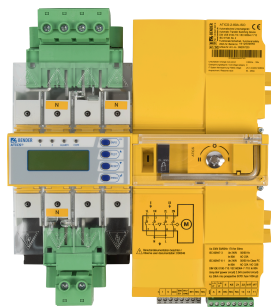


Automatic transfer switching devices with monitoring functions for unearthed safety power supplies





Device features

Perfectly suitable for space-saving installation/retrofitting

- Compact device for easy setup of safety power supplies with functional safety in accordance with DIN EN 61508 (SIL 2) e. g. for group 2 medical locations in compliance with DIN VDE V 0100-710-1 (VDE V 0100-710-1)/IEC 60364-7-710
- Increased safety and availability by integrating changeover and IT system monitoring in one compact device
- All-in-one: Integration of switch disconnector, control and monitoring electronics for unearthed safety power supplies
- Solutions for any application

Convenient installation and commissioning

- Saves time and money

Safe operation

- Robust switch disconnector contacts
- Mechanical locking
- Manual operation directly on the device
- Functional safety SIL 2
- Certification by TÜV SÜD

Uninterrupted maintenance

- Plug connectors and optional bypass switch
- Excellent communication and parameterisation options

Product description

The ATICS-2-ISO automatic transfer switching devices provide all functions for changeover between two independent power supplies and for monitoring unearthed power supplies. The integration of both the electronic system and the switching elements in one flat, compact device reduces space requirements in the switchgear cabinet, minimises the amount of wiring, and reduces the fault probability. For maximum reliability, ATICS-2-ISO was designed in strict accordance with the guidelines for functional safety.

Connectors at all connecting wires, in combination with the optional bypass switch, enable the ATICS-2-ISO to be tested or replaced during service works without interruption of the power supply. ATICS-2-ISO considerably enhances the safety level particularly in intensive care units and in operating theatres.

Changeover

- Automatic changeover to the redundant line if the preferred supply fails or is outside the permissible voltage range
- Voltage monitoring of lines 1 and 2 (input) and line 3 (output)
- Automatic return to the preferred line on voltage recovery
- Short-circuit monitoring at the output or at the distribution board downstream of the transfer switching device avoids damaging switching operations
- Manual operation, with optional locking by means of a padlock

IT system (unearthed power supply)

- Insulation monitoring
- Load and temperature monitoring IT system/transformer
- Optional insulation fault locator

