



ATICS-2...-ISO Quick start

Automatic transfer switching devices with monitoring functions for unearthed safety power supplies Software version: D333 V1.2x, D334 V1.2x, D335 V1.0x, D308 V1.2x

This reference guide does not replace the operating manual. You will find the operating manual on the download section of our homepage. Make sure that the personnel has read this manual and understood all instructions relating to safety.

1. Safety instructions

Danger: Risk of fatal injury from electric shock

Parts of the system are live. During installation and connection:

- ▶ Do not touch parts of the system.
- ▶ Make sure that the power supply has been disconnected and the system is dead.
- ▶ Switch the ATICS® to manual mode and to switch position "0".
- ▶ Lock the changeover device with a padlock to prevent it starting accidentally.

Warning: Risk of destruction if mains voltage incorrect

- ▶ The permissible mains voltage is indicated on the nameplate.

Caution: Avoiding incorrect insulation measurements

Only one insulation monitoring device may exist in an IT system to prevent erroneous measurements. ATICS® includes an insulation monitoring device.

- ▶ Do not connect additional insulation monitoring devices.

Danger: Risk of fatal injury from electric shock

Connecting wires can come loose and fall out if the ferrules being used are too short, the wire ends are tinned or the connection screws have not been tightened enough.

- ▶ Consider a stripping length of 20 mm and do not use ferrules when connecting lines 1, 2 and 3.
- ▶ Use a torque wrench to tighten the terminal screws. Check all the screws on a regular basis to make sure they are seated tightly.

Warning: Risk of destruction when insulation and voltage tests are being carried out

- ▶ Disconnect the device from the mains for the duration of the test.

2. Scope of delivery

ATICS® transfer switching device

- including connectors, bridge and terminal covers
- Current transformers STW2 and STW3

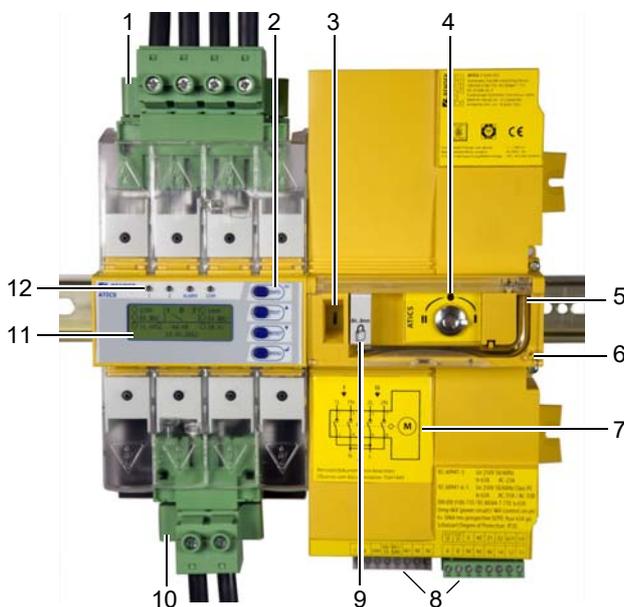
Documentation

- You can find the ATICS® manual and the manuals of other system components under:
<http://www.bender.de> > Service & support > Downloads > manuals
- Quick reference guides and checklist

3. Other system components required

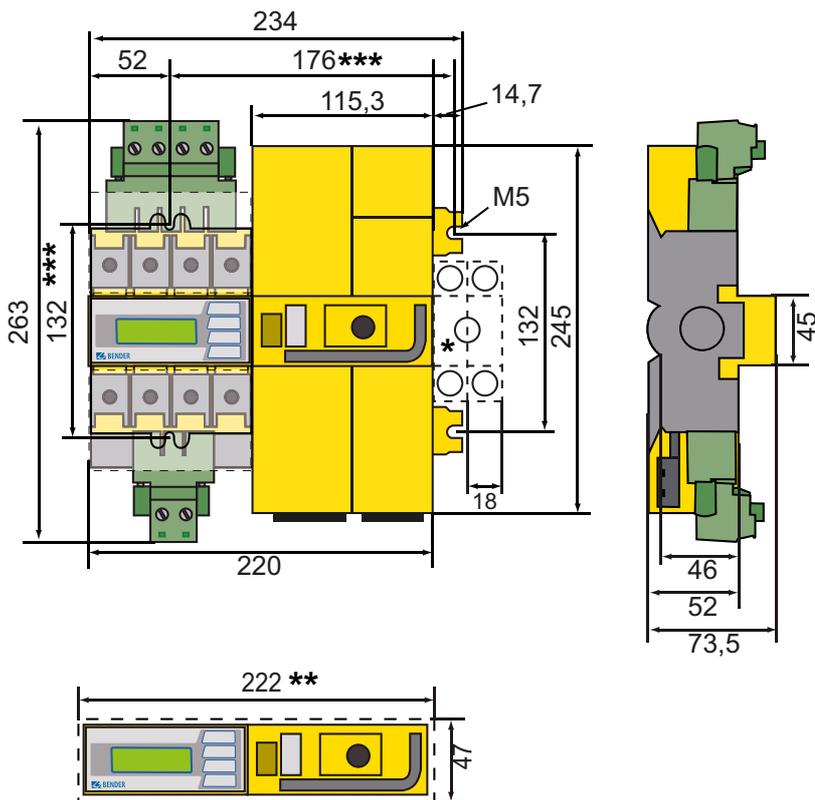
- IT system transformer with temperature monitoring
- Alarm indicator and test combination MK... or/and alarm indicator and operator panel TM...
- Bypass switch (recommended)
- Insulation fault locator EDS151 (recommended)
- For screw mounting only: mounting screws M5
- Only the transformers recommended by Bender (T5, T6) may be used for the "ATICS® for 400-volt systems without N conductor" variant (see manual).

