

L1000A QSG Addendum for A3

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1 Overview

According to EN 81-1:2010 chapter 9.11 or EN 81-2:2010 chapter 9.13, new lifts must be equipped with a system independent of the drive control to prevent unintended car movement (UCM) away from the stop with open doors. This protection device has three functions:

- Recognition
- Tripping
- Braking

With gearless PM motors, the applied brake can be used as the “braking” part of the UCM-device. In this case, the brake function has to be monitored. With a certified brake response monitor function, the motor brake and the drive can act as parts of the UCM protective device.

◆ Specification for Brake Response Monitor (BRM) Function

The brake monitor status function supports:

- Check the status of the brakes at every run command
- Check the correct switching of the brake within a defined time
- Lock the system if failure is detected

The Brake Response Monitor function is certified according to the normative requirements.

◆ Checking the Status of the Brakes

The Brake Response Monitor (BRM) function checks the status of the brakes with every run command.

Setting 79h: “Brake Feedback” (N.O. signal)

Setting 5Bh: “Brake Feedback” (N.C. signal)

To comply with the EN 81-1/2 A3 norm, the Brake Feedback function must be selected for two digital inputs simultaneously (e.g.: H1-07 = 79h & H1-08 = 79h).

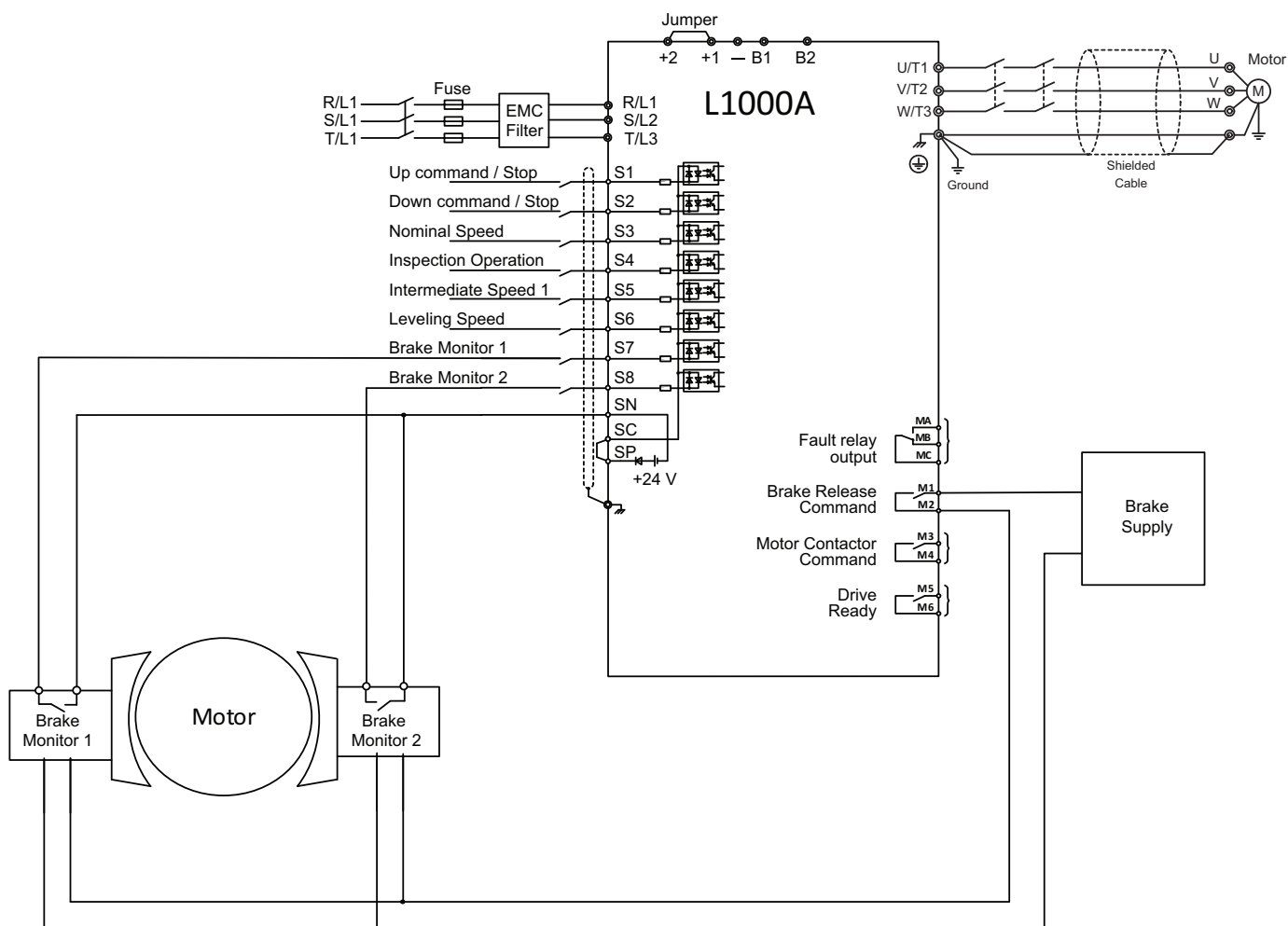
Selecting the Brake Feedback function once or more than twice, or mixing the functions (selecting 79h & 5Bh) triggers an OPE03 fault if the Brake Response Monitor function is enabled (S6-17 = 1).

