "13-20 Controller Timer "(10] Munala reset | | | | |
| [24] (1990) Jam Word [6] MotorPower 14-0X Invents Switching 16-01 Reference (Unit) [35] (1692) Warning Word [8] DCLinkVoltage [10] 2 kHz -099 • 0.000 [36] (1694) Ext. Status Word [8] DCLinkVoltage [10] 2 kHz -000 0 * 0.06 [36] (1694) Ext. Status Word [13] Analoginput50 [2] 8 kHz -000 0 * 0.06 [36] (1694) Ext. Status Word [36] (1642) Analoginput50 [2] 8 kHz -000 0 * 0.06 [31] LogicO [31] CounterA [0] Off -000 0* 0.00% -000 0* [31] LogicO [31] CounterB [10] Off 16-05 Main Actual Value [96] -000 0* [32] LogicO [31] CounterB [10] Off 16-05 Custon Readout 16-05 Nation | | · · | | |
| [15] frozd Warning Word [7] MotorVoltage [14-01 Switching Frequency .4993-4999 * 0.000 6-5X Dighta/Bus [8] DCLinkVoltage [1] 4 kHz .2000-200,0% * 0.006 6-5X Dighta/Bus [13] Analoginput53 [1] 4 kHz .2000-200,0% * 0.006 6-5X Dighta/Bus [13] Analoginput53 [1] 4 kHz .2000-200,0% * 0.006 [1] Bus [2] Analoginput53 [1] 4 kHz .2000-200,0% * 0.006 [1] Bus [2] Analoginput53 [1] 6 kHz not available for MS .606 Min Actual Value [96] [2] LogicAn [3] LogicOr [3] LogicOr [3] LogicOr [3] LogicOr .201 Aarmwinde 8-51 Outlet State [1] Approximately equals *[1] Origo .607 Dower [MV] .606 Dower provide 8-52 Destate Select *[1] Approximately equals *[1] Warning .614 Dower [MV] .614 Dower [MV] 8-53 Set Select *[3] LogicOr *[3] LogicOr .322 Times .14-20 Reset Mode .16-13 Motor State 8-55 Set set Select *[3] LogicOr *[3] LogicOr .520 Controller Timer .101 AutoReset 1-9 .16-18 Motor Timernal [96] 8-56 Set set Select *[3] Logi | | | | |
| [36] [194] Ext. Status Word [8] DCLink/Voltage [0] 2. Hz 1902 Areference % 65X Digital/bus [12] Analoginput50 [2] 8. Hz -2000.0% # 0.0% 6.50 Coasting Select [13] Analoginput50 [2] 8. Hz -000.0% # 0.0% [10] Digitalinput [18] Publehput33 [2] 8. Hz -000.0% # 0.0% [11] LogicAnd [13] Counter8 [0] OF -000.0% # 0.0% *51 Quick Stop Select [13] LogicAnd [14] Comparator Operator 14-12 Function at line imbalance 16-05 Main Actual Value [90] *51 Quick Stop Select [13] LogicAnd [1] Approximately equals *[10] Trip 16-11 Power [hp] *53 Star Select [13] LogicAnd [13] Counter8 [10] Xaming 16-11 Power [hp] *54 Star Select [13] Approximately equals *[10] Xaming 16-11 Motor Current [A] *54 Star Select [13] Approximately equals *[10] Namia reset 16-13 Motor Status *54 Star Select [13] Approximately equals *[10] Namia reset 16-13 Motor Status *55 Preset Reference Select [13-20 Controll Fill 12-20 Reset Mode 16-14 Motor Current [A] *55 S | | | _ | |
| §-SX Digital/Bus [12] Analoginput63 *11] 4 kHz 2000-2000% * 0.0% §-SO Coasting Select [13] Analoginput60 [2] kHz [6-3] Status Word [1] Bus [20] algonput60 [2] kHz [6-6] Status Word [2] LogicAnd [20] CounterA [0] Off -000-2000% + 0.0% [2] LogicAnd [30] CounterA [0] Off -2000-2000% + 0.0% [31] CounterB [4] 16 kHz not available for MS -6-65 Main Actual Value [96] [32] LogicAn [31] CounterB [4] 17 Di Pomer monitoring [36] CounterA [10] Oir Trip [35] Cuck Stop Select [31] CounterB [4-12 Function at line imbalance [6-17 Motor Status [36] Sea par. 8-50 * [3] LogicAr [32] Greater Than [11] Warning [16-11 Power [hp] [36] Sea par. 8-50 * [31] LogicAr [32] ZE Tres [14-22 Trip Reset [16-13 Frequency [fk] [36] Sea par. 8-50 * [31] LogicAr [32] ZE Tres [14-22 Trip Reset [16-15 Frequency [fk] [36] Sea par. 8-50 * [31] LogicAr [33-42 Logic Rule Boolean 1 [11] AutoReset 10 [16-33 Heatsink Ternp. [36] Sea par. 8-50 * [31] LogicAr [36] Cig Rule Doelan 1 | | | | |
| 8-50 Coasting Select [13] Analoginput60 [2] 8 kHz [6-63 Status Word [10] Digitalinput. [18] Publishput33 [4] 16 kHz not available for MS -200.0-200.0%, *0.0% [2] LogicAnd [30] CounterA [10] Off [11] CunterB [11] OunterB [20] Off [21] Off [20] Off | | | | |
| [10] Digitalinçur. [18] Pudsefnput33 [14] 16 kHz not available for MS 0-0XFFFF [11] Bus [20] AlamMumber [14] 30 CounterA [10] Olf -200.0-200.0% * 0.0% [21] LogicOr [31] CounterB [10] Olf -200.0-200.0% * 0.0% -200.0-200.0% * 0.0% [31] LogicOr [31] CounterB [11] Approximately equals *[11] Approximately equals *[10] Trip 16-10 Power Hpl [32] See par. 8-30 * [3] LogicOr [32] Greater Than [11] Warning 16-11 Power Hpl 16-11 Power Hpl [34] See par. 8-30 * [3] LogicOr [33-20 SL Controller Timer [12] Azo Reset Mode 16-11 Power Hpl 16-11 Power Hpl [35] See par. 8-30 * [3] LogicOr [3-20 SL Controller Timer 14-22 Reset Mode 16-14 Motor Current [A] [36] See par. 8-30 * [3] LogicOr [3-34 Logic Rule Boolean 1 [11] AutoReset 10 16-33 Incetter Themal [9] [36] See par. 8-30 * [3] LogicOr [36] Cig Rule Boolean 1 [11] AutoReset 10 16-34 Heatsink Temp. [36] See par. 8-30 * [3] LogicOr [36] Ada Rule Operator 1 14-22 AutoReset 20 16-34 Heatsink Temp. [36] See par. 8-30 * [3] LogicOr [36] Ada not [30] Nax. Current [40] | | | | |
| [1] Bus [20] AlarmNumber 14-33 Overmodulation 16-05 Main Actual Value [%] [2] LogicAnd [30] CounterA [0] Off 20.0-20.00%* 0.0% [3] LogicAnd [31] CounterA [1] In 16-05 Main Actual Value [%] [3] LogicAnd [31] CounterA [1] In 16-05 Main Actual Value [%] [3] LogicAnd [31] CounterA [1] In 16-10 Mover Monthon [4-32 Derake Select [1] Approximately equals "10] Trip 16-11 Power Monthon [4-33 Start Select [3] LogicAnd [2] Disabled 16-11 Power Monthon [4-35 Start Select [3] LogicAnd [2] Disabled 16-12 Motor Status 16-11 Power Monthon [4-35 Reversing Select [3] 22 Comparator Value [2] Disabled 16-13 Frequency [M2] 16-13 Frequency [M2] [4-55 Setup Select [3] -000 50 s* 0.0 s [1-9] AutoReset 1.0 16-14 Motor Status 16-14 Motor Status [4-56 Setup Select [3] -000 (S trip Fase [1-9] AutoReset 1.0 16-14 Motor Status 16-30 Dive Status [4-57 Motor Status [3] AutoReset 1.0 11-42 AutoReset 1.0 16-31 Normacone 16-34 Metastink Temp. [4-50 Controller Mode [3] Autont [3] Aut | | | | |
| [2] LogicAnd [30] CounterA [0] Off -200.0-200.0%* 0.0% -200.0-200.0%* 0.0% [3] LogicOr [31] CointerB [1] On 14-12 Function at line Imbalance 16-90 Custom Readout See par. 8-50 * [3] LogicOr [2] Greater Than [1] Warning 16-10 Power IWJ 16-11 Power IWJ See par. 8-50 * [3] LogicOr [3] Comparator Value [2] Disabled 16-11 Power IWJ 16-11 Power IWJ See par. 8-50 * [3] LogicOr [3-20 S. Controller Timer [4] Arying Reset 16-13 Power IWJ 16-14 Motor Current [A] See par. 8-50 * [3] LogicOr [3-20 S. Controller Timer [4] AutoReset 1-9 16-14 Motor Current [A] See par. 8-50 * [3] LogicOr [3-40 Logic Rule Boolean 1 [1] AutoReset 15 16-30 DOC Link Voltage [V] See par. 8-50 * [3] LogicOr [3-40 Logic Rule Boolean 1 [1] AutoReset 15 16-30 DOC Link Voltage See par. 8-50 * [3] LogicOr [3-40 Logic Rule Boolean 1 [1] AutoReset 15 16-30 DOC Link Voltage See par. 8-50 * [3] LogicOr [3-40 Logic Rule Boolean 1 [1] AutoReset 15 16-30 DOC Link Voltage See par. 8-50 * [3] LogicOr [3-40 Logic Rule Boolean 1 [1] AutoReset 15 16-30 DOC Link Voltage See par. 8-50 * [3] LogicOr < | | · · | | |
| *[3] LogicOr [31] CounterB *[1] On 16-09 Custom Readout 8-51 Quick Stop Select 13-11 Comparator Operator 14-12 Function at line Imbalance Dep. on par. 0-31, 0-32 and 4 8-52 Dick Stop Select 131 Approximately equals *[0] Trip 16-10 Power Roll 16-10 Power Roll 8-52 Dic Brake Select 131 Comparator Value [2] Disabled 16-11 Power Roll 16-10 Power Roll 8-53 Reversing Select 13-27 Timers 14-22 Reset Mode 16-13 Frequency [Hz] 16-13 Frequency [Hz] 8-54 Reversing Select 13-20 Controller Timer *[0] Manual reset 16-15 Frequency [Hz] 16-15 Frequency [Hz] 8-56 Prest Reference Select 13-40 Logic Rule Boolean 1 11 AutoReset 10 16-33 Doc Link Voltage 16-33 Doc Link Voltage 8-56 Prest Reference Select 13-40 Logic Rule Boolean 1 11 AutoReset 15 16-34 Dink Voltage 16-34 Dink Voltage 8-56 Prest Reference Select 13-40 Logic Rule Boolean 1 11 AutoReset 15 16-34 Dink Voltage 16-34 Dink Voltage 8-56 Prest Reference Select 13-40 Logic Rule Boolean 1 13-41 Logic Rule Doperator 2 16-34 Dink Mac. Current 16-33 Dink Heat Not Voltage 16-34 Dink Mac. Current 16-34 Dink Mac. Current 16-34 Dink Mac. Current 13-340 SiGC Settings 12) Or Contr | | | | |
| 8-51 Quick Stop Select 13-11 Comparator Operator 14-12 Kunction at line imbalance Dep. on par. 0-31, 0-32 and 4 8-52 DC Brake Select *[1] Approximately equals *[0] Trip 16-12 Moort Status 8-53 Start Select 12] Greater Than [1] Warning 16-12 Moort Voltage [V] See par. 8-50 *[3] LogicOr 12] Comparator Value [2] Disabled 16-12 Moort Voltage [V] See par. 8-50 *[3] LogicOr 13-20 Zomparator Value [2] Disabled 16-12 Moort Voltage [V] See par. 8-50 *[3] LogicOr 13-20 St. Controller Timer 10/ Manual reset 16-13 Knotor Current [A] See par. 8-50 *[3] LogicOr 13-20 St. Controller Timer *[0] Manual reset 16-13 Moort Thermal [%] See par. 8-50 *[3] LogicOr See par. 13-01 *[0] False [1] AutoReset 15 16-30 Drive Status See par. 8-50 *[3] LogicOr See par. 13-01 *[0] False [1] AutoReset 15 16-30 Drive Status See par. 8-50 *[3] LogicOr See par. 13-01 *[0] False [1] AutoReset 15 16-33 Drive Status See par. 8-50 *[3] LogicOr See par. 13-01 *[0] False [1] AutoReset 15 16-33 Drive Status See par. 8-50 *[3] LogicOr See par. 13-01 *[0] False | | | | |
