

WI Line

DiggiMEC®

NANO-HMI WITH FLAG INDICATORS / OUTPUT RELAYS



NANO-HMI WITH FLAG INDICATORS / OUTPUT RELAYS

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Original document

English

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Build 61241

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1 Safety Messages and Proper Use of the DiggiMEC

1.1 Important Definitions

The types of messages shown below serve the safety of life and limb as well as for the appropriate operating life of the device.

DANGER!



DANGER! indicates an immediately dangerous situation that will result in death or serious injury if it is not avoided.

WARNING!



WARNING! indicates a hazardous situation that can result in death or serious injury if it is not avoided.

CAUTION!



CAUTION! indicates a possibly hazardous situation that can result in minor or moderate injuries if it is not avoided.

NOTICE!



NOTICE! is used to address practices not related to personal injury.



This symbol indicates useful tips and recommendations as well as information for efficient and trouble-free operation.

1.2 Proper Use of the Device and of This Manual

WARNING!



FOLLOW INSTRUCTIONS

Read this entire manual and all other publications pertaining to the work to be performed before installing, operating, or servicing this equipment. Practice all plant and safety instructions and precautions. Failure to follow instructions can cause personal injury and/or property damage.

WARNING!



The bistable output relays of a DiggiMEC, that is connected to the WIC1, may be used only for visualization purposes. It is not permitted to use these relay contacts for any protection-related and/or switching purposes!

If the DiggiMEC relays are used for switching purposes there is the risk of an unreliable protection of your application!

Only the trip-coil output “TC+/-” of the WIC1 may be used for tripping a breaker.

(Further remarks can be found in ↪[“Remarks with respect to this warning”](#).)

1.3 Important Information

Out-of-Date Documentation?



This publication may have been revised or updated since this copy was produced. To verify that you have the latest revision, please visit the download section of our website:

- **<https://docs.SEGelectronics.de/DiggiMEC>**

Please check this download area for the latest revision of this Technical Manual and whether there is an Errata Sheet with updated information. (The ID of every document is printed on its cover page.)

2 DiggiMEC® - Nano HMI with Flag Indicators and Output Relays

The DiggiMEC® is a remote HMI to be used in connection with a WIC1 (generation 2) protection relay. (It cannot be used with the predecessor WIC1.)



DiggiMEC® is a registered trademark. For the sake of readability, most chapters of this User Manual omit the “®” designation. This, however, does not mean that the term “DiggiMEC” can be used without any restrictions.

An overview of the elements and connectors can be found here: [↪5 Navigation - Operation](#), and here: [↪4.1 DiggiMEC Connectors](#)

Connection of the DiggiMEC

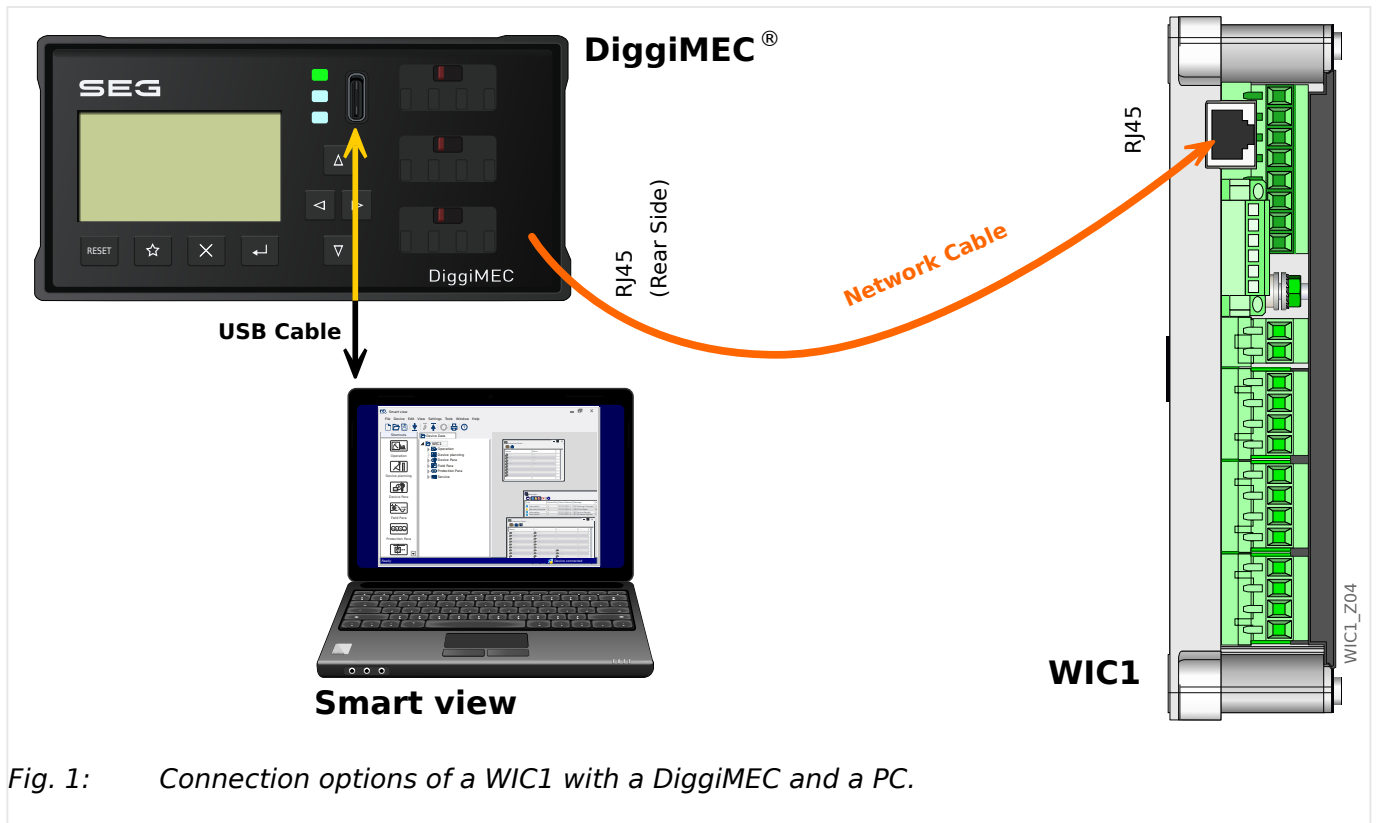


Fig. 1: Connection options of a WIC1 with a DiggiMEC and a PC.

The **WIC1** can be (optionally) connected to the interface device **DiggiMEC**, which adds an LCD display, keys and one or three flag indicators. Each flag indicator is mechanically related to a bistable output relay.

The **DiggiMEC** can be connected to a Windows PC, so that the parameter setting and evaluation software *Smart view* can be used to configure the WIC1 and to retrieve measurement values and fault data from it. Moreover, the WIC1 can trigger the flag indicators / output relays.

CAUTION!



Use an Ethernet cable CAT 3 (or better) with shielding for the connection between WIC1 and DiggiMEC. **Crossover cables must not be used!**

Make sure that the connection cable between WIC1 and DiggiMEC is mounted according to all regulations! Respect the manufacturer's specifications about permissible bending radii, and prevent defects by appropriate means such as cable conduits, e. g. if the cable needs to be bent around sharp corners.

A defective cable might impair the internal voltage of the WIC1 and DiggiMEC, and this might affect the capability of the device to operate a trip coil and outputs.

NOTICE!

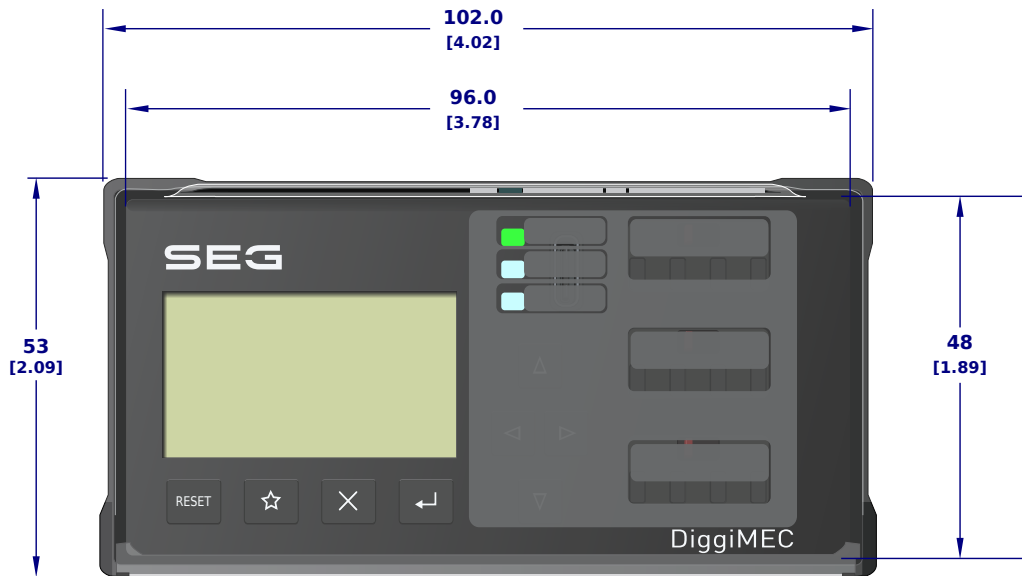


The **DiggiMEC** is always usable only with a connected **WIC1** (independent of whether there is any supply via the USB interface of the DiggiMEC).

