

# INSTRUCTION MANUAL

# ATyS g M

## Automatic Transfer Switching Equipment

EN





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# INDEX

|                                                   |    |
|---------------------------------------------------|----|
| 1. GENERAL SAFETY INSTRUCTIONS .....              | 6  |
| 2. INTRODUCTION.....                              | 7  |
| 2.1. THE ATYS FAMILY PRODUCT RANGE .....          | 7  |
| 2.2. THE ATYS M RANGE KEY FEATURES .....          | 8  |
| 2.2.1. SELECTION GUIDE .....                      | 9  |
| 3. QUICK START .....                              | 10 |
| 3.1. QUICK START ATYS G M (2P).....               | 10 |
| 3.2. QUICK START ATYS G M (4P).....               | 14 |
| 4. ATYS G M VERSIONS.....                         | 17 |
| 4.1. PRODUCT PRESENTATION .....                   | 17 |
| 4.2. SPECIFICATIONS AND ADVANTAGES .....          | 17 |
| 4.3. SUPPLY TYPES.....                            | 17 |
| 5. OPTIONAL ACCESSORIES .....                     | 18 |
| 6. TECHNICAL DATA.....                            | 19 |
| 7. ENVIRONMENTAL CONDITIONS .....                 | 20 |
| 8. PRODUCT INSTALLATION.....                      | 21 |
| 8.1. CHANGING THE PADLOCKING CONFIGURATION .....  | 21 |
| 8.2. RECOMMENDED ORIENTATION .....                | 21 |
| 8.3. DIMENSIONS OF THE SINGLE PHASE PRODUCT ..... | 21 |
| 8.4. BACK PLATE MOUNTED SINGLE PHASE PRODUCT..... | 21 |
| 8.5. DIMENSIONS OF THE THREE PHASE PRODUCT .....  | 22 |
| 8.6. BACK PLATE MOUNTED THREE PHASE PRODUCT ..... | 22 |
| 8.7. DIN RAIL MOUNTED .....                       | 22 |
| 9. INSTALLATION OF OPTIONAL ACCESSORIES.....      | 23 |
| 9.1. AUXILLIARY CONTACTS .....                    | 23 |
| 9.2. VOLTAGE SENSING AND POWER SUPPLY TAP .....   | 23 |
| 9.3. BRIDGING BARS 2P .....                       | 23 |
| 9.4. BRIDGING BARS 4P .....                       | 24 |
| 9.5. TERMINAL SHROUDS.....                        | 24 |
| 9.6. SEALABLE COVER.....                          | 24 |
| 10. INSTALLING WITHIN THE ATYS M ENCLOSURE .....  | 25 |

|                                                                       |    |
|-----------------------------------------------------------------------|----|
| 10.1. MODULAR PLASTIC ENCLOSURE .....                                 | 25 |
| 10.2. POLYCARBONATE ENCLOSURE .....                                   | 25 |
| 10.2.1. WIRING IN A POLYCARBONATE ENCLOSURE .....                     | 26 |
| 10.2.2. EXTENSION UNIT .....                                          | 26 |
| 11. CONNECTION OF THE POWER CIRCUITS.....                             | 27 |
| 11.1. RATINGS / CROSS-SECTIONS TABLE OF CORRESPONDENCE.....           | 27 |
| 11.2. PARALLEL POLE SET-UP FOR A 4P DEVICE USED IN SINGLE PHASE ..... | 27 |
| 11.3. NETWORK CONFIGURATIONS.....                                     | 28 |
| 11.3.1. 230VAC NETWORK CONFIGURATIONS (2P) .....                      | 28 |
| 11.3.2. 230/400VAC NETWORK CONFIGURATIONS (4P) .....                  | 28 |
| 11.3.3. THREE PHASE WITHOUT NEUTRAL NETWORK.....                      | 29 |
| 12. CONNECTION OF CONTROL/COMMAND CIRCUITS.....                       | 31 |
| 12.1. TERMINAL CONNECTORS DESIGNATION .....                           | 32 |
| 12.2. AUXILIARY CONTACT OPERATING SCHEDULE .....                      | 33 |
| 13. OPERATION.....                                                    | 34 |
| 13.1. PRESENTATION OF THE PRODUCT INTERFACE .....                     | 34 |
| 13.1.1. 2P PRODUCT INTERFACE .....                                    | 34 |
| 13.1.2. 4P PRODUCT INTERFACE .....                                    | 34 |
| 13.1.3. RESET.....                                                    | 35 |
| 13.2. MANUAL MODE .....                                               | 35 |
| 13.2.1. MANUAL SWITCHING.....                                         | 35 |
| 13.3. PADLOCKING .....                                                | 36 |
| 13.4. PROGRAMMING .....                                               | 37 |
| 13.4.1. SINGLE PHASE VERSION.....                                     | 37 |
| 13.4.2. THREE PHASE VERSION .....                                     | 38 |
| 13.4.3. SEALABLE CONFIGURATION COVER .....                            | 39 |
| 13.5. AUTOMATIC MODE.....                                             | 39 |
| 13.5.1. SEALABLE AUTO/MANUAL COVER.....                               | 39 |
| 13.6. POSSIBLE ACTIONS.....                                           | 39 |
| 13.7. MANUAL & AUTOMATIC MODE / MAINS RESTORATION CONDITIONS .....    | 40 |
| 13.7.1. MODE 1: AUTOMATIC RETRANSFER .....                            | 40 |
| 13.7.2. MODE 2A: CONTROLLED RETRANSFER .....                          | 42 |
| 13.7.3. MODE 2B: CONTROLLED TRANSFER.....                             | 44 |
| 13.7.4. MODE 3: NETWORK - NETWORK APPLICATION WITH PRIORITY .....     | 45 |
| 13.7.5. MODE 4: NETWORK - NETWORK APPLICATION WITHOUT PRIORITY.....   | 47 |
| 14. PREVENTATIVE MAINTENANCE .....                                    | 49 |
| 15. TROUBLESHOOTING GUIDE .....                                       | 50 |

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# 1. GENERAL SAFETY INSTRUCTIONS

- This manual provides instructions on safety, connections and operation of the ATyS M transfer switch manufactured by SOCOMEC.
- Whether the ATyS is sold as a loose product, as a spare, as an enclosed solution or as any other configuration, this device must always be installed and commissioned by qualified and experienced personnel, in line with the manufacturers recommendations, following good engineering practices and after having read and understood the details in the latest release of the relative product instruction manual.
- Maintenance on the product and any other associated equipment including but not limited to servicing operations must be performed by adequately trained and qualified personnel.
- Each product is shipped with a label or other form of marking including rating and other important specific product information. One must also refer to and respect markings on the product prior to installation and commissioning for values and limits specific to that product.
- Using the product outside the intended scope, outside SOCOMEC recommendations or outside the specified ratings and limits can cause personal injury and/or damage to equipment.
- This instruction manual must be made accessible so as to be easily available to anyone who may need to read it in relation with the ATyS.
- The ATyS meets the European Directives governing this type of product and includes CE marking on each product.
- No covers other than that for auto/manu on the ATyS should be opened (with or without voltage) as there may still be dangerous voltages inside the product such as those from external circuits.
- **Do not handle any control or power cables connected to the ATyS when voltage may be present on the product directly through the mains or indirectly through external circuits.**
- Voltages associated with this product may cause injury, electric shock, burns or death. Prior to carry out any maintenance or other work on live parts or other parts in the vicinity of exposed live parts, ensure that the switch including all control and associated circuits are de-energized.

|                                                                                                   |                                                                                                    |                                                                                                      |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
|  <b>DANGER</b> |  <b>WARNING</b> |  <b>CAUTION</b> |
| <b>RISK:</b><br>Electric shock, burns, death                                                      | <b>RISK:</b><br>Possible personal injury                                                           | <b>RISK:</b><br>Equipment damage                                                                     |

- As a minimum the ATyS M comply with the following international standards:
  - IEC 60947-6-1
  - GB 14048-11
  - EN 60947-6-1
  - VDE 0660-107
  - BS EN 60947-6-1
  - NBN EN 60947-6-1
  - IEC 60947-3
  - IS 13947-3
  - EN 60947-3
  - NBN EN 60947-3
  - BS EN 60947-3

The information provided in this instruction manual is subject to change without notice, remains for general information only and is non-contractual.

## 2. INTRODUCTION

ATyS g M “Automatic Transfer Switching Equipment” (ATSE) is designed for use in power systems for the safe transfer of a load supply between a normal and an alternate source. The changeover is done in open transition and with minimum supply interruption during transfer ensuring full compliance with IEC 60947-6-1, GB 14048-11 and other international TSE standards as listed.

The ATyS g M is a full load break (switch type) derived transfer switching equipment where the main components are proven technology devices also fulfilling requirements in IEC 60947-3 standards.

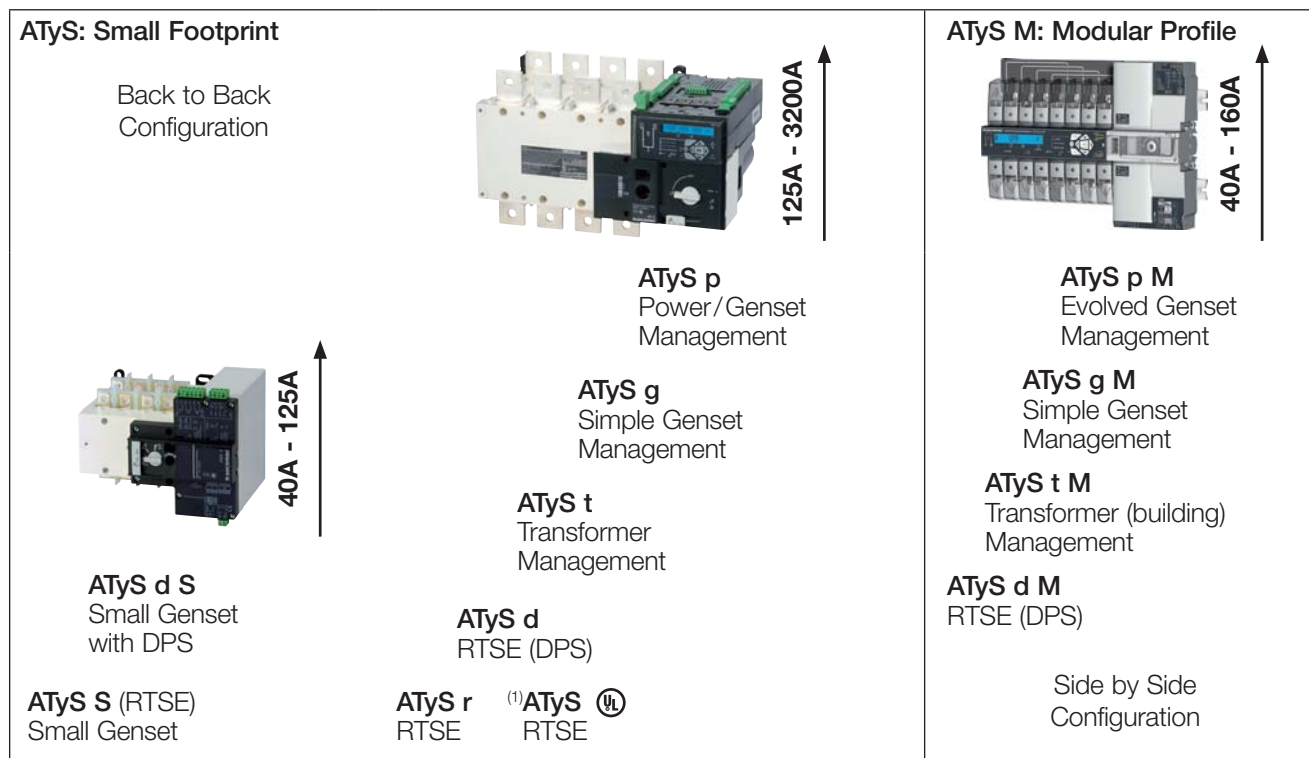
As a Class PC ATSE, the ATyS g M is capable of “making and withstanding short circuit currents” assigned to IEC 60947-3 utilization categories of up to AC23A, GB 14048-11, IEC 60947-6-1 and equivalent standards with utilization categories of up to AC33B.

### ATyS g M transfer switches ensure:

- Power Control and Safety between a normal and an alternate source.
- A complete product delivered as a fully assembled and tested solution.
- Intuitive HMI for emergency / local operation.
- Integrated and robust switch disconnection.
- Window with clearly visible position indication I – 0 – II.
- An inherent failsafe mechanical interlock.
- Stable positions (I – 0 – II) non affected by typical vibration and shocks.
- Constant pressure on the contacts non affected by network voltage.
- Energy Efficient with virtually no consumption whilst on the normal, alternate or off positions.
- Extremely rugged, error free and built in padlocking facility (configurable).
- Straight forward installation with effective ergonomics.
- Simple motorization control interface.
- ATS configuration through 4 potentiometers and DIP switches.
- Auxiliary contacts for switch positions I – 0 – II (optional).
- “Product availability” output.
- Ample accessories to suit specific requirements.
- Fully integrated ATS controller specifically designed for Mains / Mains and Mains / Genset applications.

### 2.1. The ATyS family product range

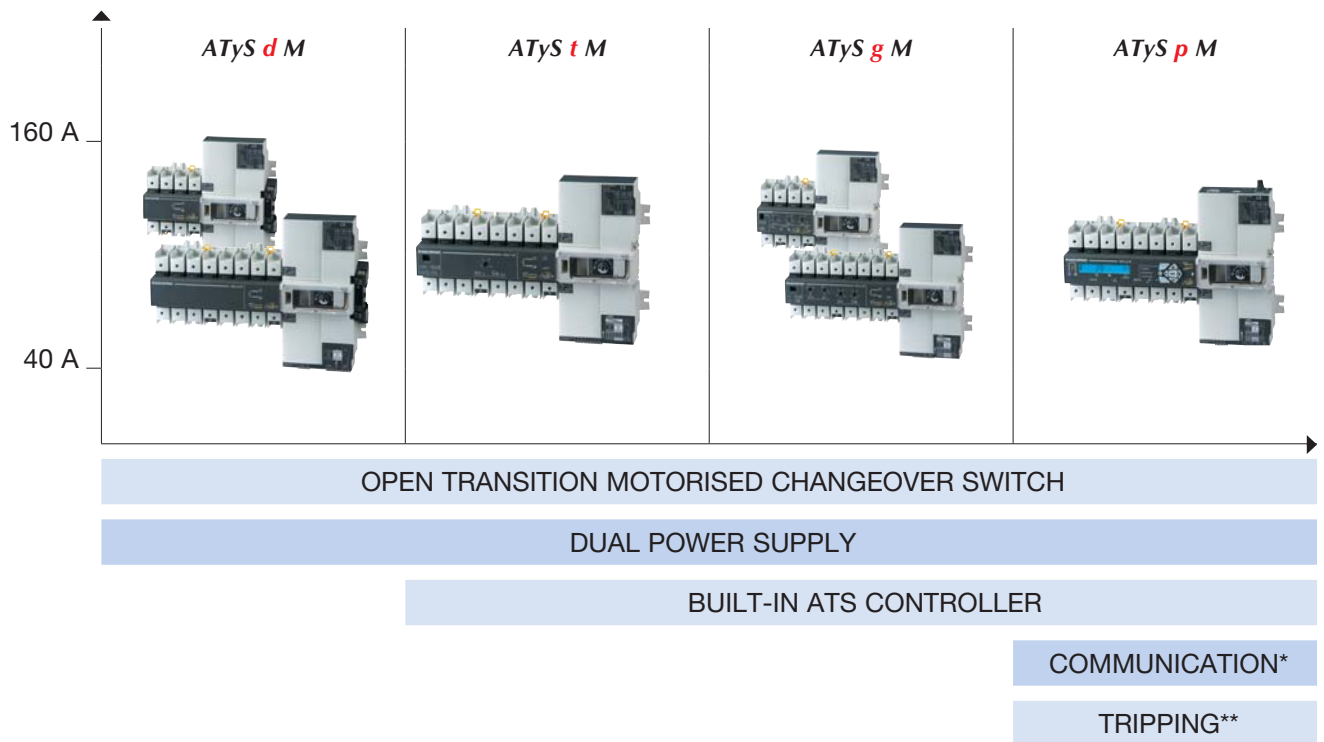
Just the right ATyS for your application...



<sup>(1)</sup> The UL version of ATyS r is available from 100 - 400A

## 2.2. The ATyS M Range Key Features

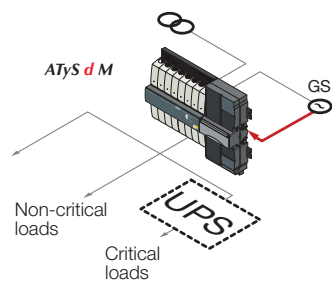
Selecting the right ATyS M will depend on the application, the functionality required as well as the nature of the installation in which the ATyS M will be installed. Below is an outline product selection chart listing the key features of each product to help you select the right ATyS M for your needs.



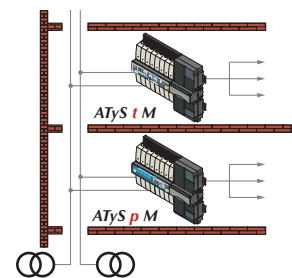
\* Specific version. \*\* Return to zero without external energy source.

