

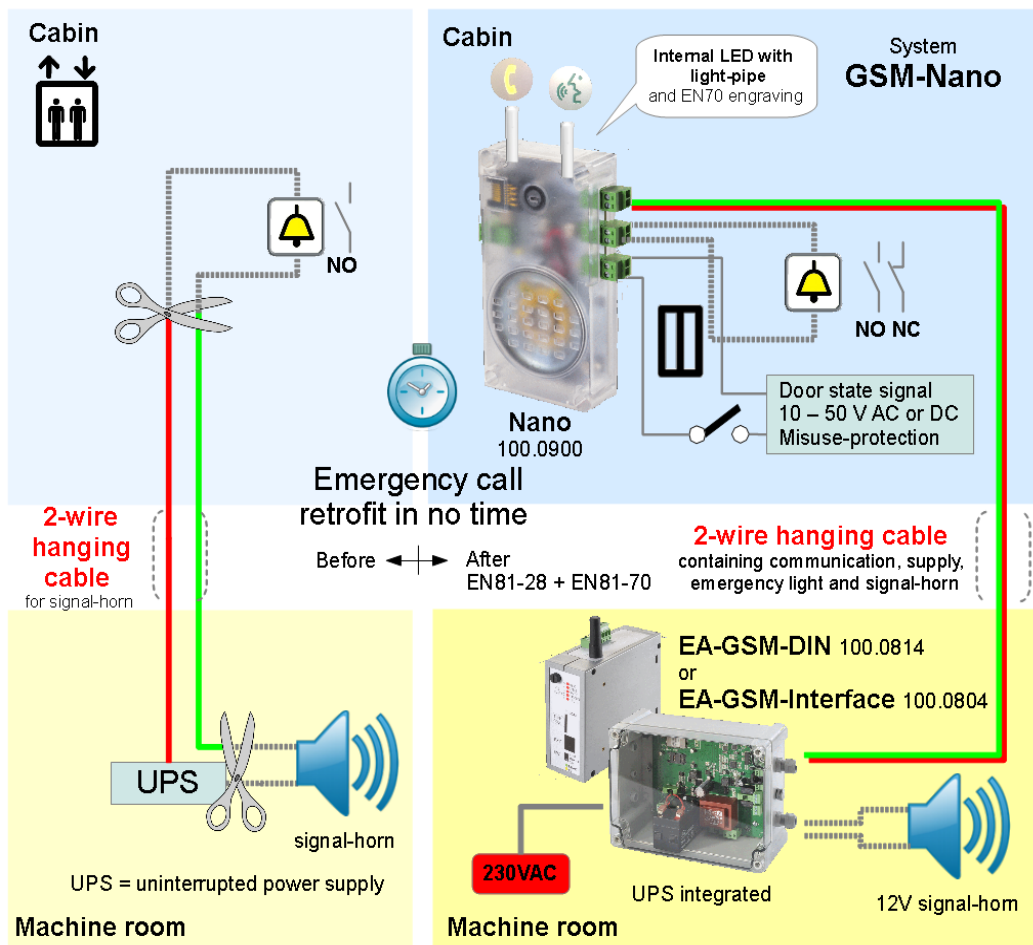
GSM-Nano



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1 Overview



The elevator alarm system GSM Nano is **conform** to EN81-28 and EN81-70.

- The connection between the communication unit Nano and the EA-GSM-DIN needs **two wires only** (existing wires of alarm-horn may be used).
- The emergency call over GSM is a cost effective **alternative to landline installation**.
- No costs for an **analogue landline**.
- You may **change the provider** at any time.
- The elevator can already be used during **construction**.
- Programming over **SMS** (Calling numbers, identification and parameters).
- Connectivity for emergency button, misuse-protection-signal and external emergency light.
- Additional interface to connect to the elevator control (e.g. Böhnke & Partner, Newlift etc.) use as **GSM-Modem**.