2 Wiring

The motor is equipped with two brakes. In the figure below the brakes have two Normally Open (N.O.) switches, but Normally Closed (N.C.) operation is also possible.

When the motor brakes close, the switches close as well. This causes the digital inputs used for brake monitoring (e.g. S7 and S8) to change their logic state and unlock the drive allowing the run sequence to start.

The figure below shows how to wire the drive and motor brakes.



3 Activation/Deactivation

The following table provides an overview of the parameters necessary for the Brake Response Monitor.

Parameter Number	Parameter Name	Setting Range
H1-□□	Brake Feedback 1	79h (N.O.)
	Brake Feedback 2	5Bh (N.C.)
S6-17	Brake Response Monitor	0 = Deactivated (Default) 1 = BRM Function Active
S6-05	Brake Response Error (SE4) Detection Time	Default 500 ms Min. 0 ms- Max. 60,000 ms
S6-06	Brake Response Error (SE4) Detection Time During Run	Default 500 ms Min. 0 ms - Max. 60,000 ms
S6-18	SE4 Fault Reset	0 = No reset (Default) 1 = Reset SE4 Fault

The Brake Response Error Time is adjustable in parameter S6-05. Default detection time is 500 ms. If S6-05 is set to 0 the SE4 fault detection during Start/Stop is disabled.

The Brake Response Error Time During Run is adjustable in parameter S6-06. Default detection time is 500 ms. If S6-06 is set to 0 the SE4 fault detection during Run is disabled.

◆ Activation

The Brake Response Monitor (BRM) function is not active by default. The Brake Feedback function must be programmed to two digital inputs of the drive.

To activate the BRM function, perform the following steps:

- Set Parameter S6-17 = 1.
- Program the Brake Feedback function to two digital inputs of the drive. For example:
 - Input S7 -> H1-07 = 79h
 - Input S8 -> H1-08 = 79h

Note: If S6-17 = 0, but Brake Feedback 1 and Brake Feedback 2 are wired and Brake Control (H2-□□ = 50h) is used, the L1000A Brake Feedback Function is active, but the mode of operation is not A3-conform. This Brake Feedback function is just monitoring the brake operation and issues a fault if the brake's status does not match the brake command.

◆ Deactivation

To deactivate the Brake Response Monitor (BRM) function, perform the following steps:

- Set Parameter S6-17 = 0.

The function is disabled.

4 Fault Detection/Fault Reset

◆ Fault Detection

If during the start or stop process Brake Feedback 1 and/or Brake Feedback 2 do not change their logic state within the time limit specified in S6-05 (Brake Response Error (SE4) Detection Time), an SE4 fault will be triggered and the drive will be locked.

If during Run Brake Feedback 1 or Brake Feedback 2 change their logic state for a time longer than S6-06 (Brake Response Error (SE4) Detection Time During Run), an SE4 fault will be triggered and the drive will be locked.

◆ SE4 Fault Reset

With the Brake Response Monitor function enabled (S6-17 = 1), an SE4 fault cannot be reset by:

- Using the Reset button
- Power cycling the drive or installation
- Using the “Automatic Fault Reset” function (L5-□□)

The SE4 fault can be reset only by setting parameter S6-18 = 1.

With the Brake Response Monitor (BRM) function disabled (S6-17 = 0), an SE4 fault can be reset using the standard procedure.