| See par. 8-50 * [3] LogicOr [0] Less Than 14-12 Function at line imbalance 16-10 Power [bw] 8-52 DC Brake Select *101 Approximately equals *101 Trip 16-10 Power [bw] 8-53 Start Select 13-12 Comparator Value [2] Disabled 16-12 Motor Voltage [V] 8-53 Kart Select 13-12 Comparator Value [2] Disabled 16-13 Frequency [Hz] 8-54 Reversing Select 13-23 Controller Timer 14-20 Reset Mode 16-14 Motor Current [A] 8-55 N * [3] LogicOr 9-99 9-999 * 0.0 14-2X Tip Reset 16-13 Frequency [Hz] 8-56 N * [3] LogicOr 13-24 Cogic Rules 1101 AutoReset 1-0 16-13 Motor Thermal [%] 8-56 N * [3] LogicOr 13-44 Logic Rules 1101 AutoReset 10 16-33 Inverter Thermal [%] 8-56 N * [3] LogicOr See par. 13-01 * [0] False 112 AutoReset 10 16-33 Inverter Thermal [%] 8-56 Mass (perdback 1 13-41 Logic Rule Operator 1 0-405 * 105 16-33 Inv. Mac. Current 1 8-54 Bus feedback 1 13-41 Logic Rule Operator 1 0-600 * 105 16-37 Inv. Mac. Current 1 13-04 SLC Settings [2] Or *101 Motin 14-22 Operation Mode 16-35 Inv. Mac. Current 1 < | | | | |
| 8-52 DC Brake Select *(1) Approximately equals *(0) Trip 16-10 Power [MV] See par. 8-50 * [3] LogicOr 12) Greater Than [1] Warning 16-11 Power [hp] 8-53 tart Select 13-12 Comparator Value [2] Disabled 16-12 Motor Voltage [V] See par. 8-50 * [3] LogicOr 13-20 SL Controller Timer 16-12 Motor Voltage [V] 16-12 Motor Voltage [V] See par. 8-50 * [3] LogicOr 13-20 SL Controller Timer *(0) Manual reset 16-13 Frequency [Po] See par. 8-50 * [3] LogicOr 13-4X Logic Rules [10] AutoReset 1-9 16-18 Motor Thermal [Po] See par. 8-50 * [3] LogicOr 13-4X Logic Rules [10] AutoReset 10 16-34 Motor Thermal [Po] 8-56 Terus Reference Select 13-40 Logic Rule Boolean 1 [11] AutoReset 20 16-34 Heastink Temp. 8-59 Mis Jog/ Feedback 1 13-41 Logic Rule Operator 1 174-22 AutoReset 20 16-34 Heastink Temp. 8-54 Reversing S [2] Or *(0) Disabled 16-36 Inverter Hemal 16-36 Inverter Hemal 8-54 Setups Sol [7] Logic Rule Boolean 1 113-40 Xolc Settings [2] Or 170 not 16-34 Heastink Temp. 8-54 Boversindou 16-34 Inverter Faul | | | | |
| See par. 8-50 * [3] LogicOr[2] Cirelater Than[1] Warning[6-11 Power (hp]8-53 Start Select13-12 Comparator Value[2] Disabled16-12 Motor Voltage (V]8-54 Start Select13-22 Times16-12 Motor Voltage (V]8-56 * [3] LogicOr13-22 Times14-22 Trip Reset16-13 Frequency (Hz]8-56 * [3] LogicOr13-20 SL Controller Timer16-12 Motor Voltage (V]8-55 Set-up Select0.0-3600 s* 0.0 s19 AutoReset 1-916-18 Motor Thermal (%)8-55 Set-up Select13-40 Logic Rule Boolean 1[1] AutoReset 1-916-18 Motor Thermal (%)8-56 Preset Reference Select13-40 Logic Rule Boolean 1[1] AutoReset 1-916-33 DC Link Voltage8-56 Was Jog / Feedback[3] - [32] SL Timeout 0-213 Infinite auto reset16-33 Inverter Thermal8-94 Bus Jog / Feedback[3] - [32] SL Timeout 0-213 Jafnitie auto reset16-33 Inv. Max. Current8-94 Bus Sectings[2] Or11 And14-22 Operation Mode16-33 Exctroller State13-03 SLC Settings[2] Or10 rot16-52 Feedback16-53 Inv. Max. Current13-04 SLC Settings[3] Not or not16-52 Feedback16-51 Pulse Reference10] Orfi[4] Or not16-52 Feedback16-53 Logic Rule Doperator 213 Infiniting13-40 * [0] False15-50 Kimun Magnetization16-52 Feedback13 Or SL Controller Mode16 Not or16-52 Feedback16-53 Feedback13 Or Statt Event[6] Not and not16-52 Feedback16-53 Feedback13 Or Statt Event[6] Not and not | | | | |
| 8-53 Start Select 13-12 Comparator Value [2] Disabled 16-12 Motor Voltage [M] See par. 8-50 * [3] LogicOr -9999-9999 * 0.0 14-2X Tip Reset 16-13 Frequency [Hz] 8-54 Reversing Select 13-2X Timers *10 Motor Current [A] See par. 8-50 * [3] LogicOr 13-20 SL Controller Timer *10 Motor Merset 16-13 Frequency [Hz] See par. 8-50 * [3] LogicOr See par. 13-01 * [0] False [19] AutoReset 1-9 16-33 Dick Motor Thermal [90] See par. 8-50 * [3] LogicOr See par. 13-01 * [0] False [12] AutoReset 1-9 16-33 Invester Thermal [90] See par. 8-50 * [3] LogicOr See par. 13-01 * [0] False [12] AutoReset 1-9 16-33 Invester Thermal [90] See baset Reference Seledack 13-41 Logic Rule Deprator 114-21 Automatic Restar Time 16-33 Invester Thermal [91] See baset So * [3] LogicOr See par. 13-01 * [0] False [12] Automatic Restar Time 16-33 Invester Thermal [92] See baset So * [3] LogicOr See par. 13-40 [10] False 16-32 <td></td> <td></td> <td>· · ·</td> <td></td> | | | · · · | |
| See par. 8-50 * [3] LogicOr -9999-999 * 0.0 14-2X Trip Reset 16-13 Frequency [Fz] 8-54 Reversing Select 13-2X Timers 14-20 Reset Mode 16-14 Motor Current [A] 8-55 * [3] LogicOr 13-2X SL Controller Timer 10] Manual reset 16-13 Frequency [Fz] 8-55 Setup Select 0.0-3600 s* 0.0 s [1-9] AutoReset 1-9 16-18 Motor Thermal [%] 8-55 Preset Reference Select 13-40 Logic Rule Boolean 1 [11] AutoReset 10 16-33 DV Link Voltage See par. 8-50 * [3] LogicOr See par. 13-01 * [0] False [12] AutoReset 10 16-34 Heatsink Temp. 8-96 Bus feedback [30] - 132] SL Timeout 0-2 [13] Infinite auto reset 16-33 Inv. Max. Current 8-94 Bus feedback 1 13-41 Logic Rule Operator 1 0-600 s* 10 s 16-37 Inv. Max. Current 8-94 Bus feedback 1 [13] And not [2] Or "[0] Normal Operation 16-53 Ref. / Feedb. 13-00 SL Controller Mode [3] And not [2] Initialization 16-55 Net. / Feedb. 13-00 SL Controller Mode [3] And not [4] Not and not 14-26 Action At Inverter Fault 16-51 Pulse Reference 10] Orf [4] Or not [5] Not and | | | 5 | |
| 8-54 Reversing Select 13-20 SL Controller Timer 14-20 Reset Mode 16-14 Motor Current (A) See par. 8-50 * [3] LogicOr 13-20 SL Controller Timer "[0] MatuReset 1-9 16-18 Motor Thermal [%] See par. 8-50 * [3] LogicOr 13-40 Logic Rule Boolean 1 [11] AutoReset 10 16-32 DV: Link Voltage See par. 8-50 * [3] LogicOr See par. 13-01 * [0] False [12] AutoReset 10 16-34 Move Status S-49 Rus feedback 1 13-41 Logic Rule Boolean 1 [11] AutoReset 10 16-35 InvNom. Current 9-49 Rus feedback 1 13-41 Logic Rule Operator 1 16-35 InvNom. Current 16-36 InvNom. Current 9-49 Rus feedback 1 13-41 Logic Rule Operator 1 16-20 peration Mode 16-36 InvNom. Current 9-37 Namat Logic [1] And 14-22 Operation Mode 16-53 Ref. / Feedb. 13-00 S L Controller Mode [3] And not [2] Initialization 16-53 Diverter Reference 1(1] On [5] Not and not 14-44 Kenergy Optimizing 16-50 Digital Input 18/19,27,3 [1] True [8] Not or not 14-44 Kenergy Optimizing 16-64 Digital Input 18/19,27,3 [1] True [8] Not GR Rule Boolean 3 15-01 Running Holurus 16-64 An | | | | |
| See par. 8-50* [3] LogicOr 13-20 SL Controller Timer [10] Manual reset 16-15 Frequency [%] 8-55 Set-up Select 0.0-3600 s* 0.0 s [1-9] AutoReset 1-9 16-18 Motor Thermal [%] 8-56 *[3] LogicOr 13-4X Logic Rule Boolean 1 [11] AutoReset 10 16-3X Drive Status 8-56 *[3] LogicOr See par. 8-50* [3] LogicOr See par. 13-01* [0] False [12] AutoReset 15 16-30 DC Link Voltage 8-97 Bus feedback [30] -[32] SL Timeout 0-2 [13] Infinite autoReset 10 16-37 Inv. Max. Current 8-98 Bus feedback 1 13-41 Logic Rule Operator 1 14-21 Automatic Restart Time 16-36 Inv.Nom. Current 0-8000: XFF * 0 *[0] Disabled 0-6005 * 10s 16-37 Inv. Max. Current 0-8000: XFF * 0 *[0] Disabled 0-6005 * 10s 16-37 Inv. Max. Current 13-00 SL Controller Mode [3] And not [2] Initialization 16-51 Evention 16-52 Evention 13 Off [4] Or not [4] Arront 14-26 Action At Inverter Fault 16-52 Evention 16-52 Evention 13 Infange [6] Not or [1] Warning 16-42 Analog Input 53 (ovlt) 16-42 Analog Input 53 (ovlt) 13 Infange | | | - | |
| 8-55 Set-up Select 0.0-3600 s * 0.0 s [1-9] AutoReset 1-9 16-18 Motor Thermal [%] See par, 8-50 * [3] LogicOr 8-56 Preset Reference Select 13-40 Logic Rule Boolean 1 [11] AutoReset 10 16-32 Drive Status 8-56 Preset Reference Select 13-40 Logic Rule Boolean 1 [11] AutoReset 10 16-33 Drive Status 8-56 Preset Reference Select [30] -132 JS. Timeout 0-2 [13] Infinite auto reset 16-33 Inv.Nex Current 8-94 Bus feedback 1 13-41 Logic Rule Operator 1 14-21 Automatic Restart Time 16-33 Inv.Nex. Current 0.8000-0x7FFF * 0 *(0) Disabled 14-22 Operation Mode 16-33 K. Controller State 13-05 SL Controller Mode [3] And not [2] Or *(0) Normal Operation 16-53 External Reference *[0] Off [4] Or not 14-24 Action At Inverter Fault 16-50 Digital Input 18,19,27,3 13-10 Stat Event [6] Not or 11/441 AEO Minimum Magnetization 0-16-62 Analog Input 53 (curre [1] Running 13-43 Logic Rule Boolean 2 40-75% * 660% 0-1111 16-63 Analog Input 53 (curre [2] Running 13-44 Logic Rule Boolean 3 15-00 Operating Days 16-63 Analog Input 53 (curre) <td>-</td> <td></td> <td></td> <td></td> | - | | | |
