Altivar Machine ATV320

Variable Speed Drives
for Asynchronous and Synchronous Motors

POWERLINK Manual - VW3A3619

03/2016

Schneider Electric

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.
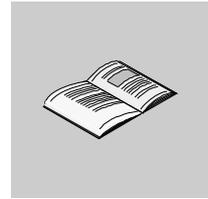
Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

Table of Contents

Safety Information

Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potentiel personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation, which, if not avoided, **will result** in death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation, which, if not avoided, **could result** in death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation, which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Qualification Of Personnel

Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and with this product. In addition, these persons must have received safety training to recognize and avoid hazards involved. These persons must have sufficient technical training, knowledge and experience and be able to foresee and detect potential hazards that may be caused by using the product, by changing the settings and by the mechanical, electrical and electronic equipment of the entire system in which the product is used. All persons working on and with the product must be fully familiar with all applicable standards, directives, and accident prevention regulations when performing such work.

Product Related Information

Read and understand these instructions before performing any procedure with this drive.

⚠ ⚠ **DANGER**

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation and who have received safety training to recognize and avoid hazards involved are authorized to work on and with this drive system. Installation, adjustment, repair and maintenance must be performed by qualified personnel.
- The system integrator is responsible for compliance with all local and national electrical code requirements as well as all other applicable regulations with respect to grounding of all equipment.
- Many components of the product, including the printed circuit boards, operate with mains voltage. Do not touch. Use only electrically insulated tools.
- Do not touch unshielded components or terminals with voltage present.
- Motors can generate voltage when the shaft is rotated. Prior to performing any type of work on the drive system, block the motor shaft to prevent rotation.
- AC voltage can couple voltage to unused conductors in the motor cable. Insulate both ends of unused conductors of the motor cable.
- Do not short across the DC bus terminals or the DC bus capacitors or the braking resistor terminals.
- Before performing work on the drive system:
  - ❍ Disconnect all power, including external control power that may be present.
  - ❍ Place a **Do Not Turn On** label on all power switches.
  - ❍ Lock all power switches in the open position.
  - ❍ Wait 15 minutes to allow the DC bus capacitors to discharge. The DC bus LED is not an indicator of the absence of DC bus voltage that can exceed 800 Vdc.
  - ❍ Measure the voltage on the DC bus between the DC bus terminals (PA/+, PC/-) using a properly rated voltmeter to verify that the voltage is <42 Vdc
  - ❍ If the DC bus capacitors do not discharge properly, contact your local Schneider Electric representative. Do not repair or operate the product.
- Install and close all covers before applying voltage.

Failure to follow these instructions will result in death or serious injury.

Drive systems may perform unexpected movements because of incorrect wiring, incorrect settings, incorrect data or other errors.

⚠ WARNING
UNEXPECTED MOVEMENT
• Carefully install the wiring in accordance with the EMC requirements. • Do not operate the product with unknown or unsuitable settings or data. • Perform a comprehensive commissioning test.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

Damaged products or accessories may cause electric shock or unanticipated equipment operation.

⚠⚠ DANGER
ELECTRIC SHOCK OR UNANTICIPATED EQUIPMENT OPERATION
Do not use damaged products or accessories.
Failure to follow these instructions will result in death or serious injury.

Contact your local Schneider Electric sales office if you detect any damage whatsoever.

⚠ WARNING
LOSS OF CONTROL
• The designer of any control scheme must consider the potential failure modes of control paths and, for critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop, overtravel stop, power outage and restart. • Separate or redundant control paths must be provided for critical control functions. • System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link. • Observe all accident prevention regulations and local safety guidelines (1). • Each implementation of the product must be individually and thoroughly tested for proper operation before being placed into service.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

(1) For USA: Additional information, refer to NEMA ICS 1.1 (latest edition), Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control and to NEMA ICS 7.1 (latest edition), Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems.

NOTICE
DESTRUCTION DUE TO INCORRECT MAINS VOLTAGE
Before switching on and configuring the product, verify that it is approved for the mains voltage
Failure to follow these instructions can result in equipment damage.

