

ATS Controller

ATyS C25



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1. GENERAL SAFETY INSTRUCTIONS

- This manual provides instructions on safety, connections instructions on the SOCOMEC ATyS C25 ATS controller
- Whether the ATyS C25 is sold as a loose product, as a spare, in a kit or as part of an enclosed solution or in 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 offload by adequately trained and qualified personnel using the appropriate protection equipment.
- 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 C25.
- The ATyS C25 meets the European Directives governing this type of product and includes CE marking on each product.
- No covers on the C25 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 voltage sensing cables connected to the ATyS C25 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 carrying out any maintenance or other actions on live parts in the vicinity of exposed live parts, ensure that the switch including all control and associated circuits are de-energized.

 DANGER	RISK: Electric shock, burns, death
 WARNING	RISK: Possible personal injury
 CAUTION	RISK: Equipment damage

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

Abbreviation and terms:

ATS : Automatic transfer switch (as defined in 60947-6-1)

ATSE : Automatic transfer switching equipment (as defined in 60947-6-1)

RTSE : Remotely operated transfer switching equipment (as defined in 60947-6-1)

HMI : Human machine interface (includes DIP switch and LED information available on the ATyS C25 front face).

2. STANDARDS

- As a minimum the ATyS C25 comply with the following international standards:
 - IEC/EN 60947-6-1*
 - IEC/EN 60947-1
 - IEC/EN 61010-2-201
 - IEC/EN 61010-2-030
 - IEC/EN 61010-1
 - GB/T 14048.11*
 - GB/T 14048.11 Annex C
 - EMC 60947
- The Electromagnetic compatibility (EMC) directive 2004/30/UE
- LVD Low voltage directive 2014/35/UE
- EMC according to IEC/EN 60947-6-1 and GB/T 14048.11 (including annex C) & IEC / EN 61326-1 standard
- Vibration according to IEC 60068-2-6 / GB/T 2324.10
- Shock test according to IEC 60068-2-27 / GB/T 2324.5
- Dry heat 16 h , 70 °C according to IEC 60068-2-2 / GB/T 2324.2
- Damp heat at 55°C according to IEC 60068-2-30 / GB/T 2324.4
- Low Temperature 16 h, -25 °C according to IEC 60068-2-1 / GB/T 2423.1
- Salt mist severity 1 according with IEC 60068-2-52 / GB/T 2423.11

* When associated with Socomec ATyS r / ATyS S RTSE products

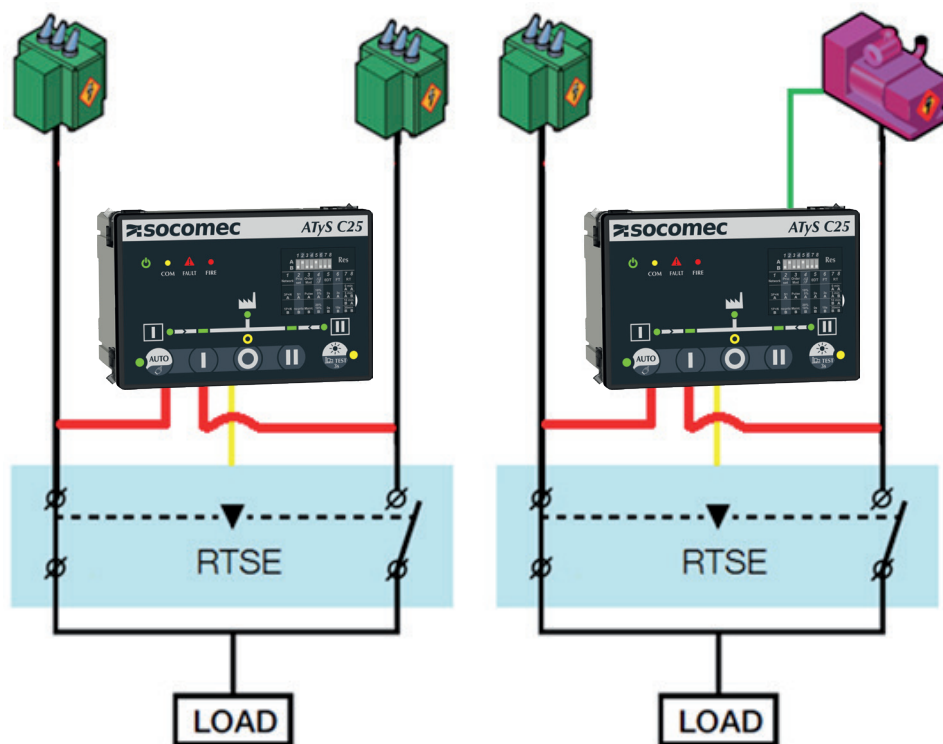
3. INTRODUCTION

ATyS C25 "ATS Controller" in association with an RTSE (Remote transfer switching equipment) forms an ATSE (Automatic transfer switching equipment), the ATSE formed by the association is designed for use in power systems for the safe transfer of a load supply between a normal and alternate source. When associated with SOCOMEC RTSE the changeover is done in open transition insuring full compliance with IEC 60947-6-1, GB 14048-11 and other international standards as listed. As a standalone product the ATyS C25 is compliant with IEC 61010-2-201 and is compatible with use with PC and CC type RTSE.

This version of installation and operating manual is based on C25 products with firmware version 1.28.

ATyS C25 "ATS Controller" Ensures:

- Monitoring of the availability of a Normal and Alternate source
- Supply to the controller and switch from the Normal or Alternate source
- Transfer orders to the RTSE and position reception from the RTSE
- A complete solution fully tested with SOCOMEC RSTE
- Intuitive HMI for emergency/local operation
- Clearly visible and indicated HMI
- Suitable for door mounting on the enclosure or DIN Rail mounting inside the enclosure
- Inherent electrical interlock between position orders
- Monitoring of the RTSE stable positions (I – O – II)
- Strait forward installation with effective ergonomics
- Power supply continuity for most Utility / Generator or Utility / Utility network applications when linked to an RTSE (Remotely operated transfer switches).



4. THE ATyS FAMILY PRODUCT RANGE

SOCOMEK has been manufacturing power control and safety products since 1922. The first generation SOCOMEK “motorised changeover switches” were introduced in 1990 and today the ATyS brand has become trusted by major players in the power industry worldwide.

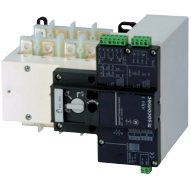
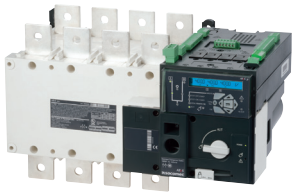
The ATyS Family includes a complete range of remotely operated transfer switch equipment (RTSE), ATS Controllers as well as automatic fully integrated products and solutions (ATSE). Selecting the right ATyS will depend on the application as well as the nature of installation in which the ATyS will be installed.

This instruction manual includes details and instructions specific to the “ATyS C25” ATS controller only. For all other ATyS family of products please refer to the specific instruction manual related to that product.

(Available for download on www.socomec.com)

An overview of the complete ATyS range is presented below:
(The encircled device is the product detailed in this instruction manual).

Always the right ATyS for your application...

ATyS: Controllers	ATyS: Small Footprint	ATyS M: Modular Profile
 ATyS C65 ⁽¹⁾ Programmable & P&E metering ATyS C55 Programmable	Back to Back Configuration  40A - 125A ATyS d S Small Genset with DPS ATyS S (RTSE) Small Gense	 40A - 160A ATyS p M Evolved Genset Management ATyS g M Simple Genset Management ATyS t M Transformer (building) Management ATyS d M RTSE (DPS) Side by Side Configuration
ATyS A15/C25 DIP switch configuration	 125A - 3200A ATyS p Power/Genset Management ATyS g Simple Genset Management ATyS t Transformer Management ATyS d RTSE (DPS) ATyS r RTSE	 40A - 160A ATyS t M Transformer (building) Management ATyS d M RTSE (DPS) Side by Side Configuration
	 ATyS r RTSE	 ⁽¹⁾ ATyS  RTSE

(1) Available in UL version - contact us.