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| See par. 8-50 * [3] LogicOr See par. 3-01 * [0] False [12] AutoReset 20 16-34 HeatsInk Temp. 8-94 Bus Gedback [30] - [32] SL Timeout 0-2 [13] Infinite auto reset 16-33 Inverter Thermal 8-94 Bus Gedback [13-41 Logic Rule Operator 1 14-21 Automatic Restart Time 16-33 Inverter Thermal 0x8000-0x7FFF * 0 *(0) Disabled 0-600s * 10s 16-37 Inv. Max. Current 13-0X SLC Settings [2] Or *(0) Normal Operation 16-58 SL Controller State 13-0X SLC Settings [2] Or *(0) Normal Operation 16-58 SL Controller State 13-0X SLC Settings [2] Or *(0) Normal Operation 16-58 SL Controller State 13-0X SLC Settings [2] Or *(0) Normal Operation 16-58 SL Controller State 13-0X SLC Settings [2] Or *(0) Normal Operation 16-50 External Reference 13-0X SLC Settings [2] Not and not *(2) Initialization 16-54 Inputs / Outputs 10] False [7] Not and not 14-41 AEO Minimum Magnetization 0-11 [3] InRange See par. 13-44 * (0] False 15-00 Operating Data 16-64 Nalog Input 50 [3] Inderference 13 | | | | |
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| 0x8000-0x7FFF * 0 *[0] Disabled 0-600s * 10s 16-37 Inv. Max. Current 13-XX Smart Logic [1] And 14-22 Operation Mode 16-38 SL. Controller State 13-00 SL Controller Mode [3] And not *[0] Normal Operation 16-38 SL. Controller State *[0] Off [4] Or not 14-26 Action At Inverter Fault 16-51 Pulse Reference *[1] On [5] Not and *[0] Trip 16-52 Feedback [Unit] [1] True [8] Not or [1] Warning 16-60 Digital Input 3(19,27,3) [1] True [8] Not or not 14-41 AEO Minimum Magnetization 0-1111 [2] Running 13-42 Logic Rule Boolean 2 40-75% 66% 16-61 Digital Input 18,19,27,3 [3] InRange See par. 13-40 * [0] False 15-50 Dive Information 0-1 1111 [4] OnReference 13-43 Logic Rule Boolean 3 15-01 Running Days 16-63 Analog Input 53 (curre [7] Nohand See par. 13-40 * [0] False 15-02 KWh Counter 16-64 Analog Input 60 [9] AbovelHigh See par. 13-40 * [0] False 15-03 Power Ups 16-64 Ralog Input 60 [19] Warning 13-52 SL Controller Event | 5 | [30] - [32] SL Timeout 0-2 | [13] Infinite auto reset | 16-35 Inverter Thermal |
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| 13-0X SLC Settings [2] Or *[0] Normal Operation 16-5X Ref. / Feedb. 13-00 SL Controller Mode [3] And not [2] Initialization 16-50 External Reference *[0] Off [4] Or not [1] trialization 16-51 Publes Reference *[1] On [5] Not and *[0] Trip 16-52 Feedback [Unit] 13-01 Start Event [6] Not or [1] Warning 16-6X Inputs / Outputs [0] False [7] Not and not 14-4X Energy Optimizing 16-60 Digital Input 18,19,27,3 [1] True [8] Not or not 14-4X Energy Optimizing 0-1111 [2] Naming 13-42 Logic Rule Boolean 2 40-75% * 66% 16-61 Digital Input 29 [3] InRange See par. 13-40 * [0] False 15-00 Operating Data 16-62 Analog Input 53 (volt) [7] OutOfCurrentRange See par. 13-40 * [0] False 15-00 Operating Data 16-64 Analog Input 53 (volt) [9] AboveHigh See par. 13-40 * [0] False 15-03 Power Ups 16-64 Analog Input 64 [ma] [19] Warning 13-55 States 15-03 Power Ups 16-64 Analog Input 64 [ma] [19] Warning 13-52 States 15-03 Power Ups 16-64 Ralog Output 42 [mA [16] ThermalWarning 13-52 Sto | 0x8000-0x7FFF * 0 | *[0] Disabled | 0–600s * 10s | 16-37 Inv. Max. Current |
| 13-00 SL Controller Mode [3] And not [2] Initialization 16-50 External Reference *[0] Off [4] Or not 14-26 Action At Inverter Fault 16-51 Pulse Reference [1] On [5] Not and *[0] Trip 16-52 Feedback [Unit] [3] And not *[1] Warning 16-66 Digital Input 18,19,27,3 [1] True [8] Not or not 14-4X Energy Optimizing 16-60 Digital Input 29 [3] InRange See par. 13-40 * [0] False 15-0X Operating Data 16-64 Digital Input 29 [3] InRange See par. 13-40 * [0] False 15-00 Operating Data 16-64 Analog Input 53 (volt) [7] OutOfCurrentRange See par. 13-40 * [0] False 15-00 Operating Data 16-65 Analog Input 53 (curre [8] BelowILow 13-44 * [0] False 15-01 Running Hours 16-65 Analog Output 42 [mA [16] ThermalWarning 13-52 SL Controller Event 15-04 Over Temps 16-73 Counter A [19] Warning 13-52 SL Controller Action 15-05 Over Volts 16-72 Counter A [19] Warning 13-52 SL Controller Action 15-06 Reset KWh Counter 16-73 Counter A [19] Warning 13-52 SL Controller Action 15-07 Re | 13-XX Smart Logic | | 14-22 Operation Mode | |
| *[0] Off [4] Or not 14-26 Action At Inverter Fault 16-51 Pulse Reference [1] On [5] Not and *[0] Trip 16-52 Feedback [Unit] 13-01 Start Event [6] Not or [1] Warning 16-62 Feedback [Unit] [1] True [8] Not or not 14-44 Kenergy Optimizing 16-60 Digital Input 18,19,27,3 [1] True [8] Not or not 14-41 AEO Minimum Magnetization 0-1111 [2] Running 13-42 Logic Rule Boolean 2 40-75% * 66% 16-61 Digital Input 29 [3] InRange See par. 13-40 * [0] False 15-50 X Drive Information 0-1 [4] On Reference 13-41 Logic Rule Operator 2 15-50 Operating Data 16-64 Analog Input 53 (volt) [7] OutOfCurrentRange See par. 13-40 * [0] False 15-01 Running Hours 16-64 Analog Input 53 (volt) [7] MainOutOfRange 13-51 SL Controller Event 15-03 Power Ups 16-668 Pulse Input 1/42 [17] MainOutOfRange 13-52 SL Controller Action 15-05 Over Volts 16-72 Counter A [19] Warning 13-52 SL Controller Action 15-06 Reset kWh Counter 16-73 Relay Output [bin] [18] Reversing See par. 13-40 * [0] False 15-05 Over Volts 16-72 Counter A | | [2] Or | *[0] Normal Operation | |
| [1] On [5] Not and *[0] Trip 16-52 Feedback [Unit] 13-01 Start Event [6] Not or [1] Warning 16-62 Inputs / Outputs [0] False [7] Not and not 14-4X Energy Optimizing 16-60 Digital Input 8,19,27,3 [1] True [8] Not or not 14-41 AEO Minimum Magnetization 0-1111 [2] Running 13-42 Logic Rule Boolean 2 40-75% * 66% 0-1111 [3] InRange See par. 13-40 * [0] False 15-XX Drive Information 0-1 [4] OnReference 13-43 Logic Rule Operator 2 15-XX Drive Information 0-1 [7] OutOfCurrentRange See par. 13-40 * [0] False 15-00 Operating Data 16-63 Analog Input 53 (curre [8] BelowlLow 13-44 Logic Rule Boolean 3 15-01 Running Hours 16-64 Analog Input 53 (curre [17] MainOutOffKange 13-51 SL Controller Event 15-03 Power Ups 16-63 Analog Output 42 [mA [18] Reversing See par. 13-40 * [0] False 15-06 Over Volts 16-72 Counter A [19] Warning 13-52 SL Controller Action 15-06 Neset KWh Counter 16-73 Counter B [20] Alarm_Trip *[0] Disabled *[0] Do not reset 16-86 FC Port REF 1 [22-25] Comparator 0-3 | 13-00 SL Controller Mode | [3] And not | [2] Initialization | 16-50 External Reference |
| 13-01 Start Event [6] Not or [1] Warning 16-6X Inputs / Outputs [0] False [7] Not and not 14-4X Energy Optimizing 16-60 Digital Input 18,19,27,3 [1] True [8] Not or not 14-44 AEO Minimum Magnetization 0-1111 [2] Running 13-42 Logic Rule Boolean 2 40-75% * 66% 0-1111 [3] InRange See par. 13-40 * [0] False 15-50X Operating Data 16-62 Analog Input 53 (volt) [4] OnReference 13-43 Logic Rule Boolean 3 15-00 Operating Days 16-64 Analog Input 53 (volt) [7] OutOfCurrentRange See par. 13-40 * [0] False 15-00 Operating Days 16-64 Analog Input 53 (volt) [8] BelowlLow 13-44 Logic Rule Boolean 3 15-01 Running Hours 16-64 Analog Output 42 [mA [1] MainOutOfRange 13-51 SL Controller Event 15-02 kWh Counter 16-68 Pulse Input [Hz] [1] Maring 13-52 SL Controller Event 15-06 Reset kWh Counter 16-72 Counter A [1] Warning 13-52 SL Controller Event 15-06 Reset kWh Counter 16-73 Counter B [20] Alarm_Trip *[0] Disabled *[0] Do not reset 16-88 Fieldbus / FC Port [21] Alarm_TripLock [1] NoAction [1] Reset counter 16-69 Alard Mod | *[0] Off | [4] Or not | 14-26 Action At Inverter Fault | 16-51 Pulse Reference |
| [0] False [7] Not and not 14-4X Energy Optimizing 16-60 Digital Input 18,19,27,3 [1] True [8] Not or not 14-41 AEO Minimum Magnetization 0-1111 [2] Running 13-42 Logic Rule Boolean 2 40-75% * 66% 0-1111 [3] InRange See par. 13-40 * [0] False 15-5X Drive Information 0-1 [4] OnReference 13-43 Logic Rule Operator 2 15-5X Operating Data 16-62 Analog Input 53 (volt) [7] OutOfCurrentRange See par. 13-40 * [0] False 15-01 Running Hours 16-63 Analog Input 53 (volt) [8] BelowILow 13-44 Logic Rule Boolean 3 15-01 Running Hours 16-64 Analog Input 53 (curree [9] AboveIHigh See par. 13-40 * [0] False 15-02 kWh Counter 16-65 Analog Output 42 [mA [16] ThermalWarning 13-5X States 15-04 Over Temps 16-71 Relay Output [bin] [17] MainOutOfRange 13-52 SL Controller Event 15-06 Reset kWh Counter 16-73 Counter A [19] Warning 13-52 SL Controller Action 15-06 Reset kWh Counter 16-73 Counter B [20] Alarm_Trip *[0] Disabled *[0] Do not reset 16-86 FC Port REF 1 [22-25] Comparator 0-3 [2] SelectSetup1 15-07 Reset Running Hours 0x8000- | [1] On | [5] Not and | *[0] Trip | 16-52 Feedback [Unit] |