4. Device overview



1. Green plug device for Line 1 and Line 2
2. Control buttons
3. Inspection window for switch position
4. Selector switch for manual mode selection, also shows the switch position.
5. Allen key for manual mode
6. Transparent cover for changeover switch (manual mode), sealable
7. Wiring diagram for lines 1, 2 and 3
8. Three coded connector plugs
9. Locking device for switch position 0
10. Green plug device for Line 3
11. LCD
12. Operating and alarm LEDs

5. Dimensions



⚠ Caution: Risk of destruction by plastering
Liquid plaster may run into the device and the device may jam.

▶ Do not seal the device with plaster.

ATICS® is suitable for DIN rail mounting or screw mounting on plate. To guarantee the protection against accidental contact, it is to be installed behind a plastic cover.

* Additional space required for the auxiliary contact when using a bypass switch

** Adapt the cutout to the terminal cover

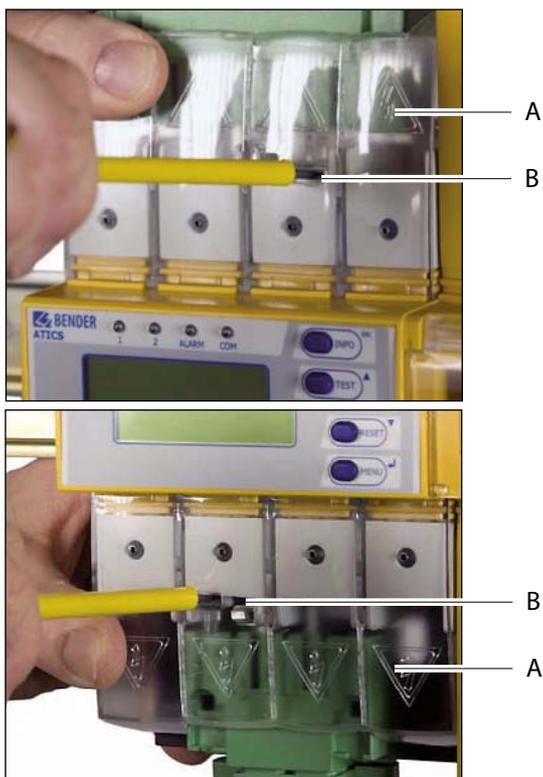
*** Dimensions for screw mounting on mounting plate

6. Tools required

▶ We recommend to use the following tools for connecting the power section and the control cables:

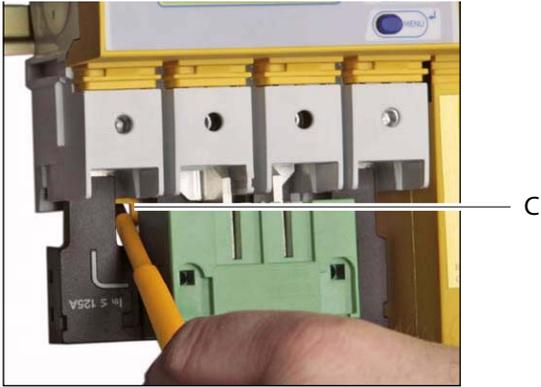
- Torx® screwdriver T20 or 6.5 x 1.2 mm
- Screwdriver 2.5 x 0.4 mm
- Allen key 4 mm

7. Removing the terminal covers

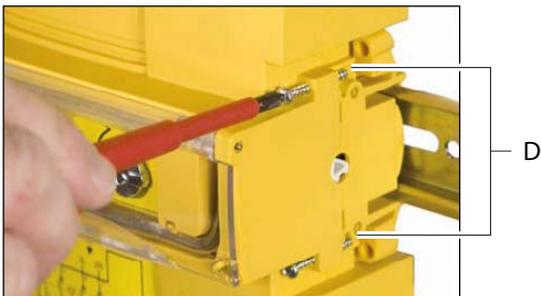


1. Push back the locking hook (B) in the middle of the top and bottom terminal (A) cover by using a screwdriver.
2. Remove the terminal cover.

