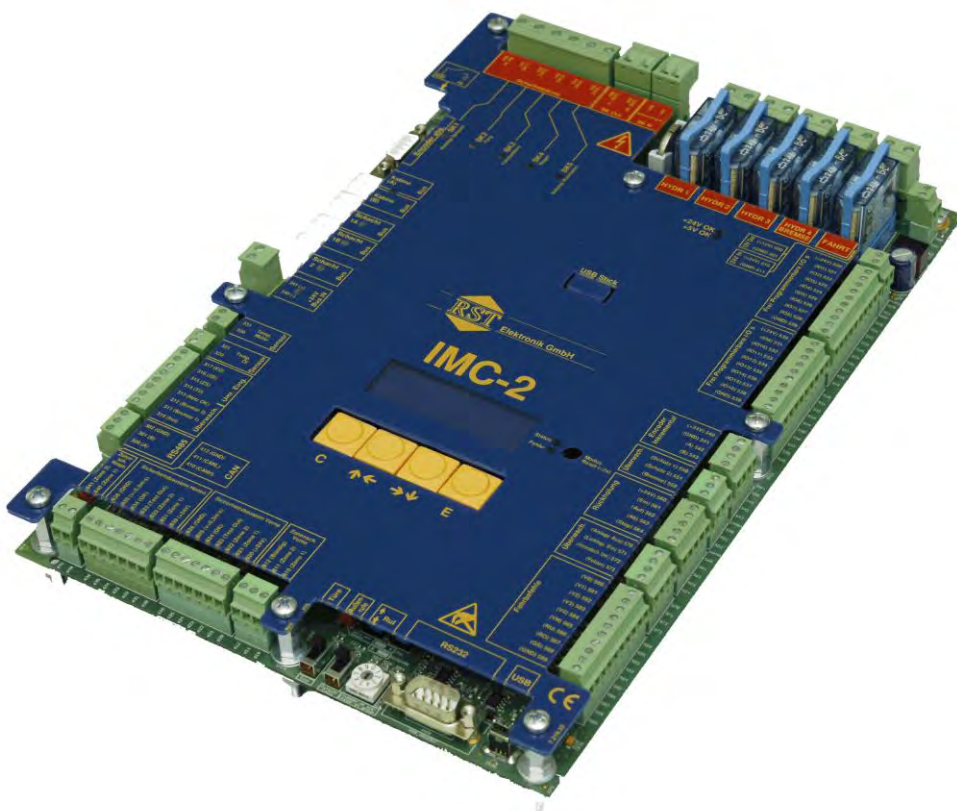


IMC-2

Elevator Controller

Manual





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1 General

1.1 Information about this manual

This assembly manual describes a recommended assembly method which has been implemented successfully many times. However, RST Elektronik does not guarantee that this assembly variant can also be applied to other lift plants. The Customer alone shall be responsible for complying with the local regulations and adjusting the special circuitry features of each lift installation to the relevant technical requirements. RST Elektronik shall not be held responsible for any loss and/or damage resulting from the Customer's negligence during the execution of the assembly. This shall apply in particular to any non-compliance with the Assembly and Commissioning Instructions/Manuals supplied with our products.

Before starting the work, read these instructions carefully. Compliance with all safety instructions contained in this manual is a prerequisite for safe working.

In addition to this manual, the applicable local accident prevention and safety regulations must be complied with.

1.2 Co-applicable documents

In addition to this manual, the following documents shall also be complied with:

“IMC-2 Assembly and Commissioning Instructions” (RST-document 9.627.xx)

1.3 Signs and symbols



Dangerous electric voltage



General hazard area

Activities where various causes might result in personal damage.



Suspended load

Activities involving the risk of being injured by loads falling down.



Danger of falling

Activities involving the risk of falling down.



Crushing hazard



General information

2 General safety regulations

This chapter summarizes all important safety regulations and instructions. These safety regulations must always be followed when working on the plant.

Anybody carrying out assembly and commissioning work on the IMC-2 controller must read this chapter and implement its instructions in practice.

2.1 Requirements to be met by the assembly personnel

- Assembly personnel must:
- be 18 years of age (exception: trainees (min. 16 years of age) who are permanently supervised by a qualified trainer).
- be capable of providing first aid,
- know and implement the fire protection and explosion protection directives applying to the relevant work area,
- know, avoid/prevent and take action against all hazards involved in the work in the shaft and the equipment rooms,
- be able to identify and repair all irregularities and faults during assembly and operation of a lift plant,
- know and apply the technical basics of the function and operating conditions of electrical controls and drive systems.

All installation and commissioning work on the electrical components of the IMC2 controller shall be carried out by or supervised by a qualified electrician.

In Germany, a qualified electrician is a person “who, based on his/her technical qualification, know-how, experience and familiarity with the applicable regulations, can assess the work to be performed and identify potential hazards” (BGV A3).

2.2 Hazards

Hazard to persons

The following shall generally apply to any work on the plant:



Life hazard. Do not touch live components when working on electrical equipment.

- Before starting to work, verify that the equipment is deenergized.
- Only carry out assembly work on electrical equipment/components when it/they is/are switched off and deenergized.
- Always use tools with protective insulation when working on electrical equipment.



Risk of injury when lifting and handling the electrical cabinet, or when it falls down or over.

- Always use appropriate means (lift truck, hoist, etc.) when lifting and handling the electrical cabinet.
- The personnel must have been trained in handling such tools as well as the applicable accident prevention regulations.



Parts falling down or projecting into the shaft. Serious injuries or death may result.

- Lock the shaft access points.
- Before starting the assembly work, remove all foreign objects and unused assembly aids from the shaft.



Electric shock, leaking gas or water from supply lines damaged by drilling. Serious injuries or death may result.

- Before starting the assembly work, make sure there are no supply lines at the place of assembly.



Danger of falling! Assembly personnel and unauthorized persons may fall into the shaft. Serious injuries or death may result.

- Lock the shaft access points.
- When working on or in the shaft, always use fall protection equipment (e.g. safety harness, scaffolds, etc.).



Crushing hazard by wanted or unwanted cabin movements. Serious injuries or death may result.

- Lock the shaft access points.
- Before starting the work, make sure there are no persons in the shaft or near moving drive components.
- Make sure the controller cannot be operated by unauthorized persons

2.3 Safety regulations

General

- During assembly and commissioning of the lift, the lift manufacturer's instructions and the instructions contained in this manual must be complied with.
- During assembly and commissioning, the shaft must be protected against unauthorized access.
- Assemblies, equipment and cables must be assembled and fixed in a safe and durable manner.
- Loads must be handled using appropriate means (e.g. lift truck, hoists, etc.).
- Do not keep any sharp or pointed tools or other dangerous objects in your pockets/clothes, unless appropriate safety precautions have been taken to prevent injury.
- Use of alcohol and drugs before and during assembly and commissioning is forbidden.
-

Documentation

- One copy of the assembly and commissioning manual must be available to the assembler at the time of assembly and commissioning of the IMC2 controller and its components.
- One copy of the assembly and commissioning manual must be kept, together with the circuit diagrams, in the electrical cabinet at all times after completion of the assembly work.
- The supplied circuit diagrams of the IMC2 controller shall be binding. Any modifications may only be made in consultation with RST Elektronik GmbH and must be documented in writing in the plant.
- The factory inspection/test reports of the IMC2 controller will be kept at RST-Elektronik GmbH.

Electrical work

- The regulations governing electrical installations (VDE 0100), as well as any special regulations of local utilities shall be complied with.
- The defined spacing between the individual electrical assemblies must be kept.
- All assembly work shall be executed with the equipment shut down and deenergized.
- Cables and lines must be provided with sufficient strain relief.
- Separate neutral and PE conductors shall be installed.
- Clockwise field of rotation must be present at the electrical cabinet.

Working in the shaft

- When work is carried out in the shaft, uninterrupted communication between the supervisor at the IMC2 controller in the motor room and the workers must be guaranteed.
- Components in the shaft must be arranged or secured such that persons staying in the shaft in order to perform inspection, maintenance or repair work are not endangered.
- The permissible load of the lift plant must not be exceeded.
- The defined overtravel distances of the emergency limit switches based on travel speed must be kept.
- The emergency limit devices must not be actuated in normal operation.
- Each time before starting the work, proper function of all emergency stop equipment and brake systems must be checked and all shaft access points must be locked.
- Performance of assembly work or operation shall not be permitted if other persons are endangered.
- Workers must use appropriate fall protection equipment.
- When the work is interrupted, the cabin must be moved to the bottom floor, the controller must be turned off and power supply (e.g. UPS) must be interrupted permanently.

Personal safety equipment of assembly personnel

- Eye protection
- Safety footwear
- Hard hat
- Safety harness
- Clothing suitable for the environmental conditions at the place of assembly
- Jewellery, watches or similar objects must not be worn, use hairnet if applicable.

Handling electronic modules

- Leave electronic module in its original packaging until the time of installation.
- Before opening the original packaging, touch a grounded metal part to discharge any static electricity.

Disposal

- Packaging material must be disposed of in an environmentally compatible manner; recycle paper, plastics, metals, electronic components, etc.

2.4 Service / Disposal

The controller is equipped with two 12 V batteries. We recommend the installation to be completed within 4 months after delivery. If this is not possible, the controller should be stored in an environment where the temperature is between +5° .. +40°C and the humidity is under 90%.

The batteries must be checked at least once a year and replaced after 5 years.
It should be noted that the new batteries are of the same type or have the same characteristics.

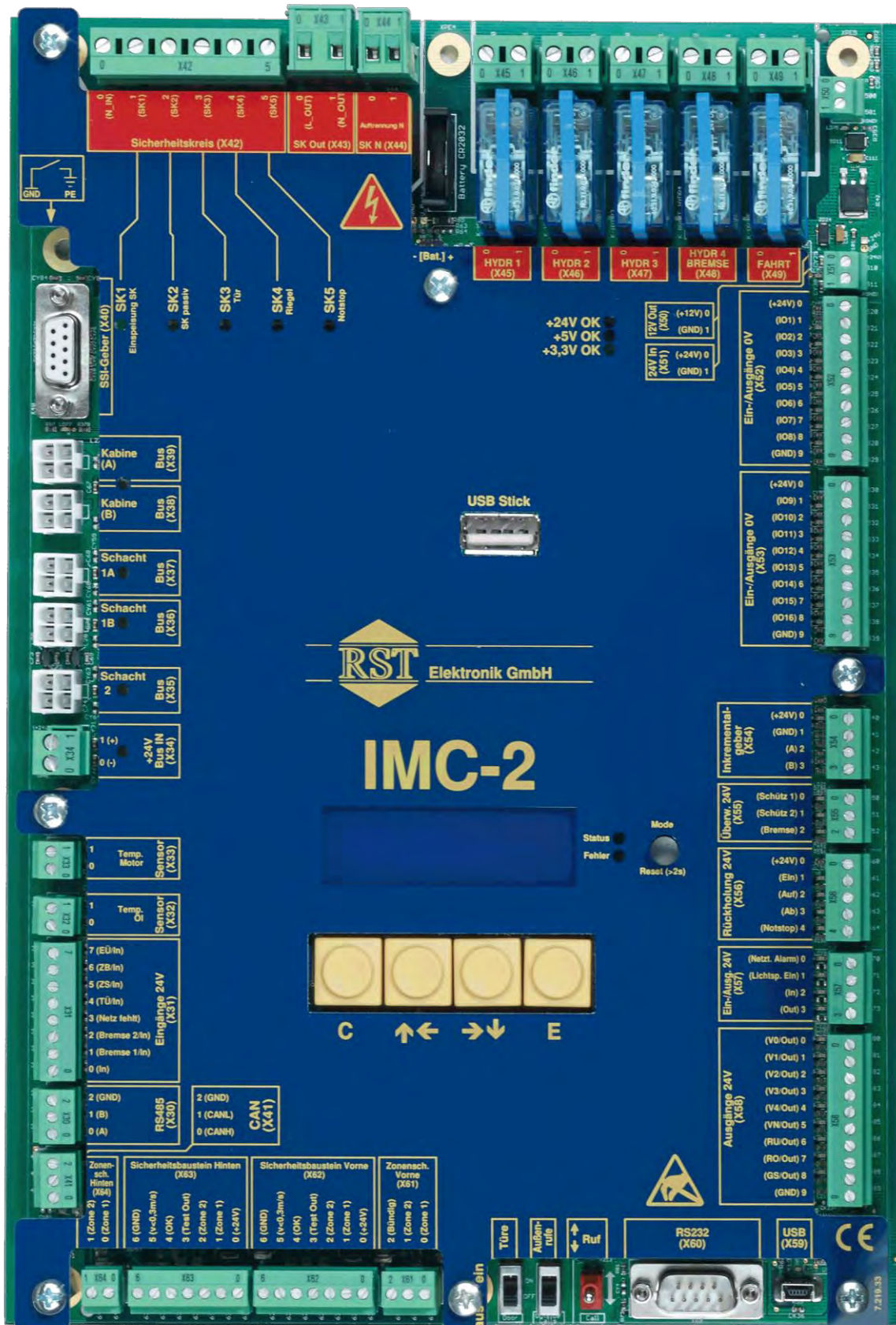


For disposal please keep local regulations in mind.

All package material is to be disposed of in an environmental-friendly manner.

3 Modules

3.1 Main board



3.1.1 General

- Operation of all standard cable and hydraulic lifts.
- 2 separate CAN buses for shaft and cabin
- 1 CAN Open interface
- Groups up to a max. of 4 lifts and 32 floors
- 16 programmable I/Os on the main board, can be expanded to 32
- USB host for data logging and uploading software updates
- LCD display 4x20 characters
- Mini USB and RS232 interface for diagnosis and operation with LiftControl
- RS485 interface

3.1.2 Technical Data

Description	Value
Supply voltage	24 V DC $\pm 10\%$
Current consumption (typ.)	100 mA
Storage temperature	-20°C to $+70^{\circ}\text{C}$
Operating temperature	0°C to $+60^{\circ}\text{C}$
Relative humidity (non-condensing)	5% to 95%
Dimensions (WxHxD) mm	200 x 300 x 45

3.1.3 Jumper

Name	Function
XJ2	EEPROM unlocked: Default setting EEPROM locked: Parameter EEPROM is read-only type.

3.1.4 Special LEDs

All universal inputs/outputs feature LEDs.
With open terminals, the LED may glow slightly.

Name	Colour	State	Description
Status LED	Yellow	flashing	Receiving CAN telegrams
Error LED	Red	lights up	Error active
Error LED	Red	flashing	New error entered in log and not read out yet. Error is no longer active

3.1.5 Operating elements

Name	Description
"Door" slide switch	Switch door on/off
"Call  flip switch	Short actuation: Call to next floor Long actuation: Call to final floor
"Mode/Reset" button	Short actuation: Changeover to VVVF inverter mode Long actuation > 2s: Reset
 button	Select displayed menu item and open submenus; confirm entries and save edited parameters
 button	Leave submenus; cancel changes
 button	Move in menu; increase values
 button	Move in menu; decrease values

3.1.6 List of terminals

Connector/Terminal	Function
X30	RS 485
0	RS485 A
1	RS485 B
2	GND
X31	Inputs 24V, active-high
0	freely programmable
1	freely programmable, standard brake contact 1 24V
2	freely programmable, standard brake contact 2 24V
3	Mains OK 24V
4	freely programmable, standard VVVF inverter T $\ddot{U}$
5	freely programmable, standard VVVF inverter ZS
6	freely programmable, standard VVVF inverter ZB
7	freely programmable, standard VVVF inverter E $\ddot{U}$
X32	Oil temperature
0	Sensor
1	Sensor
X33	Motor temperature
0	Sensor
1	Sensor
X34	Bus supply
0	GND
1	+24V
X35	CAN shaft bus 2
X36	CAN shaft bus 1
X37	CAN shaft bus 1
X38	CAN car bus
X39	CAN car bus

X40	Absolute encoder input (D-SUB 9-pin, female)
1	+24V
2	GND
3	PRESET
4	RICHTUNG
5	n.c.
6	+Data
7	-Data
8	+Clock
9	-Clock
X41	CAN-Open
X42	Safety circuit inputs
0	N (neutral conductor)
1	SK1 230V
2	SK2 230V
3	SK3 230V
4	SK4 230V
5	SK5 230V
X43	Safety circuit outputs
0	L_Out
1	N_Out
X44	Safety circuit separation, neutral
0	N_Out (neutral conductor output)
1	N_In (neutral conductor input)
X45	Hydraulic control 1
0	Potential-free relay contact
1	Potential-free relay contact
X46	Hydraulic control 2
0	Potential-free relay contact
1	Potential-free relay contact
X47	Hydraulic control 3
0	Potential-free relay contact
1	Potential-free relay contact
X48	Hydraulic control 4/brake
0	Potential-free relay contact
1	Potential-free relay contact
X49	Travel
0	Potential-free relay contact
1	Potential-free relay contact
X50	Power supply + 12V (output)
0	+12 V
1	GND
X51	Supply +24V (for electronic equipment)
0	+24V
1	GND

X52	Inputs/outputs 24 V, active-low
0	+24 V
1	freely programmable
2	freely programmable
3	freely programmable
4	freely programmable
5	freely programmable
6	freely programmable
7	freely programmable
8	freely programmable
9	GND
X53	Inputs/outputs 24 V, active-low
0	+24 V
1	freely programmable
2	freely programmable
3	freely programmable
4	freely programmable
5	freely programmable
6	freely programmable
7	freely programmable
8	freely programmable
9	GND
X54	Incremental encoder input
0	+24V encoder supply
1	GND
2	Encoder signal A
3	Encoder signal B
X55	Contactor feedback
0	Travel contactor 1
1	Travel contactor 2
2	Brake contactor
X56	Return mode
0	+24 V
1	Return on
2	Return up
3	Return down
4	Return emergency stop
X57	Inputs 24V, active-high + error output
0	Voltage supply alert
1	Light voltage
2	free
3	Error output
X58	Travel command outputs +24V
0	V0 (creeping speed)
1	V1 (inspection)
2	V2 (intermediate speed)
3	V3 (intermediate speed)
4	V4 (fast journey)
5	VN (readjustment)
6	RU (downward direction)
7	RO (upward direction)
8	GS (controller release)
9	GND

X59	Mini USB standard, 5-pin
X60	RS 232 (D-SUB 9-pin, male)
2	RxD
3	TxD
5	GND
9	+5V
1,4,6,7,8	n.c.
X61	Zone switch, front, and levelling display + 24V
0	Zone switch input 1, front
1	Zone switch input 2, front
2	Levelling display, output
X62	Safety monitoring module, front
0	Power supply +24V
1	Zone switch 1 output
2	Zone switch 2 output
3	Safety monitoring module test output
4	Safety monitoring module OK input
5	Approach threshold $v < 0.3$ m/s output
6	GND
X63	Safety monitoring module, rear
0	Power supply +24V
1	Zone switch 1 output
2	Zone switch 2 output
3	Safety monitoring module test output
4	Safety monitoring module OK input
5	Approach threshold $v < 0.3$ m/s output
6	GND
X64	Zone switch, rear + 24V
0	Zone switch input 1
1	Zone switch input 2

3.2 Cabin control module (KSM)



3.2.1 General

- Operation via car bus
- Interface between IMC-2 main board and cabin
- Communication with main board via CAN-Bus
- Installation in inspection box
- Connection option for absolute encoder
- Monitoring of cabin light
- Freely programmable I/Os and relays
- Emergency call buzzer

3.2.2 Technical Data

Description	Value
Supply voltage	24 V DC $\pm 10\%$
Current consumption (typ.)	40 mA
Storage temperature	-20°C to $+70^{\circ}\text{C}$
Operating temperature	0°C to $+60^{\circ}\text{C}$
Relative humidity (non-condensing)	5% to 95%
Dimensions (WxHxD) mm	429 x 128 x 71

3.2.3 Jumper / rotary encoder switch

Name	Function
Jumper XJ2 <i>Load measurement</i>	<i>On:</i> Enable load measurement info via CAN <i>Off:</i> Disable load measurement info via CAN
Jumper XJ3	Level selection of light barrier inputs X72 Active-high / active-low
Jumper XJ4	Level selection of light barrier inputs X72 Active-high / active-low
Jumper XJ5	Level selection of light barrier inputs X75 Active-high / active-low
Jumper XJ6	Level selection of light barrier inputs X75 Active-high / active-low
Jumper XJ7 <i>Encoder</i>	<i>On:</i> Enable absolute position info via CAN. SSI encoder must be connected to X107. <i>Off:</i> Disable absolute position info via CAN.
Jumper XJ8	<i>0..5V:</i> Load measurement input voltage range (X81,XS1) <i>0..10V:</i> Load measurement input voltage range (X81,XS1)
Jumper XJ9 <i>Light Current</i>	<i>High:</i> Cabin light current wide measurement range (effective value 1.2 A sine) <i>Low:</i> Cabin light current small measurement range (effective value 0.6 A sine) The sensitivity range can be adjusted depending on the light fixture by means of XJ9. In this way, even partial lighting failure can be detected (e.g. 2 lights out of 4 failed).
Rotary encoder switch <i>S-ADRESS</i>	Setting of node number

3.2.4 Special LEDs

All universal inputs/outputs feature LEDs.
With open terminals, the LED may glow slightly.