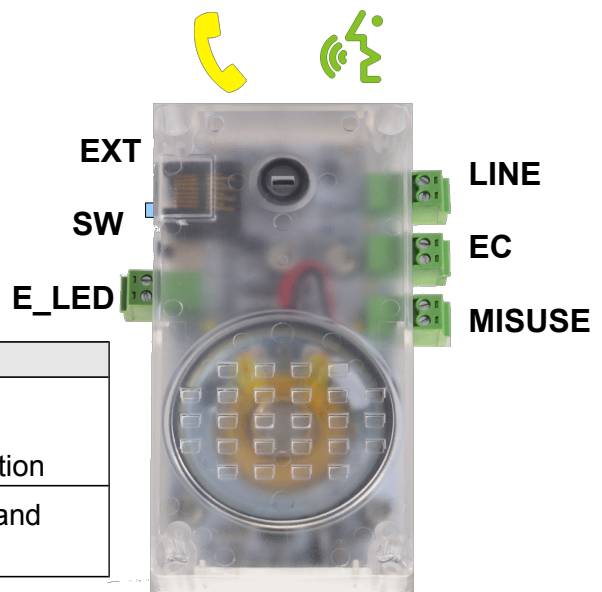
Safety note



- The location of the GSM-antenna **should be stationary** (e.g. in the machine room) in order that a stable reception is guaranteed.
- In case of an emergency call retro-fit (SNEL, ESBA), where no empty wires in the hanging cable are available, the EA-GSM-DIN can be located on top of the cabin, providing that the **GSM reception is guaranteed for the entire cabin travel** (Simple GSM reception diagnosis by SMS).
- If the GSM reception is **inadequate or fails completely**, the elevator must **automatically be set out of order**: for example, command to the elevator control to move to the ground floor. Therefore the EA-GSM-DIN provides a relay contact (NO or NC).
- **Beware of using prepaid cards**: in case of an emergency there might be no credit left. **Better use a subscription or prepaid with topping up via auto reload**.
- **To ensure that the correct number is dialled even with roaming, the calling numbers must be entered including the country code**.

2 Specification

2.1 Communication unit Nano

Article-No: 100.0900
 Power supply: from EA-GSM-DIN
 Dimension (L x W x D): 112 x 56 x 21 mm
 Housing: ABS transparent
 Weight: 100 g

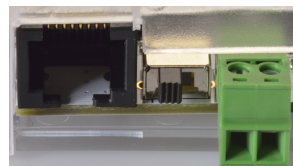


LED indicator	Comment
Green 	Flashes every 5 seconds (1x=NO, 2x=NC): Nano is ready Permanent on: during voice connection
Yellow 	During Misuse-protection, time-out and dial-up

2.1.1 Connectors

	Comment
EC Emergency-contact	Potential free emergency-contact Automatic detection of the contact type on power (e.g. voltage on LINE). NO = Normally open (1xPiep and every 5s a green flash) NC = Normally closed (2xPieps and every 5s a green double-flash)
LINE	Connect communication unit over two wires with the EA-GSM-DIN. Notes: <ul style="list-style-type: none"> Check polarity → same polarity as on EA-GSM-DIN → If the polarity is wrong the emergency light is on continuously. For retro-fits you may use the existing two wires of the siren. The siren is then connected to the EL output of the EA-GSM-DIN.
MISUSE	Misuse-protection door-signal-input: (active) = 10 to 50 V AC or DC If during this time-out (= max. travel time) the door-signal changes, the emergency call will be stopped.
E_LED Emergency-light	Emergency-light output for external LED: 6V DC / 20 mA The emergency-light is on in case of a mains loss on the EA-GSM-DIN and in case of any failure → 7.3. SW = Slide switch. Switches between internal LED and external emergency-light
EXT	e.g. for connecting an additional sub-communication unit EA-LMC70

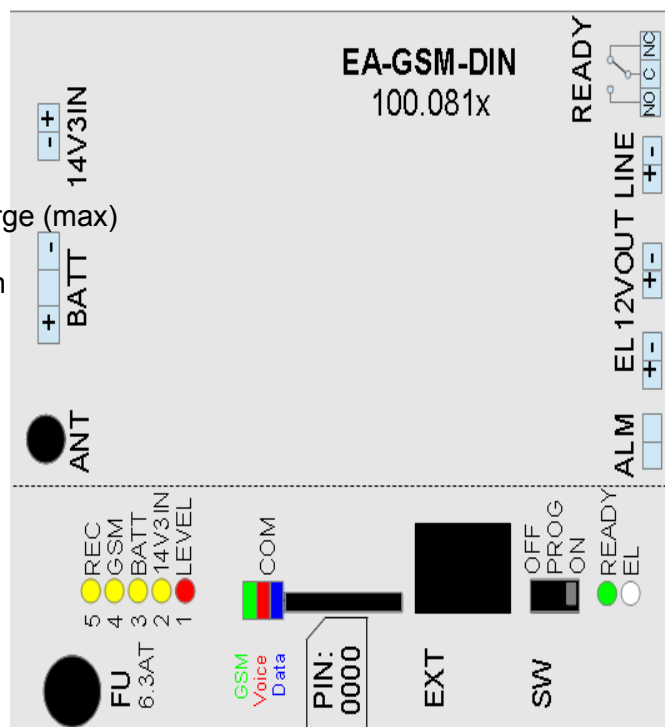
Left detail



EXT SW E_LED

2.2 EA-GSM-DIN

Article-No: 100.0814
 Power supply: 14.3 VDC +/- 0.15 V
 Standby: 2.8 W
 + 1 W during connection
 + load on 12VOUT
 + load on EL
 + 5 W during battery charge (max)
 Backup battery: 12 V / 1.2 Ah (100.0880)
 Typical charging time: 8 h
 GSM: Dual-Band
 900/1800 MHz
 Dimension (L x W x H): 45 x 118 x 138 mm
 Housing: DIN
 Weight: 400 g (without battery)