◆ Brake Feedback

■ Standard Behavior of Brake Feedback

After the Brake Release Command is set (brake open) during start procedure the drive starts a timer with the value set in parameter S6-05. If Brake Feedback function 79h is selected, both of the Brake Feedback Inputs must be set within the time set in S6-05. If Brake Feedback function 5Bh is selected, they must be reset within the time set in S6-05.

After the Brake Release Command is reset (brakes closed) during stop procedure the drive starts a timer with the value set in parameter S6-05. If Brake Feedback function 79h is selected, both of the Brake Feedback Inputs must be set within the time set in S6-05. If Brake Feedback function 5Bh is selected, they must be reset within the time set in S6-05.

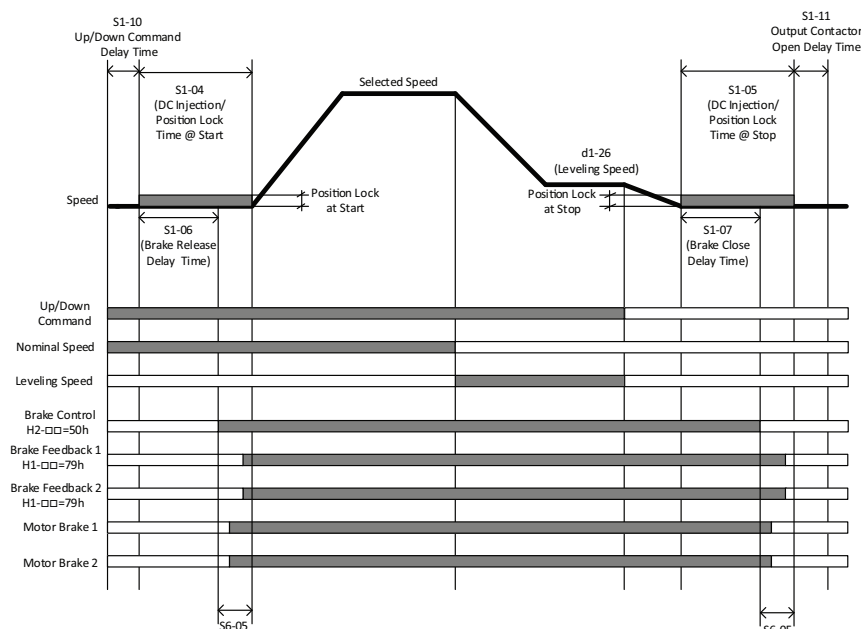


Figure 1 Normal Operation with MFDOs set to 79h (N.O.)

