english

ZETADYN 3 Series

Additional information for CANopen Lift

Brief instruction

Additional information for the operating instructions:
ZETADYN 3BF (R-TBA05_08)
ZETADYN 3C (R-TBA08_03)
ZETADYN 3C-MRL (R-TBA09_01)
ZETADYN 3BF009-1 (R-TBA08_02)

R-TBA11_01-GB 1114 Part.-No. 00163371-GB

ZIEHL-ABEGG

Content

1 General notes

1.1 Validity

These operating instructions apply to:
Frequency inverter from the series: ZETADYN 3

1.2 Structure of the operating instructions

This instruction is a brief instruction with additional informations. It is valid only in connection with the following operating instructions:

- R-TBA05_08 (ZETADYN 3BF)
- R-TBA08_03 (ZETADYN 3C)
- R-TBA09_01 (ZETADYN 3C-MRL)
- R-TBA08_02 (ZETADYN 3BF009-1)

The following informations, described in the operating instructions have to be followed:

- Safety information
- Product overview
- mechanische Installation
- Electrical installation
- Service & maintenance
- Transport
- Storage duration:
- Disposal & recycling

Before installation and start-up, read this manual carefully to ensure correct use!

1.3 Exclusion of liability

Concurrence between the contents of these operating instructions and the described hardware and software in the device has been examined.
It is still possible that non-compliances exist; no guarantee is assumed for complete conformity. The contents of this manual are put through periodic reviews. Necessary modifications are incorporated into the next version.
Ziehl-Abegg AG is not liable for damage due to misuse, incorrect use, improper use or as a consequence of unauthorized repairs or modifications.

2 Safety information

The Safety informations , described in chapter 2 of the operating instructions R-TBA05_08, R-TBA08_03, R-TBA09_01 or R-TBA08_02 or has to be followed!

3 Start-up

3.1 Information for start-up

Danger!
Defective connections can cause the motor to start unexpectedly or lead to uncontrolled motor movements.
Reversed connections cause the motor to rotate in the wrong direction. That can cause serious machine damage.

CAUTION!

Caution!
Incorrectly wired connections can destroy the electrical / electronic components.
Electrostatic discharges can be hazardous to the electronic components and lead to errors in the software.

3.2 Frequency inverter

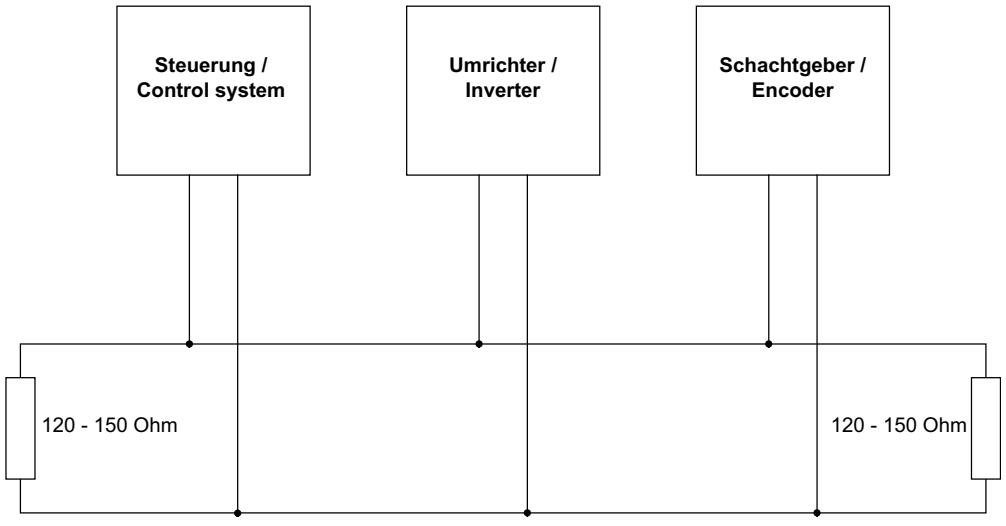
- **To operate the installation with CANopen, the frequency inverter must be equipped with the optional board EM3-ENC-CAN-DCP (Art.-No.357107)!**
- Only devices with the CiA 417 profile are allowed.
- All devices work in 11 bit - mode.
- By implication, there can be one ZETADYN 3 connected to one bus-system.
- When two ZETADYN 3 per bus-system are needed, please call Ziehl-Abegg before installing.