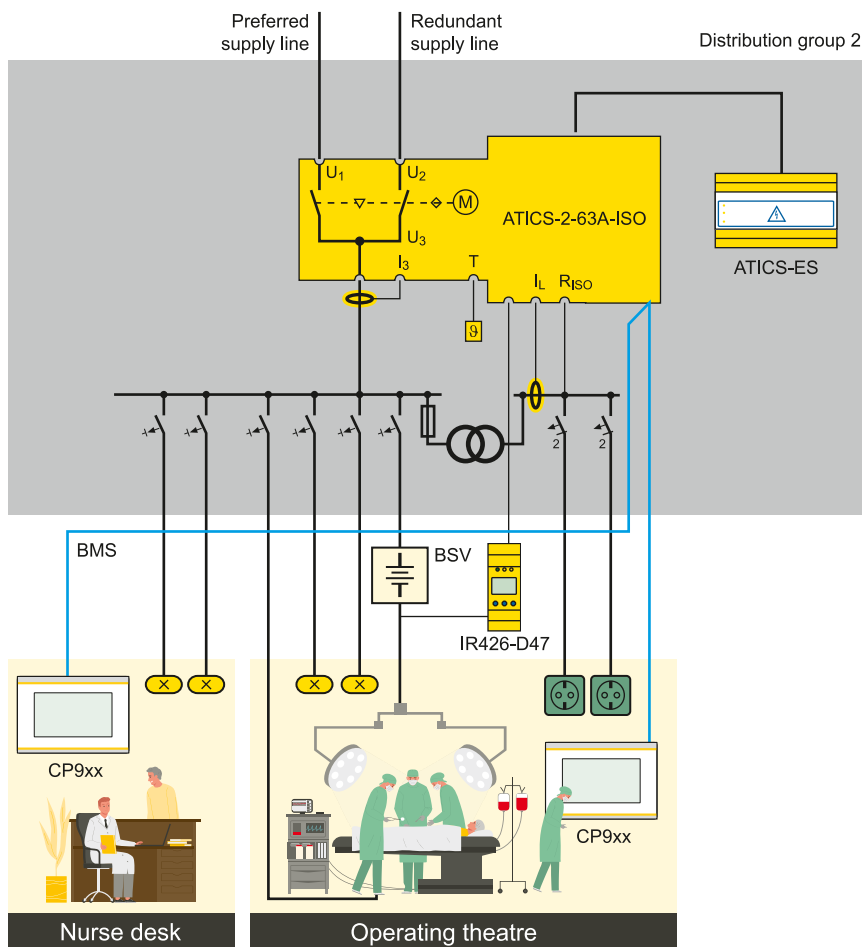
Messages

- Status indication of operating, warning and alarm messages via
 - integrated graphic display and
 - external indication on MK.../TM.../CP...
- Automatic reminder for prescribed tests and service intervals
- History memory for events, messages, tests and parameter changes
- Exchange of information with alarm indicator and operator panels via BMS bus

Other functions

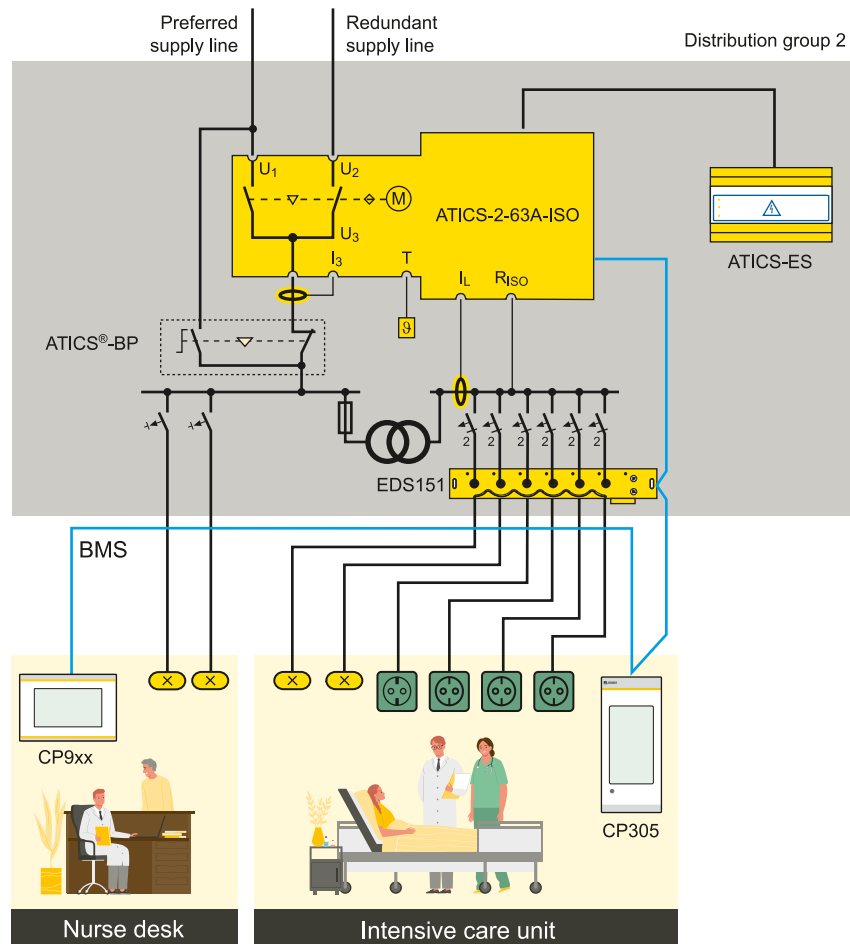
- Automatic monitoring of all programme and data storage as well as essential internal components and connecting wires for proper functioning
- Programmable relay output (alarm relay)
- Programmable digital input