8 EN

DIN rail mounting

IEC 60715
DIN rail

dimensions in mm.



dimensions in mm.



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- Source 1: Green thinking information (Green head when Source 1 is present and available and when treated with a green thinking when Source 1 is present but outside of threshold limits, or when Source 1 is absent and available)
- Switch 1 LED position (redaction) (Green head when in position 1)
- 2nd position LED position (redaction) (Yellow when in position 2)
- Lead acquired information (Green head when lead is supplied by an available source) (green thinking when lead is supplied with a source which is present but outside of threshold limits)
- Switch 2 LED position (redaction) (Green head when in position 2)
- Source 2 availability information (Green head when Source 2 is present and available and when treated with a green thinking when Source 2 is present but outside of threshold limits, or when Source 2 is absent and available)
- Auto LED indicator (Green head when in automatic, 2 seconds after timer is ongoing or when it is active, or when in manual mode), (red) mode is last mode)
- Red LED (Yellow head when last lead is loaded) (orange thinking)
- Configurations (displays switches are covered)
- Auto LED (Green when product is powered)
10. FULL LED (Yellow thinking when long time for communication is ongoing)
11. COM LED (Red thinking, long time when fact or method is activated (500/600 ops), short blink when a valid parameter has been changed and needs validation)
12. The red head when fact is activated)
13. The red head when fact is activated)
14. Change AUTO/ANAL position, press at least 3 seconds to switch from AUTO to MANUAL or ANAL to AUTO
15. Handle device to switch positions, connect into a MANUAL mode for the buttons to be active
16. Handle device to two functions (stop lead and TEST ON LOAD) to start a lamp test (not press on the test button) (500 ops) (600 ops)
17. Press button [8] is a service press the "V" button. To the LED of lead (big press on the test button) (500 ops)

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A

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Res

Network

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8

First

Port

Mod

ADT

OT

FT

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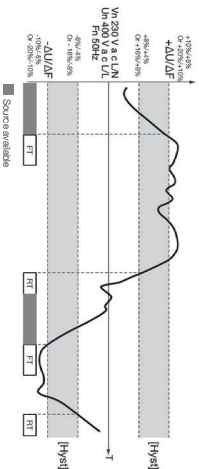
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DIP SWITCH	
1. Network	A. Three phase network
	B. Single phase network
2. Pro Set	A. Priority source 1
	B. No priority
3. Other Mod	A. Control mode: impulse logic
	B. Control mode: constant logic
4. ALU/IF	A. Overhead and underhead setting at $\pm 20\%$ of nominal voltage / $\pm 5\%$ of nominal frequency (value is 20% of ALU/IF)
	B. Overhead and underhead setting at $\pm 20\%$ of nominal voltage / $\pm 10\%$ of nominal frequency (value is 40% of ALU/IF)
5. OOT	A. Time in disconnection 0.2 second (OOT = 2 sec)
	B. Time in disconnection 0.2 second (OOT = 0 sec)
6. FT	A. Wait time of 33s before source is lost (Fail timer = 33s)
	B. Wait time of 10s before source is lost (Fail timer = 10s)
7/8. RT	AA. Wait time of 0.9ms (33 before source returns (return timer = 0.9ms (33s)
	AB. Wait time of 3ms before source returns (return timer = 3ms)
	BA. Wait time of 10ms before source returns (return timer = 10ms)
	BB. Wait time of 30ms before source returns (return timer = 30ms)

Nominal frequency 50 Hz (fixed)
Nominal Voltage 230 / 400 V.a.c (DIP 1 A/B)

Source availability (chart for 1 source)



	IEC 60947-6-1	IEC 61010-2-01	IEC 61010-2-00	[ENF 14048] 11 appendix C
Voltage Sensing		50...300VAC 90...550VAC U.L.	CAT III	
Measurement Cal		50...50Hz	50Hz	
Frequency	50...50Hz			
Overloadings Cat	III	III	III	
U Imp	4kV		6kV ***	

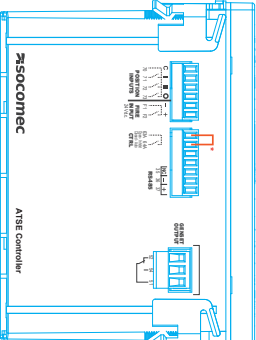
* Wherefore tested with IEC 60947-6-1 P1STE ** Test level: Between SOURCE

* When type tested with IEC 60947-6-1 RTSE ** Test level : Between SOURCE

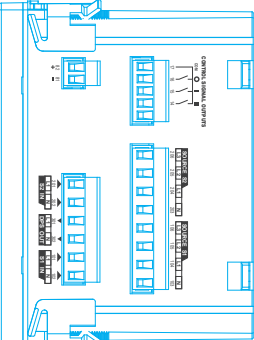
DOMINATION	DESCRIPTION	CHARACTERISTICS
14	Position order	AC1 - General use - 4x 5A, 1k, 250 V a.c. AC2 - General use - 4x 5A, 1k, 250 V a.c. AC3 - 3x 3A, 1k, 250 V a.c. AC4 - 3x 3A, 1k, 250 V a.c.
15	Position order	AC1 - General use - 4x 5A, 1k, 250 V a.c. AC2 - General use - 4x 5A, 1k, 250 V a.c. AC3 - 3x 3A, 1k, 250 V a.c. AC4 - 3x 3A, 1k, 250 V a.c.
16	Position order	AC1 - General use - 4x 5A, 1k, 250 V a.c. AC2 - General use - 4x 5A, 1k, 250 V a.c. AC3 - 3x 3A, 1k, 250 V a.c. AC4 - 3x 3A, 1k, 250 V a.c.
17	Common port for position output	DC1 - 4x 0.25A, 1k, 150 V d.c. DC2 - 4x 0.25A, 1k, 150 V d.c. DC3 - 4x 0.12A, 1k, 250 V d.c.
35	NC - Not connected	
36	Negative electrode	
37	Positive electrode	
51	Common port	
52	Open to start the general feed when controller is powered off	AC1 - General use - 4x 3A, 1k, 250 V a.c. DC1 - General use - 4x 3A, 1k, 30 V d.c. DC2 - General use - 4x 3A, 1k, 30 V d.c. AC3 - 4x 5A/51 0.25A, 0.25A, 1.25A, 250 V a.c. AC4 - 4x 5A/51 0.25A, 0.25A, 1.25A, 250 V a.c. DC3 - 4x 5A/51 0.12A, 0.25A, 1A, 250 V d.c.
54	Open to start the general	
63A	Control is obtained when the control is on, products delivered with current wire on this input	Do not use external voltage - Power from common port
64	Common port for position inputs	
71	Position RTSE	
72	Position RTSE	
73	Position RTSE	
74	Position RTSE	
75	Position RTSE	
76	Position RTSE	
77	Position RTSE	
78	Position RTSE	
79	Position RTSE	
80	Position RTSE	
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98	Position RTSE	
99	Position RTSE	
100	Position RTSE	