The product is not approved for use in hazardous areas (explosive atmospheres).

⚠ WARNING
EXPLOSION HAZARD
Only use this device outside of hazardous areas (explosive atmospheres).
Failure to follow these instructions can result in death, serious injury, or equipment damage.

Machines, controllers, and related equipment are usually integrated into networks. Unauthorized persons and malware may gain access to the machine as well as to other devices on the network/fieldbus of the machine and connected networks via insufficiently secure access to software and networks.

> # ⚠ WARNING
>
> **UNAUTHORIZED ACCESS TO THE MACHINE VIA SOFTWARE AND NETWORKS**
>
> - In your hazard and risk analysis, consider all hazards that result from access to and operation on the network/fieldbus and develop an appropriate cyber security concept.
> - Verify that the hardware infrastructure and the software infrastructure into which the machine is integrated as well as all organizational measures and rules covering access to this infrastructure consider the results of the hazard and risk analysis and are implemented according to best practices and standards covering IT security and cyber security (such as: ISO/IEC 27000 series, Common Criteria for Information Technology Security Evaluation, ISO/IEC 15408, IEC 62351, ISA/IEC 62443, NIST Cybersecurity Framework, Information Security Forum - Standard of Good Practice for Information Security).
> - Verify the effectiveness of your IT security and cyber security systems using appropriate, proven methods.
>
> **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

About the book
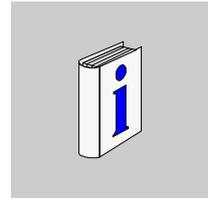
At a Glance

Document Scope

The purpose of this document is to:
- show you how to install the POWERLINK module on your drive
- show you how to configure the drive to use POWERLINK fieldbus.

NOTE: Read and understand this document and all related documents (see below) before installing, operating, or maintaining your drive.

Validity Note

This documentation is valid for the Altivar Machine drives.

The technical characteristics of the devices described in this document also appear online. To access this information online:

Step	Action
1	Go to the Schneider Electric home page *www.schneider-electric.com*.
2	In the **Search** box type the reference of a product or the name of a product range. • Do not include blank spaces in the reference or product range. • To get information on grouping similar modules, use asterisks (*).
3	If you entered a reference, go to the **Product Datasheets** search results and click on the reference that interests you. If you entered the name of a product range, go to the **Product Ranges** search results and click on the product range that interests you.
4	If more than one reference appears in the **Products** search results, click on the reference that interests you.
5	Depending on the size of your screen, you may need to scroll down to see the data sheet.
6	To save or print a data sheet as a .pdf file, click **Download XXX product datasheet**.

The characteristics that are presented in this manual should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the manual and online information, use the online information as your reference.

Related Documents

Use your tablet or your PC to quickly access detailed and comprehensive information on all our products on www.schneider-electric.com

The internet site provides the information you need for products and solutions
- The whole catalog for detailed characteristics and selection guides
- The CAD files to help design your installation, available in over 20 different file formats
- All software and firmware to maintain your installation up to date
- A large quantity of White Papers, Environment documents, Application solutions, Specifications... to gain a better understanding of our electrical systems and equipment or automation

And finally all the User Guides related to your drive, listed below:You can download the latest versions of these technical publications and other technical information from our website at www.schneider-electric.com.

