KRONENBERG

Encoding Keypad TC4
Extension Module EM8

Operating Instructions

kronenberg-gmbh.de

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1 General information

In these operating instructions you will find:

- information on installation, adjustment, maintenance and disposal for the assembly TC4 / EM8
- safety information
- assistance in case of malfunctions

Read these operating instructions carefully before you start using the assembly TC4 / EM8. Pay special attention to the safety instructions, as the failure to comply with them might result in severest injuries, environmental damage or damage to the assembly and to machines.

1.1 Key words and warning symbols used

Danger

Indicates an imminent danger for life and health of persons.

Warning

Indicates a possibly dangerous situation. Disregarding this warning may result in death or serious injury. This advice additionally warns of risks for machine, material or environment.

Attention

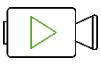
Indicates possible minor personal injury due to neglect.

Caution

Indicates possible material damage when disregarding these instructions or gives an important advice for the function.

Note

Identifies general information on the handling or the product.



Multimedia - information

Identifies additionally available multimedia information on the activity or the product. An internet connection is required to access the information.

1.2 Brief description

1.2.1 Assembly TC4

The assembly TC4 has been developed and manufactured in accordance with the applicable national standards and guidelines.

The features of the assembly at a glance:

mechanics:	• pluggable screw terminal block • TC4-EDEL: – stainless steel faceplate and robust stainless steel keys with engraving, colored in black – face plate can be adapted to the order or the keypad can be integrated in the face plate of the operating panel – slim design, compatible with standard wall-box – front side level of protection IP54 • TC4-STORM: – optimal protection against vandalism – front side level of protection IP54 • TC4-ECO: – compact plastic keypad
electronics:	• up to 32 access codes useable, changeable by keypad at any time • code length 4, 5 or 6-digit • two relay outputs integrated • can be extended to 26 relay outputs with the EM8 extension modules • switching behaviour bistable or monostable, can be changed for each relay output • switch-on time between 0.1 up to 25.4 seconds adjustable at monostable switching behaviour • switch-on and off function using the keys [∗] and [#] at bistable switching behaviour • as option four additional special outputs extendable on request, e. g. for optical acknowledgement • order-related assignment of access codes can be programmed, e.g. for simultaneous switching of several outputs with one access code

1.2.2 Extension module EM8

The features of the assembly at a glance:

mechanics:	• removable screw terminal blocks • insulating vat can be used universally, assembly by clipping on (TS35), sticking on or screwing
electronics:	• for connection to the TC4 to provide 8 additional relay outputs • up to 3 extensions can be connected in series (3 x 8 additional relay outputs) • pluggable connection cable included in scope of delivery (1 m) • longer connection cables between TC4 and EM8 allowed (max. 10 m) • compatible with previous versions AM8 and TC3

1.3 Intended use

The assembly TC4:

- switches potential-free contacts by entering a numerical code
- is intended for the use in lift installations for activating, blocking or releasing of call functions or operating elements
- may only be used in a dry environment outside of explosion protection areas
- may be extended to maximum 26 contacts by using the EM8 extension module
- is only designed for a maximum switching voltage of 60 V and a maximum switching current of 1 A at the potential-free contacts

The assembly EM8:

- may only be used to extend the potential-free contacts of the assembly TC4
- may only be used in a dry environment and outside of explosion protection areas
- is only designed for a maximum switching voltage of 60 V and a maximum switching current of 1 A at the potential-free contacts

Any other use is considered **improper** and may result in personal injury, environmental damage and / or property damage. In particular, the following are not permitted:

- repair, adjustment or modification of the assembly TC4 / EM8
- the use for safety-relevant functions

Hans & Jos. Kronenberg GmbH do not assume any liability for damages caused by:

- improper or incorrect use
- use of non-approved spare or accessory parts
- non-observance of this manual

2 Safety

Caution – Read this manual carefully, especially the safety instructions and information on the application of the assembly TC4 / EM8!

For the safety of persons, the environment and to avoid damage to property always observe the country-specific regulations for the installation, safety and accident prevention in addition to the safety instructions in this manual.

- Prior to use familiarize yourself with the mode of operation.
- Keep this manual safe and in a legible condition.
- Only pass the assembly TC4 / EM8 on to the qualified personnel with these original operating instructions.

2.1 Safety advice

Danger – Risk of injury or death due to electrical current!

Only use the assembly TC4 / EM8 in a dry environment and outside of EX-protection areas.

A damaged and faulty assembly TC4 / EM8 or single components of the assembly must not be repaired and must be replaced by a new assembly TC4 / EM8.