2.2.1 Connectors

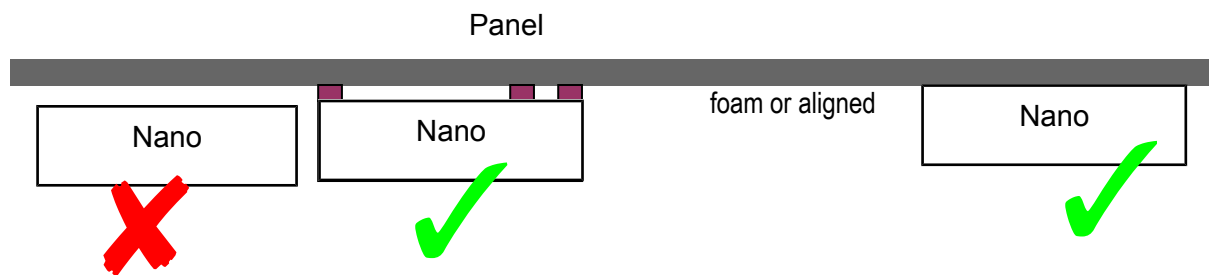
	Comment	
ANT	GSM-Antenne SMA	GSM-Antenna
ALM	Alarm-input:	active if signal 10 .. 50 V AC or DC
BATT	Connector for 12 V / 1.2 Ah battery	+BATT (red) -BATT (black)
EL	+12V-Siren *) max. 250 mA	+EL (12V-Siren) -EL (12V-Siren)
EXT	Serial interface	For modem use
FU	Battery fuse	6.3 A slow
LINE	Connection to communication unit Nano	+LINE (Nano) -LINE (Nano)
14V3IN	Supply voltage	+14V3IN -14V3IN
READY	Relay: Operation control: „System ready”	Normally open (NO) C Normally closed (NC)
SIM	SIM-card holder	Set SIM-PIN to 0000
SW	Mode switch	OFF: GSM-Modem use only (transparent) PROG: Programming of EA-GSM-DIN ON: Emergency call and GSM-Modem use
12VOUT	Uninterrupted power supply max. 250 mA	+12VOUT (UPS) -12VOUT (UPS)

*) the alarm-horn output is active,
 - as long as the emergency button is active
 - if the communication unit Nano is not connected
 - in case of any problem (short tone every 10 seconds, can be switched off 7.1)

3 Mounting

3.1 Communication unit Nano

- Once mounted, the speaker and the **microphone** in particular should **not be covered**, otherwise the communication quality decreases (reduced volume, poor hands free quality).
- Make sure the **microphone hole** and the panel hole **fit**.
- The sub-communication unit must be mounted **directly** behind the panel **without any gap**, otherwise there will be an acoustic feedback. If necessary insulate speaker and microphone room acoustically using foam or rubber.



For mounting accessories (panels, drilling templates, transparent frames, emergency lights, etc.) have a look at our special document.

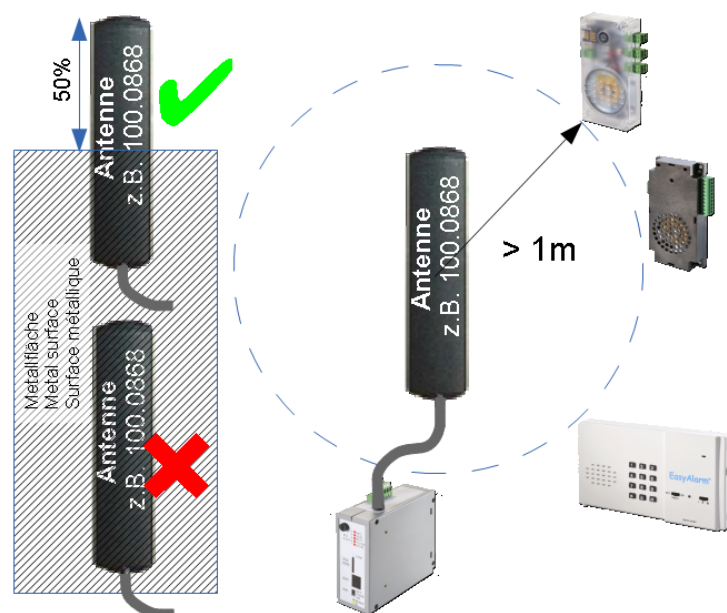
http://www.leitronic.ch/Documents/100.0xxx_Retrofit_Material-GB.pdf

