



# ATS-3

## Automatic Transfer Switch Controller



**POWER SYSTEM PROTECTION  
EQUIPMENT**

---

**TABLE OF CONTENT**

|  |           |
|--|-----------|
| <b>1. MANUFACTURER COMMENTS .....</b>                            | <b>3</b>  |
| 1.1. General safety rules .....                                  | 3         |
| 1.2. List of applied standards .....                             | 3         |
| 1.3. Storage and transport .....                                 | 4         |
| 1.4. Place of installation .....                                 | 4         |
| 1.5. Device documentation.....                                   | 4         |
| 1.6. Disposal .....  | 4         |
| 1.7. Warranty and service .....                                  | 5         |
| 1.8. How to order.....   | 5         |
| 1.9. Manufacturer's data .....                                   | 6         |
| <b>2. TECHNICAL DESCRIPTION .....</b>                            | <b>7</b>  |
| 2.1. Application.....  | 7         |
| 2.2. Main features .....   | 7         |
| 2.3. Construction .....  | 7         |
| <b>3. TECHNICAL DATA.....</b>                                    | <b>11</b> |
| <b>4. FUNCTIONAL PROPERTIES .....</b>                            | <b>12</b> |
| 4.1. Principle of operation .....                                | 12        |
| 4.2. Error codes.....  | 18        |
| <b>5. INSTALLATION AND COMMISSIONING .....</b>                   | <b>18</b> |
| 5.1. Storage and preparation ATS-9 controller for operation..... | 18        |
| 5.2. Operation and maintaince .....                              | 19        |
| <b>6. SMIS 2 SOFTWARE .....</b>                                  | <b>19</b> |

## 1. MANUFACTURER COMMENTS

### 1.1. General safety rules

**WARNING**

During normal operation of the device, some of its parts are under hazardous voltage. Inappropriate or improper use of the device can pose a danger to persons serving, also leads to damage of the device.

### 1.2. List of applied standards

The device described in this manual has been designed and manufactured for industrial purposes. In the process of development and production, compliance with the standards has been assumed, the fulfilment of which ensures the implementation of the assumed principles and safety measures, provided that the user complies with the installation, commissioning and operating instructions.

This device complies with the essential requirements of the Low Voltage Directive (2014/35/UE) and the Electromagnetic Compatibility Directive (2014/30 / EU), in compliance with the following standards:

Urządzenie będące przedmiotem niniejszej instrukcji zostało zaprojektowane i jest produkowane dla zastosowań przemysłowych.

- **PN-EN 60664-1:2011** Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests
- **PN-EN 61010-1:2011** Safety requirements for electrical equipment for measurement, control, and laboratory use -- Part 1: General requirements
- **PN-EN 60255-26:2014-01** Measuring relays and protection equipment -- Part 26: Electromagnetic compatibility requirements
- **PN-EN 61000-6-2:2008** Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
- **PN-EN 61000-6-4:2008/A12:2012** Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments



Related standards:

- **PN-EN 61000-4-2:2011** Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
- **PN-EN 61000-4-4:2013-05** Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
- **PN-EN 61000-4-5:2014-10** Electromagnetic compatibility (EMC) -- Part 4-5: Testing and measurement techniques -- Surge immunity test
- **PN-EN 61000-4-11:2007** Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests

- **PN-EN 60255-22-5:2014-1** Measuring relays and protection equipment -- Part 26: Electromagnetic compatibility requirements
- **PN-EN 60255-22-2:2014-1** Measuring relays and protection equipment -- Part 26: Electromagnetic compatibility requirements
- **PN-EN 60255-22-4:2014-01** Measuring relays and protection equipment -- Part 26: Electromagnetic compatibility requirements
- **PN-IEC 255-11:1994** Electrical relays - Part 11: Interruptions to and alternating component (ripple) in d.c. auxiliary energizing quantity of measuring relays

### 1.3. Storage and transport

The devices are packed in individual packages to protect them from damage during transport and storage. Equipment should be stored in transport packs, indoors, free of vibration and direct atmospheric, dry, airy, free from harmful vapors and gases. Ambient air temperature should not be below -20 ° C and above + 70 ° C and relative humidity should not exceed 80%.

### 1.4. Place of installation

The equipment should work in areas free of water, dust and gases and explosive, flammable and chemically active gases where the mechanical exposure is moderate. Installation height should not exceed 2000 m above sea level at an ambient temperature of -5 ° C to + 40 ° C and relative humidity not exceeding 80%.

The device terminal marked with the PE symbol should be connected to ground potential. It is recommended to use stranded wire of cross section min. 2,5 mm<sup>2</sup> and insulation strength min. 500 V with a length of no more than 3 m.

### 1.5. Device documentation

The set comes with:

- Operating manual
- Test protocol
- Warranty Card
- SMIS-2 Software
- USB-Cable

### 1.6. Disposal

The device has been manufactured mostly from materials that can be recycled or disposed of without endangering the environment. A recalled device may be recaptured for re-processing, provided that its condition corresponds to normal wear and tear. All components that are not regenerated will be removed in an environmentally friendly manner. The device should be disposed of in accordance with local law or passed on to an electronic waste disposal company.

### 1.7. Warranty and service

The warranty period is 24 months from the date of sale, unless a longer period agreed in the contract or the sales contract.

The warranty covers free of charge removal of defects revealed during use, under the conditions specified in the warranty card.

ZEG-ENERGETYKA SP. Z O.O. gives a guarantee subject to the following conditions:

- the installation and operation of the device should be in accordance with that manual
- the seal on the device's housing must not be affected
- no corrections or changes can be made to the warranty card

The warranty does not cover:

- defects caused in result of inappropriate transport or storage conditions
- defects caused in result of inappropriate installation or operation of the device
- defects caused in result of tampering within the unit, structural modifications, alterations and repairs carried out without the consent of the manufacturer

BUYER TIPS:

- Proper and trouble-free operation of the device requires proper transport, storage, mounting and commissioning, as well as proper operation, maintenance and service.
- The equipment must be handled by properly trained and qualified personnel
- When complaining, please state the reason for the complaint (symptoms related to malfunction) and factory serial number
- After receiving of the complaint confirmation, send the complaint device with the warranty card to the manufacturer's address
- The warranty period is extended by the time of successful complaint filling

### 1.8. How to order

The order should specify the full name of the device and all the necessary parameters:

- type and version of the device
- supply voltage level

Example of order:

- Automatic Transfer Switch Controller ATS-3
- supply voltage:  $U_{pn} = 220 \text{ V DC}$