| [1] True[8] Not or not14-41 AEO Minimum Magnetization0-1111[2] Running13-42 Logic Rule Boolean 240-75% * 66%0-1[3] InRangeSee par. 13-40 * [0] False15-XX Drive Information0-1[4] OnReference13-43 Logic Rule Operator 215-XX Drive Information16-62 Analog Input 53 (volt)[7] OutOfCurrentRangeSee par. 13-41 * [0] Disabled15-00 Operating Days16-63 Analog Input 53 (volt)[8] BelowILow13-44 Logic Rule Boolean 315-01 Running Hours16-64 Analog Input 53 (current)[9] AboveIHighSee par. 13-40 * [0] False15-02 kWh Counter16-65 Analog Output 42 [mA[16] ThermalWarning13-5X States15-03 Power Ups16-67 Relay Output [Ju][17] MainOutOfRange13-51 SL Controller Event15-04 Over Temps16-71 Relay Output [Ju][18] ReversingSee par. 13-40 * [0] False15-05 Over Volts16-73 Counter A[19] Warning13-52 SL Controller Action15-06 Reset kWh Counter16-73 Counter B[20] Alarm_Trip*[0] Disabled*[0] Do not reset16-86 FC Port REF 1[21-225] Comparator 0-3[2] SelectSetup115-07 Reset Running Hours0x8000-0x7FFFF[26-29] LogicRule0-3[3] SelectSetup2Counter16-90 Alarm Word[34] DigitalInput_19[18] SelectRamp215-37 Fault Log16-92 Warning Word[35] DigitalInput_27[19] SelectRamp215-30 Fault Log: Error Code0-0XFFFFFFF[36] DigitalInput_23[23] RunReverse15-4X Drive Identification16-94 Ext. Status Word[3 | 13-01 Start Event | [6] Not or | [1] Warning | 16-6X Inputs / Outputs |
| [2] Running 13-42 Logic Rule Boolean 2 40-75% * 66% 16-61 Digital Input 29 [3] InRange See par. 13-40 * [0] False 15-XX Drive Information 0-1 [4] OnReference 13-43 Logic Rule Operator 2 15-0X Operating Data 16-62 Analog Input 53 (volt) [7] OutOfCurrentRange See par. 13-41 * [0] Disabled 15-00 Operating Days 16-64 Analog Input 53 (currents) [8] BelowlLow 13-44 Logic Rule Boolean 3 15-01 Running Hours 16-64 Analog Input 53 (currents) [9] AbovelHigh See par. 13-40 * [0] False 15-02 kWh Counter 16-65 Analog Output 42 [mA [16] ThermalWarning 13-5X States 15-03 Power Ups 16-68 Pulse Input [Hz] [17] MainOutOfRange 13-51 SL Controller Event 15-06 Over Volts 16-77 Relay Output 42 [mA [19] Warning See par. 13-40 * [0] False 15-05 Over Volts 16-73 Counter A [19] Warning 13-52 SL Controller Action 15-06 Reset kWh Counter 16-86 FC Port REF [20] Alarm_Trip *[0] Disabled *[0] Do not reset 16-86 FC Port REF 1 [22-25] Comparator 0-3 [2] SelectSetup1 15-07 Reset Running Hours 0x8000-0x7FFFF [24-29] LogicRule0-3 [3] SelectSetup2 Counter <td>[0] False</td> <td>[7] Not and not</td> <td>14-4X Energy Optimizing</td> <td>16-60 Digital Input 18,19,27,33</td> | [0] False | [7] Not and not | 14-4X Energy Optimizing | 16-60 Digital Input 18,19,27,33 |
| [3] InRangeSee par. 13-40 * [0] False15-XX Drive Information0-1[4] OnReference13-43 Logic Rule Operator 215-0X Operating Data16-62 Analog Input 53 (volt)[7] OutOfCurrentRangeSee par. 13-41 * [0] Disabled15-00 Operating Days16-63 Analog Input 53 (volt)[8] BelowlLow13-44 Logic Rule Boolean 315-01 Running Hours16-64 Analog Input 60[9] AbovelHighSee par. 13-40 * [0] False15-02 KWh Counter16-65 Analog Output 42 [mA[16] ThermalWarning13-5X States15-03 Power Ups16-68 Pulse Input [Hz][17] MainOutOfRange13-51 SL Controller Event15-06 Over Temps16-71 Relay Output [bin][18] ReversingSee par. 13-40 * [0] False15-05 Over Volts16-72 Counter A[19] Warning13-52 SL Controller Action15-06 Reset KWh Counter16-73 Counter B[20] Alarm_Trip*[0] Disabled*[0] Do not reset16-86 FC Port REF 1[21] Alarm_TripLock[1] NoAction[1] Reset counter16-86 FC Port REF 1[22-25] Comparator 0-3[2] SelectSetup115-07 Reset Running Hours0x8000-0x7FFFF[26-29] LogicRule0-3[3] SelectSetup2Counter16-90 Alarm Word[33] DigitalInput_18[10-17] SelectPresetRef0-7*[0] Do not reset16-92 Warning Word[34] DigitalInput_27[19] SelectRamp215-33 Fault Log0-0XFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF | [1] True | [8] Not or not | 14-41 AEO Minimum Magnetization | |
| [4] OnReference13-43 Logic Rule Operator 215-0X Operating Data16-62 Analog Input 53 (volt)[7] OutOfCurrentRangeSee par. 13-41 * [0] Disabled15-00 Operating Days16-63 Analog Input 53 (vorte)[8] BelowlLow13-44 Logic Rule Boolean 315-01 Running Hours16-64 Analog Input 60[9] AbovelHighSee par. 13-40 * [0] False15-02 kWh Counter16-68 Pulse Input [Hz][16] ThermalWarning13-55 States15-03 Power Ups16-68 Pulse Input [Hz][17] MainOutOfRange13-51 SL Controller Event15-04 Over Temps16-71 Relay Output [bin][18] ReversingSee par. 13-40 * [0] False15-05 Over Volts16-72 Counter A[19] Warning13-52 SL Controller Action15-06 Reset KWh Counter16-73 Counter B[20] Alarm_Trip*[0] Disabled*[0] Do not reset16-86 FC Port REF 1[21] Alarm_TripLock[1] NoAction[1] Reset counter0x8000-0x7FFFF[22-25] Comparator 0-3[2] SelectSetup115-07 Reset Running Hours0x8000-0x7FFFF[23] DigitalInput_18[10-17] SelectPresetRef0-7*[0] Do not reset16-90 Alarm Word[33] DigitalInput_19[18] SelectRamp1[1] Reset counter0-0XFFFFFFFFF[34] DigitalInput_27[19] SelectRamp215-33 Fault Log0-0XFFFFFFF[35] DigitalInput_23[23] RunReverse15-34 Fault Log0-0XFFFFFFFF[36] DigitalInput_33[23] RunReverse15-4X Drive Identification16-94 Ext. Status Word*[39] StartCommand[24] Stop15-40 FC Type0-0XFFFFFFFFFFFF | [2] Running | 13-42 Logic Rule Boolean 2 | 40-75% * 66% | 16-61 Digital Input 29 |
| [7] OutOfCurrentRangeSee par. 13-41 * [0] Disabled15-00 Operating Days16-63 Analog Input 53 (current [8] BelowlLow[8] BelowlLow13-44 Logic Rule Boolean 315-01 Running Hours16-64 Analog Input 60[9] AbovelHighSee par. 13-40 * [0] False15-02 kWh Counter16-65 Analog Output 42 [mA[16] ThermalWarning13-5X States15-03 Power Ups16-68 Pulse Input [Hz][17] MainOutOfRange13-51 SL Controller Event15-04 Over Temps16-71 Relay Output [bin][18] ReversingSee par. 13-40 * [0] False15-05 Over Volts16-72 Counter A[19] Warning13-52 SL Controller Action15-06 Reset kWh Counter16-73 Counter B[20] Alarm_Trip*[0] Disabled*[0] Do not reset16-86 FC Port REF 1[22-25] Comparator 0-3[2] SelectSetup115-07 Reset Running Hours0x8000-0x7FFFF[26-29] LogicRule0-3[3] SelectSetup2Counter16-90 Alarm Word[31] DigitalInput_18[10-17] SelectPresetRef0-7*[0] Do not reset16-90 Alarm Word[32] DigitalInput_27[19] SelectRamp215-33 Fault Log0-0XFFFFFFFF[33] DigitalInput_29[22] Run15-30 Fault Log0-0XFFFFFFFF[34] DigitalInput_33[23] RunReverse15-43 Fault Log0-0XFFFFFFFFFFFF[35] DigitalInput_23[23] RunReverse15-44 KX Drive Identification16-94 Ext. Status Word*[39] StartCommand[24] Stop15-40 FC Type0-0XFFFFFFFFFFFFFFFFFFFFFFFFFF | [3] InRange | See par. 13-40 * [0] False | 15-XX Drive Information | 0–1 |
| [8] BelowlLow13-44 Logic Rule Boolean 315-01 Running Hours16-64 Analog Input 60[9] AbovelHighSee par. 13-40 * [0] False15-02 kWh Counter16-65 Analog Output 42 [mA[16] ThermalWarning <i>13-5X States</i> 15-03 Power Ups16-68 Pulse Input [Hz][17] MainOutOfRange13-51 SL Controller Event15-04 Over Temps16-71 Relay Output [bin][18] ReversingSee par. 13-40 * [0] False15-05 Over Volts16-72 Counter A[19] Warning13-52 SL Controller Action15-06 Reset kWh Counter16-73 Counter B[20] Alarm_Trip*[0] Disabled*[0] Do not reset16-86 FC Port REF 1[21] Alarm_TripLock[1] NoAction[1] Reset counter16-86 FC Port REF 1[22-25] Comparator 0-3[2] SelectSetup115-07 Reset Running Hours0x8000-0x7FFFF[26-29] LogicRule0-3[3] SelectSetup2Counter16-90 Alarm Word[33] DigitalInput_18[10-17] SelectPresetRef0-7*[0] Do not reset16-90 Alarm Word[34] DigitalInput_27[19] SelectRamp215-30 Fault Log0-0XFFFFFFFF[35] DigitalInput_29[22] Run15-30 Fault Log0-0XFFFFFFFF[36] DigitalInput_33[23] RunReverse15-4X Drive Identification16-94 Ext. Status Word*[39] StartCommand[24] Stop15-40 FC Type0-0XFFFFFFF18-XX Extended | [4] OnReference | 13-43 Logic Rule Operator 2 | 15-0X Operating Data | 16-62 Analog Input 53 (volt) |
| [9] AbovelHighSee par. 13-40 * [0] False15-02 kWh Counter16-65 Analog Output 42 [mA[16] ThermalWarning13-5X States15-03 Power Ups16-68 Pulse Input [Hz][17] MainOutOfRange13-51 SL Controller Event15-04 Over Temps16-71 Relay Output [bin][18] ReversingSee par. 13-40 * [0] False15-05 Over Volts16-72 Counter A[19] Warning13-52 SL Controller Action15-06 Reset kWh Counter16-73 Counter B[20] Alarm_Trip*[0] Disabled*[0] Do not reset16-86 FC Port REF 1[21] Alarm_TripLock[1] NoAction[1] Reset counter16-86 FC Port REF 1[22-25] Comparator 0-3[2] SelectSetup115-07 Reset Running Hours0x8000-0x7FFFF[26-29] LogicRule0-3[3] SelectPresetRef0-7*[0] Do not reset16-90 Alarm Word[34] DigitalInput_19[18] SelectRamp1[1] Reset counter0-0XFFFFFFFF[35] DigitalInput_27[19] SelectRamp215-33 Fault Log0-0XFFFFFFFF[38] DigitalInput_33[23] RunReverse15-40 FC Type0-0XFFFFFFF18-XX Extended | [7] OutOfCurrentRange | See par. 13-41 * [0] Disabled | 15-00 Operating Days | 16-63 Analog Input 53 (current) |
| [16] ThermalWarning13-5X States15-03 Power Ups16-68 Pulse Input [Hz][17] MainOutOfRange13-51 SL Controller Event15-04 Over Temps16-71 Relay Output [bin][18] ReversingSee par. 13-40 * [0] False15-05 Over Volts16-72 Counter A[19] Warning13-52 SL Controller Action15-06 Reset kWh Counter16-73 Counter B[20] Alarm_Trip*[0] Disabled*[0] Do not reset16-88 <i>Fieldbus / FC Port</i> [21] Alarm_TripLock[1] NoAction[1] Reset counter16-86 FC Port REF 1[22-25] Comparator 0-3[2] SelectSetup115-07 Reset Running Hours0x8000-0x7FFFF[26-29] LogicRule0-3[3] SelectSetup2Counter16-90 Alarm Word[33] DigitalInput_18[10-17] SelectPresetRef0-7*[0] Do not reset16-90 Alarm Word[34] DigitalInput_19[18] SelectRamp215-33 Fault Log0-0XFFFFFFFFF[35] DigitalInput_27[19] SelectRamp215-33 Fault Log0-0XFFFFFFFF[38] DigitalInput_33[23] RunReverse15-40 FC Type0-0XFFFFFFF18-XX Extended | [8] BelowILow | 13-44 Logic Rule Boolean 3 | 15-01 Running Hours | 16-64 Analog Input 60 |