3.2 EA-GSM-DIN

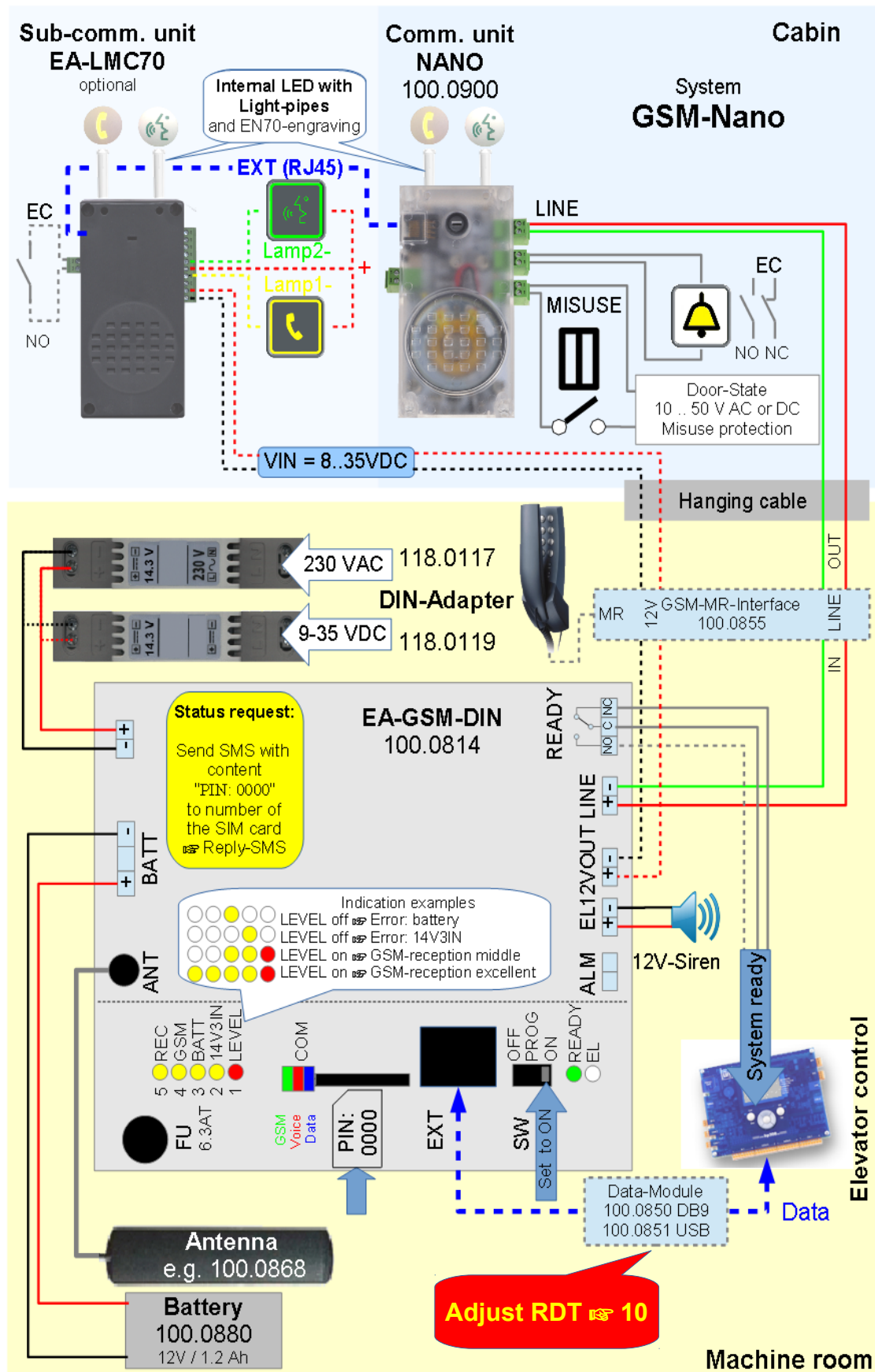
Find a suitable location for the EA-GSM-DIN according to the reception intensity indicator on the mobile phone.