**1.9. Manufacturer's data**

ZEG-ENERGETYKA Sp. z o.o. Oddział Tychy

ul. Fabryczna 2

43-100 Tychy

Poland

tel: +48 32 775 07 80

tel/fax: +48 32 775 07 83

NIP: 6381805949

REGON: 242933572

VAT ID-No.: PL6381805949

ING Bank Śląski SA: 72 1050 1344 1000 0090 9570 7718

e-mail: [biuro@zeg-energetyka.pl](mailto:biuro@zeg-energetyka.pl)

[www.zeg-energetyka.pl](http://www.zeg-energetyka.pl)

## 2. TECHNICAL DESCRIPTION

### 2.1. Application

ATS-3 controller is dedicated to automatic switching of back-up incoming feeder and automatic recover of main incoming feeder in LV switchgears. Automatic transfer switching controllers are basic devices which ensure high level of service security. The ATS-3 is dedicated for switchgear of three-circuit-breakers topology. In case of outage, the feeder where it occurred is automatically switched off and simultaneously, the CB in coupling bay is switched on. Annunciator panel provides the staff necessary information about current status in precise and quick way. The device serves as the event recorder too. Recorded data can be transferred to SCADA system via fiber-optic port, RS485 port or Ethernet. The available communication protocols are: „ZEG”, IEC 60870-5-103 and (optionally) MODBUS or DNP-3.

Depending on auxiliary voltage level, the device is provided in two versions:

- ATS-3 of Upn 230V AC/DC
- ATS-3 of Upn 110V AC/DC

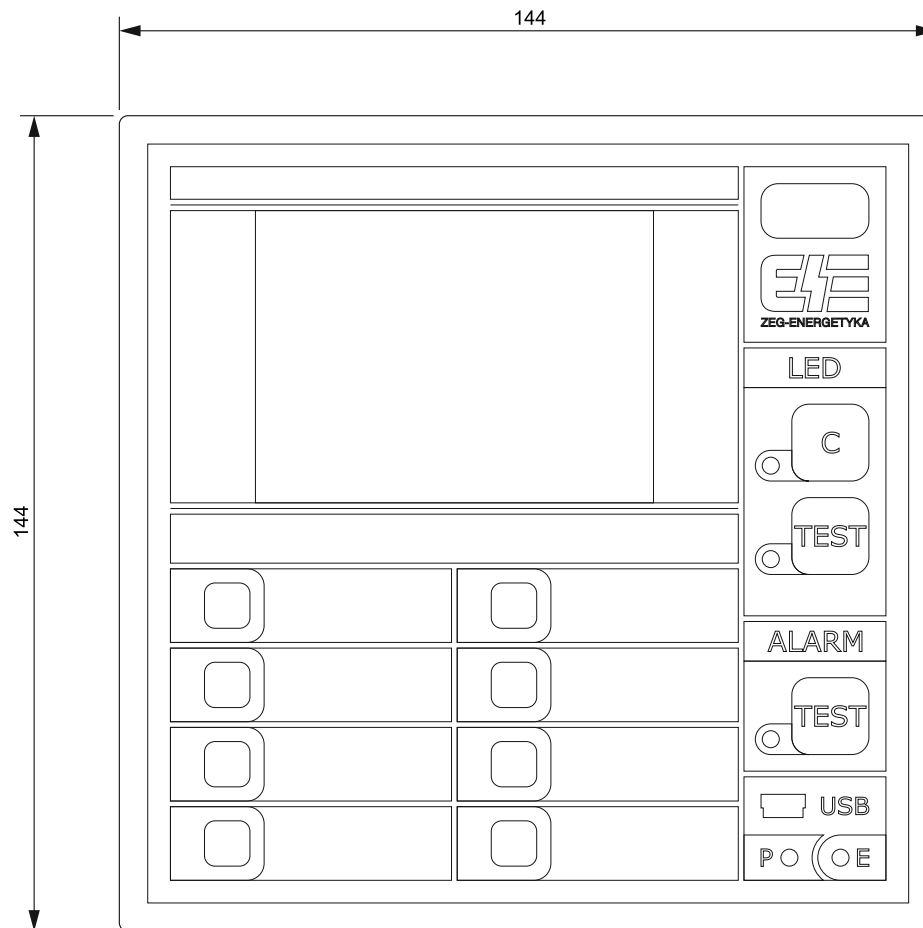
### 2.2. Main features

The main features of ATS-9 are:

- flush-mounted enclosure of dimensions 144/144/141 mm
- 16 binary inputs – fully configurable
- 8 measuring inputs with voltage unbalance detection
- 16 relay outputs in order to control circuit-breakers or to signalling purposes
- 3,5 inch LCD display (mimic diagram, settings, configuration, control)
- 8 RGB LED diodes – fully configurable
- lack of auxiliary voltage or supply module failure signalled by NC watchdog contact
- back-up auxiliary voltage by additional supply module
- input/output modules equipped with plug-in connectors with screw flanges
- ALARM TEST button in order to test of alarm outputs proper operation
- 4 communication ports: 2 x RS485, 1 x fiber-optic ST, USB
- programmable selection of communication protocol: IEC 60870-5-103, ZEG

### 2.3. Construction

ATS-3 is enclosed in aluminium flush mounted enclosure of dimensions: 144/144/141 mm. Each device is equipped with 8 RGB LED diodes for disturbance signalling purposes (Fig. 1). 3,5" LCD display main task is to visualise of switchgear topology with current breakers states. LCD display serves as interface for settings and configuration purposes as well. ALARM C button allows to send alarm signal by closing Failure and Alarm relay contacts. LED C button is used for quitting alarm signals.