2.1 Order Form of the DiggiMEC

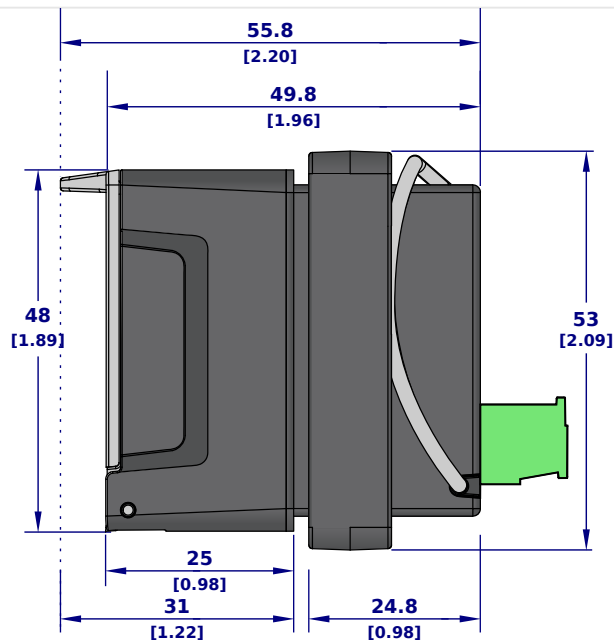
Nano-HMI with Flag Indicators	
DiggiMEC	-#
Type	↓
Door mounting, 1 bi-stable relay / flag indicator	-A
Door mounting, 3 bi-stable relays / flag indicators	-B

3 DiggiMEC Dimension Drawings



WI_Z02

Fig. 2: DiggiMEC, front view. All dimensions in mm, except dimensions in brackets [inch].



WI_Z03

Fig. 3: DiggiMEC, side view. All dimensions in mm, except dimensions in brackets [inch].

Installation Diagram - Cutout for Door Mounting of the DiggiMEC

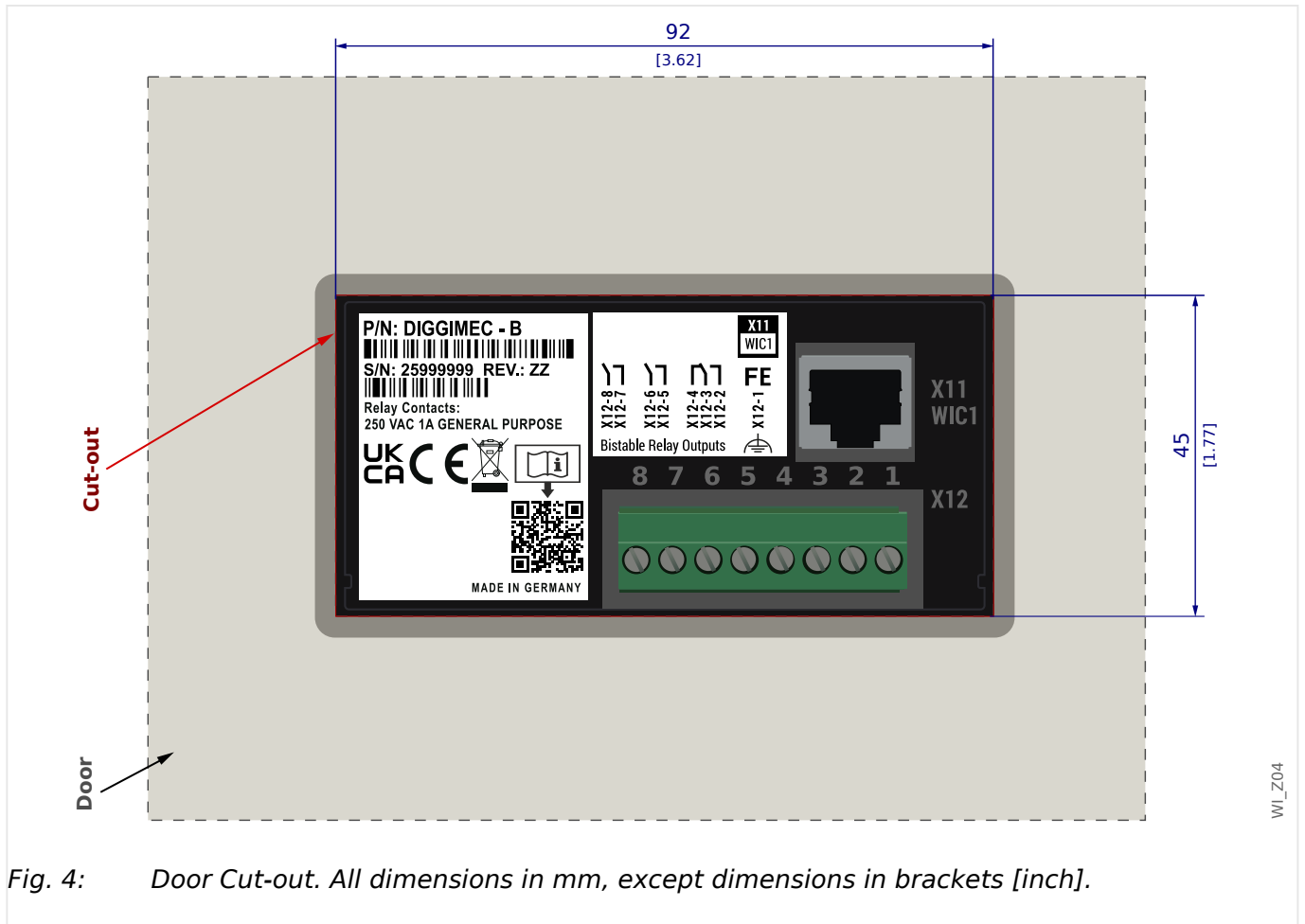


Fig. 4: Door Cut-out. All dimensions in mm, except dimensions in brackets [inch].

The DiggiMEC can be mounted into a standard door cutout, that is already available by default with most cabinets.

The rear side (↪4.1 DiggiMEC Connectors) features an RJ45 plug: It may only be used to connect the DiggiMEC with a WIC1.