3.3 Bus-cable

- A shielded bus-cable is not needed, but the data wires should be twisted.
- The installation takes place in line structure. The seperate devices are connected to the bus with short branch lines.
- The bus should be terminated with a terminating resistor of 120 - 150 Ohms, at both ends of the bus.
- The maximum length of the bus is 200 m and 6 m at the branch lines.
- All devices normally work with a baud rate of 250 kBit/s.

3.4 Wiring

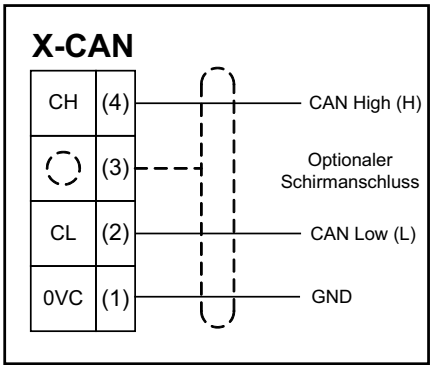
- The connection of the bus cable takes place at the slot "X-CAN" of the frequency inverter.
- Take care of the maximum bus length.
- Not correctly shielded motor- , brake chopper- or brake resistor cables can cause significant errors.
- In case of an error, check the shielding of the cables.



Exemplary assembly of a bus-system with CANopen

3.5 Electrical connection

Information
The connection of the bus cable takes place at the slot X-CAN of the frequency inverter.



Connection CAN

3.6 Activating the interface

The activation of the CAN interface can be set in the menu **Control system/CONFIG**.

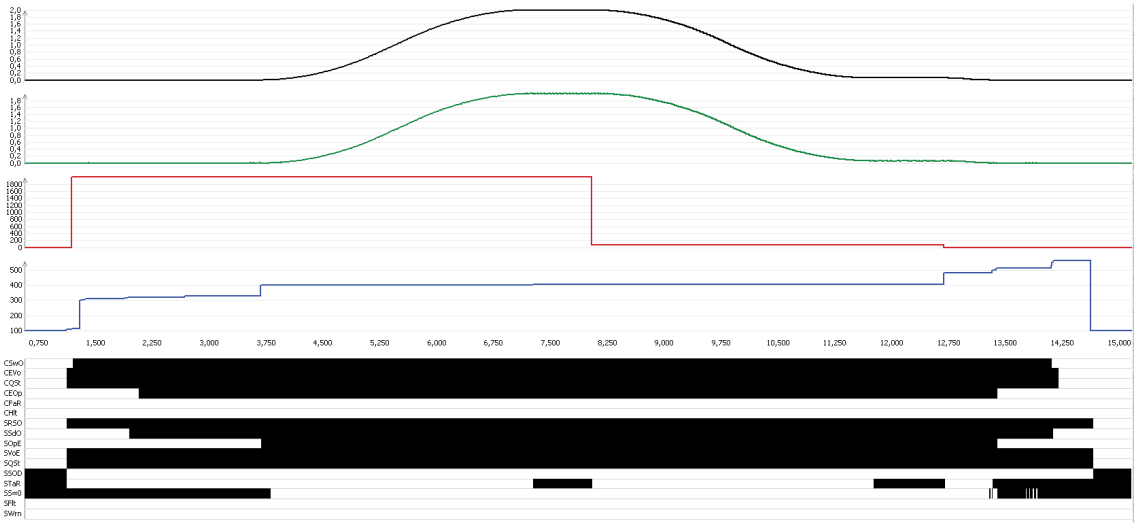
```
Control system
↳CONFIG  01:ZA_IO
  ↳      02:ZA_CAN
Configuration
```

The INFO menu shows CAN information at the pages 14 - 17 (Assumption: "CONFIG" = "02: ZA_CAN").

