User Manual for MCTC-SCB-A1 NICE1000+

EN81-1-A3 compliant door bridging safety circuit during relevelling of the lift and/ or advanced door opening, including detection of unintended car movement (UCM-UCMP)

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LIFTINSTITUUT

TYPE EXAMINATION CERTIFICATE

Issued by Liftinstituut B.V.

Certificate no.	: NL16-400-1002-209-01	Revision no.: 1
Description of the product	: PCB for bridging the door safety circuit during (re-) levelling of the lift and/or advanced door opening, including detection of unintended movement of the car (UCM).	
Trademark, type	: Suzhou Inovance Technology, SCB MCTC-SCB-A1 Ver:B00 1625	
Name and address of the certificate holder	: Suzhou Monarch Control Technology Co. Ltd. No.16, Youxiang Road, Yuexi Town, Wuzhong District, Suzhou 215104, P.R.China	
Certificate issued on the following requirements	: EN81-1:1998 + A3:2009 art. 9.11.7, 14.1.1, 14.1.2.1.3, annex F.8 & H. EN 81-2:1998 + A3:2009 art. 9.13.7, 14.1.1, 14.1.2.1.3, annex F.8 & H.	
Name and address of the manufacturer	: Suzhou Inovance Technology Co., Ltd. No.16, Youxiang Road, Yuexi Town, Wuzhong District, Suzhou 215104, P.R.China	
Test laboratory	: None	
Date and number of the laboratory report	: None	
Date of type-examination	: June 2015 - August 2016, August 2017	
Additional document with this certificate	: Annex belonging to the type examination certificate no.: NL16-400-1002-209-01REV.1	
Additional remarks	: The printed circuit board is not subjected to the laboratory tests according to annex F.6 of EN 81-1/2 + A3	
	Key parameters for detecting UCM	
	Detection distance (variable) point	: FL magnets switching
	Max. response time	: 9 ms
	Max. response time incl. contactors	: 30 ms
	Speed and distance travelled	: to be calculated
Conclusion	: The printed circuit board meets the requirements referred to in this certificate taking into account any additional remarks mentioned above.	

Amsterdam

Date : 03-08-2017
Valid until : 03-08-2022

ing. J.L. van Vliet
Managing Director

Certification decision by

In order to ensure safety and make the lift more efficient, also rich the family members of NICE series, we decide to develop the safety device-MCTC-SCB-A1 as an essential accessory for NICE integrate controller.

1. Overview

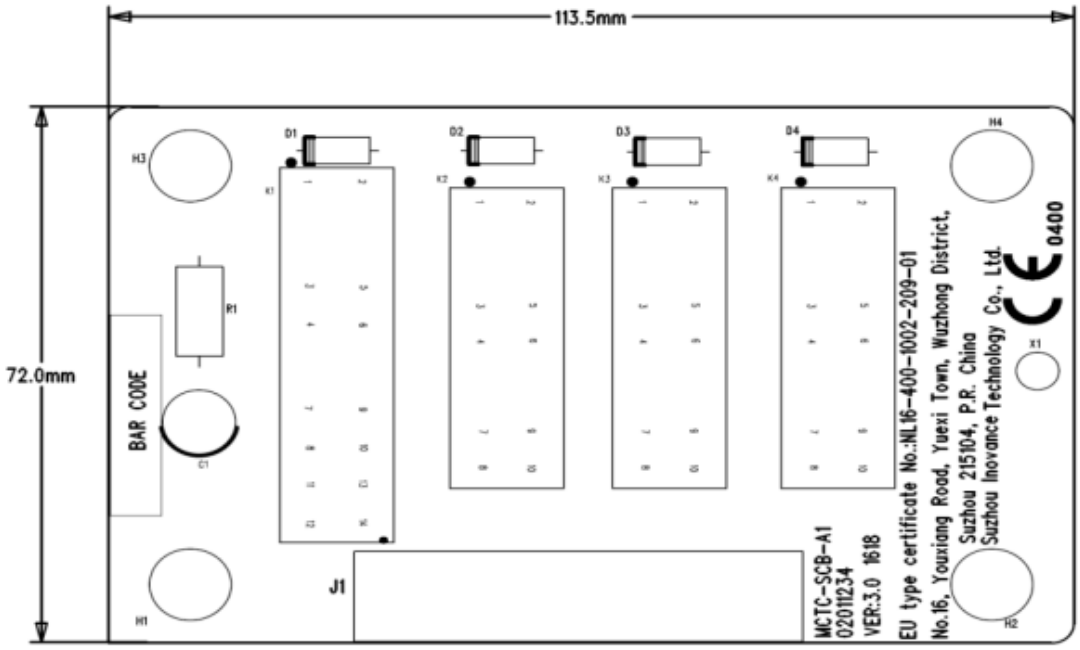
MCTC-SCB-A1 is a device which helps to execute re-levelling operation, pre-open door and protect unintended car movement-UCMP.