4 Hardware

4.1 DiggiMEC Connectors

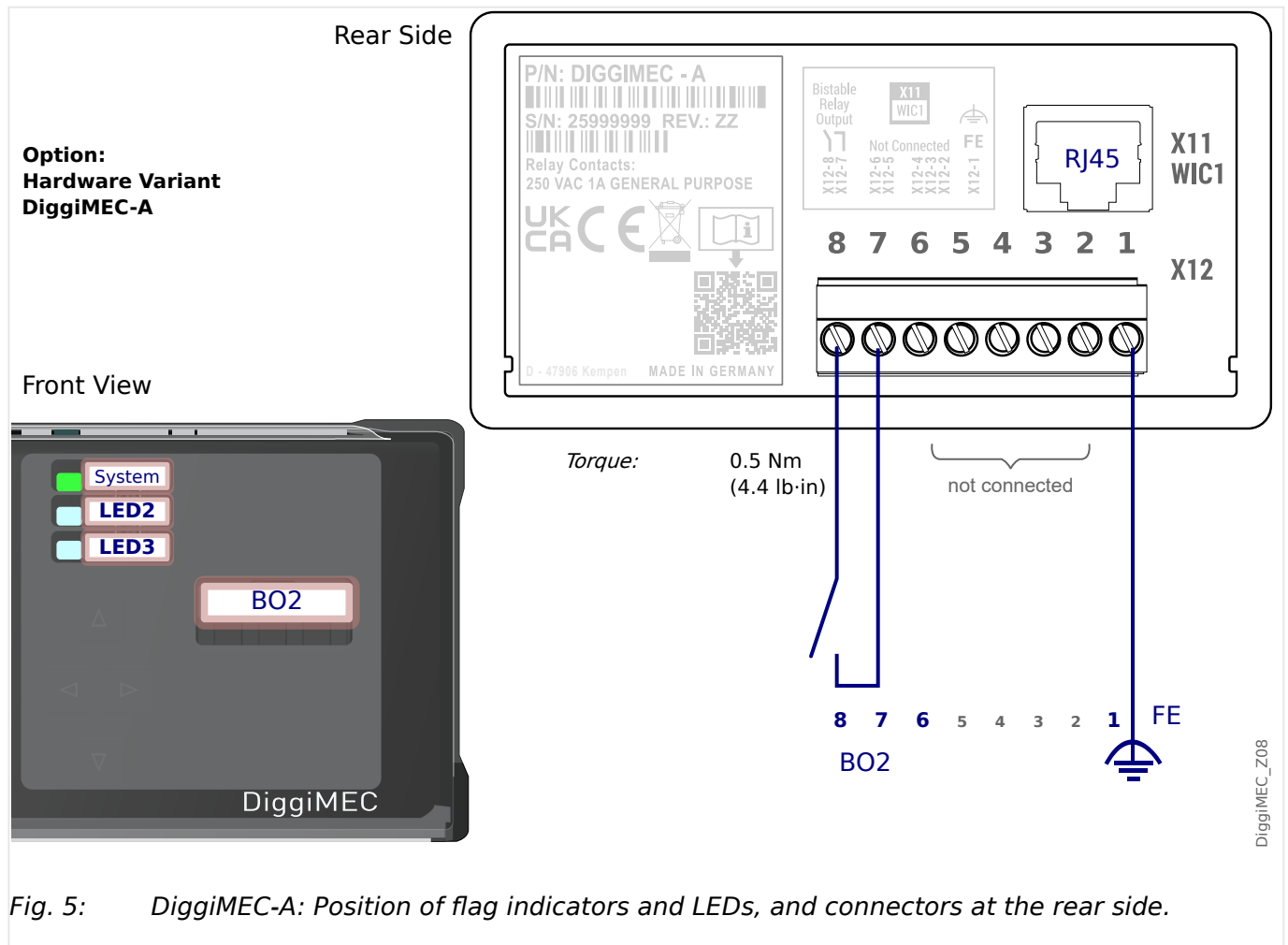
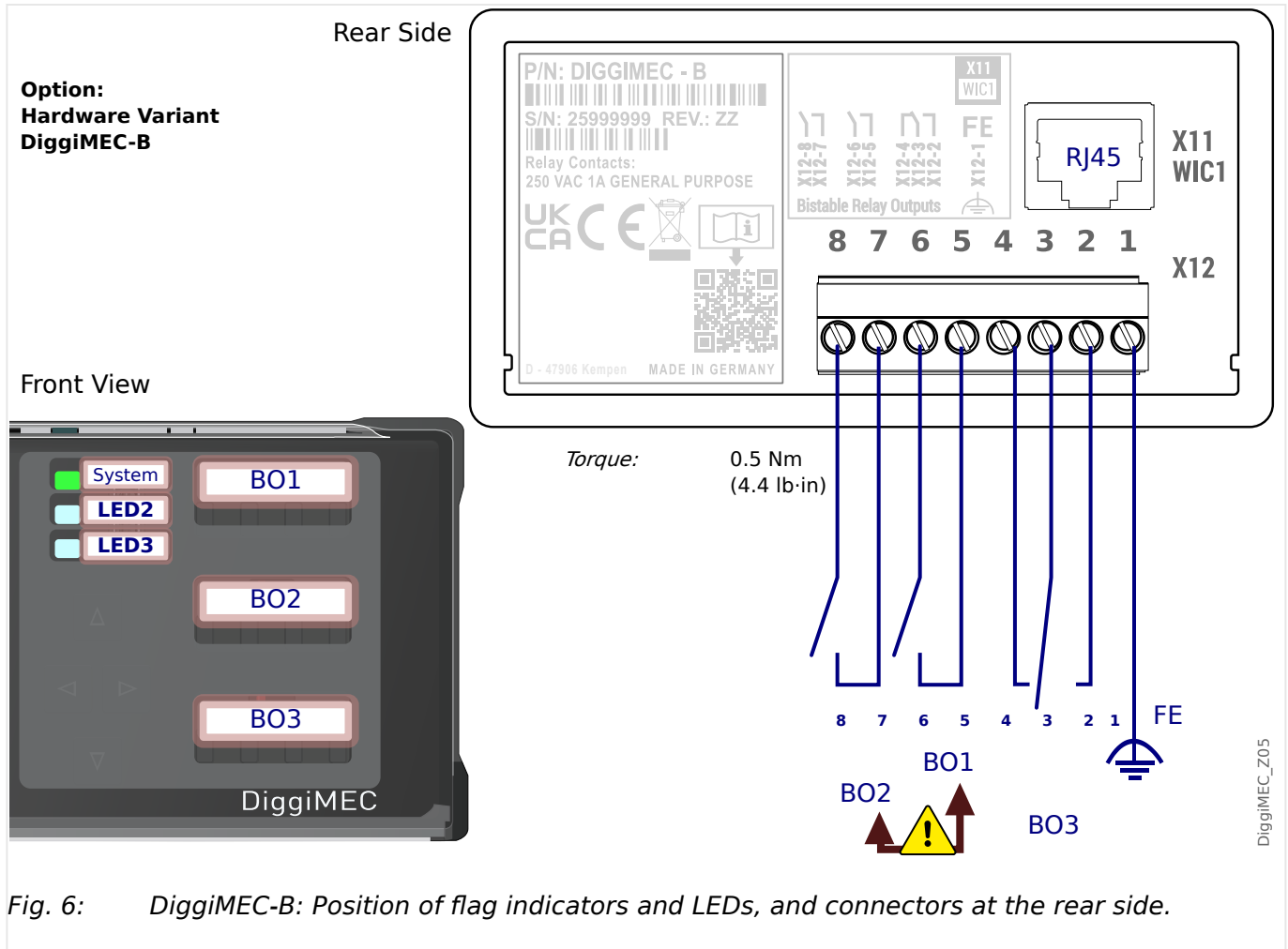


Fig. 5: DiggiMEC-A: Position of flag indicators and LEDs, and connectors at the rear side.




Slot	Max. Torques of the Screws	Screw type	Description
X12	0.5 Nm (4.4 lb·in)	M3 slotted	Connections for functional earth and relay outputs
X11	—	—	RJ45 connection to the WIC1. Ethernet CAT3 cable or better, but beware, this is not an Ethernet connection! Crossover cables must not be used!

Functional Earth (“FE”)

The DiggiMEC must be grounded:

WARNING!



A ground connection (functional earth, min. 2.5 mm² [≲ AWG 13], tightening torque 0.5 Nm [4.4 lb·in]) must be connected at the “FE” terminal, see diagram →Fig. 6).

In general, all grounding connections must be low-inductance, i. e. as short as possible, and national standards – if applicable – must be followed.

RJ45

The DiggiMEC features an RJ45 connector on the rear side. Use a standard network cable (CAT 3 or better) to connect the DiggiMEC to the DiggiMEC-RJ45-connector of a WIC1.

NOTICE!



Although the communication between DiggiMEC and WIC1 is transferred over a network cable, note that this is not an Ethernet communication. In fact, a proprietary protocol is used.

Some WIC1 variants feature another RJ45 connector, that can be used for Ethernet-based communication, in particular TCP/IP-based SCADA protocols. This Ethernet-RJ45 connector must **not** be used for a direct connection with a DiggiMEC.

Relay Outputs

The “Outputs” terminals feature:

- For device variants DiggiMEC-**A**, one normally-open (Form A) relay contact, that is mechanically connected with a flag indicator.

(Note that this contact is labeled as BO2 within the WIC1 configuration.)

- For device variants DiggiMEC-**B**, one changeover (Form C) and two normally-open (Form A) relay contacts. Each of these three relay outputs is mechanically connected with one of the three flag indicators.

All relay contacts are bistable and potential-free. They can be triggered by a digital signal from the WIC1. Since each relay is mechanically connected to a flag indicator, switching a relay means that the corresponding flag indicator starts to show its signal, and vice versa.

Further details, in particular about the settings at the WIC1, are here: [↪4.2 Flag Indicator / Output Relays Settings \(DiggiMEC\)](#)

WARNING!



The bistable output relays of a DiggiMEC, that is connected to the WIC1, may be used only for visualization purposes. It is not permitted to use these relay contacts for any protection-related and/or switching purposes!

If the DiggiMEC relays are used for switching purposes there is the risk of an unreliable protection of your application!

Only the trip-coil output “TC+/-” of the WIC1 may be used for tripping a breaker.