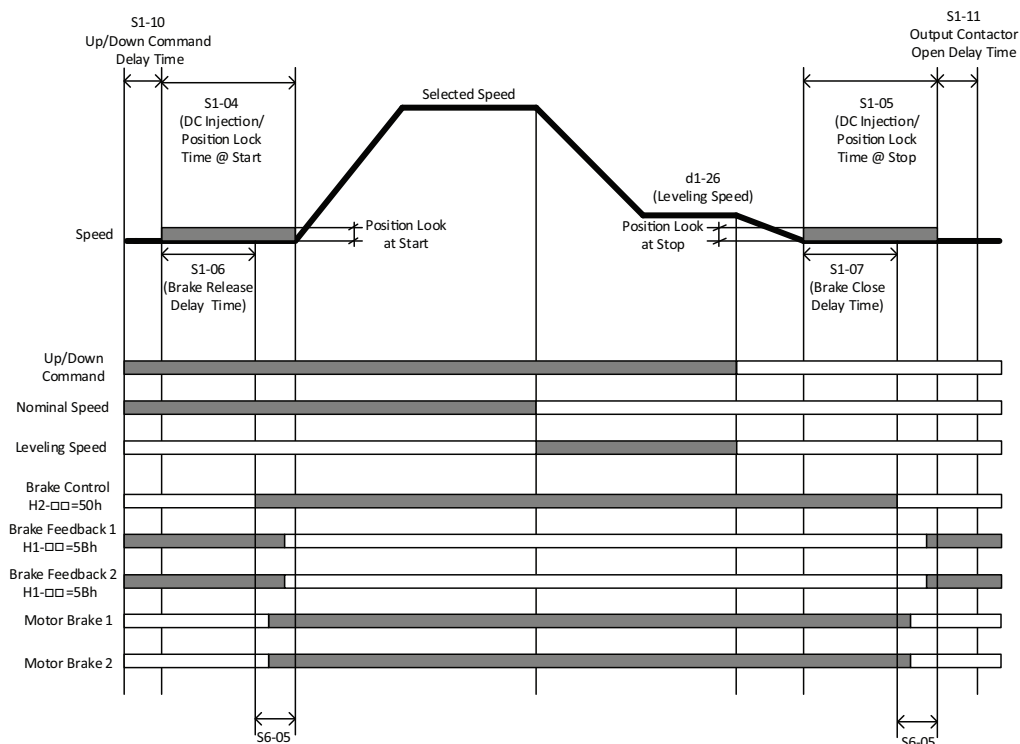


Figure 2 Normal Operation with MFDs set to 5Bh (N.C.)

■ Fault during Start or Stop

If both Brake Feedback Inputs do not change their logic state within the time set in parameter S6-05, the drive stops the start/stop sequence and triggers an SE4 (Brake Response Error) fault.

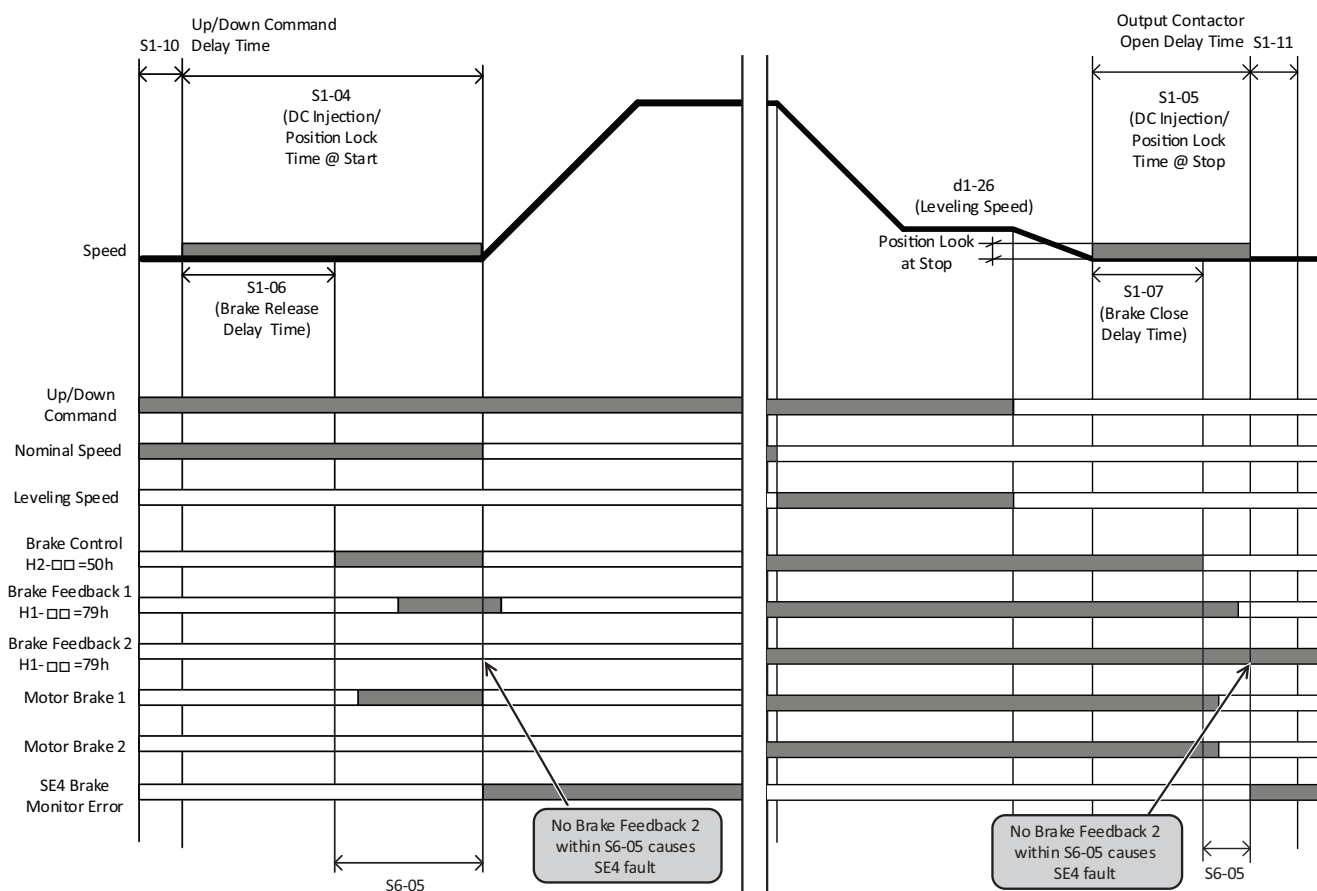


Figure 3 Fault during Start (left) and Fault during Stop (right)