Recommendation: stationary location in the machine room or shaft assembly, not in the vicinity of radio transmitters and interference sources. If there are no free wires in the hanging cable, the EA-GSM-DIN can be mounted on top of the cabin. In any case, the **GSM receive** must be **checked over the entire travel of the cabin** ☎ 9. Check Reception! Note that the **level-indicator** may be **delayed**.



4 Wiring



5 Initial operation

- Connect **communication unit**, **alarm-horn** and **emergency button** according to wiring plan.
- Optional machine-room communication using GSM-MR-Interface (100.0855):
- Loop **LINE**-connection and connect **12V** and **MR**-telephone.
- Insert SIM-card with **PIN set to 0000**.

☞ To set PIN to 0000 use any mobile phone.

*** * 0 4 * <old PIN> * 0 0 0 0 * 0 0 0 0 #** + 

- Connect the **battery** 100.880.
- Connect **14V3IN**
 - either from 230 VAC using DIN-adapter 118.0117.



Work on the 230 VAC power supply must be carried out by a qualified electrician.












Doing so the applicable accident prevention regulations must be observed, to avoid electric shock, the mains has to be disconnected (trip the circuit breaker).

- or from 16 to 35 VDC using DIN-adapter 118.0118.
- After two minutes the LEVEL indicators are showing the GSM reception. LED_COM flashes green every 3 seconds.
 - ☞ Stick the antenna where the LEDs LEVEL show maximum reception
- If you **call NANO**, the unit indicates sound while ringing and activating the green LED (speak). You may now record the individual announcement (identification) ☞ 11.

The calling-numbers can be **programmed via SMS**, by sending an SMS towards NANO ☞ 7.

- A short **pressing of the emergency button** activates the alarm-horn. If you press longer than the programmed debounce time-out, you will hear a dial tone during the selected misuse time-out.
- If there is **no change of the MISUSE signal** the first calling-number will be dialled.

5.1 Accessories

Picture	Supply	Art.No.
	DIN-Switching power supply EA-ACDC-USV Supply voltage: 230 VAC +-15% / 50 Hz, Output voltage: 14.3 VDC / 10 W	118.0117
	DIN-Switching power supply EA-DCDC-USV Supply voltage: 9 to 35 VDC, Output voltage: 14.3 VDC / 10 W	118.0119
	Battery 12 V / 1.2 Ah ☞ 100.0117, 100.080x and 100.081x	100.0880
Picture	Antenna accessories for all GSM-modules 100.080x and 100.081x	Art. No.
	External GSM-Antenna cable 5m	100.0864
	Antenna-Extension-cable cable 10m	100.0863
Picture	Remote-communication unit to communicate with cabin	Art. No.
	GSM-MR (DIN-mounting, pluggable screw terminal and RJ12-jack) Machine room solution extension for DTMF capable telephone ☞ i.e. 118.0120	100.0855
	Wall mount telephone incl. cable 3m ☞ machine room solution	118.0120
Picture	Serial interface	Art.No.
	Data-Module DB9 serial interface for elevator controls DB9	100.0850
	Data-Module USB interface for elevator controls MiniUSB	100.0851
Picture	Other accessories	Art.No.
	EA-LMC70 (pluggable screw terminal and RJ45-jack) Supply voltage: 8 - 35 V DC i.e. +12V from EA-GSM-Interface or EA-GSM-DIN 2xEN81-70 indicator (yellow/green): internal with light pipes, external symbols 1xInput for emergency button: potential free	118.0155
	LMC-EC (pluggable screw terminal and RJ45-jack) 1xEmergency-Button (Normally open: integrated or external) 1xMicrophone + 1xSpeaker	118.0158
	EC-MIC (screw terminal and RJ45-jacks) 1xEmergency button 1xMicrophone	118.0152
	12V-SIR siren horn	100.0020

6 Indicators

6.1 EA-GSM-DIN

LED_COM	Comment
Green	SIM-error: flashes every 1/2 second During network registration: flashes every second Flashes every 3 seconds if connected to the GSM network
Red	Communication unit Nano connected
Blue	Elevator control in connection: over serial interfaces

LED	Normally showing the GSM-reception level	In case of an error the LED shows error code 1_LEVEL is inactive
LEVEL	GSM Level poor	Inactive ↳ LED2..5 showing errors *)
14V3IN	GSM Level low	Problem with supply voltage
BATT	GSM Level medium	Problem with battery/charging
GSM	GSM Level high	Problem with GSM-Network or Roaming or Nano not connected to LINE
REC	GSM Level excellent	Problem with GSM-reception (Level Alarm)

*) Error analysis by Status-SMS:


↳ send SMS with content „PIN:0000“ ↳ Reply-SMS ↳ 7.3

LED	Comment
EL	Indicator of the alarm-horn output
OK (READY)	Ready-indicator for GSM-Interface, if <ul style="list-style-type: none"> Battery and battery-charging ok SIM-card inserted with correct SIM-PIN GSM-reception sufficient Otherwise the elevator may not perform any further trips. Note: OK (READY) can be delayed up to two minutes (GSM-reception)

6.2 Communication unit Nano

LED	Comment
Green	Flashes every 5 seconds (1x=NO, 2x=NC): Nano is ready Permanent on: In voice connection
Yellow	During Misuse-protection time-out and dial-up

7 Programming over SMS

Programming is done by **SMS**. An SMS containing PIN: 0000 will be evaluated and answered  7.2 to the sender. All **commands** are written in **CAPITAL LETTERS**.

SMS-Commands	Comment	Reply-SMS
PIN:0000	Default-PIN:0000 Note: PIN 4-digits	leitronic.ch Nano V.F.x.y ready
NEW:1234	Change PIN to 1234 and activate SIM-card protection Note: PIN 4-digits	New Pin:1234
CALLNx=<Calling-No.>_ CALLN1 to CALLN9 will be called until DTMF 0 acknowledges call	Calling-numbers x=1..9 completed with a space (max. 24 digits) CALLN9 (Routine-No.)	CallNx: <Calling-number>
ALARM=<Alarm-number>_	Status-SMS number with +country code e.g. +41 completed with a space (max. 24 digits)	Alarm: <Alarm-number>
ALARM=OFF	Disable Status-SMS	Alarm:OFF
RESET	Set to factory defaults	Reset

7.1 Advanced settings

Advanced settings can be read-out or changed as following:

EE_R: <adresse>	Read EEPROM <adresse> is 4-digits	adr: <adresse>: <read out value>
EE_W: <adresse>=<value>	Write EEPROM <adresse> is 4-digits <value> is 3-digits (000..255)	adr: <adresse>: <written value>

<adresse>	Function	<value>	Default
0001	Signal errors on alarm-horn	000 disabled 001 enabled	001
0002	Connection time-out	030 to 255 s	120
0003	Debounce time: Emergency button (Nano)	000 to 255 * 20ms	050 = 1s
0018	Debounce time: Alarm-input ALM until Status-SMS	000 to 255 * 20ms	050 = 1s
0023	Routine call interval (CALLN9)	000 to 255 h	072
0024	Misuse protection time=max. cabin travel time	000 to 255 s	030
0127	Announcement every x seconds	000 off 001 to 255 s	000

Example:

PIN=0000, **Calling-No. 1:** 044 111 22 33, **Calling-No. 2:** 044 111 22 44, **Routine-No. 9:** 044 123 45 567, **Status-SMS:** +41 79 100 10 10, max. cabin travel time= 20 s

 send SMS with content

PIN:0000 CALLN1=0041441112233 CALLN2=0041441112244 CALLN9=0041441234567
ALARM=+41791001010 EE_W:0024=020

 Reply-SMS

leitronic.ch Nano V.F.x.y ready, CallN1:0041441112233
CallN2:0041441112244, CallN9:0041441234567, Alarm:+41791001010,
adr:0024:20, Batt:96, Ri:18, Charge:255, Power:34, last Call:26,
Rssi:12(9-15), Ber:0(0-2), Errors:----+,-----,--- (limited to 160 characters)

7.2 Reply-SMS

Example of a Reply-SMS:

leitronic.ch Nano V.F.x.y xx, (adr:<adresse>:<value>), (New Pin:<new PIN>),
(Alarm:<alarm number>), Batt:xx, Ri:xx, Charge:xx, Power:xx, last Call:xx,
Rssi:xx(xx-xx), Ber:xx(xx-xx), Errors:-----,-----,---