The Hoisting rope stretch and shrink may cause the car sill out of the landing sill when lift stops at level, which will bring incontinences for passengers and carrying goods. Therefore, the lift should be equipped with MCTC-SCB-A1 to operate the car to meet the landing sill in a slow speed with the door open. Meanwhile, the lift equipped with MCTC-SCB-A1 will work in a more efficient way of pre-opening door when it is close to stop.

Moreover, MCTC-SCB-A1 will help to stop the lift within the distance when there is unintended car movement.

2. Specification

2.1 Mounting Dimension:



2.2 Board Appearance:

2.3 Terminal Configuration:

Terminal	Label	Definition
1	24V	External 24Vdc
2	COM	External 0Vdc
3	FL1	Re-levelling signal1
4	FL2	Re-levelling signal2
5	SY	the command of shorting door lock circuit
6	SX1	Output of door zone signal from MCB
7	SX2	Feedback of shorting door lock circuit command
8		Not Used
9	SO1	Output to short door lock circuit
10	SO2	Output to short door lock circuit

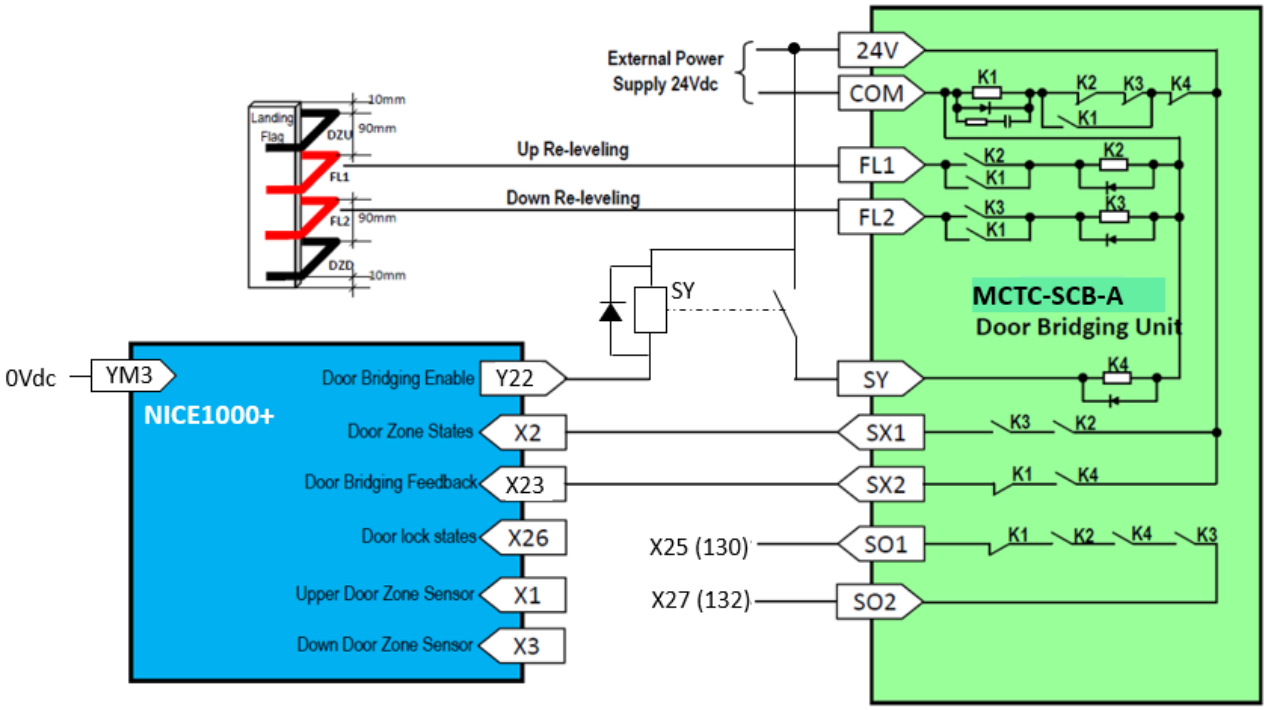
2.4 Component List:

Components	Qty	Model	Manufacturer	Standard Compliance
Safety Relay	3	RF1V-3A1B-D24	IDEC	• EN61810-1 • EN50205 • UL508 • CSA C22.2 No.14
		G7SA-3A1B	OMRON	
Safety Relay	1	RF1V-5A1B-D24	IDEC	• EN61810-1 • EN50205 • UL508 • CSA C22.2 No.14
		G7SA-4A2B	OMRON	
10 Pins Terminal	1	2EDGRC50810P1423H	DEGSON	• UL 1059 • CSA C22.2 NO.158
		F85-7-508-10P	WELINK	
		TP508H-00V-10P	SCED	