Name	Colour	State	Description
LD3 Error	Yellow	flashing	Error has occurred
LD4 Status	Yellow	flashing 0.5Hz flashing 2 Hz	No CAN receive telegram Node receives CAN telegrams
LD1 +24V	Yellow		+24 V board supply voltage
LD2 +5V	Yellow		+5 V board supply voltage

Technical drawing of the rear panel of a Kabinensteuermodul (KSM). The drawing shows the following components and connectors:

- Connectors:** X92, X95, X96, X97, X98, X99, X100, X101, X102, X103, X104, X105, X106, X107, X108, X109, X110, X111, X112, X113, X114, X115, X116, X117, X118, X119, X120, X121, X122, X123, X124, X125, X126, X127, X128, X129, X130, X131, X132, X133, X134, X135, X136, X137, X138, X139, X140, X141, X142, X143, X144, X145, X146, X147, X148, X149, X150, X151, X152, X153, X154, X155, X156, X157, X158, X159, X160, X161, X162, X163, X164, X165, X166, X167, X168, X169, X170, X171, X172, X173, X174, X175, X176, X177, X178, X179, X180, X181, X182, X183, X184, X185, X186, X187, X188, X189, X190, X191, X192, X193, X194, X195, X196, X197, X198, X199, X200, X201, X202, X203, X204, X205, X206, X207, X208, X209, X210, X211, X212, X213, X214, X215, X216, X217, X218, X219, X220, X221, X222, X223, X224, X225, X226, X227, X228, X229, X230, X231, X232, X233, X234, X235, X236, X237, X238, X239, X240, X241, X242, X243, X244, X245, X246, X247, X248, X249, X250, X251, X252, X253, X254, X255, X256, X257, X258, X259, X260, X261, X262, X263, X264, X265, X266, X267, X268, X269, X270, X271, X272, X273, X274, X275, X276, X277, X278, X279, X280, X281, X282, X283, X284, X285, X286, X287, X288, X289, X290, X291, X292, X293, X294, X295, X296, X297, X298, X299, X300, X301, X302, X303, X304, X305, X306, X307, X308, X309, X310, X311, X312, X313, X314, X315, X316, X317, X318, X319, X320, X321, X322, X323, X324, X325, X326, X327, X328, X329, X330, X331, X332, X333, X334, X335, X336, X337, X338, X339, X340, X341, X342, X343, X344, X345, X346, X347, X348, X349, X350, X351, X352, X353, X354, X355, X356, X357, X358, X359, X360, X361, X362, X363, X364, X365, X366, X367, X368, X369, X370, X371, X372, X373, X374, X375, X376, X377, X378, X379, X380, X381, X382, X383, X384, X385, X386, X387, X388, X389, X390, X391, X392, X393, X394, X395, X396, X397, X398, X399, X400, X401, X402, X403, X404, X405, X406, X407, X408, X409, X410, X411, X412, X413, X414, X415, X416, X417, X418, X419, X420, X421, X422, X423, X424, X425, X426, X427, X428, X429, X430, X431, X432, X433, X434, X435, X436, X437, X438, X439, X440, X441, X442, X443, X444, X445, X446, X447, X448, X449, X450, X451, X452, X453, X454, X455, X456, X457, X458, X459, X460, X461, X462, X463, X464, X465, X466, X467, X468, X469, X470, X471, X472, X473, X474, X475, X476, X477, X478, X479, X480, X481, X482, X483, X484, X485, X486, X487, X488, X489, X490, X491, X492, X493, X494, X495, X496, X497, X498, X499, X500, X501, X502, X503, X504, X505, X506, X507, X508, X509, X510, X511, X512, X513, X514, X515, X516, X517, X518, X519, X520, X521, X522, X523, X524, X525, X526, X527, X528, X529, X530, X531, X532, X533, X534, X535, X536, X537, X538, X539, X540, X541, X542, X543, X544, X545, X546, X547, X548, X549, X550, X551, X552, X553, X554, X555, X556, X557, X558, X559, X560, X561, X562, X563, X564, X565, X566, X567, X568, X569, X570, X571, X572, X573, X574, X575, X576, X577, X578, X579, X580, X581, X582, X583, X584, X585, X586, X587, X588, X589, X590, X591, X592, X593, X594, X595, X596, X597, X598, X599, X600, X601, X602, X603, X604, X605, X606, X607, X608, X609, X610, X611, X612, X613, X614, X615, X616, X617, X618, X619, X620, X621, X622, X623, X624, X625, X626, X627, X628, X629, X630, X631, X632, X633, X634, X635, X636, X637, X638, X639, X640, X641, X642, X643, X644, X645, X646, X647, X648, X649, X650, X651, X652, X653, X654, X655, X656, X657, X658, X659, X660, X661, X662, X663, X664, X665, X666, X667, X668, X669, X670, X671, X672, X673, X674, X675, X676, X677, X678, X679, X680, X681, X682, X683, X684, X685, X686, X687, X688, X689, X690, X691, X692, X693, X694, X695, X696, X697, X698, X699, X700, X701, X702, X703, X704, X705, X706, X707, X708, X709, X710, X711, X712, X713, X714, X715, X716, X717, X718, X719, X720, X721, X722, X723, X724, X725, X726, X727, X728, X729, X730, X731, X732, X733, X734, X735, X736, X737, X738, X739, X740, X741, X742, X743, X744, X745, X746, X747, X748, X749, X750, X751, X752, X753, X754, X755, X756, X757, X758, X759, X760, X761, X762, X763, X764, X765, X766, X767, X768, X769, X770, X771, X772, X773, X774, X775, X776, X777, X778, X779, X780, X781, X782, X783, X784, X785, X786, X787, X788, X789, X790, X791, X792, X793, X794, X795, X796, X797, X798, X799, X800, X801, X802, X803, X804, X805, X806, X807, X808, X809, X810, X811, X812, X813, X814, X815, X816, X817, X818, X819, X820, X821, X822, X823, X824, X825, X826, X827, X828, X829, X830, X831, X832, X833, X834, X835, X836, X837, X838, X839, X840, X841, X842, X843, X844, X845, X846, X847, X848, X849, X850, X851, X852, X853, X854, X855, X856, X857, X858, X859, X860, X861, X862, X863, X864, X865, X866, X867, X868, X869, X870, X871, X872, X873, X874, X875, X876, X877, X878, X879, X880, X881, X882, X883, X884, X885, X886, X887, X888, X889, X890, X891, X892, X893, X894, X895, X896, X897, X898, X899

3.2.6 List of terminals

Connector/Terminal	Function
X68	
0	+24V
1	GND
2	Relay C (common terminal)
3	Open door relay
4	Close door relay
5	Shoving relay
6	Open door input (24V, neg. switching)
7	Closed door input (24V, neg. switching)
8	Reverse input (24V, neg. switching)
X69	
0	GND
1	GND
2	GND
3	GND
X70	+24V
0	+24V
1	+24V
2	+24V
3	+24V
4	+24V supply for light barrier front/rear (X71,X72,X74,X75)
X71	Light barrier 1, transmitter
0	+24V (voltage from X70.4)
1	GND
2	Data Tx/Rx (connection to X72.4)
X72	Light barrier 1, receiver
0	+24V (voltage from X70.4)
1	GND
2	GND
3	Signal In
4	Data Tx/Rx (connection to X71.2)
X73	
0	+24V (voltage from X70.4)
1	GND
2	Relay K4-K7 C (common terminal)
3	Relay K4 NO
4	Relay K5 NO
5	Relay K7 NO
6	Input 1 (24V, neg. switching)
7	Input 2 (24V, neg. switching)
8	Input 3 (24V, neg. switching)
X74	Light barrier 2, transmitter
0	+24V (voltage from X70.4)
1	GND
2	Data Tx/Rx (connection to X75.4)



X75	
0	+24V
1	GND
2	GND
3	Signal In
4	Data Tx/Rx (connection to X74.2)
X76	Universal inputs/outputs
0	+24V
1	I/O 24
2	I/O 32
3	GND
X77	Shaft light switch
0	Input shaft light switch
1	GND shaft light switch
X78	Inspection
0	GND Inspection
1	Input Inspection emergency stop (24V, neg. switching)
2	Input Inspection fast (24V, neg. switching)
3	Input Inspection down (24V, neg. switching)
4	Input Inspection up (24V, neg. switching)
5	Input Inspection on (24V, neg. switching)
X79	Inspection fast
0	Input Inspection fast (24V, neg. switching)
1	GND Inspection
X80	Cabin emergency call relay
0	Relay contact NC (normally closed)
1	Relay contact C (changeover)
2	Relay contact NO (normally open)
X81	Load measurement
0	Signal
1	AGND (analogue GND)
X82	Suspended cables power supply / zones
0	+24V battery
1	Emergency call
2	Zone switch 1
3	Zone switch 2
4	+24V from main board
5	+24V from main board
6	GND from main board
7	GND from main board
X83	Wiring to internal panel module
0	+24V battery
1	Emergency call button
2	GND
3	Intercom wire 1A
4	Intercom wire 1B
5	Intercom wire 2A
6	Intercom wire 2B
7	Intercom wire 3A
8	Intercom wire 3B

X84	Zone switch 1/2
0	+ 24V battery
1	Zone switch 1
2	Zone switch 2
3	GND
X85	Cabin emergency call button
0	+24V battery
1	Emergency call button
X86	Suspended cables data
0	Intercom wire 1A
1	Intercom wire 1B
2	Intercom wire 2A
3	Intercom wire 2B
4	Intercom wire 3A
5	Intercom wire 3B
6	CANL
7	CANH
X87	Intercom on cabin
0	Intercom wire 1A
1	Intercom wire 1B
2	Intercom wire 2A
3	Intercom wire 2B
4	Intercom wire 3A
5	Intercom wire 3B
X88 	Cabin lighting supply
0	PE
1	N
2	L
X89 	Outlet supply+inspection box grounding
0	PE (inspection box grounding)
1	PE (inspection box grounding)
2	N
3	L
X90 	Reserve
0	Reserve (permanent connection to X92.0)
1	N
X91 	Door controller supply / three-phase door
0	L1
1	N
2	L2
3	PE
4	L3
X92 	Suspended cables L1-L3
0	Reserve (permanent connection to X90.0)
1	L cabin lighting, outlet + fan
2	N cabin lighting, outlet + fan
3	L1 door
4	N door
5	L2 door

6	PE
7	L3 door
X93	Active-high inputs
0	Input (active-high)
1	Input (active-high)
2	Input (active-high)
3	Input (active-high)
X94	Relay for +24 V signals
0	+24V
1	GND
2	Relay K3+K4 C (common terminal)
3	Relay K3 NO (normally open)
4	Relay K6 NO (normally open)
X95 	Fan supply
0	PE
1	N
2	L
X96 	Relay for +24 V or 230V signals
0	Relay K1 NO (normally open contact)
1	Relay K1 C (changeover contact)
2	Relay K1 NC (normally closed contact)
X97 	Relay for +24 V or 230V signals
0	Relay K2 NO (normally open contact)
1	Relay K2 C (changeover contact)
2	Relay K2 NC (normally closed contact)
X98 	Safety circuit
0	Safety circuit, cabin limit switch
1	Safety circuit, cabin limit switch
X99	Inspection
0	Input Inspection emergency stop (24V, neg. switching)
1	GND Inspection
X100 	Safety circuit
0	Safety circuit, catch contact
1	Safety circuit, catch contact
X101 	Safety circuit
0	Safety circuit, cabin door front limit switch
1	Safety circuit, cabin door front limit switch
X102 	Safety circuit
0	Safety circuit, cabin door rear limit switch
1	Safety circuit, cabin door rear limit switch
X103 	Safety circuit
0	Safety circuit, external emergency stop
1	Safety circuit, external emergency stop

X104 	Safety circuit
0	Safety circuit, safety switch
1	Safety circuit, safety switch
2	Safety circuit, safety switch
3	Safety circuit, safety switch
4	Safety circuit, safety switch
5	Safety circuit, safety switch
6	Safety circuit, safety switch
7	Safety circuit, safety switch
X105 	Safety circuit, suspended cables
0	Start of cabin safety circuit
1	End, limit switch
2	Door tapping
3	End, cabin door
4	To emergency stop switch
5	Return / bypass limit switch
6	To inspection switch
7	No inspection
X106 	Safety circuit
0	Safety circuit, inspection + emergency stop
1	Safety circuit, inspection + emergency stop
2	Safety circuit, inspection + emergency stop
3	Safety circuit, inspection + emergency stop
4	Safety circuit, inspection + emergency stop
5	Safety circuit, inspection + emergency stop
6	Safety circuit, inspection + emergency stop
X107	Absolute encoder input (D-SUB 9-pin, female)
1	+24V
2	GND
3	PRESET
4	RICHTUNG
5	n.c.
6	+Data
7	-Data
8	+Clock
9	-Clock
X108	CAN
X109	CAN
XS1	RESERVED
XS2	RESERVED
XS3	RESERVED

3.2.7 Safety information referring wiring of the KSM



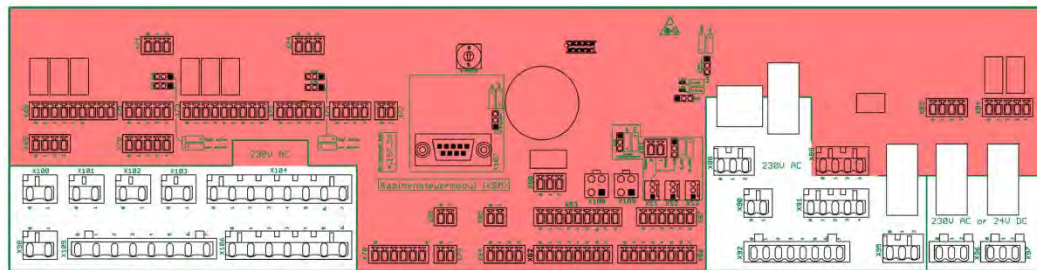
Der rot markierte Bereich enthält Kleinspannung von maximal 24V DC. Zur Einhaltung der sicheren Trennung gegen elektrischen Schlag ist folgendes zu beachten:

- * Litzen mit Netzpotential dürfen die Platine / die Bauteile in diesem Bereich nicht berühren!
- * Netzpotential führende Litzen sind mechanisch zu fixieren (z.B. mit Kabelbindern), damit diese beim Lösen den markierten Bereich nicht berühren!
- * Abstand einfach isolierte Litze: mind. 3 mm
- * Abstand unisolierte Litzenenden: mind. 5,5 mm



The area marked in red contains low voltage of 24V DC maximum. To maintain the safe separation against electric shock, note the following:

- * Stranded wires with mains potential must not touch the PCB / the components in this area!
- * Mains potential leading stranded wires have to be mechanically fixed (eg with cable ties) so that they do not touch the marked area should the wire come out!
- * Distance single insulated wires: minimum 3 mm
- * Distance uninsulated wire ends: minimum 5.5 mm



- 1) Abstand isolierte Litze < 3 mm zur Platine
- 2) Litzen nicht fixiert

- 1) Distance single insulated wires < 3 mm to the PCB
- 2) wires not fixed



Technische Änderungen vorbehalten
Specification subject to change without notice

KSM		DIN ISO 2768 m	Maßstab 1:1.5
		Bearb. Gepr. Norm	Zchngs.-Nr.: 5.785.31
		Datum 12.05.15	Name Müller
		Sicherheitshinweise Safety Information	
31 Index Rev.: Änd.Nr.: Freigabe Name:		 RST Elektronik GmbH	
		Datel: 5-785-31.skd	Blatt 1 2 Bl.

3.3 Universal Bus Module (UBM)



3.3.1 General

- Operation via shaft or car bus
- Communication with main board via CAN-Bus
- Installation in external panel, for example
- 8 freely programmable I/Os, can be expanded to 32 I/Os using port expander module

3.3.2 Technical Data

Description	Value
Supply voltage	24 V DC $\pm 10\%$
Current consumption (typ.)	20 mA
Storage temperature	-20°C to $+70^{\circ}\text{C}$
Operating temperature	0°C to $+60^{\circ}\text{C}$
Relative humidity (non-condensing)	5% to 95%
Dimensions (WxHxD) mm	58 x 56 x 16

3.3.3 Jumper / rotary encoder switch

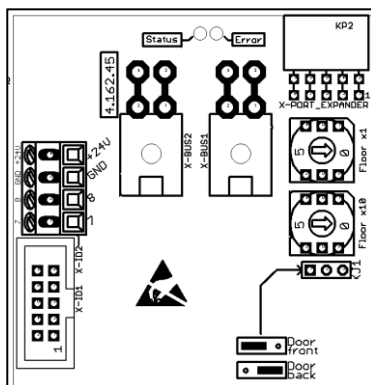
Name	Function
Jumper XJ1	Selection, front/rear door side
Rotary encoder switch S_ADRESS_1	Setting of node number "unit position"
Rotary encoder switch S_ADRESS_10	Setting of node number "ten's position"

3.3.4 Special LEDs

All universal inputs/outputs feature LEDs.
With open terminals, the LED may glow slightly.

Name	Colour	State	Description
Error	Yellow	flashing	Error has occurred
Status	Yellow	flashing 0.5Hz flashing 2 Hz	No CAN receive telegram Node receives CAN telegrams

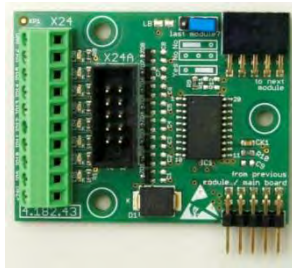
3.3.5 Location of terminals / Layout



3.3.6 List of terminals

Connector/Terminal	Function
XIO1	Universal inputs/outputs (10-pin strip)
1	I/O1 (24V, neg. switching)
2	I/O2 (24V, neg. switching)
3	I/O3 (24V, neg. switching)
4	I/O4 (24V, neg. switching)
5	I/O5 (24V, neg. switching)
6	I/O6 (24V, neg. switching)
7	I/O7 (24V, neg. switching)
8	I/O8 (24V, neg. switching)
9	GND
10	+24V
XIO2	Universal inputs/outputs (4-pin screw terminal)
7	I/O7 (24V, neg. switching)
8	I/O8 (24V, neg. switching)
GND	GND
+24 V	+24V
X-BUS1	CAN
X-BUS2	CAN

3.4 Port Expander Module (PEM)



3.4.1 General

- Adding I/Os to the universal module
- Max. 3 pcs. cascable
- 8 freely programmable I/Os

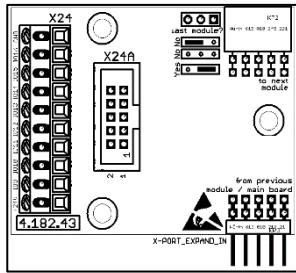
3.4.2 Technical Data

Description	Value
Supply voltage	24 V DC $\pm 10\%$
Current consumption (typ.)	5 mA
Storage temperature	-20°C to $+70^{\circ}\text{C}$
Operating temperature	0°C to $+60^{\circ}\text{C}$
Relative humidity (non-condensing)	5% to 95%
Dimensions (WxHxD) mm	43 x 56 x 13

3.4.3 Jumper

Connector/Terminal	Function
Last module ?	Yes: last port expander module, no other module following No: other module connected

3.4.4 Location of terminals / Layout



3.4.5 List of terminals

Connector/Terminal	Function
X24	Universal inputs/outputs (10-pin screw terminal)
+24 V	Power supply +24 V
IO 9	I/O9 (24V, neg. switching)
IO 10	I/O10 (24V, neg. switching)
IO 11	I/O11 (24V, neg. switching)
IO 12	I/O12 (24V, neg. switching)
IO 13	I/O13 (24V, neg. switching)
IO 14	I/O14 (24V, neg. switching)
IO 15	I/O15 (24V, neg. switching)
IO 16	I/O16 (24V, neg. switching)
GND	Ground
X24A	Universal inputs/outputs (10-pin strip)
1	I/O (24V, neg. switching)
2	I/O (24V, neg. switching)
3	I/O (24V, neg. switching)
4	I/O (24V, neg. switching)
5	I/O (24V, neg. switching)
6	I/O (24V, neg. switching)
7	I/O (24V, neg. switching)
8	I/O (24V, neg. switching)
9	GND
10	+24V

3.5 Car position indicator module (EAM)

3.5.1 General

- 2 design variants:
L with matrix display 64x64
S with matrix display 40x40
- Operation via shaft or car bus
Communication with main board via CAN-Bus
- 8 freely programmable I/Os

3.5.2 Technical Data

Description	Value
Supply voltage	24 V DC $\pm 10\%$
Current consumption (typ.)	20 mA
Storage temperature	-20°C to $+70^{\circ}\text{C}$
Operating temperature	0°C to $+60^{\circ}\text{C}$
Relative humidity (non-condensing)	5% to 95%
Dimensions L approx. (WxHxD) mm Dimensions S approx. (WxHxD) mm	110 x 70 x 30
Display size L (WxH) mm Display size S (WxH) mm	64 x 64 40 x 40

3.5.3 Jumper / rotary encoder switch

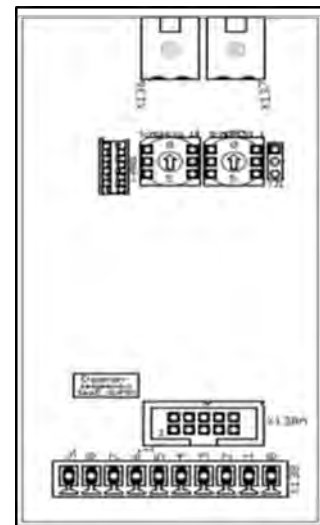
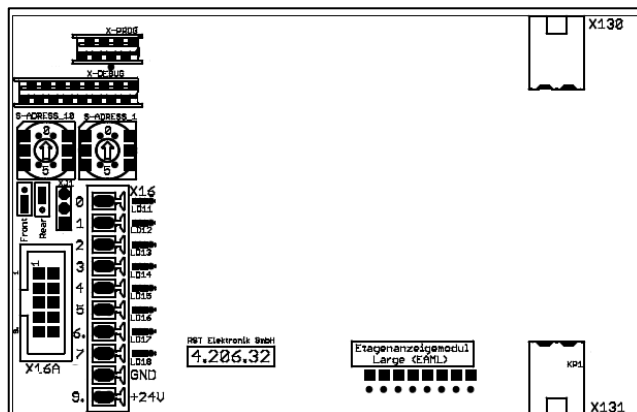
Name	Function
Jumper XJ1	Selection, front/rear door side
Rotary encoder switch S-ADDRESS_1	Setting of node number "unit position"
Rotary encoder switch S-ADDRESS_10	Setting of node number "ten's position"

3.5.4 Special LEDs

All universal inputs/outputs feature LEDs.
With open terminals, the LED may glow slightly.

Name	Colour	State	Description
Error	Red	flashing	Error has occurred
Status	Yellow	flashing 0.5Hz flashing 2 Hz	No CAN receive telegram Node receives CAN telegrams

3.5.5 Location of terminals / Layout

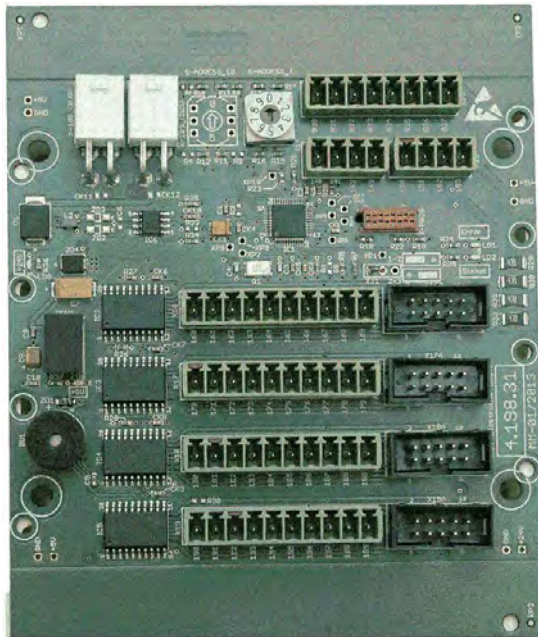


3.5.6 List of terminals

Connector/Terminal		Function
X132 and X132A		Universal inputs/outputs (10-pin strip)
0	1	I/O1 (24V, neg. switching)
1	2	I/O2 (24V, neg. switching)
2	3	I/O3 (24V, neg. switching)
3	4	I/O4 (24V, neg. switching)
4	5	I/O5 (24V, neg. switching)
5	6	I/O6 (24V, neg. switching)
6	7	I/O7 (24V, neg. switching)
7	8	I/O8 (24V, neg. switching)
8	9	GND
9	10	+24V
X130		CAN
X131		CAN

EAM-S Stecker/Klemme		Funktion	
X138 and X138A		Universal Ein-Ausgänge (Stiftleiste 10 pol)	
0	1	I/O1	(24V, neg. switching)
1	2	I/O2	(24V, neg. switching)
2	3	I/O3	(24V, neg. schaltend)
3	4	I/O4	(24V, neg. schaltend)
4	5	I/O5	(24V, neg. schaltend)
5	6	I/O6	(24V, neg. schaltend)
6	7	I/O7	(24V, neg. schaltend)
7	8	I/O8	(24V, neg. schaltend)
8	9	GND	
9	10	+24V	
X136		CAN	
X137		CAN	

3.6 Car operation panel (ITM)



3.6.1 General

- Operation via car bus
- Communication with main board via CAN-Bus
- Mounted in cabin control panel
- freely programmable I/Os
- Emergency lighting for cabin
- Overload buzzer

Note: The integrated emergency lighting can provide for the 5 Lux illumination required per EN81-20 up to a cabin diagonal of approx. 1.4 meters.
In the case of larger cabins, additional measures must be taken to ensure sufficient illumination.

3.6.2 Technical Data

Description	Value
Supply voltage	24 V DC $\pm 10\%$
Current consumption (typ.)	25 mA
Storage temperature	-20°C to $+70^{\circ}\text{C}$
Operating temperature	0°C to $+60^{\circ}\text{C}$
Relative humidity (non-condensing)	5% to 95%
Dimensions (WxHxD)	108 x 130 x 26 (BS) 108 x 99 x 26 (Schäfer)

3.6.3 Rotary encoder switch

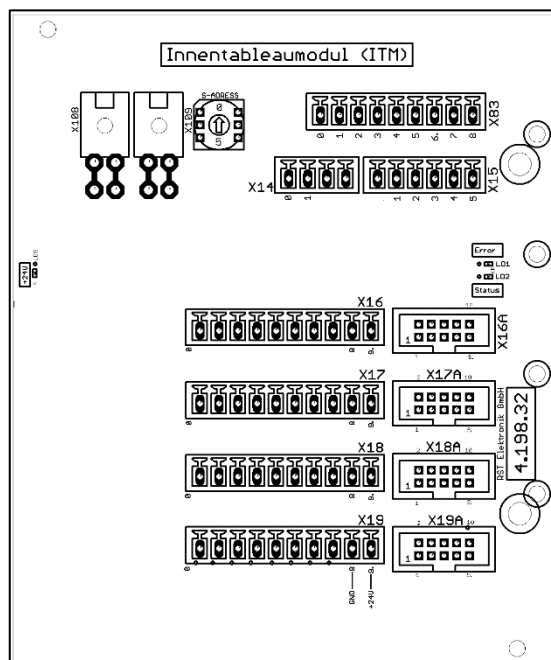
Name	Function
S-ADRESS	Setting of node number

3.6.4 Special LEDs

All universal inputs/outputs feature LEDs.
With open terminals, the LED may glow slightly.

