ATICS-…-DIO Quick start

BENDER
The Power in Electrical Safety©

Automatic transfer switching devices for safety power supplies
Software-Version: D333 V1.2x, D334 V1.2x, D335 V1.0x

This reference guide does not replace the operating manual. You will find the operating manual in the download area 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 accidently.*

Warning: Risk of destruction if mains voltage incorrect

- ► *The permissible mains voltage is indicated on the nameplate.*

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 (ATICS-4-160A-DIO only: stripping length 15 mm, with or without ferrules).*
- ► *Use a torque wrench to tighten the terminal screws. Check all the screws on a regular basis to make sure they are seated tightly.*

ATICS-4-125A-DIO and ATICS-4-160A-DIO only: High temperatures may affect the terminals

The terminals for the connection of Line, 1, 2, 3 are designed for the specified rated operational current, at room temperature.

- ► *Avoid higher temperatures or ensure that the load current is reduced.*

2. Scope of delivery

ATICS® transfer switching device

- including connectors, bridge and terminal covers
- Measuring current transformer STW3 resp. STW4

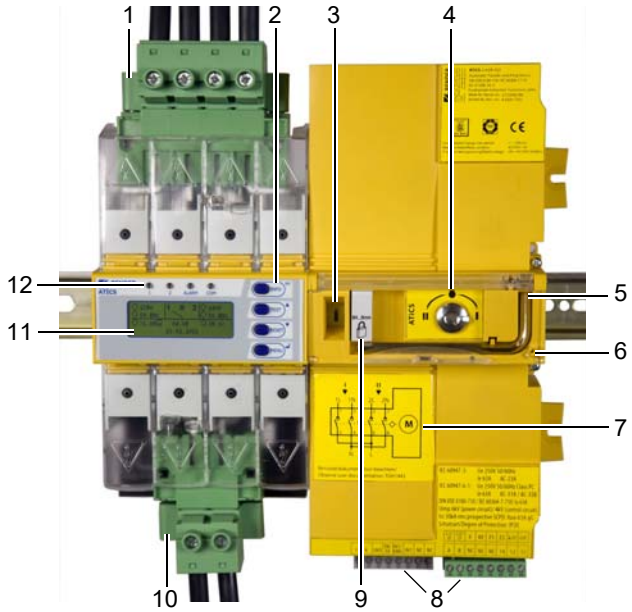
Documentation

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

3. Other system components required

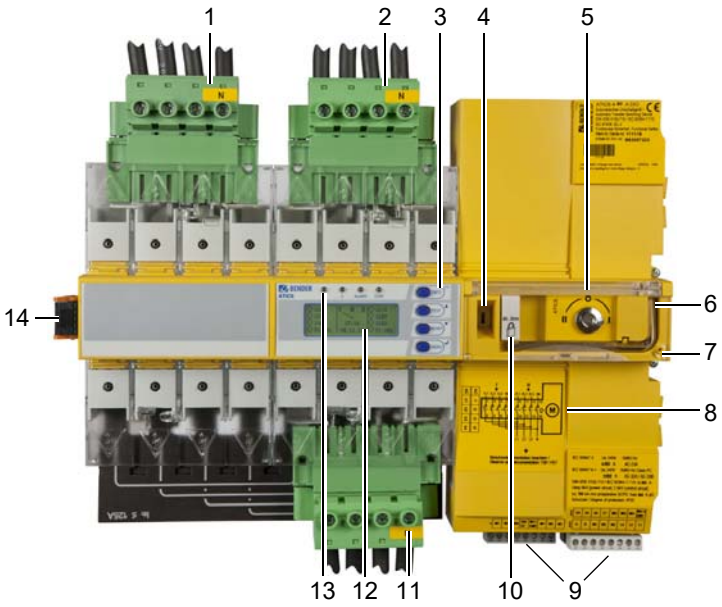
- Alarm indicator and test combination MK… or/and alarm indicator and operator panel TM…
- Bypass switch (recommended for ATICS-2-DIO)
- For screw mounting only: mounting screws M5

4. Device overview



Transfer switching device ATICS-2-DIO

1. Green plug connector 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 connector for line 3
11. LCD
12. Operating and alarm LEDs