Application example Operating Theatre



ATICS-2-63A-ISO	Changeover between the preferred and redundant line while monitoring the medical IT system with transformer load and temperature monitoring
IR426-D47	Monitoring of the operating theatre light IT system (optional)
MK.../CP...	Alarm at at least two points with independent power supplies for functional safety
ATICS-ES	Energy storage (B92057206, B92057207 only)

Application example Intensive Care Unit



ATICS-2-63A-ISO	Changeover between the preferred and redundant line while monitoring the medical IT system with transformer load and temperature monitoring
EDS151	Insulation fault locator for fast insulation fault location (recommended)
ATICS-BP	Bypass switch for uninterrupted test/maintenance (recommended)
MK.../CP...	Alarm at at least two points with independent power supplies for functional safety
ATICS-ES	Energy storage (B92057206, B92057207 only)

Technical data ATICS-2-ISO

Insulation coordination acc. to IEC 60664-1/IEC 60664-3

Overvoltage category	III
Pollution degree outside, inside	2
Rated insulation voltage	250 V
Protective separation between	Line 1 – Line 2; Line 1, 2, 3 – RS-485; Line 1, 2, 3 – digital inputs; Line 1, 2, 3 – relay outputs
Voltage test according to IEC 61010-1 (basic insulation/protective separation)	2.21 kV / 3.54 kV

Supply voltage

Supply voltage U_s	230 V (50/60 Hz)
Power consumption at 63 A	≤ 16 W
Power consumption at 80 A	≤ 28 W
Current during changeover process	17 A / < 30 ms

Power section / switching elements

Rated operational voltage U_o	see "Ordering information", page 7
Frequency range f_n	48...62 Hz
Crest factor	≤ 1.2
Number of operating cycles (mechanical)	≥ 8000
Short-circuit currents	see table "Short-circuit currents" in manual
Short-circuit current I_{sc} and fuses	refer to table "Utilisation category acc. to DIN EN 60947" in manual

Voltage monitoring / changeover

Frequency range f_n	40...70 Hz
Undervoltage response value (Alarm 1)	160...207 V (1 V steps)
Overvoltage response value (Alarm 2)	240...275 V (1 V steps)
Response delay t_{on}	50 ms...100 s (resolution of setting starting 50 ms)
Delay on release t_{off}	200 ms...100 s (resolution of setting starting 50 ms)
Hysteresis	2...10 % (1 % steps)
Frequency measurement	40...70 Hz (resolution 0.1 Hz)
Display range measured value	20...300 V
Operating uncertainty	±1 %
Changeover period	$t < 500$ ms ... 100 s

Current monitoring (output current)

Measuring current transformers	STW3, STW4
Measuring range I_n (TRMS)	STW3: 0...> 150 A, STW4: 0...> 260 A
Response value for short-circuit detection (versions 63 A and 80 A) with STW3	130 A
Crest factor	min. 2
Hysteresis for short-circuit alarm	5 %

Cable length

Single wire ≥ 0.75 mm ²	0...1 m
Single wire, twisted ≥ 0.75 mm ²	1...10 m
Shielded cable	10...40 m
Cable: twisted pairs, shield connected to terminal I on one side, must not be earthed	recommended: J-Y(St)Y min. $n \times 2 \times 0.8$