2.5 Technical specification:

Environment	Installation area	Indoors
	Surrounding Area	Install the device in an area free from: Direct sunlight Dust and oil mist Harmful gases and liquids Combustible materials chlorides Oil, water or other foreign material
	Altitude	Below 1000m
	Ambient temperature	–10°C to 40°C
	Humidity	Maximum relative humidity 95%, non-condensing
	vibration	Maximum 5.9m/s2
	Storage temperature	–20°C to 60°C
	IP class	IP20

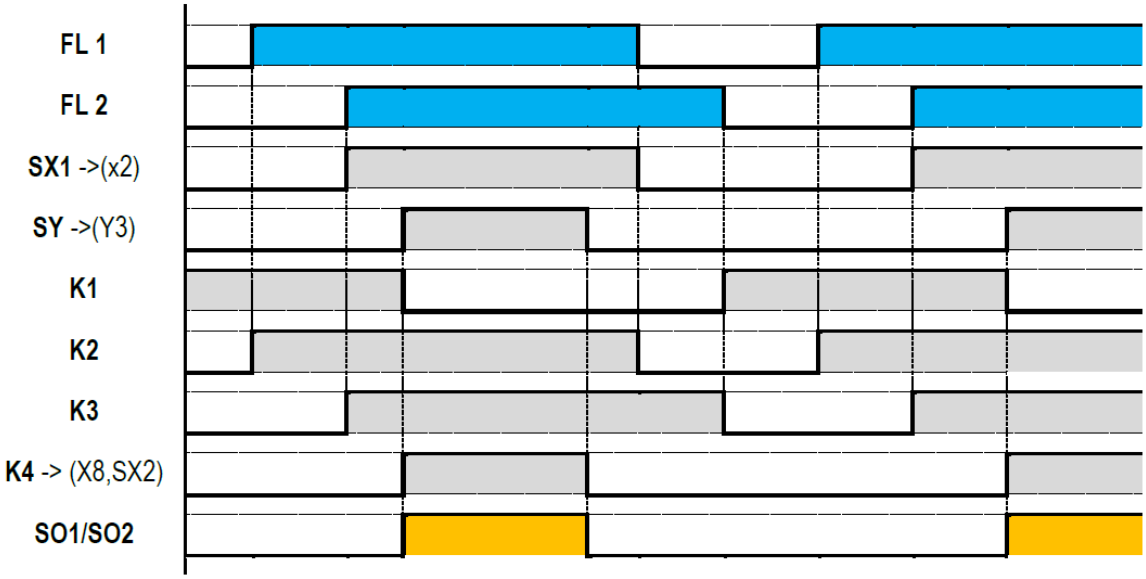
2.6 Electrical Drawing:



Note: If **X1** is low in door-zone > permanent error **"22"**, out of operation
If **X3** is low in door-zone> permanent error **"47"**, out of operation

3. Control logical timing diagram

The below timing diagram shows how the device works. The high-level voltage means the signal is enabled.



More description about the timing diagram:

Upon the power is supplied, the relay **K1** will act.

Then the **FL1** effectively on triggers the relay **K2** consequently.

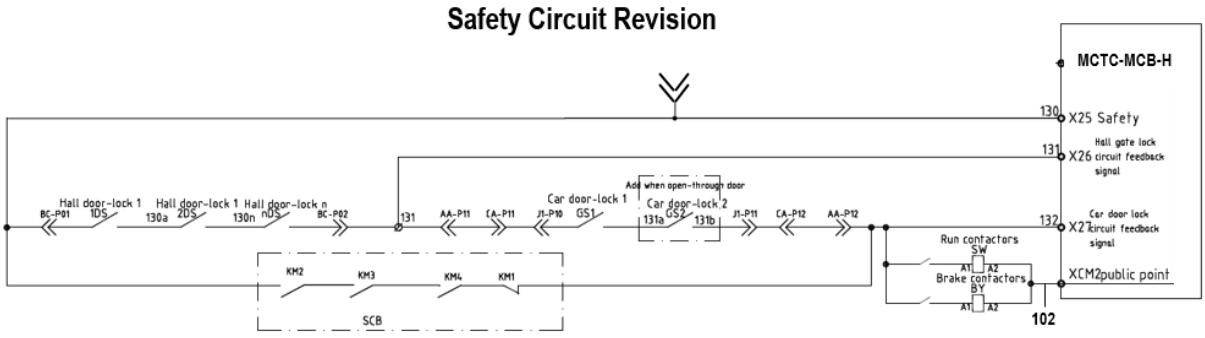
Also, the **FL2** effectively on triggers the relay **K3** consequently.