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Connectors top view

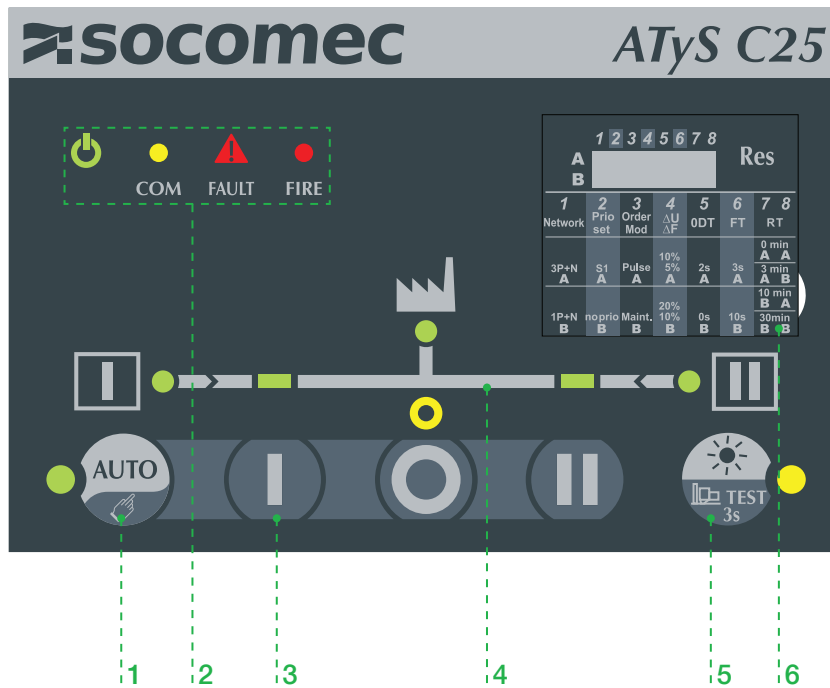


* Remove shunt wire when using ATYS F

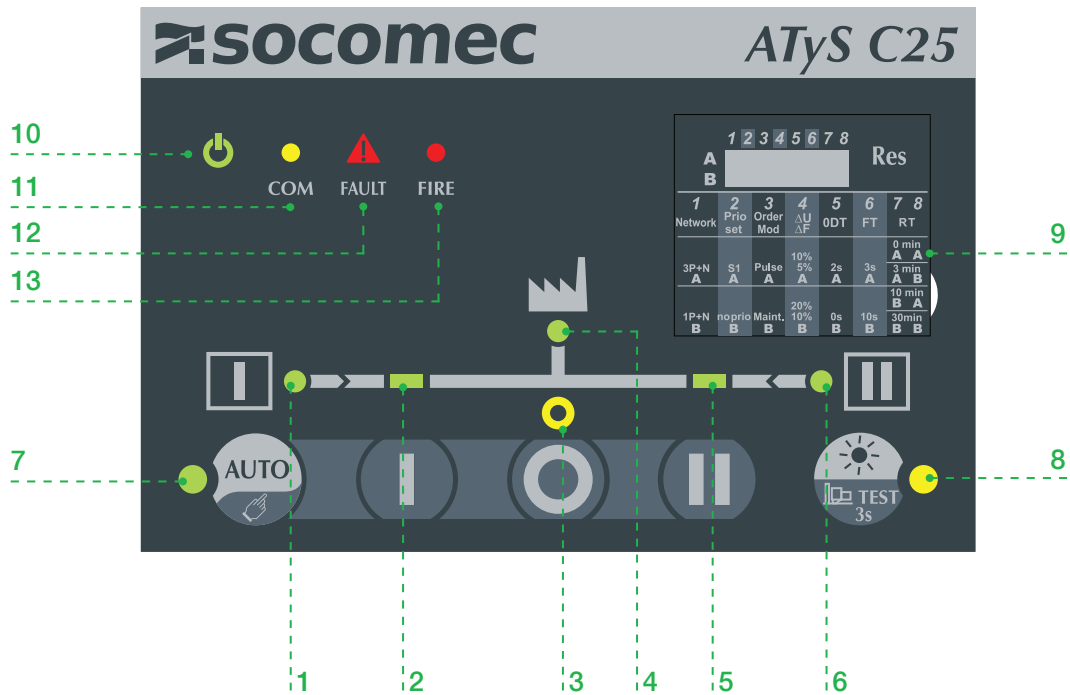


6. GENERAL OVERVIEW

6.1. Product identification



1. AUTO/Manual selector
2. Controller state LEDs
3. Remote position order selector
4. ATSE Synoptic
5. Test function selector
6. DIP switch programming



1. Source 1 availability information (Green fixed when source 1 is present and available within threshold limits, green blinking when source 1 is present but outside of threshold limits, off when under 50VAC).
2. Switch 1 LED position indication (Green fixed when confirmed in position 1, green blinking when expected in position 1).
3. Zero position LED indication (Yellow when in position 0).
4. Load supplied information (Green fixed when load is supplied by an available source) green blinking when load is connected to as source which is present (>50 VAC) but not available (outside setting thresholds).
5. Switch 2 LED position indications (Green fixed when confirmed in position 2, green blinking when expected in position 2)).
6. Source 2 availability information (Green fixed when source 2 is present and available within threshold limits, green blinking when source 2 is present but outside of threshold limits, off when under 50VAC).
7. Auto LED indication (Green fixed when in automatic, blinking when a transfer is ongoing, off when in manual mode or inhibited or fault is ongoing).
8. Test LED (Yellow fixed when test on load is ongoing, yellow blinking when waiting for test confirmation).
9. Configurations dip switches (8 dip switches with 2 positions A and B, see chapter 10.5 page 24 for configuration details).
10. Run LED (Green when product is powered).
11. COM LED (yellow blinking when RS communication is ongoing).
12. Fault LED (Red blinking – long blink (1 Hz) when fault or product in inhibited, fast blink (3Hz) when a dip switch parameter has been changed and needs validation).
13. Fire (Red when fire input is activated).

See Annex I for more details on the LED indicators.

6.3. Environmental

The ATyS C25 controllers meet the following environmental requirements:

6.3.1. IP Rating



IP degree according to IEC 60529

- P4X on the front face when door mounted.
- IP2X on the back of the controller.

6.3.2. IK Rating

IK8 rating according to IEC 61010-1

6.3.3. Operating Conditions

- From -25 to + 70°C
- 95% humidity without condensation at 40°C according to IEC 61010-1
- 95% humidity without condensation 50°C according to GB/14048.11 Annex Q

6.3.4. EMC

- Class A according to IEC / EN 60947-6-1 and GB/T 14048.11 (including annex C) standards
- Class A according to IEC / EN 61326-1

6.3.5. Altitude



- Up to 2000m

6.3.6. Storage Conditions

- From -30 to +70°C
- Maximum storage up to a period of 12 months
- To be stored in a dry, non-corrosive and non-saline atmospheric conditions
- A maximum of 3 boxes may be stacked vertically

6.3.7. Volume and shipping weights

- Volume LxWxH (mm): 172x128x154.5
- Weight : 1090 g

6.3.8. Lead free process

The ATyS C25 complies with :

- The UE directive for RoHS 2 2011/65/UE
- The UE directive RoHS 3 2015/863/UE
- China RoHS 2 SJ/T 11364-2014



6.3.9. WEEE

- The ATyS C25 is built in accordance with 2012/19/EU directive:



6.3.10. Pollution class

- Pollution degree 2.