*Fig. 1. ATS-3 Automatic Transfer Switch Controller – front panel view*

Description of modules designations:

- H1 – communication module
- Z1 – power module, the converter of 230 V to 12 V DC
- Y1 – modules of 8 independent outputs for control and signalling purposes
- A1 – modules of 8 inputs dedicated to collect binary signals (input voltage 220 V AC/DC)
- P1 – supply voltage measuring module

The standard hardware configuration of ATS-3 controller is:

- 2 input modules, 8 inputs per each (marked as A1 – A2)
- 2 output modules, 8 outputs per each (marked as Y1 – Y2)
- 1 power module equipped with two independent 12 V supplies (marked as Z1)
- 1 communication module (marked as H1)
- 1 measuring module for measuring the supply voltage at incoming feeder



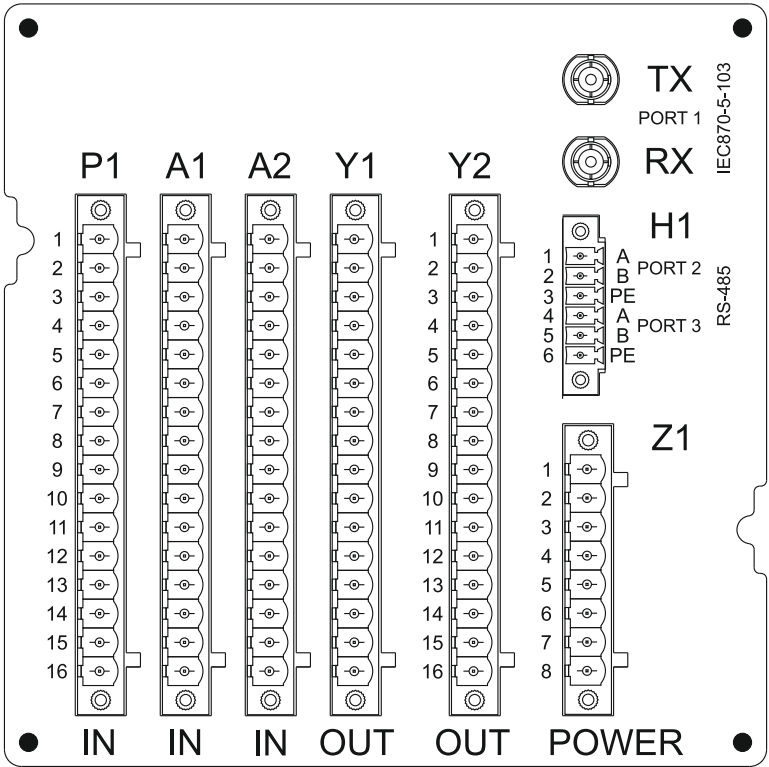


Fig. 2. ATS-3 – terminals side

Table 1. Assigned functions of input modules

| Plug P1   |  |    | Plug A1                                  |  |    | Plug A2   |  |    |
|---|--|----|--|--|----|---|--|----|
| Feeder A - TR1<br>Voltage measurement<br>phase L1 |  | 1  | CB "A"<br>closed                         |  | 1  | Voltage on<br>section 1<br>busbars                      |  | 1  |
|   |  | 2  |  |  | 2  |   |  | 2  |
| Feeder A - TR1<br>Voltage measurement<br>phase L2 |  | 3  | CB "A"<br>open                           |  | 3  | Voltage on<br>section 2<br>busbars                      |  | 3  |
|   |  | 4  |  |  | 4  |   |  | 4  |
| Feeder A - TR1<br>Voltage measurement<br>phase L3 |  | 5  | CB "B"<br>closed                         |  | 5  | CB "A" charging<br>Ready to close                       |  | 5  |
|   |  | 6  |  |  | 6  |   |  | 6  |
| Feeder A - Tr1<br>Voltage<br>unbalance            |  | 7  | CB "B"<br>open                           |  | 7  | CB "B" charging<br>Ready to close                       |  | 7  |
|   |  | 8  |  |  | 8  |   |  | 8  |
| Feeder B - TR2<br>Voltage measurement<br>phase L1 |  | 9  | CB "S"<br>closed                         |  | 9  | CB "S" charging<br>Ready to close                       |  | 9  |
|   |  | 10 |  |  | 10 |   |  | 10 |
| Feeder B - TR2<br>Voltage measurement<br>phase L2 |  | 11 | CB "S"<br>open                           |  | 11 | CB TRIP<br>To be<br>acknowledged                        |  | 11 |
|   |  | 12 |  |  | 12 |   |  | 12 |
| Feeder B - TR2<br>Voltage measurement<br>phase L3 |  | 13 | ATS<br>blocking input<br>Control voltage |  | 13 | ATS blocked by<br>open command<br>To be<br>acknowledged |  | 13 |
|   |  | 14 |  |  | 14 |   |  | 14 |
| Feeder B - Tr2<br>Voltage<br>unbalance            |  | 15 | ATS disengaged                           |  | 15 | FIRE<br>To be<br>acknowledged                           |  | 15 |
|   |  | 16 |  |  | 16 |   |  | 16 |
| Measuring inputs module<br>230 AC                 |  |    | Control inputs module<br>220-250 AC/DC   |  |    | Control inputs module<br>220-250 AC/DC                  |  |    |

Table 2. Assigned functions of output modules

























| Plug Y1  |   |          | Plug Y2  |   |          | Alternative signals                            |   |          |
|--|---|----------|--|---|----------|--|---|----------|
| ATS blocked or not-energized                   |  | 1<br>2   | Circuit-breaker "A" ready-to-close             |  | 1<br>2   | Circuit-breakers not-ready-to-close            |  | 1<br>2   |
| ATS blocked or not-energized                   |  | 3<br>4   | Circuit-breaker "B" ready-to-close             |  | 3<br>4   | Circuit-breakers faulty position               |  | 3<br>4   |
| Circuit-breaker "A" open-signal                |  | 5<br>6   | Circuit-breaker "S" ready-to-close             |  | 5<br>6   | Blocked by TRIP signal                         |  | 5<br>6   |
| Circuit-breaker "A" close-signal               |  | 7<br>8   | Outage at section 1                            |  | 7<br>8   | ATS deactivated                                |  | 7<br>8   |
| Circuit-breaker "B" open-signal                |  | 9<br>10  | Outage at section 2                            |  | 9<br>10  | FIRE   |  | 9<br>10  |
| Circuit-breaker "B" close-signal               |  | 11<br>12 | ATS operation                                  |  | 11<br>12 | Transformers parallel operation                |  | 11<br>12 |
| Circuit-breaker "S" open-signal                |  | 13<br>14 | Unsuccessful ATS cycle                         |  | 13<br>14 | Blocked by open signal                         |  | 13<br>14 |
| Circuit-breaker "S" close-signal               |  | 15<br>16 | Outage at incoming feeder                      |  | 15<br>16 | + control ATS activation                       |  | 15<br>16 |
| Control and signalling purposes outputs module |   |          | Control and signalling purposes outputs module |   |          | Control and signalling purposes outputs module |   |          |