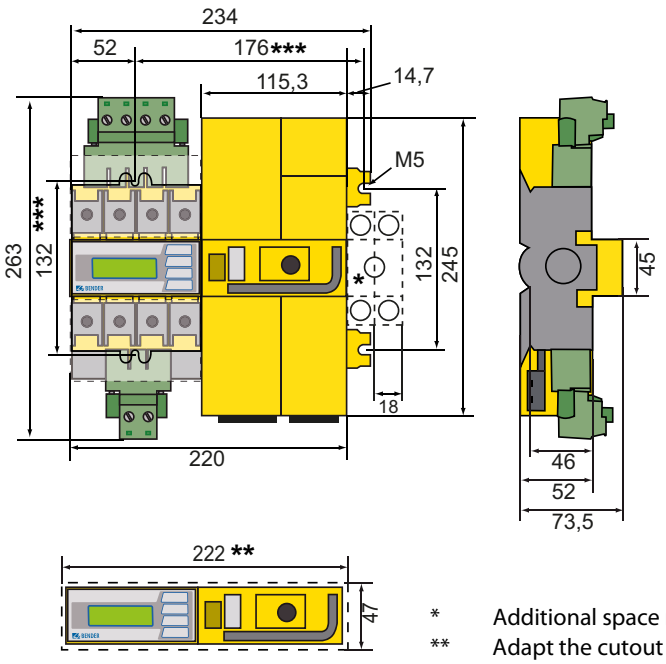


Transfer switching device ATICS-4-DIO

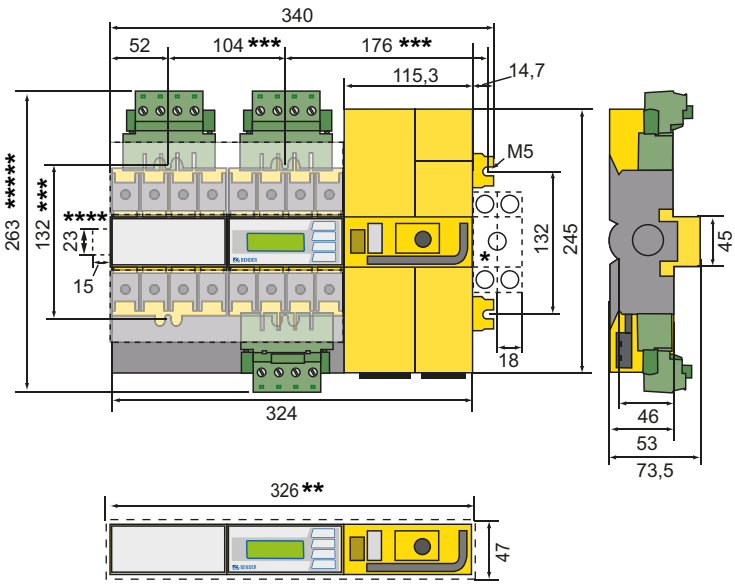
1. Green plug connector for line 1
2. Green plug connector for line 2
3. Control buttons
4. Inspection window for switch position
5. Selector switch for manual mode selection, also shows the switch position.
6. Allen key for manual mode
7. Transparent cover for changeover switch (manual mode), sealable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

5. Dimensions

ATICS-2-DIO



ATICS-4-DIO



* 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
**** Additional space required for the connector plug of the measuring current transformer
***** Version 80 A / 125 A. Version 160 A without connectors.

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*

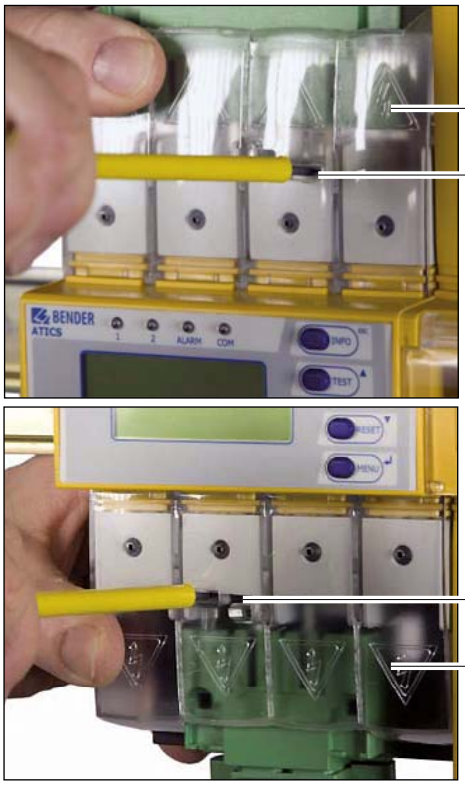
ATICS® is suitable for DIN rail mounting or screw mounting on plate. To guarantee the protection against accidental contact, it is to be installed behind a plastic cover.