### A product for virtually all power changeover applications from 40 to 160 A

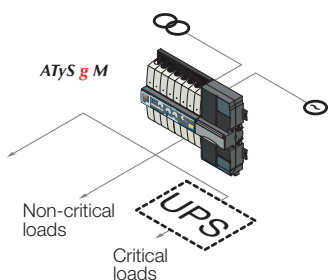
- > Network/Genset
  - > Genset/Genset
  - > Network/Network
- Applications with an External ATS Control



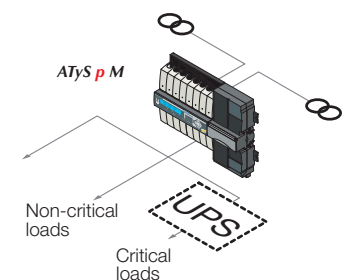
- > Network/Network
- Building applications



- > Network/Genset
- Genset Applications for Standby Power



- > Network/Genset
- > Network/Network



## 2.2.1. Selection guide

Six ratings 40/63/80/100/125/160 A

|                                                                   | ATyS <i>d</i> M | ATyS <i>t</i> M | ATyS <i>g</i> M | ATyS <i>p</i> M |
|-------------------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|
| <b>APPLICATIONS</b>                                               |                 |                 |                 |                 |
| Normal/Backup without automatic controller                        | •               |                 |                 |                 |
| Normal/Backup with built-in automatic controller                  |                 | •               | •               | •               |
| Stable positions                                                  | •               | •               | •               | •               |
| Load changeover                                                   | •               |                 |                 |                 |
| <b>FUNCTIONS</b>                                                  |                 |                 |                 |                 |
| <b>POWER SUPPLY</b>                                               |                 |                 |                 |                 |
| External                                                          | •               |                 |                 |                 |
| Integrated                                                        |                 | •               | •               | •               |
| <b>OPERATION</b>                                                  |                 |                 |                 |                 |
| Backup manual operation of the 3 positions                        | •               | •               | •               | •               |
| Electrical (dry contact) control of positions I, 0 and II         | •               |                 |                 | •*              |
| Automatic control of positions I, 0 and II                        |                 | •               | •               | •               |
| Return to 0 position feature upon loss of source                  |                 |                 |                 | •               |
| <b>MONITORING</b>                                                 |                 |                 |                 |                 |
| 3 voltages on networks I and II                                   |                 | •               | •               | •               |
| Frequency on networks I and II                                    |                 | •               | •               | •               |
| Phase rotation on networks I and II                               |                 |                 |                 | •               |
| Asymmetry of networks I and II                                    |                 |                 |                 | •               |
| <b>AUTOMATIC CONTROLLER CONFIGURATION</b>                         |                 |                 |                 |                 |
| By potentiometer and micro-switch                                 |                 | •               | •               |                 |
| By screen + keyboard                                              |                 |                 |                 | •               |
| V <sub>n</sub> , F <sub>n</sub> , V threshold, F threshold        |                 | •               | •               | •               |
| Driving with or without priority                                  |                 | •               | •               | •               |
| Adjustable operating timers                                       |                 | •               | •               | •               |
| Control type (impulse or switch / contactor)                      | •               |                 |                 |                 |
| <b>DISPLAY</b>                                                    |                 |                 |                 |                 |
| Position, fully visualised breaking                               | •               | •               | •               | •               |
| LED: source status, automatic mode, fault LED                     |                 | •               | •               | •               |
| LED: switch positions, supply, tests, control                     |                 |                 |                 | •               |
| V, F, timers, number of operations, last event                    |                 |                 |                 | •               |
| <b>REMOTE CONTROL</b>                                             |                 |                 |                 |                 |
| <b>Outputs</b>                                                    |                 |                 |                 |                 |
| Generator start/stop order                                        |                 |                 | •               | •               |
| Product availability (not fault and not manual mode)              |                 |                 | •               | •*              |
| Source available                                                  |                 | •               |                 | •*              |
| Programmable output (source, availability, fault)                 |                 |                 |                 | •*              |
| <b>Inputs</b>                                                     |                 |                 |                 |                 |
| Test on load                                                      |                 |                 | •               | •*              |
| Retransfer                                                        |                 |                 | •               | •*              |
| Automatic mode inhibit                                            |                 | •               | •               | •*              |
| Position 0 order                                                  |                 | •               |                 | •*              |
| Priority                                                          |                 | •               | •               | •               |
| Other programmable inputs (test off-load, position control, etc.) |                 |                 |                 | •*              |
| <b>Remote control</b>                                             |                 |                 |                 |                 |
| Human / Machine Interface ( <i>D10</i> and <i>D20</i> )           |                 |                 |                 | •               |
| RS485 communication (MODBUS)                                      |                 |                 |                 | •**             |

\* 3 inputs / 3 outputs (programmable).

\*\* Product reference is different: communication by RS485 connection (MODBUS) allows up to 31 ATyS M to be connected to a PC or a PLC over 1500 m.

# 3. QUICK START

## 3.1. Quick Start ATyS g M (2P)



QUICK START EN 40 - 160A (2P)

# ATyS g M

Automatic  
Transfer Switching Equipment

### Preliminary operations

Check the following upon delivery and after removal of the packaging:

- Packaging and contents are in good condition.
- The product reference corresponds to the order.
- Contents should include:  
Qty 1 x ATyS M  
Qty 1 x Emergency handle extension ROD  
Qty 1 x Set of terminals  
Quick Start instruction sheet

### Warning

⚠ Risk of electrocution, burns or injury to persons and / or damage to equipment.

This Quick Start is intended for personnel trained in the installation and commissioning of this product. For further details refer to the product instruction manual available on the SOCMEC website.

- This product must always be installed and commissioned by qualified and approved personnel.
- Maintenance and servicing operations should be performed by trained and authorised personnel.
- Do not handle any control or power cables connected to the product when voltage may be, or may become present on the product, directly through the mains or indirectly through external circuits.
- Always use an appropriate voltage detection device to confirm the absence of voltage.
- Ensure that no metal objects are allowed to fall in the cabinet (risk of electrical arcing).

Failure to observe good engineering practises as well as to follow these safety instructions may expose the user and others to serious injury or death.

⚠ Risk of damaging the device

- In case the product is dropped or damaged in any way it is recommended to replace the complete product.

### Accessories

- Bridging bars and 125A or 160A.
- Control voltage transformer (400Vac -> 230Vac).
- Voltage sense and power supply TAP.
- Terminal shrouds.
- Additional aux contact block.
- Polycarbonate enclosure.
- Polycarbonate extension box.
- Power Connection Terminals.
- Sealable cover.



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A separate sheet for each language.



542 955 B - 06/15 - EN



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## Installation and Commissioning

**STEP 1**  
Cabinet / Back  
Plate Installation

**STEP 2**  
Connecting the  
POWER section

**STEP 3**  
CONTROL /  
AUX POWER  
terminal  
connections

**STEP 4**  
CHECK

**STEP 5**  
Programming

**STEP 6A**  
Automatic Operation

**STEP 6B**  
Emergency Manual  
Operation

**STEP 6C**  
Padlocking



### STEP 3

#### CONTROL / AUX POWER Terminals and wiring

| Type    | Terminal no.  | Application                               | Status of the contact                                                                | Description                                                                                          | Output characteristics                                                                    | Recommended connection cross-section                |
|---------|---------------|-------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Inputs  | I1: 207 / 208 | Network/Network                           |  | With priority                                                                                        | Dry potential free contact                                                                | 0.5 to 2.5 mm² (rigid)<br>0.5 to 1.5 mm² (stranded) |
|         |               |                                           |  | Without priority                                                                                     |                                                                                           |                                                     |
|         |               | Network-Genset.                           |  | Automatic retransfer                                                                                 |                                                                                           |                                                     |
|         |               |                                           |  | Manual Retransfer                                                                                    |                                                                                           |                                                     |
|         | I1: 207 / 209 | Network/Network                           |  | Source priority 1                                                                                    | Dry potential free contact                                                                |                                                     |
|         |               |                                           |  | Source priority 2                                                                                    |                                                                                           |                                                     |
|         |               | Network-Genset.                           |  | Stop the test on load                                                                                |                                                                                           |                                                     |
|         |               |                                           |  | Test on load                                                                                         |                                                                                           |                                                     |
|         | I3: 207 / 210 | Network-Network or Network-Generating set |  | AUTO mode                                                                                            | Dry potential free contact                                                                |                                                     |
|         |               |                                           |  | Automatic mode inhibition                                                                            |                                                                                           |                                                     |
| Outputs | O1: 63 / 64   | Network-Network or Network-Generating set |  | Product not available :<br>- Manual mode<br>- Command default<br>- Electronic default<br>- No source | Resistive load<br>2A 30 Vdc<br>0.5A 230Vac<br>Pmax: 60W or 125VA<br>Umax: 30Vdc or 230Vac |                                                     |
|         |               |                                           |  | Product available                                                                                    |                                                                                           |                                                     |
|         | O2: 73 / 74   | Network-Genset.                           |  | No start command genset                                                                              | Resistive load<br>2A 30 Vdc<br>0.5A 230Vac<br>Pmax: 60W or 125VA<br>Umax: 30Vdc or 230Vac |                                                     |
|         |               |                                           |  | Generating set starting                                                                              |                                                                                           |                                                     |



## STEP 4

### Check

Whilst in manual mode, check the wiring and if ok power up the product.



## STEP 5

### Programming

The LED signalling and operation is only active when the product supply is available. To set the dip switches, it is necessary to open the Auto/Manual cover. Commissioning must always result in having at least 1 LED source available on. (Therefore, the voltage and frequency must be within the defined thresholds).

⚠ Any action on the potentiometers will change the settings, even when the cover is closed.

### A Dip switch settings



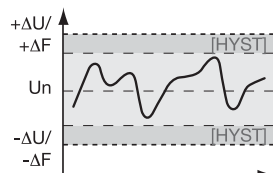
Stop in 0 position: E-F

- E: No stop in 0 position
- F: 2s stop in 0 position

Type of application: G-H

- G: Network - Genset
- H: Network - Network

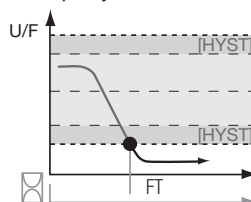
### B Hysteresis settings



HYST: 20 %ΔU/F  
ΔU: 5-20%  
ΔF: 3-10%

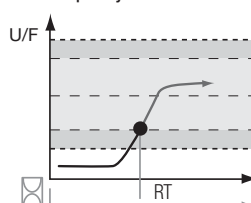
### C Timer settings

Loss of priority source timer



FT: 0-60 sec.

Return of priority source timer

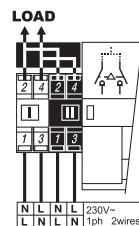


RT: 0-30 min.

### D Source supply voltage and frequency Auto-Configuration

Ensure that the supply voltage is available and within the following limits:

Un: 176-288VAC  
Fn: 45-65Hz



Press PROG for ≥ 2s



| LED state | Auto Conf result | Action            |
|-----------|------------------|-------------------|
| Steady ON | OK               | Ready             |
| Blinking  | Not OK           | Go back to step 4 |

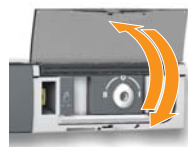
### E LED info

Source availability LED

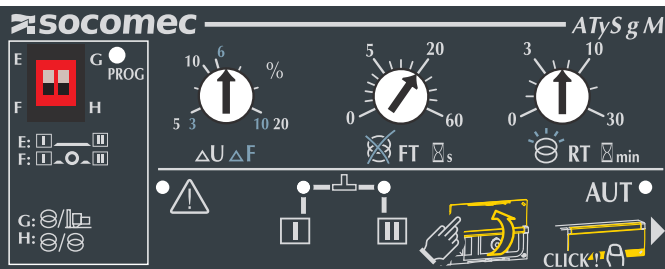
| Source | LED ON             | LED OFF                                | LED blinking                           |
|--------|--------------------|----------------------------------------|----------------------------------------|
| I      | Source 1 available | Source 1 not available or out of range | - a timer is counting down - test mode |
| II     | Source 2 available | Source 2 not available or out of range | - a timer is counting down             |

Fault and state of the product LED's

|     | LED ON    | LED OFF                           | LED blinking      |
|-----|-----------|-----------------------------------|-------------------|
| ⚠   | Fault     | Product OK or S1-S2 not available | Please wait       |
| AUT | Auto mode | Manual mode                       | Manual retransfer |



Fault reset



## STEP 6A

### Automatic operation

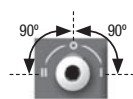
Close the front cover as shown to put the product into automatic mode.



## STEP 6B

### Manual operation

- Open the front cover as shown to put into manual mode.
- Use the handle situated in the front panel under the cover to operate the transfer switch.
- Check the changeover switch position on the indicator before operating.



To simplify operation use the handle with the extension provided.



(Max 8 Nm)

## STEP 6C

### Padlocking mode

- In order to padlock put the product in manual mode.
- Pull the locking mechanism and insert a padlock as shown.
- As standard padlocking in the 0 position. Configurable to I-0-II (see step 1).



1x 4-8 mm

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## 3.2. Quick Start ATyS g M (4P)



QUICK START EN 40 - 160A (4P)

# ATyS g M

Automatic  
Transfer Switching Equipment

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- Polycarbonate enclosure.
- Polycarbonate extension box.
- Power Connection Terminals.
- Sealable cover.



www.socomec.com  
www.socomec.com/en/atys-g-m  
To download, brochures, catalogues and technical manuals.

Printing informations: 1 color Black White paper 90g/m².  
Printing size: 420x297. Final size 210x297. This page visible first.  
A separate sheet for each language.



542 932 B - 06/15 - EN



Non contractual document.  
Subject to change without notice.

## Installation and Commissioning

**STEP 1**  
Cabinet / Back  
Plate Installation

**STEP 2**  
Connecting the  
POWER section

**STEP 3**  
CONTROL /  
AUX POWER  
terminal  
connections

**STEP 4**  
CHECK

**STEP 5**  
Programming

**STEP 6A**  
Automatic Operation

**STEP 6B**  
Emergency Manual  
Operation

**STEP 6C**  
Padlocking



### STEP 3

#### CONTROL / AUX POWER Terminals and wiring

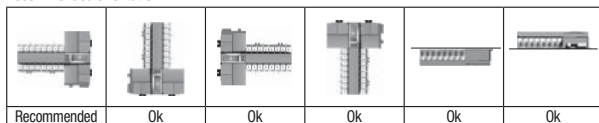
| Type    | Terminal no.  | Application                               | Status of the contact                                                                | Description                                                                                          | Output characteristics                                                                    | Recommended connection cross-section                    |
|---------|---------------|-------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Inputs  | I1: 207 / 208 | Network/Network                           |  | With priority                                                                                        | Dry potential free contact                                                                | 0.5 to 2.5 mm² (rigid)<br><br>0.5 to 1.5 mm² (stranded) |
|         |               |                                           |  | Without priority                                                                                     |                                                                                           |                                                         |
|         |               | Network-Genset.                           |  | Automatic retransfer                                                                                 |                                                                                           |                                                         |
|         |               |                                           |  | Manual Retransfer                                                                                    |                                                                                           |                                                         |
|         | I1: 207 / 209 | Network/Network                           |  | Source priority 1                                                                                    | Dry potential free contact                                                                |                                                         |
|         |               |                                           |  | Source priority 2                                                                                    |                                                                                           |                                                         |
|         |               | Network-Genset.                           |  | Stop the test on load                                                                                |                                                                                           |                                                         |
|         |               |                                           |  | Test on load                                                                                         |                                                                                           |                                                         |
|         | I3: 207 / 210 | Network-Network or Network-Generating set |  | AUTO mode                                                                                            | Dry potential free contact                                                                |                                                         |
|         |               |                                           |  | Automatic mode inhibition                                                                            |                                                                                           |                                                         |
| Outputs | O1: 63 / 64   | Network-Network or Network-Generating set |  | Product not available :<br>- Manual mode<br>- Command default<br>- Electronic default<br>- No source | Resistive load<br>2A 30 Vdc<br>0.5A 230Vac<br>Pmax: 60W or 125VA<br>Umax: 30Vdc or 230Vac |                                                         |
|         |               |                                           |  | Product available                                                                                    |                                                                                           |                                                         |
|         | O2: 73 / 74   | Network-Genset.                           |  | No start command genset                                                                              | Resistive load<br>2A 30 Vdc<br>0.5A 230Vac<br>Pmax: 60W or 125VA<br>Umax: 30Vdc or 230Vac |                                                         |
|         |               |                                           |  | Generating set starting                                                                              |                                                                                           |                                                         |

## STEP 1

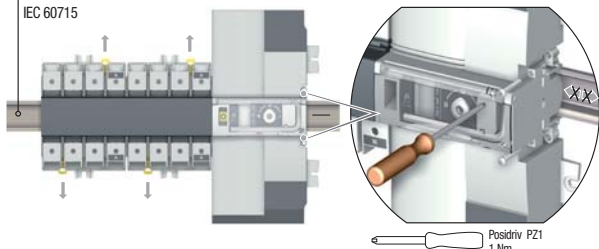
### Installation

Caution: Ensure that the product is installed on a flat rigid surface.

#### Recommended orientation

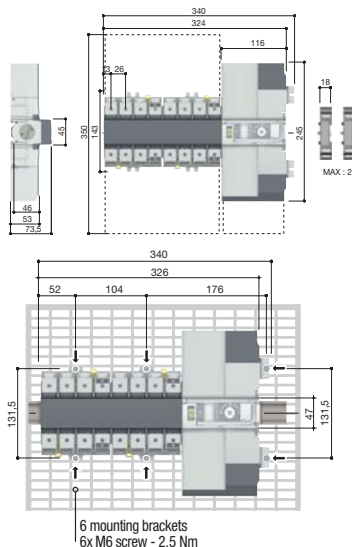


DIN RAIL  
IEC 60715



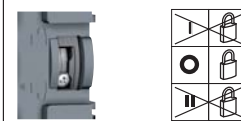
Tighten to avoid movement on the DIN rail.

Posidriv PZ1  
1 Nm



### Padlocking configuration

The ATyS M is delivered with padlocking configured to the 0 position.



To allow padlocking in all positions (I - 0 - II), configure the ATyS M as follows before installation. (Screw is located at the back of the product).

## STEP 2

### Power Terminal Connections

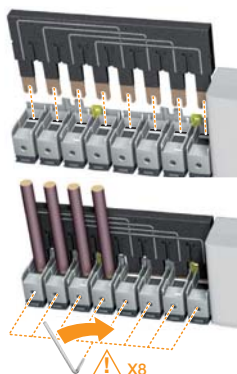
It is essential to tighten all terminals including those not being used.



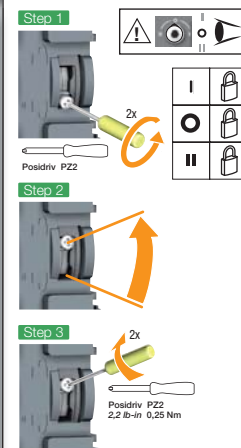
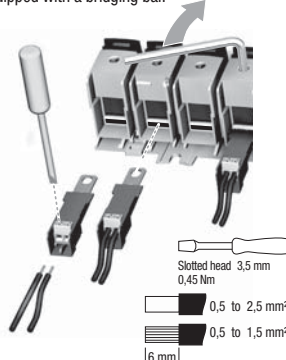
Source supply side

Load side  
bridging bar.  
125A: 1309 4006  
160A: 1309 4016

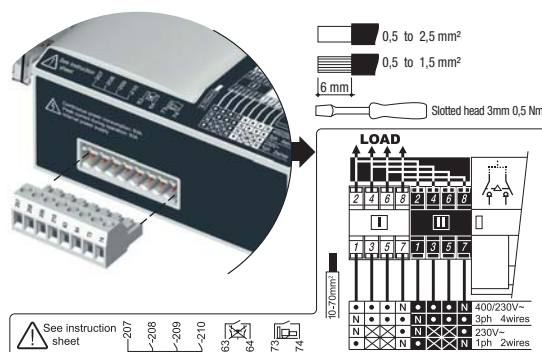
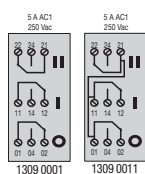
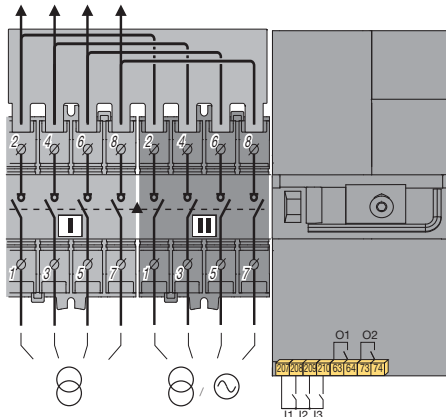
Hexagonal Metric  
Allen size 4  
5,0 Nm  
10 to 70 mm<sup>2</sup>  
[15mm]



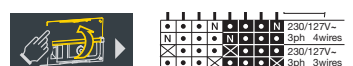
Voltage taps provide 2x ≤ 1.5mm<sup>2</sup> connections. They can be fitted in any terminals on the source supply side. Do not use on the load side when equipped with a bridging bar.