Table 3. Power module and additional signals

| Plug Z1                                |       |   |
|--|-------|---|
| Power supply 1                         | +220  | 1 |
|  | AC/DC | 2 |
| PE                                     | -220  | 3 |
|  | PE    | 4 |
| Power supply 2                         | +220  | 5 |
|  | AC/DC | 6 |
| PE                                     | -220  | 7 |
|  | PE    | 8 |
| Lack of power supply or device failure |       |   |
| Power supply module 220-250 AC/DC      |       |   |

## 3. TECHNICAL DATA

|                            |   |  |        |
|----------------------------|---|--|--------|
| <b>Power module</b>        | Supply voltage                                  | U <sub>z</sub> = 2 × 110V/240V, DC/AC<br>(on request)                        |        |
|                            | Permissible range of supply voltage fluctuation | ±15%   |        |
|                            | Burden in supply voltage                        | AC   | ≤ 30VA |
|                            |   | DC   | ≤ 30W  |
| <b>Signal inputs</b>       | Number of inputs                                | 24   |        |
|                            | Input voltage (of signal inputs)                | U <sub>in</sub> = 220V DC / 230V AC<br>(or any different on request)         |        |
|                            | Threshold                                       | 0,7 x U <sub>in</sub> for DC<br>0,5 x U <sub>in</sub> for AC<br>(on request) |        |
|                            | Burden in signal inputs                         | 0,3W / input   |        |
|                            | Range of settable time delay                    | 5 ms to 25 s for DC<br>20 ms to 25 s for AC<br>Default setting: 100ms        |        |
|                            | Time resolution                                 | 1 ms   |        |
| <b>Communication</b>       | Number of communication channels                | 3  |        |
|                            | Port 1  | Fiber optic ST / IEC 870-5-103   |        |
|                            | Port 2/3  | RS-485   |        |
|                            | Port 4 – front panel                            | USB / ZEG protocol   |        |
| <b>Insulation</b>          | Insulation strenght                             | 2kV, 50Hz, 1 min   |        |
|                            | Nominal voltage                                 | 250V   |        |
|                            | Overvoltage category                            | II   |        |
|                            | Ingress protection degree                       | IP 40  |        |
| <b>Operating condition</b> | Ambient temperature                             | 268 ÷ 313K (-5 ÷ +40 °C)   |        |
|                            | Relative humidity                               | < 80%  |        |
| <b>General data</b>        | Dimensions (width x height x depth)             | 144 mm × 144 mm × 141 mm   |        |
|                            | Weight  | 2 kg   |        |

## 4. FUNCTIONAL PROPERTIES

### 4.1. Principle of operation

ATS-3 or 9 provides voltages supervision on switchgear busbars and feeders. In standard 3-breakers topology (two incoming feeders, two busbar section and coupling breaker) the voltage is supervised in 4 points:

- feeder A
- feeder B
- busbars section A
- busbars section B

In addition, the controller receives the signals of:

- circuit breakers positions
- circuit breakers ready-to-close statuses
- trip signals of each breaker

In normal operation, section A is energised from TR1 transformer and section B is energised by TR2 transformer. Circuit-breakers A and B are closed, while the circuit-breaker S is opened. In case of voltage drop on TR1 or TR2 transformer, the controller automatically starts its operation.

The breaker on which, outage situation occurs, is immediately opened. Then breaker in coupling bay (CB "S") receives the command to close. The time delay of CB "S" close can be adjusted.