Name	Colour	State	Description
LD1 Error	Yellow	flashing	Error has occurred
LD2 Status	Yellow	flashing 0.5 Hz flashing 2 Hz	No CAN receive telegram Node receives CAN telegrams
LD8 +24V	Yellow		+24 V board supply voltage
LD9 +5V	Yellow		+5 V board supply voltage

3.6.5 Location of terminals / Layout



3.6.6 List of terminals

Connector	Function
X14	To emergency call button
0	Emergency lighting
1	Emergency call button
2	24V battery voltage for emergency call button
3	GND for emergency call lighting
X15	Intercom in panel
0	Intercom wire 1A
1	Intercom wire 1B
2	Intercom wire 2A
3	Intercom wire 2B
4	Intercom wire 3A
5	Intercom wire 3B
X16	Universal inputs/outputs (10-pin screw terminal)
0	I/O1 (24V, neg. switching)
1	I/O2 (24V, neg. switching)
2	I/O3 (24V, neg. switching)
3	I/O4 (24V, neg. switching)
4	I/O5 (24V, neg. switching)
5	I/O6 (24V, neg. switching)
6	I/O7 (24V, neg. switching)
7	I/O8 (24V, neg. switching)
8	GND
9	+24V
X16 A	Universal inputs/outputs (10-pin strip)
1	I/O1 (24V, neg. switching)
2	I/O2 (24V, neg. switching)
3	I/O3 (24V, neg. switching)
4	I/O4 (24V, neg. switching)
5	I/O5 (24V, neg. switching)
6	I/O6 (24V, neg. switching)
7	I/O7 (24V, neg. switching)
8	I/O8 (24V, neg. switching)
9	GND
10	+24V
X17	Universal inputs/outputs (10-pin screw terminal)
0	I/O9 (24V, neg. switching)
1	I/O10 (24V, neg. switching)
2	I/O11 (24V, neg. switching)
3	I/O12 (24V, neg. switching)
4	I/O13 (24V, neg. switching)
5	I/O14 (24V, neg. switching)
6	I/O15 (24V, neg. switching)
7	I/O16 (24V, neg. switching)
8	GND
9	+24V

X17 A	Universal inputs/outputs (10-pin strip)	
1	I/O9	(24V, neg. switching)
2	I/O10	(24V, neg. switching)
3	I/O11	(24V, neg. switching)
4	I/O12	(24V, neg. switching)
5	I/O13	(24V, neg. switching)
6	I/O14	(24V, neg. switching)
7	I/O15	(24V, neg. switching)
8	I/O16	(24V, neg. switching)
9	GND	
10	+24V	
X18	Universal inputs/outputs (10-pin screw terminal)	
0	I/O17	(24V, neg. switching)
1	I/O18	(24V, neg. switching)
2	I/O19	(24V, neg. switching)
3	I/O20	(24V, neg. switching)
4	I/O21	(24V, neg. switching)
5	I/O22	(24V, neg. switching)
6	I/O23	(24V, neg. switching)
7	I/O24	(24V, neg. switching)
8	GND	
9	+24V	
X18A	Universal inputs/outputs (10-pin strip)	
1	I/O17	(24V, neg. switching)
2	I/O18	(24V, neg. switching)
3	I/O19	(24V, neg. switching)
4	I/O20	(24V, neg. switching)
5	I/O21	(24V, neg. switching)
6	I/O22	(24V, neg. switching)
7	I/O23	(24V, neg. switching)
8	I/O24	(24V, neg. switching)
9	GND	
10	+24V	
X19	Universal inputs/outputs (10-pin screw terminal)	
0	I/O25	(24V, neg. switching)
1	I/O26	(24V, neg. switching)
2	I/O27	(24V, neg. switching)
3	I/O28	(24V, neg. switching)
4	I/O29	(24V, neg. switching)
5	I/O30	(24V, neg. switching)
6	n.c	(reserved for emergency lighting)
7	n.c	(reserved for buzzer)
8	GND	
9	+24V	
X19A	Universal inputs/outputs (10-pin strip)	
1	I/O25	(24V, neg. switching)
2	I/O26	(24V, neg. switching)
3	I/O27	(24V, neg. switching)
4	I/O28	(24V, neg. switching)
5	I/O29	(24V, neg. switching)
6	I/O30	(24V, neg. switching)
7	n.c.	(reserved for emergency lighting)
8	n.c.	(reserved for buzzer)
9	GND	
10	+24V	



X83	Connection to hand-held terminal
0	+24V battery
1	Emergency call
2	GND for emergency lighting
3	Intercom wire 1A
4	Intercom wire 1B
5	Intercom wire 2A
6	Intercom wire 2B
7	Intercom wire 3A
8	Intercom wire 3B
X108	CAN
X109	CAN

3.7 Bluetooth module (BTM)



3.7.1 General

- Operation via car bus
- Enables wireless connection between cabin and IMC-2 for operation of LiftControl or Display-APP
- Communication with main board via CAN-Bus
- Installation in inspection box, for example

3.7.2 Technical Data

Description	Value
Supply voltage	24 V DC +/-10%
Current consumption (typ.)	40 mA
Storage temperature	-20°C to +70°C
Operating temperature	0°C to +60°C
Relative humidity (non-condensing)	5% to 95%
Dimensions (WxHxD) mm	64 x 73 x 16

3.7.3 Jumper / rotary encoder switch

Name	Function
Rotary encoder switch S_ADRESS_1	Setting of node number

3.7.4 Special LEDs

Name	Colour	State	Description
Conn. status	Yellow	flashing 10Hz flashing 1 Hz	Module waiting for connection
Conn.	Blue		Module connected to PC or mobile
Error	Red	flashing	Error has occurred
Status	Yellow	flashing 0.5Hz flashing 2 Hz	No CAN receive telegram Node receives CAN telegrams

3.8 Hand-held terminal



3.8.1 General

- Operation via shaft or car bus
- Remote adjustment and diagnosis
- Can be connected to any bus port both in the shaft and in the car bus.
- If operating at the car bus, the VVVF inverter can also be remote-controlled

3.8.2 Technical Data

Description	Value
Supply voltage	24 V DC $\pm 10\%$
Current consumption (typ.)	30 mA
Storage temperature	-20°C to $+70^{\circ}\text{C}$
Operating temperature	0°C to $+60^{\circ}\text{C}$
Relative humidity (non-condensing)	5% to 95%
Dimensions (WxHxD)	118 x 227 x 47

3.9 Safety monitoring module



3.9.1 General

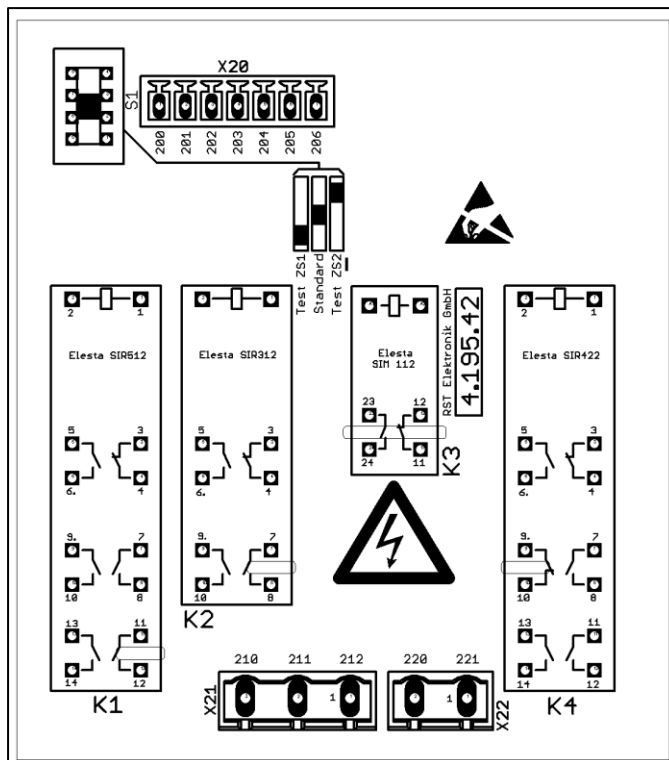
The safety monitoring module enables bypassing the door and lock contact in the safety circuit via two independently operating door-zone switches.

The circuit monitors the closed/open changeover status of the two zone switches. If one or both zone switches do not change their status in the test cycle, this will be interpreted as an error and the door/lock bypass will not be activated. In addition, an output will be switched for the controller to evaluate the error.

3.9.2 Technical Data

Description	Value
Supply voltage	24 V DC $\pm 10\%$
Current consumption (typ.)	60 mA
Storage temperature	-20°C to $+70^{\circ}\text{C}$
Operating temperature	0°C to $+60^{\circ}\text{C}$
Relative humidity (non-condensing)	5% to 95%
Dimensions (WxHxD)	99 x 128 x 67

3.9.3 Location of terminals / Layout



3.9.4 List of terminals

Terminal	Type	Note
X20		
200	Supply	+24V +/-10%
201	Input	Zone switch 1 (connected to GND)
202	Input	Zone switch 2 (connected to +24V)
203	Input	Start of test cycle 0V: no test +24V: Test active
204	Output	Info for controller on state of safety monitoring module 0V: ok +24V: Error
205	Input	Info on cabin speed Cabin speed > 0.3m/s: 0V Cabin speed < 0.3m/s: +24V
206	Supply voltage, ground	GND
X21	Potential-free relay contact	max. 3 A at 230 VAC rated voltage
210	Safety circuit	
211	Safety circuit	
212	Safety circuit	
X22	Potential-free relay contact	max. 3 A at 24 VDC rated voltage
220	Relay contact	Normally open contact of K3
221	Relay contact	Normally open contact of K3

3.9.5 Test

Via test switch S1 "Hanging" of zone switches is simulated.

Test procedure:

(Test of monitoring of zone switch 1)

1. The lift is in flush position, both zone switches are closed.
2. Relays K1 and K2 energized, K4 is deenergized.
3. Set test switch S1 to "Test ZS1" position (□zone switch 1 is bypassed permanently).
4. Start travel operation to any floor.
5. Once the test cycle has started, K4 cannot be energized again when landing in the door zone (contact of K1 is open). As a result, K2 can no longer be energized.
6. After stopping, the feedback to the controller is "0". For this reason, no more travel operations are possible (because K2 is deenergized). The door/lock contact bypass is ineffective (contact of K2 in safety circuit open).
7. Set test switch S1 to "Standard" position again.
8. Switch control voltage supply off and on again.
9. The controller is ready for operation again.

(Test of monitoring of zone switch 2)

10. The lift is in flush position, both zone switches are closed.
11. Relays K1 and K2 energized, K4 is deenergized.
12. Set test switch S1 to "Test ZS2" position (□zone switch 2 is bypassed permanently).
13. Start travel operation to any floor.
14. K1 is deenergized once the zone is left.
15. K2 remains energized (latch).
16. K4 is deenergized by normally open contact of K2.
17. When entering the zone, K4 cannot be energized because K2 is still energized. As a result, K1 cannot be energized.
18. After stopping, the feedback to the controller is "0" (because K1 is deenergized). No more travel operations are possible. The door/lock contact bypass is ineffective (contact of K1 in safety circuit open).
19. Set test switch S1 to "Standard" position again
20. Switch control voltage supply off and on again.
21. The controller is ready for operation again

(Test K3)

22. The lift is in flush position
23. Relay K3 is energized.
24. Start travel operation at $v < 0.3 \text{ m/s}$ □relay K3 must not be deenergized
25. Start travel operation at $v > 0.3 \text{ m/s}$ □relay K3 must be deenergized once the speed exceeds 0.3 m/s , and re-energized when the speed drops below 0.3 m/s again
(Info: the switching signal for relay K3 comes from the IMC-2 controller)

3.9.6 Activation in controller

Generally the safety monitoring module is activated in the menu

Setup - Plant - Safety monitoring module ? = 1 (Yes)

.

3.10 CAN bus

3.10.1 General

All modules are networked via CAN bus. Generally, 3 separate buses are used:

Car bus	Standard
Shaft bus1	Standard
Shaft bus2	In groups with 2 shaft daisy chains

By default, car bus and shaft bus1 are wired in the case of single lifts.



The bus connectors may only be plugged when the system is deenergized !
Free bus terminals at the end of the line must be provided with a terminator !

3.10.2 Technical Data

Description	Value
Supply voltage	24 V DC $\pm 10\%$
Operating temperature	0°C to +60°C
Relative humidity (non-condensing)	5% to 95%
Maximum number of nodes per bus	64

3.10.3 Setting the node IDs

The node number (identifier) is set by means of a rotary encoder switch. The first node corresponds to switch position "1".

In the universal bus module, an additional rotary encoder switch is provided since the number of nodes may involve two digits (ten's position, unit position).



Generally, the nodes are preset and labelled by RST.

3.11 Travelling cable

3.11.1 General



- All connectors may only be plugged when the system is deenergized !



The shield of the travelling cable must be connected to earth in the cabinet

3.11.2 Technical Data

Description	Value
Supply voltage	24 V DC $\pm 10\%$ 230 V AC $\pm 10\%$
Operating temperature	0°C to +60°C
Relative humidity (non-condensing)	5% to 95%

3.11.3 Wire allocation

IMC-2 Connector/Terminal	Suspended cables Wire no.	Cabin (KSM) Connector/Terminal	Function	
X1.101	1	X92.0	Reserve	 High voltage 400/230VAC
X1.102	2	X92.1	L-Lighting	
X1.103	3	X92.2	N-Lighting	
X1.104	4	X92.3	L1-Door1	
X1.105	5	X92.4	N-Door1	
X1.106	6	X92.5	L2-Door1	
X1.PE	PE	X92.6	PE	
X1.107	7	X92.7	L3-Door1	
X1.108	8	X105.0	Safety circuit	
X1.109	9	X105.1	Safety circuit	
X1.110	10	X105.2	Safety circuit	
X1.111	11	X105.3	Safety circuit	
X1.112	12	X105.4	Safety circuit	
X1.113	13	X105.5	Safety circuit	
X1.114	14	X105.6	Safety circuit	
X1.115	15	X105.7	Safety circuit	
X1.116	16	X82.4	24V	Low voltage ≤ 24 VDC
X1.117	17	X82.5	24V	
X1.118	18	X82.6	0V	
X1.119	19	X82.7	0V	
X1.120	20	X82.0	24V Bat.	
X1.121	21	X82.1	Emergency call	
X1.122	22	X82.2	Zone1	
X1.123	23	X82.3	Zone2	
X1.124	24	X2.124	Safety circuit	High voltage 400/230V AC
X1.125	25	X2.125	Safety circuit	
X1.126	26	X2.126	Reserve	
X1.127	27	X2.127	Reserve	
X1.BN	BN (1.1)	X86.0	Intercom1	Low voltage ≤ 24 VDC
X1.WS	WS (1.2)	X86.1	Intercom2	
X1.GN	GN (2.1)	X86.2	Intercom3	
X1.WS	WS (2.2)	X86.3	Intercom4	
X1.OR	OR (3.1)	X86.4	Intercom5	
X1.WS	WS (3.2)	X86.5	Intercom6	
X1.BL	BL (4.1)	X86.6	CAN-Bus Low	
X1.WS	WS (4.2)	X86.7	CAN-Bus High	
X1.blank				

4 Menu and operation

4.1 General

The IMC controller is operated via four buttons.

Button  Select displayed menu item and open submenus; confirm entries and save edited parameters ("Enter")

Button  Leave submenus; cancel changes („Cancel“).

Button  Move in menu level; increase values

Button  Move in menu level; reduce values

Generally there are different access levels for the menus.

By default, the parameters covering 90% of the applications are visible. For special functions, another menu access level can be added.

To do this, press buttons  +  simultaneously for 2 seconds.

In the following descriptions, they are marked with the following symbols:

 Standard menu.

 Extended menu.

Note: Different parameters are shown in the menu depending on the set drive type.

*S: Parameter only shown in the case of a cable lift

*H: Parameter only shown in the case of a hydraulic lift

Parameters can generally not be changed during travel operations !

4.2 Start screen

The start screen is displayed immediately after startup. It has the following layout:

Line 1: Operating state

Line 2: Safety circuit and various status symbols

Line 3: Current floor, cabin speed, position referred to next floor

Line 4: Destination floor, direction, front door, rear door (if applicable)

If an error occurs, it is displayed in the 2 menu lines at the bottom.

```
Return Operation
SC 1 2-----
F 3 v0.00 P -12mm
T 0 D      FD-- RD--
```

Example: Return operation

```
IMC2 Run
SC: OK
F 3 v0.38 P-2072.3mm
T 4 D^  FD][ RD][
```

Example: Normal travel operation

```
Moving to Level
SC: OK
Error Internal
SSI Open/Short Cir.?
```

Example: Error in SSI encoder connection

4.3 Entering parameter values



Press **E** to activate "Edit mode".



In the display, you will now see the current parameter value, in the fourth line, you can change the value.

Press **↑** to increase the value. Press **↓** to reduce it.



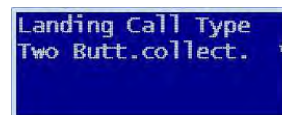
The setting range is limited by the minimum/maximum value of the relevant parameter.

Once the desired parameter value is reached, press **E** to apply it.

Press **C** to cancel.



4.4 Selection lists



In some menus, you can scroll through lists to select a setting. In these lists, the current setting is marked by a "*" symbol after the list entry.



4.5 General menu structure

Settings

Unit

- Landing Call Type
- Encoder
 - Encoder-Type
 - Encoder Direction
 - encoder via CAN(1)
- Zone Length
- Pulley Circum.
- Number of Floors
- Door Bypass
- Red.SpeedControl
- Nom. Speed of Unit
- Term. Settings I/O
 - Input
 - Output

Drive

- Drive Type
- Times
 - On Delay Hyd.
 - Off Delay Hyd.
 - Delay DSV
 - Waittime TOR
 - Star/Delta-Time
 - Brake Drop Time
 - Contactorm Drop Delay
 - Motor Fan Run Time
 - Relevelling Delay
 - Brake 2 Delay
 - Time ZS/ZB
- Relevelling

Position Reference

- Floor Settings
 - Floor 1
 - Position
 - Door Side
 - Floor 2
 - Position
 - Door Side
 -
 -

- Decel.V4 Up
- Decel.V4 Down
- Decel.V3 Up
- Decel.V3 Down
- Decel.V2 Up
- Decel.V2 Down
- Decel. Dist. V4
- Decel. Dist. V3
- Decel. Dist. V2
- Switch Off V0 Up
- Switch Off V0 Down
- Relevel On
- Relevel Off
- Relevel ext. On
- Relevel On

Relevel On
Relevel Off
Relevel Off
Insp.Stop Up
Insp.Stop Down
Insp.Always Fast ?
Level Adjust
Zone Hysteresis
Encoder Zero Pos.

Learn Run

Learn Run Auto.
Learn Run Manual

Doors

Pre Opening Doors
Doors Collective
Lock+Bolt Magnet F+R
Lock+Bolt Max.Time
Separation Door?
Lock pause close
Lock pause open
Door Para. Front
Door Type
LR Test=>Start
LR Status=>Run
Light Ray w. Reset?
Door Time Car
Door Time Landing
Time Open no Call
Reversal Time
Photocell
Photocell Ext.Time
Door Runtime Monitor
Reversal Time
Loading Time
Nudging Time
Open Limit Front
Close Limit Front
Door Run Time =>Open
Door Run Time=>Close
Mot.Off Door Open
Mot.Off Door Closed
Door Revers.Cont
Door Pos.at Floor
Door learning?
Door Para. Rear
..see Door Para front

Controller

Timer
Times
Lock Debounce Time
Start Delay
Car Fan Run Time
Car Light Off Time
?Kabine Hier OnDelay?
Priority
Car Priority Time
Land. Priority Time
Landing Priority
<C>Car Call w. Prio.



Special Functions

- Fire Evacuation
 - Fire Evac.Type
 - Fire Evac.1 Floor
 - Door Pos.at Floor
 - Fire Evac.2 Floor
 - Door Pos.at Floor
- Emerg.Power
 - Emerg.Powerdr.Type
 - Floor
 - Door Pos.at Floor
 - Stutter Brake=>Mode
- Out Of Order
 - Floor
 - Door Pos.at Floor
- Switch Off
 - Hard/Soft
 - Floor
 - Door Pos.at Floor
- Parking
 - Standard Parking?
 - Parking Floor
 - Parking Time
 - Door Pos.at Floor
 - Door Parking Hydr
- VIP
 - VIP 1 Desti.Floor
 - VIP 1 Door Pos.
 - VIP 2 Desti.Floor
 - VIP 2 Door Pos.
 - VIP Time Reserved
 - only when empty
- Sel.LandCallContr
- KitchenControl V01
 - KSt CallEnableTime
 - KSt SignalTime
- Ramp Operation
 - Limit Top
 - Limit Bottom
 - Creep Dist.

Display/Gong

Pos.Indicator

- Floor Text
- Language
- Displaymode
- Floor Changes
- Scroll Speed
- Change at Target?
- Disp.SpecDrive?
- Landing Disp.Binary
- Cab.Target.Land.Dist

Gong-Functions

- Gong.Dist.to Floor
- Gong at Land.

Blinking Approach

Range Cab.Stand

Lock w. Inv. Error

Monitorings

- Brake MonitorK1K2
- ?Bremsueb.K1K2 inv??
- Brake MonitorK3K4
- Brake MonitorK1K2
- Red.SpeedControl
 - Red.SpeedControl
 - SpeedThreshold
 - VmaxPuffer
- Monitor.Term.
- Brake Mon.EN81A3 IMD
- Temp.Mon.Ext.N.O?
- Motor Temp. Monitor
- Oil Temp. Monitor
- Run Time Monitor
- Car Start Monitor
- Lock Monitor
- Max. Temperature
- Min.Temperature
- Temperature Out 1
- Temperature Out 2
- Photocell Max.Time
- Level Monitor
- VMaxInspection
- DirMonitCabine
- no Move in Drive
- Move in Stop
- Rope Slip
- Car Light Monitor
 - Light Mon.Err.Time
 - Activate
 - Car Light Measure.