6. Tools required

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

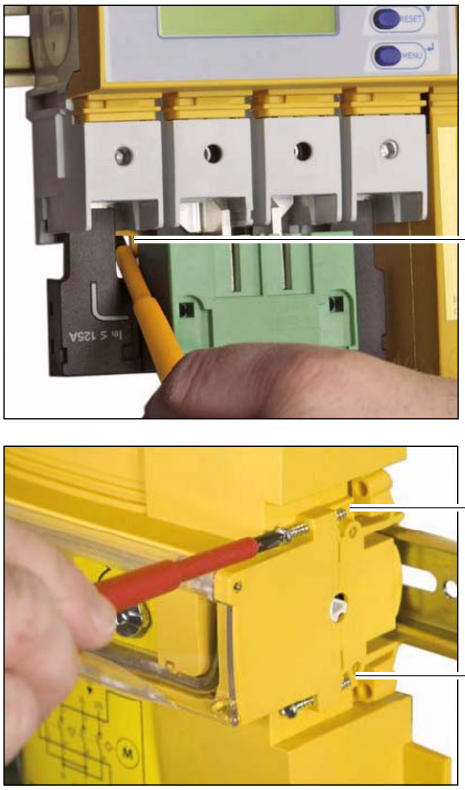
- Torx® screwdriver T20 or 6.5 x 1.2 mm
- Screwdriver 2.5 x 0.4 mm
- Allen key 4 mm

7. Removing the terminal covers



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

8. Mounting the ATICS® on DIN rail



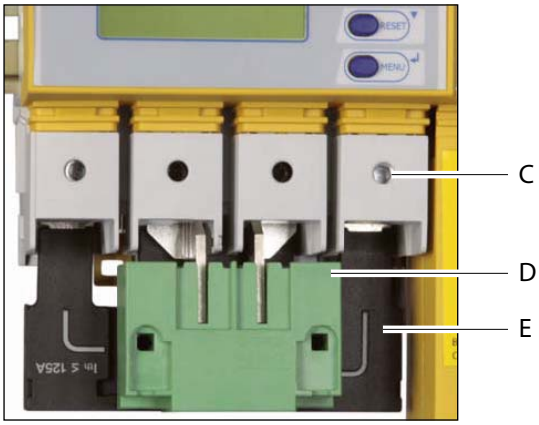
1. Place the ATICS® on the top edge of the rail.
2. **ATICS-2-DIO:** Use a screwdriver to pull down the lower yellow slide lock (C) and snap the ATICS® into place with slight pressure.
   ATICS-4-DIO: Remove bottom green plug connector. Use screwdrivers to pull down the two lower yellow slide lock (C) and snap the ATICS® into place with slight pressure.
   Check that the slide locks are 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.
5. 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

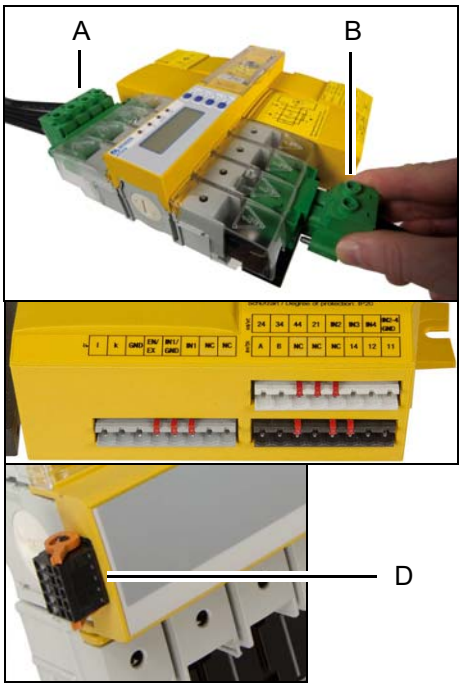
Warning: Screw heads or washers reduce voltage clearance

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 plug connectors (D) top and bottom
3. Remove the black bridge (E) bottom
4. Fasten the ATICS® to the mounting plate with M5 mounting screws, torque setting 22 lb-in, 2.5 Nm (see dimension diagram).
5. Insert the black bridge (E), bottom
6. Plug in the green plug connectors (D) top and bottom
7. Use Allen screws to tighten all terminals (C) including the unused terminals.
   Tightening torque: 5 Nm.
8. Fasten the terminal covers.