3.7 Operation mode

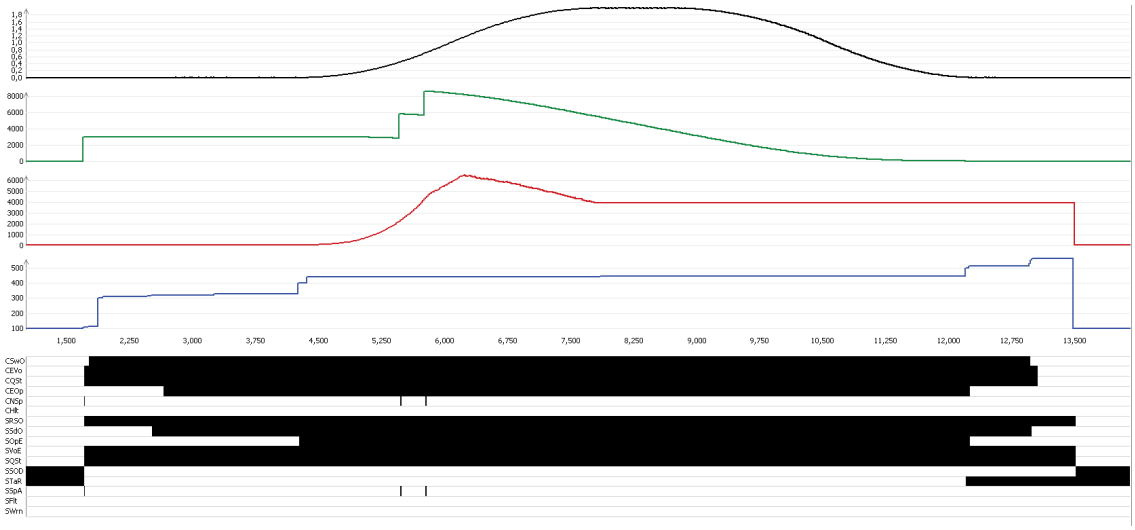
Information
There are two operation modes by using CAN:

- Velocity Mode [pv]



Velocity Mode

- Position Mode [pp]



Position Mode

3.7.1 Command- and Statusbits of the recorder

- Position Mode [pp] C&S / Velocity Mode [pv] C&S
- C = Command = Command from the control system to the frequency inverter
- S = Status = Status of the frequency inverter as reaction of a command from the control system

Status- / Commandbit	Description	Comment
CSwO	Command Switch On	
CEVo	Command Enable Voltage	
CQSt	Command Quick Stop	
CEOp	Command Enable Operation	
CFaR	Command Fault Reset	
CNSp	Command New Setpoint	only active in position mode
CHlt	Command Halt	
SRSO	Status Ready to Switch On	
SSdO	Status Switched On	
SOpE	Status Operation Enabled	
SVoE	Status Voltage Enabled	
SQSt	Status Quick Stop	
SSOD	Status Switch On Disabled	
STaR	Status Target Reached	
SS=0	Status Speed = 0	only active in velocity mode
SSpA	Status Setpoint Acknowledge	only active in position mode
SFlt	Status Fault	
SWrn	Status Warning	

The used mode can be set in the menu "S8: CAN/MODE" of the ZETADYN 3. Generally the mode is sent from the control system to the ZETADYN 3 shortly before start-up. Therefor you have to set the operation mode in the control system.
When the ZETADYN 3 is operated in position mode, the shaft-encoder has to be connected to the same bus as the ZETADYN 3.

The control system transmits the travel speed to the frequency inverter before every drive. If the transmitted speed couldn't be reached, the frequency inverter initiates a pointed arch drive. Therefor the maximum speed has to be entered in the control system.

4 Parameter

4.1 Parameter settings

The seperate parameters for CAN operation can be modified in the menu **S8:CAN**.

Parameter	Description	Value range	Factory setting
LIFT_NR	Enter the lift number	1 ... 2	1
NODE_ID	Node number, normally: Control system: 1 Frequency inverter: 2 Encoder: 4	1 ... 128	2
BD_RATE	Transfer rate (baud rate)	10 kBd ... 250 kBd	250 kBd
MODE	Operation mode of the ZETADYN 3	Position / Velocity	Position
T_CMD	Maximum waiting time for commands of the control system	200 ... 3000 ms	1500 ms
T_MAX	Maximum processing time for the CAN messages per cycle.	0,1 ... 3 ms	0.8 ms

Information
The in the ZETADYN 3 adjusted nominal travel speed V* has to be equal or higher than the speed which is sent to the ZETADYN 3 by the control system. Otherwise no drive takes place.

4.2 Info menu

The INFO menu provides an easily accessible overview of:

- Current measurements
- Current operation conditions of the ZETADYN 3
- Current switching states of the inputs and outputs
- Inverter internal measurements
- Information about the internal components

The individual pages are numbered for increased clarity.
This is a CAN specific instruction. Only the pages 14 - 17 will be described. A complete overview is shown in the operating instruction of the particular inverter.