Energy Save (ECO)

- ECO Mode (0=OFF)
- Standby-Time
- Wake Up-Time

Anti Nuisance

- Max.no.Car Calls
- C.Calls no Photo.Int
- Empty Car
- Alarm Filter
 - Alarm Filter
 - Alarm Filter
 - Alarm Delay

Group

- Elevator Type
- Elevator No.
- LobbyParkFloor
- No.of Shaft Risers

Display/Diagnostic

System-time

Error Log

Status Group

- Group-Members
- Group Master
- Group Errors

Can-Bus

- ErrorsAllMax
- ErrorsAll
- Node errors
- ErrorsHPICB
- ErrorsHPISB1
- ErrorsHPISB2
- CANBus-Log
- Status Shaft Bus 1
- Status Shaft Bus 2
- Status Car Bus
- ErrorsAllMax

Input/output

- Shaft Bus 1
- Shaft Bus 2
- Car Bus
- Main Board
 - Door Bypass F/R(Out)
 - Door Byass F/R(In)
 - Drive Commands(Out)>
 - <Drive Commands(Out)
 - Monitor.1(In) ->
 - <- Monitor.2(In)->
 - <- Monitor 3(In)
 - ERO (In)
 - Sensor Mot+Oil(In)
 - Encoder Incremental
 - Main Board Uni.(Out)
 - Main Board Uni.(In)

Actual Values

- Rope Slip
 - Slip Calc.
 - Slip Calc.
 - Slip Max.value
- Car Position
- CarSpeed CtrlPoint
- Car Speed MAX
- Car Accel. MAX
- Temperature
- Min>AbsPos>Max
- SSI-ErrEDCRL
- PosDelta > Max
- Correction Value ZF
- Correction Max

Statistics

- Absolute Counter
 - Run Counter
 - Door Cycles Front
 - Door Cycles Rear
 - Active Hours
- Relative Counter
 - Run Counter
 - Door Cycles Front
 - Door Cycles Rear
 - Active Hours
- Count Till Service
 - Run Counter
 - Door Cycles Front
 - Door Cycles Rear



Active Hours
Call Statistics

Actual Calls

I=Car A=Landing

Software Version

Bootloader Version

Status ECO Mode

Actual Faults

System

Inverter Control

Language

Time/Date

Set Time/Date

Day
Weekday (Sun=1)
Month
Year (20xx)
Hours
Minutes
Save Data? <E>

Code

Enter Code
Change Code
Code Present

Menu-Access

USB Host

Import
Export
Firmware
Hex-File from
Error Code
Star/Delta-Time

Flash Loader

Start from PC? (E)
Start from USB? (E)

Service

Calls

Random Calls
Activate
Call no. (act)
Calls (Remain.)
Run Interval
Run Top/Bottom
Disable Car Call F
Disable Land.Call F
Disable Car Call R
Disable Land. Call R

Installation.Mode

9.620.123-6.docx



Show Services

TüV / Test

- Run Time Min.
- Top/Bott.Limit Test
- Buffer-Test
- Overload Off
- EN81-A3 Test Run
- No Lockup SC
- Nothalt-Test

Calibration Inverter

Service Interval

- Runs Till Service
- Door Cycles Front
- Door Cycles Rear
- Active Hours
- Set Interval

Erase Rel. Counter

- ..Erase With <E>

Erase Call Counter

- ..Erase With <E>

Data Interface

- Baudrate PC/Modem
- Remote Access

4.6 Setup menu

4.6.1 Plant

Are You Sure ?
After Change
New Learn Run!
<C>Cancel Go On<E>

When setting up the plant data, note that some of these parameters will require a new Learn Run. This will be indicated when you open the menu.

Parameter		Description	Setting range
Landing Call Type	☺		
2KS		The lift will stop with each Up call in Up direction and with each Down call in Down direction.	
1KS RE		All calls in travel direction will be considered. Once there is no more call in travel direction, the search direction is reversed and current calls in the new travel direction will be processed.	
1KS RU		The lift will stop with each call in Up and Down direction.	
Direct travel		Outside calls will only be processed once there is no more inside command. During this time, <i>Occupied</i> will be displayed.	
Encoder	☺		
Encoder type WDGA58B-10-1213		Wachendorff absolute encoder	
Shaft incremental encoder		1024 pulse encoder HTL. Pre-limit switch required.	
Motor incremental encoder		Motor rotary encoder. Pre-limit switch required.	
ELGO LIMAX02 SSI		Absolute shaft information system ELGO	
Encoder direction	☺	0: Normal 1: Inverted	0 .. 1
Encoder via CAN	☺	0: no encoder info received via CAN 1: Position info received via CAN bus	0 .. 1
Zone Length	☺	All sheets must have the same length	0 .. 2000 mm
Pulley Circum.	☺	Circumference = 3.14 * diameter [mm]	0 .. 3000 mm
Number of Floors	☺	Number of floors	1 .. 32
Door Bypass	☺	Activation of safety monitoring module	0 .. 1
Decel.Control	☺	Activation of the deceleration supervision Separate documentation at RST	0 .. 1
Nom. Speed of Unit	☺	Entered in mm/sec	0.1 .. 4 m/s
Configuration I/Os	☺	Configuration of input/output terminals	

4.6.2 Drive

Parameter		Description	Setting range
Drive type	😊		
<i>Cable IMD/FRC-F</i> <i>Hyd 3 valve</i> <i>Hyd 4 valve</i> <i>Hyd Bucher LRV</i> <i>Hyd Bucher iValve</i> <i>Hyd Algi AZRS</i> <i>Hyd GMV</i> <i>Hyd Danfoss AZFR</i> <i>Hyd GMV NGVA3</i>		Cable lift with RST frequency controller Hydraulic lift 3-valve Hydraulic lift 4-valve Hydraulic lift Bucher valve block LRV Hydraulic lift Bucher valve block iValve Hydraulic lift with ALGI valve block AZRS Hydraulic lift with GMV valve block Hydraulic lift with Danfoss controller Hydraulic lift with GMV NGVA3 block	
Times	😊		
On Delay Hyd. TH	😊	Time Delay between K1/K2 and the drive commands at start.	0 .. 2000 ms
Off Delay Hyd. TH	😊	Time Delay between K1/K2 and the drive commands at stop.	0 .. 2000 ms
Delay DSV TH	😊	Time Delay between "Hydr.DSV" and K1/K2 at start.	0 .. 4000 ms
Waittime TOR ^H	😊	Max. waiting time of input "Hydr.TOR" after switching output "Hydr.StartESB"	0 .. 10000 ms
Star/Delta-Time TH	😊	Time between "Hydr.StarOut" and "Hydr.DeltaOut"	0 .. 4000 ms
Brake Drop Time	😊	Wait time for "ZB" signal from VVVF inverter If it is not received within the set time, an error will be reported	1 .. 10 s
Contactorm Drop Delay	😊	Wait time for "ZS" signal from VVVF inverter If it is not received within the set time, an error will be reported.	1 .. 10 s
Motor Fan Run Time	😊	Time until shutdown of motor fan after end of travel operation.	1 .. 500 s
Relevelling Delay	😊	Wait time between end of travel operation and start of readjustment	0.5 .. 10 s
Brake 2 Delay	😊	Time at which the additional brake is released before the travel operation and engaged after the end of the travel operation. To deactivate set "0".	0 .. 3 s (0 = OFF)
Time ZS/ZB	😊	Within this time feedback ZS and ZB from inverter must be high after switching drive commands	0,5 .. 3 s
Relevelling ?	😊	Activation of relevelling function Can only be activated if parameter Door Bypass=1 (Unit menu) is set.	0..1
Relevel.atOvertemp?	😊	1: relevelling is active despite overtemp.	0..1

4.6.3 Position Reference

Parameter		Description	Setting range
Floor Settings	☺		
Floor 1			
Position	☺	Relative Position in shaft, referred to bottommost floor.	-1000 ... 128000 mm
Door side	☺	0=front (0) 1=rear (1) 2=both (2) 3=rear with zone sheet 4=No door	0 .. 4
.... Floor 32			
Decel. Dist. V4	☺	Distance from flush position for deactivation of travel command V4 in both directions.	0.01 ... 1 m
Decel.V4 Up ^{*H}	☺	Distance from flush position for deactivation of travel command V4 in UP direction.	0.01 ... 1 m
Decel.V4 Down ^{*H}	☺	Distance from flush position for deactivation of travel command V4 in DOWN direction.	0.01 ... 1 m
Decel. Dist. V3 ^{*S}	☺	Distance from flush position for deactivation of travel command V3 in both directions.	0.01 ... 1 m
Decel.V3 Up ^{*H}	☺	Distance from flush position for deactivation of travel command V3 in UP direction.	0.01 ... 1 m
Decel.V3 Down ^{*H}	☺	Distance from flush position for deactivation of travel command V3 in DOWN direction.	0.01 ... 1 m
Decel. Dist. V2 ^{*S}	☺	Distance from flush position for deactivation of fast travel command V2 in both directions.	0.01 ... 1 m
Decel.V2 Up ^{*H}	☺	Distance from flush position for deactivation of travel command V2 in UP direction.	0.01 ... 1 m
Decel.V2 Down ^{*H}	☺	Distance from flush position for deactivation of travel command V2 in DOWN direction.	0.01 ... 1 m
Switch Off V0 Up	☺	UP distance from flush position for deactivation of creeping speed command V0 in UP direction.	1 ... 1000 mm
Switch Off V0 Down	☺	DOWN distance from flush position for deactivation of creeping speed command V0 in UP direction.	1 ... 1000 mm
Relevel On ^{*S}	☺	Distance from flush position where readjusting is activated in both directions.	1 ... 1000 mm
Relevel On UP ^{*H}	☺	Distance from flush position where readjusting is activated in UP direction.	1 ... 1000 mm
Relevel On DOWN ^{*H}	☺	Distance from flush position where readjusting is activated in DOWN direction.	1 ... 1000 mm
Relevel Off ^{*S}	☺	Distance from flush position where readjusting is deactivated in both directions.	1 ... 1000 mm
Relevel ext. On ^{*H}	☺	Distance from flush position where readjusting is activated in UP direction with closed doors.	1 ..1000 mm
Relevel Off Up ^{*H}	☺	Distance from flush position where readjusting is deactivated in UP direction.	1 ... 1000 mm
Relevel Off DOWN ^{*H}	☺	Distance from flush position where readjusting is deactivated in DOWN direction.	1 ... 1000 mm

Insp.Stop Up	😊	Inspection travel operation stop point in front of flush position of top floor. Prevents actuation of limit switch.	10 ... 3000 mm
Insp.Stop Down	😊	Inspection travel operation stop point in front of flush position of bottommost floor. Prevents actuation of limit switch.	10 ... 3000 mm
Insp.Always Fast ?	😊	In inspections, high speed V1 will generally be used.	0 ..1
Ret.Op. Always Fast ?	😊	In return operation, high speed V1 will generally be used.	0 ..1
Zone Hysterisis	😊	Only relevant if motor encoder is used (see Section 0)	-100 .. 100 mm
Encoder zero pos	😞	Absolute zero position of bottommost floor is determined automatically during Learn Run. If it is changed, the whole shaft image might be displaced.	-147483648 ... 2147483647
Level Adjust	😊	Release for level correction via the cabin control panel (see Section 7.2).	0 ..1
Learn Run	😊	Activation of Learn Run (see Section 6). Only possible in return operations.	0 ..1
<i>Learn Run Auto!</i>		Activation of automatic Learn Run	
<i>Learn Run Manual</i>		Activation of manual Learn Run	

4.6.4 Doors



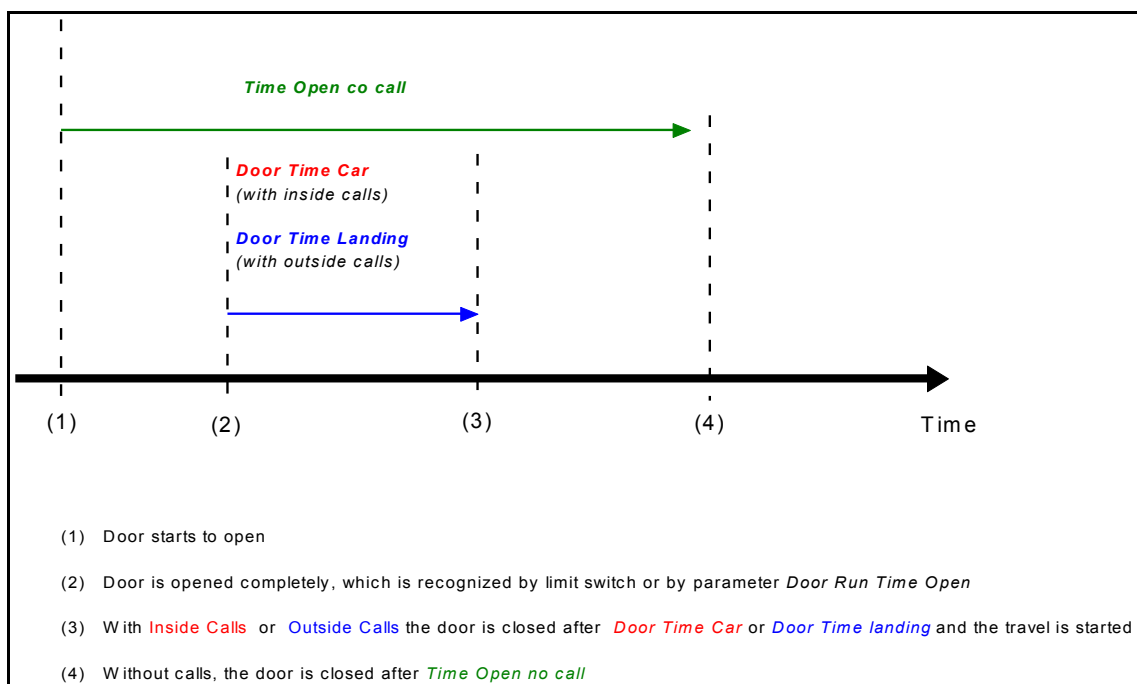
Attention: Different door-types front/back RST (eg. automatic/manual) please contact RST !

Parameter		Description	Setting range
Pre Opening Doors	😊	Distance from flush position for early door opening. Cabin must be within the zone and the speed must be less than 0.3m/s. To deactivate set "0".	0 .. 1000 mm (0 = OFF)
Doors Collective.?	😊	0=selective: 1 button each for front and rear door side. Calls effective for the relevant door. 1=collective: 1 common button for front and rear door side. Calls effective for both doors.	0 .. 1
Lock+Bolt Magnet F+R?	😊	1=Yes: Rear door provided with its own locking magnet.	0 .. 1
Separation Door?	😊	1=Yes: The states of the separating door are evaluated	0 .. 1
Lock pause close	😊	Halt time before lock is engaged	500 .. 10000
Lock pause open	😊	Halt time before lock is opened	0 .. 10000
SluiceOperation?	😊	0: OFF 1: Door front, than door rear 1: Door rear, than door front	0 .. 1
Entr.AreaMon.Time	😊	Time until the door has closed by approx. 80% after the start of the closing operation. After that, the input terminal will no longer be evaluated.	1 .. 100 s
Entr.AreaMon.Tmout	😊	If the signal is present at the input terminal for longer than this time, the terminal will no longer be evaluated (e.g. if there is an obstacle in front of the cabin door).	1 .. 3600 s
Door Para. Front	😊		
Door Type	😊		
<i>AutoDoor with locking magnet</i>		Automatic cabin door with locking magnet	
<i>AutoDoor without locking magnet</i>		Automatic cabin door without locking magnet	
<i>Semiauto/without door</i>		Semiautomatic door No cabin termination door	
LR Test=>Start	😊	0=OFF, 1=1door side, 2=2door sides	0 .. 2
LR Status=>Run	😊	0=OFF, 1=1door side, 2=2door sides	0 .. 2
Light Ray w. Reset?	😊	1=Yes: Use of light grid in combination with Reset button	0 .. 1
Door Time Car	😊	Open time of door when there are other inside calls.	1 .. 100 s
Door Time Landing	😊	Open time of door when there are other outside calls.	1 .. 100 s
Time Open no Call	😊	Open time of door when there are no calls.	1 .. 600 s

Reversal Time	☺	Open time of door after reversing cycle. This cycle is started if the light barrier is actuated while the door is being closed, the Open Door button is pressed or the reversing contact is detected. Button "Close door" will only be active once the reversing time has elapsed.	1 .. 100 s
Photocell	☺	0=Normal: 1=Inverted:	0 .. 1
Photocell Ext.Time	☺	Extension of reversing time to actuation of light barrier	1 .. 100 s
Door Runtime Monitor	☺	Automatic doors: The limit switch must be detected within this time. Semiautom. d:door Lock must be closed within this time.	1 .. 100 s
Reversal Time	☺	Halt time upon changeover of door operation from closing to opening	200 .. 5000 ms
Loading time	☺	Via an additional button in the cabin, the cabin loading door time can be extended. Can be cancelled by pressing the "Close door" button or by an inside command.	1 .. 600 s
Nudging Time	☺	If the light barrier is actuated permanently, the door will be closed (forced closing) once this time has elapsed. In this case, the reversing function is ineffective and the cabin door will close at reduced speed. Another output for "Close door slowly" is required for this. During the forced closing operation, the buzzer is activated. Value 0 disables this function.	0 .. 600 s (0 = OFF)
Open Limit Front	☺		
<i>normal(closed= +24V)</i> <i>no limit switch</i> <i>inverted(closed= 0V)</i>		+24V, if limit switch is closed Operation without limit switch, time control via parameter <i>Door runtime until OPEN</i> +0V, if limit switch is actuated	
Close Limit Front	☺		
<i>normal(closed= +24V)</i> <i>no limit switch</i> <i>inverted(closed= 0V)</i>		+24V, if limit switch is closed Operation without limit switch, time control via parameter <i>Door runtime until CLOSED</i> +0V, if limit switch is actuated	
Door Run Time =>Open	☺	Only relevant in doors without limit switch: At the end of the motor runtime, the door is considered open	1 .. 100 s
Door Run Time=>Close	☺	Only relevant in doors without limit switch: At the end of the motor runtime, the door is considered closed	1 .. 100 s

Mot.Off Door Open	😊	0=No: The motor control signal remains active even when the door is open. 1=Yes: The motor control signal is removed when the door is fully open.	0 .. 1
Mot.Off Door Closed	😊	0=No: The motor control signal remains active even when the door is closed. 1=Yes: The motor control signal is removed when the door is fully closed. 2=InTravel: The motor control signal is removed during travel operation.	0 .. 1
Door Revers.Cont	😊	0=Norm: +24V, if reversing contact is closed 0=Inv: +24V, if reversing contact is open	
Door Pos.at Floor	😊	0: After travel operation, doors remain closed 1:After travel operation, the front door is opened and kept open. 2:After travel operation, the rear door is opened and kept open. 3:After travel operation, both doors are opened and kept open. 4:After travel operation, the front door is opened and closed. 5:After travel operation, the rear door is opened and closed. 6:After travel operation, both doors are opened and closed.	0 .. 6
Door learning?	😊	0 = No 1 = Yes: After activation, the door will carry out a Learn Run first.	
Door Para. Rear	😊	Contains the same parameters as "Door parameters front" menu.	

4.6.4.1 Graphical representation of door times



4.6.5 Controller

Parameter		Description	Setting range
Timer	😊	Weekly program with 1 switching point a day	
Times	😊		
Lock Debounce Time	😊	Time elapsing after closing of lock until lock input is valid.	10 .. 1000 ms
Start delay	😊	Delay time between closing of safety circuit and start of travel command execution	0.1 .. 10 s
Car Fan Run Time	😊	Delay of cabin fan after end of travel operation.	0 .. 10 s
Car Light Off Time	😊	Time after end of travel operation until cabin light is turned off	1 .. 600 s
Priority	😊		
Car Priority Time	😊	Once inside priority is activated, it will remain active for the set time	0 .. 120 s
Land. Priority Time	😊	Once outside priority is activated, it will remain active for the set time	0 .. 120 s
Landing Priority	😊	0=Hard: Priority is activated immediately - inside calls will be deleted. 1=Soft: Priority will only be activated once inside calls have been processed. 2=Soft+empty: Priority will only be activated once inside calls have been processed and the cabin is empty	0 .. 2
Car Call w. Prio..	😊	0=No: 1=Yes:	0 .. 1

Special Functions	😊		
Fire Evacuation	😊		
Fire Evac.Type	😊		
<i>Fire OFF</i> <i>Fire evac 1</i> <i>Fire evac 1+2</i> <i>Fire evac Switzerland</i> <i>Fire evac Set+ Reset</i> <i>Fire evac dyn.</i>			
Fire Evac.1. Floor	😊	Once fire alarm input is detected, this floor will be approached.	1 .. 32
Door Pos.at 1. Floor	😊		
<i>Don't open</i> <i>open front+ keep open</i> <i>open rear+ keep open</i> <i>open both+ keep open</i> <i>open front + close</i> <i>open rear + close</i> <i>open both + close</i>		Don't open door Open front door and keep it open Open rear door and keep it open Open both doors and keep them open Open front door and close it Open rear door and close it Open both doors and close them	
Fire Evac.2. Floor ..	😊	Once fire alarm input is detected, this floor will be approached.	1 .. 32
...Fire Evac.3.-8. Floor	😊	Only relevant at dynamic fire evacuation	1 .. 32
Door Pos.at 2. Floor	😊	See <i>Door Pos.at 1. Floor</i>	
NumberFireDetectors	😊	Only relevant at dynamic fire evacuation	1 .. 8
FireEvacWithPassage	😊	Only relevant at dynamic fire evacuation	0 .. 2
...Fire Evac.3.-8. Floor	😊	Only relevant at dynamic fire evacuation	1 .. 32
Door Pos.at FI2-8	😊	See <i>Door Pos.at 1. Floor</i>	

Emerg. Power	😊	Is activated by emergency power input	
Floor	😊	Once emergency power input is detected, this floor will be approached.	1 .. 32
Emerg.Powerdr.Type	😊	0=static: target is the parametrized floor 1=dynamic: travel to the next floor. Travel-direction ist depending of the input „EmergencyLoad“: EmergencyLoad = 1: up EmergencyLoad = 0: down	0 .. 1
Door Pos.at Floor	😊	See <i>Door Pos.at 1. Floor</i>	
Em.Pow.Cascade?	😊	1: The controller is operating in an emergency power sequence	0 .. 1
Em.Pow.DriveTimeout	😊	Start occurs once the set time as defined by the emergency power input has elapsed	0 .. 3600 s
Em.Pow.StartTimeout	😊	If no start can occur due to an error (e.g. door blocked), the lift will be removed from the emergency power sequence once the time has elapsed.	0 .. 3600 s
Stutter Brake=>Mode	😊		
0,1 m/s Bis Hst 0,1 m/s 0,3 m/s Bis Hst 0,3 m/s	😊	Stutter speed max. 0,1 m/s Stutter to floor, speed max. 0,1 m/s Stutter speed max. 0,3 m/s Stutter to floor, speed max. 0,3 m/s	0 .. 50 %
Out of order	😊		
Door Pos.at Floor	😊	See <i>Door Pos.at 1. Floor</i>	
Switch Off	😊		
Hard/Soft	😊	0=Hard: 1=Soft:	0 .. 1
Floor	😊		1 .. 32
Door Pos.at Floor	😊	See <i>Door Pos.at 1. Floor</i>	
Parking	😊		
Parking Floor	😊		1 .. 32
Parking Time	😊	Idle time after which parking travel operation is started. Value 0 disables this function.	0 .. 3600 s (0 = OFF)
Door status in floor	😊		
Door Parking Hydr *H	😊	Only in hydraulic lifts 15 minutes after the parking travel operation, the lift is moved to the bottommost floor (out-of-order floor).	