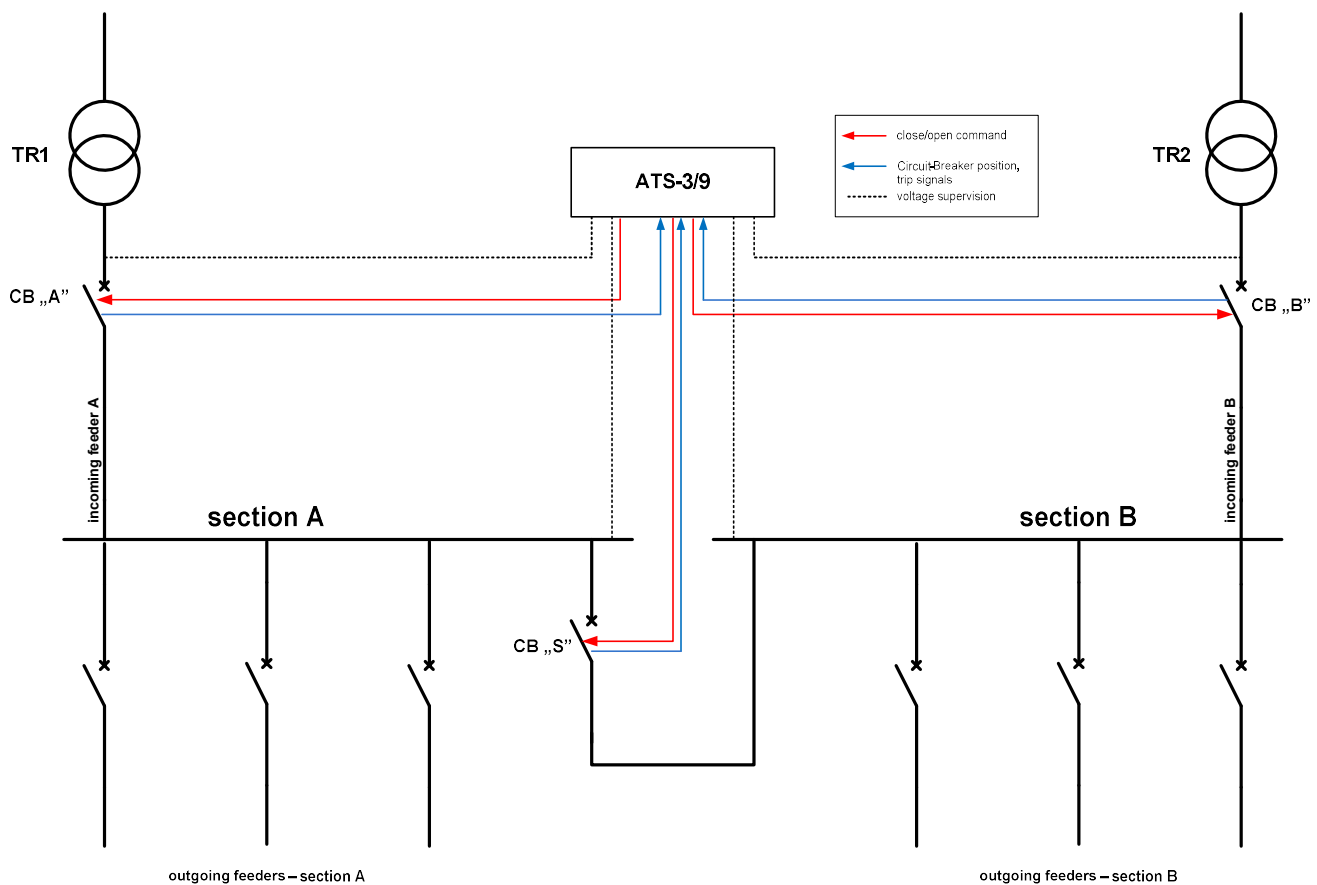


Fig 3. ATS operation in standard two-section switchgear

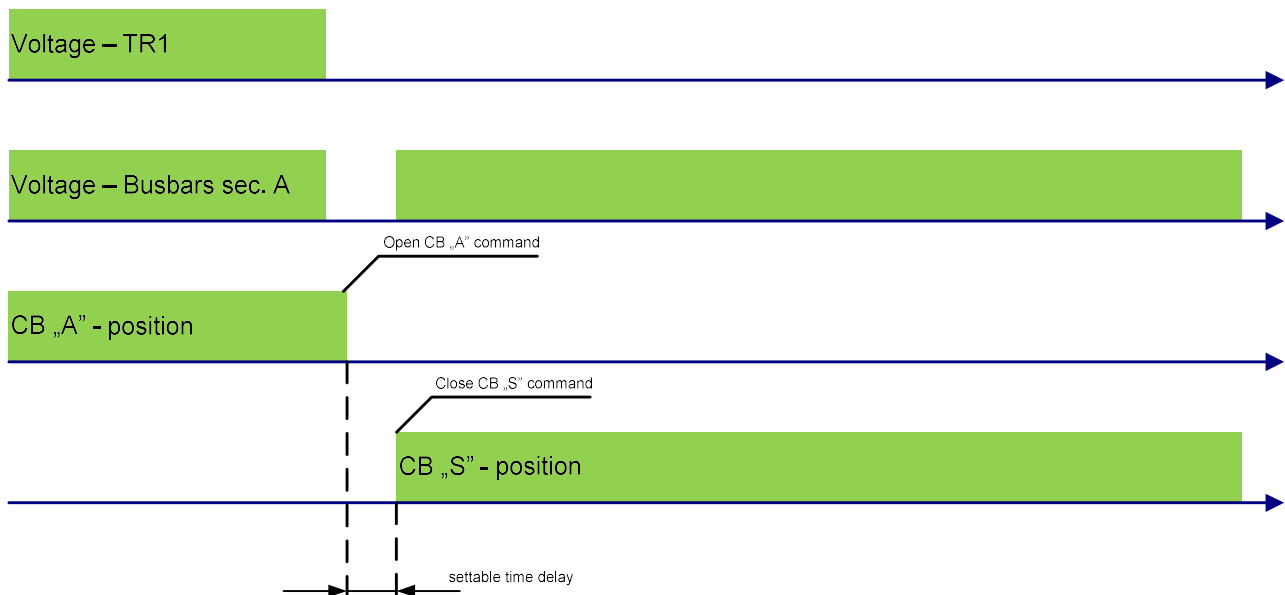


Fig 4. Operation of ATS. Reaction to outage on TR1

### Repeating, non-repeating operation mode

ATS controller can be set as: repeating or non-repeating operation mode. In repeating operation mode, the ATS controller immediately restores the standard arrangement of the switchgear when voltage on faulted feeder is restored.

In non-repeating operation mode, the ATS controller do not restore the standard arrangement. If the voltages is restored on faulted feeder, the controller waits for acknowledgment signal. Once the controller receives the acknowledgment signal, restores the standard arrangement by sending open command to coupling breaker ("S") and close command to breaker on which, the outage situation occurred.

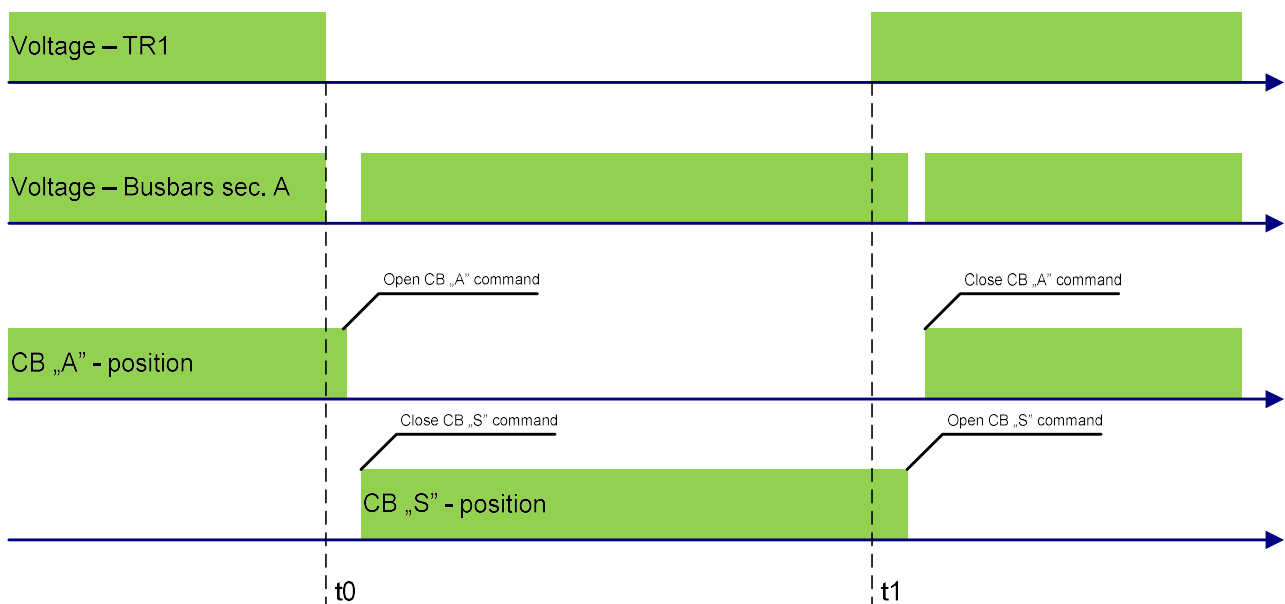


Fig.5 Operation of ATS set to "repeating mode"