6.3.11. Other compliances and marking



6.4. ATyS C25 accessories and compatible products

The ATyS C25 is compatible and compliant according to IEC 60947-6-1 when used with the following IEC 60947-6-1 SOCOMEC RTSE and specific product connection harness:

- ATyS S (from 40-125A)
- ATyS dM (from 40-160A)
- ATyS R (from 125-3200A)

7. CONTENT OF PACKAGING

The C25 packaging includes:

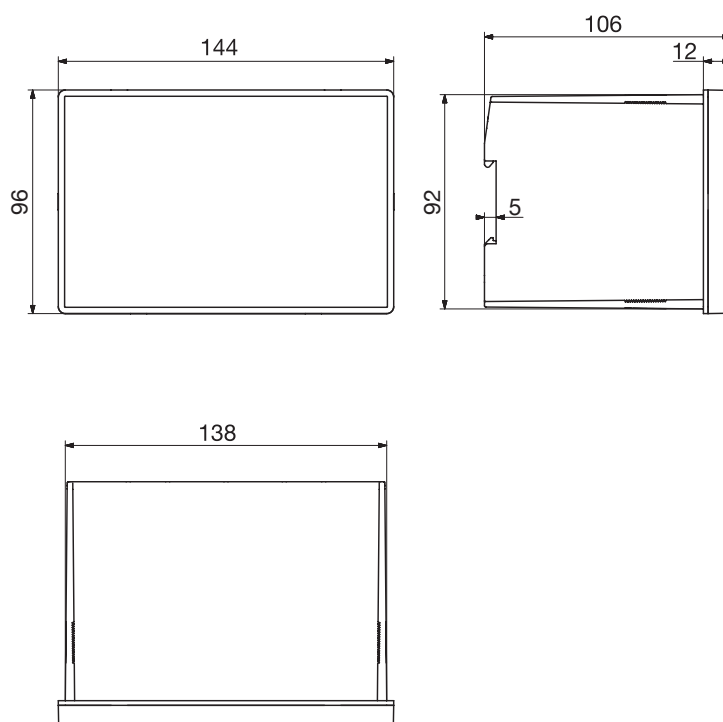
- 1 C25 controller
- 1 C25 quickstart guide
- All connector
- Door mounting clips

All other products described in this instruction sheet **are delivered and sold separately.**

8. INSTALLATION

8.1. Product dimensions

dimensions (mm)

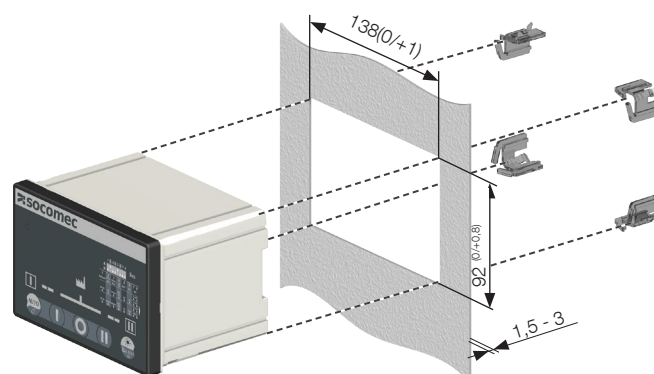


8.2. Mounting

8.2.1. Door mounting

Door cut-out of $92(+0.8) \times 138(+1)$ mm, door thickness 1.5- 3mm.

Remove all connectors and clip before inserting the controller in the cut-out then fix the controller in place using all 4 fixations clips (cf. image below):



8.2.2. DIN RAIL mounting

Install on IEC 60715 Standard Din RAIL.

When mounting make sure both clips are pushed up, then clip on the DIN Rail.



To remove from the DIN Rail, drag the two mounting clips down before removing the product.



9. CONNECTIONS



DANGER ! When using the ATyS C25 without the Socomec Harness, gG 4A fuse protection is required on the voltage sensing inputs of connection diagrams.
When using the C25 with ATyS R and the Socomec harness gG fuses are not mandatory.

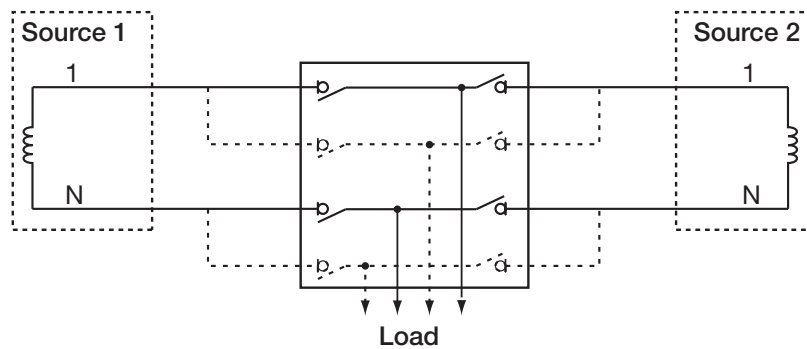
9.1. Networks

9.1.1. Type of networks

1P + N :

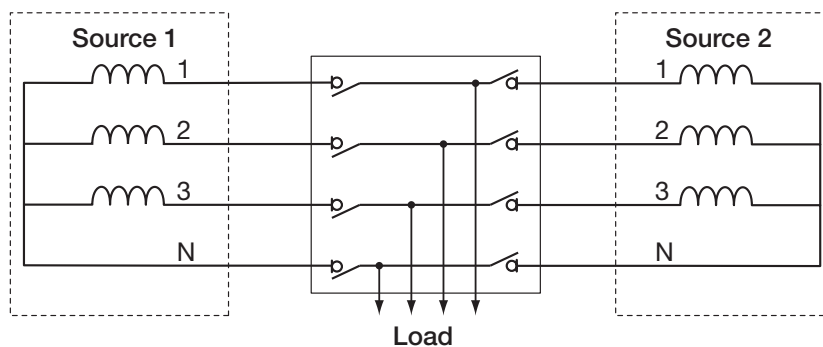
The C25 is suitable for single phase networks, for with voltages within 184-300 V.a.c Ph-N

In these networks, the phase must be connected to the L1 input (terminal 104 for source 1 and 204 for source 2).
When using 1P + N make sure that DIP switch 1 is in position B.

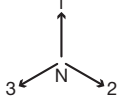
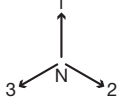


3P+N:

The C25 is suitable for three phase with neutral networks, for with voltages within 184-300 V.a.c Ph-N and 318-520 PH-PH. When using this network make sure that DIP switch 1 is in position A.



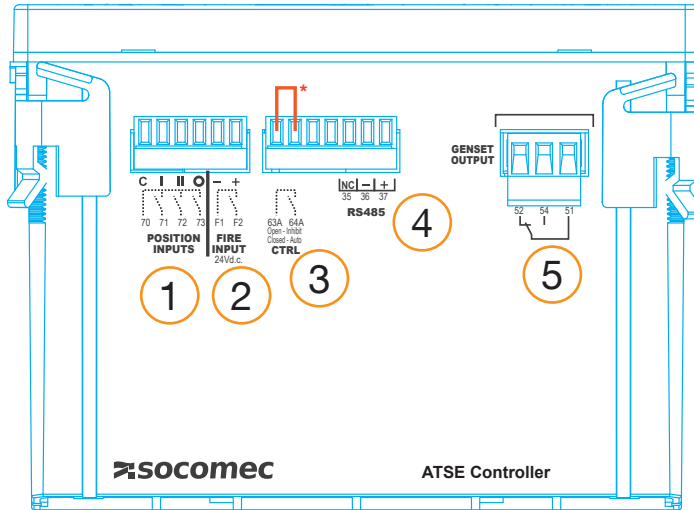
9.1.2. Metering and sensing detail

Network type		
	1P	3P+N
Source 1	1 phase 2 wire	3 phase 4 wire
Source 2		
Source 1		
Source 2		
Voltage sensing Voltage accuracy +/- 1% from 100-300VAC (L-N) 1V when <100 VAC. Frequency accuracy +/- 0.2 Hz.		
Source 1	- V1	U12, U23, U31 V1, V2, V3
Source 2	- V1	U12, U23, U31 V1, V2, V3
Source presence (source available)	✓	✓
Source in ranges (U, V, F)	✓	✓

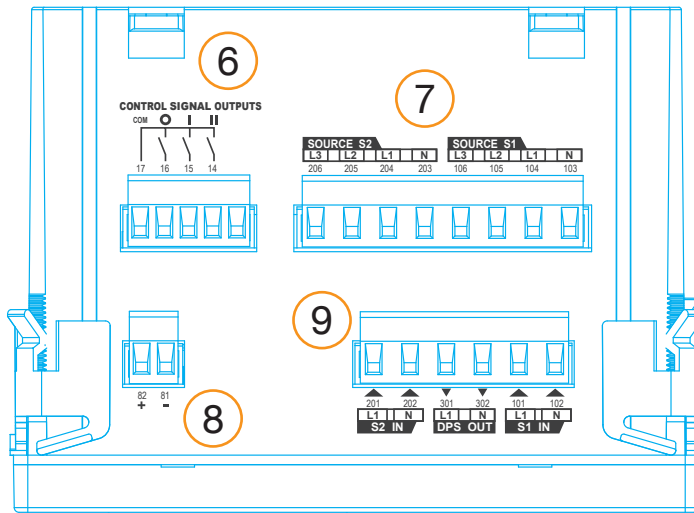
 **CAUTION !** In 3 phases with Neutral balanced networks, there is a risk that the loss of neutral will not be detected. To limit this risk the Dip switch 4 (threshold) can be switched to position A. (see chapter "12. Programming", page 24).