When installing the assembly, ensure that there is a sufficient safety distance to neighboring live modules and cabling.

The maximum switching voltage of 60 V and the maximum switching current of 1 A when selecting the peripheral devices have to be observed.

Caution

Do not put any mechanical or thermal stress on the assembly TC4 / EM8 and only use the assembly TC4 / EM8 for its intended use.

Only use the assembly TC4 / EM8 within the permissible temperature and voltage range (see chapter 9.4).

Store and transport the assembly TC4 / EM8 in such a way that no moisture, other liquids, other contaminations or foreign objects can enter the assembly.

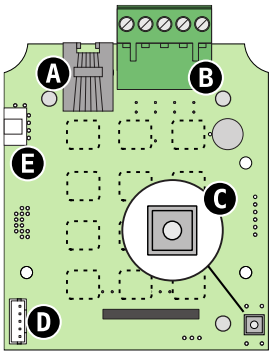
3 Overview assembly TC4 and extension module EM8

3.1 Assembly TC4 (EDEL, STORM, ECO)

TC4-EDEL

TC4-STORM

TC4-ECO



motherboard*

* Dimensioning, technical data and terminal connections can be found in chapter 9.

components:

(A) plug socket for extension module EM8

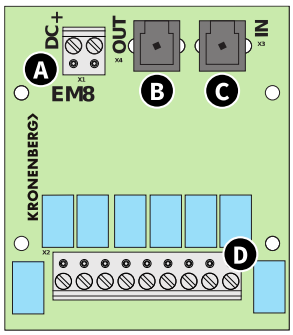
(B) pluggable screw terminal block for power supply, relay outputs and switching potential of the relay outputs

(C) micro switch for programming mode

(D) connection for special outputs as option

(E) connection for programming adapter

3.2 Extension module EM8



Extension module EM8*

* Dimensioning, technical data and terminal connections can be found in chapter 9.

components:

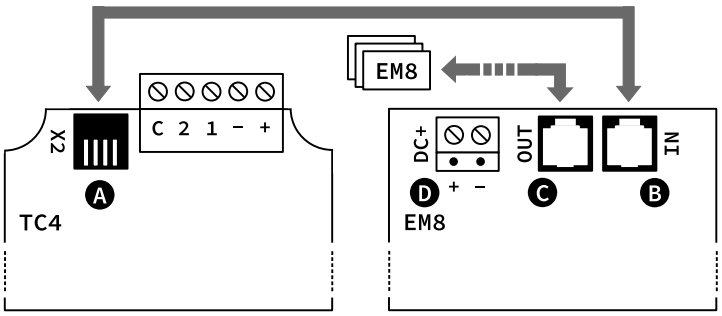
(A) pluggable screw terminal block for power supply

(B) plug socket for connection of further EM8-modules

(C) plug socket for connection of the TC4

(D) pluggable screw terminal block for relay outputs and switching potential of the relay outputs

3.3 Connection establishment TC4 with EM8



connection EM8 to TC4

components:

(A) output socket TC4 for the connection of an extension module EM8

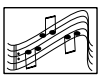
(B) input socket extension module EM8

(C) output socket extension module EM8

(D) feeding-in of an additional power supply at connection cable with a length of > 1m

4 Overview of the tone sequences as feedback of the entries

During operation and programming you hear the following tone sequences as feedback of your entries.

key acknowledgement		The key acknowledgement signals a keystroke with a tone.
entry deleted		A sequence of 2 identical tones confirms the automatic deletion of your entry.
entry valid		A sequence of 3 different tones confirms the validity of your entry.
entry invalid		A sequence of different tones signals the invalidity of your entry. Note: Invalid entries do not block the assembly.

5 Functions and operation of the assembly TC4 in user mode

5.1 Overview of the functions and procedure when operating

The table summarizes the functions and brief instructions for operation in user mode in an overview.

switch on output	procedure in the operation: 1. enter access code 2. press key [∗]
switch off output (only at bistable switching behaviour)	press key [#]
cancel entry	press key [∗] or key [#]
change access code	procedure in the operation: 1. enter master code 2. enter current access code 3. enter new access code 4. press key [∗] A detailed example of this procedure can be found in chapter 7.3.
reset all access codes to factory settings	procedure in the operation: 1. enter master code 3x 2. press key [∗] Note: Master code, code length, switching behaviour and switching time are maintained and are **not reset**!

Note for the keypad entry

The time between 2 keystrokes is limited to 3s. If the maximum entry time is exceeded, the complete key combination is automatically deleted and you hear the tone sequence “entry deleted” (see chapter 4).