LOAD



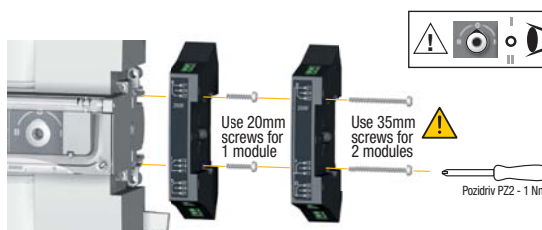
Ensure that the product is in Manual Mode (front cover open).



| Type                                 | Terminal no. | Status of the contact | Description                      | Output characteristics       | Recommended connection cross-section     |
|--------------------------------------|--------------|-----------------------|----------------------------------|------------------------------|------------------------------------------|
| Auxiliary contact block<br>1309 0001 | 11/12/14     | 11 — 14<br>12         | Changeover switch in position I  | 250V AC 5A AC1<br>30 Vdc 5 A | 0.5 to 2.5 mm <sup>2</sup><br>(rigid)    |
|                                      | 21/22/24     | 21 — 24<br>22         | Changeover switch in position II | 250V AC 5A AC1<br>30 Vdc 5 A |                                          |
|                                      | 01/02/04     | 01 — 04<br>02         | Changeover switch in position 0  | 250V AC 5A AC1<br>30 Vdc 5 A |                                          |
| Auxiliary contact block<br>1309 0011 | 11/12/14     | 11 — 14<br>12         | Changeover switch in position I  | 250V AC 5A AC1<br>30 Vdc 5 A | 0.5 to 1.5 mm <sup>2</sup><br>(stranded) |
|                                      | 21/22/24     | 21 — 24<br>22         | Changeover switch in position II | 250V AC 5A AC1<br>30 Vdc 5 A |                                          |
|                                      | 01/02/04     | 01 — 04<br>02         | Changeover switch in position 0  | 250V AC 5A AC1<br>30 Vdc 5 A |                                          |

### Auxiliary contacts: Fitting of auxiliary contacts: 1309 0001 or 1309 0011

To fit an AC, the switch must first be put in position 0. An auxiliary contact module comprises: one NO/NC changeover contact for each position (I-0-II). To install use the long screws supplied with the module.



## STEP 4

### Check

Whilst in manual mode, check the wiring and if ok power up the product.



## STEP 5

### Programming

The LED signalling and operation is only active when the product supply is available. To set the dip switches, it is necessary to open the Auto/Manual cover. Commissioning must always result in having at least 1 LED source available on. (Therefore, the voltage and frequency must be within the defined thresholds).

Any action on the potentiometers will change the settings, even when the cover is closed.

### A Dip switch settings



Type of network: A-B

- A: 3P
- B: 1P

Frequency: C-D

- C: 50 Hz
- D: 60 Hz

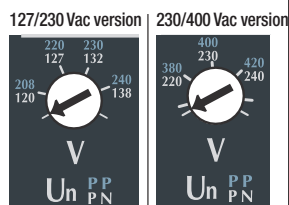
Stop in 0 position: E-F

- E: No stop in 0 position
- F: 2s stop in 0 position

Type of application: G-H

- G: Network - Genset
- H: Network - Network

### B Source voltage supply configuration

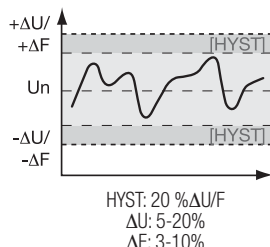


Un (P-P):  
208-240 Vac

Un (P-N):  
120-138 Vac

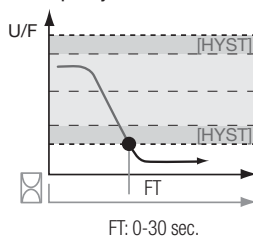
Un (P-P):  
380-420 Vac

Un (P-N):  
220-240 Vac

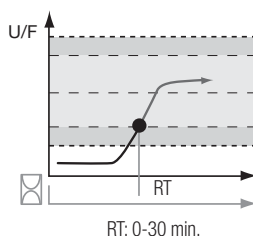


### C Timer settings

Loss of priority source timer



Return of priority source timer



### D Led info

Source availability LED

| Source             | LED ON                           | LED OFF                    | LED blinking |
|--------------------|----------------------------------|----------------------------|--------------|
| Source 1 available | Source 1 missing or out of range | - a timer is counting down | - test mode  |
| Source 2 available | Source 2 missing or out of range | - a timer is counting down |              |

Fault and state of the product Leds

|           | LED ON      | LED OFF           | LED blinking |
|-----------|-------------|-------------------|--------------|
| Fault     | Product OK  | Wait              |              |
| Auto mode | Manual mode | Manual retransfer |              |



Fault reset

**socomec**



A: 3P  
B: 1P  
C: 50Hz  
D: 60Hz  
E: I  
F: I  
G: I  
H: I

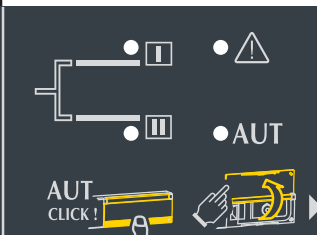


Un P P  
N N

ΔU ΔF

FT

RT



AUT

AUT CLICK!

## STEP 6A

### Automatic operation

Close the front cover as shown to put the product into automatic mode.



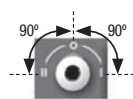
AUT  
CLICK!



## STEP 6B

### Manual operation

- Open the front cover as shown to put into manual mode.
- Use the handle situated in the front panel under the cover to operate the transfer switch.
- Check the changeover switch position on the indicator before operating.



To simplify operation use the handle with the extension provided.



(Max 8 Nm)



## STEP 6C

### Padlocking mode

- In order to padlock put the product in manual mode.
- Pull the locking mechanism and insert a padlock as shown.
- As standard padlocking in the 0 position. Configurable to I-0-II (see step 1).



1x 4-8 mm



## 4. ATYS G M VERSIONS

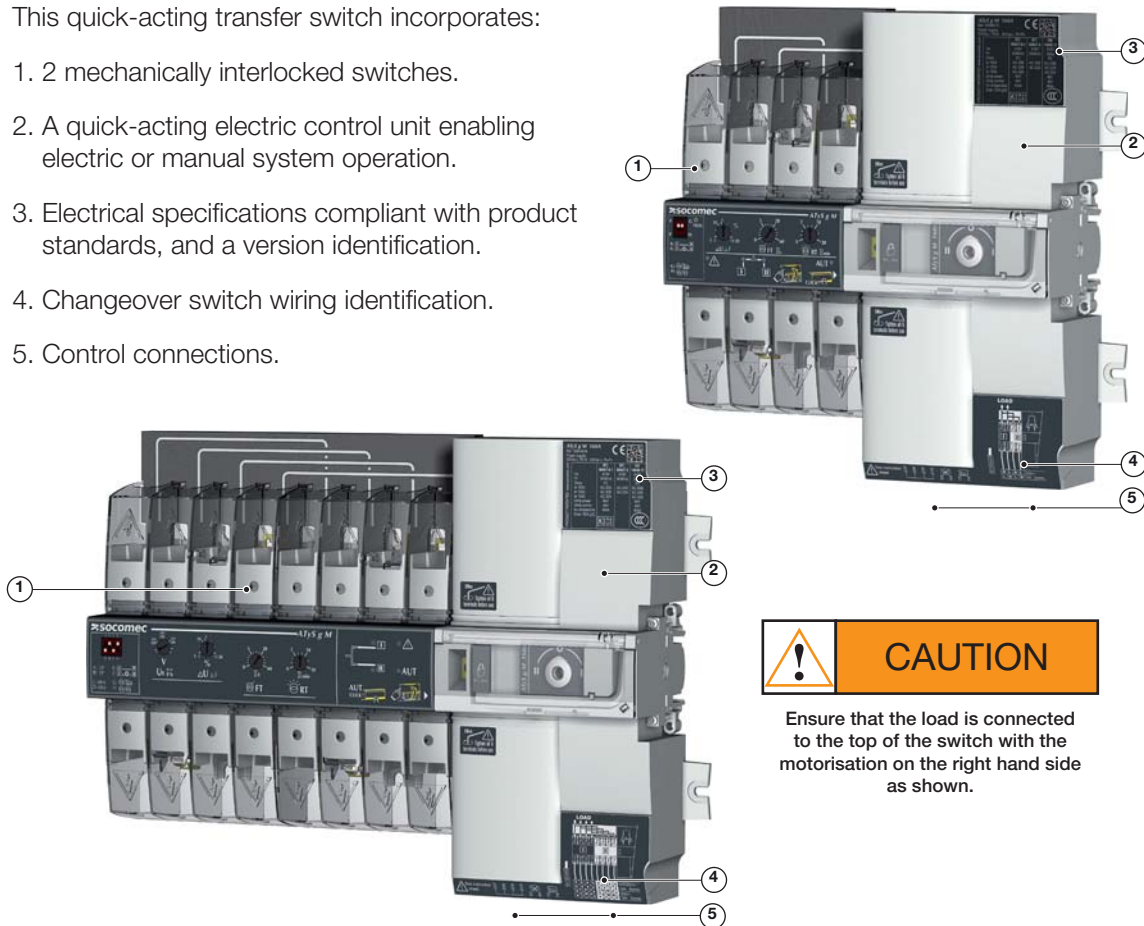
The ATyS g M is available as 2P or 4P with the possibility of being used on virtually any automatic open transition type of application.

Measurement accuracy: Frequency: 1 % - Voltage: 1 %

### 4.1. Product presentation

This quick-acting transfer switch incorporates:

1. 2 mechanically interlocked switches.
2. A quick-acting electric control unit enabling electric or manual system operation.
3. Electrical specifications compliant with product standards, and a version identification.
4. Changeover switch wiring identification.
5. Control connections.



#### CAUTION

Ensure that the load is connected to the top of the switch with the motorisation on the right hand side as shown.

### 4.2. Specifications and advantages

#### 1 - Power section:

A fully integrated and interlocked transfer switch, with high electrical performance offering microprocessor control and monitoring.

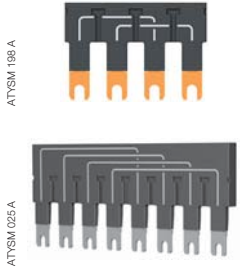
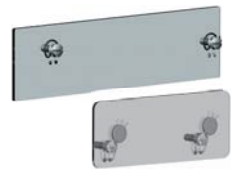
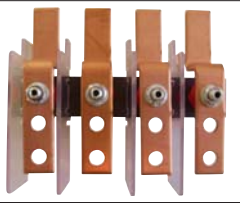
#### 2 - Operation:

A flexible operating mechanism enabling quick motorised transfer in automatic mode or locally in manual mode for emergency operations. Features a locking device to ensure (in position zero) a secured isolation of the load (padlocked).

### 4.3. Supply types

The power supply of ATyS g M is required to be 230VAC  $\pm 30\%$  at a frequency of 50/60 Hz and has been developed so as to meet most network configurations.

## 5. OPTIONAL ACCESSORIES

|                                    |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                      |                                                                                                                                                               |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Auxiliary contacts                 | Each product can take up to 2 auxiliary contact blocks. Each accessory integrates 1 NOC auxiliary contact (for each position I, O and II) 1309 0001 or NONC for 1309 0011.<br><br>Characteristics: 250 VAC / 5 A maximum.                                                                                                                                                      |    | Ref. : 1309 0001<br>Ref. : 1309 0011                                                                                                                          |
| Bridging bars                      | To provide a common point on the outgoing side of the switch (load side).                                                                                                                                                                                                                                                                                                      |    | Single phase product:<br>Rating ≤ 125A: 1309 2006<br>Rating 160A: 1309 2016<br><br>Three phase product:<br>Rating ≤ 125A: 1309 4006<br>Rating 160A: 1309 4016 |
| Terminal shrouds                   | Protection against direct contacts with terminals or connecting parts. Other features: Perforations allowing remote thermographic inspection without removal. Possibility of sealing.                                                                                                                                                                                          |    | Ref. : 2294 4016<br>2 parts/ref.                                                                                                                              |
| Enclosure                          | Fully dedicated to ATyS M use, this polycarbonate enclosure provides easy access to a compact, enclosed transfer switch.                                                                                                                                                                                                                                                       |   | Ref. : 1309 9006                                                                                                                                              |
| Extension unit                     | Combined with the polycarbonate enclosure, the extension box creates extra space for routing cables with a larger diameter.                                                                                                                                                                                                                                                    |  | Ref. : 1309 9007                                                                                                                                              |
| Single phase residential enclosure | Dedicated to the implementation of a single-phase ATyS M, it enables easy access to a compact power supply switching solution.<br>40-160A (HxWxD: 410x305x150mm).<br>IP41                                                                                                                                                                                                      |  | Ref. : 1309 9056                                                                                                                                              |
| Sealable cover.                    | It prevents access to the configuration panel of the ATyS g M.                                                                                                                                                                                                                                                                                                                 |  | Three phases product:<br>Ref. : 1359 0000<br><br>Single phase product:<br>Ref. : 1359 2000                                                                    |
| Power connection terminals         | The power connection terminals allow conversion of the cage terminals into bolt-on type connection terminals, enabling connection of up to two 35mm <sup>2</sup> cables or one 70mm <sup>2</sup> cable. Each power connection terminal is provided with separation screens.                                                                                                    |  | Ref. : 1399 4017<br>For complete conversion, order 3 times the reference.                                                                                     |
| Auto-transformer                   | For use with ATyS M in 400 VAC three-phase applications without a distributed neutral. As the ATyS M has integrated measurement and power supply circuits, a neutral connection is required for 400 VAC three-phase applications. When no neutral connection is available this autotransformer (400/230 VAC, 400 VA) provides the 230 VAC required for the ATyS M to function. |  | Ref. : 1599 4121                                                                                                                                              |

## 6. TECHNICAL DATA

| Ratings                                                                                                           |                                                                   | 40A      | 63 A     | 80 A     | 100 A    | 125 A    | 160 A     |
|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------|----------|----------|----------|----------|-----------|
| Frequencies                                                                                                       |                                                                   | 50/60 Hz | 50/60 Hz | 50/60 Hz | 50/60 Hz | 50/60 Hz | 50/60 Hz  |
| Thermal current I <sub>th</sub> at 40 °C (A)                                                                      |                                                                   | 40       | 63       | 80       | 100      | 125      | 160       |
| Thermal current I <sub>th</sub> at 50 °C (A)                                                                      |                                                                   | 40       | 63       | 80       | 100      | 110*     | 125       |
| Thermal current I <sub>th</sub> at 60 °C (A)                                                                      |                                                                   | 40       | 50       | 63       | 80       | 100*     | 125       |
| Thermal current I <sub>th</sub> at 70 °C (A)                                                                      |                                                                   | 40       | 40       | 50       | 63       | 80*      | 100       |
| Rated assigned insulation voltage U <sub>i</sub> (V) (Power circuit)                                              |                                                                   | 800      | 800      | 800      | 800      | 800      | 800       |
| Rated impulse withstand voltage U <sub>imp</sub> (kV) (power circuit)                                             |                                                                   | 6        | 6        | 6        | 6        | 6        | 6         |
| Rated insulation voltage U <sub>i</sub> (V) (control circuit)                                                     |                                                                   | 300      | 300      | 300      | 300      | 300      | 300       |
| Rated impulse withstand voltage U <sub>imp</sub> (kV) (control circuit)                                           |                                                                   | 2.5      | 2.5      | 2.5      | 2.5      | 2.5      | 2.5       |
| Rated operational currents (A)<br>IEC 60947-3 at 415 VAC<br>at 40 °C                                              | AC 21A / 21 B                                                     | 40/40    | 63/63    | 80/80    | 100/100  | 125/125  | 160/160   |
|                                                                                                                   | AC 22A / 22 B                                                     | 40/40    | 63/63    | 80/80    | 100/100  | 125/125  | 125/160   |
|                                                                                                                   | AC 23A / 23 B                                                     | 40/40    | 63/63    | 80/80    | 100/100  | 125/125  | 125/160   |
| Rated operational currents (A) IEC 60947-6-1 415Vac at 40 °C                                                      | AC 33B / AC32B<br>**AC 33iB                                       | 40/40    | 63/63    | 80/80    | 100/100  | 125/125  | 125**/160 |
| Fuse protected short-circuit withstand if using gG DIN fuses                                                      | Fuse protected short-circuit withstand (kA eff)                   | 50       | 50       | 50       | 50       | 50       | 40        |
|                                                                                                                   | Associated fuses (gG DIN)                                         | 40       | 63       | 80       | 100      | 125      | 160       |
| Short-circuit capacity                                                                                            | Rated short-term withstand current: I <sub>cw</sub> 1s (kA eff)   | 4        | 4        | 4        | 4        | 4        | 4         |
|                                                                                                                   | Rated short-term withstand current: I <sub>cw</sub> 30ms (kA eff) | 10       | 10       | 10       | 10       | 10       | 10        |
| Switching time at I <sub>n</sub> excluding loss of supply sensing time and excluding any delay timers applicable. | I-II or II-I (ms)                                                 | 180      | 180      | 180      | 180      | 180      | 180       |
|                                                                                                                   | Duration of "electrical blackout" at U <sub>n</sub> (ms)          | 90       | 90       | 90       | 90       | 90       | 90        |
|                                                                                                                   | I-O / O-I / II-O / O-II (ms)                                      | 45       | 45       | 45       | 45       | 45       | 45        |
| Consumption                                                                                                       | Inrush current(A)                                                 | 20       | 20       | 20       | 20       | 20       | 20        |
|                                                                                                                   | Consumption in stabilised state (VA)                              | 6        | 6        | 6        | 6        | 6        | 6         |
| Mechanical characteristics                                                                                        | Number of changeovers                                             | 10000    | 10000    | 10000    | 10000    | 10000    | 10000     |
| Connection cross-section<br>(⚠ not compatible with aluminium cables)                                              | Minimum size (Cu mm²), flexible and rigid                         | 10       | 10       | 10       | 10       | 10       | 10        |
|                                                                                                                   | Maximum size (Cu mm²), flexible and rigid                         | 70       | 70       | 70       | 70       | 70       | 70        |
| Equipment class (According to IEC 60947-6-1)                                                                      |                                                                   | PC       | PC       | PC       | PC       | PC       | PC        |
| EMC environment                                                                                                   |                                                                   | A        | A        | A        | A        | A        | A         |

\* Possibility of reaching 125A with bigger connection cross-sections and use of the 160A bridging bar.

\*\* AC 33iB 160A according to GB 14048.11.