■ Fault Behavior during Run

If at any point during Run the logic state of one of the Brake Feedback inputs changes unexpectedly, a countdown timer with the value of parameter S6-06 will be initiated. If the timer expires without change of Brake Feedback status to its expected state an SE4 Fault will be triggered and the fault message “Brake Response Error (SE4)” will be displayed.

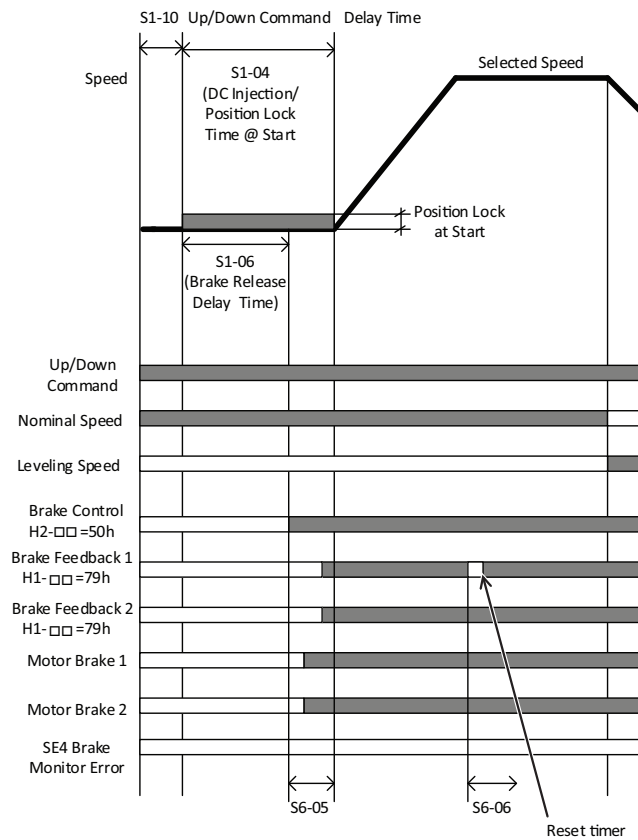


Figure 4 Short Disruption of Brake Feedback 1 Input during Run

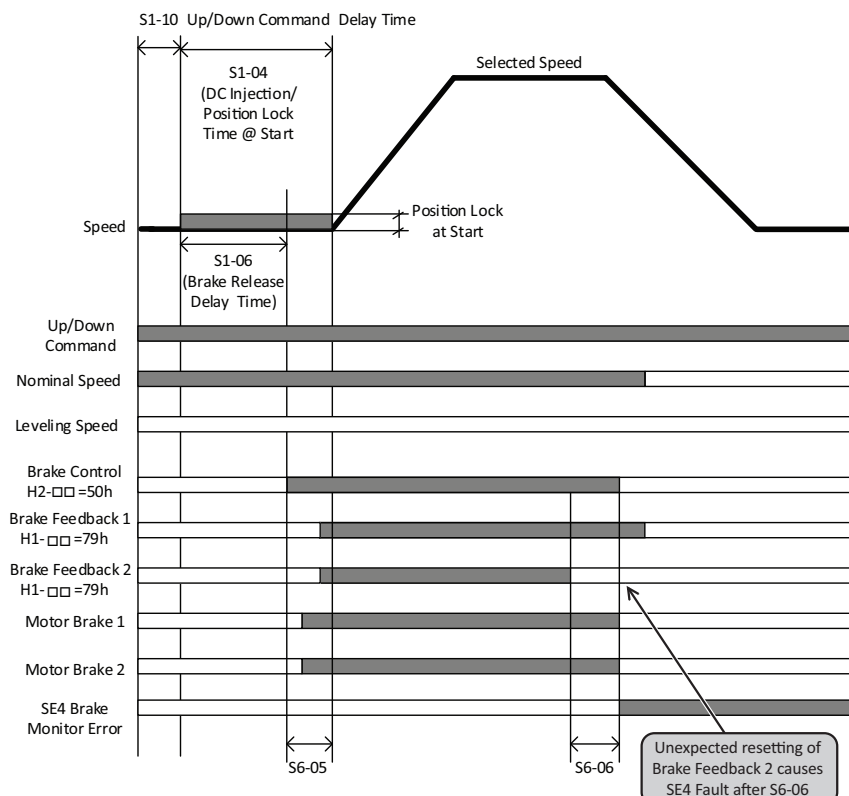


Figure 5 Fault during Run

5 Function Test

Selecting the Brake Feedback function on only one or more than two digital inputs, or mixing the functions (selecting 79h & 5Bh) triggers an oPE03 fault if the Brake Response Monitor function is enabled (S6-17 = 1).

In case of an oPE03 fault, check if two inputs have been programmed as Brake Feedback and if they are both programmed to the same function.

For example:

H1-07 = 79h & H1-08 = 79h

or

H1-07 = 5Bh & H1-08 = 5Bh

If the Brake Response Monitor function is enabled (S6-17 = 1) and the SE4 fault appears, the Brake Monitor Function must be verified before the SE4 fault can be reset.

◆ Function Test NPN Logic

The following steps have to be performed for the functional test after commissioning when using NPN logic:

1. Disconnect the signal Brake Feedback 1 (e.g. input S7).
2. Execute test travel.
3. During start an SE4 fault should be triggered and the drive should immediately stop.
4. The drive should be blocked and no further travel should be possible even after power cycle.
5. Reconnect the signal Brake Feedback 1.
6. Execute test travel.
7. The drive should be blocked and no further travel should be possible even after power cycle.
8. Unlock the drive by setting S6-18 to 1.
9. Execute test travel.
10. The drive should operate normally.

Repeat this NPN logic procedure for Brake Feedback 2 (e.g. input S8).

◆ Function Test PNP Logic

The following steps have to be performed for the functional test after commissioning when using PNP logic:

1. Connect 24 V to Brake Feedback 1 (e.g. input S7).
2. Execute test travel.
3. During start an SE4 fault should be triggered and the drive should immediately stop.
4. The drive should be blocked and no further travel should be possible even after power cycle.
5. Disconnect 24 V on Brake Feedback 1.
6. Execute test travel.
7. The drive should be blocked and no further travel should be possible even after power cycle.
8. Unlock the drive by setting S6-18 to 1.
9. Execute test travel.
10. The drive should operate normally.

Repeat this PNP logic procedure for Brake Feedback 2 (e.g. input S8).

◆ Brake Feedback

The following steps have to be performed to ensure correct operation of the Brake Feedback switches and function.

■ Brake Monitor 1

- Check if Motor Brake 1 operates correctly.
- Check status of Motor Switch in Brake 1.
- Check if the logic changes like specified.
- Check if Digital Input Brake Monitor 1 works correctly.
- Check in Monitor Parameter U1-10 if input change the status.

■ Brake Monitor 2

- Check if Motor Brake 2 operates correctly.
- Check status of Motor Switch in Brake 2.
- Check if the logic changes like specified.
- Check if Digital Input Brake Monitor 2 works correctly.
- Check in Monitor Parameter U1-10 if input change the status.



TYPE-EXAMINATION CERTIFICATE FOR LIFTCOMPONENTS

Issued by Liftinstituut B.V.

Certificate nr. : NL13-400-1002-184-01 Revision nr.: 1
Description of the product : Brake monitoring as part of protection against unintended car movement.

Trademark, type : Yaskawa, CIMR-LCxAxxxxxxx - 910x

Name and address of the manufacturers : Yaskawa Electric UK LTD
1 Hunt Hill Orchardton Woods
Cumbernauld G68 9LF
Yukuhashi-City
Fukuoka 824-8511
United Kingdom
Japan

Name and address of the certificate holder : Yaskawa Europe GmbH
Hauptstr. 185
D-65760 Eschborn
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 : June 2013

Annexes with this certificate : Report belonging to the type-examination certificate nr.: NL13-400-1002-184-01 Rev.1