IT system monitoring

Insulation monitoring

Nominal system voltage U_n (operating range)	230 V 50/60 Hz (80...275 V)
Measuring range	10 k Ω ... 1 M Ω
Measurement method	AMP (adaptive measuring pulse)
Response value R_{an1} (ALARM 1)	50...250 k Ω
Relative uncertainty	±15 %
Hysteresis	≤ 25 %
Response time t_{an} at $R_F = 0.5 \times R_{an}$ and $C_e = 1$ μ F	≤ 5 s
Measuring voltage U_m	DC 12 V
Measuring current I_m (at $R_F = 0$ Ω)	≤ 53 μ A
Internal resistance R_i	≥ 240 k Ω
Impedance Z_i	≥ 220 k Ω
Internal resistance/impedance during test	≥ 100 k Ω
Permissible extraneous DC voltage U_{lg}	≤ DC 370 V
Permissible system leakage capacitance C_e	≤ 5 μ F
Automatic self test	every hour
Response time for loss of earth connection as well as loss of network connection	maximum 1 hour

Load current monitoring (IT system transformer)

Measuring current transformers	STW2, STW3, SWL-100 A
Measuring range I_L (TRMS)	10...110 % of the response value
Adjustable response value (STW2, STW3, SWL-100A)	5...(50) 100 A (1 A steps)
Relative uncertainty	±5 %
Crest factor	≤ 2
Response time	< 1 s
Response delay t_{on}	0...100 s (step-by-step in 1 s steps)
Delay on release t_{off}	0...100 s (step-by-step in 1 s steps)
Hysteresis	5...30 %
Response time CT connection monitoring	ca. 1 h (or immediately in case of "TEST Isometer")

Cable length

Single wire ≥ 0.75 mm ²	0...1 m
Single wire, twisted ≥ 0.75 mm ²	1...10 m
Shielded cable ≥ 0.5 mm ²	10...40 m
Cable: twisted pairs, shield connected to terminal I on one side, must not be earthed	recommended: J-Y(St)Y min. $n \times 2 \times 0.8$

Temperature monitoring (IT system transformer)

Response value	4 k Ω
Relative uncertainty	±10 %
Release value	1.6 k Ω
Response time (overtemperature or open-circuit temperature sensor)	≤ 2 s
PTC resistors acc. to DIN 44081	max. 6 in series

Insulation fault location

Locating current IT	< 1 mA
Test cycle/pause	2/4 s

Displays and data memory

Display: graphic display	languages DE, EN, FR, PL
Alarm LEDs	Line 1, Line 2, Alarm, Com
History memory	500 data records
Data logger	500 data records/channel
Config. logger	300 data records
Test logger	100 data records
Service logger	100 data records

Input

Digital inputs	1
Galvanic separation	yes
Control	via potential-free contacts
Operating mode	active at 0 V (low) or 24 V (high), adjustable
Voltage range high/low	AC/DC 10...30 V / AC/DC 0...0.5 V
Adjustable function	switch-back lock manual/automatic mode bypass mode functional test changeover to preferred line alarm input for operating theatre lights alarm input for other devices

Output

Switching element	1 potential-free changeover contact
Operating mode adjustable	n/o or n/c operation
Adjustable function	see "Settings menu 4: Relay" in manual
Electrical endurance under rated operating conditions	10,000 operating cycles

Contact data according to IEC 61810

Rated operational current AC (resistive load, $\cos \varphi = 1$)	5 A / AC 250 V
Rated operational current DC	5 A / DC 30 V
Overvoltage category	III
Minimum contact rating	10 mA at DC > 5 V

BMS interface

Interface / protocol	RS-485 / BMS
Baud rate	9.6 kbit/s
Cable length	≤ 1200 m
Cable: shielded, one end of shield connected to PE	recommended: CAT6/CAT7 min. AWG23
alternative:	twisted pair, one end of shield connected to PE J-Y(St)Y min. 2 × 0.8
Terminating resistor	120 Ω (0.25 W)
Device address, BMS bus	2...90

Environment/EMC

EMC	EN 61326 (see CE declaration)
Operating temperature	−25...+55 °C

Classification of climatic conditions acc. to IEC 60721

Stationary use (IEC 60721-3-3)	3K22
Transport (IEC 60721-3-2)	2K11
Long-term storage (IEC 60721-3-1)	1K22