Meanwhile, the door zone signal-**SX1** (X2) will be active as a result.

And NICE integrated controller will give output to **Y22** (SY) upon it detects the **SX1** signal.
And MCTC-SCB-A1 will give a feedback output-**SX2** (X23) to NICE controller since **K4** is active.

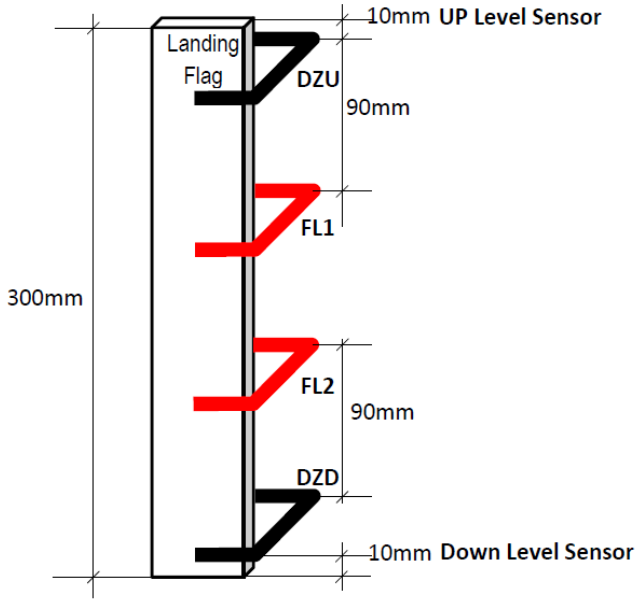
When **K2**, **K3** and **K4** are active simultaneously, the device will short the door lock circuit to pre-open the door or re-levelling operation.

After the pre-opening/re-levelling operation is completed and the lift stops at level, NICE integrated controller will cut the output of **Y22** (SY) which will cause the device stop working by cut the output of **SO1** and **SO2**.



4. Installation of Re-levelling sensors:

Total 4 levelling sensors must be installed when the device-MCTC-SCB-A1 is used for re-levelling sensors and pre-opening of door. There is up level sensor, up re-levelling sensor, down re-levelling sensor and down levelling sensor which must be installed in consequence.



4.1 Parameters setting

Application sample:

4 levelling sensors are used including up levelling sensor, up re-levelling sensor, down re-levelling sensor and down levelling sensor.

Connect the levelling signals to **X1** and **X3** of the NICE3000new, upper re-levelling signal to **FL1** and lower re-levelling signal to **FL2** in MCTC-SCB-A1.

Ensure that all sensors are all normal open (NO) types. If they are normal closed (NC) type, please use auxiliary relay to convert them to NO types.

When the elevator runs up, lift will detect the upper levelling signal, **FL1** and **FL2** consequently to execute pre-opening operation.

Same case happens for the down running.

Parameter revision	
F5-01=001	F5-21=105
F5-02=003	F5-23=008
F5-03=002	F7-22=27
F5-20=104	FE-13, Bit 02=1

5. UCM system certification operating instruction

It says lifts shall be provided with a means to stop unintended car movement away from the landing with the landing door not in the locked position and the car door not in the closed position.

When intended car movement happens with door open, the safety device will act to prevent the movement immediately.

When the lift moves within levelling zone, MCTC-SCB-A1 will short the door safety circuit. At this case, re-opening of door and re-levelling function will act instead.

When the car locates out of levelling zone, MCTC-SCB-A1 will not short the door safety circuit. If car door open and safety door circuit is cut off, UCM will act. In this case, the lift brake will act to stop the lift.

Here provides an operation measurement to certify MCTC-SCB-A1 in compliance to the requirement.

Input an air break switch to door lock safety circuit in series, it should be normal close.
Ensure the lift can run normally.

Cut the air circuit breaker when lift goes over the platform. Measure the distance away from the landing.

The movement distance must meet the requirement.

Risk Analysis

1.	**FL 1** permanent high or welded K2	**K4** becomes high > **K1** off and cannot pick up > **K2** and **K3** cannot pick up	**SX1** fault
2.	**FL 1** permanent off (or K2 off)	**K2** cannot pick up, permanent off	**SX1** fault
3.	**FL 2** permanent high or welded K3	**K4** becomes high > **K1** off and cannot pick up > K2 and **K3** cannot pick up	**SX1** fault
4.	**FL 2** permanent off (or K3 off)	**K3** cannot pick up, permanent off	**SX1** fault
5.	**K1** welded	Monitored at **SX2**	**SX2** fault
6.	**K1** permanent off	**K2** and **K3** cannot pick up >	**SX1** fault
7.	**K4** is welded	**K1** stays off > **K2** and **K2** cannot pick up	**SX1** fault
8.	**K4** permanent off	**K1** stays high >	**SX2** fault