**This is a class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.**

## 7. ENVIRONMENTAL CONDITIONS



### Humidity

- 80 % humidity without condensation at 55 °C
- 95 % humidity without condensation at 40 °C



### Temperature

- -20 +40 °C without de-rating
- 40 °C < t ≤ 70 °C with de-rating (see Technical Characteristics)



### Altitude

- Max 2000 m without de-rating

Correction factors:

|    | 2 000 m < A ≤ 3 000 m | 3 000 m < A ≤ 4 000 m |
|----|-----------------------|-----------------------|
| UE | 0.95                  | 0.80                  |
| Ie | 0.85                  | 0.85                  |



### Storage

- 1 year maximum
- Maximum storage temperature: +55 °C
- 80 % humidity without condensation at 55 °C



### IP rating

- IP41 in the SOCOMEC polycarbonate modular enclosure see page 25
- IP2x for non-enclosed modular product

Protection class: Class 1

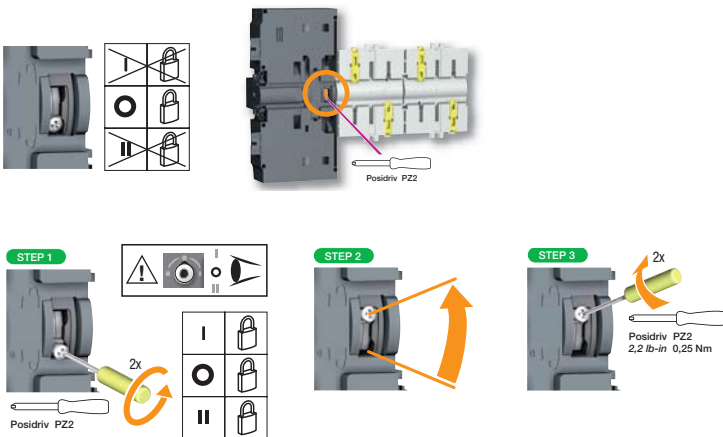
# 8. PRODUCT INSTALLATION



Prior to installation of the product ensure that the padlocking setting screw (located at the back of the product) is configured as per your requirements.  
For locking in Positions I, II and 0, refer to the following procedure

## 8.1. Changing the padlocking configuration

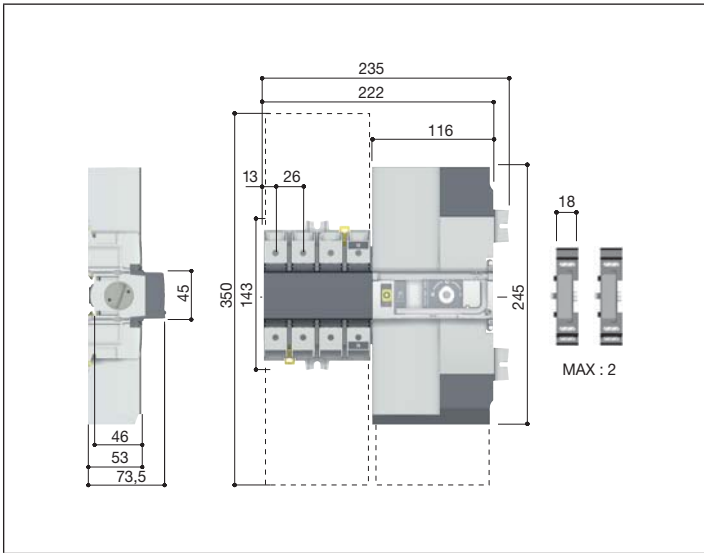
To configure the locking in the 3 positions:  
STEP1: loosen the screw at the back of the product as shown below.  
STEP2: slide the screw upwards.  
STEP3: tighten the screw in the top position as shown.



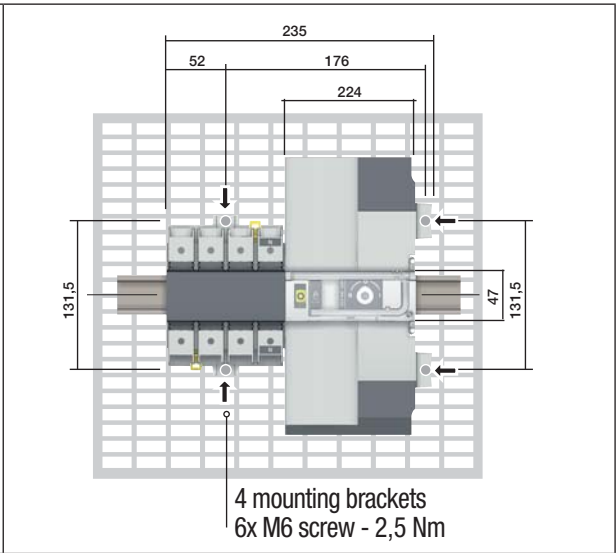
## 8.2. Recommended orientation

|             |    |    |    |    |    |
|-------------|----|----|----|----|----|
|             |    |    |    |    |    |
| Recommended | Ok | Ok | Ok | Ok | Ok |

## 8.3. Dimensions of the single phase product



## 8.4. Back plate mounted single phase product



[illegible]

340  
326  
52 104 176  
131,5  
47  
131,5  
6 mounting brackets  
6x M6 screw - 2,5 Nm

DIN RAIL  
IEC 60715

! Tighten to avoid movement on the DIN rail.

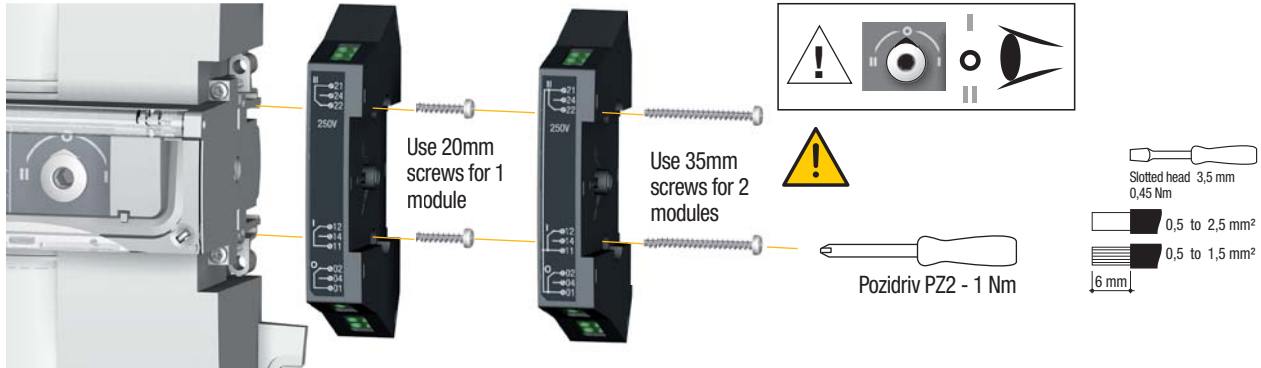
Posidriv PZ1  
1 Nm

## 9. INSTALLATION OF OPTIONAL ACCESSORIES

### 9.1. Auxilliary contacts

Ref. 1309 0001 or ref. 1309 0011.

To fit an AC, the switch must first be put in the 0 position. An auxiliary contact module comprises: one NO/NC changeover contact for each position (I-0-II). To install use the screws supplied with the module.

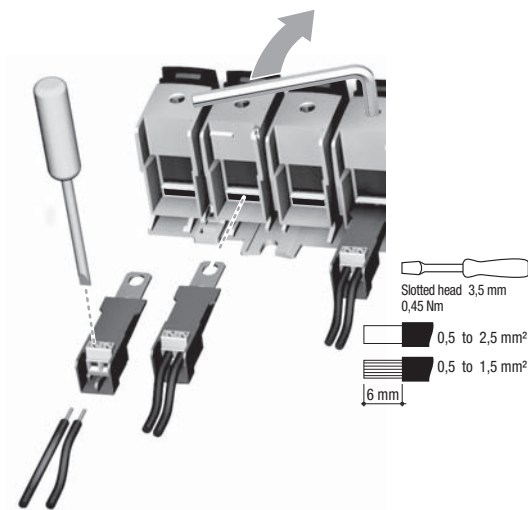


### 9.2. Voltage sensing and power supply tap

Ref. 1399 4006.

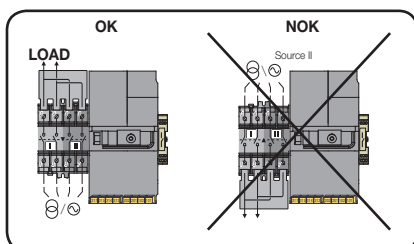
This provides 2 connection terminals for conductors with cross-section  $\leq 1.5 \text{ mm}^2$ .

The single pole terminals can be fitted in any of the terminal cages without reducing the cage connection capacity. 2 parts/ref. Do not use in case of use of the bridging bar.

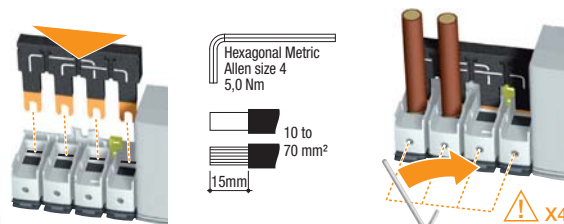


### 9.3. Bridging bars 2P

Ratings  $\leq 125\text{A}$ : ref. 1309 2006; 160A: ref. 1309 2016



Bridging bar.  
125A: 1309 2006  
160A: 1309 2016

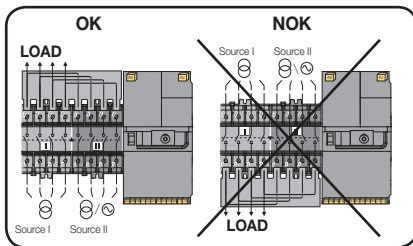


Make sure that the bridging bar is fitted to the correct set of terminals.

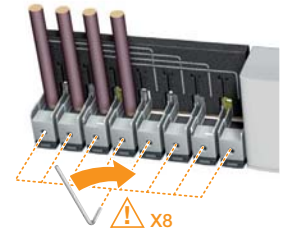
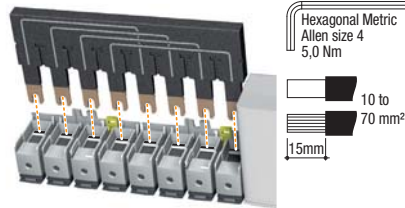
There are two references available: one for ratings up to 125A, and another for 160A rating.

## 9.4. Bridging bars 4P

Ratings  $\leq 125\text{A}$ : ref. 1309 4006; 160A: ref. 1309 4016



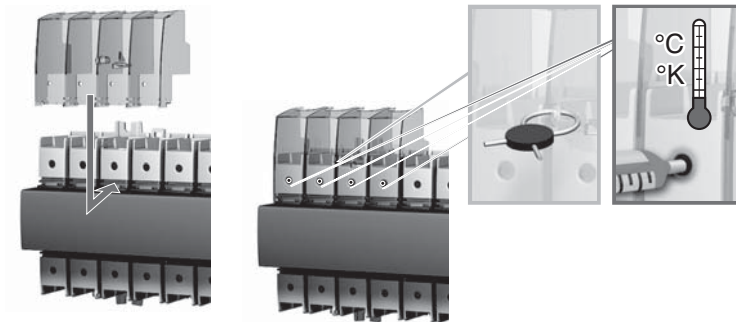
Load side  
bridging bar.  
125A: 1309 4006  
160A: 1309 4016



Make sure that the bridging bar is fitted to the correct set of terminals.  
There are two references available: one for ratings up to 125A, and another for 160A rating.

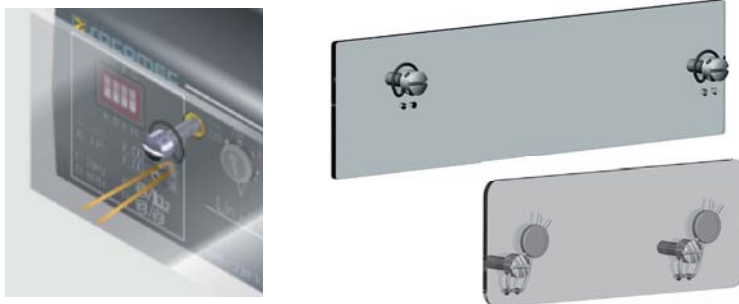
## 9.5. Terminal shrouds

Ref. 2294 4016



## 9.6. Sealable cover

Single phase: ref. 1359 2000; three phase: ref. 1359 0000



## 10. INSTALLING WITHIN THE ATYS M ENCLOSURE

### 10.1. Modular plastic enclosure

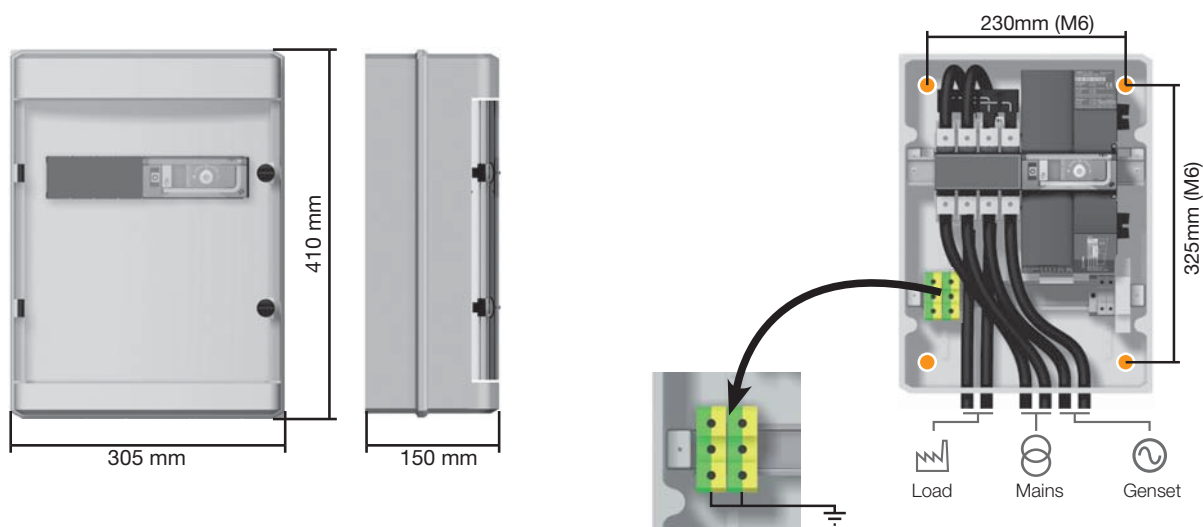
Ref. 1309 9056

Dimensions and mounting (for 2P ATyS M products only)

The enclosure must be wall-mounted using screws (not supplied). Recommended size: M6 50 mm (minimum).  
Weight: between 8 and 10 kg, depending on the accessories.



Only 1 aux contact block may be installed when using this enclosure.



### 10.2. Polycarbonate enclosure

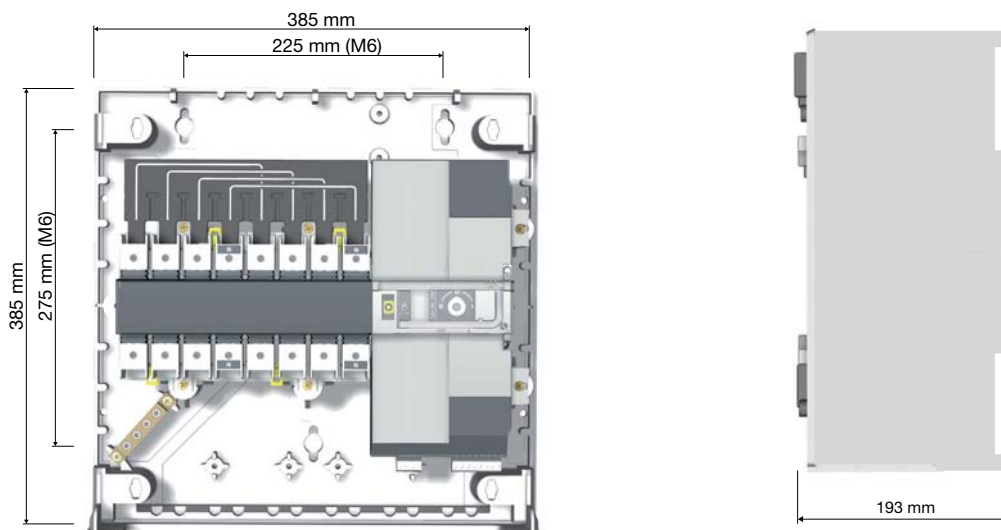
Ref. 1309 9006

Dimensions and mounting

The enclosure must be wall-mounted using screws (not supplied). Recommended size: M6 50 mm (minimum).  
Weight: between 8 and 10 kg, depending on the accessories.



Only 1 aux contact block may be installed when using this enclosure.



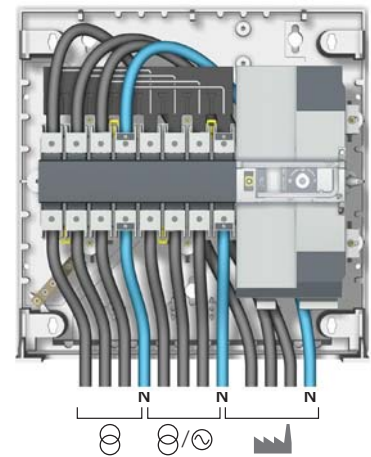
### 10.2.1. Wiring in a polycarbonate enclosure



Max cable size 25 mm<sup>2</sup>



Example: Neutral on the right



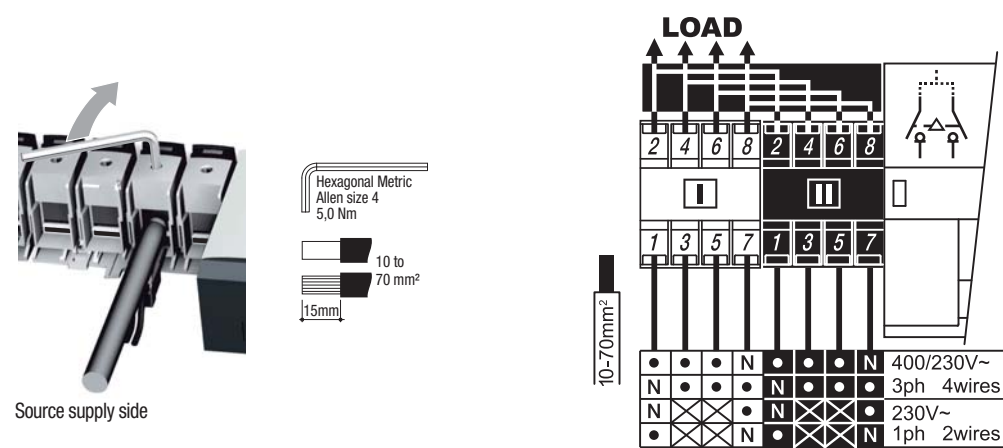
### 10.2.2. Extension unit

Ref. 1309 9007



Enables you to allocate additional space to the polycarbonate enclosure (ref. 1309 9006).

# 11. CONNECTION OF THE POWER CIRCUITS



 It is essential to tighten all terminals (even those that are not used).

## 11.1. Ratings / cross-sections table of correspondence

|                                    | 40 A | 63 A | 80 A | 100 A | 125 A | 160 A |
|------------------------------------|------|------|------|-------|-------|-------|
| Min cable size recommended (mm²)   | 10   | 16   | 25   | 35    | 50    | 50    |
| **Max cable size recommended (mm²) | 50   | 50   | 50   | 50    | 70*   | 70*   |

\*With extension unit.

\*\* Maximum cable size for rigid cable is 50 mm². For larger terminations use the power connection terminals ref. 1399 4017.