Remarks with respect to this warning

- The switching time of the “TC+/-” output is faster than that of a DiggiMEC output relay. Therefore it is strongly discouraged to use a DiggiMEC output relay for any protection-related switching purposes.
- It is possible to assign the WIC1 signal »Prot . TripCmd« to a DiggiMEC output relay. This is absolutely o.k. for visualization purposes. But there is no signaling back of a DiggiMEC relay status to the WIC1. This has the consequence that the WIC1 cannot realize any signaling/switching problem if – for instance – there is no DiggiMEC connected to the WIC1, or if there should be any technical problem with the DiggiMEC. In such a case the whole protection concept can be void.

4 Hardware

4.1 DiggiMEC Connectors

- It is technically possible and permitted to switch the relay contact manually. But if a breaker should be connected directly to a DiggiMEC output relay, it would be opened by such a manual switching, and the WIC1 would not be able to detect this. This makes the whole protection concept unsafe and not permissible.
- The WIC1 Backup Protection cannot switch a DiggiMEC output relay. It only uses the "TC+/-" output.

4.2 Flag Indicator / Output Relays Settings (DiggiMEC)

Depending on the [ordered type](#), the DiggiMEC features either one flag indicator FI2, or three flag indicators FI1, FI2, FI3.

See also [↔4.1 DiggiMEC Connectors](#).

Each of these flag indicators is mechanically coupled with a bistable output relay.

WARNING!



The bistable output relays of a DiggiMEC, that is connected to the WIC1, may be used only for visualization purposes. It is not permitted to use these relay contacts for any protection-related and/or switching purposes!

If the DiggiMEC relays are used for switching purposes there is the risk of an unreliable protection of your application!

Only the trip-coil output "TC+/-" of the WIC1 may be used for tripping a breaker.

At any time, the DiggiMEC can toggle the state of an Flx. Note that each Flx is always only set with the rising edge of the assigned signal.

With respect to the DiggiMEC flag indicators, there is the following convention: In the state appearing as a red-colored mark at the DiggiMEC front the flag indicator / output relay has been "set", and the other state means that the Flx has been "reset".

WARNING!



A CT-powered DiggiMEC is able to reliably set and reset the flag indicators only under the condition that it is supplied with sufficient electrical energy via the CTs. (Unfortunately the required electrical energy depends on various aspects, e. g. how many flag indicators shall be switched at the same time, or whether the impulse outputs shall be triggered, too. Therefore it is impossible to explicitly specify any limit value.)

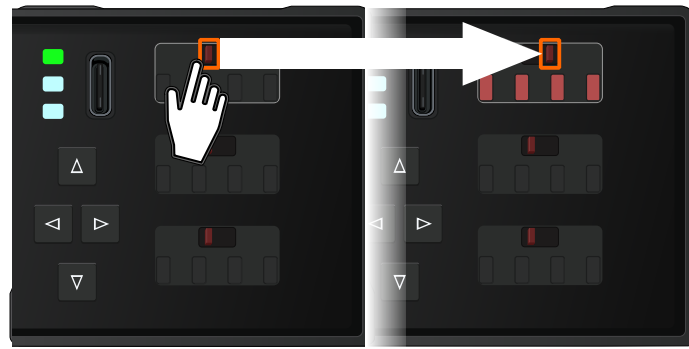
CAUTION!



It is not possible for the DiggiMEC to check the current state of any Flx. So, if the user mechanically changes the state of an Flx the new state is not signaled to the DiggiMEC.

In other words: Although it is possible at any time to change the state of an Flx by hand, this should only be done with great care, being aware of potential consequences, because this also switches the state of the output relay contacts.

After a reset (via HMI or Digital Input), however, all Flx - regardless whether with or without latching - (re-)assume their correct states according to the current state of the assigned signals. (Important: The reset is functional only if the WIC1 settings have specified which DiggiMEC variant is connected; the related parameter is [Device planning / WIC1 + DiggiMEC] »DiggiMEC . Mode«.)



DiggiMEC_Z07

Fig. 7: *Important: Manually toggling the state of a flag indicator also switches the contacts of the respective output relay.*

The conditions of a module output or signal of a protective function can be assigned to an Flx, so that it is both electrically available (via the relay contacts) and visualized (via the flag indicator). Since the Flx are bistable the last state remains available even after the WIC1 and DiggiMEC are no longer supplied (i. e. have been switched off).

All output relay contacts are potential-free. Each relay can be assigned a signal out of the »assignment list«.

NOTICE!

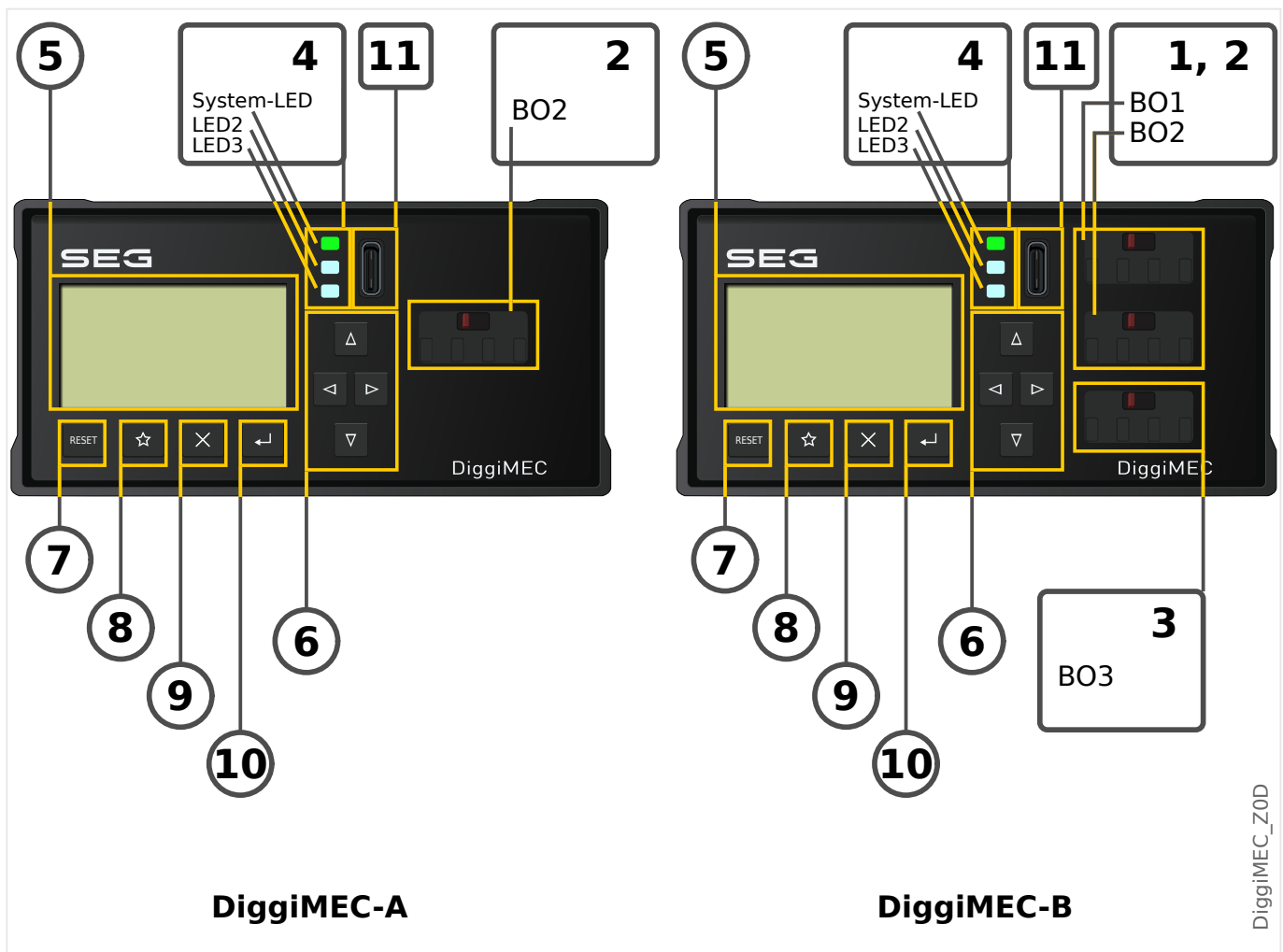


Whenever the DiggiMEC is not actively used by a human operator we recommend to keep the lid closed. (Depending on the local security directives you might also want to use the sealing option.)

This prevents an unintended re-positioning of the flag indicators / output relays. Furthermore, it reduces the risk of dust or dirt intruding into the mechanics of the flag indicators.