10. Fastening, inserting and securing connections



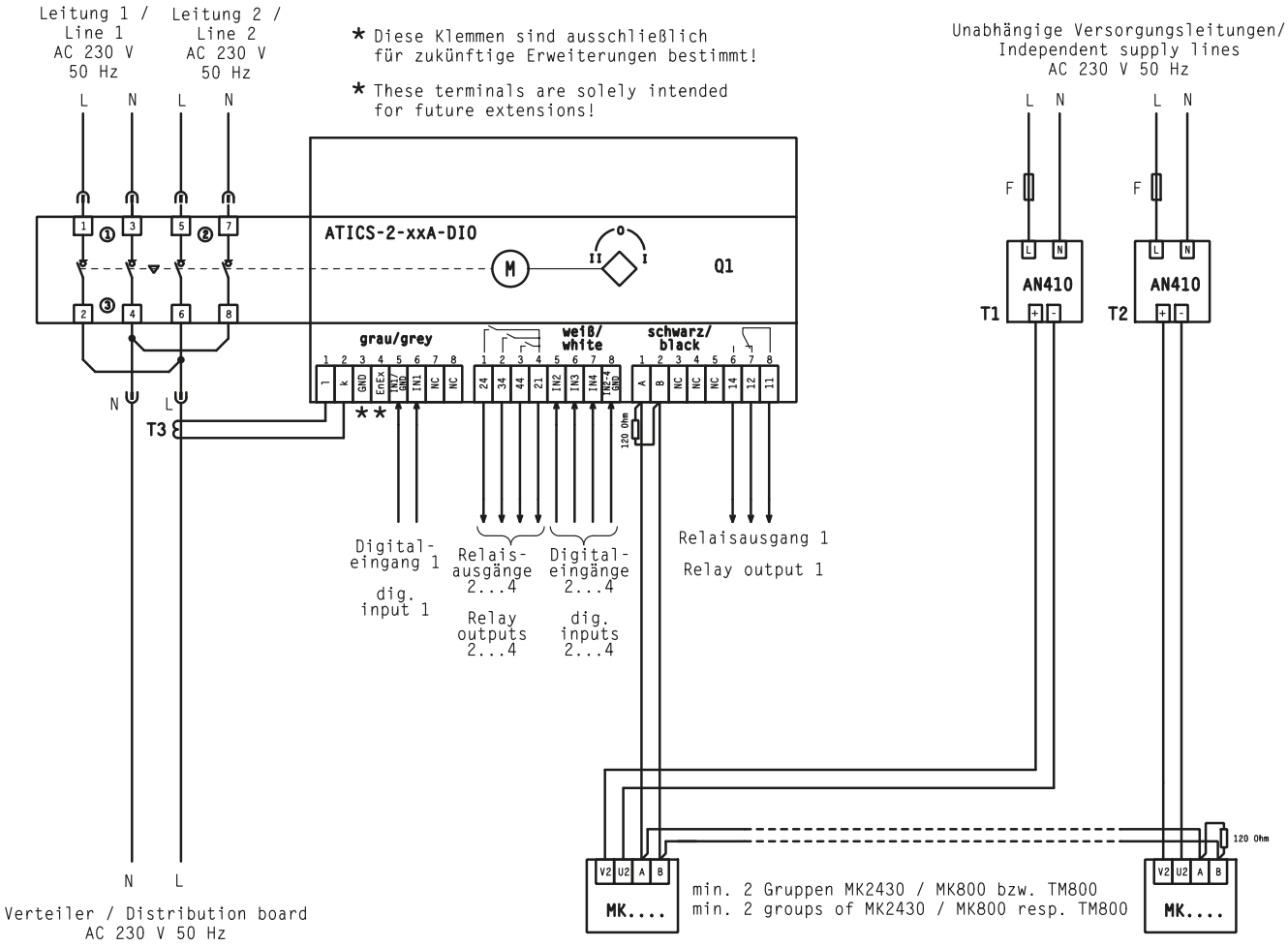
Connect the terminals according to the wiring diagram to the plug connectors (A, B) and the connector plugs (C, D).