Title of documentation	Reference Number
Altivar 320 Getting Started	NVE21763 (English) NVE21771 (French) NVE21772 (German) NVE21773 (Spanish) NVE21774 (Italian) NVE21776 (Chinese)
Altivar 320 Getting Started Annex (SCCR)	NVE21777 (English)
Altivar 320 Installation manual	NVE41289 (English) NVE41290 (French) NVE41291 (German) NVE41292 (Spanish) NVE41293 (Italian) NVE41294 (Chinese)
Altivar 320 Programming manual	NVE41295 (English) NVE41296 (French) NVE41297 (German) NVE41298 (Spanish) NVE41299 (Italian) NVE41300 (Chinese)
Altivar 320 Modbus Serial Link manual	NVE41308 (English)
Altivar 320 PROFIBUS DP manual (VW3A3607)	NVE41310 (English)
Altivar 320 Ethernet IP/Modbus TCP manual (VW3A3616)	NVE41313 (English)
Altivar 320 CANopen manual (VW3A3608, 618, 628)	NVE41309 (English)
ATV320 POWERLINK manual (VW3A3619)	NVE41312 (English)
Altivar 320 DeviceNet manual (VW3A3609)	NVE41314 (English)
Altivar 320 EtherCAT manual (VW3A3601)	NVE41315 (English)
Altivar 320 Communication Parameters	NVE41316 (English)
Altivar 320 PROFINET manual	NVE41311 (English)
Altivar 320 Safety Functions manual	NVE50467 (English) NVE50468 (French) NVE50469 (German) NVE50470 (Spanish) NVE50472 (Italian) NVE50473 (Chinese)

You can download these technical publications and other technical information from our website at http://download.schneider-electric.com

Terminology

The technical terms, terminology, and the corresponding descriptions in this manual normally use the terms or definitions in the relevant standards.

In the area of drive systems this includes, but is not limited to, terms such as **error, error message, failure, fault, fault reset, protection, safe state, safety function, warning, warning message**, and so on.

Among others, these standards include:
- IEC 61800 series: Adjustable speed electrical power drive systems
- IEC 61508 Ed.2 series: Functional safety of electrical/electronic/programmable electronic safety-related
- EN 954-1 Safety of machinery - Safety related parts of control systems
- EN ISO 13849-1 & 2 Safety of machinery - Safety related parts of control systems.
- IEC 61158 series: Industrial communication networks - Fieldbus specifications
- IEC 61784 series: Industrial communication networks - Profiles
- IEC 60204-1: Safety of machinery - Electrical equipment of machines – Part 1: General requirements

In addition, the term **zone of operation** is used in conjunction with the description of specific hazards, and is defined as it is for a **hazard zone** or **danger zone** in the EC Machinery Directive (2006/42/EC) and in ISO 12100-1.

ATV320 POWERLINK Overview

<div style="float:right;">

1

</div>

What Is in This Chapter?

This chapter contains the following topics:

Overview

Description

The **VW3A3619** communication card enables the integration of an Altivar 320 variable speed drive into an Ethernet POWERLINK fieldbus system specification V2.

Software and Protocols Supported

The **VW3A3619** POWERLINK card is compliant with ATV320 minimum version (V2.7)

Installation of the Module

Before Starting

Verify that the catalog number printed on the label corresponds to the purchase order.

Remove the fieldbus module from its packaging and check that it has not been damaged in transit.

⚠ ⚠ DANGER

**ELECTRIC SHOCK OR UNANTICIPATED EQUIPMENT OPERATION**

Do not use damaged products or accessories.

Failure to follow these instructions will result in death or serious injury.

Insertion of the Fieldbus Module

The table provides the procedure for insertion of the DeviceNet module in the drive:

Step	Action
1	Ensure that the power is off.
2	Locate the fieldbus module slot on the bottom of the control part.
3	Add the corresponding sticker on the LED front panel of the drive.
4	Insert the module.
5	Check that the module is correctly inserted and locked mechanically in the drive.