5 Navigation - Operation

The following illustration shows the elements on the DiggiMEC front:



5.1 Front Panel Parts

(1), (2), (3) Output Relays / Flag Indicators

Each flag indicator is mechanically connected with a bistable output relay.

(1), (2) The flag indicators BO1, BO2 have one "Form A" (normally open) contact each.

(3) The flag indicator BO3 has a "Form C" (changeover) contact.

- The device variant DiggiMEC-A has only one bistable output relay BO2.
- The device variant DiggiMEC-B has three bistable output relays BO1, BO2, BO3.

See also [↔4.1 DiggiMEC Connectors](#).

(4) LEDs

The DiggiMEC features three two-colored (red+green) LEDs. The first (upper) »System« LED has fixed functionality and (roughly) corresponds to the WIC1-LEDs »READY« and »ERROR«.

The »System« LED is constantly green when everything works OK. This means, in particular:

- The connection to the WIC1 has been established.
- The WIC1 has successfully started all protection functions.
- The WIC1 has stored sufficient electrical energy to issue a trip impulse.

See also the chapters "LEDs" and "Troubleshooting" in the WIC1 User Manual.

The other two LEDs are programmable. This means they can be assigned with WIC1-signals, so that they can inform you about operational states, system data or other WIC1 particulars.

Various signals can be freely allocated to LEDs out of an »assignment list«. (The available signals can be found in the WIC1 Reference Manual.)

(5) Display

Via the display you can check operational data and edit parameters (of the connected WIC1).

(6) ... (10) Keys

The keys usually react on a short key-press at the moment when the key is released. Exceptions are the Repeat-functionality of ▲ »Up« und ▼ »Down« and the [Special Keys During Power-on](#).



After some time without any keystroke the backlight of the display goes off. Note that then, while the display backlight is off, the first keystroke does nothing but illuminating the display (i. e. the normal key function is ignored).

(6) Navigation Keys

The functions of the keys "◀" (Left), "▶" (Right), "▲" (Up), "▼" (Down) are contextual.

- ◀ In general, the "Left" key is used to go one step back. You can leave a submenu. You go back to the previous page of the menu tree.
- ▶ In general, the "Right" key is used to enter the currently selected submenu.
- ▲ In general, the "Up" key is used to scroll upwards. You go to the prior menu point/one parameter up by scrolling upwards.
- ▼ In general, the "Down" key is used to scroll downwards. You go to the next menu point/one parameter down by scrolling downwards.

The ▲ »Up« und ▼ »Down« keys have a Repeat-functionality. If you hold the keys pressed for some time, the key-stroke gets automatically repeated again and again. This allows for quickly browsing through a long list.

(7) »Reset« Key

A key-press resets latched signals (including latched LEDs, flag indicators and the Fault Display screen).

See the WIC1 User Manual (chapter "Reset") for details.



An LED test is always also executed together with the reset: All LEDs flash in red color for (approx.) a second, then flash in green color for (approx.) a second.

(8) »★« Key

The “Favorites” key allows for an immediate access to often used menu branches. See [↔5.2 Favorites Key »★«](#) for details.

(9) »X« Key

The “Cancel” key aborts parameter changes.

(10) »↵« Key

The »↵« (»Enter«) key can be used to select new parameter values out of a selection list or value setting dialog. In any other dialogs the »Enter« key is used to store prepared parameter changes: By pressing the »Enter« key once the parameter changes are temporarily stored. These settings are marked by an asterisk symbol (“*”) on the display, they have not been transferred to the WIC1 yet and are therefore not effective yet. If the »Enter« key is pressed again, those changes are stored definitely.

(11) USB Interface (Smart view Connection)

Connection to the PC software *Smart view* can be done via this USB-C interface.

Moreover, this is a sufficient power supply for DiggiMEC and WIC1, in case the WIC1 is not supplied via the CTs or any auxiliary power (WIC1-4 only).

5.2 Favorites Key »★«

The “Favorites” key »★« allows for an immediate access to often used menu branches.

For the current Version, there is a fixed list of entries. (It is planned to allow for individual choices in a later Version.)

F1 Measured Values
F2 Fault/Alarm Rec.
F3 reset
F4 Internal messages

(1) Press “★” (several times) to call the Favorites one after the other.

(2) Afterwards, you can navigate as usual (with “▲” and “▼”) and/or enter a details screen (by pressing “▶”).

(3) Leave the Favorites menu by pressing “◀”.

DiggiMEC_Z19

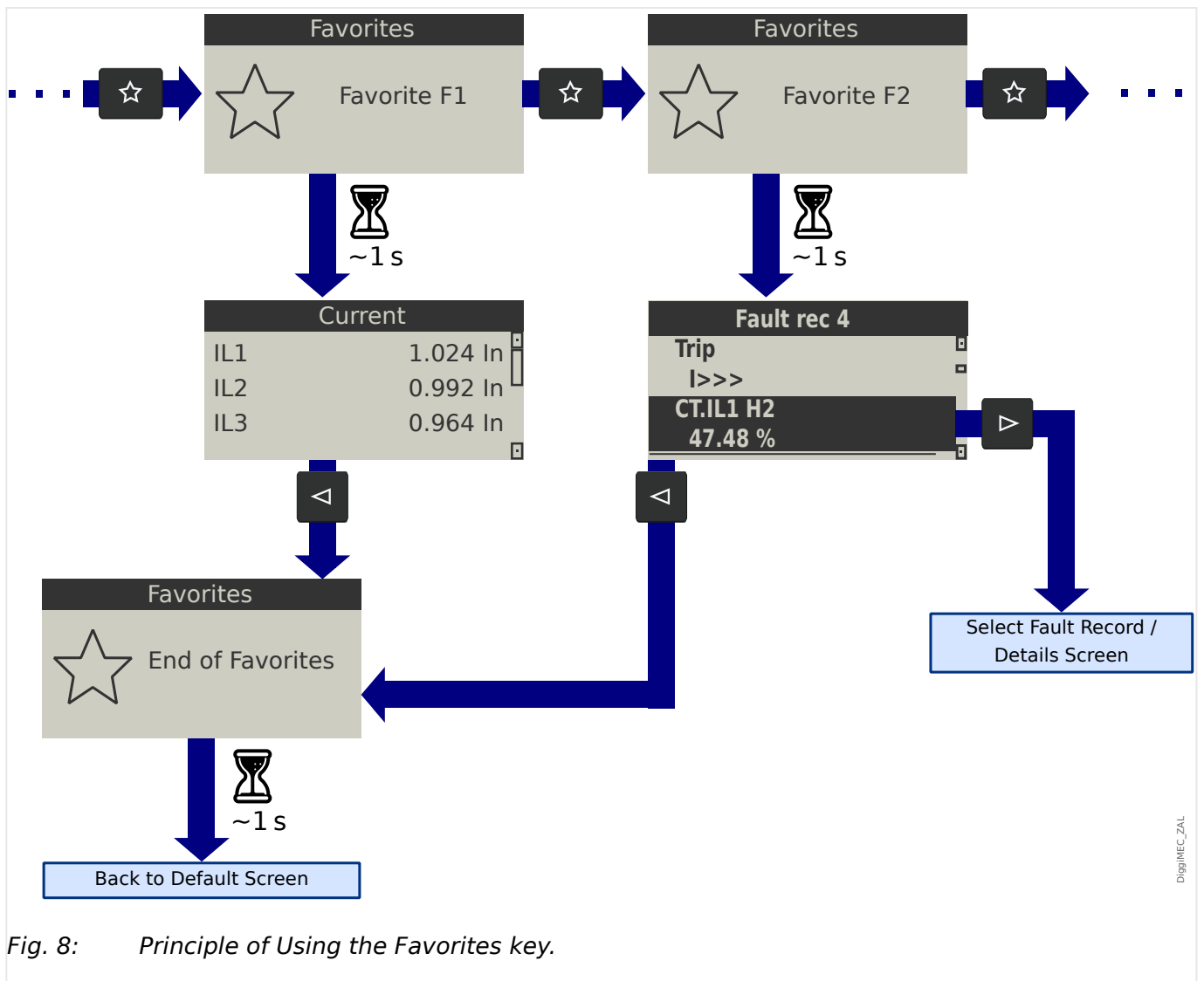


Fig. 8: Principle of Using the Favorites key.

5.3 Special Keys During Power-on

Some keys have a special functionality when being pressed during the power-on / boot process.

- **»⇐« during power-on** - After a confirmation dialog, the DiggiMEC enters a special "Service Mode". This operating mode allows for installing a new firmware on the DiggiMEC.
- **»Reset« during power-on** - After a confirmation dialog, the WIC1 enters a special "Service Mode". This operating mode allows for installing a new firmware on the WIC1.
- **»X« during power-on** - After a confirmation dialog, the WIC1 resets all settings to the respective factory default.