| [17] MainOutOfRange13-51 SL Controller Event15-04 Over Temps16-71 Relay Output [bin][18] ReversingSee par. 13-40 * [0] False15-05 Over Volts16-72 Counter A[19] Warning13-52 SL Controller Action15-06 Reset kWh Counter16-73 Counter B[20] Alarm_Trip*[0] Disabled*[0] Do not reset16-88 <i>Fieldbus / FC Port</i> [21] Alarm_TripLock[1] NoAction[1] Reset counter16-86 FC Port REF 1[22-25] Comparator 0-3[2] SelectSetup115-07 Reset Running Hours0x8000-0x7FFFF[26-29] LogicRule0-3[3] SelectSetup2Counter16-90 Alarm Word[33] DigitalInput_18[10-17] SelectPresetRef0-7*[0] Do not reset16-90 Alarm Word[34] DigitalInput_19[18] SelectRamp1[11 Reset counter0-0XFFFFFFFFF[35] DigitalInput_27[19] SelectRamp215-33 Fault Log0-0XFFFFFFFF[36] DigitalInput_29[22] Run15-30 Fault Log0-0XFFFFFFFF[38] DigitalInput_33[23] RunReverse15-4X Drive Identification16-94 Ext. Status Word*[39] StartCommand[24] Stop15-40 FC Type0-0XFFFFFFF18-XX Extended | [9] AbovelHigh | See par. 13-40 * [0] False | 15-02 kWh Counter | 16-65 Analog Output 42 [mA] |
| [18] ReversingSee par. 13-40 * [0] False15-05 Over Volts16-72 Counter A[19] Warning13-52 SL Controller Action15-06 Reset kWh Counter16-73 Counter B[20] Alarm_Trip*[0] Disabled*[0] Do not reset16-86 FC Port REF 1[21] Alarm_TripLock[1] NoAction[1] Reset counter16-86 FC Port REF 1[22-25] Comparator 0-3[2] SelectSetup115-07 Reset Running Hours0x8000-0x7FFFF[26-29] LogicRule0-3[3] SelectSetup2Counter16-90 Alarm Word[33] DigitalInput_18[10-17] SelectPresetRef0-7*[0] Do not reset16-90 Alarm Word[34] DigitalInput_19[18] SelectRamp1[1] Reset counter0-0XFFFFFFFFF[35] DigitalInput_27[19] SelectRamp215-30 Fault Log0-0XFFFFFFFF[36] DigitalInput_29[22] Run15-30 Fault Log0-0XFFFFFFFF[38] DigitalInput_33[23] RunReverse15-4X Drive Identification16-94 Ext. Status Word*[39] StartCommand[24] Stop15-40 FC Type0-0XFFFFFFF18-XX Extended | [16] ThermalWarning | 13-5X States | 15-03 Power Ups | 16-68 Pulse Input [Hz] |
| [18] ReversingSee par. 13-40 * [0] False15-05 Over Volts16-72 Counter A[19] Warning13-52 SL Controller Action15-06 Reset kWh Counter16-73 Counter B[20] Alarm_Trip*[0] Disabled*[0] Do not reset16-8K Fieldbus / FC Port[21] Alarm_TripLock[1] NoAction[1] Reset counter16-86 FC Port REF 1[22-25] Comparator 0-3[2] SelectSetup115-07 Reset Running Hours0x8000-0x7FFFF[26-29] LogicRule0-3[3] SelectSetup2Counter16-9X Diagnosis Readouts[33] DigitalInput_18[10-17] SelectPresetRef0-7*[0] Do not reset16-90 Alarm Word[34] DigitalInput_19[18] SelectRamp1[1] Reset counter0-0XFFFFFFFF[35] DigitalInput_27[19] SelectRamp215-3X Fault Log0-0XFFFFFFFF[36] DigitalInput_33[23] RunReverse15-4X Drive Identification0-0XFFFFFFFF[39] StartCommand[24] Stop15-40 FC Type0-0XFFFFFFF18-XX Extended | [17] MainOutOfRange | 13-51 SL Controller Event | 15-04 Over Temps | 16-71 Relay Output [bin] |
| [19] Warning13-52 SL Controller Action15-06 Reset kWh Counter16-73 Counter B[20] Alarm_Trip*[0] Disabled*[0] Do not reset16-8X Fieldbus / FC Port[21] Alarm_TripLock[1] NoAction[1] Reset counter16-86 FC Port REF 1[22-25] Comparator 0-3[2] SelectSetup115-07 Reset Running Hours0x8000-0x7FFFF[26-29] LogicRule0-3[3] SelectSetup2Counter16-9X Diagnosis Readouts[33] DigitalInput_18[10-17] SelectPresetRef0-7*[0] Do not reset16-90 Alarm Word[34] DigitalInput_19[18] SelectRamp1[11 Reset counter0-0XFFFFFFFF[35] DigitalInput_27[19] SelectRamp215-3X Fault Log0-0XFFFFFFFF[36] DigitalInput_29[22] Run15-30 Fault Log: Error Code0-0XFFFFFFFF[38] DigitalInput_33[23] RunReverse15-4X Drive Identification16-94 Ext. Status Word*[39] StartCommand[24] Stop15-40 FC Type0-0XFFFFFFF18-XX Extended | - | See par. 13-40 * [0] False | 15-05 Over Volts | |
| [21] Alarm_TripLock [1] NoAction [1] Reset counter 16-86 FC Port REF 1 [22-25] Comparator 0-3 [2] SelectSetup1 15-07 Reset Running Hours 0x8000-0x7FFFF [26-29] LogicRule0-3 [3] SelectSetup2 Counter 16-90 Alarm Word [33] DigitalInput_18 [10-17] SelectPresetRef0-7 *[0] Do not reset 16-90 Alarm Word [34] DigitalInput_19 [18] SelectRamp1 [1] Reset counter 0-0XFFFFFFF [35] DigitalInput_27 [19] SelectRamp2 15-3X Fault Log 16-92 Warning Word [36] DigitalInput_29 [22] Run 15-30 Fault Log: Error Code 0-0XFFFFFFFF [38] DigitalInput_33 [23] RunReverse 15-4X Drive Identification 16-94 Ext. Status Word *[39] StartCommand [24] Stop 15-40 FC Type 0-0XFFFFFFF18-XX Extended | - | | 15-06 Reset kWh Counter | 16-73 Counter B |
| [21] Alarm_TripLock [1] NoAction [1] Reset counter 16-86 FC Port REF 1 [22-25] Comparator 0-3 [2] SelectSetup1 15-07 Reset Running Hours 0x8000-0x7FFFF [26-29] LogicRule0-3 [3] SelectSetup2 Counter 16-90 Alarm Word [33] DigitalInput_18 [10-17] SelectPresetRef0-7 *[0] Do not reset 16-90 Alarm Word [34] DigitalInput_19 [18] SelectRamp1 [1] Reset counter 0-0XFFFFFFFF [35] DigitalInput_27 [19] SelectRamp2 15-30 Fault Log 0-0XFFFFFFFF [36] DigitalInput_29 [22] Run 15-30 Fault Log: Error Code 0-0XFFFFFFFF [38] DigitalInput_33 [23] RunReverse 15-4X Drive Identification 16-94 Ext. Status Word *[39] StartCommand [24] Stop 15-40 FC Type 0-0XFFFFFF18-XX Extended | | *[0] Disabled | *[0] Do not reset | 16-8X Fieldbus / FC Port |
| [26-29] LogicRule0-3 [3] SelectSetup2 Counter 16-9X Diagnosis Readouts [33] DigitalInput_18 [10-17] SelectPresetRef0-7 *[0] Do not reset 16-90 Alarm Word [34] DigitalInput_19 [18] SelectRamp1 [11] Reset counter 0-0XFFFFFFF [35] DigitalInput_27 [19] SelectRamp2 15-3X Fault Log 16-92 Warning Word [36] DigitalInput_29 [22] Run 15-30 Fault Log: Error Code 0-0XFFFFFFFF [38] DigitalInput_33 [23] RunReverse 15-4X Drive Identification 16-94 Ext. Status Word *[39] StartCommand [24] Stop 15-40 FC Type 0-0XFFFFFFF18-XX Extended | | [1] NoAction | [1] Reset counter | 16-86 FC Port REF 1 |
| [26-29] LogicRule0-3 [3] SelectSetup2 Counter 16-9X Diagnosis Readouts [33] DigitalInput_18 [10-17] SelectPresetRef0-7 *[0] Do not reset 16-90 Alarm Word [34] DigitalInput_19 [18] SelectRamp1 [11] Reset counter 0-0XFFFFFFF [35] DigitalInput_27 [19] SelectRamp2 15-3X Fault Log 16-92 Warning Word [36] DigitalInput_29 [22] Run 15-30 Fault Log: Error Code 0-0XFFFFFFFF [38] DigitalInput_33 [23] RunReverse 15-4X Drive Identification 16-94 Ext. Status Word *[39] StartCommand [24] Stop 15-40 FC Type 0-0XFFFFFFF18-XX Extended | - | | | |
| [33] Digitallnput_18 [10-17] SelectPresetRef0-7 *[0] Do not reset 16-90 Alarm Word [34] Digitallnput_19 [18] SelectRamp1 [1] Reset counter 0-0XFFFFFFF [35] Digitallnput_27 [19] SelectRamp2 15-3X Fault Log 16-92 Warning Word [36] Digitallnput_29 [22] Run 15-30 Fault Log: Error Code 0-0XFFFFFFFF [38] Digitallnput_33 [23] RunReverse 15-4X Drive Identification 16-94 Ext. Status Word *[39] StartCommand [24] Stop 15-40 FC Type 0-0XFFFFFFF1 8-XX Extended | | 1 | 5 | |
| [34] DigitalInput_19 [18] SelectRamp1 [1] Reset counter 0-0XFFFFFFF [35] DigitalInput_27 [19] SelectRamp2 15-3X Fault Log 16-92 Warning Word [36] DigitalInput_29 [22] Run 15-30 Fault Log: Error Code 0-0XFFFFFFFF [38] DigitalInput_33 [23] RunReverse 15-4X Drive Identification 16-94 Ext. Status Word *[39] StartCommand [24] Stop 15-40 FC Type 0-0XFFFFFFF18-XX Extended | - | | | |
| [35] Digitallnput_27 [19] SelectRamp2 15-3X Fault Log 16-92 Warning Word [36] Digitallnput_29 [22] Run 15-30 Fault Log: Error Code 0-0XFFFFFFFF [38] Digitallnput_33 [23] RunReverse 15-4X Drive Identification 16-94 Ext. Status Word *[39] StartCommand [24] Stop 15-40 FC Type 0-0XFFFFFFF 18-XX Extended | | | | |
| [36] DigitalInput_29 [22] Run 15-30 Fault Log: Error Code 0-0XFFFFFFF [38] DigitalInput_33 [23] RunReverse 15-4X Drive Identification 16-94 Ext. Status Word *[39] StartCommand [24] Stop 15-40 FC Type 0-0XFFFFFF18-XX Extended | | · · | | |
| [38] DigitalInput_33 [23] RunReverse 15-4X Drive Identification 16-94 Ext. Status Word *[39] StartCommand [24] Stop 15-40 FC Type 0-0XFFFFFF18-XX Extended | | | - | - |
| *[39] StartCommand [24] Stop 15-40 FC Type 0–0XFFFFFFF 18-XX Extended | | | • | |
| | | | | 0-0XFFFFFFFF 18-XX Extended Motor |
| [40] DriveStopped [25] Qstop 15-41 Power Section Data | | · | | |
| 13-02 Stop Event[26] DCstop15-42 Voltage18-8X Motor Resistors | | · | | |
| | | · · | - | 18-80 Stator Resistance (High |
| 13-03 Reset SLC [28] FreezeOutput [27] coast [15-46 Adjustable Frequency Drive resolution] | | | | |
| | | | | 0.000–99.990ohm * 0.000ohm |
| | | | | |
| | | | | 18-81 Stator Leakage Reactance |
| 13-1X Comparators [31] StartTimer2 (High resolution) [32] Set Digital Output A Low 0.000–99.9900hm * 0.000hm | | | | (High resolution) 0.000–99.990ohm * 0.000ohm |