9.2. Connections

TOP



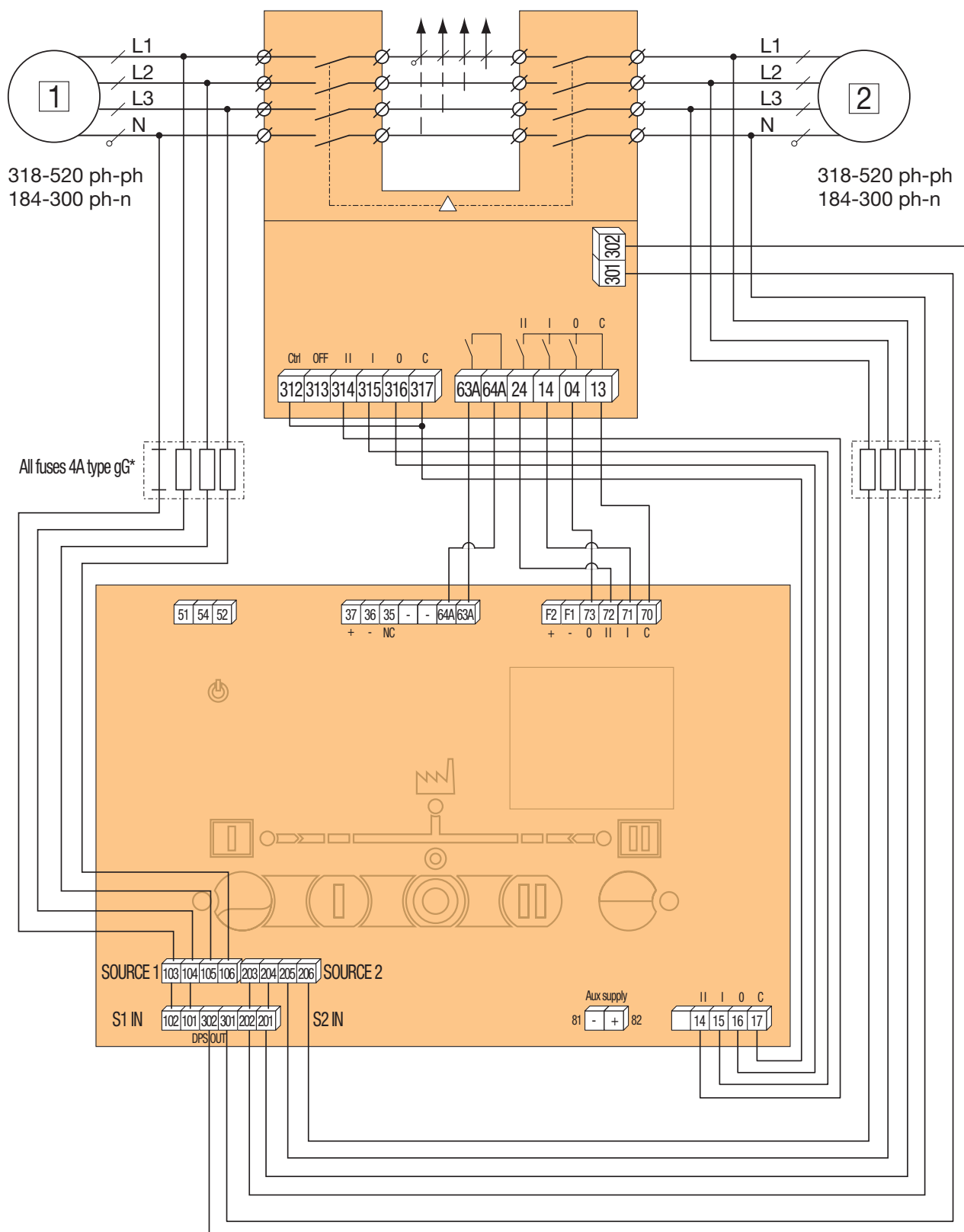
BOTTOM



1. RTSE position feedback input
2. d.c fire input
3. Enable control when closed / disable control (inhibit) when open
4. RS485 connections
5. Genset Start relay
6. RTSE position control outputs
7. Source 1 and 2 voltage inputs
8. d.c Aux supply
9. External DPS – Input / output

9.3. Connection diagrams with ATyS R

For additional connexion diagrams (ATyS S, ATyS dM , Contactor , etc..) see ANNEX I



*Using a Socomec cable harness kit excludes the need for fuses

9.4. Terminal denomination, description and characteristics

Denomination	Terminal	Description	Characteristics	Recommended Cable section	Tightening torque / screw type
Control signal outputs (orders to RTSE)	14	Position II order	AC1 – General use – Ie: 5A , Ue: 250 V.a.c DC1 – General use – Ie: 5A , Ue: 30 V.d.c AC15 - Ie: 3A, Ue: 120 V.a.c AC15 - Ie: 1.5A, Ue: 240 V.a.c DC13 - Ie: 0.22A, Ue: 125 V.d.c DC13 - Ie: 0.11A, Ue: 250 V.d.c	1-2.5mm²	0.58 Nm / M3
	15	Position I order			
	16	Position 0 order			
	17	Common point for position output			
RS485	35	NC – Not connected	RS485 Isolated bus		
	36	Negative electrode			
	37	Positive electrode			
Genset output	51	Common point	AC1 – General use – Ie: 3A , Ue: 250 V.a.c DC1 – General use – Ie: 3A , Ue: 30 V.d.c AC15 - Ie 54/51: 3A 52/51: 1.5A Ue: 120 V.a.c AC15 - Ie 54/51: 1.5A 52/51: 0.75A Ue: 240 V.a.c DC13 - Ie 54/51: 0.22A 52/51: 0.22 A 125 V.d.c DC13 - Ie 54/51: 0.11A 52/51: 0.11 A 250 V.d.c		
	52	Closed to start the Genset (closed when controller is powered off)			
	54	Open to start the genset			
Controller inhibit input	63A	Controller is inhibited when this contact is open	Do not use external voltage - close contact to activate	0.5-1.5mm²	0.2 Nm/ M2
	64A				
Return of information from RTSE (Position inputs)	70	Common point for position inputs	Do not use external voltage - Power from common point		
	71	Position I RTSE			
	72	Position II RTSE			
	73	Position 0 RTSE			
Fire input	F1	Negative electrode of the d.c input	12-24 V.d.c		
	F2	Positive electrode of the d.c input			
Optional Aux supply 24V.d.c	81	Negative electrode of the d.c power supply	10-30 V.d.c (Auxiliary supply for controller, does not supply RTSE)	1-2.5mm²	0.58 Nm / M3
	82	Positive electrode of the d.c power supply			
Source 1 and 2 voltage inputs	103	Source 1 N	Sensing range: 90-520 V.a.c (ph-ph) 50-300 V.a.c (ph-n) 45-65 Hz Supply: 184-300 V.a.c* (ph-n) 45-65 Hz Max consumption 10 W *200-300 V.a.c in maintained mode		
	104	Source 1 L1			
	105	Source 1 L2			
	106	Source 1 L3			
	203	Source 2 N			
	204	Source 2 L1			
	205	Source 2 L2			
	206	Source 2 L3			
DPS output (RTSE power supply)	301	Phase output	AC – General use – Ie: 6A , Ue: 250 V.a.c DC – General use – Ie: 6A , Ue: 30 V.d.c AC15 - Ie: 3A, Ue: 120 V.a.c AC15 - Ie: 1.5A, Ue: 240 V.a.c DC13 - Ie: 0.22A, Ue: 125 V.d.c DC13 - Ie: 0.11A ,Ue: 250 V.d.c		
	302	Neutral output			