This is the same functionality as the Direct Control [Service / General] »Factory Reset«.

WARNING!



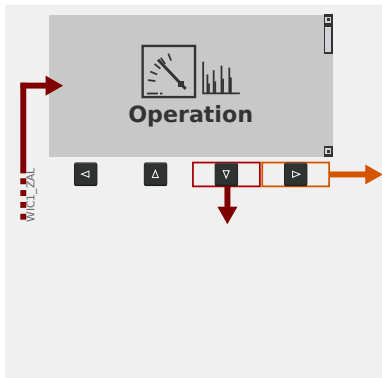
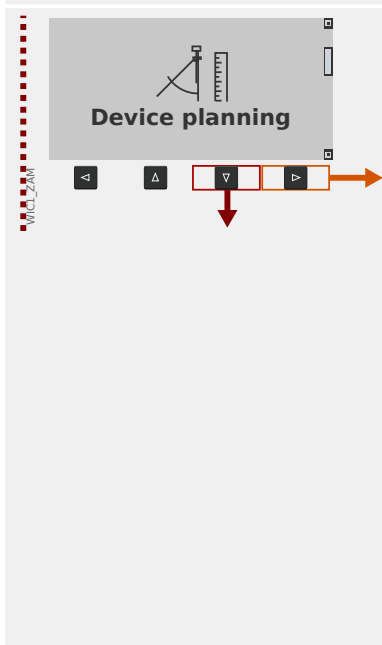
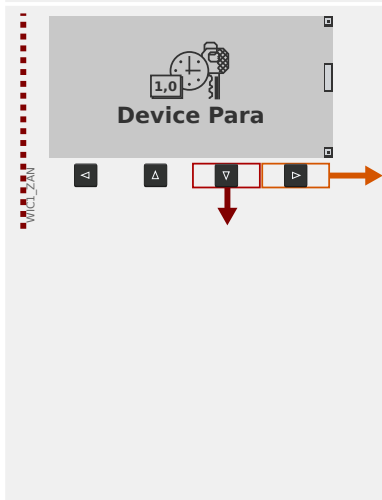
As long as the WIC1 is running in „Service Mode“, your equipment is protected only by the Backup protection, not by the user settings.

This means that the Backup Protection of the WIC1, especially the DiggiMEC-xxxxxx1 (“Backup Protection trip as soon as possible”) variant, might output a trip pulse. Therefore it is strictly recommended to always enter the „Service Mode“ only with the breaker opened (or disconnected).

5.4 Menu Structure

The menu structure offers the following top-level menu entries. You enter a menu branch with the »►« key. The keys »▲« and »▼« let you navigate to the previous or next one. The key »◀« leaves a menu branch so that you go to the previous or to the super-ordinated view.

A complete documentation of all WIC1 menu branches, parameters, direct commands and values in tabular form can be found in a separate document, the "WIC1 Reference Manual".

	<p>Operation</p> <p>Here you can find run-time data.</p> <ul style="list-style-type: none"> • Measured Values • Status Display • Recorders • Self-Supervision • reset
	<p>Device planning</p> <p>This will usually be your first step during commissioning:</p> <ul style="list-style-type: none"> • Within sub-menu WIC1 + DiggiMEC, you can specify fundamental properties of your device setup. In particular, you can define for a WIC1-2 (with DIP switches) or WIC1-3 (with HEX switches) whether the protection configuration shall be made via switches or via DiggiMEC / Smart view. • Within sub-menu Projected Elements, you can activate the elements that you need, and deactivate elements that are not needed. • Within sub-menu Definition, you can define for each element (if it makes sense) whether it shall operate as a protection function (i. e. being able to trip the circuit breaker) or as a supervision function (i. e. issuing an alarm message instead of a trip signal).
	<p>Device Parameters</p> <p>This menu branch features all settings that are directly related to the device, for example:</p> <ul style="list-style-type: none"> • Inputs and outputs • (DiggiMEC) LEDs • Settings for the automatic reset and - for some WIC1 variants - for the external reset • Password setting • In sub-menu Version, you can check all versioning details about the running WIC1 firmware and DiggiMEC firmware.

	<p>Field settings</p> <p>Usually the second commissioning step: Configure the properties of the field, for example:</p> <ul style="list-style-type: none">• Nominal frequency, current• CT ratios
	<p>Protection Parameters</p> <p>All protection settings, which are related to a specific protection function, can be found here in various sub-menus.</p>
	<p>Service</p> <p>This menu branch contains some special functions:</p> <ul style="list-style-type: none">• Force a WIC1 restart.• Force a trip command.• Force a reset of all settings to their factory defaults.• Force a temporary transition of the WIC1 into the backup protection mode (for testing purposes).

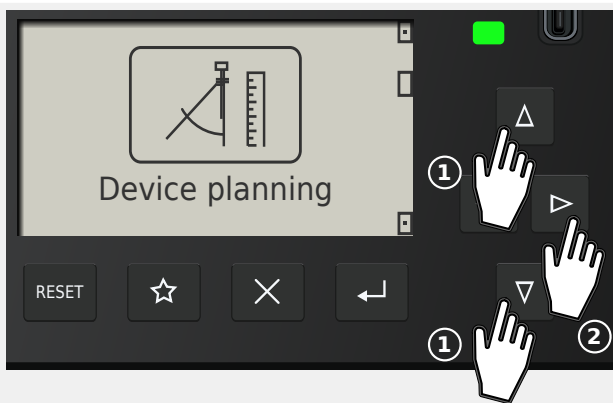
5.5 Parameter Changes - "OK" key

Whenever setting values are being modified the key »↵« is used (which is also called »OK« or »Enter« key for the sake of simplicity). This makes the device accept the new value. But note that for modifying one value, the »↵« key must be pressed a second time: When pressing »↵« for the first time, the new value is stored temporarily. Only after it has been pressed for a second time, the new value (and all other changed values) get(s) activated. This way it is possible to prepare a lot of settings changes, and only after all changes have been made consistent and as required for the (new) protection concept they can be activated all at once.

NOTICE!



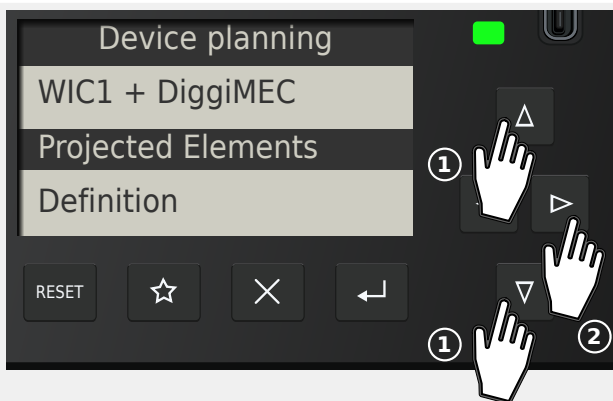
Make sure that WIC1 and DiggiMEC are sufficiently supplied, especially when both are supplied by the CTs. A sag of the supply might result in losing all parameter changes that have not been transferred to the WIC1 yet.



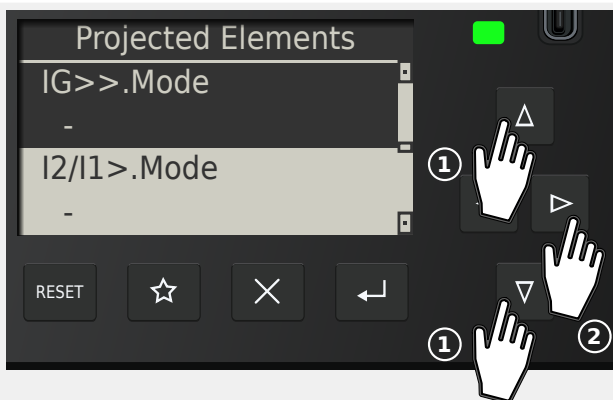
For example, let us assume we want to modify the value of »IG>> . Mode«.

This setting can be found in the [Device planning / Projected Elements] menu branch (which can be seen, for example, in the Reference Manual). The purpose of the parameter is to activate (or deactivate) the protection function »IG>>« (i. e. the 2nd stage of the Ground Overcurrent protection).

Use the arrow keys »▼«, »▲« to select Device planning menu branch, then »▶« to enter it.



In the same way, select and enter the (sub-)menu item Projected Elements.



