english

ZETADYN

Protection against unintended movement of the car

Technical Information

Self-monitoring of the proper function of the drive unit brakes as brake elements for protection against unintended movement of the car

R-TIA12_02-GB 1215 Part.-No. 00163392-GB

ZIEHL-ABEGG

Content

1 General

1.1 Application of the operating instruction

- The technical information does not replace the operating instructions of the frequency inverter!
- The operating manual has to be always available!
- The safety information of the operating instructions have to be noticed!

1.2 General

The self-monitoring is only used in connection with the drive unit brakes, approved as a protection device against unintended movement of the car, in accordance with EN 81-1:1998 + A3:2009.

2 Safety

- Persons entrusted with the installation, commissioning, maintenance and servicing in connection with the device must have the corresponding qualifications and skills for these jobs.
- Based on their training apprenticeship, experiences, as well as knowledge of the relevant standards, they must be able to judge the work transferred of them and be able to recognize possible hazards.
- During all maintenance and service work the installation must be de-energised and protected against unintentional restart.
- Work on electric components may only be carried out by trained electricians or by persons instructed in electricity under the supervision of an electrician in accordance with electrical engineering regulations.
- A second person must always be present when working on energized parts or lines who disconnects in case of emergency.
- Inspect electrical equipment periodically: retighten loose connections - iimmediately replace damaged lines and cables.
- Always keep switch cabinets and all electrical supply facilities locked. Access is only allowed for authorized persons using a key or special tool.

Danger!
It is forbidden to work on the frequency converter under voltage (electrically alive). Even after disconnection, the DC-link (terminals X1:+DC / X1:-DC) is still live.
Through use of capacitors, danger of death exists even after switching off the device through directly touching the energized parts or due to parts that have become energized due to faults.
The safe isolation from the supply must be checked using a two-pole voltage detector.
Wait at least 3 minutes before working on the device.

3 Principle of self-monitoring

3.1 How does the self-monitoring of the proper function of the brake elements by the ZETADYN work?

The drive unit brake is already used as a protective device against over-speeding in the upwards direction. The drive unit brake therefore has a redundant structure and is equipped for the detection of the redundancy loss with one microswitch per brake circuit as demanded by the type approval test. These micro-switches are used for self-monitoring of the proper function of the drive unit brakes as brake elements for protection against unintended movement of the car.

3.2 Monitoring inputs of the ZETADYN

Frequency inverters of the ZETADYN type have freely programmable inputs:

- Connection terminal X-IN I01…I08
- Connection terminal X-BR: BR1...BR4

All inputs can be programmed to the “brake monitor” function. Up to 4 brake circuits can be monitored. Inputs BR1...BR4 are used as a standard.
Monitoring can take place both with normally closed contacts (NC) and normally open contacts (NO). The type of monitzoring contact can be selected in the input programming.

3.3 Technical data of the inputs

Voltage range	+22,0...26,0 VDC
Switching level low/high	< 5,0 VDC / > 11,0 VDC
Current consumption at 24 V	typ. 12.6 mA
Clamping range	max. 1.5 mm²

4 Function of the self-monitoring

4.1 Monitoring start travel

4.1.1 Motor is at standstill (speed 0)

As soon as ZETADYN receives a travel command, the brake is monitored for rest state:

- Monitoring function “normally open contact” (NO): 0V signal is necessary at the monitor inputs
- Monitoring function “normally closed contact” (NC): 24V signal is necessary at the monitor inputs

If the necessary signals are not available, the ZETADYN outputs error message “380 BR:Start Error” and locks.
The output programmed to the „Fault“ function switches off and remains inactive until the lock is reset by setting the “Monitors / UNLOCK = On” parameter.

4.1.2 The brake opening time T2 starts with activation of the output function “MB” (open drive unit brake).

The drive unit brake must be opened within this time and a signal change is expected at the monitor inputs:

- Monitoring function “normally open contact” (NO): 24V signal is necessary at the monitor inputs
- Monitoring function “normally closed contact” (NC): 0V signal is necessary at the monitor inputs

If no signal change takes place within the time T2, the ZETADYN outputs the error message “582:BR_T2 too small” and locks.
The output programmed to the „Fault“ function switches off and remains inactive until the lock is reset by setting the “Monitors / UNLOCK = On” parameter.

4.2 Monitoring end travel

4.2.1 Motor is at standstill (speed 0)

The brake closing time T5 starts with deactivation of the output function “MB” (close drive unit brake). The drive unit brake must be closed within this time and a signal change is expected at the monitor inputs:

- Monitoring function “normally open contact” (NO): 0V signal is necessary at the monitor inputs
- Monitoring function “normally closed contact” (NC): 24V signal is necessary at the monitor inputs

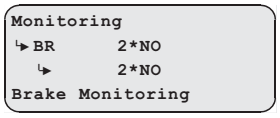
If no signal change takes place within the time T5, the ZETADYN outputs the error message “585:BR:T5 too small” and locks.
The output programmed to the „Fault“ function switches off and remains inactive until the lock is reset by setting the “Monitors / UNLOCK = On” parameter.