 Not compatible with aluminium cables

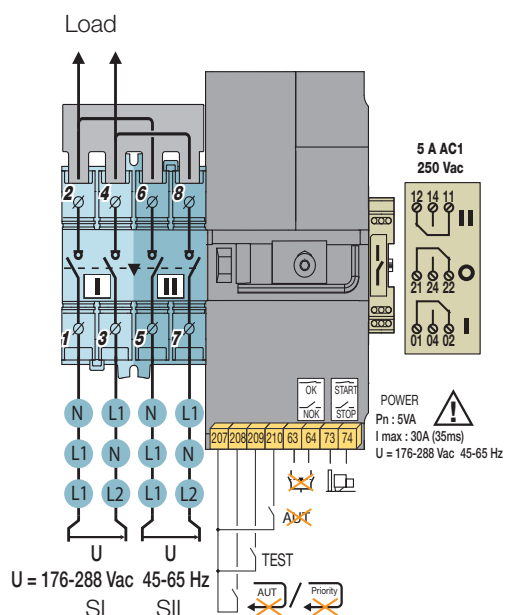
## 11.2. Parallel pole set-up for a 4P device used in single phase

Rating conversion table for use in single phase and two-by-two parallel pole set up.  
(Max ambient temperature = 40 °C).

| Nominal current rating in three-phase (A) | Nominal current rating in single-phase (2 poles in //) (A) |
|-------------------------------------------|------------------------------------------------------------|
| 40                                        | 63                                                         |
| 63                                        | 100                                                        |
| 80                                        | 125                                                        |
| 100                                       | 160                                                        |
| 125                                       | 200                                                        |
| 160                                       | 250                                                        |

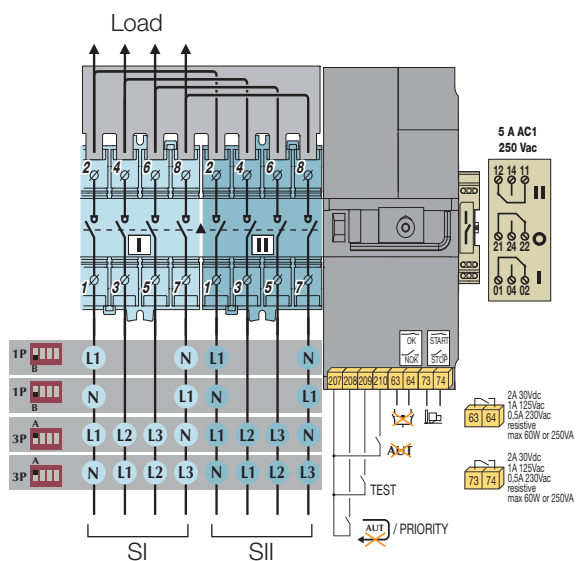
## 11.3. Network configurations

### 11.3.1. 230VAC network configurations (2P)



| Type of network    | Terminal 1 | Terminal 3 | Terminal 5 | Terminal 7 |
|--------------------|------------|------------|------------|------------|
| 1BL - Single phase | N          | L1         | N          | L1         |
|                    | L1         | N          | L1         | N          |
| 2BL - Two-phase    | L1         | L2         | L1         | L2         |

### 11.3.2. 230/400VAC network configurations (4P)



| Type of network                     | Position of the first dip switch     | Terminal 1     | Terminal 3 | Terminal 5 | Terminal 7      |
|-------------------------------------|--------------------------------------|----------------|------------|------------|-----------------|
| 1BL - Single phase                  | 1P - Position B<br>(dip switch down) | L1             | /          | /          | N               |
|                                     |                                      | N              | /          | /          | L1              |
| 4NBL - Three-phase with neutral     | 3P - Position A<br>(dip switch up)   | L1             | L2         | L3         | N               |
|                                     |                                      | N              | L1         | L2         | L3              |
| 3NBL - Three-phase without neutral* | 3P - Position A<br>(dip switch up)   | L1             | L2         | L3         | Neutral transfo |
|                                     |                                      | Neutre transfo | L3         | L2         | L1              |



\* In case of three-phase without neutral configurations you must first configure the neutral position by wiring the product for the first time with a network 4NBL.

### 11.3.3. Three phase without neutral network

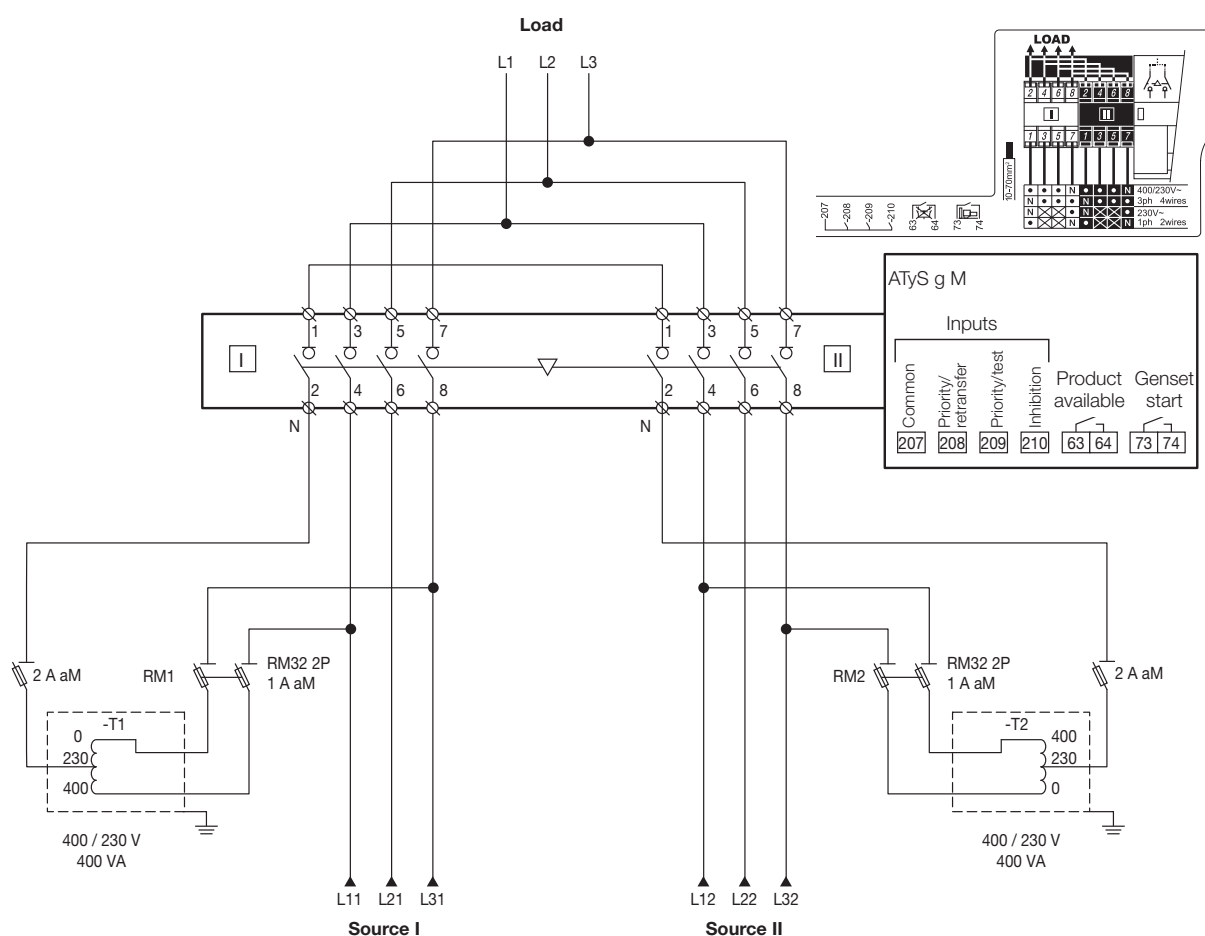
For three-phase networks without neutral (3NBL) 400Vac, a neutral must be recreated to allow the ATyS M to operate at 230Vac. To recreate the neutral, we recommend the use of quantity 2x 400VA auto-transformers connected as shown below. The neutral position must be defined as neutral on the left or neutral on the right in advance and then wired accordingly. The example below shows the wiring for a product configured with neutral on the left



A new product must have the neutral configuration pre-programmed as on the left or on the right at the first start up using a real (not a recreated) 3 phase + neutral supply.

#### 11.3.3.1. Auto-transformer connections

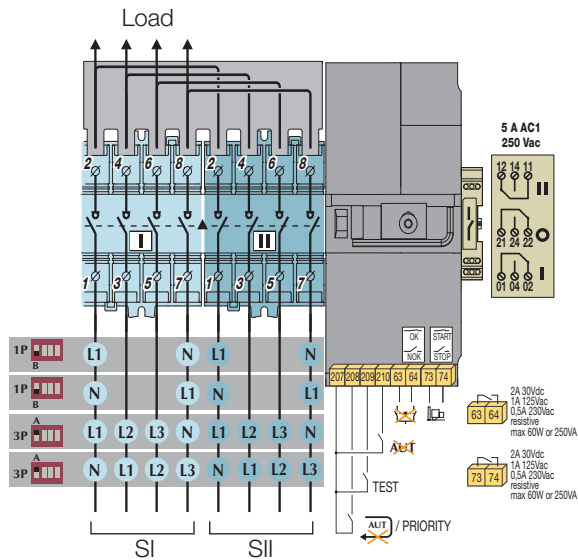
Reference 1599 4121



Note : Phase unbalance is not active in 3NBL configurations.

### 11.3.3.2. Procedure for the configuration and storage of the neutral position.

230/400VAC network configurations without neutral conductors.



#### Step 1

It is first necessary to connect the ATyS g M in three-phase + neutral (4NBL) to allow configuration of the neutral position (neutral position is detected at the first power-up).

#### Step 2

Connect the autotransformers.



**Neutral must be connected as shown in the drawing above in section «11.3.3.1. Auto-transformer connections», page 29**

### 11.3.3.3. Reset of neutral position

In case the network is not recognized by the ATyS g M (or in case you would like to change the neutral position), proceed as follows:

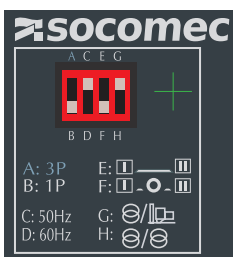
#### Step 1

Ensure that the product is powered and within voltage limits.  
Open the AUTO/MANU cover.



#### Step 2

Set DIP Switch 1 from 3P to 1P.



#### Step 3

Set DIP Switch 1 from 1P to 3P.

#### Step 4

Close the cover.

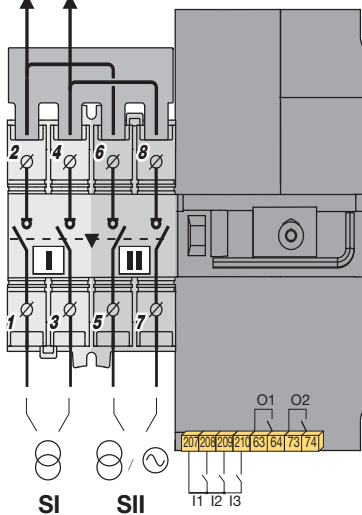
**End of the procedure for detecting the neutral position.**

## 12. CONNECTION OF CONTROL/COMMAND CIRCUITS

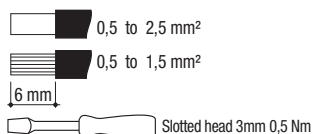
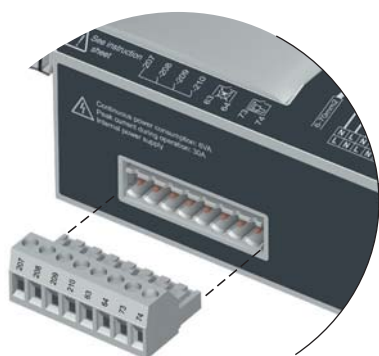
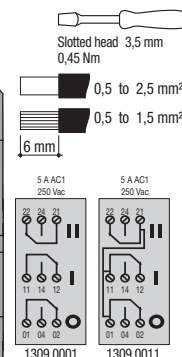
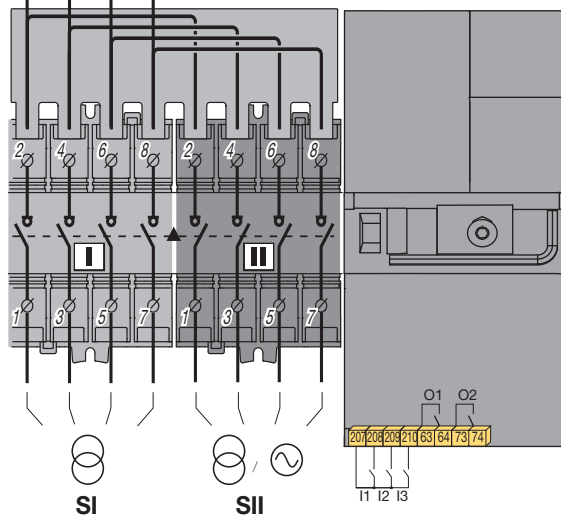


Switch to manual mode before connecting the product. (Front Auto/Manu cover open). The product is delivered in the 0 position.

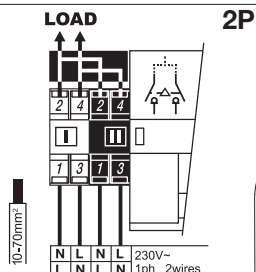
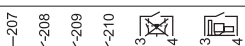
LOAD SIDE



LOAD SIDE



See instruction sheet

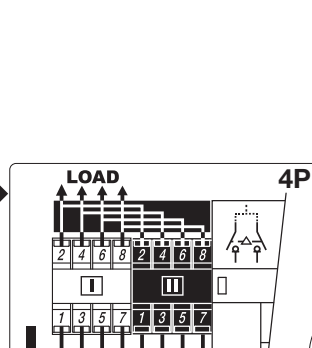


All pressure on the connector pins is to be avoided during wiring of the auxiliary cables

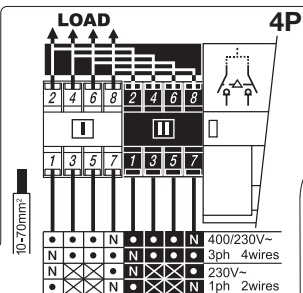
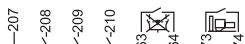


The product is delivered in the 0 position and in auto mode. Maximum control cables length = 10 m. In case of longer distance, use control relays.

Source must always be connected as show above.



See instruction sheet



Ensure that the product is in Manual Mode (front cover open).

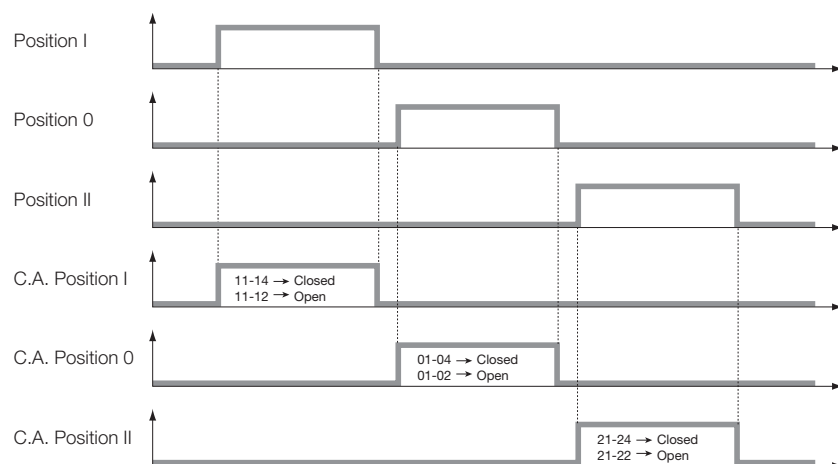


## 12.1. Terminal connectors designation

| Type    | Terminal no. | Application                                          | Status of the contact | Description                                                                                          | Output characteristics                                                                    | Recommended connection cross-section |
|---------|--------------|------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------|
| Inputs  | I1: 207/208  | Network/<br>Network                                  |                       | With priority                                                                                        | Dry potential free contact                                                                | 0.5 to 2.5 mm² (rigid)               |
|         |              |                                                      |                       | Without priority                                                                                     |                                                                                           |                                      |
|         |              | Network-<br>Genset.                                  |                       | Automatic retransfer                                                                                 |                                                                                           |                                      |
|         |              |                                                      |                       | Manual Retransfer                                                                                    |                                                                                           |                                      |
|         | I1: 207/209  | Network/<br>Network                                  |                       | Source priority 1                                                                                    | Dry potential free contact                                                                |                                      |
|         |              |                                                      |                       | Source priority 2                                                                                    |                                                                                           |                                      |
|         |              | Network-<br>Genset.                                  |                       | Stop the test on load                                                                                |                                                                                           |                                      |
|         |              |                                                      |                       | Test on load                                                                                         |                                                                                           |                                      |
|         | I3: 207/210  | Network-<br>Network or<br>Network-<br>Generating set |                       | AUTO mode                                                                                            | Dry potential free contact                                                                |                                      |
|         |              |                                                      |                       | Automatic mode inhibition                                                                            |                                                                                           |                                      |
| Outputs | O1: 63/64    | Network-<br>Network or<br>Network-<br>Generating set |                       | Product not available :<br>- Manual mode<br>- Command default<br>- Electronic default<br>- No source | Resistive load<br>2A 30 Vdc<br>0.5A 230Vac<br>Pmax: 60W or 125VA<br>Umax: 30Vdc or 230Vac |                                      |
|         |              |                                                      |                       | Product available                                                                                    |                                                                                           |                                      |
|         | O2: 73/74    | Network-<br>Genset.                                  |                       | No start command genset                                                                              | Resistive load<br>2A 30 Vdc<br>0.5A 230Vac<br>Pmax: 60W or 125VA<br>Umax: 30Vdc or 230Vac |                                      |
|         |              |                                                      |                       | Generating set starting                                                                              |                                                                                           |                                      |
|         |              |                                                      |                       |                                                                                                      |                                                                                           |                                      |
|         |              |                                                      |                       |                                                                                                      |                                                                                           |                                      |

| Type                                 | Terminal no. | Status of the contact | Description                      | Output characteristics          | Recommended connection cross-section  |
|--------------------------------------|--------------|-----------------------|----------------------------------|---------------------------------|---------------------------------------|
| Auxiliary contact block<br>1309 0001 | 11/12/14     |                       | Changeover switch in position I  | 250V AC 5A<br>AC1<br>30 Vdc 5 A | 0.5 to 2.5 mm <sup>2</sup> (rigid)    |
|                                      | 21/22/24     |                       | Changeover switch in position II | 250V AC 5A<br>AC1<br>30 Vdc 5 A |                                       |
|                                      | 01/02/04     |                       | Changeover switch in position 0  | 250V AC 5A<br>AC1<br>30 Vdc 5 A |                                       |
| Auxiliary contact block<br>1309 0011 | 11/12/14     |                       | Changeover switch in position I  | 250V AC 5A<br>AC1<br>30 Vdc 5 A | 0.5 to 1.5 mm <sup>2</sup> (stranded) |
|                                      | 21/22/24     |                       | Changeover switch in position II | 250V AC 5A<br>AC1<br>30 Vdc 5 A |                                       |
|                                      | 01/02/04     |                       | Changeover switch in position 0  | 250V AC 5A<br>AC1<br>30 Vdc 5 A |                                       |