VIP	😊	Separate documentation at RST	
VIP 1 Desti.Floor	😊		1 .. 32
VIP 1 Door Pos.	😊	0=No: Don't open door 1=front: Open front door only 2=rear: Open rear door only 3=Both: Open both doors	0..3
VIP 2 Desti.Floor	😊		1 .. 32
VIP 2 Door Pos.	😊	0=No: Don't open door 1=front: Open front door only 2=rear: Open rear door only 3=Both: Open both doors	0..3
VIP Time Reserved	😊		0 .. 3000 s
only when empty	😊	Only when the „empty input“ is active	
Sel.LandCallContr	😊	Separate documentation at RST	
KitchenControl V01	😊	Separate documentation at RST	
Ramp Operation	😊	Separate documentation at RST	
LobbyStop	😊		
LobbyStop	😊	1: Function inactive	
LobbyDir	😊	0: Lift stops in both directions 1: Lift stops only in UP - directions 2: Lift stops only in DOWN - direction	
LobbyDoorside	😊	0: Front door opens in Lobby Floor 1: Rear door opens in Lobby Floor	
LobbyFloor	😊	Floor where the lift stops	1 .. 32
Ramp Operation	😊	Separate documentation at RST	
LimitOben	😊		0 .. 128 m
LimitUnten	😊		-1 .. 128 m
Schleichweg	😊		0 .. 1000 mm
Display/Gong	😊		

Pos.Indicator	😊		
Floor Text	😊	Only for EAM from RST. Texts for each floor.	
Language	😊	Only for EAM from RST. Language selection for floor texts.	
Displaymode	😊	Only for EAM from RST. Selection of representation	
Floor Changes	😊	Only for EAM from RST. 0: Hard transition 1: Soft transition. Floor value scrolled in travel direction 2: Soft transition. Floor value scrolled against travel direction	
Scroll Speed	😊	Only for EAM from RST. Definition of run-through speed of arrows and texts	
Change at Target?	😊	Only for EAM from RST. 0: Display switches in the middle between 2 floors. 1: Display switches when destination zone is reached.	
Disp.SpecDrive?	😊	Only for EAM from RST. 0: Special travel operations are not displayed 1: Special travel operations are displayed via scrolling texts	
Landing Disp.Binary?	😊	For parallel-controlled floor displays. 0: Output Gray-encoded 1: Output binary-encoded	
Cab.Target.Land.Dist	😊	The distance to the the target floor in which the floor position will be displayed permanently	1 .. 10000 mm
Gong-Functions	😊		
Gong.Dist.to Floor	😊	The distance to the the target floor at which the gong signal will be activated	0 .. 10000 mm
Gong at Land.?	😊	Gong signal at floor will be activated with hall call	0 .. 1
Blinking Approach?	😊	0=No: No flashing. 1=Yes: Flashing when landing	0 .. 1
Range Cab.Pos.	😬	Range in which the signal Cabin Position is output at the floors	20 .. 100000 mm
Lock w. Inv. Error	😊	0=No: After inverter faults, the controller tries to restart 1=Yes: Controller will be disabled after a inverter fault	0 .. 1

4.6.6 Monitorings

Parameter		Description	Setting range
Brake Monitor K1K2	☺	Monitoring of brake contacts	0 .. 1
OFF ON On+disableEN81A3 EIN(CAN) Ein+SperreA3(CAN)		Inactive Active, max. 3 unsuccessful attempts, otherwise disable Active, disable as per EN81A3 after error. Disabling may only be cancelled after reset and deletion of error memory. Überwachung über CAN, Bremskontakte am Umrichter angeschlossen (<i>Digin1</i> und <i>Digin2</i>). Maximal 3 Fehlversuche, dann Sperre. Überwachung über CAN, Bremskontakte am Umrichter angeschlossen (<i>Digin1</i> und <i>Digin2</i>). Bei Fehler Sperre. Aufhebung der Sperre erst nach Reset und Löschen des Fehlerspeichers.	
Brake Mon.K1K2 Inv.	☹	Brake control contact signals will be evaluated inverted	
Brake Monitor K1K2	☺	Brake control contact signals can be programmed on universal I/Os („ <i>Bremse3In</i> “ bzw. „ <i>Bremse4In</i> “).	
Time Brake Mon.	☹	Delay after which the brake contacts will be evaluated	100 .. 5000 ms
Decel.Control	☺	Separate documentation at RST	
Dist.to term.floor	☺	Distance to terminal floors at which the set speed („SpeedThreshold“) will be checked	0 .. 10000 mm (0 = OFF)
SpeedThreshold	☺	The speed which is to be checked at distance („Dist.to term.floor“) to terminal floor.	
vMaxPuffer	☺	Max. speed for buffer test	
Monitoring Terminal	☹	The input must always be high (can be used for contactor monitoring)	
Stop Lvl.+Lock-up Stop Lvl. no Lock-up Stop inst.+Lock-up Stop inst no Lock-up		After reaching target floor the elevator is locked up. After reaching target floor the elevator will stay out of order until the fault is cleared Elevator will go into lock up instantly. Elevator will go out of order instantly until fault is cleared.	
Brake Mon.EN81A3 IMD	☹	Activation of brake monitoring in VVVF inverter . Function is only supported if VVVF inverter is controlled via CAN.	0 .. 1
Temp.Mon.Ext.N.O?	☺	Input „TempüberwExt“ is evaluated as a normally open contact	0 .. 1
Motor Temp. Monitor	☺	Monitoring of motor temperature.	0 .. 1
Oil Temp. Monitor	☺	Monitoring of oil temperature.	0 .. 1

Run Time Monitor	😊	Monitoring of travel time. Zone signal must be received within the set time. Value 0 disables this function.	0 .. 45 s (0 = OFF)
Car Start Monitor	😊	Monitor checks if the cabin is moving upon start (threshold 0.01 m/s). on. Value 0 disables this function.	0 .. 20 s (0 = OFF)
Lock Monitor	😊	Maximum wait time when lock is closed	0.1 .. 10 s
Max. temperature	😞	Max. electrical cabinet temperature When exceeded, the lift will move to Out-of-Order stop.	10 .. 100 °C
Min. temperature	😞	Min. electrical cabinet temperature If temperature is lower, the lift will move to Out-of-Order stop.	-10 .. 100 °C
Temperature Out 1	😊	Switching threshold for temperature output1	10 .. 100 °C
Temperature Out 2	😊	Switching threshold for temperature output2	10 .. 100 °C
Photocell Max.Time.	😞	Max. time of light barrier interruption. If higher, display "Out of Order". Value 0 disables the monitoring function.	0 .. 600 s (0 = OFF)
Level Monitor	😞	If, after a normal travel operation (no inspection or return operation), the stop inaccuracy is greater than the set value, an entry will be made in the error memory. Value 0 disables the monitoring function.	0 .. 100 mm (0 = OFF)
VMaxInspection	😊	Maximum permitted inspection-speed	0,3 .. 0,8 m/s
DirMonitCabine	😞	Maximum distance allowed for wrong direction movement	5 .. 100 mm
No Move during run	😞	Maximum time allowed for no movement	1000 .. 10000 ms
Rope Slip	😞	Cable slip monitor, enter max. slip. Value 0 disables the monitoring function. Only possible with CANDrive interface to VVVF inverter	0 .. 500 mm
Car Light Monitor	😊		
Light Mon.Err.Time	😊	Time delay before cabin light- fault	
Activate	😊	Cabin lighting is monitored by measuring the lighting current. Here, you can set the threshold for a failure of the cabin lighting. Value 0 disables the monitoring function.	0 .. 100 % (0 = OFF)
Car Light Measure.	😊	Display of currently measured cabin light current.	

4.6.7 Energy Save (ECO)

Parameter		Description	Setting range
ECO Mode (0=OFF)	😊	0: Eco mode disabled 1: Standard mode Various components such as absolute encoders, LCD displays and floor indicators will be turned off when the standby time has elapsed 2: Additional to standard mode the relevelling numbers will be reduced. (according to parameter „Relevel ext. On“).	0 .. 2
Standby time	😊	Time after last travel operation until controller switches to standby mode. Note: If errors are present, the controller will not switch to standby mode.	0 .. 300 min
WakeUp time	😊	Time required after standby mode to activate various components Currently no function	0 .. 300 min

Separate documentation at RST.

4.6.8 Anti Nuisance

Parameter		Description	Setting range
Max.no.Car Calls	😊	If the number of inside calls exceeds the value set here, they will be deleted and the issue will be logged in the error memory. Value 0 disables the monitoring function.	0 .. 32 (0 = OFF)
C.Calls no Photo.Int	😊	If the number of travel operations with inside calls without light barrier interruption exceeds the value set here, they will be deleted and the issue will be logged in the error memory. Value 0 disables the monitoring function.	0 .. 32767 (0 = OFF)
Empty Car	😊	When the cabin is empty, no inside calls will be accepted. Value 0 disables the monitoring function.	0 .. 1 (0 = OFF)
Alarm-Filter	😊		
<i>Not during travel operations or with open door</i>		No emergency calls possible during travel operations or with open door	
<i>Not during travel operations</i>		No emergency calls possible during travel operations	
<i>Always possible</i>		Emergency calls are always possible	
Alarm-Type	😊	0: Standard. 1: Special Version (RST No. 40003_xx)	0 .. 1
Alarm-Delay	😊	Delay before forwarding emergency call.	1 .. 10 s

4.6.9 Inverter settings

If the VVVF inverter is operated via CAN, it can be set up by remote control from the controller.

VVVF-inverter control can be activated in two ways:

- Via parameter **VVVF inverter setting=1**
- By pressing the *Mode/Reset* button to the right of the controller display

4.6.10 Group

Parameter		Description	Setting range
Elevator Type	😊	Single lift Group communication deactivated Group lift Activates communication with the other group controllers	
Elevator No.	😊	Each lift in the group is assigned its own number. The number defines which lift is assigned the group master function. The lift with the smallest number is the group master. If this lift is out of service, the lift with the next higher number will perform the master function automatically.	1 .. 4
LobbyParkFloor	😊	One elevator will always park at main floor. Value 0 = deactivated	0 .. 1 (0 = OFF)
No.of Shaft Risers	😬	Must be = 1.	1 .. 2

4.7 Display/Diagnostic

4.7.1 Error Log

- The error memory contains the last 50 errors that have occurred.
- For easier troubleshooting, additional data is saved on each error.
- The last entry describes the most recent error.
- Once the maximum number of entries is reached, the oldest error will be removed.

The error menu is structured as follows:

```
50/50 :5949
We 24.01.16 00:26:17
Error Internal
SSI Open/Short Cir.?
```

Line 1: No. in memory (error 50 of 50 entries)
Line 2: Date and time
Line 3: Plain error text
Line 4: Plain error text

```
Error Log
...erase ? <E>
Exit <C>
```

When leaving the menus, you can delete the logged errors.

4.7.2 CAN Bus

Via this menu, you can access information for diagnosis in consultation with RST. The individual submenus are not described in detail here.

4.7.2.1 CAN Bus-Log

This is an extended access level menu 😊.

It contains info on CAN-bus, incl. the date and time

For example:

CAN does not respond
New node was detected
Node reports error
etc.

4.7.2.2 Status Group

Here, you will find group info. The menu will only be displayed if parameter **Lift type = Group** is selected.

4.7.2.3 Status Shaft Bus 1

Here, you will see how many nodes are involved in the CAN message traffic in shaft bus 1 and if any errors are reported.

Via the   buttons, you can scroll through the list of CAN nodes. Error and software version info will be displayed for each node.

4.7.2.4 Status Shaft Bus 2

Like shaft bus 1 Menu will only be displayed if a 2nd shaft bus branch exists. The number of shaft branches is pre-configured by RST in the factory.

4.7.2.5 Status Car Bus

Like shaft bus 1

4.7.3 Inputs/outputs

4.7.3.1 Shaft Bus 1

```
Input/output
Shaft Bus 1

Shaft Bus 1
6 Nodes
... go on with <E>

Univ.Mod.Front No. 1
K1.16 9 8 1
O: 00000000 00000000
I: 00000000 00000000
```

When the menu is opened, number of shaft bus nodes found will be displayed first.

Use the **E** button to open the node list. In display line 3 you will see the Outputs and, in line 4, you will see the Inputs.

4.7.3.2 Shaft Bus 2

Menu structure like shaft bus 1. Menu will only be displayed if a 2nd shaft bus branch exists. The number of shaft branches is pre-configured by RST in the factory.

4.7.3.3 Car bus

Menu structure like in Shaft Bus 1.

4.7.3.4 Main board

```
Input/output
Main Board

Main Board
ERO (In)
0 0 0 0
561 562 563 564
```

Use the **E** button to open the terminal list. In display line 3, you will see the terminal status and in line 4, you will see the terminal number.

The terminal number is to be read as follows:
Example: **561** is terminal **X56** No. 1

4.7.4 Actual Values

Display value		Description	Unit
Rope Slip	😊		
Factor mm->Incr.	😊	Conversion factor shaft position VVVF inverter increments	
Current slip	😊	Measured cable slip of last travel operation	
Max. slip	😊	Measured maximum cable slip of all travel operations since last Power-On	
Car Position	😊	Current cabin position.	mm
CarSpeedDecel.Point	😊	Cabin speed at last control point	mm/s
Car Speed MAX	😊	Maximum cabin speed of last travel operation.	mm/s
Car Accel. MAX	😊	Maximum cabin acceleration of last travel operation.	mm/s ²
Temperature	😊	Current ambient temperature	°C
Min>AbsPos>Max	😞	Counter of position values outside of shaft limits (EMC issues, encoder defects)	
SSI-ErrEDCRL	😞	SSI error register (EMC issues, encoder defect)	
PosDelta > Max	😞	Counter of events with implausible position changes (EMC issues, encoder defect)	
CorrectionValZbl	😞	With motor encoder: current correction value at zone sheet	
CorrectionValZbl MAX	😞	With motor encoder: Greatest correction value since Power-On at zone sheet	

4.7.5 Statistics

Display value		Description	Unit
Absolute Counters	😊	Counter since commissioning of IMC-2	
Run Counter	😊		
Door Cycles Front	😊		
Door Cycles Rear	😊		
Active Hours	😊		
Relative Counters	😊	Counter readings since last deletion	
Run Counter	😊		
Door Cycles Front	😊		
Door Cycles Rear	😊		
Active Hours	😊		
Count Till Service	😊	Counter readings until next service	
Run Counter	😊		
Door Cycles Front	😊		
Door Cycles Rear	😊		
Active Hours	😊		
Call Statistics	😊	Calls of individual floors/door sides	

4.7.6 Actual Calls

Display value		Description	Unit
Inside calls+outside calls	😊	Display of current calls	

4.7.7 Software version

Display value		Description	Unit
Software version	😊	Number, date	
Bootloader version	😊	Number	

4.7.8 Remote Access

Display value		Description	Unit
Status	😊	Status of the GSM-Modem	
LastRemoteInq	😊	Elapsed time since the last query	
ConnectAttempts	😊	Number of connection attempts since reset	
Signal Strength	😊	GSM signal strength	10 .. 30 = ok

4.8 System

4.8.1 Inverter Control

Parameter		Description	Setting range
Terminals	☺	The VVVF inverter is actuated via terminals	
CANDriveVelocity	☺	The VVVF inverter is actuated via CAN bus Travel mode is like in actuation via terminals.	
CANDrivePosition	☺	The VVVF inverter is actuated via CAN bus The VVVF inverter evaluates the position data from the controller and determines time-optimized travel profiles with direct landing.	

4.8.2 Language

Change the language.

4.8.3 Time/Date

Display of current time and date.

4.8.4 Set Time/Date

Parameter		Description	Setting range
Day	☺		1 .. 31
Weekday (Su=1)	☺		1 .. 7
Month	☺		1 .. 12
Year (20xx)	☺	Example: 2013 -> Enter 13	11 .. 50
Hours	☺		0 .. 23
Minutes	☺		0 .. 59
Save Data? <E>	☺	Save entries	

4.8.5 Code

Parameter		Description	Setting range
Enter Code	😊	When the plant is password-protected, you will have to enter the password here before parameters can be edited.	0 .. 32767
Change Code	😊	Activate or edit code number	
1st value	😊	Set value using   buttons and save by pressing  .	0 .. 32767
2nd value	😊	Set value using   buttons and save by pressing  . Note: The 2 values must be identical for the code to be activated.	0 .. 32767

4.8.6 Menu Access

0 = part: Access only to parameters required for maintenance/service

1 = full: Access to all parameters

4.8.7 USB Host

The main board has an integrated USB-Host and is generally equipped with a USB Stick. We recommend you to use this stick as it has been tested.
Generally most USB-Sticks will be supported but due to the great number of manufacturers and types we can not guarantee no faulty function.

Following functions are possible:

- Datalogger
- Installing Softwareupdates
- Parametertransfers

The standard function is datalogger. All events are logged in real-time.

Parameter		Beschreibung	Einstellbereich
Para-Export	😊	Export parameters and IO-config. to USB-Stick	
Para-Import	😊	Import parameters and IO-config. from USB-Stick	
Firmware	😞	Firmwareversion	
Hex-File vom	😞	Date of Hex-File	
Fehlercode	😞	Errorcode from Host (e.g. Stick cannot be read)	
SendUSBLogData	😞	Starts transfer of logdata to PC	

4.8.8 Uploading software-Updates via integrated Flash Loader

Software updates should only be made in consultation with RST !

Via the integrated Flash Loader, you can upload software updates from a **USB stick** or **PC**. The Loader can only be activated if no travel operation is being executed and if **inspection** or **return mode** is on.



Note ! The programme in the Flash Memory will be deleted by this procedure.
Note that the controller should not be turned off during the programming operation which will take some 2 minutes !

At the end of the update, the controller will execute a system reset. After that it is ready for operation.

4.8.8.1 Flashing from USB Stick

The **easiest way** is flashing from a USB stick.

Once a USB stick containing the "18080xxx.hex" programming file, the following message will be displayed for 10 s :

```
USB-Stick OK
File 18080007.HEX
Start Update
<C>No      Yes<E>
```

After confirmation (press **E** button),
the following prompt will be displayed.
d

```
Are You Sure ?
Return On ?
<C>Cancel  Go On<E>
```

Before the update process can be started, **inspection** or **return mode** must be activated.

When you take the stick out and plug it in again, the message will be displayed again.

4.8.8.2 Flashing from PC

For further informations please contact RST.

4.9 Service

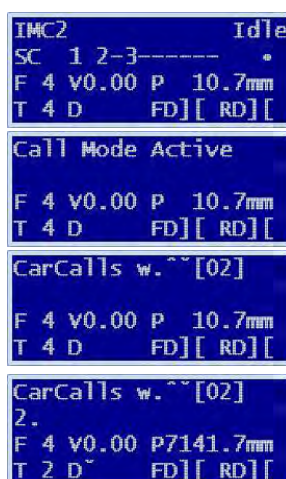
4.9.1 Calls

Parameter		Description	Setting range
Random Calls	☺		
Activate	☺	1=On: Activation of automatic call generation	0 ..1
Call no. (act)	☺	Number of calls to be made automatically. In accidental mode, inside calls are generated.	0 .. 10000
Run Interval	☺	Time to wait after end of travel operation until making a new call.	0 .. 32767 s
Run Top/Bottom	☺	1=Yes: Only calls to the end floors are made	0 .. 1
Disable Car Call F	☺	Disable inside calls, front door side, certain floors (see Section 4.9.1.3).	
Disable Land.Call F	☺	Disable inside calls, rear door side, certain floors (see Section 4.9.1.3).	
Disable Car Call R	☺	Disable outside calls, front door side, certain floors (see Section 4.9.1.3).	
Disable Land. Call R	☺	Disable outside calls, rear door side, certain floors (see Section 4.9.1.3).	

4.9.1.1 Manual calls via flip switch IMC-2

Actuate for a short time for call to next floor, travel direction corresponds to direction of actuation.
Actuate for a long time for call to end floor, travel direction corresponds to direction of actuation.

4.9.1.2 Manual calls via keyboard and menu of IMC-2



In standard menu, press  or  for more than 0.5 s to activate the Calls menu.

The Calls menu will be displayed.

Use buttons   to select the floor. It will be displayed in the first line of the display in square brackets.

Press button  to make the call to the selected floor.

Note: The menu can also be used for displaying current calls.

4.9.1.3 Disabling calls for certain floors

The procedure for disabling calls in certain floors is as follows:



When calling the menu, the first floor is offered as shown in the following illustration. By default calls for the floors are enabled.

To change the setting, use the **E** button to switch between "enabled" and "disabled".

Use the **↑↓** buttons to get to the next floor.

Use the **C** button to exit the menu. A prompt will be displayed asking you if you wish to save the changes.

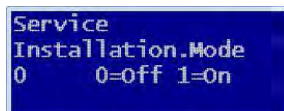
Confirm by pressing the **E** button to save the configuration. Press the **C** button to exit the menu without saving.

The procedure is the same for front inside calls, rear inside calls, front outside calls and rear outside calls.

4.9.2 Assembly mode

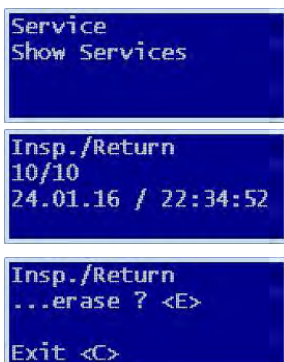


Assembly mode can only be activated in inspection or return mode. It will be deactivated automatically once the controller is set to normal operating mode. Activation in **Service** menu.



The controller is delivered in assembly mode. In this mode, various error messages (encoders, buses,...) will be suppressed to enable return travel operations without position system and bus wiring.

4.9.3 Display services



The controller saves the times when inspection or return mode was activated.

When leaving the menus, you can delete the logged operations.

4.9.4 TÜV / Test

Parameter		Description	Setting range
Run Time Min.	😊	The runtime monitoring limit is reduced to 2 s for one travel operation. In this way you can cause an intentional runtime error. After the travel operation, the value is set to 0 to disable this function.	0 .. 1
Top/Bott.Limit Test	😊	For the test, please move to an end floor. Creeping speed setting for the VVVF inverter will remain active even though the flush position is reached until the limit switch is reached. After the travel operation, the value is set to 0 to disable this function.	0 .. 1
Buffer-Test ERO	😊	In this mode ERO speed will be set to V4. Makes it possible to hit the buffer at max. speed.. Will be deactivated automatically after one run.	0 .. 1
Overload OFF	😊	Die response to a cabin overload signal is suppressed for one travel operation. In this way, the travel operation can be executed even if the cabin is overloaded. After the travel operation, the value is set to 0 to disable this function.	0 .. 1
EN81-A3 Test Run	😊	Execution of test travel operation in order to test EN81-A3 functionality (see Section 0)	0 .. 1
N No Lockup SC	😊	No disable function in case of passive interruption of safety circuit for the time set (e.g. during TÜV inspection)	0 .. 60 min
Emerg.stop-Test	😊	This function will help to termin the mounting distance of the terminal speed control limit. An emergency stop can be initiated with the E-key during run The following will be displayed: • Total distance to standstill • Distance until the speed is below <i>vMaxPuffer</i> .	0 .. 1

4.9.5 Calibration of Inverter

When function is active, the controller accepts changed VVVF inverter feedback (on main contactors and brake) for one travel operation. After the travel operation, the parameter will be reset automatically.

4.9.6 Service Interval

Parameter		Description	Setting range
Runs Till Service	☺	If value is 0, the parameter is ignored for determination of next service/maintenance.	0 ..20000000
Door Cycles Front	☺	If value is 0, the parameter is ignored for determination of next service/maintenance.	0 ..20000000
Door Cycles Rear	☺	If value is 0, the parameter is ignored for determination of next service/maintenance.	0 ..20000000
Active Hours	☺	If value is 0, the parameter is ignored for determination of next service/maintenance.	0 ..20000000
Set interval	☺	Use the E button to include the counter values above in the general counter readings for the next service. Generally, a service message will be displayed once any of the counters has reached the service limit.	

4.9.7 Erase Rel. Counter

Here, you can delete the relative counters (see Section 0).
To do this, confirm the prompt by pressing the **E** button.

```
Service
Erase Rel. Counter
```

```
Are You Sure ?
<C>Cancel Go On<E>
```

```
Statistic Data
..Erase With <E>
```

4.9.8 Monitoring

Parameter		Description	Setting range
Remote Access	☺	0: off 1: only at return operation 2: always 3: not when car priority is active	0 .. 3
Provider/Modemtyp	☺	Info is required for Internet access	
AB-Nummer	☺	Required for lift assignment	
SIM-Nummer	☺	Required for access to the system	

4.10 Programmable I/O functions

4.10.1 General

The universal input/output terminals of the controller can be programmed very flexibly in the whole control system. Programming is done directly in plain text.

You will find the terminal configuration menu in

Settings – Unit – Term. Settings I/O

The following distinction is made:

- IMC-2 main board
- Car Bus
- Shaft Bus 1
- Shaft Bus 2

4.10.2 Programming

Generally, the I/O terminals found in the menu are displayed.

Example: At **Car bus node no. 1**, an I/O terminal is to be programmed with the function **Arriving bell up** on the **front door side** for **Floor 1**.

To do this, switch to the I/O configuration menu first.

```
Unit
Term. Settings I/O
```

```
>Car Bus
```

```
Car Bus
>ITM f      ( 1)
1 +++++--- 8
```

```
Car Bus
ITM f      ( 1)
>IO 1 / 8
1 +++++--- 8
```

```
CB --/ITMv ( 1)/K: 1
>Car Call w.Ind. *
Front
Hst 1
```

```
CB --/ITMv ( 1)/K: 1
Car Call w.Ind. *
>Front
Hst 1
```

After pressing the **[E]** button, the car bus menu will be displayed.

Using the **[↑↓]** buttons you can select the other components (shaft bus, main board).

After pressing the **[E]** button, the first bus module found will be displayed. Use the **[↑↓]** buttons to scroll through all modules found.