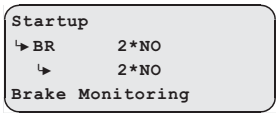
5 Activation of the self-monitoring and the locking function

5.1 Activation of the self-monitoring

The self-monitoring is activated by selecting the brake circuits count and the function of the micro-switch based on the “BR” parameter in the “Startup” or “Monitors” menu (e.g. 2 brake circuits with normally open function of the microswitches: BR=2xNO).

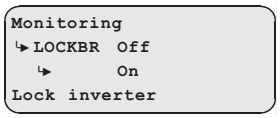
Other setting options and an explanation of the “BR” parameters can be found in the operating manual.





5.2 Activation of the ZETADYN lock in case of a malfunctioning brake circuit

The lock function of the ZETADYN is engaged by activating the “LOCKBR=On” parameter in the “Monitors” menu.



Activation of the parameter ensures that the ZETADYN locks on detection of a faulty brake circuit. The ZETADYN lock can only be released by setting the “Monitors / UNLOCK = On” parameter.

The description of the activation is part of the operating instructions.

6 Function test of the self-monitoring

6.1 General

Since the software of the ZETADYN is editable and is continuously adapted to new conditions, the function of the self-monitoring must be checked both during the software test and when starting up the ZETADYN.

6.2 Function test according to EN81-1:1998+A3:2009

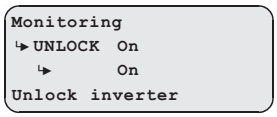
The self-monitoring test required according to EN81-1:1998+A3:2009 Enclosure F8.3.2 is performed for every software version during internal software tests at Ziehl-Abegg.
For this, 10 test runs are made and the function of the self-monitoring checked.

6.3 Function test in start-up

If the drive unit brakes are used as brake elements for protection against unintended movement of the car, a function test of the self-monitoring must be made during start-up.

Test step 1

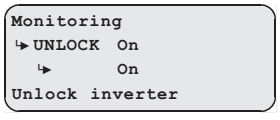
1. Disconnect signal cable at a monitor input.
2. Perform test run.
3. The error message “380 BR:Start Error” must be output already at the start, otherwise the monitoring is faulty.
4. The ZETADYN locks, no further travel is possible.
5. Re-connect the signal cable.
6. Repeat the test run to check the lock. A new run may not be possible, the ZETADYN is still locked.
7. Release the lock by setting the “Monitors / UNLOCK = On” parameter (see display).
8. Start new run, this must take place without errors.



Repeat test step 1 for every monitor input.

Test step 2

1. Disconnect the signal cable at a monitor input and short circuit the monitor input with the internal 24V DC voltage source of the ZETADYN.
2. Perform test run.
3. The error message “380 BR:Start Error” must be output already at the start, otherwise the monitoring is faulty.
4. The ZETADYN locks, no further travel is possible.
5. Remove short-circuit and re-connect the signal cable.
6. Repeat the test run to check the lock. A new run may not be possible, the ZETADYN is still locked.
7. Release the lock by setting the “Monitors / UNLOCK = On” parameter (see display).
8. Start new run, this must take place without errors.



Repeat test step 2 for every monitor input.
The description of the function test is part of the operating instructions.

7 Type-examination certificate

LIFTINSTITUUT

PRODUCTS RvA C 087

TYPE-EXAMINATION CERTIFICATE
FOR LIFTCOMPONENTS

Issued by Liftinstituut B.V.

Certificate nr.	:	NL12-400-1002-163-01 Revision nr.:
Description of the product	:	Brake monitoring as part of protection against unintended car movement.
Trademark, type	:	ZETADYN 4 and ZETADYN 3 (Software version 3.39 or higher)
Name and address of the manufacturer	:	Ziehl-Abegg AG Heinz-Ziehl-Strasse 74653 Künzelsau Germany
Name and address of the certificate holder	:	Ziehl-Abegg AG Heinz-Ziehl-Strasse 74653 Künzelsau Germany
Certificate issued on the following requirements	:	Lifts Directive 95/16/EG, EN 81-1:1998+A3:2009
Test laboratory	:	None
Date and number of the laboratory report	:	None
Date of type-examination	:	
Annexes with this certificate	:	Report belonging to the type-examination certificate nr.: NL12-400-1002-163-01
Additional remarks	:	None
Conclusion	:	The lift component meets the requirements referred to in this certificate taking into account any additional remarks mentioned above.

Issued in Amsterdam
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ing. A.J. van Ommen
Manager Business Unit
Certification

Certification decision by

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