ATV320B   ATV320C
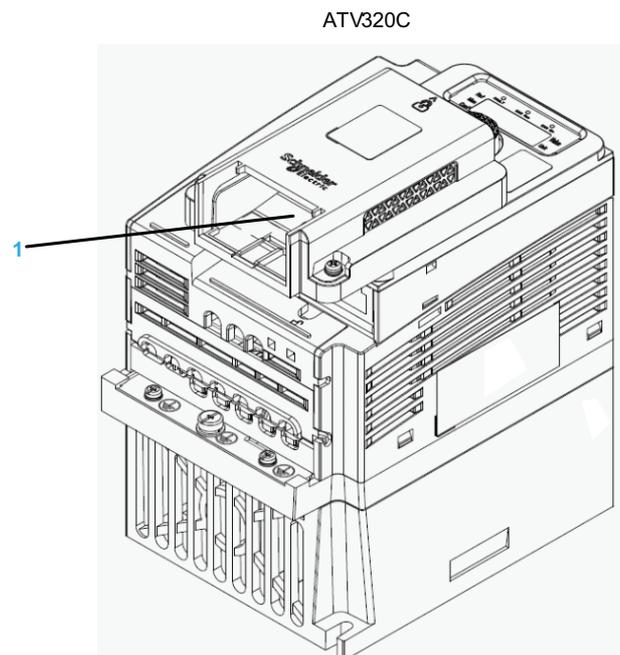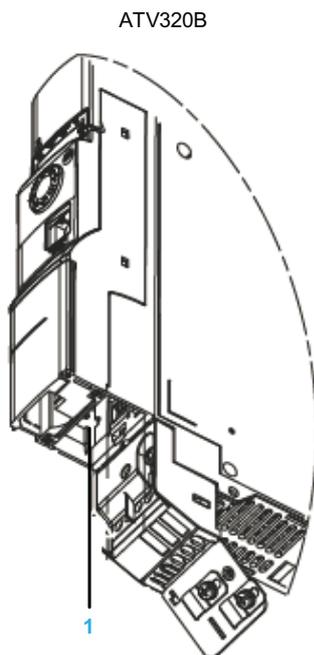
1. Slot A

Removal of the Fieldbus Module

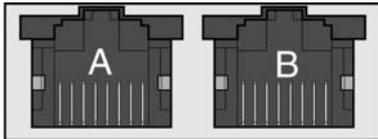| Step	Action
1	Ensure that the power is off.
2	Press the strip.
3	Remove the module while maintainng the strip pressed.

Hardware Setup

Hardware Presentation

The following figure shows the dual RJ45 connector, POWERLINK module:

POWERLINK Interface

The VW3A3619 option module is equipped with 2 RJ45 female sockets for the POWERLINK connection.

The following table describes the pin out of the VW3A3619 RJ45 connector:

Interface	Pin Assignments		
Application interface POWERLINK 8 7 6 5 4 3 2 1 8 7 6 5 4 3 2 1 Port A / Port B	**PIN**	**Ethernet**	
	1	RxD	Receive Data
	2	RxD\	Receive Data\
	3	TxD	Transmit Data
	4	Termination	-
	5	Termination	-
	6	TxD\	Transmit Data\
	7	Termination	-
	8	Termination	-

Cable Specifications

- Connection accessories may be ordered separately (consult our catalog).
- Use the Schneider Electric cable with 2 pairs of shielded twisted conductors (reference: TSXCSA100, TSXCSA200, TSXCSA500).
- Keep the Modbus cable separated from the power cables (30 cm (11.8 in.) minimum).
- Make any crossovers of fieldbus cable and the power cables at right-angles, if necessary.

For more information, refer to the TSX DG KBL E manual: "Electromagnetic compatibility of industrial networks and fieldbuses".

LED Indicators

Description

Operation

Figure	LED	Color	Status	Description
1	L/A1	Green	On	A link to the remote station has been established
			Blinking	A link to the remote station 1 has been established. The LED blinks when Ethernet activity is present on the bus.
2	S/E **(1)**	Green / red	-	Status/Error LED. See Status *(see page 15)* in the next table
3	E **(1)**	Green / red	On	Used to indicate critical module failure
4	L/A2	Green	On	A link to the remote station has been established
			Blinking	A link to the remote station 2 has been established. The LED blinks when Ethernet activity is present on the bus.

(1). The status/Error LED is green/Red dual LED.