Use the **[E]** button to start edit mode, the first terminal will be flashing.

Use the **[↑↓]** buttons to select the required terminal of the module.

Terminals marked with “+” are already assigned a function. Free terminals are marked with “-”

Use the **[E]** button to start the function selection. Use the **[↑↓]** buttons to select the required function. The terminal functions are displayed in alphabetical order.

Use the **[E]** button to go to the next selection option.

In the case of terminal functions without reference to floors or door sides, these selection options are not available, as shown in the left example.

5 Position reference systems

IMC-2 supports the following shaft copying systems:

5.1 SSI absolute encoder

Connected to IMC-2 main board.

A Wachendorff encoder type WDGA58B-10-1213 must be used.

After Supply Power Off and On, the controller knows the position instantly. No search travel operation will take place.

5.2 ELGO LIMAX with SSI interface

Connected to hand-held terminal.

Position values are transmitted via CAN bus.

After Supply Power Off and On, the controller knows the position instantly. No search travel operation will take place.

5.3 Shaft incremental encoder 1024 Pulses HTL +15.. +24V

Connected to IMC-2 main board.

A pre-limit switch must be installed at the bottom of the shaft. The controller will use it after Supply Power Off and On to identify the position of the bottommost floor.

5.4 Motor incremental encoder 1024 Pulses HTL +15.. +24V

Connected to IMC-2 main board.

A pre-limit switch must be installed at the bottom of the shaft. The controller will use it after Supply Power Off and On to identify the position of the bottommost floor. The motor/shaft pulse translation is performed during the Learn Run. Re-synchronization of the position (cable slip compensation) is done automatically at the zone sheets during the travel operation.



The pre-limit switch is active-low, i.e. Level 0 means switch = ON !

6 Learn Run

6.1 General



Before starting a teaching travel operation, you will have to deactivate installation mode! Deactivation in [Service](#) menu.

You can perform **automatic** or **manual** teaching travel operations (in return mode).

During the teaching travel operation, the controller will determine the flush position (middle of zone sheet) and the door sides of the individual floors automatically. The detection is done based on the zone signals. **For this reason, a zone sheet must be installed in each floor.**

In addition, it must be checked if the number of floors is set correctly (Menu [Settings-Unit-Number of Floors](#)).

If an **incremental encoder** is used for shaft copying, it will be checked before starting the Learn Run if the **pre-limit switch** is installed. It must be installed in the bottom floor. If it is not installed, the relevant message will be displayed.



The pre-limit switch is active-low, i.e. Level 0 means switch = ON.

If a motor encoder is used, you will have to determine the transmission ratio between motor pulses and cabin movement first. To that end a zone sheet must be passed in return mode. This is done via an interactive menu. The procedure is self-explanatory and not described in detail for this reason.

6.2 Execution

In return mode, move the cabin to the **bottommost floor**, ensure that it is within the zone sheet area.

```
Settings
Position Reference
```

```
Position Reference
Learn Run
```

```
Are You Sure ?
During Learn Run
All Pos. Are Erased
<C>Cancel Go On<E>
```

```
Learn Run
Learn Run Manual
```

```
*With Zone Flag*
41574608mm ZvXZh-
Determine Dir...
... cancel with C
```

Switch to menu
[Settings - Position Reference - Learn Run](#)

Start the function by pressing the **E** button.

The following warning will be displayed. Confirm it by pressing the **E** button...

Now, you can choose either an automatic or a manual Learn Run. Choose the relevant menu

or

```
Learn Run
Learn Run Auto.
```

.. and start teaching mode by pressing the **E** button again.

After deactivation of return mode, the Learn Run will start now in **automatic** mode.

In manual mode, please move up using the **return control** ...

```
HST 1 =      0mm Zv
      316mm Zv-Zh-
Waiting for Zone 2/
... cancel with C
```

```
HST 3 =  6353mm Zv
      6609mm Zv-Zh-
Waiting for Zone 4/
... cancel with C
```

```
Learn Run Complete !

Save <E> (2s)
Discard <C>
```

At each negative zone sheet edge, the controller will determine the position of the floor. Here, the flush position is set to the middle of the zone sheet. In addition, you can see how many zones (floors) the controller expects. This corresponds to the set number of floors (Menu [Settings-Unit-Number of floors](#)).

In the top line, the determined flush position of the floor is displayed.

Once the top zone sheet is detected, the Learn Run is stopped and the following message is displayed.

Save the taught values by pressing the  for a while.

You can view and, if necessary, correct the taught values in the menu [Settings – Position Reference– Floor Settings](#) for each floor.

After successful Learn Run, regular travel operations should be possible. To check flush positioning, move to each floor from both directions. In order to ensure that the drive system works properly, check if the flush position shown in the display is within a tolerance of 2 mm.

If this is the case, it must be checked if the set flush positions correspond to the actual flush positions.

If they are different, flush positioning can be corrected as follows:

- Setting at IMC-2 main board
- Setting via Smartphone-APP (Android)
- Setting via IMC-2 hand-held terminal
- Correction from car panel

7 Setting the flush positions

Before carrying out a flush correction, you will have to check if the deceleration distances are set correctly by the VVVF inverter and the controller. This is the case if the drive approaches the floor at creeping speed for approx. 1 to 2 seconds. The flush position displayed should be within a range of **+2mm** irrespective of travel direction.

Important: The displayed flush position only refers to the taught positions and not to the real flush position in the shaft !

When adjusting the real flush position in the shaft, the procedure will be different depending on the type of encoder (shaft encoder or motor encoder) used:

Use of shaft encoder (incremental or absolute):

- Move to and measure the flush deviation at each floor. The floor position can be adjusted in the shaft copying menu (see Section 0) [Setup – Position Reference – Floor Settings](#) or via the flush correction at the cabin control panel (see Section 7.2).

Use of motor encoder (incremental):

- Move to and measure the flush deviation at each floor (except for bottommost floor). The floor position can be adjusted in the shaft copying menu (see Section 0) [Setup – Position Reference – Floor Settings](#) or via the flush correction at the cabin control panel (see Section 7.2).
- If the flush position in up direction is correct for all floors (except for bottommost floor), measure the deviation in down direction and correct it in Parameter [Setup – Position Reference – Zone Hysteresis](#). The following must be noted: If the cabin is 8 mm too deep, for example, Parameter [Zone Hysteresis](#) must be set to -8 mm.
- Finally check and adjust the flush position of the bottommost floor.

The following example is to illustrate how the flush correction works:

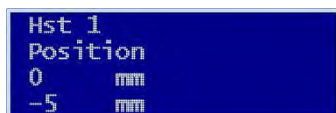
- After the Learn Run, the cabin is 5 mm too high in the bottommost floor.
- The position is to be corrected by 5 mm in down direction.

7.1 Flush correction via hand-held terminal or IMC-2 main board

Switch to menu [Setup – Position Reference – Floor Settings](#).



After the Learn Run, the bottom most position will always be 0 mm.



Press the **E** button to activate edit mode

Use the **↑↓** buttons to change the parameter to - 5 mm

... and save the value by pressing the **E** button.



Now, the cabin will be 5 mm deeper after the next travel operation

7.2 Correction at cabin control panel

Activate correction mode in

Setup – Shaft copying – Level Adjust=1

menu.



After activation, the following will be displayed, the controller is now in a special mode:

- inside priority activated
- outside calls will not be accepted

- 1.) Move the cabin to the required floor.
- 2.) Press the **Open Door button** for more than 2 seconds to start the flush correction procedure. A **signal sound** will indicate that the flush positions can be corrected now. When you release the buttons, all inside call buttons will light up, except for the **topmost** and **bottommost inside call**. These are now used for correcting the flush positions.
Note: If you don't start the correction procedure within 60 s, the sequence will be cancelled. To restart it, press the Open Door button again.
- 3.) Press the **topmost inside call** button to change the flush position correction value by **+1 mm**. Press the **bottommost inside call** button to change the flush position correction value by **-1 mm**. Each correction step will be acknowledged by a signal sound. The correction values are not saved yet at this stage.
- 4.) The corrected values are saved by pressing the Open Door button for more than 3 seconds, saving is acknowledged by a long sound. If you press the button for a shorter time, the setup procedure will be cancelled and you will hear a series of 3 short sound signals.
- 5.) Move to the next floor and repeat steps 2 to 4.

Once all floors have the required flush position, you can disable correction mode by setting

Setup – Shaft copying – Level Adjust=0

When there are no flush position correction activities for more than 10 minutes, this mode will be deactivated automatically.

8 Bypass-Operation

8.1 General Information

According to the standard EN81-20, devices for bridging the shaft door, car door or lock contacts are to be provided. These are used for maintenance or test purposes and for emergencies. The components used are to be labeled "BYPASS".

All parameters and terminal functions used in the controller are marked with the suffix "Bypass".

8.2 Functional description

The complete bypass function is activated via the BypassEnable parameter in the service menu.

A run in the bypass mode is only possible when the door is closed.

The determination "door is closed" is realized in the inspection and return operation mode via the safety circuit.

Since the safety circuit is bridged in by-pass mode, the state "door is closed" must be determined by means of a door limit switch (door end switch) or, in the case of time-controlled doors, via a separate initiator (BypassTureZuIn).

For operation with a safety light ray, both status inputs (front + rear) must be 1.

The bypass mode is activated via the input (BypassIstAus). The input is "fail-safe", the function is active if the signal is not pending. In case of a wire break the controller switches to the bypass mode and prevents a normal run.

The display shows **BYPASS ACTIVE**.

A run is now only possible via the ERO / Insp. buttons. Inspection has priority over ERO..

During the bypass run, the output BypassAktivOut is active.

An input Bypass switchErrorIn allows you to wire a signal which is active if the switch position is not permitted. If the control detects this input, only inspection control can be used.



Important note:

In the future, car doors must always be fitted with a "door closed limit switch" !

9 Inspection controller

9.1 General Information

The inspection control has priority over the return control.

In addition to the inspection control on the cabin, there is an inspection control in the pit.

The controller displays which inspection inputs are activated:

Inspection On	Display: Inspection Cabin
Inspection pit On	Display: Inspektion Pit
Inspection On und Inspection pit On	Display: Inspektion Cb+Pit

9.2 Functionality

- If only one inspection control is switched on, then you can drive with the UP or DOWN buttons (**Inspection** ↑, **Inspection** ↓, **Inspection** ↑ **Pit**, **Inspection** ↓ **Pit**).
- If both cabine and pit inspections are switched on, both direction-of-travel switches must be pressed together (with the same directional specification) for a run.
- During a run, change of direction is only possible after releasing both buttons.
- Special feature pit:
The switching on of the pit inspection control (**Inspection pit On**) is stored in the EEPROM.

After switching off the pit inspection control, the controller remains initially locked. It can only return into normal mode after a reset signal (**InspResetGrube**) has been set.

Alternatively, it may be possible, if certain general conditions are met, to use an outside call to reset the pit inspection.

In the locked state, **Insp.Grube Locked** is displayed.
In Locked mode, the output **InspResetGrubeQuit** is set.

Switching the controller off and on again does not allow the unlock. The reset signal (**InspResetGrube**) is also required here.

After a "successful" reset, the output (**InspResetGrubeQuit**) is deleted.

10 UCM Detection (unwanted cabin movement)

10.1 General

The safety monitoring module can be used in combination with the IMC-2 controller to detect unwanted cabin movements (**UCM**) as per **EN81-A3**.

The identified error is saved on the IMC-2 board permanently, i.e. the controller will remain disabled even after Power Off/On. Re-commissioning and resetting of the error may only be performed by authorized persons.

Monitoring of the UCM safety gear can be realized via the IMC-2 controller since the function is TÜV-certified. For more information, refer to chapter 11.

For system testing, an open door is simulated. This is done by unplugging a short circuit connector in the door contact branch of the safety circuit.

10.2 Description of function

If the lift moves out of the door zone area with the door open, the IMC-2 safety monitoring module will interrupt the safety circuit and the lift will stop (emergency stop).



The length of the door zone must be selected such that the distances required by EN81-A3 are kept.

Via the door safety circuit tapping, the controller will know that it is an EN81-A3 error and save the error permanently in the internal error memory. The error message "**UCM Error**" will be displayed. The plant is disabled and will remain disabled even after Power Off/On.

The plant can be re-commissioned by an authorized person. This is done by deleting the error memory manually.

10.3 Test

10.3.1 Preparations

- 1) Turn doors and outside calls off (slide switches).
- 2) Interrupt safety circuit in the door contact area by opening Jumper **"A3 Test"** at terminals **X4.1** and **X4.2**.
In this way a test can be carried out with closed doors (for safety reasons).
- 3) Activate EN81-A3 test in the menu.
Now, the controller will ignore the state of safety taps 3 to 5 for one travel operation and activate relay K3S (bypass of door contacts), and the travel operation can be started.

10.3.2 Execution

- 4) Make a call.
*The controller will start a travel operation.
At the end of the door zone, the safety monitoring module will interrupt the safety circuit, and an emergency stop will be actuated.*
- 5) The controller disables the plant, displaying the message **"UCM Error"**.
The distance covered referred to the flush position will be displayed.

10.3.3 Check of requirements as per EN81-A3

- 6) Check the dimensions required as per **EN81-A3**.
- 7) Turn plant off.
- 8) After approx. 15 seconds (display must be dark), turn plant on again.
The error **"UCM Error Eeprom"** will be displayed and the plant will remain disabled.

10.3.4 Re-commissioning the plant

- 9) Open the menu **Display/Diagnostic – Error Log**: The last error will be displayed.
- 10) When leaving the menu, confirm the **"Erase ?"** prompt by pressing the E-button to erase the error memory.
- 11) Turn plant off. After approx. 10 seconds (display must be dark), turn plant on again. Now, the plant is enabled again.
- 12) Connect **"A3 Test"** again.

The plant is ready for operation.

10.3.5 Regular testing



The requirements as per EN81-A3 must be tested in the context of the regular testing as per Section Fehler! Verweisquelle konnte nicht gefunden werden. !

11 Self-monitoring of UCM safety gear per EN81-20

11.1 Field of application

The self-monitoring system may only be used in combination with brake systems which are approved as a safety device preventing unwanted car movement according to EN 81-20.

This includes, for example:

- Drive brakes of cable lifts (with brake contacts)
- Hydraulic valves (with end position monitoring)
- Additional brakes at traction sheaves (with brake contacts)

11.2 Monitoring inputs at IMC-2 controller

2 digital inputs are provided at the controller to realize the monitoring function. The inputs are designated inputs and cannot be used for other functions.

Terminal	Function	Technical Spezification
X31 / 1	Bremse1/In	+24V+-10%, 10 mA, switching threshold 10V
X31 / 2	Bremse2/In	+24V+-10%, 10 mA, switching threshold 10V

Monitoring can be implemented either using NC or NO contacts (see 11.3.2).

By default, monitoring is implemented using NO contacts, i.e. when the brake is open, the contact is closed and there are +24V at the input.

11.3 Parameterization

11.3.1 Activation of monitoring function per EN81-20

The parameter *Settings – Monitorings – Brake MonitorK1K2* must be set to **On+LockA3(Term)**

11.3.2 Determination of signal level (High active or Low active)

If monitoring is implemented using NC contacts, *Settings – Monitorings – Brake Mon.K1K2 inv?* must be set to “1”.

In order to enable this parameter, press the two buttons in the middle simultaneously until the message “Menu Activated” is displayed.

11.3.3 Determination of wait time until check of feedback contacts

After a change in actuation of the brake or valves to be monitored, an adjustable wait time will elapse before the contact feedback is checked.

This time is made up of the following parameters:

Setting – Monitorings – **Time Brake Mon.** (works set = 2000 ms)
Setting – Monitorings – **Brake 2 Delay** (works set = 0 ms)

11.4 Overview of monitored states and error messages

Note	Error state	Error message
Start of travel operation. Check of brake / valve contact inputs once the brake is opened	No feedback signal 1	"Open K1"
Start of travel operation. Check of brake / valve contact inputs once the brake is opened	No feedback signal 2	"Öpen K2"
Start of travel operation. Check of brake / valve contact inputs once the brake is opened	No feedback signal 1 and 2	"Öpen K1+K2"
End of travel operation. Check of brake / valve contact inputs once the brake is closed	Checkback signal 1 remains active	"Close K1"
End of travel operation. Check of brake / valve contact inputs once the brake is closed	Checkback signal 2 remains active	"Close K2"
End of travel operation. Check of brake / valve contact inputs once the brake is closed	Checkback signal 1 and 2 remain active	"Close K1+K2"

11.5 Resetting errors

Once a brake monitoring error has occurred, the controller will be disabled – the error cannot be acknowledged.

Once the controller is turned off and on, the controller will remain disabled, and the error message "**BremseErrK1K2 EEP**" will be displayed.

To re-enable the controller, either the error memory must be deleted and then the Reset button (to the right of the display on the IMC-2 main board) must be pressed, or the board supply voltage must be turned off and on again.

11.6 Functional test during on-site commissioning

When commissioning the controller in the lift plant, the following test must be carried out:

Test A:

1. Disconnect signal at X31/1 (Bremse1/In).
2. Make call to execute a travel operation.
3. Once the travel operation has started, the message "**Error Brake – Öpen K1**" must be issued after the set time **Time Brake Mon.**, and an emergency stop is performed. In addition, the controller will be disabled ("**Lock-Up**" will appear on the display).
4. In this state, the controller will no longer respond to calls.
5. Reset controller by pressing the "Reset" button to the right of the display.
6. After system reset, the controller will be disabled immediately, and the error "**BrakeError EEPROM**" will be displayed.
7. Delete error memory (**Display – Error Log** – confirm the "...erase ? <E> " prompt upon exit)
8. Reset controller again.
9. After system reset, the controller is ready for operation again, and new travel operations can be started.
10. Start new travel operation, it must be executed without any errors.

Carry out test A as described above for input X31/2 (Bremse2/In), too.

In this case, the error message is "**Error Brake – Öpen K2**"

Test B:

1. Disconnect signal at X31/1 (Bremse1/In) and jumper +24 V voltage to X31/1.
2. Make call to execute a travel operation.
3. Once the travel operation has been completed, the message "**Brake error – CloseK1**" must be issued after the set **Time Brake Mon.**, time. In addition, the controller will be disabled ("**Lock-Up**" will appear on the display).
4. In this state, the controller will no longer respond to calls.
5. Reset controller by pressing the "Reset" button to the right of the display.
6. After system reset, the controller will be disabled immediately, and the error "**BrakeError EEPROM**" will be displayed.
7. Delete error memory (**Display – Error Log** – confirm the "...erase ? <E> " prompt upon exit)
8. Reset controller again.
9. After system reset, the controller is ready for operation again, and new travel operations can be started.
10. Start new travel operation, it must be executed without any errors.

Carry out test B as described above for input X31/2 (Bremse2/In), too.

In this case, the error message is "**Brake error – CloseK2**"

12 CANDrive interface

12.1 General

The CANDrive interface couples the controller and VVVF inverter via the CAN car bus. Data such as position, speed, operating states, adaptation modes, etc. are exchanged between the VVVF inverter and the controller permanently.

12.2 Operating modes

The following basic operating modes are available:

12.2.1 CANDriveVelocity

The CAN interface replaces the parallel terminal wiring of the inverter.
The deceleration distances of the controller and VVVF inverter must be set up / adjusted manually.

12.2.2 CANDrivePosition

Via the CAN interface, position and deceleration distance data enabling direct landing are transmitted in addition to the Velocity Mode.
No adjustment of deceleration distances required between the controller and VVVF inverter. The braking ramps are adjusted at the VVVF inverter depending on the required travel comfort.

12.3 Procedure

12.3.1 Activation

Controller:

Activation via menu **System – VVVF inverter control**

Here, you must select the relevant mode via the  buttons and confirm by pressing the  button.

- **CANDrivePosition** or - **CANDriveVelocity**

VVVF inverter:

Activation via menu **System – Operating Mode**

Here, you must select the relevant mode via the  buttons and confirm by pressing the  button.

- **CANDrivePosition** or - **CANDriveVelocity**

12.3.2 Calibration in CANDrivePosition mode

To ensure correct function, the positioning systems of the VVVF inverter and the controller must be adjusted to one another.

To do this, you should set the following plant data in the VVVF inverter first - menu **Setting – General Settings**:

Transmission ratio
Pulley diameter
Suspension



If you do not know all of the above plant data, please set plausible data for the VVVF inverter to have a reasonable basis for calibration.

Example: Transmission ratio->53:2=2650, Pulley diameter = 500mm, Suspension=1.

If the Learn Run was already performed in *CANDrivePosition* mode, the system is calibrated after that.

If the CANDrivePosition mode was activated at a later stage, the system must be calibrated in a return travel operation:

- Switch the controller to “Return”
- Before the travel operation, open the VVVF inverter menu **Setting – CANDrive – Adapt OK**. At first, this parameter is set to **0**.
- In return mode, move through the shaft. After a distance of 1 m, VVVF inverter parameter **Adapt OK** switches from **0** to **1**. Now, the system is calibrated.
The display value **Adapt INK/M** in the VVVF inverter menu **Setting – CANDrive** indicates how many encoder increments were counted per meter (used for error diagnosis only). The display value **DDrive Adapt** indicates which Drive pulley diameter is used by the VVVF inverter based on the calibration travel operation (only used for error diagnosis). With the plant data set correctly, this value should be close to the real drive pulley diameter.

Now, the controller can be switched to normal operation mode.

12.3.3 Special features in CANDrivePosition mode

Travelling to flush position with non-flush cabin after Controller Power On or after changeover from return to normal operation mode is always done at VN, provided that the cabin is in the zone area.

If the cabin is not in the zone, the travel profile used for travelling to the flush position is based on the remaining distance. If this is not the case, Stopping distance V2 must be reduced to 10 mm in the controller menu Setup – Shaft copying.

13 LiftControl for plant setup / diagnoses via PC

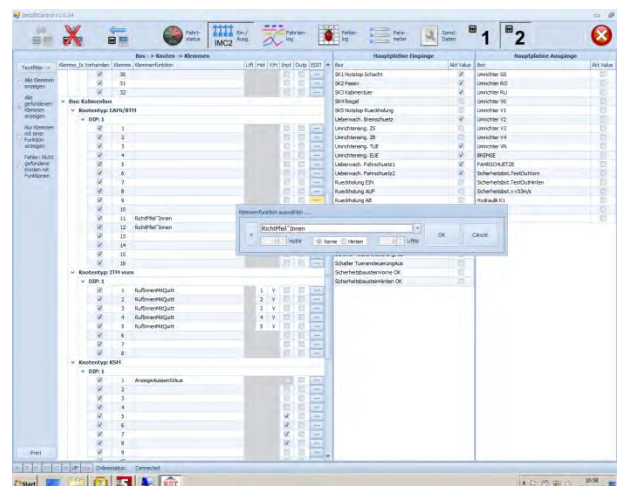
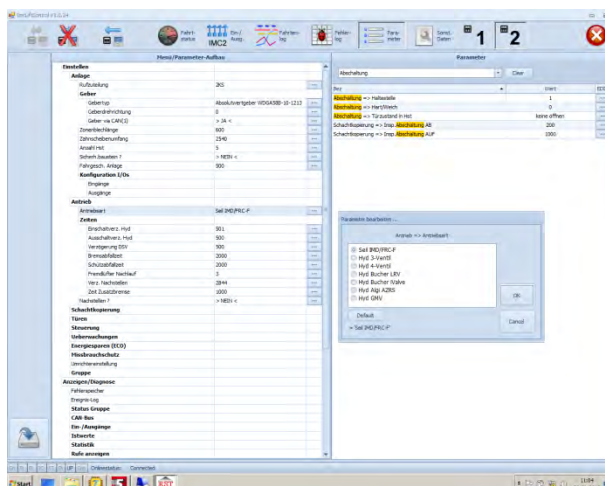
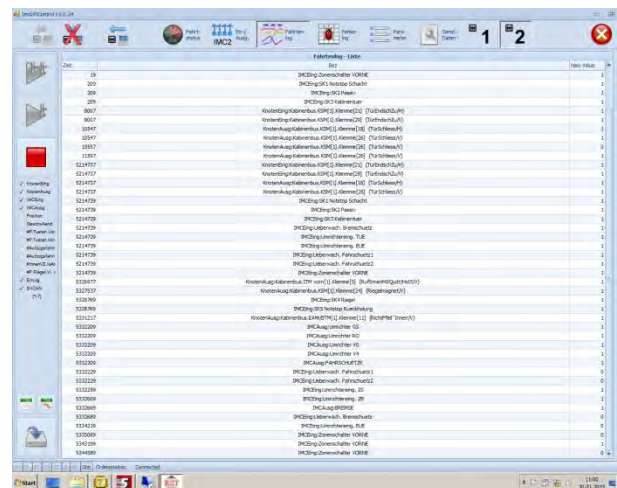
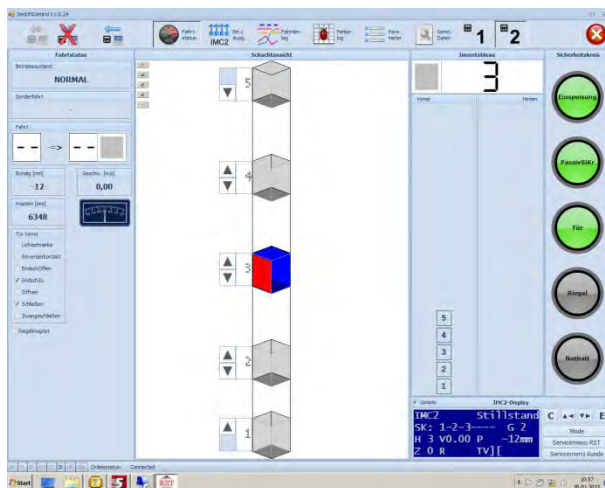
13.1 General

LiftControl is a powerful PC programme which can be connected with the controller locally or via remote data transfer.