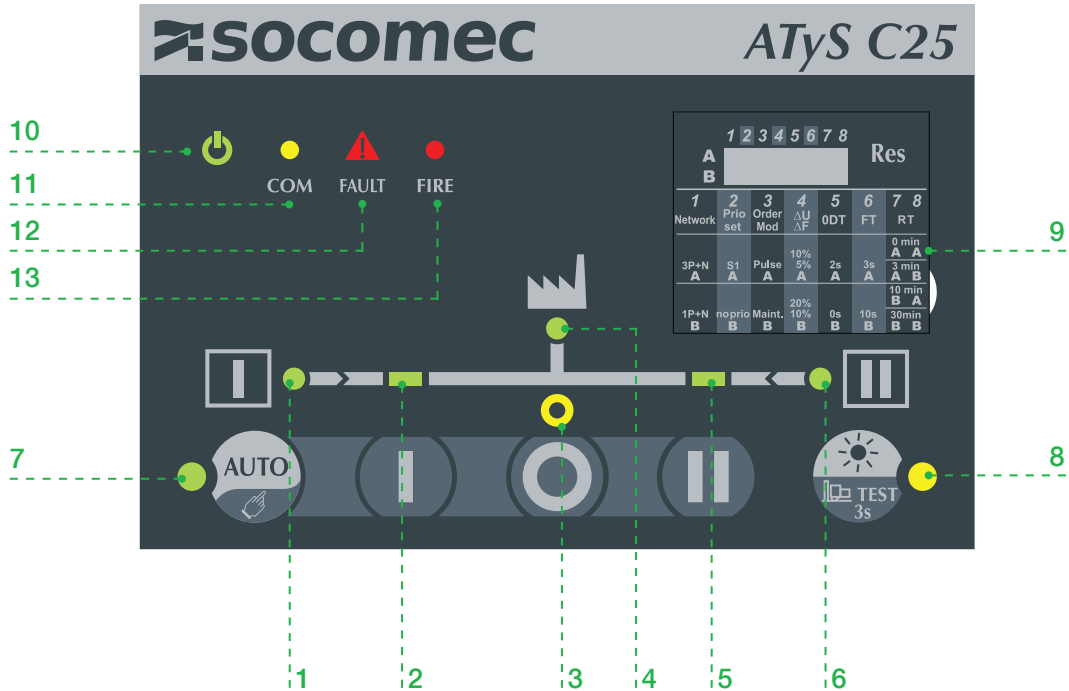
*LiYCY sheilded twisted pair

-  Note:
- use 7mm as stripping length for the controller terminals.
 - use 90°C copper wire for installations with ambient temperature from 35-60°C.

When the ambient temperature is above 60°C, Use 105°C copper wire.

10. ATYS C25 OPERATING MODES

The ATyS C25 has 4 distinct working modes, the working modes are selected using the HMI button or by using the 63A/64A input.



The 4 working modes are working as described below:

• Auto mode

In this mode the controller will automatically give orders to the RTSE connected to switch to the correct position according to the settings selected.

In this mode, the manual order buttons , ,  are disabled.

This mode is activated when the Auto LED (7) is ON (fixed). To access this Mode make sure that you are in manual mode (the Auto LED (7) is OFF and that the fault LED (12) or the TEST LED (8) are not activated) and then press the button  for 3 seconds, the Auto LED (7) should then turn ON.

• Manual mode

In this mode the manual orders buttons , ,  enable manual orders to switch respectively to position I , O or II.

This mode is activated when the Auto LED (7) is OFF and that the fault LED (12) or the TEST LED (8) are not activated. To switch from AUTO mode to manual mode, press the button  for 3 seconds

• Inhibit mode

In this mode both the Automatic transfer and manual orders will be blocked. This mode is activated when the input 63A/64A is **OPEN**.

In this mode the fault LED (12) will be blinking, and Auto LED (7) will be OFF. To leave the inhibit mode close the 63A/64A input, the controller will return to the last working mode (Automatic or Manual).

• Test mode

In this mode the controller will start the genset and switch over to source 2, TEST LED will be active and AUTO LED will be OFF.

To access this mode press the TEST button for 3s, the TEST LED (8) will start blinking, then press the "0" button to validate, the TEST mode will then start. To go back to the previous working mode (AUTO or MANU) press the TEST button 3s, TEST LED will turn OFF.

11. POWER SUPPLY AND I/O

11.1. Triple power supply

The ATyS C25 can be supplied by 3 power sources:

AC – Power through the voltage sensing (terminals 103-104 for source 1 and terminal 203-204 for source 2) with power supply range going from 184-300 V.a.c (in pulse mode - dip switch 3 position A) 200-300 V.a.c (in maintained mode - dip switch 3 position B) 50/60 Hz+/- 10%.

DC - Auxiliary supply (not mandatory to use), 10-30 V.d.c power supply using terminals 82-81.



CAUTION ! The DPS output used to supply power to the RTSE will not be functional when powering the controller through the DC auxiliary power supply only.

11.2. Voltage sensing Inputs

The ATyS C25 includes dual single phase and 3 phase voltage sensing (terminals 103-106 and 203-206) designed to monitor 1 Phase supplies up to 300 V.a.c (L-N) and 3 phase +N up to 520 V.a.c (L-L).

The ATyS is designed to handle single phase and three phases with neutral networks, simply define the correct configuration of single phase / 3 phase with neutral using the DIP switch 1 on the front of the controller (cf. Chapter 10-5 programming).

Sensing values measured will have a direct influence on determining the availability of the main and alternate supplies as well as the ATyS C25 automation.

The parameters monitored through the sensing are the following:

- Phase rotation

When both sources are available the controller will check that the phase rotation is identical on both sources. If the sources have different phase rotations the source available LED will be blinking on both sources, fault LED will blink, automatic transfer will be blocked and only manual (with pushbutton in manual mode) transfer will be enabled.

Press the "RES" button for 15s or remove all power supply sources after clearing the fault to reset the controller.

- Frequency within set limits

The ATyS C25 will check that the frequency is within the limits configured through DIP switch 4. Frequency is checked on L1 only.

- Loss of the main or alternate power supply

Loss of supply depends on the nominal voltage and frequency configured together with the hysteresis (set in DIP switch 4) The source will be considered as lost after the fail timer has ended (set through dip switches 6 (3s/10s)).

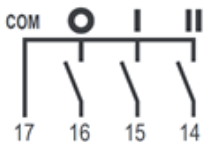
- Return of main and/ or alternate power supply

Return of supply depends on the nominal voltage and frequency configured together with the hysteresis set. (Set in DIP switch 4). The source will be considered as available when the return timer will have counted down (set through dip switches 7 & 8 (0 (3s) / 3 / 10 / 30min)).

11.3. Fixed outputs

11.3.1. Control signal outputs

CONTROL SIGNAL OUTPUTS



Control signal outputs are the output orders (dry contact) to the RTSE; the ATyS C25 includes 3 signal outputs and a common (point powered by the user) (Terminals 17 to 14). These outputs are rated for 250 Vac, 50/60 Hz 5A general use , and 30 V.d.c 5A general use.