- 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 (≤ 25 mm²) or 4.5 Nm (≥ 25 mm²
  ATICS-4-160A-DIO only: stripping length 15 mm, with or without ferrules, Tightening torque: 5 Nm.
  The connecting wires must be laid so that they are short-circuit and earth-fault proof!
- Connect the three 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.
   ATICS-2-DIO: After that, insert top green plug connector (A) and secure with mounting screws.
   ATICS-4-DIO: After that, insert the two top green plug connectors and secure with mounting screws.
2. Insert the three connector plugs (C).
3. **ATICS-4-DIO only:**
   Insert the connector plug (D) of the measuring current transformers T1 … T4 (D).
   Note: The plug must noticeably click into place!

11. Wiring diagrams

Connection ATICS-2-DIO

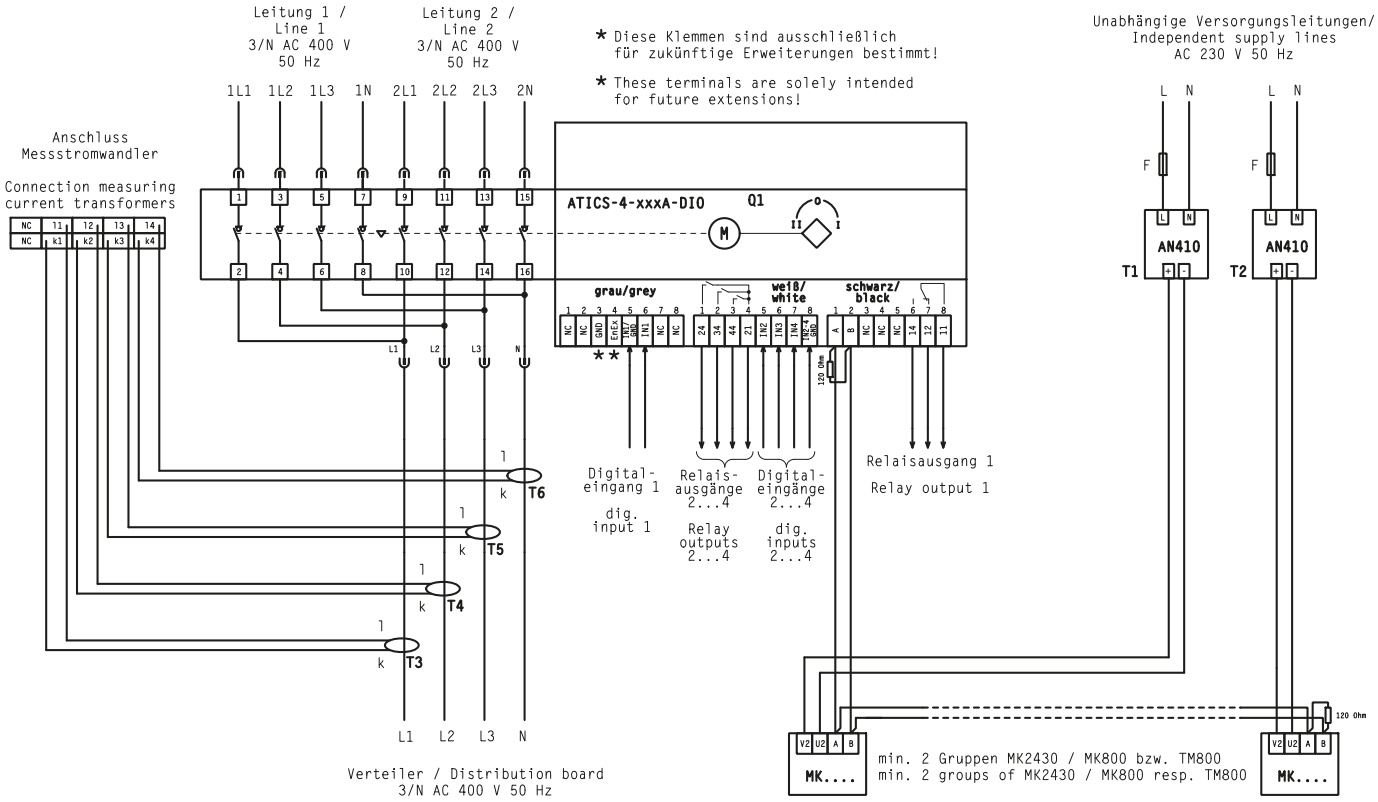


Terminal	Meaning
1,3	Connection line 1 (input line) L,N
5,7	Connection line 2 (input line) L,N
4,6	Connection line 3 (output line) N,L
I, k	Connection measuring current transformer STW3 (T3) for monitoring the load current downstream the transfer switching device (short-circuit monitoring)
GND, En/Ex	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, NC	not used
24, 34, 44, 21	3 alarm relays (1 N/O contact each), 21 = common connection for the three alarm relays
IN2, IN3, IN4, IN2-4 GND	3 digital inputs
A, B	BMS bus connection
14, 12, 11	Alarm relay, programmable function

Warning: Risk of destruction if connection incorrect

► *The terminals labelled GND must **not** be connected to PE.*

Connection ATICS-4-DIO



Terminal	Meaning
1, 3, 5, 7	Connection line 1 (input line) 1L1, 1L2, 1L3, 1N
9, 11, 13, 15	Connection line 2 (input line) 2L1, 2L2, 2L3, 2N
10, 12, 14, 16	Connection line 3 (output line) L1, L2, L3, N
NC, NC	not used
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, NC	not used
24, 34, 44, 21	3 alarm relays (1 N/O contact each), 21 = common connection for the three alarm relays