Label	Comment	Value xx	Info
Nano V.F.x.y	Status Software-Version	ready not ready	System ready to use System not ready
Batt:	Battery voltage	0 to 97	Calculate voltage: $0.145 * \text{<value>}$ e.g. 97 ↗ 14.05V or 92 ↗ 13.34V
Ri:	Battery-resistance	10 to 70	10 – 23 ↗ battery o.k.
defect!	Battery- or Fuse F2 defect	-	Battery failure or blown fuse F2 6.3AT ↗ check and replace
Charge:	Battery charge value	0 to 255	Charge: * 255s / Discharge: * 15s
Power:	Battery charging voltage	0 to 38	≤ 25 ↗ supply voltage missing ≤ 28 ↗ supply voltage too low to charge bat- tery 34 ↗ supply voltage sufficient
last Call:	Hours since last call	0 to 255	in hours
Roaming	GSM-Roaming		Not home GSM-network => higher costs
Rssi: <mom> (<min>- <max>)	GSM-Level Momentary Min. since last call Max. since last call	0 to 31	Calculate level: $2 * \text{<Value>} - 113\text{dB}$ e.g. 10 ↗ $2 * 10 - 113 = -93\text{db}$ GSM poor ≥ 5 LED1 GSM low ≥ 10 LED2 GSM medium ≥ 15 LED3 GSM high ≥ 20 LED4 GSM excellent ≥ 25 LED5
Ber: <mom> (<min>- <max>)	BitErrorRate Momentary Min. since last call Max. since last call	0 to 7	0: minimum BitErrorRate 7: maximum BitErrorRate
Errors	Error-No. 0 to 12 e.g. ----+,---*,--*	- + * ,	-: inactive *: active ,: separator before error 5/10 +: delayed error not jet active

Example:

Change PIN from 0000 to 1234, set Alarm to +41791234567, set EEPROM 0018 to 100

↗ send SMS with content

PIN:0000 NEW:1234 ALARM=+41791234567 EE_W:0018=100

↗ Reply-SMS

leitronic.ch Nano V.F.x.y ready, New Pin:1234, Alarm:+41791234567,
adr:0018:100, Batt:96, Ri:18, Charge:255, Power:34, last Call:26,
Rssi:12(9-15), Ber:0(0-2), Errors:--*+,-,-----,---

↗ Error 2 active: GSM bad and Error 4: Supply voltage too low (in delay)

If you **do not get any Reply-SMS**, please check the following points:

- EA-GSM-DIN is **not connected** to the GSM-network ↗ check LED_GSM
- PIN-Code** is incorrect
- SIM number** is incorrect
- No money** left on SIM-card
- Mode switch **SW1 not on ON**

7.3 Automatic Status-SMS

The Status-SMS will be sent to the **defined alarm-number** ALARM= , **completed with a space**.

To disable the **Status-SMS** ➡ send SMS with content: PIN:0000 ALARM=OFF_

Example:

Signal on input ALM ➡ SMS with content:

leitronic.ch Nano V.F.x.y ready, Alarm X4, Batt:96, Ri:18, Charge:255, Power:34, last Call:26, Rssi:12(9-15), Ber:0(0-2) Errors:*----,-----,---

Errors	< State / Error>	READY (OK)	Emergency light	Delayed	Send Alarm	SMS content	Error code LED					Test interval	Send Restore	Restore-SMS content
							1	2	3	4	5			
0	Alarm X4 / ALM	●	Off	0	✉	Alarm X4	○	○	○	○	○	(50)* 20ms	-	No Alarm X4
1	Supply voltage missing	●	On	0	-	Power off	○	●	○	○	○		-	Power on
2	GSM poor	●	On	15 s	✉	GSM poor	○	○	○	○	●	2 s	-	GSM ok
3	GSM Roaming	●	On	0	✉	Roaming	○	○	○	●	○	2 s	-	Home
4	Supply voltage too low to charge battery	●	On	15 s	✉	Power poor	○	●	○	○	○		✉	Power not poor
5	No call within routine interval	●	On	0	✉	No routine call	○	○	○	○	○	(74) h	-	Routine call ok
6	Unacknowledged calls	●	On	0	✉	Emergency Call	○	○	○	○	○		✉	Emergency ended *)
7	Battery not charged within 24 h	○	On	0	✉	Charge problem	○	○	●	○	○	24 h	✉	Charge ok
8	No or bad battery or fuse F2 defect or battery test circuit defect (Ri<10)	○	On	0	✉	Battery failure	○	○	●	○	○	1h	✉	Battery ok
9	GSM bad	○	On	15 s	✉	GSM bad	○	○	○	○	●	2 s	✉	GSM ok
10	No GSM network or not registered or mode switch SW1 not on ON	○	On	0	✉	No GSM	○	○	○	●	○		✉	GSM registered
11	Nano not connected	○	On	0	✉	Line problem	○	○	○	●	○	1 h	✉	Line OK
12	Battery end	○	Off	0	✉	Battery end	○	○	●	○	○	2 s	✉	Charging

*) Emergency ended: Door-state changes / Alarm acknowledged by DTMF 0 / New connection

8 Troubleshooting

Faults and errors are displayed by the various indicators (LED) ➡ Fehler: Referenz nicht gefunden

Detailed error information available through a status inquiry via SMS or automatically by **Status-SMS** in case of a new error (if <Send Alarm> is ✉ ➡ Table)