These outputs function as described below:

When order O is given through the Automatism in automatic mode or manually using the button  the contact between 17 and 16 will be closed.

When order I is given through the Automatism in automatic mode or manually using the button  the contact between 17 and 15 will be closed.

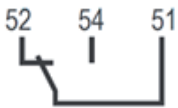
When order II is given through the Automatism in automatic mode or manually using the button  the contact between 17 and 14 will be closed.

These outputs can be impulse or maintained depending on the setting on DIP switch 3 Order Mod.

In maintained mode when an order is sent it will be maintained until a different order is sent.

In impulse mode orders are sent for maximum 5s and are stopped when either 5s has expired or the controller received feedback that the RTSE has reached the requested position. If 5s expire and the RTSE has not reached the requested position the controller will consider this as a fault and will inhibit the automatism until the fault is cleared.

11.3.2. Genset start output



Genset start outputs are the output orders (dry contact), the contact between 51 and 54 will open & the contact between 51 and 52 will close when the signal to start the genset should be sent (during a test on load or when source 1 is lost). These outputs are rated for 250 V.a.c , 50/60 Hz 5A general use for NO contact and 3A general use for NC contact, and 30 V.d.c 5A general use for the contact between 51-54 and 3A general use for the contact 51-52.

Control	51/54	51/52
Generator Start	Contact open	Contact closed
Generator Stop	Contact closed	Contact open

When the switch returns in position I the Cooldown timer will start counting (Default value 180s) during the cooldown timer, the contacts will maintain the generator start signals.



CAUTION ! If the 24 V.d.c auxiliary power supply is not used the timer 1FT will not count and the order to start the generator will be sent immediately when source 1 is under 184 VAC.

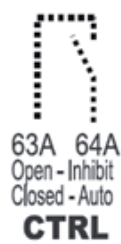
11.3.3. Buzzer

The C25 controller is equipped with a buzzer (Audible alarm sound) that will activate in the following conditions :

- A fault or fire input is active, will stay active until fault is cleared
- When a source is lost for the duration of the fail timer (FT)
- Will sound twice after a setting has been changed

11.4. Fixed inputs

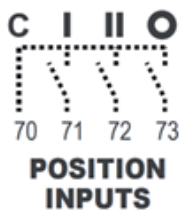
11.4.1. Inhibit input



When the contact 63A/64A is open the controller is in inhibit mode (Fault LED blinking and automatism and manual controls are deactivated). When this contact is closed the controller returns to the last working mode (either manual mode or automatic mode).

When the product is delivered this input is hardwired to closed, to use the input first remove the wire.

11.4.2. Position inputs



These inputs must be connected from the RTSE to the controller in order to indicate the position of the RTSE, when the controller gives an order both through manual command and automatically it will check that the position input corresponding to this order has closed. If this is not the case the controller fault LED will blink and the buzzer will be on, to clear the fault expected position input should be closed and the user must press the AUTO button.

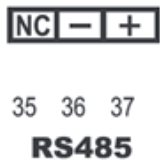
73/70 must be closed when the RTSE is in position O (In Pulse mode this input is mandatory, in Maintained mode this input is optional).
72/70 must be closed when the RTSE is in position II.
71/70 must be closed when the RTSE is in position I.

11.4.3. Fire input



This input is activated by applying 24 V.d.c (12-24 V.d.c) on F1 and F2 (negative electrode connected to F1 and positive electrode on F2).
When this input is activated the Fire LED (13) will be ON (fixed) and the buzzer will sound, the controller will give the order to the switch to go to position 0 and both manual and automatic controls will be inhibited. When the input is removed, the switch will go back to the last working mode automatically

11.4.4. RS485



The RS485 connector provides the Modbus communication allowing to read values from the controller (eg: Voltage values, settings, switch position etc...) for details on the values that can be read through communication (see Annex II).

12. PROGRAMMING

The programming of the controller is done through the DIP switches available on the front HMI.



WARNING ! Programming is only allowed when in manual mode to avoid unexpected transfers or injuries.

12.4.1. Programming through DIP switch

12345678								Res
A								
B								
1 Network	2 Prio set	3 Order Mod	4 ΔU ΔF	5 0DT	6 FT	7 RT	8	
3P+N A	S1 A	Pulse A	10% 5% A	2s A	3s A	0 min A 3 min B 10 min B 30min B		
1P+N B	no prio B	Maint. B	20% 10% B	0s B	10s B			

Programming through DIP switches is done using the 8 DIP switches on the front of the controller. Each DIP switch has positions A & B, by default all DIP switches are in position A.

When programming the dip switches with the switch powered off simply change the position of the DIP switches. To change the position of the DIP switches use a small flathead screwdriver.

When programming the DIP switches with the controller powered on, switch to manual mode. When a DIP switch changed position the Fault LED will blink fast (3Hz), to validate the change of the DIP switch press the RES button shortly (<1s). The Fault LED will stop blinking and the buzzer will sound twice. If instead of validating the DIP switch is brought back to the original position without pressing the **Res** button, the Fault LED will also stop blinking and the configuration will remain the same

DIP Switch		
1. Network	A	Three phase network
	B	Single phase network
2. Prio Set	A	Priority source 1
	B	No priority
3. Order Mod	A	Control mode impulse logic
	B	Control mode contactor logic
4. $\Delta U/\Delta F$	A	Over treshold/under treshold setting at $\pm 10\%$ of nom voltage / $\pm 5\%$ of nominal frequency (hysteresis value is 20% of $\Delta U/\Delta F$)
	B	Over treshold/under treshold setting at $\pm 20\%$ of nom voltage / overfrequency setting 10% of nominal frequency (hysteresis value is 20% of $\Delta U/\Delta F$)**
5. 0DT	A	Load supply down time of 2 second (0DT = 02 sec)
	B	Load supply down time of 0 second (0DT = 0 sec)
6. FT	A	Wait time of 3s before source is considered as lost (Fail timer = 3s)
	B	Wait time of 10s before source is considered as lost (Fail timer = 10s)
7/8. RT	AA	Wait time of 0min (3s) before source returns (return timer = 0min (3s))*
	AB	Wait time of 3min before source returns (return timer = 3min)
	BA	Wait time of 10min before source returns (return timer = 10min)
	BB	Wait time of 30min before source returns (return timer = 30min)

*When 0min is selected the return timer is set to 3s

**When Control mode contactor (DIP switch 3 in position B) is selected threshold on the DIP 4 position B is limited to 15% instead of 20%



Note: a 15s press on the "RES" button , will reboot the device and save the DIP switch settings as well as remove any configuration on the communication parameters. This will work in both AUTO and MANU mode.

13. CHARACTERISTICS

Electrical characteristics	
AC operating limits	184 - 300 VAC ⁽²⁾
Optional DC supply	24 VDC
Frequency limits	45 - 65 Hz
Power consumption	< 10 W
Inputs	5 - fixed (auto inhibit & DC fire input, position indication I-O-II)
Outputs	4 - fixed (position control I-O-II & genset start)
Impulse withstand	6/4 kV ⁽¹⁾
Overvoltage category	CAT 3
Mechanical characteristics	
Weight	1090 g
Door cutout	138 x 92 mm
Operating temperature	-25 ... +70°C
Communications	
Interface type	RS485. 2 to 3 half duplex wires
Protocol	MODBUS RTU
Baudrate	38400

(1) 6 kV tested between phases of a different source and 4 kV tested between phases of a the same source.
(2) 200 - 300 VAC in contactor mode.

14. PREVENTIVE MAINTENANCE



WARNING ! Maintenance operation should be done by trained and qualified personnel using the appropriate protection equipment.