8. Mounting the ATICS® on DIN rail



1. Place the ATICS® on the top edge of the rail.
2. Use a screwdriver to pull down the lower yellow slide lock (C) and snap the ATICS® into place with slight pressure. Check that the slide lock is properly snapped into position by pulling slightly the lower part of the enclosure.
3. Secure all terminals including the unused terminals with Allen screws.
Tightening torque: 5 Nm.
4. Fasten the terminal covers.



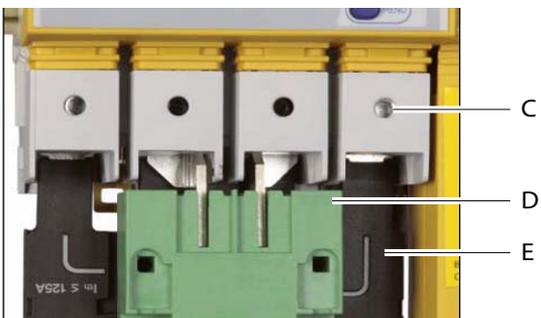
Tighten the mounting screws (D) (PZ1, 8.8 lb-in, 1 Nm).

⚠ Caution: If the screws are not tightened, ATICS can be damaged by the vibrations of the switch-over.

9. Mounting the ATICS® on mounting plate

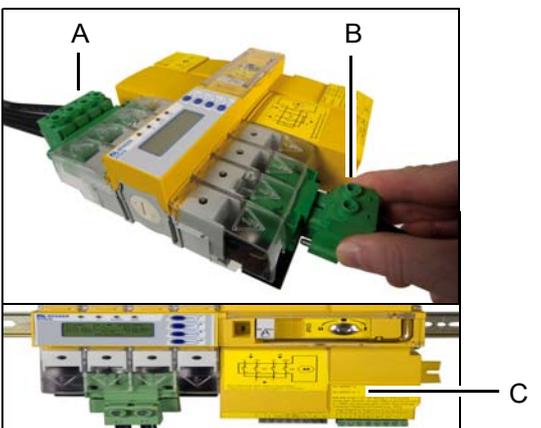
⚠ Warning: Screw heads or washers reduce voltage clearance

Provide for sufficient clearance to live conductors (voltage clearance) by using mounting screws with flat screw heads and flat washers. If mounted on electrically conductive material: the mounting plate has to be earthed and the area under the terminals has to be covered with insulating material. It is the responsibility of the mounting staff to select the appropriate mounting plate and mounting screws and to keep the prescribed torque setting.



1. Undo the Allen screws of the terminals (C).
2. Remove the green connectors (D) top and bottom
3. Remove the black bridge (E) bottom
4. Fasten the ATICS® to the mounting plate with M5 (22 lb-in, 2.5 Nm) mounting screws (see dimension diagram).
5. Insert the black bridge (E), bottom
6. Plug in the green plug connectors (D) top and bottom
7. Tighten the Allen screws on the terminals (C). All terminals, including the unused terminals must be fully tightened.
Tightening torque: 5 Nm.
8. Fasten the terminal covers.