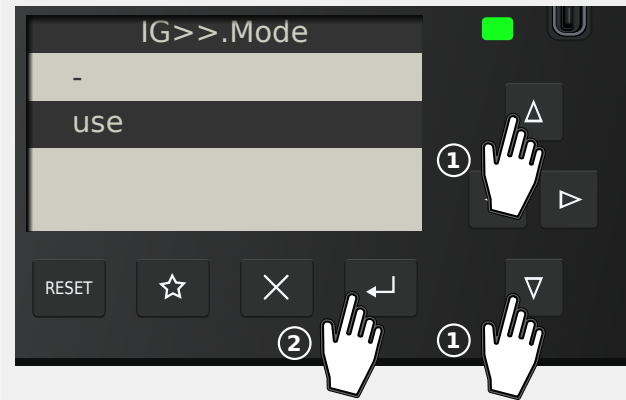
Then press »▼«, »▲« repeatedly, until the required setting appears highlighted on the display.

Press »▶« to enter the Edit Mode for this particular setting.



You are asked for the password.

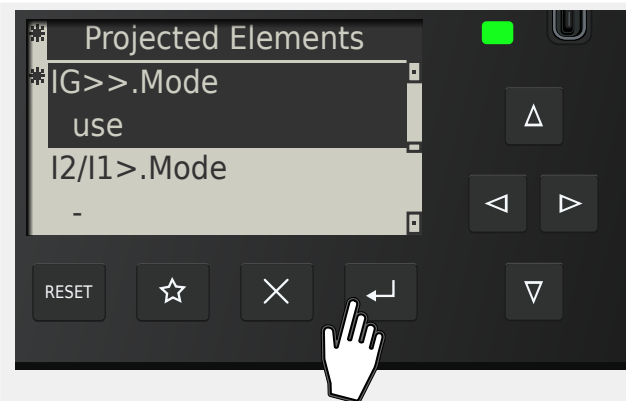
On the DiggIMEC panel, the password is entered the same way as any numerical setting value, i. e. via navigation keys »◀«, »▶« for the position (= selection of the position/digit within the password) and »▼«, »▲« for increasing/decreasing the digit. The Enter key »↵« confirms the entered password. (A Smart view user enters the password simply via the PC keyboard.)



Press »▼«, »▲« repeatedly again, until the required value, for instance: "use", is highlighted.

Then press the »↵« key, so that this new value gets stored (temporarily). (Or, alternatively, press the »✕« key to cancel the modification.)

Note that the new value is only stored internally, but not active yet, just as was already mentioned at the beginning of this chapter.

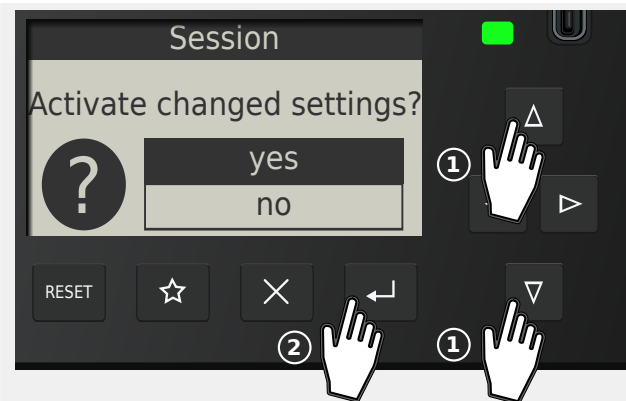


That first »↵« pressing that you have just done brings you back to the screen showing the selected parameter, »IG>> . Mode«.

However, some things have changed now:

- Now the new value "use" is shown.
- An asterisk character "*" next to the parameter indicates that there are temporary changes for it. In addition, another asterisk next to the heading line indicates that parameter changes exist that have not yet been accepted and activated by the device. (The "*" remains there, even if one navigates to some other menu branch.

Remark: If there is no more input made at the panel for 10 minutes the changes are automatically cancelled.



Press »↵« again. (In principle, this can also be done later, i. e. after some more parameter changes and when being in another menu branch.)

A confirmation dialog asks you to explicitly accept your changes. Make your choice in the usual manner with the keys »▼«, »▲«, »↵«.

The protection device performs a validity check, and after this, it uses the new setting (unless it detects a validity problem).



If the validity check should fail, i. e. the protection device detects some validity problem or inconsistency with respect to the new value(s) then this is indicated by a big "?" character that appears instead of the "*" in the heading line. In this case the protection device refuses to activate the new value(s), and you are expected to re-edit the values that are marked by the "?".

5.6 Operation via Smart view

Although it is easy and convenient to operate a WIC1 using the panel of a connected DiggiMEC, a full configuration session with many settings to be made would be a quite cumbersome activity. For numerous operations, the preferred way is to connect a PC with an operating software to the protection device, so that everything can be done using computer mouse and keyboard and the large computer monitor gives a far better overview about the available menu branches, than is possible with the device's built-in display. Moreover, the PC allows for saving all settings as a file, that can be archived and be loaded into a WIC1 at any later time.

SEG offers an operating software named *Smart view*. It offers convenient ways to do all configuration work, reading and evaluating measuring values, fault analysis via fault recorder, and much more. A detailed *Smart view* Manual is available as a separate document.

Setting up the Connection PC - Device

A PC connection can be established only via a connected DiggiMEC.

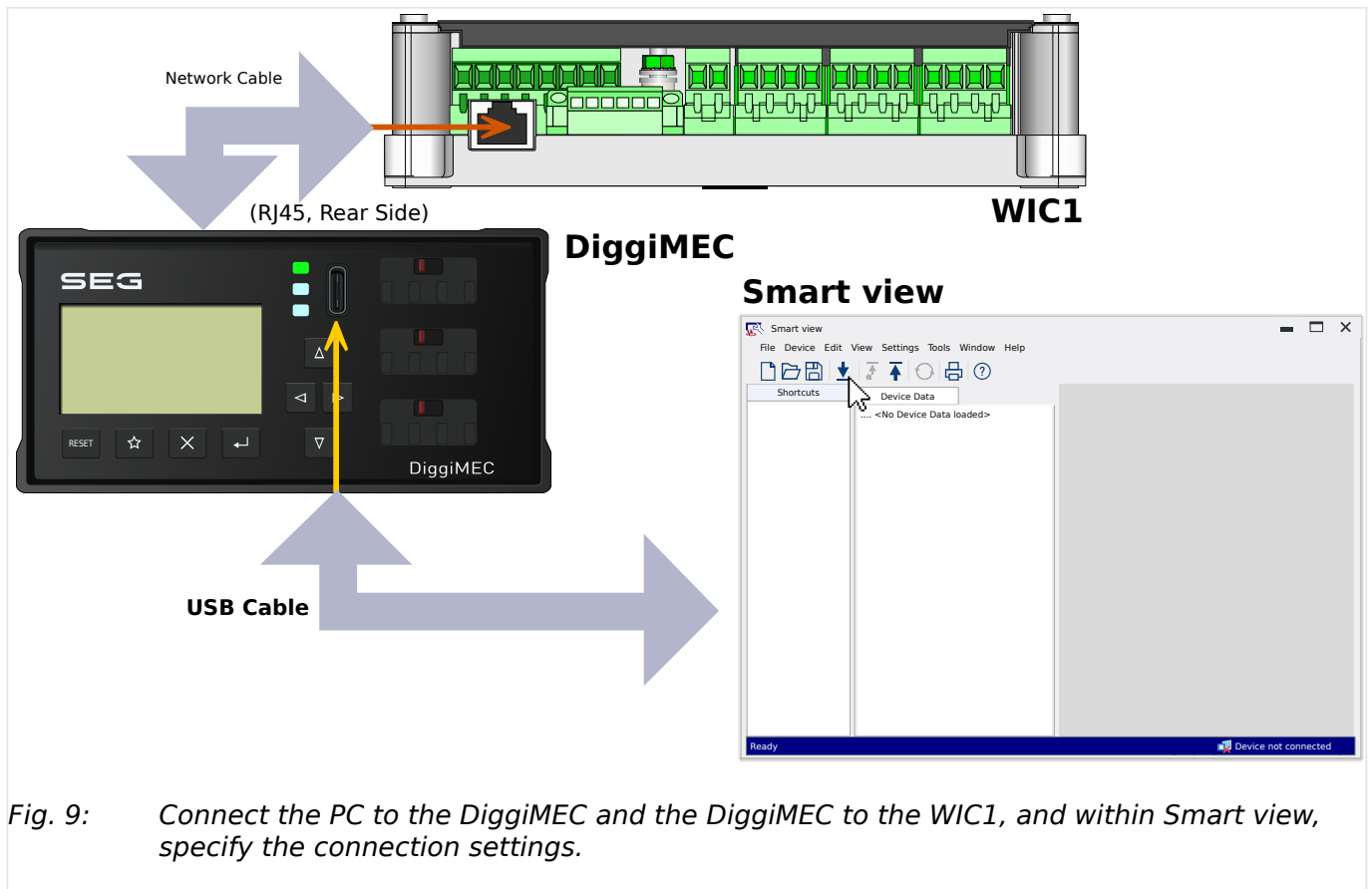


Fig. 9: Connect the PC to the DiggiMEC and the DiggiMEC to the WIC1, and within Smart view, specify the connection settings.