Status/Error LED Description

The status/error LED is a green/red dual LED. The colors green (status) is superimposed on the color red (error found)

Color	Figure	Description
-	On	The POWERLINK interface has encountered a detected error (failed Ethernet frames, increased number of collisions on the network, etc.). If an error occurs in the following states, then the green LED blinks over the red LED: ● BASIC_ETHERNET ● PRE_OPERATIONAL_1 ● PRE_OPERATIONAL_2 ● READY_TO_OPERATE ① Status Green ② Error Red ③ LED S/E

Color	Figure	Description
Green	OFF NOT_ACTIVE	The bus is monitored for POWERLINK frames. If a frame is not received within the configured time window (timeout), the drive goes directly into BASIC_ETHERNET status (flickering). If, however, POWERLINK communication is detected during this time, the CN goes directly into the PRE_OPERATIONAL_1 status (single flash).
	Flickering green (approx. 10 Hz) BASIC_ETHERNET	The drive is in BASIC_ETHERNET status, and is operated purely as an Ethernet TCP/IP device. If POWERLINK communication is detected while in this status, the CN goes into the PRE_OPERATIONAL_1 state (single flash). A lit red LED in this state indicates manager failure.
	Single flash (approx. 1 Hz) PRE_OPERATIONAL_1	The drive status is PRE_OPERATIONAL_1. The CN waits until it receives an SoC frame and then switches to PRE_OPERATIONAL_2 status (double flash). A lit red LED in this state indicates manager failure.
	Double flash (approx. 1 Hz) PRE_OPERATIONAL_2	The drive status is PRE_OPERATIONAL_2. In this status the CN is normally configured by the manager. After this, a command changes the status to READY_TO_OPERATE (triple flash). A lit red LED in this state indicates manager failure found.
	Triple flash (approx. 1 Hz) READY_TO_OPERATE	The drive status is READY_TO_OPERATE. The configuration of the CN is complete. Normal cyclic and asynchronous communication. The PDO data sent corresponds to the PDO mapping used. However, cyclic data is not yet evaluated. A lit red LED in this state indicates manager failure found.
	On - OPERATIONAL	The drive status is OPERATIONAL.
	Blinking (approx. 2.5 Hz)STOPPED	The drive status is STOPPED. No output data is produced and no input data is received. Only the appropriate command from the manager can enter or leave this state.
Red	Red pulses with following on time in ms:600-150-150-150	Bus Error - Internal interface defect
	Red pulses with following on time in ms:150-600-600-600	Invalid node number configured in the POWERLINK Node ID parameter in drive's HMI
	Off	No error detected

System Interruption Indication

Incorrect configuration or defective hardware can trigger an error. The error found is displayed via the red error LED using 4 switch-on phases. The switch-on phases are either 150 ms or 600 ms long. Error code outputs are repeated cyclically after 2 seconds.

Description	Alarm code Display by the Red Status LED									
RAM error detected	X	X	X	-	Brake	X	X	X	-	Brake
Bus error	-	X	X	X	Brake	-	X	X	X	Brake
Wrong POWERLINK station number has been configured	X	-	-	-	Brake	X	-	-	-	Brake

Legend:
● X ... 150 ms
● - ... 600 ms
● brake ... 2 s delay

Parameters

2

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
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Configuration

Drive Terminal Displays

The graphic display terminal (to be ordered separately - reference VW3A1101) menus are shown in square brackets.

Example: **[Communication]**

The integrated 7-segment display terminal menus are shown in round brackets.

Example: ?C o $\mathit{\Pi}$ - ?

Parameter names are displayed on the graphic display terminal in square brackets.

Example:**[Fallback speed]**

Parameter codes are displayed on the integrated 7-segment display terminal in round brackets.

Example: ?L F F?

Formats

In this manual, hexadecimal values are written as follows: 16#

Configuring the Communication Parameters

The parameters described are accessible with the ATV320 integrated display terminal, the graphic display terminal option or with SoMove software. The parameters are visible only if a POWERLINK card is plugged in the drive.