Classification of mechanical conditions acc. to IEC 60721

Stationary use (IEC 60721-3-3)	3M11
Transport (IEC 60721-3-2)	2M4
Long-term storage (IEC 60721-3-1)	1M12

Terminals

Power section

Connection directly to the device (for plug connectors)	screw-type terminals
Conductor cross section rigid	10...50 mm ² / AWG 8...1
Conductor cross section flexible	6...50 mm ² / AWG 10...1
Stripping length	15 mm
Tightening torque (4 mm hex key)	5 Nm

Connection type	pluggable screw-type terminals
Conductor cross-section, rigid	0.5...16 mm ²
Single-wire / multi-stranded terminal point	0.5...35 mm ²
Conductor cross-section, flexible	0.5...35 mm ²
Conductor cross-section AWG	20...2
2 conductors of equal cross-section, solid	0.5...6 mm ²
2 conductors of equal cross-section, flexible	0.5...6 mm ²
Stripping length (do not use ferrules)	20 mm
Tightening torque (T20 or SL 6.5 × 1.2 mm)	≤ 25 mm ² → 2.5 Nm > 25 mm ² → 4.5 Nm

Torque for manual operation (5 mm hex key)	approx. 6 Nm
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Electronics

Connection	pluggable screw-type terminals
Conductor cross-section rigid/flexible	0.2 ... 2.5 mm ² / AWG 24 ... 12
Conductor cross-section flexible with ferrules	0.25 ... 2.5 mm ²
2 solid conductors of equal cross-section	0.2...1 mm ²
2 flexible conductors of equal cross-section	0.2...1.5 mm ²
2 flexible conductors of equal cross-section with ferrules without plastic collars	0.25...1 mm ²
2 flexible conductors of equal cross-section with twin ferrules with plastic collars	0.5...1.5 mm ²
Stripping length	7 mm
Tightening torque (SL 2.5 × 0.4 mm)	0.5...0.6 Nm

Other

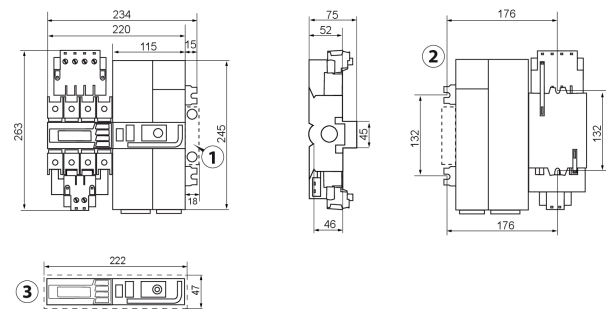
Operating mode	continuous operation
Mounting	display-oriented
For use at altitudes up to	2000 m AMSL
Protection class	Class I
Protection class LCD under foil (DIN EN 60529)	IP40
Enclosure material	polycarbonate
Flammability class	UL 94 V-0
DIN rail mounting	acc. to IEC 60715
Screw mounting	4 × M5
Dimensions incl. terminals (W × H × D)	234 × 270 × 73
Weight	approx. 3400 g

Standards and certifications

The transfer switching and monitoring device conforms to the following standards:

- DIN VDE 0100-710 (VDE 0100-710)
- DIN VDE V 0100-710-1 (VDE V 0100-710-1)
- DIN VDE 0100-710 (VDE 0100-710) supplement 1
- DIN VDE 0100-718 (VDE 0100-718)
- IEC 60364-7-710
- DIN EN 61508-1 (VDE 0803-1)
- IEC 61508-1 Ed. 2.0
- DIN EN 61508-2 (VDE 0803-2)
- IEC 61508-2 Ed. 2.0
- DIN EN 61508-3 (VDE 0803-3)
- IEC 61508-3 Ed. 2.0
- DIN EN IEC 60947-6-1 (VDE 0660-114)
- IEC 60947-6-1 Ed. 3.0
- DIN EN 61557-8 (VDE 0413-8)