6 Functions of the assembly TC4 in programming mode

Note

You can only use the functions in chapter 6.1 if the assembly TC4 is in programming mode. How to start and end the programming mode is described under initial operating in chapter 7.4.1. The operation of the functions is described with detailed examples in chapter 7 (initial operation).

6.1 Overview of the functions in programming mode

The table summarizes the functions in the programming mode in an overview. The factory settings of the functions are described in chapter 7.2.

function „change master code“ (see chapter 7.4)	You use the master code to program the assembly TC4. Call of the functions in the programming mode by key: [2]
function „change code length“ (see chapter 7.5.1)	The code length determines the number of digits in the access and master code. Values that can be set are: • 4 - digit code • 5 - digit code • 6 - digit code Call of the functions in programming mode by key: [1]
function „change switching behaviour“ (see chapter 7.5.2)	The function sets the switching behaviour of the outputs. Values that can be set are: • monostabil • bistabil Call of the function in programming mode by key: [3]
function „change switching time“ (see chapter 7.5.3)	The function sets the switching time at monostable switching behaviour of the outputs, i.e. the output remains set for the set time. Values that can be set are: 001 … 254 The entry must be made with 3-digits. Call of the function in programming mode by key: [4]

7 Initial operation

Notes

When installing the assembly, ensure that it is installed at a height which enables ergonomic operation.

Before installation, check the assembly for sharp edges and test the smooth operation of all keys.

Make sure that the assembly TC4 / EM8 is only used as intended.

7.1 Procedure

Multimedia - information

You find video instructions and audio outputs of the tone sequence for the operation and programming on our service page for the assembly TC4.
To retrieve the information, click on the direct link or enter the link address in the tab of your browser. Alternatively you can also scan the QR code with your smartphone / tablet.

Direct link	Link address	QR - Code
Click here for the information.	https://kronenberg-gmbh.de/en/service/video-tutorials/#access-control-system	

Note for the keypad entry

The time between 2 keystrokes is limited to 3s. If the maximum entry time is exceeded, the complete key combination is automatically deleted and you here the tone sequence „entry deleted“ (see chapter 4).

Caution

We recommend changing the master code during initial operation (see chapter 7.4).

Please document the new master code!

Programming is no longer possible without master code!

A template for documentation of the changed values can be found in chapter 10.

7.2 Overview of the factory settings

The table summarizes the factory settings in an overview.

code length	factory setting: 4 – digit code
master code	factory setting: 0000
access codes	factory settings: • access code 0001 | TC4 terminal 1 • access code 0002 | TC4 terminal 2 • access code 0003 | EM8 terminal 1 • access code 0004 | EM8 terminal 2 • … access code 0032 **Note** **Each code number may only be assigned once and is always clearly assigned to one output.** Please note that the code numbers 0000 (master code) and 0001 … 0032 (access codes) are already assigned by factory setting!
switching behaviour	factory setting: monostable
switching time	factory setting: 005 | the output remains set for 0.5s

7.3 Change access code

Note

The access code **can only be changed in user mode**!

The **programming mode** must **NOT be started or active**!

You **end an active programming mode**, by disconnecting the **assembly from the power supply for min. 2s** and then reconnecting it. Afterwards the user mode is active.

The time between 2 keystrokes is limited to 3s. If the maximum entry time is exceeded, the complete key combination is automatically deleted and you hear the tone sequence* „entry deleted“.

* Information on the tone sequences can be found in chapter 4.

The following process describes how to change the access code for an output.

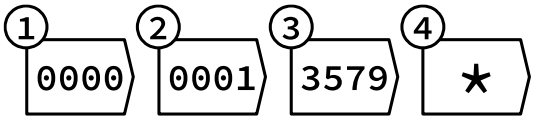
step 1	Enter the master code.
step 2	Enter the **current** access code to be changed.
step 3	Enter the **new** access code. If you enter an already assigned access code, you will hear the tone sequence* „entry invalid“. In this case, start again with step 1. **Note** **Each code number may only be assigned once!** Please note that the code numbers 0000 (master code) and 0001 … 0032 (access codes) are already assigned by factory setting!
step 4	Complete the entry with the key [∗]. You hear the tone sequence* „entry valid“.
completion	The access code has been changed successfully.

* Information on the tone sequences can be found in chapter 4.

Example for the programming:

task: Change access code 0001 (factory setting output 1 TC4) to „3579“

procedure:



1. enter master code „0000“ (factory sett.)
2. enter current access code „0001“
3. enter new access code „3579“
4. press key [∗]

7.4 Change master code

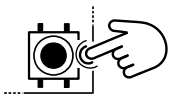
Note

A **change of the master code** is only possible **in programming mode**!