10. Fastening, inserting and securing connections

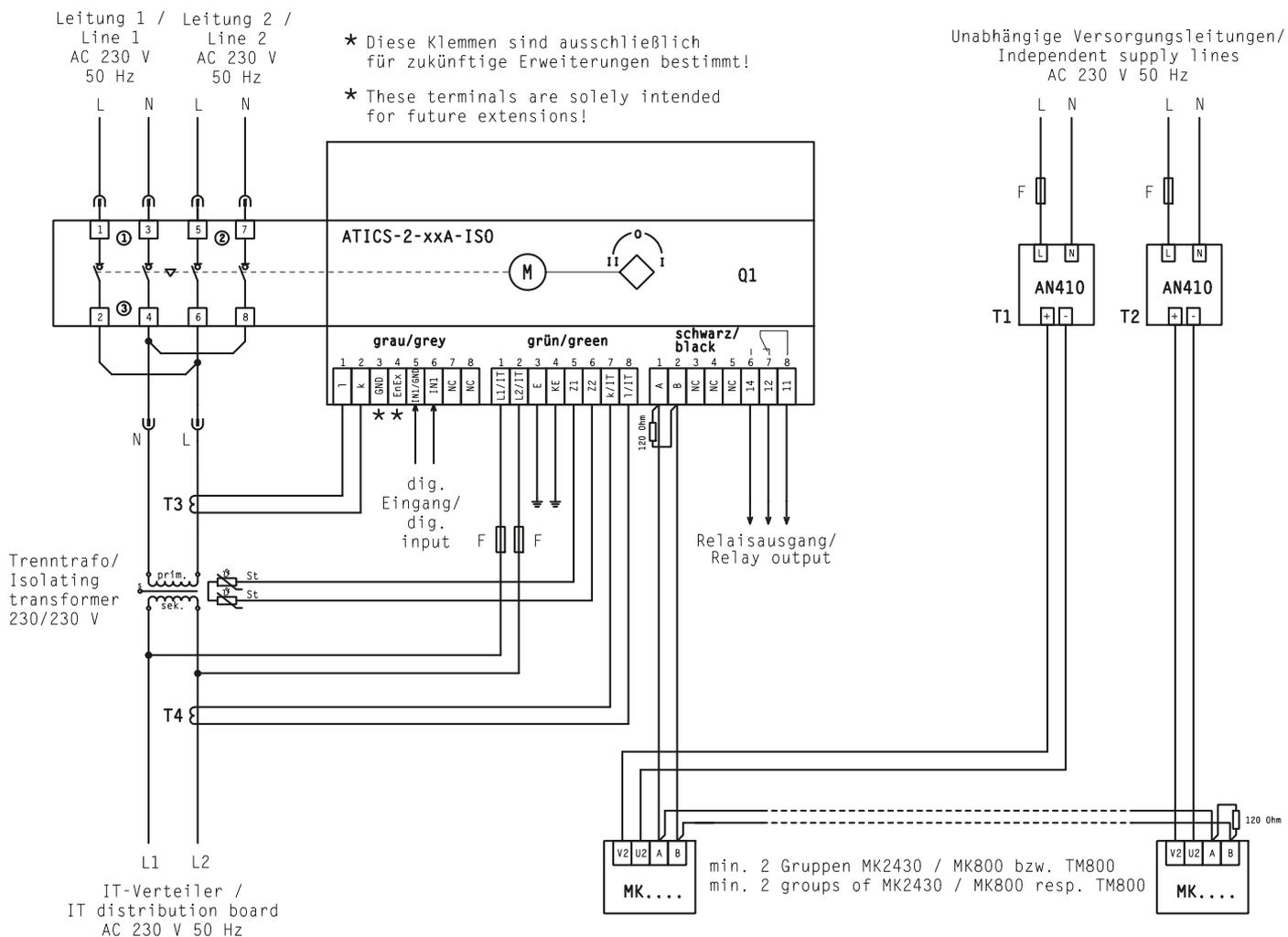


Connect the terminals according to the wiring diagram to the plug connectors (A, B) and the three connector plugs (C).

- Connect the lines 1, 2 and 3 to the plug connectors (A, B) with a Torx® screwdriver T20 or a slotted screwdriver 6.5 x 1.2 mm. Consider a stripping length of 20 mm and **do not** use ferrules. Tightening torque: 2.5 Nm ($\leq 25 \text{ mm}^2$) or 4.5 Nm ($\geq 25 \text{ mm}^2$). The connecting wires must be laid so that they are short-circuit and earth-fault proof!
 - Connect the connector plugs (C) with a slotted screwdriver of 2.5 x 0.4 mm. Stripping length: 7 mm. Tightening torque: 0.22...0.25 Nm.
1. Insert bottom green plug connector (B) and secure with mounting screws. After that, insert top green plug connector (A) and secure with mounting screws.
 2. Insert the other three connector plugs (C).
 3. ATICS...400 only: Connect connector plug on the top of the housing (opposite side of (C)).