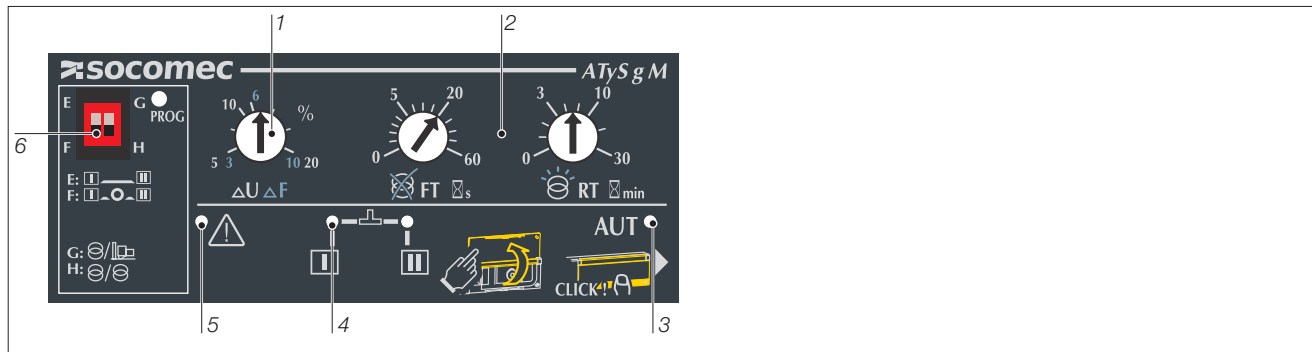
## 12.2. Auxiliary contact operating schedule



## 13. OPERATION

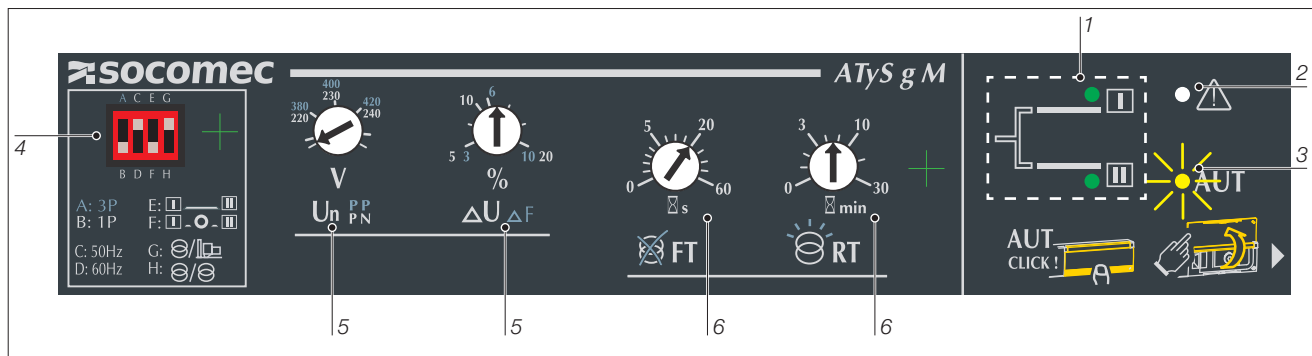
### 13.1. Presentation of the product interface

#### 13.1.1. 2P product interface

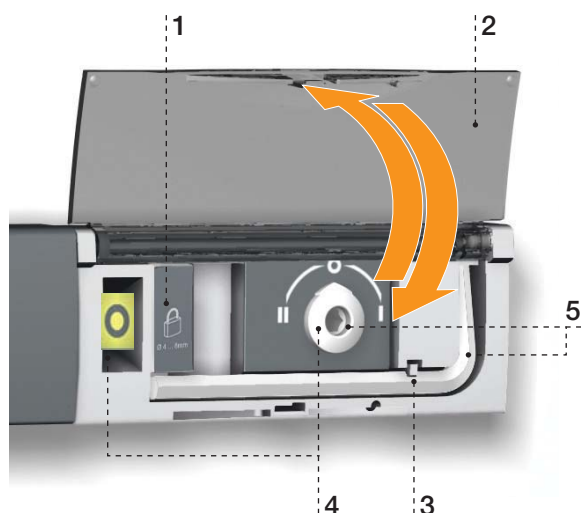


1. Adjustment potentiometers voltage and frequency thresholds
2. Potentiometers to set timers
3. Auto LED
4. Source and Source availability indicators
5. Fault LED
6. Dip switches

#### 13.1.2. 4P product interface



1. Source and Source availability indicators
2. Fault LED
3. Auto LED
4. Dip switches
5. Adjustment potentiometers of the rated voltage and frequency and voltage thresholds
6. Potentiometers to set timers



#### 1. Locking

- Option to padlock using a 1 x 8 mm max. padlock.

#### 2. AUT/MAN cover

- Open the cover to switch to manual mode.
- Close the cover to return to automatic (remote control) mode.
- Open and close the cover to clear faults.

#### 3. Auto/Manual mode sensor

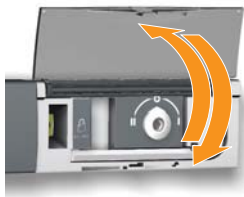
#### 4. Switch position indicators

- Display of position I, 0, II.

#### 5. Manual switching

- Insert the Allen key (5.0 mm) provided and turn to switch manually.
- Manual operation is not possible when padlocked.

### 13.1.3. Reset

| Operating fault reset                                                             | Reset Software (without loss of the settings)                                      |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Open and re-close the AUT/MAN cover                                               | Insert a pointed tip into the orifice on the upper part of the product.            |
|  |  |

## 13.2. Manual mode

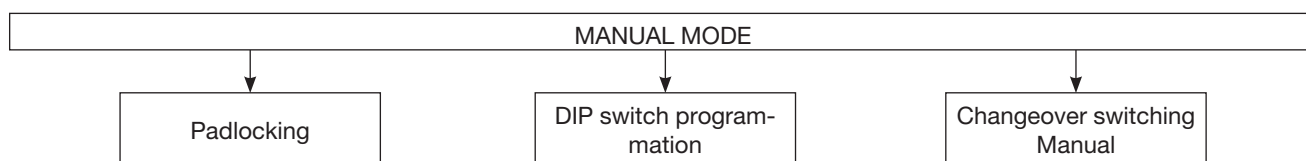
To access manual mode, open the Aut/Man cover.

Once manual mode is active (cover open) it is possible:

- To lock the changeover switch.
- To access the DIP switches programming.
- To manually operate the changeover switch using the handle.



As soon as manual mode is activated, remote orders are inhibited (except the Genset start order in case of a mains loss)



### 13.2.1. Manual switching

Use the handle situated on the front panel under the cover to manoeuvre the changeover switch. To simplify the operation, it is advised to also use the handle extension that is delivered with the product.

Check the changeover switch position on the indicator situated on the front panel before making any operation.

- From position I, turn anti-clockwise to get to position 0
- From position 0, turn anti-clockwise to get to position II
- From position II, turn clockwise to get to position 0
- From position 0, turn clockwise to get to position I



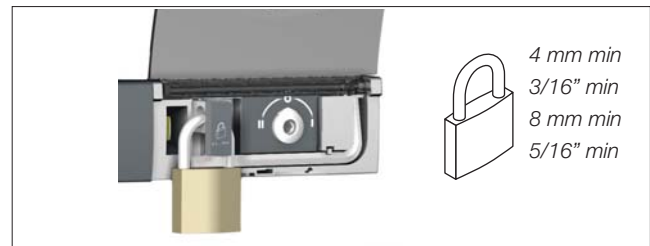
Do not force the product (Max 8 Nm).

### 13.3. Padlocking

Enables locking in the 0 position (factory configuration) or in positions I, 0 or II (user configurable).  
It is necessary to configure padlocking to all positions before installation as access to configuration is at the back of the product. Refer to section «8.1. Changing the padlocking configuration», page 21

Locking is only possible in manual mode (cover open).

Pull on the locking handle to enable the interlock. Lock by inserting a padlock into the orifice provided for this purpose.



## 13.4. Programming

Whilst in manual mode check the wiring and installation. If ok power up the product.

This product must always be put into service by qualified and approved personal.

The LED signalling is only active when the product supply is on (supply LED lit).

To set the dip switches, it is necessary to open the AUTO/MANU cover.

The commissioning must always result in having at least 1 LED source available lit..

Therefore, the voltage and frequency must be within the defined thresholds.



Any action on the potentiometers changes the settings, even if the cover is closed.

### 13.4.1. Single phase version

#### A Dip switch settings

**Stop in 0 position: E-F**

- E: No stop in 0 position
- F: 2s stop in 0 position

**Type of application: G-H**

- G: Network - Genset
- H: Network - Network

#### B Hysteresis settings

**HYST: 20 % $\Delta U/F$**   
 $\Delta U$ : 5-20%  
 $\Delta F$ : 3-10%

#### C Timer settings

**Loss of priority source timer**

FT: 0-60 sec.

**Return of priority source timer**

RT: 0-30 min.

#### D Source supply voltage and frequency Auto-Configuration

Ensure that the supply voltage is available and within the following limits:

Un: 176-288VAC  
Fn: 45-65Hz

Press PROG for  $\geq 2s$

| LED state | Auto Conf result | Action        |
|-----------|------------------|---------------|
| Steady ON | OK               | Ready         |
| Blinking  | Not OK           | Repeat step D |

#### E LED info

Source availability LED

| Source | LED ON             | LED OFF                                | LED blinking                              |
|--------|--------------------|----------------------------------------|-------------------------------------------|
|        | Source 1 available | Source 1 not available or out of range | - a timer is counting down<br>- test mode |
|        | Source 2 available | Source 2 not available or out of range | - a timer is counting down                |

Fault and state of the product LED's

|  | LED ON    | LED OFF                           | LED blinking      |
|--|-----------|-----------------------------------|-------------------|
|  | Fault     | Product OK or S1-S2 not available | Please wait       |
|  | Auto mode | Manual mode                       | Manual retransfer |

Fault reset

## 13.4.2. Three phase version

The LED signalling and operation is only active when the product supply is available.

To set the dip switches, it is necessary to open the Auto/Manual cover.

Commissioning must always result in having at least 1 LED source available on.

(Therefore, the voltage and frequency must be within the defined thresholds).

 Any action on the potentiometers will change the settings, even when the cover is closed.

### A Dip switch settings



**Type of network: A-B**

- A: 3P
- B: 1P

**Frequency: C-D**

- C: 50 Hz
- D: 60 Hz

**Stop in 0 position: E-F**

- E: No stop in 0 position
- F: 2s stop in 0 position

**Type of application: G-H**

- G: Network - Genset
- H: Network - Network

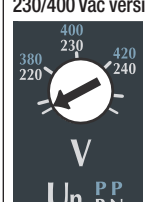
### B Source voltage supply configuration

127/230 Vac version

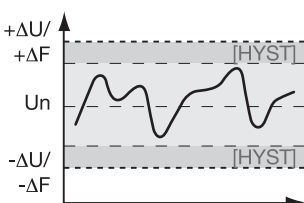


Un (P-P): 208-240 Vac  
Un (P-N): 120-138 Vac

230/400 Vac version



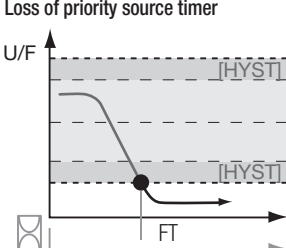
Un (P-P): 380-420 Vac  
Un (P-N): 220-240 Vac



HYST: 20 %  $\Delta U/F$   
 $\Delta U$ : 5-20%  
 $\Delta F$ : 3-10%

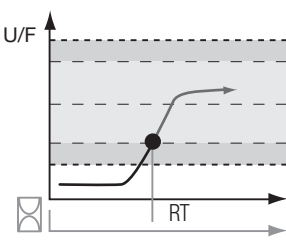
### C Timer settings

**Loss of priority source timer**



FT: 0-30 sec.

**Return of priority source timer**



RT: 0-30 min.

### D Led info

**Source availability LED**

| Source                                                                              | LED ON             | LED OFF                          | LED blinking                              |
|-------------------------------------------------------------------------------------|--------------------|----------------------------------|-------------------------------------------|
|  | Source 1 available | Source 1 missing or out of range | - a timer is counting down<br>- test mode |
|  | Source 2 available | Source 2 missing or out of range | - a timer is counting down                |

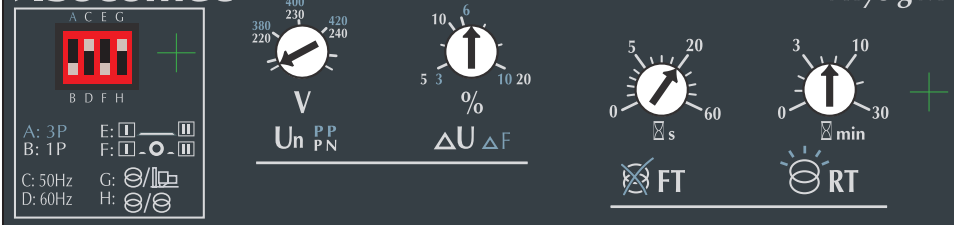
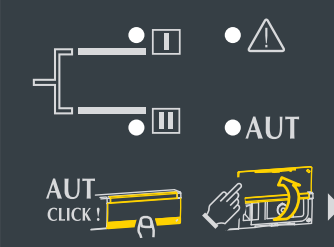
**Fault and state of the product Leds**

|                                                                                     | LED ON    | LED OFF     | LED blinking      |
|-------------------------------------------------------------------------------------|-----------|-------------|-------------------|
|  | Fault     | Product OK  | Wait              |
|  | Auto mode | Manual mode | Manual retransfer |



Fault reset



CDT and DTT timers are fixed:

Genset cooling time: 4min and validation of secondary network / backup source stability = 5 sec.

### 13.4.3. Sealable configuration cover

Configuration settings may be protected by means of a sealable cover. Refer to section «5. Optional accessories», page 18.

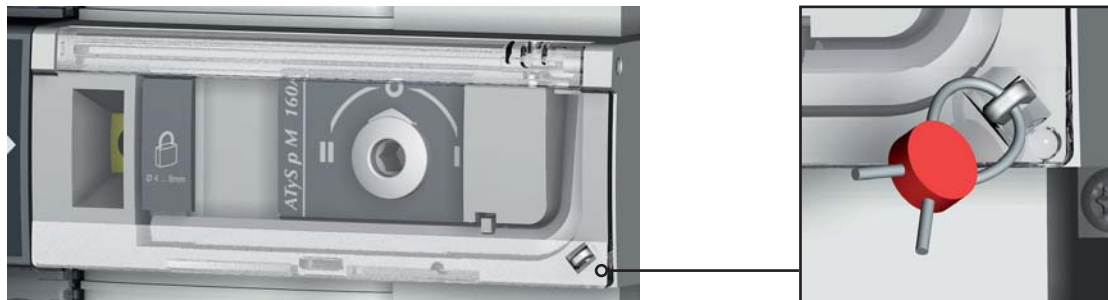


## 13.5. Automatic mode

Close the cover to enter automatic mode. Make sure that the changeover switch is in automatic mode (AUT LED lit).

### 13.5.1. Sealable Auto/Manual cover

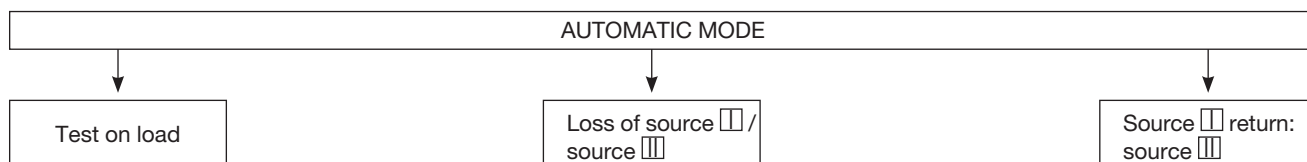
Auto/Manu mode can be protected by sealing the standard Auto/Manu cover as shown.



## 13.6. Possible actions

Once in automatic mode, it is possible to:

- Activates on load test
- Run a source ☐ or source loss sequence ☐,
- start a restoration sequence source ☐ or source ☐.

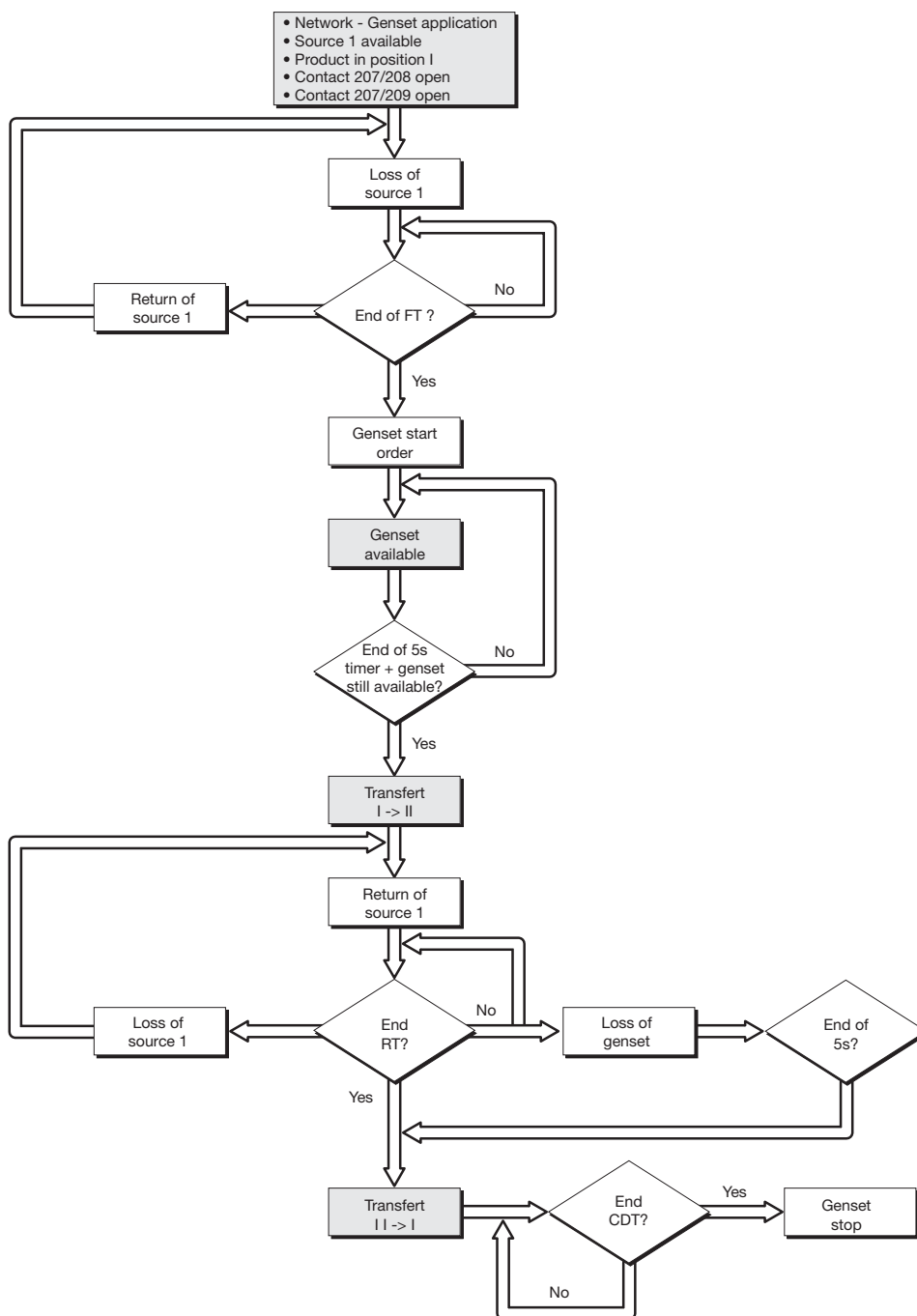


- Automatic mode returns to active 2 seconds after switching from manual to automatic mode.
- Source I source II voltages and frequencies are checked to define the changeover switch's new stable status.
- The same automatic mode recognition sequence must be executed following power-off and complete discharge of the power reserves.