How to start the programming mode is described in chapter 7.4.1.

7.4.1 Start programming mode

The following process describes how to put the assembly TC4 in the programming mode.

step 1	Disconnect the assembly TC4 from the power supply.
step 2	 Press **and** hold the button in the lower right corner of the board. (Overview of the printed circuit board see chapter 3.1)
step 3	Connect the assembly TC4 to the power supply.
step 4	Keep the button pressed down on the board of the assembly TC4 for 1s. After releasing the key you hear the tone sequence* „entry valid“.
step 5	Enter the **master code** using the keypad.

The entry was valid.	**The entry was invalid.**
You hear the tone sequence* „entry valid“.	You hear the tone sequence* „entry invalid“. Repeat the master code entry.

completion	The assembly TC4 is now in programming mode and is ready for the selection of the functions.

* Information on the tone sequences can be found in chapter 4.

Note

To **exit the programming mode**, interrupt the power supply of the assembly TC4 for at least 2s.

7.4.2 Function „change master code“

Note

You can only use the function „change master code“ if the assembly TC4 is in programming mode **and** if you are logged in with the master code. Please note the procedure in chapter 7.4.1.

The following process describes how to change the master code of the assembly TC4.

step 1

Press the **key [2]** on the keypad.
As confirmation of your entry you hear the tone sequence* „entry valid“.

step 2

Enter the **new** master code.

The entry was valid.	The entry was invalid.
You hear the tone sequence* „entry valid“. Continue with step 3.	You hear the tone sequence* „entry invalid“. Repeat the entry of the **new** master code.

step 3

Enter **the new master code again** for confirmation.

The entry was valid.	The entry was invalid.
You hear the tone sequence* „entry valid“.	You hear the tone sequence* „entry invalid“. Repeat the entry of the new master code.

completion

The master code has been changed successfully.

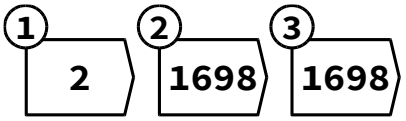
* Information on the tone sequence can be found in chapter 4.

Example for the programming:
task: change master code to „1698“

Caution

The programming mode must be activated in order to be able to carry out programming!
How to switch on the programming mode is described in chapter 7.4.1.

procedure:



① press key [2]
② enter new master code „1698“
③ Enter new master code „1698“

Caution

Please document the new master code! Programming is no longer possible without the master code!

A template for documentation of the changed values can be found in chapter 10.

7.5 Optional functions in the programming mode

7.5.1 Function „(test) change code length“

Note

You can only use the function „change code length“ if the assembly TC4 is in programming mode **and** if you are logged in with the master code. Please note the procedure in chapter 7.4.1.

The following process describes how to change the number of digits for **all** codes of the assembly TC4.

step 1

Press the **key [1]** on the keypad.
As confirmation of your entry you hear the tone sequence* „entry valid“.
Subsequently the assembly puts out the **current code length** as single tone sequence:

- code length 4 digits: 4x single tone
- code length 5 digits: 5x single tone
- code length 6 digits: 6x single tone

step 2

Use a keystroke to select the new code length:

- key [4]: 4 digit code
- key [5]: 5 digit code
- key [6]: 6 digit code

The entry was valid.	The entry was invalid.
You hear the tone sequence* „entry valid“. You find further information under „completion“.	You hear the tone sequence* „entry invalid“. Repeat the entry of the new code length.

completion

The number of the digits for **all** codes (incl. master code) has been changed successfully.

Caution

A change in the code length resets **all codes (incl. master code) to the factory setting!**

The settings for switching behaviour and and switching time are retained.

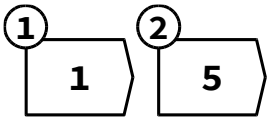
* Information on the tone sequences can be found in chapter 4.

example for the programming:
task: change code length to „5 digits“

Caution

The programming mode must be activated in order to be able to carry out programming!
How to switch on the programming mode is described in chapter 7.4.1.

procedure:



① press key [1]
② press key [5]

7.5.2 Function „change switching behaviour“

Note

You can only use the function „change switching behaviour“ if the assembly TC4 is in programming mode and if you are logged in with the master code. Please note the procedure in chapter 7.4.1.

You can change the switching behaviour from „monostable (factory setting) to „bistable“ separately for each output.

Explanation of the switching behaviour:

- **monostable switching behaviour:** When you enter the access code and the key [∗] the corresponding output sends a switching pulse and is automatically reset after the switching time (chapter 7.5.3).
- **bistable switching behaviour:** When you enter the access code and the key [∗] the corresponding output is switched on and remains in this switching state. A second entry of the same access code, pressing the key [#] or switching off the assembly resets the output.