Display	Description
CAN---------- 14 Act• Mode: Velocity T_max: 0 RErr:255 NMT:Preop./Warn.Lim:	**Page 14: CAN** Operating information (normal view) **Line 2:** Act: A dot signalizes that the inverter operates with CAN Mode: Operating mode (velocity or position) **Line 3:** T_max: Number of cycles, which excessed the maximum process time RErr: Recieve buffer - error counter **Line 4:** NMT: Shows the actual NMT status (see table 4.3)
CAN---------- 14 Act• Mode: Velocity T_max:0.7ms TErr:255 NMT:Preop./Warn.Lim:	**Page 14: CAN** Operating information (while pressing "Enter") **Line 2:** Act: A dot signalizes that the inverter operates with CAN Mode: Operating mode (velocity or position) **Line 3:** T_max: Maximum time for processing the CAN messges per cycle, since switch-on TErr: Transmit buffer - error counter **Line 4:** NMT: Shows the actual NMT status (see table 4.3)
CAN Velocity------- 15 V_CAN: + 0mm/s Contr.:Disable Volt. Status:Sw. On Disab.	**Page 15: CAN Velocity** Active in velocity mode **Line 2:** V_CAN: Travel speed, sent fron the control system to the ZETADYN 3. **Line 3:** Contr. Control-byte. Shows commands which are sent by the control system **Line 4:** Status: Status-byte. Shows CAN-status of the ZETADYN 3
CAN Position------- 16 S_CAN + 0mm Contr.:Disab. Volt. Status:Sw.On Disab.	**Page 16: CAN Position** Active in position mode **Line 2:** S_CAN: Relative target position, sent from the control system to the ZETADYN 3 **Line 3:** Contr. Control-byte. Shows commands which are sent by the control system **Line 4:** Status: Status-byte. Shows CAN-status of the ZETADYN 3 **After pressing the "Enter" button the display shows the maximum travel speed, sent by the control system**
CAN Calib. 1------- 17 AbsEnc mm: 5358 MotEnc mm:+ 4169 Offs:13081A/M 1.28	**Page 17: CAN Calib.** Calibration **Lines 2 - 4:** For calibrating the distances which were sent by the motor encoder and the shaft encoder.

4.3 Network Management Status

Status:	BootUp:	ZETADYN 3 is switching to the bus
	Stop:	ZETADYN 3 was stopped (normally by the control system)
	Preop.:	ZETADYN 3 can be parametrised, but before the it has to be set to "operational".
	Opera.:	ZETADYN 3 is ready, a drive can take place.
Controller state:	No Error:	No errors existent
	Warn.Lim.:	Error counter exceed 127
	Bus off:	Because of too many errors the device was switched off the bus (Error counter > 255)

5 Error

5.1 Error diagnosis in CANopen Lift

For error diagnosis and elimination the operating instructions R-TBA05_08-D, R-TBA08_03-D, R-TBA09_01-D and R-TBA08_02-D provide the chapter "Error diagnosis". In this chapter the errors and the possibilities to eliminate them are described.

5.2 Error list

Error	Error text	Description	Condition
800	CAN: Timeout	**Velocity Mode:** Heartbeat from control system is missing or at wrong time **Position Mode:**In addition to the heartbeat of the control system, the heartbeat of the encoder is also monitored	Only during a drive
810	CAN: Quick Stop Det.	Control system activates a quick stop	Til software version 3.32
820	CAN: Illegal Status	Control system sends commands in wrong order to the ZETADYN 3.	
830	CAN: Timeout Enab. Op.	Controll system gives command "Enable Operation" not within T_CMD	Til software version 3.32
831	CAN: Timeout Dis. Op.	Control system gives command "Disable Operation" not within T_CMD, happens at stop.	Not maskable, if necessary increase T_CMD
832	CAN: Timeout Shutdown	Happens by closing the brakes, when control system gives command "Disable Operation" not within T_CMD.	Not maskable, if necessary increase T_CMD
833	CAN: Timeout Dis. Vol.	Happens after drive, when control system gives command "Disable Voltage" not within T_CMD.	Not maskable, if necessary increase T_CMD
840	CAN: Enc. Info missing	The object Encoder Info, which shows how much encoder pulses are how much mm distance wasn't programmed by the control system	Only Position Mode / not maskable!

HOTLINE ☎	Tel. +49 (0) 7940 16-308 Fax +49 (0) 7940 16-249 email hotline.ra@ziehl-abegg.de

Ziehl-Abegg AG
Heinz-Ziehl-Straße · D-74653 Künzelsau · Germany
Tel. +49 (0) 7940 16-0 · Fax +49 (0) 7940 16-249
drives@ziehl-abegg.de · www.ziehl-abegg.com

ZIEHL-ABEGG