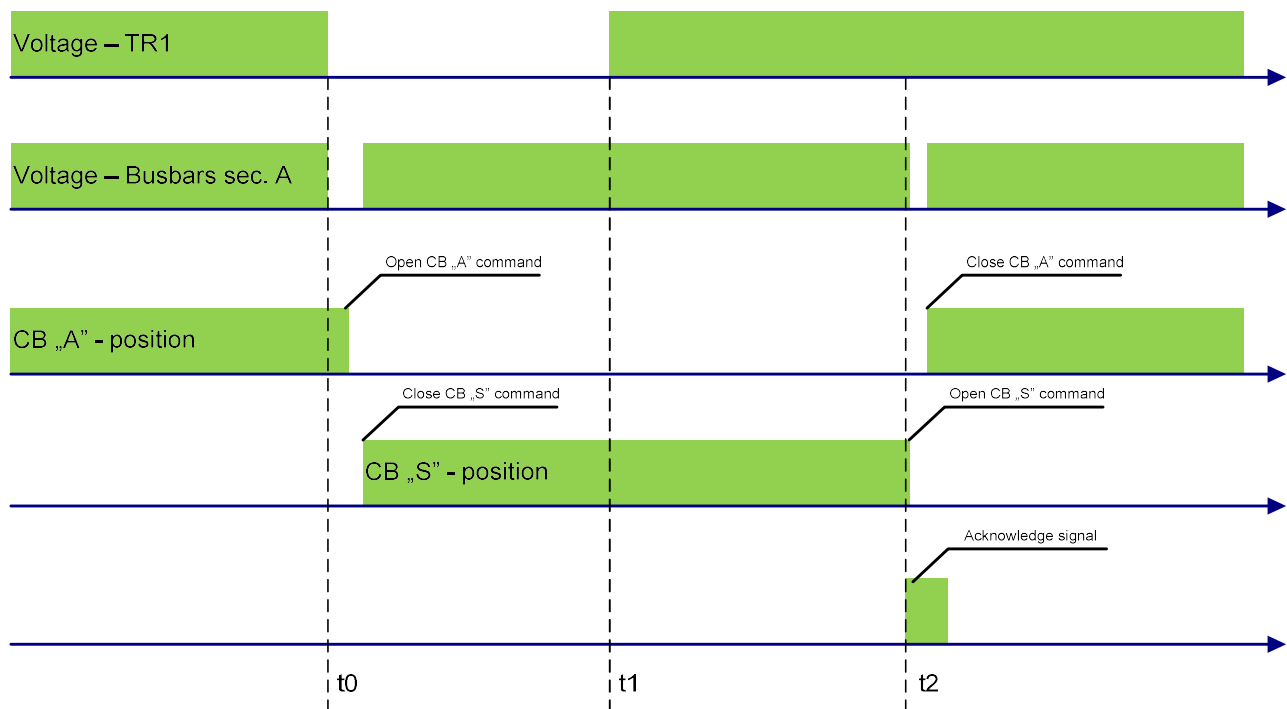


Fig. 6. Operation of ATS set to non-repeating mode

### Priority of feeder

The ATS controller allows the user to switch between the feeders. It can be performed by changing the priority of power source. If the priority is set to "energise by TR1", the controller set breakers A and S as close and breaker B as open. If the controller is set to priority "energise by TR2", the controller set breakers B and S as close and breaker A as open. If changing the priority from A to B or B to A, the controller performs operation using an appropriate order. Firstly, opens all the breakers, then closes the breaker suitable for selected priority and finally, closes coupling breaker "S".

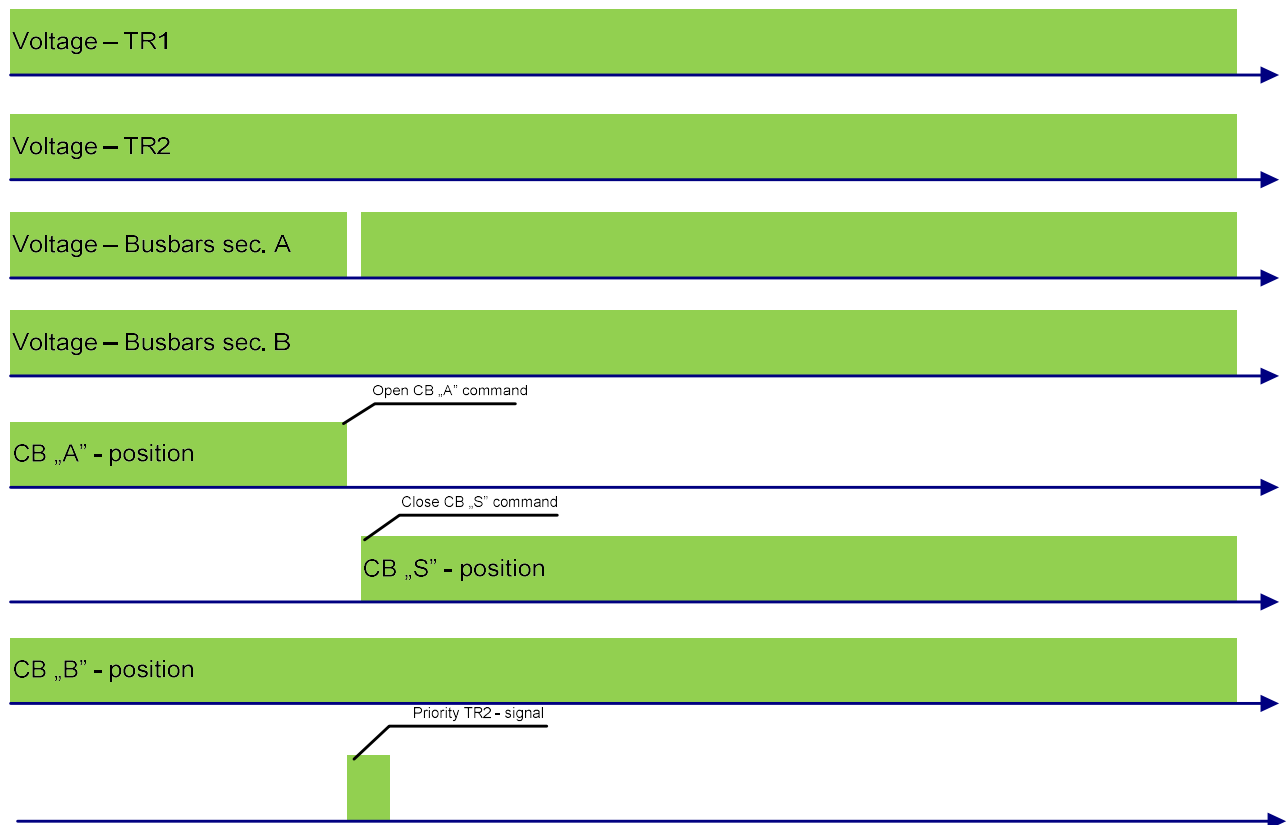


Fig. 7. Operation of ATS. Change of priority of incoming feeder.