The software is plain and user-friendly and enables easy and fast configuration of the plant parameters. In addition, it enables detailed plant analysis via the integrated real-time data logger.

13.2 Important features

- Single view of lift plant
- Real-time data logger
- Group view/monitoring in the case of lift groups
- Image of complete control menu for plain overview and easy parameter configuration
- I/O configuration menu with integrated search function for quick orientation
- Remote control of controller and VVVF inverter display
- Evaluation of logged data of internal USB stick

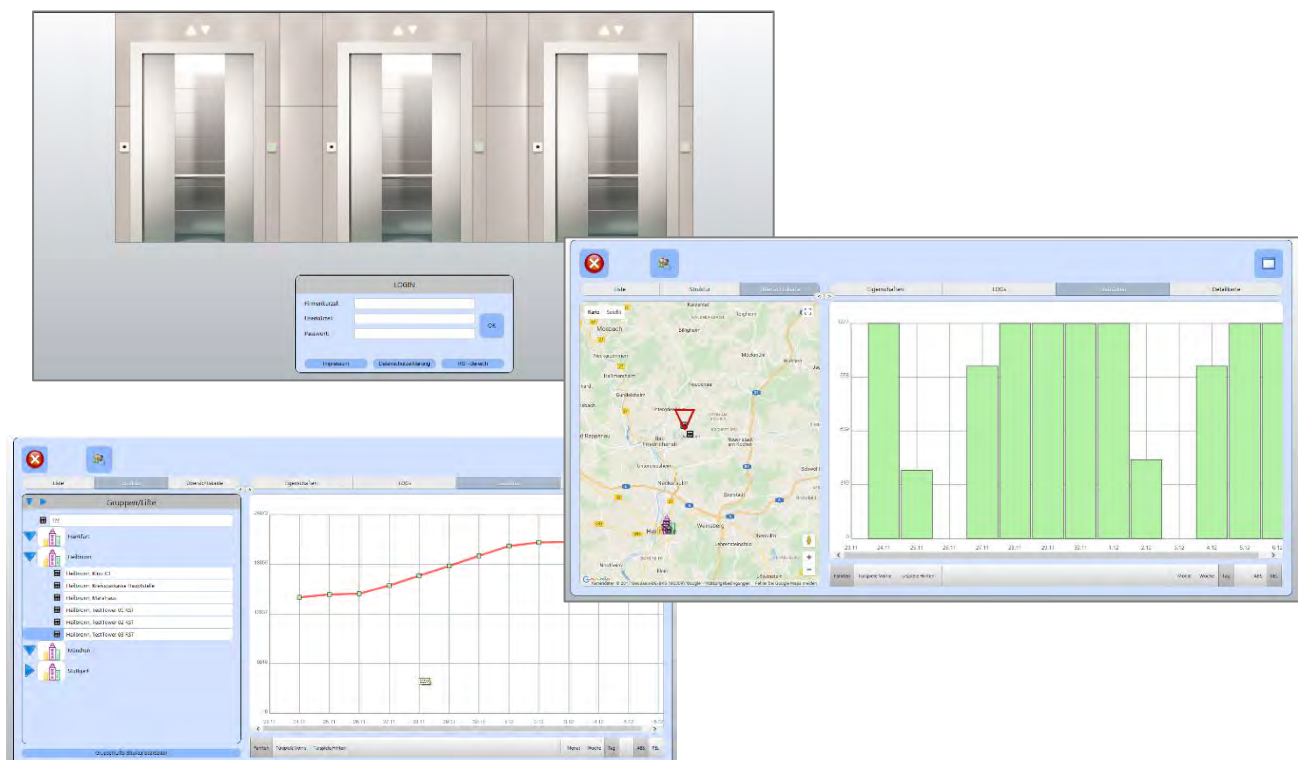
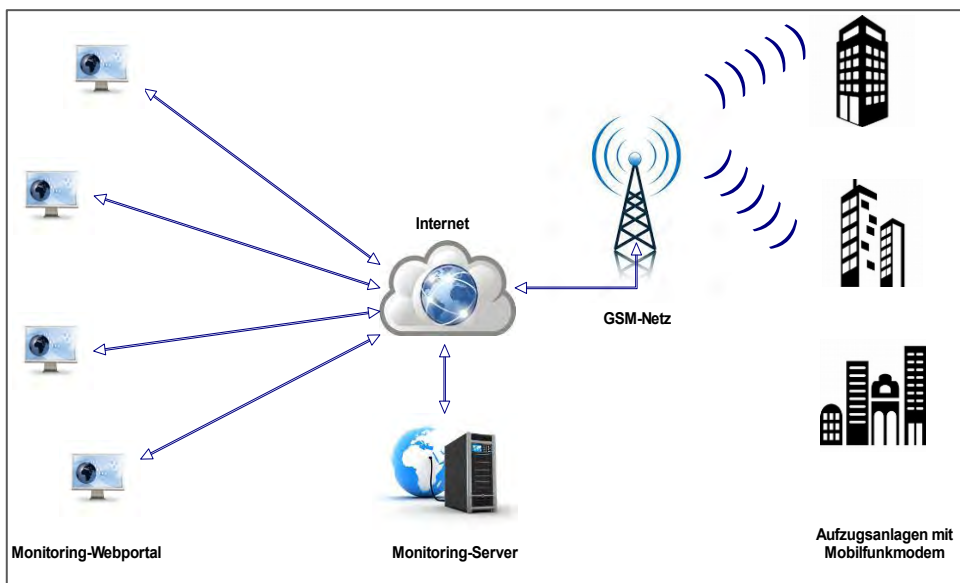


14 Remote monitoring via Monitoring System

The IMC-2 **Monitoring System** is based on an online solution. It can be accessed through any computer connected to the Internet using any Internet browser and operating system (Windows, Linux, Mac).

It provides all relevant information about your lift plant (e.g. error messages, door cycles, travel operations, loading) and collects background data enabling fault/error forecasts. The configurable message function reports faults/errors and warnings automatically. The faults/errors and warnings can automatically be sent either through SMS messages or by e-mail.

For more information, refer to document "**IMC-2 Monitoring System**".



15 Group mode

15.1 General

IMC-2 features powerful group software enabling optimum traffic control.

No separate group controller is required.

For more specifications, consult RST.

15.2 Description of system

Group communication takes place via the shaft bus, which is also used for the outside panels.

After Power On, the IMC-2 group controllers will determine which controller will be the **Master** .
The other group members will be **Group Clients** .

The Group Master controls the whole traffic and ensures that outside calls will be processed as quickly as possible.

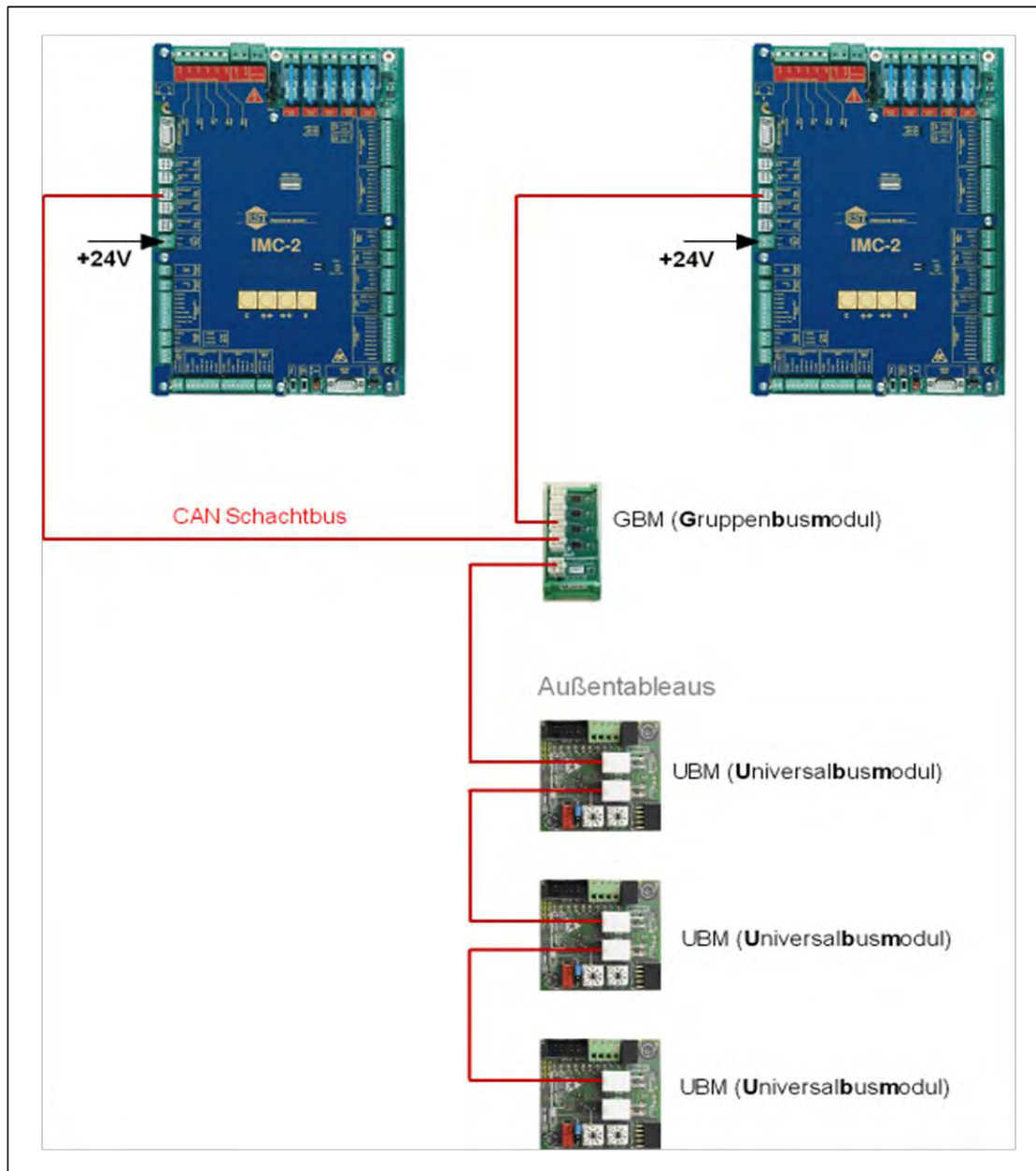
The Group Clients are communicating all the time. This makes sure that lifts which are no longer in group mode (e.g. because it was switched to inspection mode) are immediately identified and no longer considered for call assignments.

If the Group Master is shut down, one of the Clients will perform the Master function. It will remain the Master even after re-commissioning of the original Group Master.

A group bus module (**GBM**) is required for coupling the group clients.

On the following page, you will see an illustration showing a schematic circuit diagram of a group of two.

15.3 Group of 2 - Schematic circuit diagram



16 Certifications



EU-Baumusterprüfbescheinigung EU-type examination certificate

Hiermit wird bescheinigt, dass das unten beschriebene Produkt der Firma
This certifies that the product described below from company

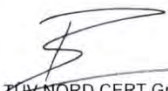
RST Elektronik GmbH
Tannenstrasse 11
74229 Oedheim
Deutschland

die Anforderungen des Anhangs I der Richtlinie 2014/33/EU (Aufzüge) als eine Grundlage für die EU-Konformitätserklärung erfüllt.
meets the requirements of Annex I of the Directive 2014/33/EU (lifts) as a basis for the EU declaration of conformity.

Geprüft nach <i>Tested in accordance with</i>	EN 81-1:1998+A3:2009, Kapitel chapter 9.11.7-9, 12.8.1, 12.8.5, 14.1.2.3, 14.2.1.2, Anhang annex H EN 81-2:1998+A3:2009, Kapitel chapter 9.13.7-9, 14.1.2.3, 14.2.1.2, Anhang annex H EN 81-20:2014, Kapitel chapter 5.6.7.7-9, 5.11.2.3, 5.12.1.3, 5.12.1.4 EN 81-50:2014, Kapitel chapter 5.15
Beschreibung des Produktes <i>(Details s. Anlage 1)</i> Description of product <i>(Details see Annex 1)</i>	Sicherheitsbauteil gem. Anh. III, Ziffer 6 der Richtlinie 2014/33/EU – Sicherheitsschaltung mit elektronischen Bauelementen <i>Safety component in accordance with annex III number 6 of directive 2014/33/EU –</i> <i>Safety circuit containing electronic components</i>
Typenbezeichnung <i>Type Designation</i>	IMC-2 Sicherheitsbaustein <i>IMC-2 safety unit</i>

Das Sicherheitsbauteil erfüllt für den im Anlage 1 zu dieser EU-Baumusterprüfbescheinigung angegebenen Anwendungsbereich die grundlegenden Sicherheits- und Gesundheitsanforderungen der Richtlinie.
The safety component satisfies the basic safety and health requirements of the Directive indicated in the field of application as specified in the annex 1 of this EU - type examination certificate.

Registrier-Nr. / Registered No. 44 208 16007802001 Prüfbericht Nr. / Test Report No. 17 208 467283 000 Aktenzeichen / File reference 8000467283 / 3519 2521	Gültigkeit / Validity von / from 2017-03-01 bis / until 2022-02-28
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TÜV NORD CERT GmbH Essen
 Zertifizierungsstelle Sicherheitsbauteile von Aufzügen
Certification Body Safety components of lifts
 Benannte Stelle 0044 / Notified Body 0044

Essen, 2017-03-01

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen

www.tuev-nord-cert.de

machinery@tuev-nord.de

Bitte beachten Sie auch die umseitigen Hinweise
Please also pay attention to the information stated overleaf



ANLAGE ANNEX

Anlage 1, Seite 1 von 2
Annex 1, page 1 of 2

zur EU-Baumusterprüfbescheinigung / to EU type-examination certificate
Registrier-Nr. / Registered No. 44 208 16007802001

Allgemeine Angaben
General Information

Siehe Seite 1 der EU-Baumusterprüfbescheinigung
See also page 1 of the EU type-examination certificate

Produkt, Typ:
Product, Type

IMC-2 Sicherheitsbaustein:
IMC-2 Safety unit:
Sichere Auswertung des Türzonensignals zur Überbrückung der Türkontakte im Sicherheitskreis während des Einfahrens, Nachstellens und der vorbereitenden Maßnahmen bei nicht geschlossenen und unverriegelten Türen.
Safe evaluation of door zone signals for bypassing the door contacts in the safety chain during levelling, re-levelling and preliminary operation with doors not closed and locked

Detektion der unbeabsichtigten Bewegung des Fahrkorbs gemäß
Detection of unintended car movement acc. to
EN 81-1:1998+A3:2009, Kapitel chapter 9.11.7-8
EN 81-2:1998+A3:2009, Kapitel chapter 9.13.7-8
EN 81-20:2014, Kapitel chapter 5.6.7.7-9

Erkennung der Übergeschwindigkeit zur Verwendung mit einer Verzögerungskontrollschaltung bei verkürztem Pufferhub
Detection of over speed to be used for monitoring the normal slowdown of the machine in case of reduced buffer stroke

Verschmutzungsgrad:
Pollution degree

3

Nennspannungen:
Nominal voltages

24VDC **Versorgungsspannung und Steuersignale**
power supply and control signals

230VAC **Sicherheitskreis**
safety chain



TÜV NORD CERT GmbH Essen
Zertifizierungsstelle Sicherheitsbauteile von Aufzügen
Certification Body Safety components of lifts
Benannte Stelle 0044 / Notified Body 0044

Essen, 2017-03-01

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.de machinery@tuev-nord.de



ANLAGE ANNEX

Anlage 1, Seite 2 von 2
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zur EU-Baumusterprüfbescheinigung / to EU type-examination certificate
Registrier-Nr. / Registered No. 44 208 16007802001

**Abstände zwischen
Sicherheits- und
Steuerungskreisen:**
*Isolation between safety
circuits and standard
control circuits*

Entsprechend / according to EN 81-1/-2/-50 / EN 60664-1

**Besondere Bedingungen
zur sicheren Verwendung:**
*Special conditions
for safe use*

Detektion der unbeabsichtigten Bewegung des Fahrkorbs
Detection of unintended car movement

**Die Sicherheitsschaltung IMC-2 unterbricht den Sicherheitskreis in einer Zeit
von maximal**
The safety chain will be opened by the safety circuit IMC-2 at a maximum response time of

25 ms

**Der detektierte Fehlerzustand kann auf der IMC-2-Hauptplatine nullspannungssicher
gespeichert werden**

The detected fault can be stored permanently on the IMC-2 main board acc. to

EN 81-1:1998+A3:2009, Kapitel chapter 9.11.9

EN 81-2:1998+A3:2009, Kapitel chapter 9.13.9

EN 81-20:2014, Kapitel chapter 5.6.7.9.

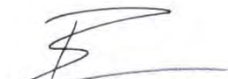
Die Überwachung der Schutteinrichtung (Bremsen) gemäß
The brake monitoring acc. to

EN 81-1:1998+A3:2009, Kapitel chapter 9.11.3

EN 81-2:1998+A3:2009, Kapitel chapter 9.13.3

EN 81-20:2014, Kapitel chapter 5.6.7.3

muss extern erfolgen./ has to be provided by external means



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Zertifizierungsstelle Sicherheitsbauteile von Aufzügen
Certification Body Safety components of lifts
Benannte Stelle 0044 / Notified Body 0044

Essen, 2017-03-01

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Langemarckstraße 20

45141 Essen

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machinery@tuev-nord.de



Konformitätsaussage zur Baumusterprüfung Certificate of Conformity to a Type Examination

Hiermit wird bescheinigt, dass das u.g. Produkt der Firma/
This certify that the product described below from company

RST Elektronik GmbH
Tannenstraße 11
74229 Oedheim
Deutschland

die Anforderungen der folgenden Prüfgrundlage(n) erfüllt.
fulfills the requirements of the following test regulations.

Geprüft nach
Tested in accordance with

EN 81-1:1998+A3:2009,
Kapitel chapter 14.1.2.1.3, Anhang annex H
EN 81-2:1998+A3:2009,
Kapitel chapter 14.1.2.1.3, Anhang annex H
EN 81-20:2014, Kapitel chapter 5.11.2.1.2
EN 81-50:2014, Kapitel chapter 5.15

Beschreibung des Produktes
(Details s. Anlage 1)
Description of product
(Details see Annex 1)

Schnittstellen zum Sicherheitskreis auf der IMC-2-Hauptplatine und auf dem
Kabinensteuermodule (KSM) für Aufzüge
Interfaces to the safety chain on the IMC-2-main board and on the car
control unit (KSM) for lifts

Typenbezeichnung
Type Designation

IMC-2 Steuerungsplatine IMC-2 control board
IMC-2 Kabinensteuermodule (KSM) IMC-2 car control unit (KSM)

Dieses Zertifikat bescheinigt das Ergebnis der Prüfung an dem vorgestellten Prüfgegenstand. Eine allgemein gültige Aussage über die Qualität der Produkte aus der laufenden Fertigung kann hieraus nicht abgeleitet werden.

This certificate is issued based on the examination of the product sample provided by the company mentioned above. A general statement regarding the quality of products from series production cannot be directly derived.

Registrier-Nr. / Registered No. 44 799 16007801
Prüfbericht Nr. / Test Report No. 16 208 459099 000
Aktenzeichen / File reference 8000459099 / 3517 9152

Gültigkeit / Validity
von / from 2016-04-27
bis / until 2021-04-26


TÜV NORD CERT GmbH
Zertifizierungsstelle Sicherheitsbauteile von Aufzügen
Certification Body Safety components of lifts

Essen, 2016-04-27

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.de machinery@tuev-nord.de

Bitte beachten Sie auch die umseitigen Hinweise
Please also pay attention to the information stated overleaf



ANLAGE ANNEX

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zur Konformitätsaussage / to Certificate of Conformity
Registrier-Nr. / Registered No. 44 799 16007801

Allgemeine Angaben
General Information

Siehe Seite 1 der Konformitätsaussage
See also page 1 of the Certificate of Conformity

Typbezeichnung:
Type Description:

Siehe Seite 1 der Konformitätsaussage
See page 1 of the Certificate of Conformity

Produkt, Typ:
Product, Type:

Schnittstellen auf der IMC-2-Hauptplatine:
IMC-2 main board interfaces:
Stecker terminals x42..x44 (Abgriffe Sicherheitskreis safety chain taps)
Stecker terminals x45..x49 (Vorsteuerung Sicherheitskreis safety chain control relays)
Stecker terminals x61..x64 (Sicherheitsbaustein/Türzonenschalter
safety unit/door zone switches)

Schnittstellen zum Sicherheitskreis auf dem Kabinensteuermodul (KSM):
Safety chain interfaces on car control unit (KSM):
Stecker terminals x98, x100..x106

Verschmutzungsgrad:
Pollution degree:

3

Nennspannungen:
Nominal voltages:

230VAC (Sicherheitskreis safety chain)


TÜV NORD CERT GmbH
Zertifizierungsstelle Sicherheitsbauteile von Aufzügen
Certification Body Safety components of lifts

Essen, 2016-04-27

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ANLAGE ANNEX

Anlage 1, Seite 2 von 2
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zur Konformitätsaussage / to Certificate of Conformity
Registrier-Nr. / Registered No. 44 799 16007801

**Abstände zwischen
Sicherheits- und
Steuerungskreisen:**
*Isolation between safety
circuits and standard
control circuits*

Entsprechend / according to EN81-1/-2/-50 / EN60664-1

Prüfergebnis:
Test result:

Die Geräte entsprechen den Prüfgrundlagen.
The devices comply with the test principles.

**Diese Konformitätsaussage dient als Grundlage für die Konformitätserklärung
des Herstellers.**
This Certificate of Conformity is a basis for the manufacturer's Declaration of Conformity.