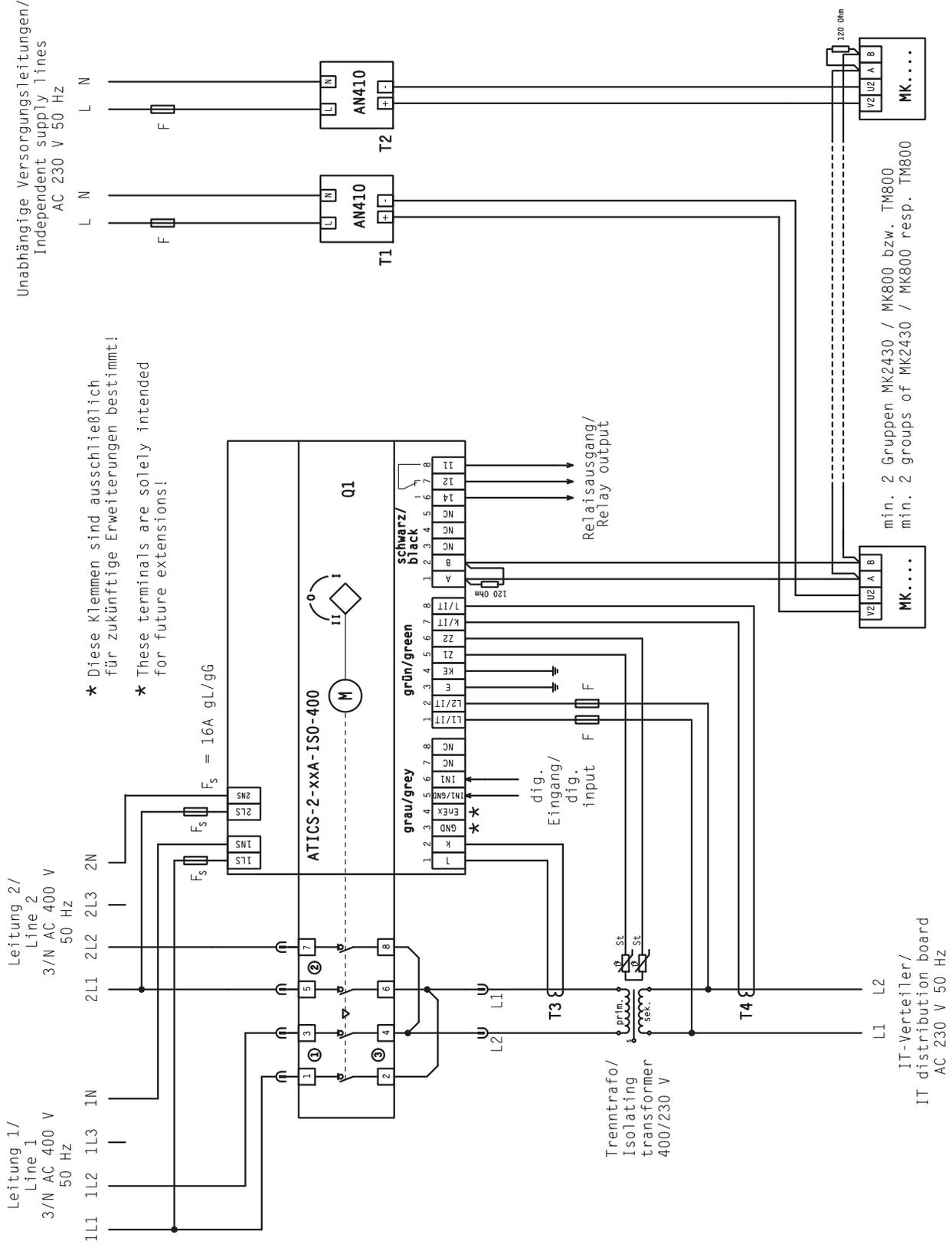
11. Connection examples

Connection example 1: ATICS® basic configuration

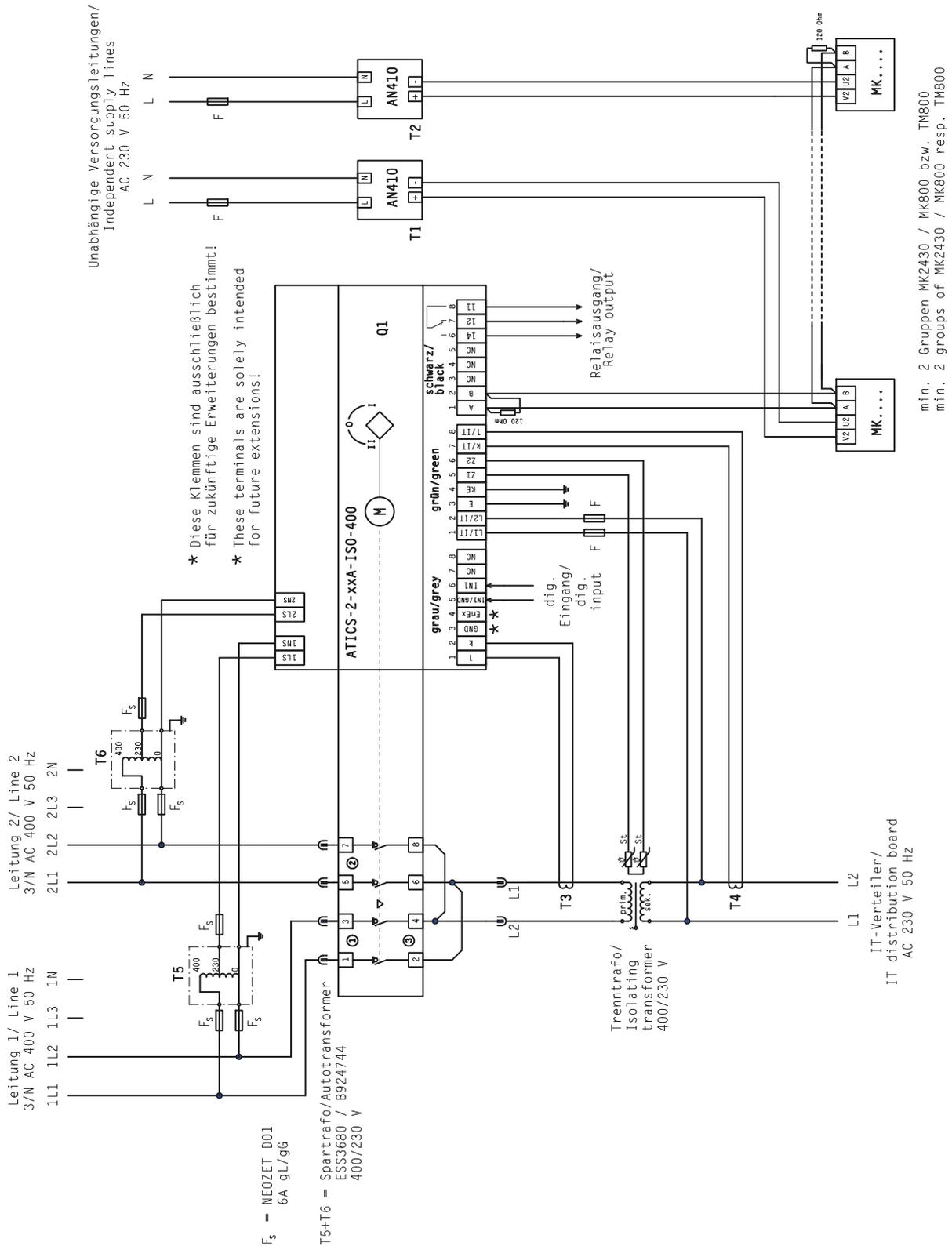


Terminal	Meaning
1, 3	Connection for Line 1 (input line) L, N
5, 7	Connection for Line 2 (input line) L, N
4, 6	Connection for Line 3 (output line) N, L
l, k	Connection measuring current transformer T3 (STW3) for monitoring the load current downstream the transfer switching device (short-circuit monitoring)
GND, En/Ex	Connection must not be used. These terminals are solely intended for future extensions!
IN1/GND, IN1	Digital input, configurable, for example, for monitoring the switch position of the transfer switching device
NC	not used
L1/IT, L2/IT	Connection to the IT system. Monitoring the insulation resistance. When there are insulation faults: Locating current fed in for insulation fault location. Bipolar protection via 6 A back-up fuse.
E, KE	Connection of E and KE to two separate PE lines. The terminals labelled GND must not be connected to PE.
Z1, Z2	Temperature monitoring for the IT system transformer
k/IT, I/IT	Connection for measuring current transformer STW2 to monitor the load current downstream of the IT system transformer (overload monitoring)
A, B	BMS bus connection
NC	not used
14, 12, 11	Alarm relay, programmable function

Connection example 4: ATICS® for 400-volt systems with N conductor



Connection example 5: ATICS® for 400-volt systems without N conductor



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ATICS-2...-ISO Quick start

Automatic transfer switching devices with monitoring functions for unearthed safety power supplies Software version: D333 V1.2x/D334 V1.2x, D335 V1.0x/D308 V1.2x

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1. Safety instructions