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1.6 Troubleshooting

| No. | Description | Warning | Alarm | Trip Lock | Error | Cause of Problem |
|------------------|---|-------------|-----------|--------------|---------|---|
| 2 | Live zero error | Х | Х | | | Signal on terminal 53 or 60 is less than 50% of the value set in par. 6-10, 6-12 and 6-22. |
| 4 | Line phase loss1) | Х | Х | Х | | Missing phase on the supply side, or a voltage imbalance that is too high. Check supply voltage. |
| 7 | DC overvoltage1) | Х | Х | | | Intermediate circuit voltage exceeds the limit. |
| 8 | DC undervoltage1) | Х | Х | | | Intermediate circuit voltage drops below the "voltage warning low" limit. |
| 9 | Inverter overloaded | Х | Х | | | More than 100% load for too long. |
| 10 | Motor ETR over temperature | Х | Х | | | Motor is too hot due to more than 100% load for too long. |
| 11 | Motor thermistor over temperature | Х | Х | | | The thermistor or the thermistor connection is disconnected. |
| 12 | Torque limit | Х | | | | Torque exceeds the value set in either par. 4-16 or 4-17. |
| 13 | Overcurrent | Х | Х | Х | | Inverter peak current limit is exceeded. |
| 14 | Ground fault | | Х | Х | | Discharge from output phases to ground. |
| 16 | Short Circuit | | Х | Х | | Short-circuit in the motor or on the motor terminals. |
| 17 | Control word timeout | Х | Х | | | No communication to the adjustable frequency drive. |
| 25 | Brake resistor short-circuited | | Х | Х | | Brake resistor is short-circuited, thus the brake function is discon- |
| | | | | | | nected. |
| 27 | Brake chopper short-circuited | | Х | Х | | Brake transistor is short-circuited, thus the brake function is discon- nected. |
| 28 | Brake check | | Х | | | Brake resistor is not connected/working |
| 29 | Power board overtemp | Х | Х | Х | | Heatsink cut-out temperature has been reached. |
| 30 | Motor phase U missing | | Х | Х | | Motor phase U is missing. Check the phase. |
| 31 | Motor phase V missing | | Х | Х | | Motor phase V is missing. Check the phase. |
| 32 | Motor phase W missing | | Х | Х | | Motor phase W is missing. Check the phase. |
| 38 | Internal fault | | Х | Х | | Contact local Danfoss supplier. |
| 44 | Ground fault | | Х | Х | | Discharge from output phases to ground. |
| 47 | Control Voltage Fault | | Х | Х | | 24 V DC may be overloaded. |
| 51 | AMT check Unom and Inom | | Х | | | Wrong setting for motor voltage and/or motor current. |
| 52 | AMT low Inom | | Х | | | Motor current is too low. Check settings. |
| 59 | Current limit | Х | | | | VLT overload. |
| 63 | Mechanical Brake Low | | Х | | | Actual motor current has not exceeded the "release brake" current in the "start delay" time window. |
| 80 | Drive Initialized to Default Value | | Х | | | All parameter settings are initialized to default settings. |
| 84 | The connection between drive and LCP is lost. | | | | X | No communication between LCP and adjustable frequency drive. |
| 85 | Button disabled | | | | X | See parameter group 0-4* LCP |
| 86 | Copy fail | | | | X | An error occurred while copying from adjustable frequency drive to LCP or vice versa. |
| 87 | LCP data invalid | | | | X | Occurs when copying from LCP if the LCP contains erroneous data - or if no data was uploaded to the LCP. |
| 88 | LCP data not compatible | | | | X | Occurs when copying from LCP if data are moved between adjustable frequency drives with major differences in software versions. |
| 89 | Parameter read-only | | | | X | Occurs when trying to write to a read-only parameter. |
| 90 | Parameter database busy | | | | X | LCP and RS485 connection are trying to update parameters simulta- neously. |
| 91 | Parameter value is not valid in this mode | | | | X | Occurs when trying to write an illegal value to a parameter. |
| 92 | Parameter value exceeds the min/max limits | | | | X | Occurs when trying to set a value outside the range. |
| nw run | Not While RUNning | | | | Х | Parameter can only be changed when the motor is stopped. |
| Err. | An incorrect password was entered | | | | X | Occurs when using an incorrect password for changing a password- protected parameter. |
| ¹⁾ Th | ese faults may be caused by line pow | wer distort | ions. Ins | talling a | Danfoss | line filter may rectify this problem. |

¹⁾ These faults may be caused by line power distortions. Installing a Danfoss line filter may rectify this problem.

Table 1.5 Warnings and AlarmsCode list

1

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1.7 Specifications

1.7.1 Line Power Supply 3 x 200–240V AC

| Normal overload 150% for 1 minute | | | | | | | | |
|-----------------------------------|---|---------------|---------------|---------------|---------------|---------------|--|--|
| Adjustable frequency drive | | PK18 | PK37 | PK75 | P1K5 | P2K2 | | |
| Typical Shaft Output [kW] | | 0.18 | 0.37 | 0.75 | 1.5 | 2.2 | | |
| Typical Shaft Output [HP] | | 0.25 | 0.5 | 1 | 2 | 3 | | |
| IP 20 | | Frame M1 | Frame M1 | Frame M1 | Frame M2 | Frame M3 | | |
| Output current | | | | | | | | |
| 0 0 | Continuous (3 x 200–240V) [A] | 1.2 | 2.2 | 4.2 | 6.8 | 9.6 | | |
| •• 500 | Intermittent (3 x 200–240V) [A] | 1.8 | 3.3 | 6.3 | 10.2 | 14.4 | | |
| | Max. cable size: | • | • | • | • | | | |
| VLT@ Micro Drive | (line power, motor) [mm ² /AWG] 4/10 | | | | | | | |
| Max. Input current | | | | | | | | |
| · | Continuous (3 x 200–240V) [A] | 3.3 | 6.1 | 11.6 | 18.7 | 26.4 | | |
| <u> </u> | Intermittent (3 x 200–240V) [A] | 4.5 | 8.3 | 15.6 | 26.4 | 37.0 | | |
| | Max. electrical fuses [A] | | See | e section Fus | es. | | | |
| | Environment | • | | | | | | |
| VLTO Mars Drive | Estimated power loss [W], Best case/ | 12.5/ | 20.0/ | 36.5/ | 61.0/ | 81.0/ | | |
| | Typical ¹⁾ | 15.5 | 25.0 | 44.0 | 67.0 | 85.1 | | |
| | Weight enclosure IP20 (lbs [kg]) | 2.43 [1.1] | 2.43 [1.1] | 2.43 [1.1] | 3.53 [1.6] | 6.61 [3.0] | | |
| 130BAS12 | Efficiency [%], Best case/Typical ¹⁾ | 95.6/ 94.5 | 96.5/ 95.6 | 96.6/ 96.0 | 97.0/ 96.7 | 96.9/ 97.1 | | |