| MODE | 207 208       | 207 208       |
|------|---------------|---------------|
| G    | <p>MODE 1</p> | <p>MODE 2</p> |
| H    | <p>MODE 3</p> | <p>MODE 4</p> |

## Network - Genset applications

-

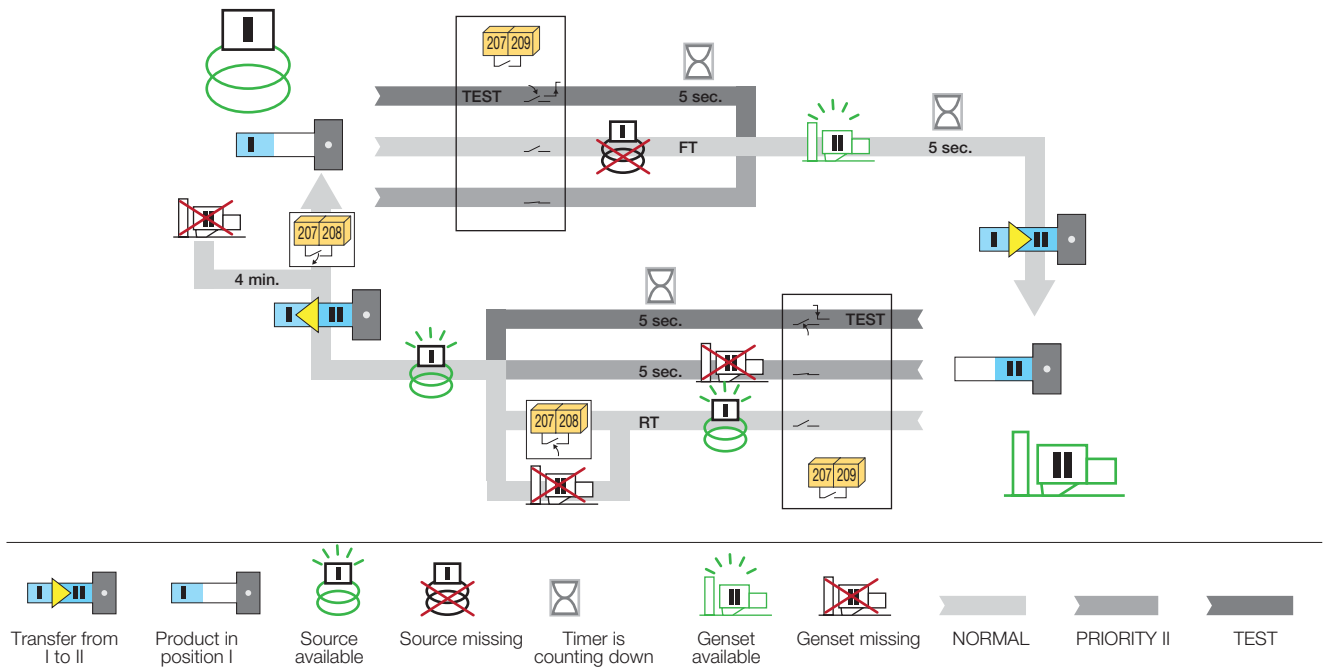


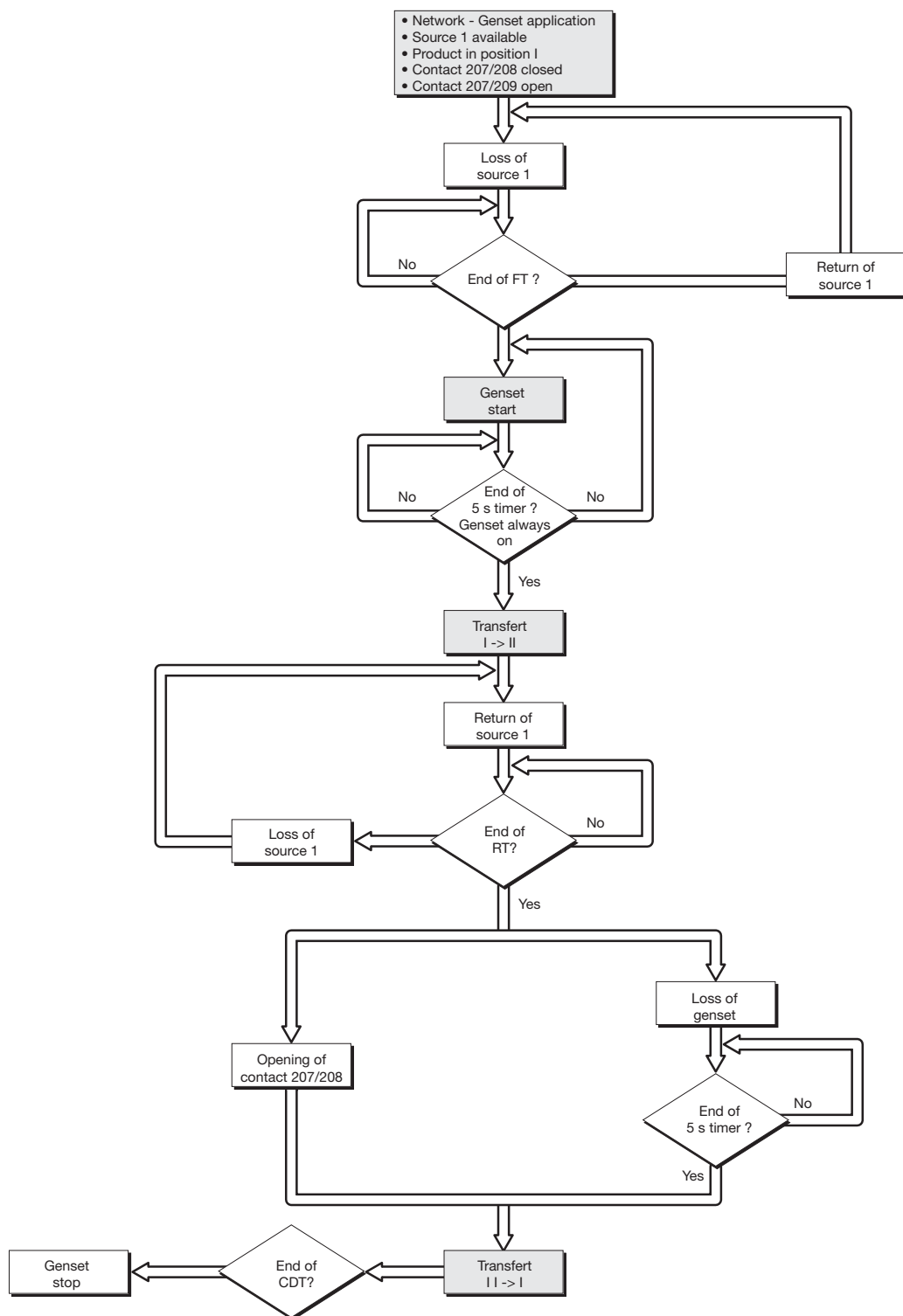
CDT = cool down timer fixed at 4 min.

### 13.7.2. Mode 2a: Controlled retransfer

Network - genset application

- Contact 207/208 closed => Manuel retransfer



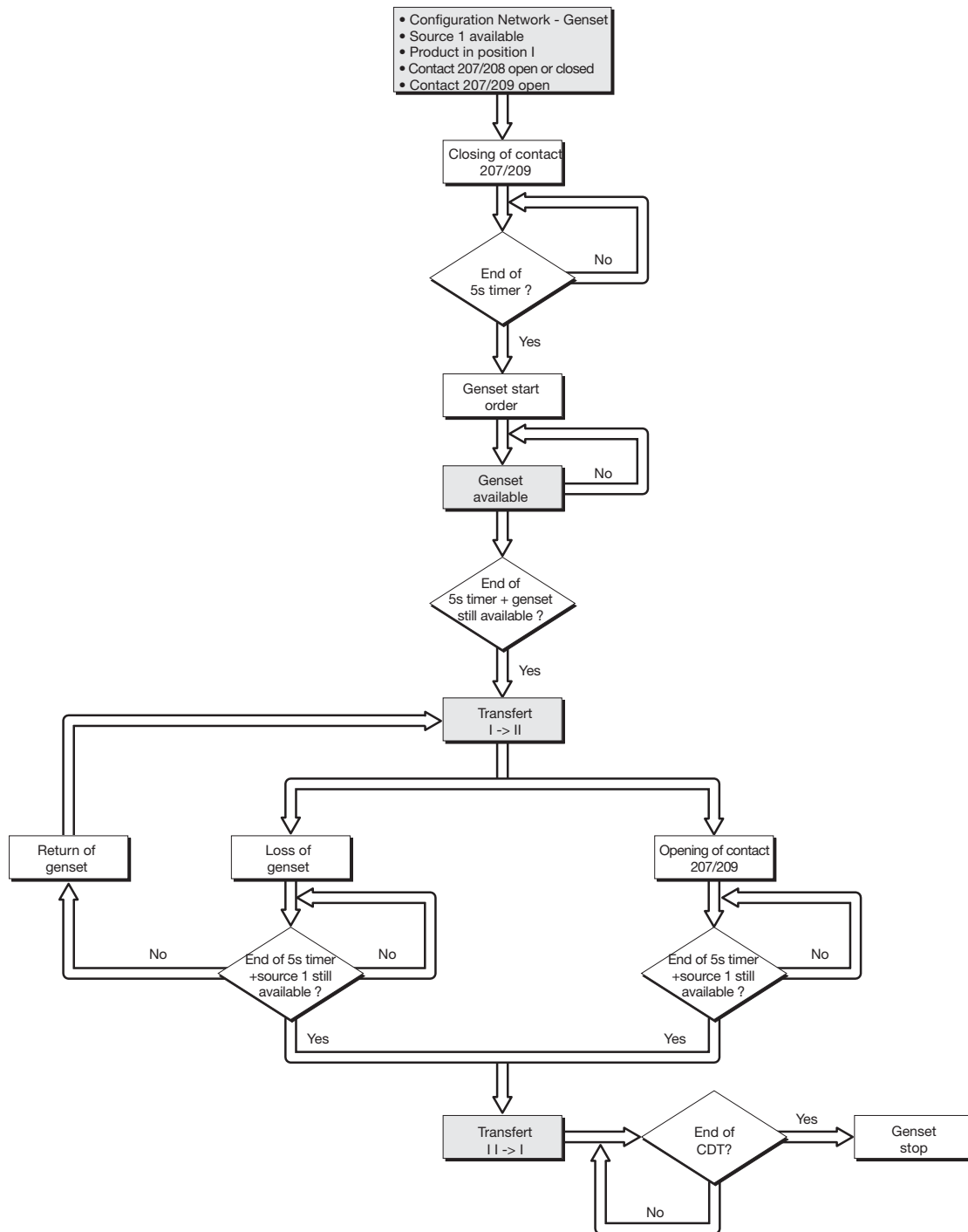


CDT = cool down timer fixed at 4 min.

### 13.7.3. Mode 2b: Controlled transfer

Network - genset application

- Contact 207/208 closed => Test on load

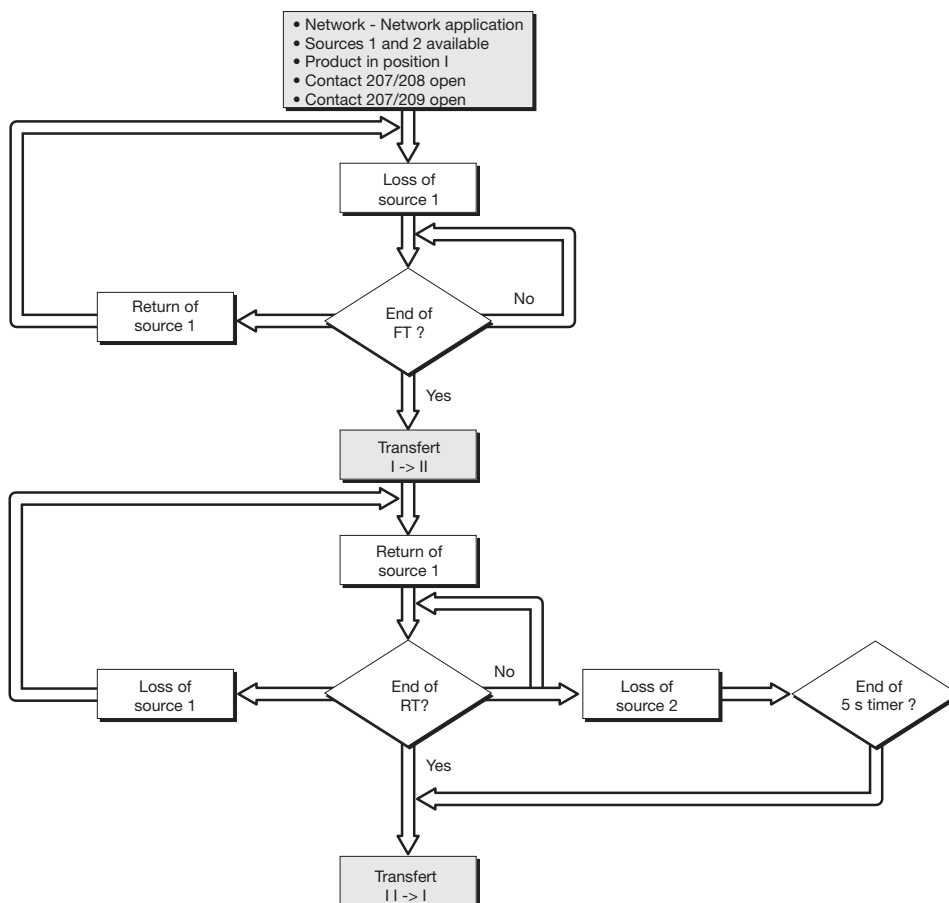
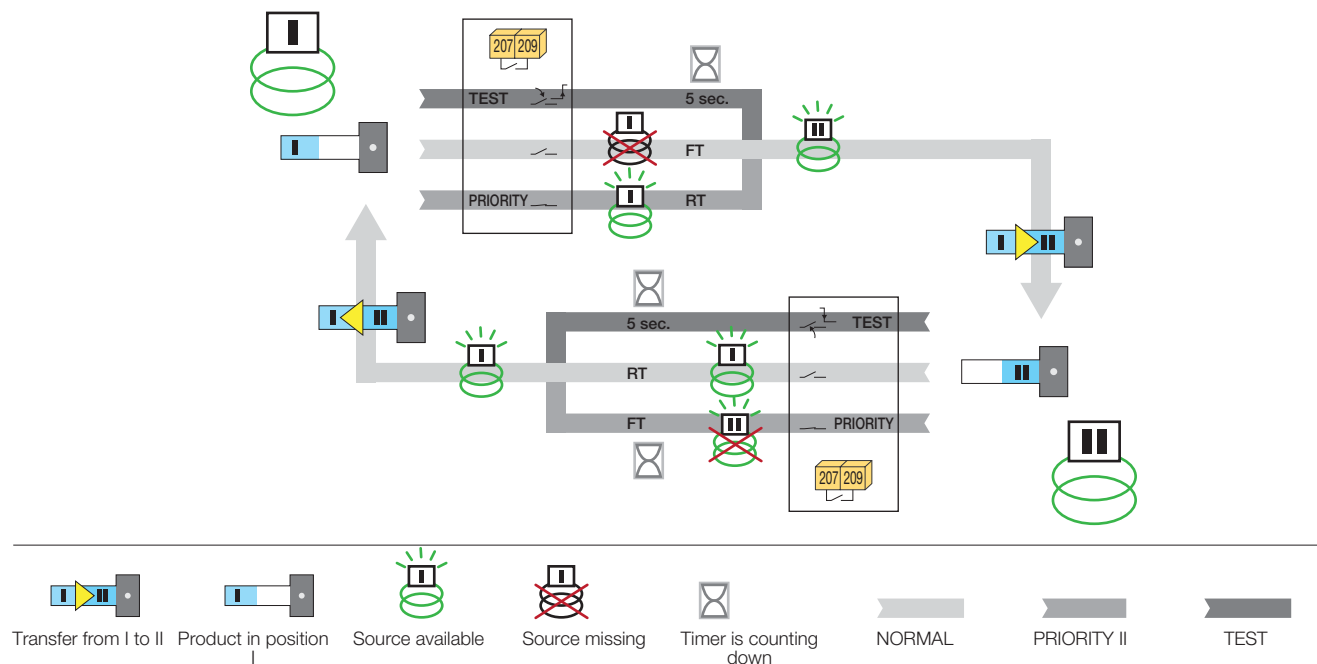


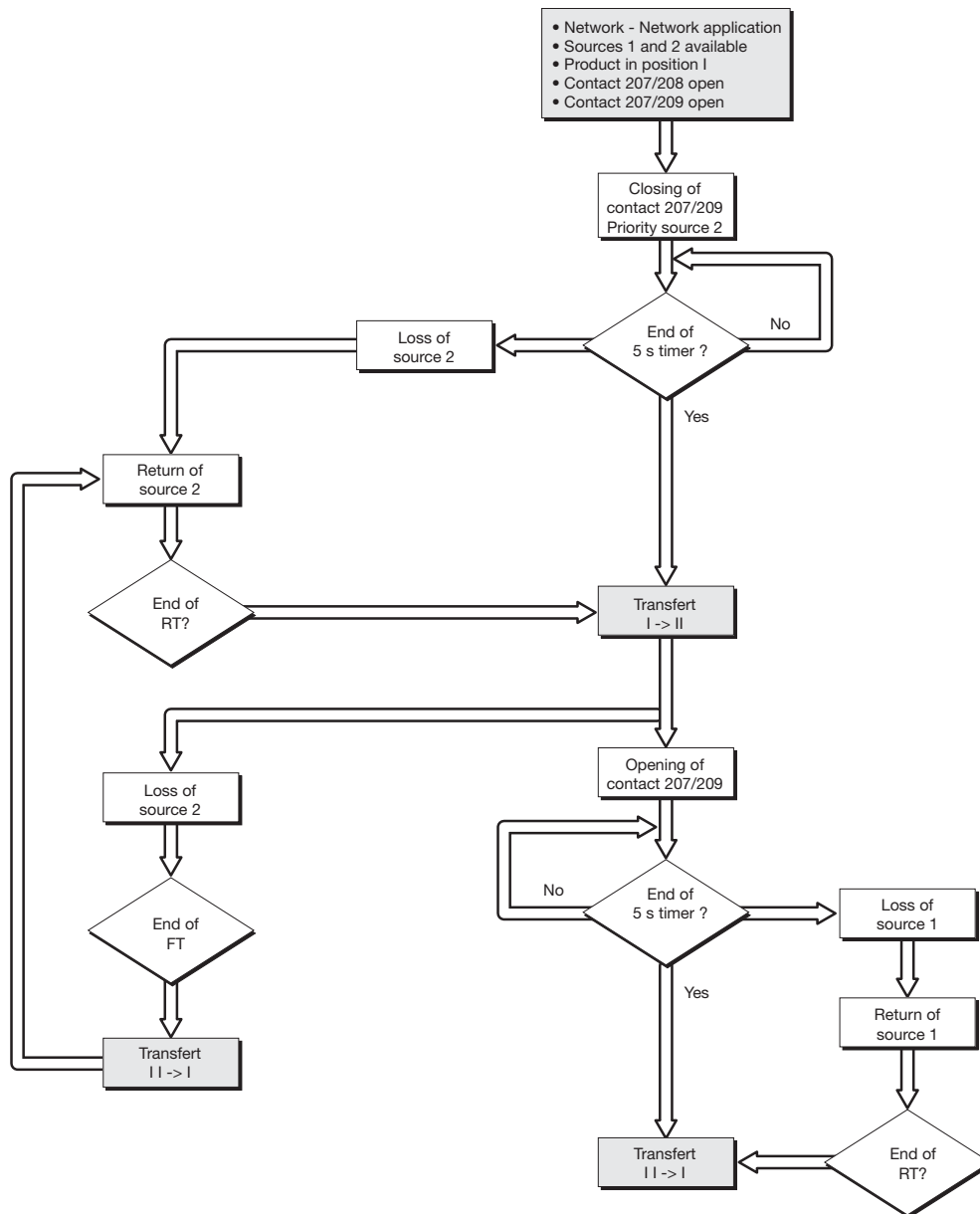
CDT = cool down timer fixed at 4 min.