The configuration of the POWERLINK communication functions on the Altivar 320 is reachable with the drive menu;

[1.3 CONFIGURATION] ?C o n F? → **[FULL]** ?F u L L? → **[COMMUNICATION]** ?C o $\mathit{\Pi}$ - ? → **[COMMUNICATION CARD]** ?C b d - ?.
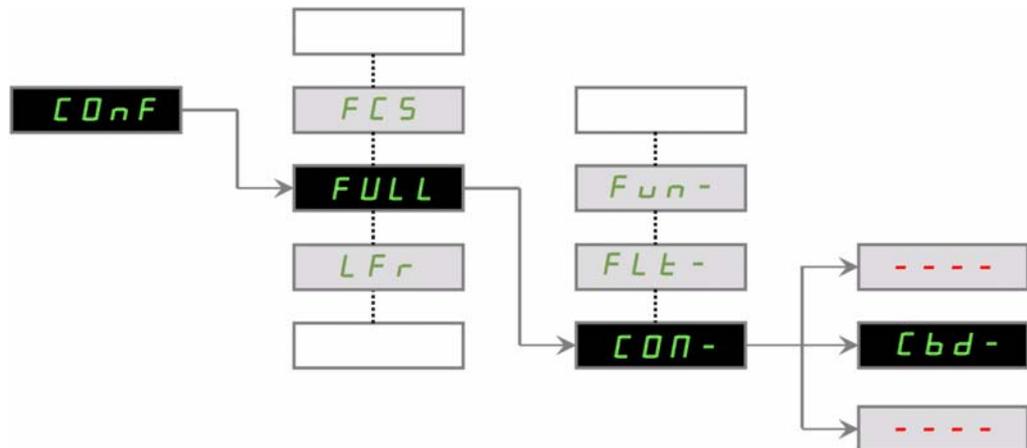
The POWERLINK Station Number

Station numbers in the range 0 to 239 are allowed.The POWERLINK station number is set via the integrated display terminal or the scroll wheel. The parameter is called as follows:

Code	Name	Possible Values	Default Value
A d r C	[Address]	0 to 239	0

NOTE:

- The configuration can only be modified when the motor is stopped and the drive stopped.
- This menu is only visible if a communication card is plugged in the drive

Communication Parameters

The MAC address appears on the label attached on the POWERLINK card

Parameter Description	Range or Listed Values	Default Value	Access	Parameter Address
[MAC @] (MAC) MAC address display	[00-80-F4-XX-XX-XX]	-	R	64267 64268 64269

Configuration I/O Scanning

The I/O scanning service is used to exchange periodic I/O data between:
- A controller or PLC (I/O scanner)
- Devices (I/O scanning servers).

I/O Scanner Setting

The communication scanner is accessible via the following menus: **[COMMUNICATION]** ?*C o M -* ? and **[COMMUNICATION CARD]** ?*C b d -* ? submenus. They are 4 output variables and 4 input variables available.

Parameters

Factory Setting

The Altivar 320 is factory-set for common operating conditions:
- Display: drive ready [Ready] (rdY) when motor is ready to run and motor frequency when motor is running.
- The LI3 to LI6 logic inputs, AI2 and AI3 analog inputs, LO1 logic output, AO1 analog output, and R2 relay are unassigned.
- Stop mode when an error is detected: freewheel.

Code	Description	Factory Settings Values
bFr	[Standard mot. freq]	[50Hz IEC] (50)
tCC	[2/3 wire control]	[2 wire] (2C): 2-wire control (level commands)
Ctt	[Motor control type]	[Standard] (Std): U/F 2 points (Volts/Hz) without internal speed loop
ACC	[Acceleration]	3.0 seconds
dEC	[Deceleration]	3.0 seconds
LSP	[Low speed]	0 Hz
HSP	[High speed]	50 Hz
itH	[Mot. therm. current]	Nominal motor current (value depending on drive rating)
SdCi	[Auto DC inj. level 1]	0.7 x nominal drive current, for 0.5 seconds
SFr	[Switching freq.]	4 kHz
Frd	[Forward]	[LI1] (LI1): Logic input LI1
rrS	[Reverse assign.]	[LI2] (LI2): Logic input LI2
Fr1	[Ref.1 channel]	[AI1] (AI1): Analog input AI1
r1	[R1 Assignment]	[No drive flt] (FLt): The contact opens when an error is detected or when the drive has been switched off
brA	[Dec ramp adapt.]	[Yes] (YES): Function active (automatic adaptation of deceleration ramp)
Atr	[Automatic restart]	[No] (nO): Function inactive
Stt	[Type of stop]	[Ramp stop] (rMP): On ramp
CFG	[Macro configuration]	[Start/Stop] (StS)