! Caution: Missing or false messages on the MK..., TM... or COM460IP because of out-dated software.

- ▶ Replace or update older operating software of MK..., TM..., FTC... or COM460IP
- ▶ Update TMK-SET configuration software.

The attached checklist includes both the factory defaults and installation-specific settings for the ATICS® transfer switching device. Please carry out all the work outlined in the list and log each test step.

Keep the checklist with this manual in the vicinity of the device.



Note: Configure MK... resp. TM... in a meaningful way.

- ▶ In addition to the message, configure a short remark of what needs to be done and who is to be informed.

2. Enabling manual mode



- ▶ Open the transparent cover of the automatic transfer switching device. The display shows "Manual mode".

3. Configure MK... resp. TM...

MK... resp. TM... must display at least the following faults detected by the ATICS®:

- Failure Line 1, failure Line 2
- Device error, device failure ATICS®
- Failure of the other MK... or TM...
- Insulation fault, overload, overtemperature
- Optional: EDS channels with circuit and/or room designation
- Device error with complete text or error code

4. Minimum parameter settings

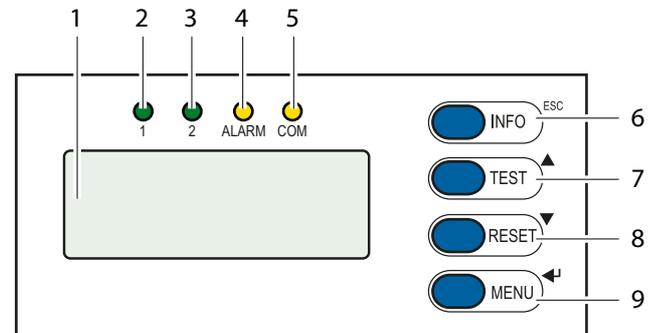
The following minimum default settings have to be carried out:

- BMS bus address (see "Settings menu 9: Interface" in the operating manual)
- Load current according to the connected IT-System transformer (see "Settings menu 4: IT System" in the operating manual)
- Delay times (see chapter "Setting and testing according to the checklist" in the operating manual)

By default, there is no password set on the ATICS®.

- ▶ For operation of the device, it is absolutely essential to enter and enable a password (see "Settings menu 11: password" in the operating manual).