Apart from plugging in the required cables, there are essentially two steps to be done for establishing a connection:

- In *Smart view*, click on [*Settings* → *Device Connection*], then select the type of connection to be used for the device, here: »WI Line (V2) DiggiMEC USB«.

After this, the connection has not been established yet, therefore you should not be confused if the status line still shows "Not connected".

- Click on [*Device* → *Receive Data from Device*] (or, alternatively, press »F2« on your keyboard, or click on the small icon with the blue arrow pointing down).

Smart view should now retrieve the complete menu tree, including all setting values and run-time data. After that, you should see a menu tree with the same top-level categories as on the DiggIMEC panel.

NOTICE!



If *Smart view* complains about a missing “device model” then your *Smart view* installation is probably older than the WIC1 firmware.

The “device model” is a file that defines the menu tree and all parameters, including factory defaults and setting ranges. It is needed by *Smart view* for showing the menu tree correctly and for making offline settings possible.

For the recent and all previous versions of the WIC1 firmware, the “device model” is part of the *Smart view* installation. So, if a WIC1-“device model” is missing, please install the latest *Smart view* version.

After the menu tree has been made available within *Smart view*, all further activities, such as changing a setting value, are straight-forward (and do probably not need a lot of detailed explanations): You can expand the (sub-)menu branches of any menu branch (click on the small angle next to the menu item, or a double-click on the item name), until you reach the required bottom-level item.

6 Technical Data - DiggiMEC

NOTICE!



Use copper conductors only, 75°C.
Conductor size \leq AWG 14 [2.5 mm²].

NOTICE!



Use an Ethernet cable CAT 3 (or better) with shielding for the connection between WIC1 and DiggiMEC. **Crossover cables must not be used!**

6.1 Climatic and Environmental Data

Storage Temperature:	-30°C to +80°C (-22°F to 176°F)
Operating Temperature:	-20°C to +60°C (-4°F to 140°F)
Permissible Humidity at Ann. Average:	<75% rel. (on 56 days up to 95% rel.)
Permissible Installation Altitude:	\leq 2000 m (6561.67 ft) above sea level

6.2 Housing

Housing (Height / Width / Depth):	53 mm / 102 mm / 55,8 mm (see also dimension drawings in ↔3 DiggiMEC Dimension Drawings)
Door cutout (Height / Width):	45 mm / 92 mm
Material, Housing:	Plastic
Weight:	<ul style="list-style-type: none"> • DiggiMEC-A (without packaging): approx. 160 g • DiggiMEC-A (incl. packaging): approx. 300 g • DiggiMEC-B (without packaging): approx. 190 g • DiggiMEC-B (incl. packaging): approx. 330 g

6.3 Degree of Protection EN 60529

Front panel with seal	IP52
Front panel without seal	IP50
Rear side terminals	IP20

6.4 Voltage Supply

Supply via WIC1 CTs

With the setting »Operation Preference« = “Early wake-up”:

- 1-phase wakeup = $0.6 I_{n,min}$
- 3-phases wakeup = $0.4 I_{n,min}$

With the setting »Operation Preference« = “Precise meas.”:

- 1-phase wakeup = $1.1 I_{n,min}$
- 3-phases wakeup = $0.75 I_{n,min}$




Since the setting »Operation Preference« = “Early wake-up” results in less accurate measurement values it is recommended in general to keep the default value “Precise meas.”.

6.5 Binary Output Relays

Continuous current, max. switching current:	1 A AC
Max. switching voltage:	250 VAC
Contact type:	1 or 3 bistable relays, depending on device type: <ul style="list-style-type: none"> • DiggiMEC-A: 1 normally open (Form A) contact • DiggiMEC-B: 1 changeover contact, 2 normally open (Form A) contacts
Terminals:	Screw-type terminals

6.6 Standards - DiggiMEC

6.6.1 Approvals

	
	
	<p>UL File Nr.: E217753</p> <p>cULuc Certification of WIC1 and DiggiMEC - UL508, E217753 - NRGU</p>

6.6.2 Design Standards

<p>Generic standards</p>	<p>EN 61000-6-2 [2019]</p> <p>EN 61000-6-3 [2022]</p>
<p>Product standards</p>	<p>IEC 60255-1 [2009]</p> <p>IEC 60255-26 [2013]</p> <p>IEC 60255-27 [2013]</p>

6.6.3 Electrical Tests

EMC Tests

Electrical Discharge Immunity Test (ESD)

IEC 60255-26 [03/14]	Air discharge	8 kV
DIN EN 61000-4-2 [12/09] class 3	Contact discharge	6 kV

Fast Transient Disturbance Immunity Test (Burst)

IEC 60255-26 [03/14]	Power supply, mains inputs	± 4 kV, 2.5 kHz
DIN EN 61000-4-4 [04/13] class 4	Other in- and outputs	± 2 kV, 5 kHz

Interference immunity against 1 MHz burst disturbance tests

IEC 60255-26 [03/14]	differential mode	2.5 kV, 1 MHz
DIN EN 61000-4-18 [09/20]	common mode	1 kV, 2 s

Interference immunity against surge immunity test

IEC 60255-26 [03/14]		4 kV / 2 kV
DIN EN 61000-4-5 [03/19]		

Interference immunity against high-frequent electromagnetic fields

IEC 60255-26 [03/14]		30 V/m
DIN EN 61000-4-3 [04/11]		

Interference immunity against magnetic fields of energy based frequency

IEC 60255-26 [03/14]	continuously	100 A/m
DIN EN 61000-4-8 [11/10]	3 s	1000 A/m

Interference immunity against line conducted interference quantities induced by high-frequent fields

IEC 60255-26 [03/14]		10 V/m
DIN EN 61000-4-6 [08/14]		

Interference immunity against surge voltage

IEC 60255-26 [03/14]	within a current circuit	1 kV
IEC 60255-27 [11/14]	current circuit to earth	5 kV

Measuring of the radio interference voltage

DIN EN 55011 [05/18]		Limit value class B
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Measuring of the radio interference radiation

DIN EN 55011 [05/18]		Limit value class B
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6.6.4 Safety-Related Tests

Overvoltage category	IEC 60255-27 [11/14]	III
Pollution degree	IEC 60255-27 [11/14]	3
Protection class	IEC 60255-27 [11/14]	II
Test of withstand alternating voltage for 1 min	IEC 60255-27 [11/14]	4 kV / 1 kV
Test of lightning surge voltage 1.2/50 μ s, 0.5 J	IEC 60255-27 [11/14]	5 kV / 1 kV
Inflammability	IEC 60255-27 [11/14]	rated
Single Defect Condition	IEC 60255-27 [11/14]	rated

6.6.5 Environmental Tests

Vibration and continuous vibration test:	IEC 60255-27 [11/14]	0.5 / 1 gn
	DIN EN 60255-21-1 [05/96]	Class 2
Shock and continuous shock test:	IEC 60255-27 [11/14]	5 / 10 gn
	DIN EN 60255-21-2 [05/96]	Class 2

Classification:

IEC 60255-27 [11/14]	Climate category	20/060/10
DIN EN 60068-1 [09/15]		

Test Ad: Kälte

IEC 60255-27 [11/14]	Temperature	-20°C
DIN EN 60068-2-1 [01/08]	Period of stress	16 h

Test Bd: Dry heat

IEC 60255-27 [11/14]	Temperature	+60°C (140°F)
DIN EN 60068-2-2 [07/07]	Rel. humidity	<50%
	Period of stress	72 h

Test Cab: Humid heat (constantly)

IEC 60255-27 [11/14]	Temperature	+60°C (140°F)
IEC 60068-2-78 [02/14]	Rel. humidity	93%
	Period of stress	10 Tage

Test Db: Humid heat (cyclic)

IEC 60255-27 [11/14]	Temperature	+60°C (140°F)
IEC 60068-2-30 [06/06]	Rel. humidity	95%
	Cycles (12 + 12 hours)	2

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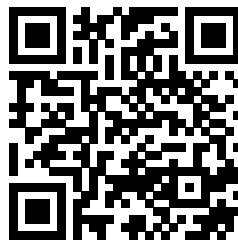
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WI Line
DiggiMEC
MANUAL

docs.SEGelectronics.de/DiggiMEC



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