IN2, IN3, IN4, IN2-4 GND	3 digital inputs
A, B	BMS bus connection
NC, NC, NC	not used
14, 12, 11	Alarm relay, programmable function
I1, I2, I3, I4, k1, k2, k3, k4	Connection measuring current transformer T1 (T4) for monitoring the load current downstream the transfer switching device (short-circuit monitoring). Note: Insert the plug until it noticeably clicks into place!

Warning: Risk of destruction if connection incorrect

► *The terminals labelled GND must **not** be connected to PE.*

Fotos: Bender Archiv.

Photos: Bender archives.

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1. Safety instructions

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

- ► *Replace or update older operating software of MK…, TM…, FTC… or COM460*
- ► *Update TMK-SET configuration software.*

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.*

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.

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…
- Device error with complete text or error code

4. Minimum parameter settings

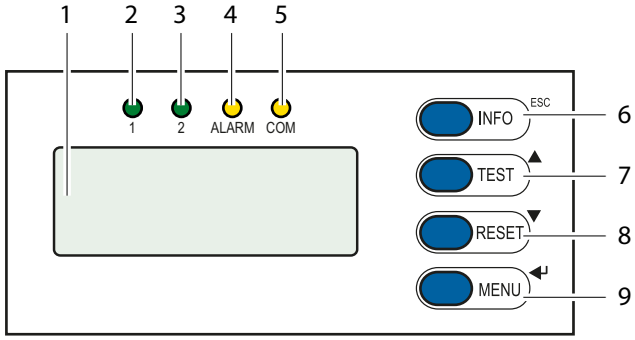
The following minimum default settings have to be carried out:

- BMS bus address (see "Settings menu 8: Interface" in the operating manual)
- Delay times (see chapter "Setting and testing according to 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 10: password" in the operating manual).

5. Operator control and display elements



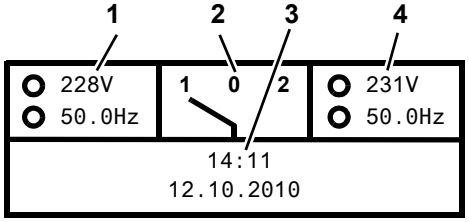
Pos.	LED/Button	Meaning
1	LC graphical display	
2	LED "1"	lights up when **Line 1** is ready
3	LED "2"	lights up when **Line 2** is ready
4	LED "ALARM"	lights up when there is an alarm message
5	LED "COM"	flashes during communication via the BMS bus
6	"INFO" button "ESC" button	to query standard information, to leave the menu function without changing parameters
7	"TEST" button, Up button	Calls up test menu Parameter changes, scrolling
8	"RESET" button 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.