5. Operating and display elements



Pos.	LED/Button	Meaning
1	LC graphical display	
2	LED "1"	lights up when Line 1 is ready
3	LED "2"	lights up when Line 2 is ready
4	LED "ALARM"	lights up when there is an alarm message
5	LED "COM"	flashes during communication via the BMS bus
6	"INFO" "ESC"	Calls up standard information Exits the menu function without changing parameters
7	"TEST" Up button	Calls up test menu Parameter changes, scrolling
8	Taste "RESET" Down button	Resets alarm and fault messages, unlocks switching back interlocking function Parameter changes, scrolling
9	"MENU" button Enter button	Toggles between the standard display, alarm display and the "MENU" Confirms parameter changes

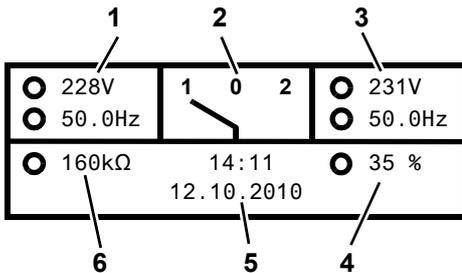
6. Enabling automatic mode



- ▶ In order to enable automatic mode, close the transparent cover of the automatic transfer switching device and seal it, if necessary.

7. Display in error-free operation

There is no alarm message. Standard display:



Pos.	Meaning
1	Line 1: Measured values of mains voltage and frequency
2	Switch position of the automatic transfer switching device
3	Line 2: Measured values of mains voltage and frequency
4	Display of the load in the IT system in %. The maximum load current is adjustable.
5	Date and time
6	Measured value of insulation resistance

Alternate displays in the bottom line of the display

The device displays alarm messages in the bottom line of the display. Also shown there are: switching back interlocking function, manual mode, countdown timer for return transfer time

The device shows the alarm status for each measured value:

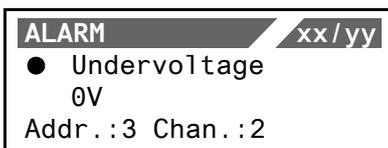
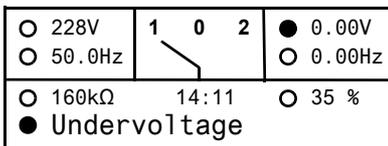
<input type="radio"/>	No alarm
<input checked="" type="radio"/>	Alarm

8. Display during fault condition

There is an alarm message:

- The yellow LED "Alarm" lights up.
- Information about the message appears on the display in the bottom line.

Example: Line 2 has no voltage



- ▶ Press the "↓" button to display the current alarm. The alarm message consists of:
 - Line 1: Alarm
xx = Serial number of the displayed alarm
yy = Number of pending messages
 - Use the arrow buttons to select the previous or next message.
 - Line 2: Alarm status and alarm text
 - Line 3: Measured value
 - Line 4: Address and channel of device triggering message.
- ▶ If no button is pressed for a few seconds, the standard display reappears.
- ▶ Press the Enter button again, then the main menu will appear.

9. Menu mode: Operation and configuration

- ▶ Press the "MENU" button to open the main menu.
 - Use the arrow buttons to go up resp. down one menu level.
 - Press the "↓" button to confirm the selected menu item.
 - Press the "ESC" button to leave the menu.

10. Menu overview

Main menu	Meaning	Submenu:	Meaning/Setting
Exit	Exit menu mode		

Main menu	Meaning	Submenu:	Meaning/Setting
1. Alarm/meas. values	Displays current status messages, alarm messages and measured values		
2. Changeover	Displays information on the changeover function (number, test)		
3. History/Logger	Displays logger information	1. History	Alarm messages of this device and tests which have been performed: value and time
		2. Data logger	Displays the history of measured values: Line 1, Line 2, position, load current in the TN system I(3), insulation, transformer load
		3. Config. Logger	Shows the history of the "Settings" menu: value and time
		4. Test logger	Displays the history of the tests of the changeover switch carried out
		5. Service logger	Displays the history of the service activities carried out
4. Settings	Various settings for this device	1. Changeover	Setting the date and time, system, switching back interlocking function, preferred supply, generator, test and service interval
		2. Voltage	Delay times, voltage ranges, hysteresis
		3. Current	Short-circuit detection
		4. IT system	Response values insulation, transformer load, temperature, fault location
		5. Relay	Mode of operation and relay mode
		6. Digital input	Mode of operation, function, delay
		7. Data logger	Modify, overwrite, delete
		8. Language	Deutsch, English, Francais
		9. Interface	Setting the BMS bus address of this device. Allow the settings to be changed via the interface. Allow a test to be run via interface.
		10. Clock	Set date format and date and time
		11. Password	Enable resp. set password for settings and test
		12. Service	Reserved for settings to be made by authorised Bender Service personnel.
5. Control	Run TEST and RESET for this device	1. TEST	Isometer, changeover, last changeover saved as a test, generator
		2. RESET	Reset alarm messages, cancel the switching back interlocking function, change the alarm value for the max. permissible number of changeover operations performed and the max. permissible number of operating hours
6. Digital input	Display voltage level of the digital input		
7. Info	Display information on device type and firmware versions		

11. Troubleshooting

If a fault occurs, proceed as follows:

1. Activate manual mode, if necessary.
2. Make a note of what happened prior to the fault: operator inputs, device error messages, ambient conditions, etc.
3. Keep the device type and device serial number to hand.
4. Speak to Bender Service, describe the type of fault and quote the three-digit error code.