Dimension diagram



- 1 Additional space required for auxiliary contact when using the bypass switch
- 2 Rear view (dimensions for screw mounting on mounting plate)
- 3 Cutout for terminal cover



The EU Declaration of Conformity is available at the following Internet address:

bender.de/fileadmin/content/Products/CE/CEKO_Atics.pdf

Ordering information

ATICS®-....DIO Variants

Type	Rated operational voltage U_e	Rated operational current I_e	Art. No.	Manual No.
ATICS-2-63A-ISO	AC 240 V	AC 63 A	B92057202	D00046
ATICS-2-63A-ISO-ES*	AC 240 V	AC 63 A	B92057206	D00046
ATICS-2-63A-ISO-400	AC 415 V	AC 63 A	B92057204	D00046
ATICS-2-80A-ISO	AC 240 V	AC 80 A	B92057203	D00046
ATICS-2-80A-ISO-ES*	AC 240 V	AC 80 A	B92057207	D00046
ATICS-2-80A-ISO-400	AC 415 V	AC 80 A	B92057205	D00046

* with connection option for ATICS-ES energy storage device

Compatible alarm indicator and operator panels

Type	Description	Art. No.	Manual No.
CP907	COMTRAXX® CP907 7" white	B95061080	D00349
CP907 without flush-mounting enclosure		B95061093	D00349
CP915	COMTRAXX® CP915 15,6" white	B95061081	D00349
CP915	COMTRAXX® CP915 15,6" grey	B95061085	D00349
CP924	COMTRAXX® CP924 24" white	B95061083	D00349
CP924	COMTRAXX® CP924 24" grey	B95061084	D00349
CP9xx	COMTRAXX® CP9xx (customised versions)		

Compatible alarm indicator and test combinations

Type	Description	Art. No.	Manual No.
CP305-IO	COMTRAXX® CP305 - Control Panel	B95100051	D00425
CP305-C	COMTRAXX® CP305 - Control Panel (customised parameter settings)	B22030051	D00425

Optional Accessories

Type	Description	Art. No.	Manual No.
STW2	Measuring current transformer (load current monitoring IT system), I_n : AC 50 A	B942709	
STW3	Measuring current transformer (short-circuit monitoring) for ATICS® < 100 A; I_n : AC 100 A	B98021000	
ATICS-BP-2-63A-SET	Bypass switch set (I_n : AC 63 A) comprising: <ul style="list-style-type: none">• Bypass switch 63 A single, 2-pole, sequence of operation: I-I+II-II, with auxiliary contact, bridge, terminal cover• Auxiliary contact for ATICS®• LEDs green/red for DIN rail mounting	B92057252	D00162
ATICS-BP-2-80A-SET	Bypass switch set (I_n : AC 80 A) comprising: <ul style="list-style-type: none">• Bypass switch 80 A single, 2-pole, sequence of operation: I-I+II-II, with auxiliary contact, bridge, terminal cover• Auxiliary contact for ATICS®• LEDs green/red for DIN rail mounting	B92057253	D00162
EDS151	Insulation fault locator	B91080101	D00107
ESS3680	Transformer 3.68 kVA, AC 400 V / 230 V For "ATICS® for 400 volt systems without N conductor", only the transformers recommended by Bender (T5, T6) may be used!	B924744	
ATICS-ES	Energy storage device for ATICS-2-63A-ISO-ES and ATICS-2-80A-ISO-ES	B72057255	D00009
AN412	Power supply unit DC 12 V for ATICS-ES energy storage device	B924150	



Bender GmbH & Co. KG

Londorfer Straße 65
35305 Grünberg
Germany

Tel.: +49 6401 807-0
info@bender.de
www.bender.de



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Subject to change!
The specified standards take into account the
edition valid until 11.2025 unless otherwise
indicated.