The channel number designates the switching outputs of the assembly TC4 and the connected extension modules in consecutive numbering.

You need the channel number in the following procedure to determine the switching behaviour.

Assignment table between channel number, switching output and assembly:

channel number	switching output	assembly
01	1	TC4
02	2	TC4
03 - 10	1 - 8	1. extension module EM8
11 - 18	1 - 8	2. extension module EM8
19 - 26	1 - 8	3. extension module EM8

The following process describes how to change the switching behaviour of the outputs of the assembly TC4 / EM8.

step 1

Press the **key [3]** on the keypad.
As confirmation of your entry you hear the tone sequence * „entry valid“.

step 2

Enter the requested channel number using the keypad.

Note
Enter the channel number **always 2-digit**,
e. g. 01 for switching output 1.

The entry was valid.	The entry was invalid.
You hear the tone sequence* „entry valid“. Continue with step 3.	You hear the tone sequence* „entry invalid“. Repeat the entry of the channel number.

step 3

Use a key entry to select a switching behaviour for the cannel number chosen:

- key [0]: switching behaviour monostable (factory setting)
- key [1]: switching behaviour bistable

The entry was valid.	The entry was invalid.
You hear the tone sequence* „entry valid“.	You hear the tone sequence* „entry invalid“. Repeat the entry of the new switching behaviour.

completion

The switching behaviour for the channel number chosen has been changed successfully.

* Information on the tone sequences can be found in chapter 4.

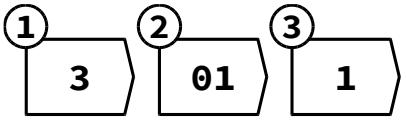
example for the programming:

task: change switching behaviour for channel number 01 (output 1 assemblyTC4) to „bistable“

Caution

The programming mode must be activated in order to be able to carry out programming!
How to switch on the programming mode is described in chapter 7.4.1.

procedure:



1. press key [3]
2. enter channel number „01“
3. press key [1]

7.5.3 Function „change switching time“

Note

You can only use the function „change switching time“ if the assembly TC4 is in programming mode and if you are logged in with the master code. Please note the procedure in chapter 7.4.1.

The switching time delays the resetting of the output and:

- is only effective at **monostable switching behaviour** of the outputs
- applies for **all** outputs with monostable switching behaviour

You can set values between 001 and 254. A switching time of 005 delays the resetting of the monostable outputs by 0.5 s. The maximum value of 254 delays the reset by 25.4 s.
Please note that the value must **always** be entered with **3-digits**.

The following table describes how to change the switching time of the outputs of the assembly TC4 / EM8.

step 1	Press the key [4] on the keypad. As confirmation of your entry you hear the tone sequence „entry valid“.
step 2	Enter the requested value as **3-digit** number using the keypad.

The entry was valid.	**The entry was invalid.**
You hear the tone sequence* „entry valid“.	You hear the tone sequence* „entry invalid“. Repeat the entry of the switching time.

completion	The switching time for **all** monostable outputs has been changed successfully.

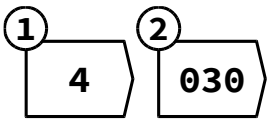
* Information on the tone sequences can be found in chapter 4.

example for the programming:
task: change switching time to „3 s“

Caution

The programming mode must be activated in order to be able to carry out programming!
How to switch on the programming mode is described in chapter 7.4.1.

procedure:



① press key [4]
② enter new switching time „030“

8 Maintenance, storage, disassembly and disposal

8.1 Maintenance

A damaged or faulty assembly TC4 / EM8 or single components of the assembly cannot be repaired and must be replaced by a new assembly TC4 / EM8. Only use approved products for cleaning the surface and the keypad.

8.2 Storage

Store the assembly TC4 / EM8 in a clean and dry place. Do not put any loads on the assembly.