### Supervision of breakers position

In order to provide reliable operation, the ATS controller needs to receive the information of each breaker in two-byte mode. The controller recognises the position correctly when receives the pair of signals "high" and "low" or "low" and "high" at the same time (XOR gate logic). In case of receiving two "low" or two "high" signals, the controller generates signal "CB ... faulty position" and turn into temporary blocked operation mode - the controller performs no operation. If the controller receives proper pair of signals, automatically returns to ON status and performs all operations according to the situation.

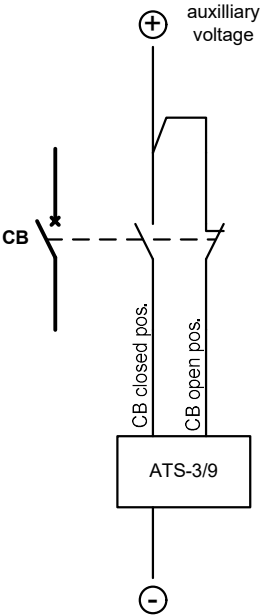


Fig. 8. ATS connection to CB contacts

Table 4. Logical table of CB position supervision

| CB closed position | CB open position | CB status in ATS controller |
|--------------------|------------------|-----------------------------|
| Low                | Low              | CB faulty position          |
| Low                | High             | CB open                     |
| High               | Low              | CB closed                   |
| High               | High             | CB faulty position          |

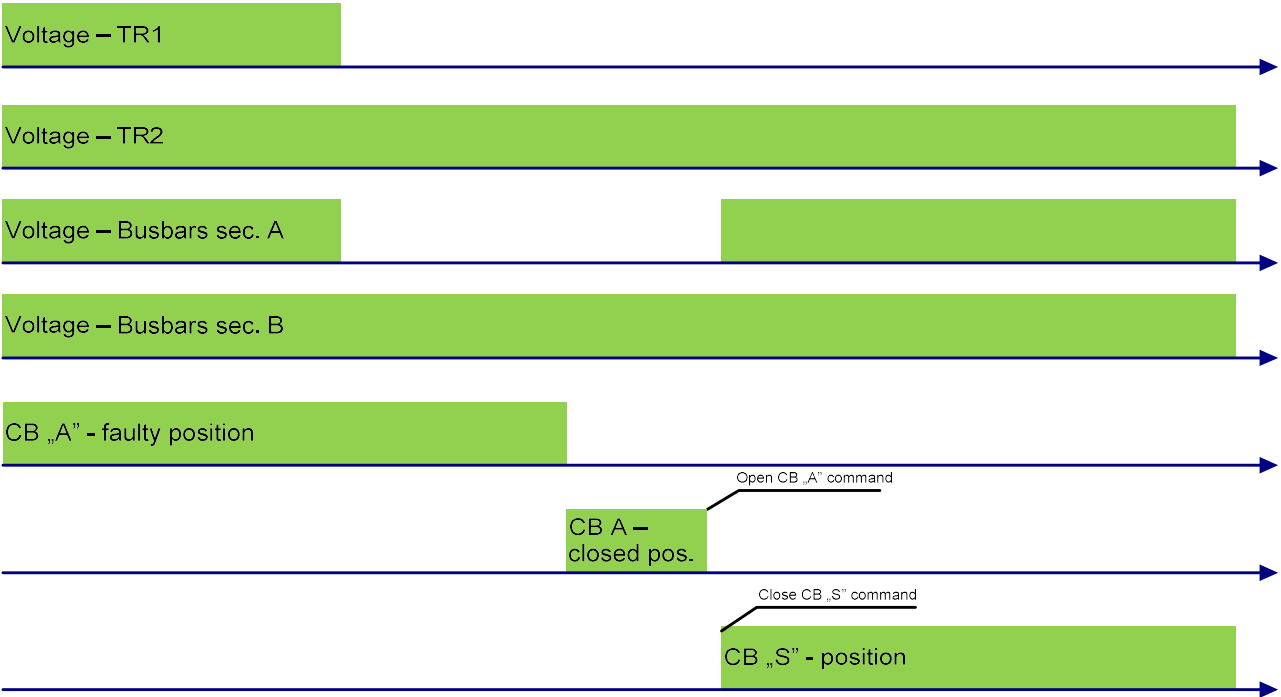


Fig. 9. ATS operation in case of CB faulty position status



### Blocking by trip signal

In case of fault on busbars, the CB is open by its overcurrent protection. In such situation, standard operation of ATS controller, would cause "switch-onto-fault" situation. It could result in increasing the danger to staff and equipment. To prevent such situation, the controller receives signal of trip condition of each supervised breaker. In case of trip of any breaker, the controller turns to "latched interlock" and performs no operation. That status must be acknowledged by the staff. Until the controller receives the acknowledgment signal, it generates no commands.