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

Date of issue : September 10, 2013

ing. A.J. van Ommen
Manager Business Unit Certification

[Signature]
Certification decision by



Report type-examination

Report belonging to type-examination : NL13-400-1002-184-01
certificate no.
Date of issue of original certificate : June 25, 2012
No. and date of revision of certificate : 1; September 10, 2013
and report
Concerns : lift component
Revision concerns : -
Requirements : Lifts Directive 95/16/EC
Standard: EN 81-1:1998+A3:2009
Project no. : P130151-01

1. General specifications

Name and address manufacturer : Yaskawa Electric UK LTD
1 Hunt Hill Orchardton Woods
Cumbernauld G68 9LF
United Kingdom
And
Yaskawa Electric Corporation
2-13-1-Nishimiyaichi Yukuhashi-City
Fukuoka 824-8511
Japan

Description of lift component : Brake monitoring as part of protection against unintended car movement.
Type : Yaskawa, CIMR-LCxAxxxxxxx - 910x
Laboratory : -
Address of examined lift : -
Date / data of examination : June 2013
Examination performed by : A. van den Burg

2. Description lift component

The brake monitoring described in this report shall be used in combination with a suitable detection system and a suitable brake to build an unintended car movement protection for lifts.

The monitoring function that is integrated in the CIMR-LCxAxxxxxxx - 910x frequency converter becomes effective after parameter S6-17 is set to 1.

Two inputs can be programmed to monitor the correct opening and closing of brakes, it can be done with both normally closed or both normally open contacts.

The activated system will stop the lift when at least one programmed brake monitoring inputs detects one of the following situations:

- When the brake monitoring signal changes status for a time period longer than set with parameter "S6-06" during a trip (Default 500 ms, range 0-60 sec.) (This function is optional).
- When the brake monitoring signal does not change status within a time period set with parameter "S6-05" after the brake is ordered to open during a trip (Default 500 ms, range 0-10 sec.).
- When the brake monitoring signal does not change status within a time period set with parameter "S6-05" after the brake is ordered to close after a trip (Default 500 ms, range 0-10 sec.).

After detection of brake malfunction, the lift remains out of service, also after switching off- and on the supply power or using the "reset" button.

Resetting of the system is only possible by setting the parameter "S6-18 = 1".

Technical data of the inputs

Voltage : +24 VDC
Switching level low/high : typ. 11.85 VDC
Input current at 24 V : typ. 12.5 mA

The examination covered a check whether compliance with the Lift Directive 95/16/EC is met. The model is examined based on the Standard EN 81-1:1998+A3:2009 Issues not covered by or not complying these Standards are directly related to the essential requirements of the Lift Directive.

The examination included:

- Examination of the technical file Software Functional Specification.docx 13-mar-2013, Rev. 1, 9-april-13
- Brake Status Monitor Operation Manual.

3. Results

After the final examination, the technical file was found in accordance with the requirements.

4. Conditions

On the type-examination certificate the following conditions apply:

Before taking the lift into service and after each change in the software of the Yaskawa, CIMR-LCxxxxxx - g10x the proper functioning of the brake monitoring must be checked. The checking shall be done by disconnecting and short circuiting the brake monitoring switches one by one.

Each time after a command is given, the manipulation shall be detected by the system and a reset shall be necessary to bring the lift back into operation.

5. Conclusions

Based upon the results of the type-examination Liftinstituut B.V. issues a type-examination certificate.

The type-examination certificate is only valid for products which are in conformity with the same specifications as the type certified product. Products deviating of these specifications need additional examination by Liftinstituut B.V. in order to determine whether a new type-examination certificate is necessary. Additional examination shall be requested by the certificate holder.

The type-examination certificate is issued based on the requirements that are valid at the date of issue. The manufacturer shall request from Liftinstituut B.V. the review of the validity of the type-examination certificate, taking into account the changes in the requirements or changes in the state of the art of the product, every 5 years.

Prepared by:

Certification decision by:

A. van den Burg

A. van den Burg
Senior Specialist
Liftinstituut B.V.

Annex 1 : Overview of previous revisions of certificate(s) and report(s)

REVISIONS OF CERTIFICATE

Rev.:	Date	Summary of revision
-	June 25, 2013	Original
1	September 10, 2013	Product name changed

REVISIONS OF REPORT, BELONGING TO THE CERTIFICATE

Rev.:	Date	Summary of revision
-	June 25, 2013	Original
1	September 10, 2013	Product name changed