8.3 Disassembly and disposal

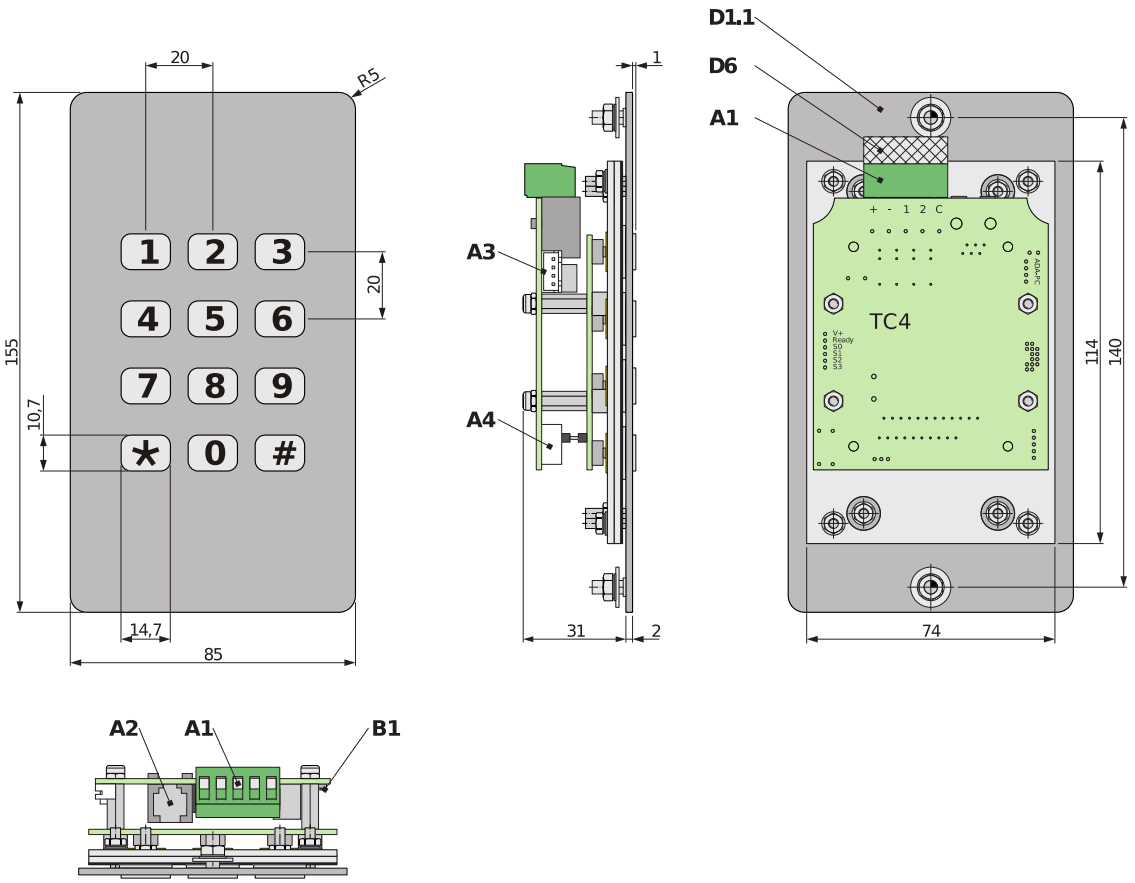
Danger – risk of injury due to sharp-edged molded parts and springs!

Do not dismantle the assembly TC4 / EM8 and dispose of the assembly in accordance with the national regulations.

9 Data sheet

9.1 Dimensions TC4

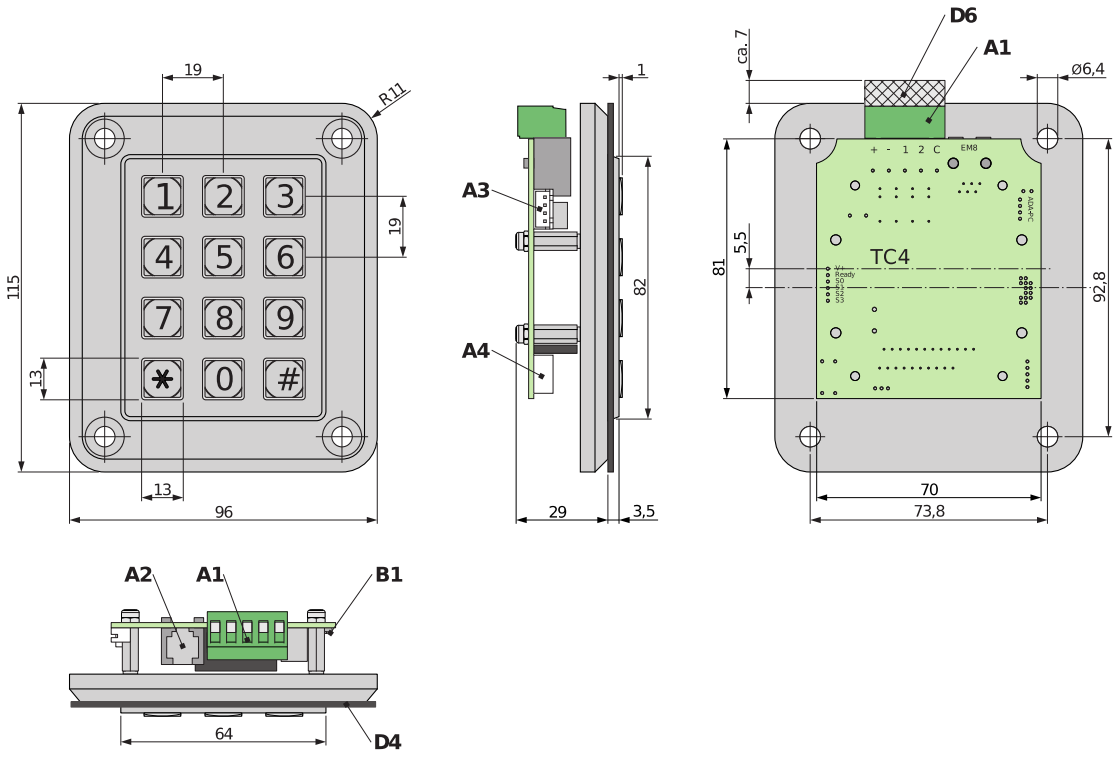
assembly TC4-EDEL:



Legend:

A1: pluggable screw terminal block, 5-pole
A2: plug socket for extension module EM8
A3: connection programming adapter
A4: connection for special outputs as option
B1: micro switch for the programming mode
D1.1: face plate TC4-EDEL with welding studs M4 x 10, mounting material included
D6: space requirement for connection cables

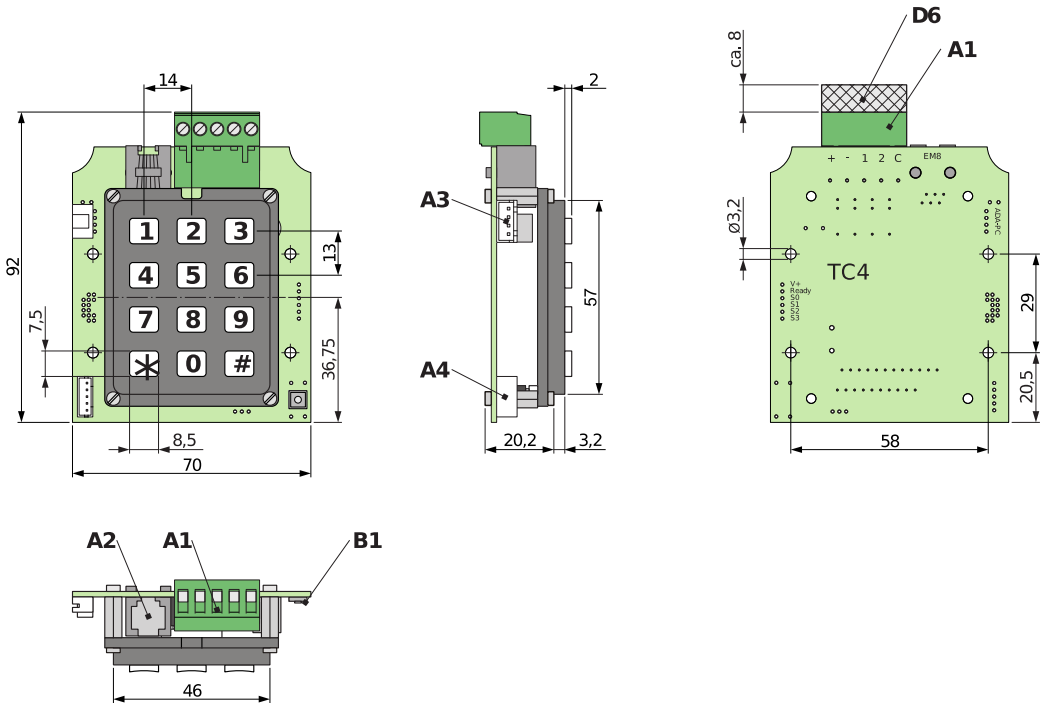
assembly TC4-STORM:



Legend:

A1: pluggable screw terminal block, 5-pole
A2: plug socket for extension module EM8
A3: connection programming adapter
A4: connection for special outputs as option
B1: micro switch for the programming mode
D4: rubber foam seal
D6: space requirement for connection cable

assembly TC4-ECO:

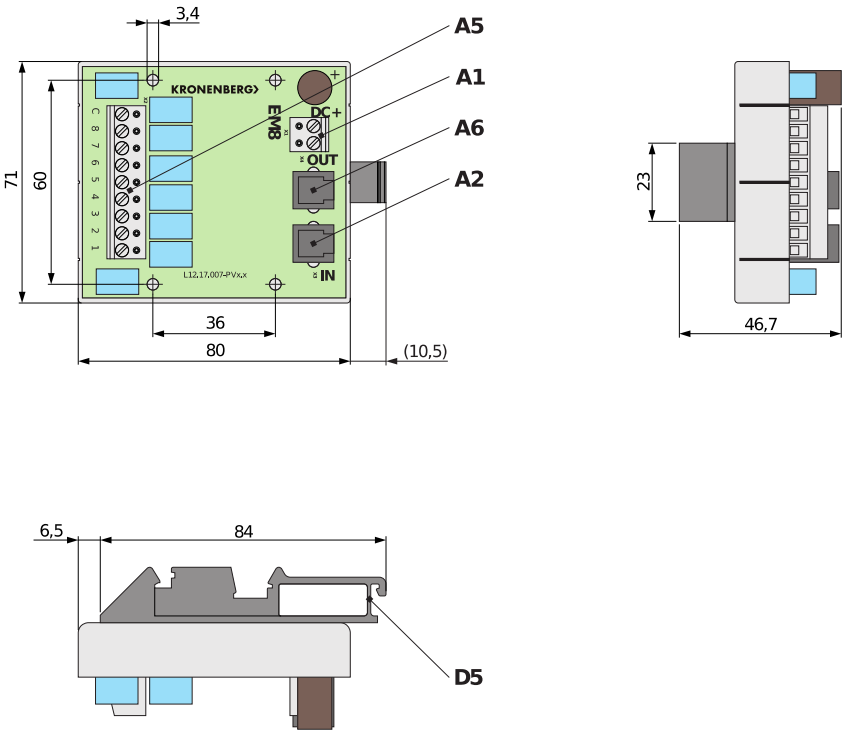


Legend:

A1: pluggable screw terminal block, 5-pole
A2: plug socket for extension module EM8
A3: connection programming adapter
A4: connection for special outputs as option
B1: micro switch for the programming mode
D6: space requirement for connection cable

9.2 Dimensions EM8

assembly EM8:

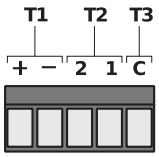


Legend:

A1: pluggable screw terminal block, 2-pole
A2: plug socket „IN“ for connection of the TC4
A5: pluggable screw terminal block, 9-pole
A6: plug socket „OUT“ for connection of further EM8-modules
D5: snap-in mounting feet for mounting rail

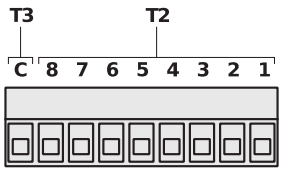
9.3 Terminal connections

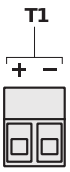
9.3.1 Assembly TC4



T1: connection power supply
T2: relay outputs
T3: switching potential of the relay outputs

9.3.2 Extension module EM8





T1: connection power supply
T2: relay outputs
T3: switching potential of the relay outputs

9.4 Technical data

9.4.1 Assembly TC4

nominal voltage	24 V DC
power supply	19 - 30 V DC
current consumption	9 mA in idle mode max. 35 mA in operation (at nominal voltage)
switching voltage	max. 60 V
switching current	max. 1 A
connection	pluggable screw terminal block 5-pole, terminal cross section max. 2.5 mm^2
level of protection	version EDEL and STORM: front side IP54 version ECO: front side IP40 rear side: IP00
ambient air temerpature	-10 °C up to +50 °C

9.4.2 Extension module EM8

nominal voltage	24 V DC
power supply	19 - 30 V DC
current consumption	6 mA im in idle mode max. 65 mA in operation (at nominal voltage)
switching voltage	max. 60 V
switching current	max. 1 A
connection	pluggable screw terminal block 2- and 9-pole, terminal cross section 2.5 mm^2
level of protection	IP00
ambient air temperature	-10 °C up to +50 °C

10 Form for documentation of the changed values

location of the installation **lift-/serial-no.**	
page of	

factory settings:

code length	4 – digit code
master code	0000
access codes	• access code 0001 | TC4 terminal 1 • access code 0002 | TC4 terminal 2 • access code 0003 | EM8 terminal 1 • access code 0004 | EM8 terminal 2 … access code 0032
switching behaviour	monostable
switching time	005 | the output remains set for 0.5s

master code:

old code	new code	… changed on	… changed by

code length:

old value	new value	… changed on	… changed by

switching time:

old value	new value	… changed on	… changed by

access codes:

output		SV*	old code	new code	... changed on	... changed by

*SV (switching behaviour): [M] monostable, [B] bistable

Notes

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