➡ send SMS with content

PIN:0000

➡ Reply-SMS ➡ 7.3

9 Reception test



1. If the EA-GSM-DIN is mounted on the cabin roof, send the cabin to the location with the **worst** GSM reception (check reception with LED1. .5). Attention: The level-indicator may be delayed.
2. Start test call and check if the connection is established ☞ terminate test call.
3. **Re-start test call** ☞ Connection must be established ☞ Stay in connection and move the cabin over the complete shaft ☞ Check if connection remains stable ☞ Terminate test call ☞ Send SMS to verify GSM-levels: Rssi:<mom> (<min>-<max>)
☞ The minimum value <min> must be higher than 5!
☞ **Report** Rssi-Value with date (see last page)!
4. If a problem occurred during test, change or optimize the placement of the EA-GSM-DIN.
5. If you cannot find an improved placement use an external antenna ☞ e.g. Article-no 100.0864 and / or extension cord 100.0863.

10 Modem settings

10.1 General settings

<adresse>	function	<value>	Default
0004	Auto-Answer ATS0=<n>	<n>	0
0125	Select Baud rate for transparent mode	0=9600 1=19200	1
0126	Quiet-Mode (Modem does not answer or indicate RING)	0=disabled (ATQ0) 1=enabled ATQ1)	0
0128	Result-Code	0=Text (ATV1) 1=Numerical (ATV0)	0

If modem should work in transparent-mode, you have to configure by SMS as following:

Example:

PIN is 0000. Modem with 19200 Baud, Auto-Answer after „four cycles“, Quiet-Mode enabled

✉ send SMS with content

PIN:0000 EE_W:0004=004 EE_W:012 5=001 EE_W:0126=001

✉ Reply-SMS


leitronic.ch Nano V.F.x.y ready, adr:0004:4, adr:0125:1, adr:0126:0,
Batt:96, Ri:18, Charge:255, Power:34, last Call:26, Rssi:12(9-15),
Ber:0(0-2), Errors:----+,-----,---

10.2 Specific elevator controls

refer to special document: http://www.leitronic.ch/Documents/100.085x_Data-Modules-GB.pdf

11 Short instruction for alarm point

11.1 Answering calls

Accept call  Indication on communication unit



The called party can initiate the following remote-commands:

DTMF key	Comment
[0]	Terminate call
[1] or [3]	Renew connection for another 120 seconds
[2]	Play individual announcement (Identification)
[8]	In case of an alarm call: Terminate connection and call next alarm-number In case of callback into cabin: Terminate connection and call number 8
[][#]	Record individual announcement (12 seconds). After recording the new text will be announced.

Each call must be terminated by key **[0]**. Otherwise GSM-Nano calls the next alarm-number. If the alarm remains **unacknowledged**, a **Status-SMS** will be sent with contents:


```
leitronic.ch Nano V.F.x.y ready, Emergency Call, Batt:96, Ri:18,
Charge:255, Power:34, last Call:26, Rssi:12(9-15), Ber:0(0-2)
Errors:-----, *-----, ---
```

If there is a **change** of the door-state a Restore-SMS will be sent:

```
leitronic.ch Nano V.F.x.y ready, Emergency ended, Batt:96, Ri:18,
Charge:255, Power:34, last Call:26, Rssi:12(9-15), Ber:0(0-2)
Errors:-----, *-----, ---
```

11.2 Callback into cabin

Call telephone number of the GSM-Nano. Ten seconds later you are connected with the cabin

 Indicated in the cabin by



11.3 Machine room communication

To speak with the cabin lift handset and press key **[1]**.

 Indicated in the cabin by:



To terminate communication press key **[0]** and set handset on-hook.

DTMF key	Comment
[0]	Terminate call
[1] or [3]	Speak with the cabin
[4]	Activate output EL to test siren
[6]	Deactivate output EL

12 Maintenance protocol

Location of the installation :

.....

.....

System GSM-Nano installed by:

Company:

Mechanic:

Date:

Calling number of SIM-card:

PIN-Code of SIM-card:

12.1 Values of the reception test (📶 9) note within each maintenance

Status query by SMS

📶 send SMS with content PIN:0000

📶 Reply-SMS 📶 .. Rssi:<mom> (<min>-<max>) ..

Write down the three Rssi-values of the Reply-SMS into the table below:

e.g. Rssi:12 (9-18) 📶 momentary=12, minimal=9, maximal=18

The minimum value must be higher than 5!

Date	Tested by	Rssi:		
		<mom>	<min>	<max>
1.1.2010	Mister Sample	15	9 ✓	18