Table 1.6 Line Power Supply 3 x 200-240V AC

1. At rated load conditions.

1.7.2 Line Power Supply 3 x 200–240V AC

| Adjustable frequency drive PK25 PK37 PK75 P1K5 P2K2 Typical Shaft Output [kW] 0.33 0.5 1 2 3 Typical Shaft Output [HP] 0.33 0.5 1 2 3 IP 20 Frame M1 Frame M1 Frame M1 Frame M2 Frame M3 Output current Continuous (3 x 200240V) [A] 1.5 2.2 4.2 6.8 9.6 Intermittent (3 x 200-240V) [A] 1.5 2.2 4.2 6.8 9.6 Intermittent (3 x 200-240V) [A] 2.3 3.3 6.3 10.2 14.4 Max. cable size: (line power, motor) [mm² /AWG] 4/10 4/10 Max. input current Continuous (3 x 200240V) [A] 2.4 3.5 6.7 10.9 15.4 Intermittent (3 x 200-240V) [A] 2.4 3.5 6.7 10.9 15.4 Max. input current Continuous (3 x 200240V) [A] 2.4 3.5 6.7 10.9 15.4 Intermittent (3 x 200-240V) [A] 3.2 4.6 8.3 14.4 23.4 Max. electrical fuses [A] | |
|---|---------------|
| Typical Shaft Output [HP] 0.33 0.5 1 2 3 IP 20 Frame M1 Frame M1 Frame M1 Frame M2 Frame M3 Output current Image: Continuous (3 x 200240V) [A] 1.5 2.2 4.2 6.8 9.6 Intermittent (3 x 200240V) [A] 1.5 2.3 3.3 6.3 10.2 14.4 Max. cable size: Image: | P3K7 |
| IP 20 Frame M1 Frame M1 Frame M1 Frame M1 Frame M2 Frame M3 Output current Continuous (3 x 200240V) [A] 1.5 2.2 4.2 6.8 9.6 Intermittent (3 x 200240V) [A] 1.5 2.3 3.3 6.3 10.2 14.4 Max. cable size: (line power, motor) [mm² /AWG] 4/10 4/10 Max. input current Continuous (3 x 200240V) [A] 2.4 3.5 6.7 10.9 15.4 Max. electrical fuses [A] Continuous (3 x 200240V) [A] 3.2 4.6 8.3 14.4 23.4 | 3.7 |
| Output current Continuous (3 x 200240V) [A] 1.5 2.2 4.2 6.8 9.6 Intermittent (3 x 200-240V) [A] 2.3 3.3 6.3 10.2 14.4 Max. cable size: (line power, motor) [mm² /AWG] 4/10 4/10 Max. input current Continuous (3 x 200240V) [A] 2.4 3.5 6.7 10.9 15.4 Max. input current Continuous (3 x 200240V) [A] 2.4 3.5 6.7 10.9 15.4 Max. electrical fuses [A] See section Fuses. See section Fuses. Environment See section Fuses. | 5 |
| Continuous (3 x 200240V) [A] 1.5 2.2 4.2 6.8 9.6 Intermittent (3 x 200-240V) [A] 2.3 3.3 6.3 10.2 14.4 Max. cable size: | Frame M3 |
| Intermittent (3 x 200-240V) [A] 2.3 3.3 6.3 10.2 14.4 Max. cable size: Intermittent (3 x 200-240V) [A] 4/10 4/10 Max. input current Continuous (3 x 200-240V) [A] 2.4 3.5 6.7 10.9 15.4 Intermittent (3 x 200-240V) [A] 2.4 3.5 6.7 10.9 15.4 Max. input current Intermittent (3 x 200-240V) [A] 3.2 4.6 8.3 14.4 23.4 Max. electrical fuses [A] See section Fuses. Environment See section Fuses. Environment | |
| Intermittent (3 x 200-2400) [A] 2.3 3.3 6.3 10.2 14.4 Max. cable size: (line power, motor) [mm² /AWG] 4/10 Max. input current Continuous (3 x 200-240V) [A] 2.4 3.5 6.7 10.9 15.4 Intermittent (3 x 200-240V) [A] 3.2 4.6 8.3 14.4 23.4 Max. input current Environment See section Fuses. Environment | 15.2 |
| Image: system Image: s | 22.8 |
| Image: system (line power, motor) [mm² /AWG] 4/10 Max. input current Continuous (3 x 200–240V) [A] 2.4 3.5 6.7 10.9 15.4 Intermittent (3 x 200–240V) [A] 3.2 4.6 8.3 14.4 23.4 Intermittent (3 x 200–240V) [A] See section Fuses. Environment See section Fuses. | |
| Continuous (3 x 200240V) [A] 2.4 3.5 6.7 10.9 15.4 Intermittent (3 x 200-240V) [A] 3.2 4.6 8.3 14.4 23.4 Max. electrical fuses [A] See section Fuses. Environment See section Fuses. | |
| Intermittent (3 x 200-240V) [A] 3.2 4.6 8.3 14.4 23.4 Max. electrical fuses [A] See section Fuses. Environment | |
| Max. electrical fuses [A] See section Fuses. Environment | 24.3 |
| Max. electrical fuses [A] See section Fuses. Environment | 35.3 |
| | |
| Estimated newor loss [W] Bost case/ 14.0/ 10.0/ 21.5/ 51.0/ 72.0/ | |
| Moodow [[LSUIIIaied power ioss [w], best Case/ [14.0/ [19.0/] 51.5/] 51.0/] /2.0/ | 115.0/ |
| Typical ¹⁾ 20.0 24.0 39.5 57.0 77.1 | 122.8 |
| Weight enclosure IP20 (lbs [kg]) 2.43 [1.1] 2.43 [1.1] 2.43 [1.1] 3.53 [1.6] 6.61 [3.0] | 6.61 [3.0] |
| Efficiency [%], Best case/Typical ¹⁾ 96.4/96.7/97.1/97.4/97.2/ 94.995.896.397.297.4 | 97.3/ 97.4 |

Table 1.7 Line Power Supply 3 x 200–240V AC

1. At rated load conditions.

1

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1.7.3 Line Power Supply 3 x 380-480V AC

| Normal overload | 150% for 1 minute | | | | | | |
|---------------------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Adjustable freque | ncy drive | PK37 | PK75 | P1K5 | P2K2 | P3K0 | P4K0 |
| Typical Shaft Outp | 0.37 | 0.75 | 1.5 | 2.2 | 3.0 | 4.0 | |
| Typical Shaft Outp | out [HP] | 0.5 | 1 | 2 | 3 | 4 | 5 |
| IP 20 | | Frame M1 | Frame M1 | Frame M2 | Frame M2 | Frame M3 | Frame M3 |
| Output current | | 4 | | | | | |
| | Continuous (3 x 380–440V) [A] | 1.2 | 2.2 | 3.7 | 5.3 | 7.2 | 9.0 |
| | Intermittent (3 x 380–440V) [A] | 1.8 | 3.3 | 5.6 | 8.0 | 10.8 | 13.7 |
| | Continuous (3 x 440–480V) [A] | 1.1 | 2.1 | 3.4 | 4.8 | 6.3 | 8.2 |
| | Intermittent (3 x 440–480V) [A] | 1.7 | 3.2 | 5.1 | 7.2 | 9.5 | 12.3 |
| | Max. cable size: | | | | | | |
| 1308A513 | (line power, motor) [mm ² / AWG] | | | 4/ | 10 | | |
| Max. input curren | t | • | | | | | |
| | Continuous (3 x 380–440V) [A] | 1.9 | 3.5 | 5.9 | 8.5 | 11.5 | 14.4 |
| | Intermittent (3 x 380–440V) [A] | 2.6 | 4.7 | 8.7 | 12.6 | 16.8 | 20.2 |
| | Continuous (3 x 440–480V) [A] | 1.7 | 3.0 | 5.1 | 7.3 | 9.9 | 12.4 |
| 0 0 | Intermittent (3 x 440–480V) [A] | 2.3 | 4.0 | 7.5 | 10.8 | 14.4 | 17.5 |
| - 50 | Max. electrical fuses [A] | | | See secti | on Fuses. | | |
| <u>ੇ ਹੈ ਹੈ ਹੈ</u> ਹ ਹ | Environment | - | | | | | |
| | Estimated power loss [W], Best case/ | 18.5/ | 28.5/ | 41.5/ | 57.5/ | 75.0/ | 98.5/ |
| | Typical ¹⁾ | 25.5 | 43.5 | 56.5 | 81.5 | 101.6 | 133.5 |
| 1968A512 | Weight enclosure IP20 (lbs [kg]) | 2.43 [1.1] | 2.43 [1.1] | 3.53 [1.6] | 3.53 [1.6] | 6.61 [3.0] | 6.61 [3.0] |
| | Efficiency [%], Best case/ | 96.8/ | 97.4/ | 98.0/ | 97.9/ | 98.0/ | 98.0/ |
| | Typical ¹⁾ | 95.5 | 96.0 | 97.2 | 97.1 | 97.2 | 97.3 |

Table 1.8 Line Power Supply 3 x 380-480V AC

1. At rated load conditions.

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Quick Guide

VLT Micro Drive Quick Guide

| Normal overload 15 | 0% for 1 minute | | | | | | |
|----------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Adjustable frequence | y drive | P5K5 | P7K5 | P11K | P15K | P18K | P22K |
| Typical Shaft Outpu | t [kW] | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 |
| Typical Shaft Outpu | 7.5 | 10 | 15 | 20 | 25 | 30 | |
| IP 20 | | Frame M3 | Frame M3 | Frame M4 | Frame M4 | Frame M5 | Frame M5 |
| Output current | | | | | | | |
| | Continuous (3 x 380-440V) [A] | 12.0 | 15.5 | 23.0 | 31.0 | 37.0 | 43.0 |
| • • • | Intermittent (3 x 380–440V) [A] | 18.0 | 23.5 | 34.5 | 46.5 | 55.5 | 64.5 |
| | Continuous (3 x 440–480V) [A] | 11.0 | 14.0 | 21.0 | 27.0 | 34.0 | 40.0 |
| | Intermittent (3 x 440–480V) [A] | 16.5 | 21.3 | 31.5 | 40.5 | 51.0 | 60.0 |
| 1308A013 | Max. cable size: | | | | | | |
| | (line power, motor) [mm ² / AWG] | 4/ | 10 | | 16 | 6/6 | |
| Max. input current | | | | | | - | - |
| | Continuous (3 x 380–440V) [A] | 19.2 | 24.8 | 33.0 | 42.0 | 34.7 | 41.2 |
| | Intermittent (3 x 380–440V) [A] | 27.4 | 36.3 | 47.5 | 60.0 | 49.0 | 57.6 |
| | Continuous (3 x 440–480V) [A] | 16.6 | 21.4 | 29.0 | 36.0 | 31.5 | 37.5 |
| w 500 | Intermittent (3 x 440–480V) [A] | 23.6 | 30.1 | 41.0 | 52.0 | 44.0 | 53.0 |
| | Max. electrical fuses [A] | | | See section | on Fuses. | | |
| VLTO Micro Drue | Environment | | | | | | |
| | Estimated power loss [W], Best case/ | 131.0/ | 175.0/ | 290.0/ | 387.0/ | 395.0/ | 467.0/ |
| | Typical ¹⁾ | 166.8 | 217.5 | 342.0 | 454.0 | 428.0 | 520.0 |
| 130BA512 | Weight enclosure IP20 (lbs [kg]) | 6.61 [3.0] | 6.61 [3.0] | | | | |
| | Efficiency [%], Best case/ | 98.0/ | 98.0/ | 97.8/ | 97.7/ | 98.1/ | 98.1/ |
| | Typical ¹⁾ | 97.5 | 97.5 | 97.4 | 97.4 | 98.0 | 97.9 |