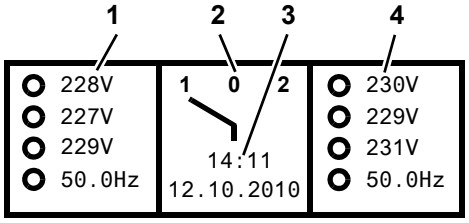
7. Display in error-free operation

There is no alarm message. Standard display ATICS-2-DIO:



Pos.	Meaning
1	Line 1: Measured values of mains voltage and frequency
2	Switch position of the automatic transfer switching device
3	Date and time
4	Line 2: Measured values of mains voltage and frequency

There is no alarm message. Standard display ATICS-4-DIO:



The device shows the alarm status for each measured value:

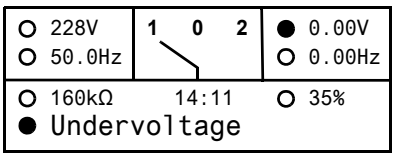
○	No alarm
●	Alarm

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.

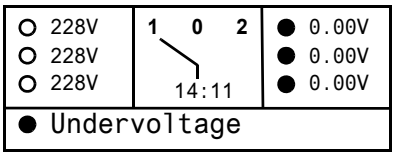
8. Display in fault condition

There is an alarm message:
- The yellow LED "Alarm" lights up.
- Information about the message appears on the display in the bottom line.

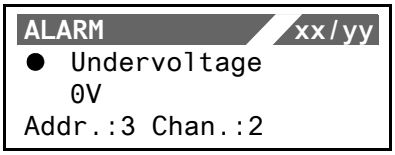
Example: Line 2 has no voltage



ATICS-2-DIO



ATICS-4-DIO



► Press "↵" to display the current alarm message.
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 next or previous message.
- Line 2: Alarm status and alarm text
- Line 3: Measured value
- Line 4: Address and channel of device triggering the 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 setting

► 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		
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)
		3. Config.logger	Shows the history of the "Settings" menu: value and time
		4. Test data 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. Relay	Mode of operation and relay mode
		5. Digital Input	Mode of operation, function, delay
		6. Data logger	Modify, overwrite, delete
		7. Language	Deutsch, English, Francais
		8. Interface	Setting the BMS bus address for this device, allow to change settings via BMS bus, allow to run a test via BMS bus.
		9. Clock	Format, date and time setting
		10. Password	Enable resp. set password for settings and test
		11. Service	Reserved for settings to be made by authorised Bender Service personnel.
5. Control	Run TEST and RESET for this device	1. TEST	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 inputs		
7. Info	Display information on device type and firmware versions		

11. Troubleshooting

If a fault exists, proceed as follows:	Activate manual mode, if necessary. Make a note of what happened prior to the occurrence of the fault: operator inputs, device error messages, ambient conditions, etc.	Keep the article number and device serial number to hand. Contact 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)	
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 resp. one of the measuring current transformers T3…T6 recognised an overcurrent.	Eliminate the cause of overcurrent. Eliminate any damage.
CT connection	Short circuit or interruption of the onnecting wire was detected. Measuring current transformer T3 resp. T3…T6, channel 7.	Check connecting wire of the measuring current transformer(s).
No MASTER	There is no device with master function or back-up master (device with address "1") 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
Phase sequence	This line does not have a right phase sequence. If the direction of the phase sequence of Line 1 is different from Line 2, it may result in malfunctions or failure on connected three-phase devices.	When installing Line 1 and Line 2 make sure that the direction of the phase sequence of both lines is right (clockwise)
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	Description	Remedy
1.xx, 4.xx, 9.xx	Fault message from the internal memory monitoring	Contact Bender Service.
3.11	Maximum number of operating hours exceeded	Plan device replacement
3.12	Maximum number of changeovers exceeded	Plan device replacement
3.13	Changeover due to overcurrent or short-circuit detected. These changeovers reduce the life of the device. Currents which are measured in excess of 130 A resp. 250 A are evaluated as overcurrents or shortcircuit currents.	Have personnel assess the short-circuit load. Contact Bender Service.
3.5	Service was carried out. This is not a fault message. Only displayed in the service logger menu.	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.	Device is to be replaced without delay.
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 provide the necessary peak current of 17 A.
8.61 … 8.66	Fault during changeover process. Occurs when also 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: device replacement. 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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Photos: Bender archives.

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