### 13.7.4. Mode 3: Network - Network application with priority

Network - network application

- Contact 207/208 open => functioning with priority.

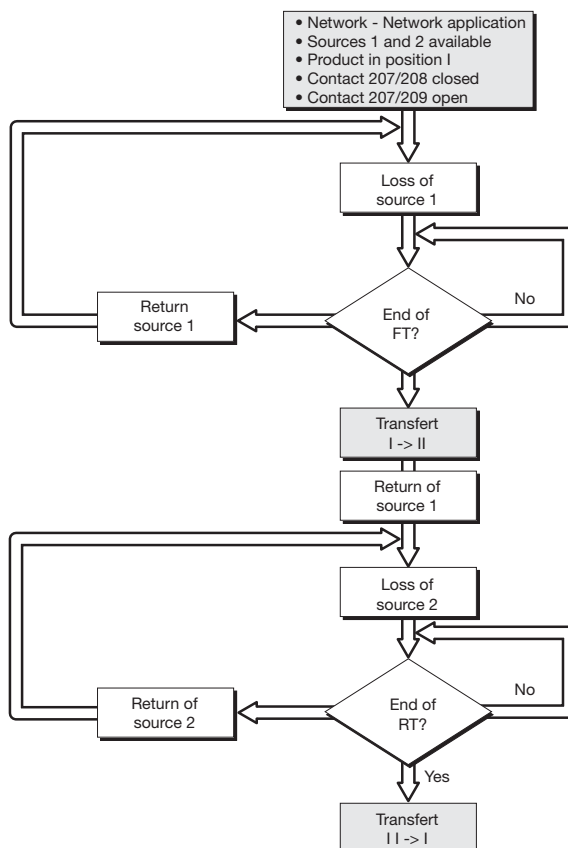
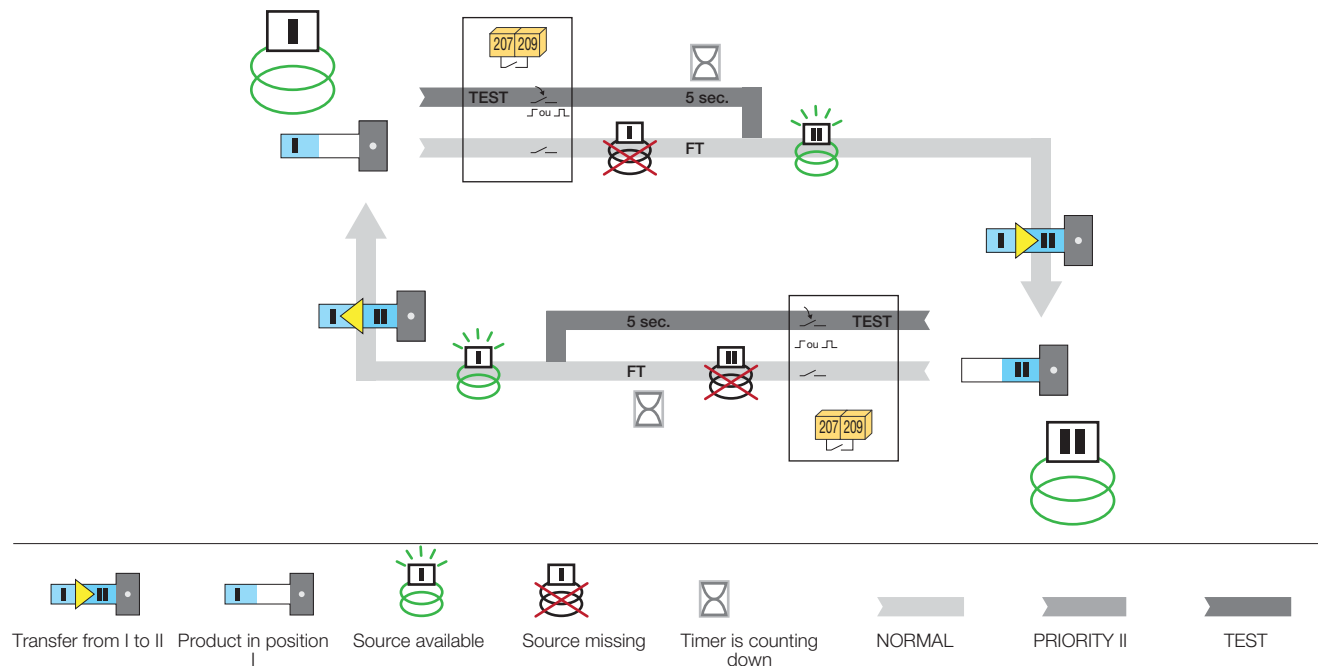


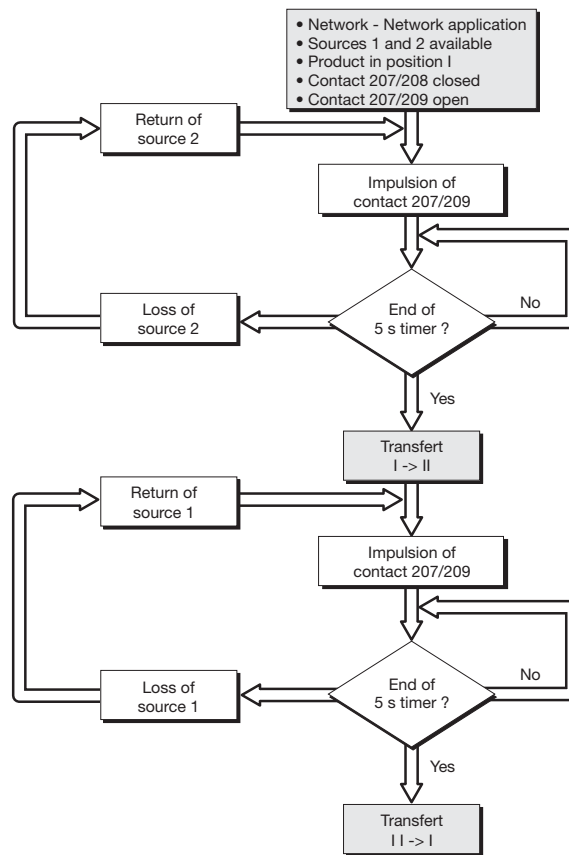


### 13.7.5. Mode 4: Network - Network application without priority

Network - Network application

- Contact 207/208 closed => functioning without priority.





## 14. PREVENTATIVE MAINTENANCE

It is recommended to operate the product at least once a year.

I - O - II - O - I

Note: Maintenance should be planned carefully and carried out by qualified and authorised personnel. Consideration of the critical level and application where the product is installed should form an essential and integral part of the maintenance plan. Good engineering practice is imperative whilst all necessary precautions must be taken to ensure that the intervention (whether directly or indirectly) remains safe in all aspects.



The use of any Megohmmeter is prohibited on this product as the connection terminals are intrinsically connected to the sensing circuit.

# 15. TROUBLESHOOTING GUIDE

| Symptoms                                                                            | Actions to be carried out                                                                                                                                                                                                                                                                                                                                                                                                                                          | Expected results                               |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Adjustment potentiometers of the rated voltage and frequency and voltage thresholds | <p>Check for a voltage of 176 to 288 Vac on the supply terminals:</p> <ul style="list-style-type: none"> <li>• 127 / 230 Vac model: <ul style="list-style-type: none"> <li>- Terminals 3-5 correspond to SOURCE 1</li> <li>- Terminals 3-5 correspond to SOURCE 2</li> </ul> </li> <li>• 230 / 400 Vac model: <ul style="list-style-type: none"> <li>- Terminals 1-7 correspond to SOURCE 1</li> <li>- Terminals 1-7 correspond to SOURCE 2</li> </ul> </li> </ul> | The "AUT" LED is lit (if the cover is closed)  |
| The "Priority SOURCE Availability" LED does not come on                             | <p>Check the following parameters:</p> <ul style="list-style-type: none"> <li>• the type of network =&gt; 3P (DIP Switch 1 on position A)<br/>1P (DIP Switch 1 on position B)</li> <li>• frequency =&gt; 50 Hz (DIP Switch 2 on position C)<br/>60 Hz (DIP Switch 2 on position D)</li> <li>• the nominal voltage =&gt; with a multimeter, measure the voltage across the terminals and report the value on the potentiometer.</li> </ul>                          | The "Priority SOURCE Availability" LED is lit  |
|                                                                                     | Check the thresholds and hysteresis of rated voltages ( $\Delta U$ ) and frequencies ( $\Delta F$ ) and report them on the corresponding potentiometer.                                                                                                                                                                                                                                                                                                            |                                                |
|                                                                                     | <p>If using an Auto transformer - proceed as follows upon 1st switching on</p> <ul style="list-style-type: none"> <li>• Step 1: ATyS M6s must be connected to a three-phase + neutral network (4NBL) for setting the neutral position. Neutral position is detected upon first switching on.</li> <li>• Step 2: Connect the autotransformers. Warning: Neutral must be connected on the same side as in step 1.</li> </ul>                                         |                                                |
|                                                                                     | <p>How to reset the neutral position:</p> <ul style="list-style-type: none"> <li>• Step 1: Open the cover</li> <li>• Step 2: Set DIP Switch 1 from 3P to 1P</li> <li>• Step 3: Set DIP Switch 1 from 1P to 3P</li> <li>• Step 4: Close the cover</li> </ul>                                                                                                                                                                                                        |                                                |
| The "Emergency SOURCE Availability" LED does not come on                            | <p>Check the following parameters:</p> <ul style="list-style-type: none"> <li>• the type of network =&gt; 3P (DIP Switch 1 on position A)<br/>1P (DIP Switch 1 on position B)</li> <li>• frequency =&gt; 50 Hz (DIP Switch 2 on position C)<br/>60 Hz (DIP Switch 2 on position D)</li> <li>• the nominal voltage =&gt; with a multimeter, measure the voltage across the terminals and report the value on the potentiometer.</li> </ul>                          | The "Emergency SOURCE Availability" LED is lit |
|                                                                                     | CAUTION: a Generator operating off load can generate a $F_r$ and a $U$ lower than the nominal values: Check the thresholds and hysteresis of rated voltages ( $\Delta U$ ) and frequencies ( $\Delta F$ ) and report them on the corresponding potentiometer.                                                                                                                                                                                                      |                                                |
|                                                                                     | <p>If using an Auto transformer - proceed as follows upon 1st switching on</p> <ul style="list-style-type: none"> <li>• Step 1: ATyS M6s must be connected to a three-phase + neutral network (4NBL) for setting the neutral position. Neutral position is detected upon first switching on.</li> <li>• Step 2: Connect the autotransformers. Warning: Neutral must be connected on the side defined in Step 1.</li> </ul>                                         |                                                |
|                                                                                     | <p>How to reset the neutral position:</p> <ul style="list-style-type: none"> <li>• Step 1: Open the cover</li> <li>• Step 2: Set DIP Switch 1 from 3P to 1P</li> <li>• Step 3: Set DIP Switch 1 from 1P to 3P</li> <li>• Step 4: Close the cover</li> </ul>                                                                                                                                                                                                        |                                                |

| Symptoms                                                                                                     | Actions to be carried out                                                                                                                                                                                                                                                                                                                                                                                                            | Expected results                                                                                      |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| The product remains switched off after the Priority SOURCE is lost                                           | Check if voltage is between 176 to 288 VAC across the power supply terminals of emergency SOURCE : <ul style="list-style-type: none"> <li>• 127 / 230 Vac model: - Terminals 3-5 corresponding to the Emergency Source</li> <li>• 230 / 400 Vac model: - Terminals 1-7 corresponding to the Emergency Source</li> </ul>                                                                                                              | The "AUT" LED is lit                                                                                  |
|                                                                                                              | In case of transformer / Genset, check that FT timer (Main Failure Timer) has finished counting down. <ul style="list-style-type: none"> <li>• Use a stopwatch.</li> <li>• Start the stopwatch when the product has lost its Priority SOURCE.</li> <li>- Contact 73 - 74 must be closed after 60s max (M-G application )</li> <li>- GENSET run command = Contact 73-74 Closed</li> <li>- GENSET stop = Contact 73-74 Open</li> </ul> | The Genset works and the LED «Emergency Source Disponibility» is lit                                  |
| The product does not switch over after the Priority SOURCE is lost                                           | Check that the product is not in manual mode: <ul style="list-style-type: none"> <li>- Automatic mode = Cover closed</li> <li>- Manual mode = Cover open</li> </ul>                                                                                                                                                                                                                                                                  | The "AUT" LED is lit                                                                                  |
|                                                                                                              | Check that automatic operation has not been inhibited by external control commands (terminals 207-210)                                                                                                                                                                                                                                                                                                                               |                                                                                                       |
|                                                                                                              | Check the status of led « Emergency SOURCE availability ». If it is off, refer to the symptom concerned (higher in the list)                                                                                                                                                                                                                                                                                                         | The "AUT" and "Emergency SOURCE Availability" LEDs are lit                                            |
|                                                                                                              | In case of transformer / Transformer, check the setting of FT timer (Main Failure Timer). The duration of this time delay is between 0 and 60s. If necessary, use a stopwatch to check switching to SOURCE after FT countdown.                                                                                                                                                                                                       | At the end of the time delay, the product switches to mechanical position 0, and to emergency SOURCE. |
| The product does not switch over when the Priority SOURCE is restored                                        | Check that the product is not in manual mode: <ul style="list-style-type: none"> <li>- Automatic mode = Cover closed</li> <li>- Manual mode = Cover open</li> </ul>                                                                                                                                                                                                                                                                  | The "AUT" LED is lit                                                                                  |
|                                                                                                              | Check that automatic operation has not been inhibited by external control commands (terminals 207-210)                                                                                                                                                                                                                                                                                                                               |                                                                                                       |
|                                                                                                              | Check the state of the "Priority Source Availability" LED. If it is off, refer to the symptom concerned (higher in the list)                                                                                                                                                                                                                                                                                                         | The "AUT" and "Emergency SOURCE Availability" LEDs are lit                                            |
|                                                                                                              | Check the setting of RT timer (Main Return Timer). The duration of this delay is between 0 and 30 min. Use a stopwatch to check the switch to Priority SOURCE after the RT timer.                                                                                                                                                                                                                                                    | At the end of the time delay, the product switches to mechanical position 0, and to priority SOURCE.  |
|                                                                                                              | Check that the "manual retransfer" function is not active* <ul style="list-style-type: none"> <li>• Retransfer mode activated = Contact 207-208 closed</li> <li>• Retransfer mode deactivated = Contact 207-208 open</li> </ul> * if this function is not required.                                                                                                                                                                  | Contact 207-208 must be open to enable switching to priority SOURCE                                   |
| Return to Priority SOURCE has been executed, but the Emergency Source (for a Generator) continues to operate | Check CDT timer (Cool Down Timer) has finished counting down - Fixed time delay: 4 min <ul style="list-style-type: none"> <li>• Use a stopwatch.</li> <li>- Start the stopwatch when the product has switched over to the Priority SOURCE.</li> <li>- Contact 73-74 must be open after time delay CDT has finished counting down</li> </ul>                                                                                          | The GenSet switches off and led « Emergency SOURCE availability » is OFF                              |
|                                                                                                              | Check that the product is not in Automatic mode: <ul style="list-style-type: none"> <li>- Automatic mode = Cover closed</li> <li>- Manual mode = Cover open</li> </ul>                                                                                                                                                                                                                                                               | The "AUT" LED is lit                                                                                  |
|                                                                                                              | Check that automatic operation has not been inhibited by external control commands (terminals 207-210)                                                                                                                                                                                                                                                                                                                               |                                                                                                       |

| Symptoms                                                        | Actions to be carried out                                                                                                                                                                                                                        | Expected results                                        |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| ON LOAD TESTS cannot be launched                                | Check that the product is not in Automatic mode:<br>- Automatic mode = Cover closed<br>- Manual mode = Cover open                                                                                                                                | The "AUT" LED is lit                                    |
|                                                                 | Check that automatic operation has not been inhibited by external control commands (terminals 207-210)                                                                                                                                           |                                                         |
|                                                                 | Check if the ON Load test has started:<br>• On Load Test activated = Contact 207-209 Closed<br>• On Load Test inhibited = Contact 207-209 Open                                                                                                   | The ON LOAD TEST starts.                                |
| The product cannot be switched over using the handle            | Check the direction of rotation of the handle:<br>• Manual switchover from position 1 to position 2 is executed clockwise.<br>• The return operation is executed anti-clockwise                                                                  | The product can be switched over using the handle       |
|                                                                 | Check that the product is not padlocked                                                                                                                                                                                                          |                                                         |
|                                                                 | Use the handle extension on the ALLEN key to check that the appropriate adjustment torque is applied.                                                                                                                                            |                                                         |
|                                                                 | When using a single AC, check that the length of the screws used is not greater than 20 mm                                                                                                                                                       |                                                         |
| AUTOMATIC mode is not activated even though the cover is closed | Check that the plastic pin is in place on the bottom of the cover. This pin activates the sensor which indicates the position of the cover (open or closed).                                                                                     | The "AUT" LED is lit                                    |
|                                                                 | Check that automatic operation has not been inhibited by external control commands (terminals 207-210)                                                                                                                                           |                                                         |
| The product cannot be locked                                    | Check the mechanical position of the changeover switch:<br>• Locking is only possible in position 0 as standard<br>• Locking in positions 1-0-2 is possible by modifying the product in accordance with the instructions                         | Locking is possible                                     |
| The product is faulty                                           | Check status of contact 63-64 (Product available):<br>• Product available: 63-64 = closed<br>Product non available :<br>63-64 = open<br>Product available = A product which is within voltage and frequency limits without any internal failure. | FAULT LED is OFF                                        |
|                                                                 | Open and close the cover to reset the fault;                                                                                                                                                                                                     |                                                         |
|                                                                 | If the product is still faulty                                                                                                                                                                                                                   | Product must be returned to factory for troubleshooting |



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