Fault/message	Description	Remedy
Failure Line xx (xx stands for: 1, 2, AV, SV, UPS, BSV), undervoltage or overvoltage	Voltage is no longer available on Line 1 or Line 2 (Channel 1 = Line 1, Channel 2 = Line 2)	→ Measure voltage on Line xx. → Check cause. → Eliminate fault on the system. → Check the setting for voltage and hysteresis.
Failure line 2	Generator delivers no voltage within the set time t(GenMax)	
Insulation fault	IT system has insulation fault	→ Look for insulation fault. → Eliminate fault on the system.
Overload	Current consumption too high	→ Check setting for transformer load current. → Switch off any loads which are not urgently needed.
Overtemperature	Temperature on the IT system transformer is too high	→ Switch off any loads which are not urgently needed.
CT connection CT short-circuit	Generator delivers no voltage within the set time. Short circuit or interruption of the connection cable was detected: Measuring current transformer STW2 (T4), isolating transformer load, channel 10.	→ Check connecting wire of measuring current transformer

Fault/message	Description	Remedy
Mains power connection	Connection to the IT system interrupted or voltage in the system being monitored below 150 V	→ Check connection of ports L1/IT, L2/IT to the IT system. Check voltage in the IT system.
Earth connection	Connection to PE interrupted	→ Check that the E and KE are connected to the protective earth conductor by two separate lines on.
Device error + Errorcode	For details about actions to be taken refer to table section "Error code/service code". The message is on channel 6 of the BMS bus.	
Short-circuit distribution board	Short-circuit detected	→ Eliminate short-circuit
Failure distribution board	No voltage on Line 3, contact of the changeover switch defective	→ Replace the ATICS®.
Overcurrent I(3)	Measuring current transformer T3 recognised an overcurrent	→ Eliminate the cause of overcurrent. → Eliminate any damage.
CT connection	Short circuit or interruption of the connection cable was detected. Measuring current transformer STW3 (T3), channel 7	→ Check connecting wire of measuring current transformer
No MASTER	There is no device with master function available on the RS-485 interface	→ Check BMS bus connection cable. → Check whether master has failed or whether its address has changed. If the device is operated without BMS bus, the "Failure monitoring" must be switched off (setting menu 8: interface).
Service: __ (date)	Reminder for next service	→ Agree date with Bender Service
Test: __ (date)	Reminder for next test	→ Plan date for test. → Carry out test.
Manual mode	Message "Manual mode" although manual mode has not been activated	→ Check the connections of the digital input.
Error during the changeover process	When the test set-ups do not supply enough current for switching the coils of the ATICS.	→ Only use test set-ups that provide the necessary peak current of 17 A.
Error code/Service code		
Error code/Service code	Description	Remedy
1.xx, 4.xx, 9.xx	Fault message from the internal memory monitoring	→ Contact Bender Service.
3.11	Max. number of hours exceeded	→ Plan device replacement
3.12	Max. number of changeovers exceeded	→ Plan device replacement
3.13	Changeover due to overcurrent or shortcircuit detected. These changeovers reduce the life of the device. Currents which are measured in excess of 130 A are evaluated as overcurrents or short-circuit currents.	→ Have personnel assess the short-circuit load. → Contact Bender Service.
3.5	Service has been carried out. This is not a fault message. Display only on service logger.	→ No action required
6.xx, 7.xx, 8.1x	Device error. The internal self monitoring of the device has detected a fault which could impair the safe operation of the device.	→ Replace the device immediately.
8.21 ... 8.30	Fault Isometer or transformer monitoring	→ Reset, then execute test of the IT system → Check that the current firmware is installed. → When no fault is being displayed: OK. Otherwise replace the device. → Check that the bridge on the output side is properly installed.
8.22	Temperature sensor faulty or earth potential tainted.	→ Disconnect the temperature sensor (Z1/Z2). If no error is displayed: replace temperature sensor or correct its wiring.
8.51 ... 8.52	Fault internal power supply unit.	→ RESET -> execute alarm, then test the changeover function. → If fault persists: device replacement. → Only use test set-ups that can supply the necessary peak current
8.61 ... 8.66	Fault during changeover process. Occurs when the voltage on the new line fails during the changeover. Also occurs when the test set-ups do not supply sufficient current for switching the coils of the ATICS.	→ RESET -> execute alarm, then test the changeover function. → If fault persists: replace the device. → Only use test set-ups that provide the necessary peak current of 17 A. → In the settings menu 1: Select changeover t(0)≥160 ms.

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