Table 1.9 Line Power Supply 3 x 380-480V AC

1. At rated load conditions.

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1.8 General Technical Data

Protection and features

- Electronic thermal motor protection against overload.
- Temperature monitoring of the heatsink ensures that the Adjustable frequency drive trips in case of overtemperature.
- The Adjustable frequency drive is protected against short-circuits between motor terminals U, V, W.
- If a motor phase is missing, the Adjustable frequency drive trips and issues an alarm.
- If a line phase is missing, the Adjustable frequency drive trips or issues a warning (depending on the load).
- Monitoring of the intermediate circuit voltage ensures that the Adjustable frequency drive trips if the intermediate circuit voltage is too low or too high.
- The Adjustable frequency drive is protected against ground faults on motor terminals U, V, W.

Line power supply (L1/L, L2, L3/N):

| Supply voltage | 200–240V ±10% |
|--|---|
| Supply voltage | 380-480V ±10% |
| Supply frequency | 50/60Hz |
| Max. imbalance temporary between line phases | 3.0% of rated supply voltage |
| True Power Factor (λ) | ≥ 0.4 nominal at rated load |
| Displacement Power Factor (cosφ) near unity | (> 0.98) |
| Switching on input supply L1/L, L2, L3/N (power-ups) | maximum 2 times/min. |
| Environment according to EN60664-1 | overvoltage category III/pollution degree 2 |

The unit is suitable for use on a circuit capable of delivering not more than 100,000 RMS symmetrical Amperes, 240/480V maximum.

| Output voltage | 0–100% of supply voltage |
|--|---|
| Output frequency | 0–200Hz (VVC+), 0–400Hz (u/f) |
| Switching on output | Unlimited |
| Ramp times | 0.05–3600sec |
| Cable lengths and cross-sections: | |
| Max. motor cable length, shielded/armored (EMC-compliant installation) | 50 ft [15 m] |
| Max. motor cable length, unshielded/unarmored | 164 ft [50 m] |
| Max. cross-section to motor, line power* | |
| Connection to load sharing/brake (M1, M2, M3) | 0.25 in [6.3 mm] insulated Faston plugs |
| Max. cross-section to load sharing/brake (M4, M5) | 16mm²/6AWG |
| Maximum cross-section to control terminals, rigid wire | 1.5mm²/16 AWG (2 x 0.75mm²) |
| Maximum cross-section to control terminals, flexible cable | 1mm²/18 AWG |
| Maximum cross-section to control terminals, cable with enclosed core | 0.5mm²/20AWG |
| Minimum cross-section to control terminals | 0.25mm ² |

* See tables for line power supply for more information!

| Programmable digital inputs (pulse/encoder) | 5 (1) |
|---|--------------------|
| Terminal number | 18, 19, 27, 29, 33 |
| Logic | PNP or NPN |
| Voltage level | 0–24V DC |
| Voltage level, logic'0' PNP | < 5V DC |
| Voltage level, logic'1' PNP | > 10V DC |
| Voltage level, logic '0' NPN | > 19V DC |
| Voltage level, logic '1' NPN | < 14V DC |
| Maximum voltage on input | 28V DC |

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| Input resistance, R _i | approx. 4k |
|---|---|
| Max. pulse frequency at terminal 33 | 5000Hz |
| Min. pulse frequency at terminal 33 | 20Hz |
| Analog Inputs: | |
| Number of analog inputs | 2 |
| Terminal number | 53, 60 |
| Voltage mode (Terminal 53) | Switch S200=OFF(U) |
| Current mode (Terminal 53 and 60) | Switch S200=ON(I) |
| Voltage level | 0–10V |
| Input resistance, R _i | approx. 10 kΩ |
| Max. voltage | 20V |
| Current level | 0/4 to 20 mA (scaleable) |
| Input resistance, R _i | approx. 200Ω |
| Max. current | 30mA |
| Analog output: | |
| Number of programmable analog outputs | 1 |
| Terminal number | 42 |
| Current range at analog output | 0/4–20mA |
| Max. load to common at analog output | 500Ω |
| Max. voltage at analog output | 17V |
| Accuracy on analog output | Max. error: 0.8% of full scale |
| Resolution on analog output | 8bit |
| Control card, RS-485 serial communication: | |
| Terminal number | 68 (P,TX+, RX+), 69 (N,TX-, RX-) |
| Terminal number 61 | Common for terminals 68 and 69 |
| Control card, 24 V DC output: | |
| Terminal number | 12 |
| Max. load (M1 and M2) | 160mA |
| Max. load (M3) | 30mA |
| Max. load (M4 and M5) | 200mA |
| Relay output: | |
| Programmable relay output | 1 |
| Relay 01 Terminal number | 01-03 (break), 01-02 (make) |
| Max. terminal load (AC-1)1) on 01-02 (NO) (resistive load) | 250V AC, 2 A |
| Max. terminal load (AC-15) ¹⁾ on 01-02 (NO) (Inductive load @ cos\ 0.4) | 250V AC, 0.2 A |
| Max. terminal load (DC-1)1) on 01-02 (NO) (resistive load) | 30V DC, 2 A |
| Max. terminal load (DC-13)1) on 01-02 (NO) (inductive load) | 24 V DC, 0.1A |
| Max. terminal load (AC-1)1) on 01-03 (NC) (resistive load) | 250V AC, 2 A |
| Max. terminal load (AC-15) ¹⁾ on 01-03 (NC) (Inductive load @ $\cos \phi$ 0.4) | 250V AC, 0.2A |
| Max. terminal load (DC-1)1) on 01-03 (NC) (resistive load) | 30V DC, 2 A |
| Min_terminal load on 01-03 (NC)_01-02 (NO) | 24V DC 10 mA 24V AC 20 mA |
| | overvoltage category III/pollution degree 2 |
| 1) IEC 60947 part 4 and 5 | |

1) IEC 60947 part 4 and 5

| Control card, 10 V DC output: | |
|-------------------------------|-------------|
| Terminal number | 50 |
| Output voltage | 10.5V ±0.5V |
| Max. load | 25mA |

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NOTE!

All inputs, outputs, circuits, DC supplies and relay contacts are galvanically isolated from the supply voltage (PELV) and other high-voltage terminals.

| Surroundings: Enclosure | IP 20 |
|--|--|
| Enclosure kit available. | IP 21, TYPE 1 |
| Vibration test | 1.0 c |
| | 5%-95% (IEC 60721-3-3; Class 3K3 (non-condensing) during operation |
| Aggressive environment (IEC 60721-3-3), coated | class 3C3 |
| Test method according to IEC 60068-2-43 H2S (10 days |) |
| Ambient temperature | Max. 104°F [40°C |
| Derating for high ambient temperature, see section on sp | pecial conditions |
| Minimum ambient temperature during full-scale operat | ion 32°F [0°C |
| Minimum ambient temperature at reduced performanc | e 14°F [-10°C |
| Temperature during storage/transport | -13°-+149°/158°F [-25°-+65°/70°C |
| Maximum altitude above sea level without derating | 3280 ft [1000 m |
| Maximum altitude above sea level with derating | 9842 ft [3000 m |
| Derating for high altitude, see section on special condition | ns |
| Safety standards | EN/IEC 61800-5-1, UL 5080 |
| EMC standards, Emission | EN 61800-3, EN 61000-6-3/4, EN 55011, IEC 61800-3 |
| | EN 61800-3, EN 61000-6-1/2, EN 61000-4-2, EN 61000-4-3 |
| EMC standards, Immunity | EN 61000-4-4, EN 61000-4-5, EN 61000-4-6 |

See section on special conditions

1.9 Special Conditions

1.9.1 Derating for Ambient Temperature

The ambient temperature measured over 24 hours should be at least 41°F [5°C] lower than the max. ambient temperature.

If the adjustable frequency drive is operated at a high ambient temperature, the continuous output current should be decreased.

The adjustable frequency drive has been designed for operation at max 122°F [50°C] ambient temperature with one motor size smaller than nominal. Continuous operation at full load at 122°F [50°C] ambient temperature will reduce the lifetime of the adjustable frequency drive.

1.9.2 Derating for Low Air Pressure

The cooling capability of air is decreased at low air pressure.

For altitudes above 6561 ft [2 km], please contact Danfoss regarding PELV.

Below altitudes of 3,281 ft [1,000 m], no derating is necessary, but at 3,281 ft [1,000 m] and higher, the ambient temperature or maximum output current should be decreased.

Decrease the output by 1% per 328 ft [100 m] higher than an altitude of 3,281 ft [1,000 m], or reduce the max. ambient temperature by 1 degree per 656 ft [200 m].

1.9.3 Derating for Running at Low Speeds

When a motor is connected to an adjustable frequency drive, it is necessary to make sure that the cooling of the motor is adequate.

A problem may occur at low speeds in constant torque applications. Running continuously at low speeds – below half the nominal motor speed – may require additional air cooling. Alternatively, choose a larger motor (one size up).

1.10 Options for VLT[®] Micro Drive FC 51

| Ordering No | Description |
|-------------|--|
| 132B0100 | VLT Control Panel LCP 11 w/o potentiometer |
| 132B0101 | VLT Control Panel LCP 12 with potentiometer |
| 132B0102 | Remote Mounting Kit for LCP incl. 10 ft [3 m] cable IP55 with LCP 11, IP21 with LCP 12 |
| 132B0103 | Nema Type 1 kit for M1 frame |
| 132B0104 | Type 1 kit for M2 frame |
| 132B0105 | Type 1 kit for M3 frame |
| 132B0106 | De-coupling plate kit for M1 and M2 frames |
| 132B0107 | De-coupling plate kit for M3 frame |
| 132B0108 | IP21 for M1 frame |
| 132B0109 | IP21 for M2 frame |
| 132B0110 | IP21 for M3 frame |
| 132B0111 | DIN rail mounting kit for M1 and M2 frames |
| 132B0120 | Type 1 kit for M4 frame |
| 132B0121 | Type 1 kit for M5 frame |
| 132B0122 | De-coupling plate kit for M4 and M5 frames |
| 132b0126 | M1 frame spare parts kits |
| 132b0127 | M2 frame spare parts kits |
| 132b0128 | M3 frame spare parts kits |
| 132b0129 | M4 frame spare parts kits |
| 132b0130 | M5 frame spare parts kits |

Danfoss line filters and brake resistors are available upon request.





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