TÜV NORD CERT GmbH
Zertifizierungsstelle Sicherheitsbauteile von Aufzügen
Certification Body Safety components of lifts

Essen, 2016-04-27

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.de machinery@tuev-nord.de

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EU-Konformitätserklärung

im Sinne der Richtlinien 2014/33/EU und 2014/30/EU

EU Declaration of Conformity

in terms of directives 2014/33/EU and 2014/30/EU

Firma: Company:	RST Elektronik GmbH Tannenstraße 11 DE-74229 Oedheim
Produktbeschreibung:	Aufzugsteuerung mit
<i>Description of product:</i>	<i>Lift control with</i>
	- IMC-2 Sicherheitsbaustein - Schnittstellen zum Sicherheitskreis auf der IMC-2 Hauptplatine und auf dem IMC-2 Kabinensteuermodul (KSM) für Aufzüge
	- <i>IMC-2 safety unit</i> - <i>Interfaces to the safety chain on the IMC-2 main board and on the IMC-2 car control unit (KSM) for lifts</i>
Typ:	IMC-2 Hauptplatine, IMC-2 Kabinensteuermodul (KSM),
<i>Type:</i>	IMC-2 Sicherheitsbaustein
	<i>IMC-2 main board, IMC-2 car control unit (KSM), IMC-2 safety unit</i>
Baujahr:	ab 2014
<i>Year of manufacture:</i>	<i>since 2014</i>

Die Aufzugsteuerung IMC-2 mit Sicherheitsbaustein und Kabinensteuermodul entspricht in Konstruktion und Fertigung den Anforderungen der Europäischen Richtlinien 2014/33/EU (Aufzugsrichtlinie) und 2014/30/EU (Elektromagnetische Verträglichkeit).

Der IMC-2 Sicherheitsbaustein dient der

- sicheren Auswertung des Türzonensignals zur Überbrückung der Türkontakte im Sicherheitskreis während des Einfahrens, Nachstellens und der vorbereitenden Maßnahmen bei nicht geschlossenen und unverriegelten Türen
- Detektion der unbeabsichtigten Bewegung des Fahrkorbs gemäß
EN 81-1: 1998+A3: 2009, Kapitel 9.11.7-8
EN 81-2: 1998+A3: 2009, Kapitel 9.13.7-8
EN 81-20: 2014, Kapitel 5.6.7.7-9
- Erkennung der Übergeschwindigkeit zur Verwendung mit einer Verzögerungskontrollschaltung bei verkürztem Pufferhub

The lift control IMC-2 with door-bypass module and car control unit corresponds in construction and production with the requirements of the European Directives 2014/33/EU (Elevator Directive) and 2014/30/EU (Electro-Magnetic Compatibility).

The IMC-2 safety unit is usable for the

- safe evaluation of door zone signals for bypassing the door contacts in the safety chain during levelling, re-levelling and preliminary operation with doors not closed and locked
- detection of unintended car movement acc. to
EN 81-1: 1998+A3: 2009, chapter 9.11.7-8
EN 81-2: 1998+A3: 2009, chapter 9.13.7-8
EN 81-20: 2014, chapter 5.6.7.7-9
- detection of over speed to be used for monitoring the normal slowdown of the machine in case of reduced buffer stroke

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Die Übereinstimmung des IMC-2 Sicherheitsbausteins mit den Anforderungen des Anhangs IV Teil A und Anhang VI der Richtlinie 2014/33/EU wurde vom TÜV NORD CERT GmbH mit der EU-Baumusterprüfbescheinigung 44 208 16007802001 bestätigt. Die Adresse und Kennnummer der benannten Stelle ist:
The compliance of the IMC-2 safety unit with the requirements according to appendix IV part A and appendix VI of directive 2014/33/EU was certified by the EU type-examination certificate 44 208 16007802001 of TÜV NORD CERT GmbH. The address/number of the notified body is:

TÜV NORD CERT GmbH
Langemarckstraße 20
DE-45141 Essen
Kennnummer 0044

Die Bewertung der Konformität des IMC-2 Sicherheitsbausteins mit der Bauart durch stichprobenartige Prüfungen nach Anhang IX der Richtlinie 2014/33/EU erfolgt durch:
The evaluation of conformity of the IMC-2 safety unit to construction type by random checks according to appendix IX of directive 2014/33/EU was certified by:

TÜV NORD CERT GmbH
Langemarckstraße 20
DE-45141 Essen
Kennnummer 0044

Folgende harmonisierte Normen werden angewandt:
The following harmonized standards are applied:

EN 81-1: 2010-06 EN 81-1: 1998+A3: 2009	Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen – Teil 1: Elektrisch betriebene Personen- und Lastenaufzüge	Safety rules for the construction and installation of lifts – Part 1: Electric lifts
EN 81-2: 2010-08 EN 81-2: 1998+A3: 2009	Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen – Teil 2: Hydraulisch betriebene Personen- und Lastenaufzüge	Safety rules for the construction and installation of lifts – Part 2: Hydraulic lifts
EN 81-20: 2014	Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen – Aufzüge für den Personen- und Gütertransport – Teil 20: Personen- und Lastenaufzüge	Safety rules for the construction and installation of lifts – Lifts for the transport of persons and goods – Part 20: Passenger and goods passenger lifts
EN 81-50: 2015	Sicherheitsregeln für die Konstruktion und den Einbau von Aufzügen – Prüfungen – Teil 50: Konstruktionsregeln, Berechnungen und Prüfungen von Aufzugskomponenten	Safety rules for the construction and installation of lifts – Examinations and tests – Part 50: Design rules, calculations, examinations and tests of lift components
EN 12015: 2014	Elektromagnetische Verträglichkeit – Produktfamiliennorm für Aufzüge, Fahrtreppen und Fahrsteige – Störaussendung	Electromagnetic compatibility – Product family standard for lifts, escalators and moving walks – Emission
EN 12016: 2013	Elektromagnetische Verträglichkeit – Produktfamiliennorm für Aufzüge, Fahrtreppen und Fahrsteige – Störfestigkeit	Electromagnetic compatibility – Product family standard for lifts, escalators and moving walks – Immunity

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Die Aufzugsteuerung ist ausschließlich für den Einsatz in Aufzügen freigegeben, welche der Europäischen Aufzugsrichtlinie 2014/33/EU unterliegen.

Die Aufzugsteuerung ist im Sinne der Europäischen EMV-Richtlinie 2014/30/EU kein selbstständig betreibbares Gerät. Die Einhaltung der spezifizierten Grenzwerte ist abhängig von der korrekten Installation und Konfiguration. Die Aufzugsteuerung ist kein gebrauchsfertiges Produkt. Vor Inbetriebnahme in Aufzugsanlagen muss ihre Sicherheit durch entsprechende bauseitige Maßnahmen sichergestellt werden.

Die Montage, elektrische Installation, Inbetriebnahme und Instandsetzung darf nur von ausgebildetem Fachpersonal unter Beachtung der Betriebsanleitung und einschlägiger Vorschriften durchgeführt werden. Planer, Hersteller und Betreiber der Aufzugsanlage sind für die ordnungsgemäße Montage und den sicheren Betrieb verantwortlich.

The lift control is solely released for the use in elevators which are subject to European Elevator Directive 2014/33/EU.

The lift control is in subject to European EMV-directive 2014/30/EU no independent operable device. The compliance with specific prescriptive limits depends on the correct installation and configuration.

The liftcontrol is no ready-for-use device. Before start-up in the elevator facility the safety has to be assured by according customers measures.

Assembly, electrical installation, start-up and maintenance have to be done only by skilled staff and under consideration of the operation manual and appropriate instructions.

Planner, manufacturer and operator of the elevator facility are responsible for the duly assembly and safe operation.

Oedheim, den 01.03.2017

RST Elektronik GmbH



Hans Dekan
Geschäftsführer
Managing Director



TYPE EXAMINATION CERTIFICATE FOR LIFTCOMPONENTS

Issued by Liftinstituut B.V.

Certificate no.	: NL17-400-1002-176-04	Revision no.:	-
Description of the product	: Brake- or hydraulic valve monitoring as part of the protection against uncontrolled movement of the car in accordance to EN 81-20 and EN 81-1/2+A3		
Trademark, type	: IMC-2 lift controller option for brake / hydraulic valve monitoring		
Name and address of the manufacturer	: RST Elektronik GmbH Tannenstraße 11 D-74229 Oedheim, Germany		
Name and address of the certificate holder	: RST Elektronik GmbH Tannenstraße 11 D-74229 Oedheim, Germany		
Certificate issued on the following requirements	: Lifts Directive 2014/33/EU		
Certificate based on the following standard	: EN 81-20:2014 article 5.6.6.2, 5.6.7.3 and 5.6.7.9 EN 81-50 article 5.8 (EN 81-1:1998+A3:2009 article 9.11.3, 9.11.9 and Annex F.8) (EN 81-2:1998+A3:2009 article 9.13.3, 9.13.9 and Annex F.8)		
Test laboratory	: None		
Date and number of the laboratory report	: None		
Date of type examination	: December 20, 2017		
Additional document with this certificate	: Report belonging to the type examination certificate no.: NL17-400-1002-176-04		
Additional remarks	: This certificate is valid for SW versions 19.172.060, 19.172.079 and higher.		
Conclusion	: The monitoring functionality meets the requirements referred to in this certificate taking into account any additional remarks mentioned above.		

Amsterdam

Date : 22-12-2017
Valid until : 22-12-2022

ing. P.J. Peeters
Manager

Certification decision by



LIFTINSTITUUT

Report type-examination

Report belonging to type-examination : NL17-400-1002-176-04
certificate no.

Date of issue of original certificate : 22-12-2017

Concerns : Lift function

No. and date of revision : -

Requirements : Lifts Directive 2014/33/EU
Standard(s): EN 81-20:2014 article
5.6.6.2, 5.6.7.3 and 5.6.7.9 ; EN 81-50
article 5.8

(EN 81-1:1998+A3:2009 article 9.11.3,
9.11.9 and Annex F.8;
EN 81-2:1998+ A3:2009 article 9.13.3,
9.13.9 and Annex F.8)

Project no. : P170383

1. General specifications

Name and address manufacturer : RST Elektronik GmbH
Tannenstraße 11
D-74229 Oedheim, Germany

Description of lift / component /
machine*) : Brake- or hydraulic valve monitoring as
part of the protection against uncontrolled
movement of the car in accordance to
EN 81-20 and EN 81-1/2+A3

Type : IMC-2 lift controller option for brake /
hydraulic valve monitoring

Laboratory : -

Address of examined lift function : RST Elektronik GmbH premises

Date of examination : 20-12-2017

Examination performed by : P.J. Schaareman

2. Description lift function

The brake or hydraulic valve monitoring described in this report shall be used in combination with suitable detection and stopping elements to prevent the lift car from uncontrolled movement (according EN 20 clause 5.6.6 and 5.6.7 as well as for EN 81-1+A3 clause 9.11 resp. EN 81-2+A3 clause 9.13).



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The monitoring function that is integrated in the IMC-2 lift control becomes effective after activation of the monitoring function.

Two dedicated inputs Bremse1/In and Bremse2/In (X31/1, X31/2) need to be programmed to monitor the correct opening and closing of the lift brakes or hydraulic valves. Normally open as well as normally closed contacts can be used (parameter setting).

The activated system will stop the lift when a monitoring input detects one of the following situations:

- When the signal does not change status within a time period after the lift is started for a trip, and
- When the signal does not change status within a time period after the lift is stopped after a trip.

The time parameter is default 2s and can be changed to fit the specific application.

After detection of a malfunction, the lift remains out of service, also after switching off- and on the supply power.

Resetting of the system is only possible by first deleting the fault from the memory and additionally to manually reset the lift control board IMC-2.

3. Examinations and tests

The examination covered a check whether compliance with the Lift Directive 2014/33/EU is met. The examination is based on the harmonized product standards EN 81-20:2014, clause 5.6.6.2, 5.6.7.3 and 5.6.7.9 and EN 81-50:2014, clause 5.8.2.3.5. Issues not covered by or not complying these Standards are directly related to the essential requirements of the Lifts Directive.

Additionally for existing lifts applications the relevant clauses of the standards EN 81-1/2+A3 were also checked.

The examination included:

- Examination of the technical file (See annex 2):
- Examination of the representative model in order to establish conformity with the technical file.
- Inspections and tests to check compliance with the requirements.

SW versions available and tested were SW versions 19.172.060 and 19.172.079.

4. Results

After the final examination the product and the technical file were found in accordance with the requirements. The functional tests passed without remarks.



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5. Conditions

On the type-examination certificate the following conditions apply:

- After each change in the software, the proper functioning of the monitoring must be checked.
- Before taking the lift into service, the proper functioning of the monitoring must be checked.
 - o The checking shall be done by disconnecting and short circuiting the 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.
- SW version shall be verified with the versions in the certificate and shall have the same or higher version number.

6. 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. The type-examination certificate is issued based on the requirements that are valid at the date of issue. In case of changes of the product specifications, changes in the requirements or changes in the state of the art the certificate holder shall request Liftinstituut B.V. to reconsider the validity of the type-examination certificate.

Prepared by:



P.J. Schaareman
Product Specialist Certification
Liftinstituut B.V.

Certification decision by:



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NL17-400-1002-176-04

Date: 22-12-2017

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17 List of errors

Symbols used in the list:

- Error is only logged, no response, operation is continued
- ③ Plant carries out 3 new attempts to repeat the operation aborted (due to an error)
- ⊗ Controller is disabled
- ③⊗ After 3 unsuccessful attempts, the controller will be disabled
- Ⓟ Controller continues operation once the error has been repaired

Error message		Description	Possible causes
VVVF inverter			
No ZB at Start	③	No ZB feedback for more than 1 sec upon start	Check VVVF inverter (setup). Check wiring
No ZS at Start	③	No ZS feedback for more than 1 sec upon start	Check VVVF inverter (setup). Check wiring
No ZB at Stop	③	ZB was not switched of within the set brake release time upon stop	Check VVVF inverter(setup). Increase brake release time (Section 4.6.2)
No ZS at Stop	③	ZB was not switched of within the set contactor release time upon stop	Check VVVF inverter(setup). Increase contactor release time (Section 4.6.2)
Error Inverter	③	Disabling possible if parameter set accordingly (see section 4.6.5 Lock w. Inv. Error)	Check cause of error in VVVF inverter error memory
No ZB during Run	③	ZB turned off during travel operation	VVVF inverter turned ZB signal off during travel operation. Brief interruption of safety circuit e.g. swiping lock. Check travel curve in VVVF inverter with PowerControl
No ZS during Run	③	ZS turned off during travel operation	VVVF inverter turned ZB signal off during travel operation. Check travel curve in VVVF inverter with PowerControl
CANDrive			
CANTimeout	Ⓟ	No CAN telegram from VVVF inverter	Check if CANDrive is activated in VVVF inverter. Check wiring of CAN interface.
Approach Timeout	●	Time to remaining distance 0 exceeded when landing.	Adjust VVVF inverter parameters (curve) to obtain a smaller ramp.
CtrlWordInverter	●		Internal

Safety monitoring module			
Active		Error from module	
Passive		Error from module	
Safety circuit			
Supply	③	No SK1 tap	
Passive	⊗	No SK2 tap	
Door	③	No SK3 tap	
Lock	③	No SK4 tap	
Emerg.Stop	③	No SK5 tap	
Passiv EEPROM	⊗	Error-memory contains an error „Passive“.	
Brake K1K2			
Open K1	③ ⊗	Error when opening Contact 1	Contact 1 and 2 monitoring can be deactivated by changing parameter settings (see Section 0). Wait time is 3 s
Open K2	③ ⊗	Error when opening Contact 2	see above
Open contactor	③ ⊗	Error when opening brake contactor	see above
Open K1+K2	③ ⊗	Error when opening Contact 1+2	see above
Open K1+contactor	③ ⊗	Error when opening Contact 1+brake contactor	see above
Open K2+contactor	③ ⊗	Error when opening Contact 2+brake contactor	see above
Open K1+K2+contactor	③ ⊗	Error when opening Contact 1+2+brake contactor	see above
Close K1	③ ⊗	Error when closing Contact 1	see above
Close K2	③ ⊗	Error when closing Contact 2	see above
Close contactor	③ ⊗	Error when closing brake contactor	see above
Close K1+K2	③ ⊗	Error when closing Contact 1+2	see above
Close K1+contactor	③ ⊗	Error when closing Contact 1+brake contactor	see above
Close K2+contactor	③ ⊗	Error when closing Contact 2+brake contactor	see above
Close K1+K2+contactor	③ ⊗	Error when closing Contact 1+2+brake contactor	see above
BremseErrK1K2EEP	⊗	Error-memory contains a error „Brake K1K2“.	
Bremse K3K4			
		Siehe „Bremse K1K2“	

Main contactors			
Not dropped 1	③	Travel contactor 1 already energized before travel operation	Check contactor and wiring
Not dropped 2	③	Travel contactor 2 already energized before travel operation	Check contactor and wiring
Not dropped 1+2	③	Travel contactors 1+2 already energized before travel operation	Check contactor and wiring
Not pulled 1	③	Travel contactor 1 not energized	Check contactor and wiring
Not pulled 2	③	Travel contactor 2 not energized	Check contactor and wiring
Not pulled 1+2	③	Travel contactor 1+2 not energized	Check contactor and wiring
Lock			
Max.Close.Attempt.	③	Lock not closed after 3 attempts	Check lock Check wiring
Door			
LimitClosingFront	③	Only in doors with limit switch: No limit switch detected within door closing runtime (see section 4.6.5).	Check limit switch Adjust door runtime monitoring settings
LimitClosingRear	③	see above	
LimitOpeningFront	③	Only in doors with limit switch: No limit switch detected within door opening runtime (see section 4.6.5).	Check limit switch Adjust door runtime monitoring settings
LimitOpeningRear	③	see above	
Opening Front	③	Only in semi-automatic doors: No lock feedback detected within door opening runtime.	Check lock Adjust door runtime monitoring settings
Opening Rear	③	see above	
Closing Front	③	Only in semi-automatic doors: No lock feedback detected within door opening runtime.	Check lock Adjust door runtime monitoring settings
Closing Rear	③	see above	
Safety Circuit Door	③	Door limit switch was detected when closing and safety circuit is open.	Check wiring
CloseTimeout (FP)		Please contact RST	
N.CloseTimeout (FP)		Please contact RST	

CAN main board			
MessageLost	●	Message lost	Consult RST
SingleErrorSB1	●	Single error occurred	uncritical, Terminator installed ?
WarnLevel SB1	●	High number of errors reached	EMC faults Check cable installation Terminator installed ?
BusOff SB1	⊗	CAN shut down	EMC faults Check cable installation
No shaft bus1 ?	●	No CAN node found in shaft bus 1	
SingleErrorSB2:	●	See shaft bus 1	
WarnLevel SB2	●		
BusOff SB2	⊗		
No shaft bus2 ?	●		
SingleErrorKB	●	See shaft bus 1	
WarnLevel KB	●		
BusOff KB	⊗		
No car bus ?	⊗		
NodeConfig	●	Node reports configuration error	Check rotary switch setting
2x Group-ID	●	2 Group-Lifts with same number	Check parameter "Elevator No."
Cabin			
No start	③	Cabin did not move within the set start time (see Section 0)	
Runtime error	⊗	No zone sheet reached within the set runtime	Check controller setup Check brake
v-Max	③	Set rated speed was exceeded by more than 10% (see Section 4.6.1)	Check plant data Check VVVF inverter settings
Wrong direction	③	Cabin moved more than 5 cm in wrong direction.	Check wiring to VVVF inverter
Move.During Idle	③	Cabin moved by more than 100 mm in standstill	Check brake
Pos. exceeded	③	Floor stop position exceeded by more than 10 cm	Check deceleration distances
No Move.During Run	⊗	During travel operations, no cabin movement was detected for more than 5 s	
Disallow.Pos.Diff.ZF	③	In the case of motor encoder only: Position correction at zone sheet too high	Learn Run executed with wrong zone sheet length. Cable slip.
Finding Cab.Pos.	③	Error occurred during travel to flush position.	
UCM Error	⊗	Zone sheet left with open door.	

UCM Error EEPROM	⊗	UCM Error in error memory	Delete error memory
Target-Zone Error	③	No zone signal detected in the destination floor zone	
V/max Decel.cont.	③	The parametrized speed at deceleration point was overceedeed	
IO Config			
MemberID	●		Consult RST
NodeID	●		Consult RST
Note not ex.	●	No CAN node existing for I/O function	Check wiring CAN node defective
Terminal not ex.	●	No terminal existing for I/O function	Check wiring CAN node defective
EepromSaveOverflow	●		Consult RST
ChecksumError	●		Consult RST
No assignments	●		Consult RST
Internal			
RTC module	③		Consult RST
Para EEPROM	⊗		Consult RST
Data EEPROM	③		Consult RST
I2C Bus	③		Consult RST
SSI Open/Short Cir.?	③		Consult RST
No ErrCode	③		Consult RST
TaskOverflow	③		Consult RST
Number Para.	③		Consult RST
StrSize	③		Consult RST
Encoder value range	③	SSI encoder position is outside of topmost and bottommost floor.	Toothed belt of shaft copying not tensioned. Carry out new Learn Run
SSI-ErrDetection	③		Consult RST
AD not valid	③		Consult RST
ImpulsErrMAXEncod	③		Consult RST
EEP address conflict	③		Consult RST
EEP MasNum WrCycl	③		Consult RST
EEP NoWr24VLow	●		Consult RST
ALFAT RxAnzahl			Consult RST
Light ray			
Light Ray Inter.	③	Light grid safety range interrupted during travel operation	
Light Ray Test Err	③ ⊗	Light grid test before start of travel operation failed	Check wiring and light grid

Travel contactors			
Not dropped 1	③	Contactors 1 not deenergized	Check wiring and light grid
Not dropped 2	③	Contactors 2 not deenergized	see above
Not dropped 1+2	③	Contactors 1+2 not deenergized	see above
Not pulled 1	③	Contactors 1 not energized	see above
Not pulled 2	③	Contactors 2 not energized	see above
Not pulled 1+2	③	Contactors 1+2 not energized	see above
Other			
Motor temperature	Ⓟ	Motor temperature too high	
Oil temperature	Ⓟ	Oil temperature too high	
Overtemperature	Ⓟ	Electrical cabinet temperature too high	
+24V Low	Ⓟ	Board supply voltage too low	Power supply overloaded or defective, board defective
Car Light	③	Cabin light monitor reports error	Check cabin light, adjust threshold if necessary (see Section 0)
HSSLow(Busk.schl?)	●		Consult RST
Level>MAX	●	Flush tolerance above set limit	Check stopping distances of controller and VVVF inverter
P.Supply Alarm-Batt.	●	Power supply reports battery alarm	Low battery level
ANS Run Without PC	●	Misuse safeguard actuated Max. number of travel operations without light barrier interruption exceeded.	
ANS Alarm	●	Emergency call misuse safeguard was actuated.	
ANS Max.No Car Calls	●	Max. number of inside calls misuse safeguard was actuated	
ANS Empty Car	●	Empty load misuse safeguard was actuated.	
Photocell MaxTime	●	Maximum light barrier interruption time exceeded	
Zone error	⊗	Internal zone monitor was actuated	Zone switch defective or hanging temporarily
Max. Rope-Slip	●	The measured cable slip is above the set maximum	
Hanging Call?	●	Permanent signal at a call-input	
Mon.TerminalLow	Ⓟ or ⊗	Signal at input „Monitoring Term.“ was low	

Door circ. monitor			
Door Cont.Bridged ?		Door cycles executed without detection of interruption of safety circuit	Wiring error Door contact bypassed
Lock Bridged ?"		Door cycles executed without detection of interruption of lock contact	Wiring error Lock contact bypassed
DCL F.Stuck?		Signal from door close switch is implausible at front side	
DCL R.Stuck?		Signal from door close switch is implausible at rear side	
Add.Door.input stuck		Signal at terminal "Add.Inp.SCDoor" ist implausible	
Para.DCL wrong		No close limit is parameterized	Door closing is time-controlled
Hydraulics			
After Start SMA 24V	⊗	SMA signal high during travel operation	
After Halt1 SMA 0V	⊗	SMA not high 1 s after end of travel operation	
After Halt6 SMA 24V	⊗	SMA not low 6 s after end of travel operation	
Hydr. Error TUE"	⊗	Hydraulic error signal	
Hydr.Timeout TOR	③	TOR signal from hydraulic system not received within the set time	
Timeout Bolts out	③		
Timeout Bolts in	③		
Timeout lift	③		
Timeout sink	③		
Anheben Ueberlast	③		
Docked too low	③		
Bolts not in lift	③		
Bolt limits in+out	③		
Cab.docked w/o Zone	③		
Cab.lift w/o Zone	③		

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