Note: If you want to keep the drive presettings to a minimum, select the macro configuration [Macro configuration] (CFG) = [Start/stop] (StS) followed by [Restore config.] (FCS) = [Config. CFG] (InI). For more information, see ATV320 programming manual (NVE41295)

Check whether the values above are compatible with application.

Code	Description	Settings Values
Fr1	[Ref.1 channel]	[Com. card] (nEt): Communication card POWERLINK
Cd1	[Cmd channel 1]	[Com. card] (nEt): Communication card POWERLINK
Cd2	[Cmd channel 2]	[Terminals] (tEr): Terminals

Downloading the XDD File

The XDD file of the VW3A3619 communication card can be downloaded from www.schneider-electric.com

Diagnostic

Code	Name / Description
dGt -	[DIAGNOSTIC] This menu can only be accessed with the graphic display terminal. It displays detected errors and their cause in plain text and can be used to carry out tests, see the ATV320 programming manual (NVE41295).

Error Code

Errors that can be cleared with the automatic restart function after the cause has been removed

These errors can also be cleared by turning on and off or with a logic input or control bit ([Fault reset] (rSF) See in the ATV320 programming manual).

- If the display does not light up, check the power supply to the drive.
- The assignment of the Fast stop or Freewheel functions will help to prevent the drive starting if the corresponding logic inputs are not powered up. The ATV320 then displays [Freewheel] (nSt) in freewheel stop and [Fast stop] (FSt) in fast stop. This is normal since these functions are active at zero so that the drive will be stopped if there is a wire break.
- Check that the run command input is activated in accordance with the selected control mode [2/3 wire control] (tCC) and [2 wire type] (tCt) parameters, See in the ATV320 programming manual).
- If an input is assigned to the limit switch function and this input is at zero, the drive can only be started up by sending a command for the opposite direction. (See in the ATV320 programming manual).
- If the reference channel or command channel is assigned to a communication bus, when the power supply is connected, the drive will display [Freewheel] (nSt) and remain in stop mode until the communication bus sends a command.

Error code	Name	Probable Cause	Remedy
CnF	Com. network]	Communication interruption on communication card.	- Check the environment (electromagnetic compatibility). - Check the wiring. - Check the time-out. - Replace the option card. - Contact Schneider Electric Product Support
iLF	[internal com. link]	Communication interruption between option card and drive.	- Check the environment (electromagnetic compatibility). - Check the connections - Replace the option card. - Contact Schneider Electric Product Support

Communication error: CNF and ILF

After an error occurred, here are the values to read:

Error code	Name	Description	Possible Values
iLF	[int. com.link]	This parameter indicates a detected error and can be cleared: It needs a drive Power Off / Power On.	1: General error 2: Application state error 19: NVS storage error 21: IOC watchdog timeout error 22: Scanner update error
CnF	[Com. network]	This parameter indicates that a network interruption occurred. A value is recorded depending of the interruption type. When the error has disappeared, the option writes 0. Note: (CnF) is available only in "operational" state and if the motor is running.	17: Loss of link 27: Missing Sync signal 34: PDO mapping error 35: Receive PDO link error 36: Too many inputs mapped 37: Too many outputs mapped 38: Invalid input mapping 39: Invalid output mapping 40: Scanner error 41: Unable to read DMN 48: Object access error 96: Invalid state change

Glossary

Acronyms

Term	Definition
PLK	PowerLink
PLC	Programmable Logic Controller
PDO	Process Data Objects
LED	Light Emitting Diode
CAN	Controller Area Network is an internally standardized serial bus system