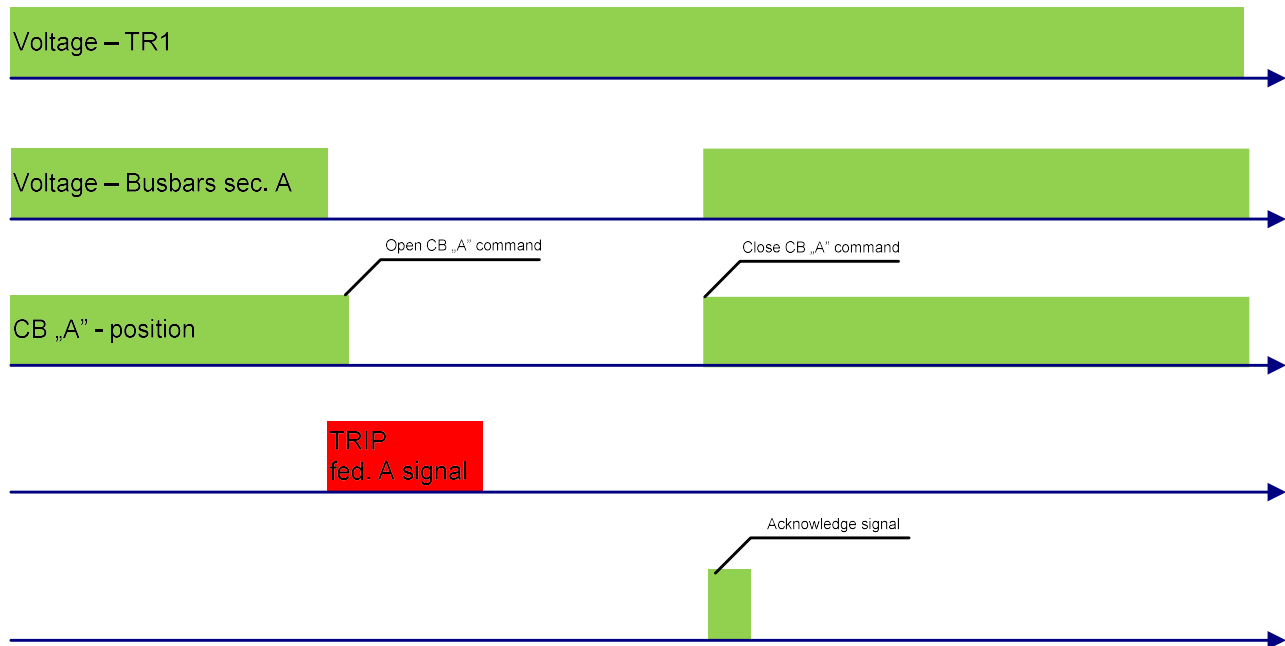


Fig. 10. ATS operation in case of TRIP signal

### ATS blocked mode

In order to allow to make intentional outage on switchgear busbars, the controller can be blocked by blocking input. This can be use in case of neccessity of performing maintainance works on switchgear busbars. If the blocking signal is active, the ATS controller performs no operation. The outage can be manually performed by the staff.

### Circuit-breaker control circuit fault

In case of unsuccessful operation of Circuit Breaker, the controller sends command 3 times again. If the position of CB does not change to expected position, the controller recognise it as failure in control circuits and generates signal "not ready-to-close".

### Protection agains parallel operation of transformers

Standard switchgear wiring do not allow to close all CB at the same time. It would cause the parallel operation of transformer what is in most cases not permitted. If, however, such sitation occurs, the ATS controller immidiately sends open command to all breakers. After the time delay, the ATS controller closes proper pair of CB's according to set priority.

## 4.2. Error codes

The ATS controller provides visual indication of events occurring within the controlled switchgear. Internal device logic covers up to 255 logical nodes of which ~90 are defined as errors or faults. The typical list of errors arriving on device LCD screen is presented in table 5.

Table 5. Error codes on device LCD

| Error number on LCD | Error description                           |
|---------------------|---|
| 15                  | ATS blocked (to be acknowledged)            |
| 16                  | ATS interlock signal from CB A Trip status  |
| 17                  | ATS interlock signal from CB B Trip status  |
| 24                  | ATS interlock signal from CB S Trip status  |
| 25                  | Circuit Breaker A Trip status               |
| 26                  | Circuit Breaker B Trip status               |
| 29                  | ATS in OFF mode                             |
| 30                  | Lack of voltage at TR1 - phase L1           |
| 31                  | Lack of voltage at TR1 - phase L2           |
| 32                  | Lack of voltage at TR1 - phase L3           |
| 33                  | Voltage unbalance at TR1                    |
| 34                  | Lack of voltage at TR2 - phase L1           |
| 35                  | Lack of voltage at TR2 - phase L2           |
| 36                  | Lack of voltage at TR2 - phase L3           |
| 37                  | Voltage unbalance at TR2                    |
| 54                  | Lack of voltage on section A                |
| 55                  | Lack of voltage on section A                |
| 56                  | Lack of voltage on section B                |
| 57                  | Lack of voltage on section B                |
| 58                  | Circuit Breaker A - not ready-to-close      |
| 59                  | Circuit Breaker B - not ready-to-close      |
| 66                  | Circuit Breaker S - not ready-to-close      |
| 67                  | Circuit Breaker A - control circuit failure |
| 68                  | Circuit Breaker B - control circuit failure |
| 75                  | Circuit Breaker S - control circuit failure |
| 76                  | ATS controller internal failure             |
| 77                  | Lack of voltage in measuring circuit of TR1 |
| 78                  | Lack of voltage in measuring circuit of TR2 |
| 79                  | Circuit Breaker A - faulty position         |
| 80                  | Circuit Breaker B - faulty position         |
| 87                  | Circuit Breaker S - faulty position         |
| 88                  | ATS operation - 5 seconds                   |
| 91                  | Lack of auxilliary voltage 1                |
| 92                  | Lack of auxilliary voltage 2                |

## 5. INSTALLATION AND COMMISSIONING

### 5.1. Storage and preparation ATS-9 controller for operation

ATS-3 Automatic Transfer Switch Controller is delivered to the user in packages to ensure protection against external influences that could cause damage. Therefore, do not unpack them for storage. Transport packages should be transported and reloaded with care, avoiding shocks and maintaining the position specified on their

packaging. Storage is possible in indoors, dry (relative humidity <80%), free of corrosive vapors at -20 °C to +70 °C.

In order to mount the signalling unit in cabinet doors, the mounting holes has to be made (Fig. 6).



*Fig. 3. Mounting holes dimensions*

## 5.2. Operation and maintaince

During routine tests of the controller, its proper work must be checked using the function buttons: LED TEST, ALARM TEST. Routine tests should be carried out at least once a year.

## 6. SMIS 2 SOFTWARE

The ATS-3 controller is provided with free software enabling its, configuration, registers reading and visualisation of particular device's modules. The software can be downloaded from manufacturer's web site under following address:

[www.zeg-energetyka.pl/en/product/smis/](http://www.zeg-energetyka.pl/en/product/smis/)

## NOTICES

.....  
.....  
.....  
.....  
.....

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

[illegible]



**ZEG-ENERGETYKA Sp. z o.o.**  
Oddział Tychy  
ul. Fabryczna 2, 43-100 Tychy  
tel: +48 32 775 07 80  
fax: +48 32 775 07 83  
[biuro@zeg-energetyka.pl](mailto:biuro@zeg-energetyka.pl)  
[www.zeg-energetyka.pl](http://www.zeg-energetyka.pl)