It is recommended to verify at least once a year the tightening torque of all connections and to operate the product in a full operating cycle (I – O – II – O – I: Auto and Manual) as well as tightening the door mounting clips and testing the LED's with the lamp test button when applicable.

In case of upstream protection tripping (fuse protection / Circuit breakers) make sure that the ATS remains functional by doing a functional test with the RTSE connected to the controller.

To clean the front face of the equipment, use a soft cloth with water and non-abrasive liquids.



Note: Maintenance should be planned carefully and carried out by qualified and authorized 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.

15. TROUBLE SHOOTING GUIDE

DEFINITION	RECOMMENDED ACTION
Sources are not detected	- Verify that the product is correctly powered on using the power LED. - Verify that the DIP switch settings are set accordingly to your installation. - Verify that the source voltage is within the set thresholds.
Positions are not detected	-Verify that the position input cabling is correctly done.
Source LED are blinking	- Verify that the sources are in the voltage range configured through DIP switch. - Verify that the sources are cabled correctly. - Verify that the phase rotation is identical on both sources. - Verify that the source voltage is within the set thresholds. - Check the source power status using communication.
Alarm LED is blinking	- Verify that the input 63-64 is closed. - Verify that there has not been a problem during a transfer order and validate fault with the AUTO button. - Verify that the DIP switches have not changed position or validate the change of position using the RES button. - Check Alarm status using communication.
COM LED is on fixed	- Verify that Communication settings are set according to your specification. - Press "RES" for 15 seconds to reset the Communication settings. - Contact Socomec.
DIP switch parameters are not taken into account	- Check if the alarm LED is blinking. - Verify that you are in manual mode when changing DIP switch parameters. - Press the "RES" button for less than 3s to validate the parameter change.

16. ASSOCIATED PRODUCTS

16.1. RTSE



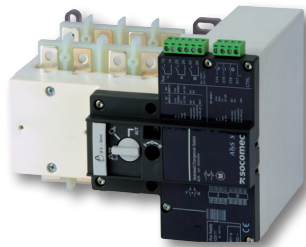
ATyS d M

ATyS d M devices are 2 pole or 4 pole transfer switches that are remotely controlled using volt-free contacts from an external controller. They are modular products with positive break indication. They are intended for use in low voltage power supply systems where a brief interruption of the load supply is acceptable during transfer.

References

Rating (A)	No. of poles	ATyS d M	Bridging bars	Voltage sensing and power supply tap	Terminal shrouds	Auxiliary contact block
40 A	2 P	9323 2004	2 P 1309 2006 4 P 1309 4006	2 pieces 1399 4006	2 pieces 2294 4016 ⁽¹⁾	1 st unit included 2 nd unit Separate common points 1309 0001 ⁽²⁾ Linked common points 1309 0011 ⁽²⁾
	4 P	9323 4004				
63 A	2 P	9323 2006				
	4 P	9323 4006				
80 A	2 P	9323 2008				
	4 P	9323 4008				
100 A	2 P	9323 2010				
	4 P	9323 4010				
125 A	2 P	9323 2012				
	4 P	9323 4012				
160 A	2 P	9323 2016	1309 2016			
	4 P	9323 4016	1309 4016			

(1) For the three-phase version, for complete upstream and downstream protection, please order 2x; for the single-phase version please order the part just 1x.
(2) 1 NO/NC contact block for positions I, O and II.

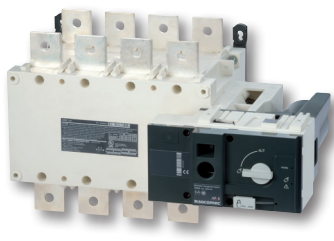


ATyS S

ATyS S products are 4 pole re motely operated transfer switches with positive break indication. They enable the on-load transfer of two three-phase supplies via remote volt-free contacts, from either an external automatic controller, using pulse logic, or a switch. They are intended for use in low voltage power supply systems where a brief interruption of the load supply is acceptable during transfer.

References

Rating (A)	No. of poles	Power supply	ATyS S	Bridging bars	Terminal shrouds	Voltage tap	Terminal retainer	DIN rail
40 A	4 P	24/48 VDC	9506 4004	4 P 9509 4013	Source side 2 pieces 9594 4012 Load side 2 pieces 9594 9012		2 pieces 9599 4003	4 modules 9599 4002
	4 P	12 VDC	9505 4004			9599 4001		
	4 P	230 VAC	9503 4004					
63 A	4 P	24/48 VDC	9506 4006					
	4 P	12 VDC	9505 4006			9599 4001		
	4 P	230 VAC	9503 4006					
80 A	4 P	24/48 VDC	9506 4008					
	4 P	12 VDC	9505 4008			9599 4001		
	4 P	230 VAC	9503 4008					
100 A	4 P	24/48 VDC	9506 4010					
	4 P	12 VDC	9505 4010			9599 4001		
	4 P	230 VAC	9503 4010					
125 A	4 P	24/48 VDC	9506 4012					
	4 P	12 VDC	9505 4012			9599 4001		
	4 P	230 VAC	9503 4012					



ATyS r

ATyS r products are 3 or 4 pole remotely operated motorised transfer switches with positive break indication. They enable the on-load transfer of two three-phase power supplies via remote volt-free contacts, from either an external automatic controller, using pulse logic, or a switch. They are intended for use in low voltage power systems where interruption of the load supply is acceptable during transfer.

References

Rating (A) / Frame size	No. of poles	ATyS r	Bridging bars	Terminal shrouds	Terminal screens	Auxiliary contact	3 position padlocking	Auto transformer
125 A / B3	3 P	9523 3012	3 P 4109 3019 4 P 4109 4019	3 P 2694 3014 ⁽²⁾ 4 P 2694 4014 ⁽²⁾	3 P 1509 3012 4 P 1509 4012	1599 0502	9599 0003 ⁽³⁾	400/230 VAC 1599 4064
	4 P	9523 4012						
160 A / B3	3 P	9523 3016						
	4 P	9523 4016						
200 A / B3	3 P	9523 3020						
	4 P	9523 4020						
250 A / B4	3 P	9523 3025	3 P 4109 3025 4 P 4109 4025	3 P 2694 3021 ⁽²⁾ 4 P 2694 4021 ⁽²⁾	3 P 1509 3025 4 P 1509 4025			
	4 P	9523 4025						
315 A / B4	3 P	9523 3031	3 P 4109 3039 4 P 4109 4039					
	4 P	9523 4031						
400 A / B4	3 P	9523 3040						
	4 P	9523 4040						
500 A / B5	3 P	9523 3050	3 P 4109 3050 4 P 4109 4050	3 P 2694 3051 ⁽²⁾ 4 P 2694 4051 ⁽²⁾	3 P 1509 3063 4 P 1509 4063			
	4 P	9523 4050						
630 A / B5	3 P	9523 3063	3 P 4109 3063 4 P 4109 4063					
	4 P	9523 4063						
800 A / B6	3 P	9523 3080	3 P 4109 3080 4 P 4109 4080	3 P 1509 3080 4 P 1509 4080	1599 0532	9599 0004 ⁽³⁾		
	4 P	9523 4080						
1000 A / B6	3 P	9523 3100						
	4 P	9523 4100						
1250 A / B6	3 P	9523 3120	3 P 4109 3120 4 P 4109 4120					
	4 P	9523 4120						
1600 A / B7	3 P	9523 3160	3 P 4109 3160 4 P 4109 4160	3 P 1509 3160 4 P 1509 4160				
	4 P	9523 4160						
2000 A / B8	3 P	9523 3200	(1)	3 P 1509 3200 4 P 1509 4200	included			
	4 P	9523 4200						
2500 A / B8	3 P	9523 3250						
	4 P	9523 4250						
3200 A / B8	3 P	9523 3320						
	4 P	9523 4320						

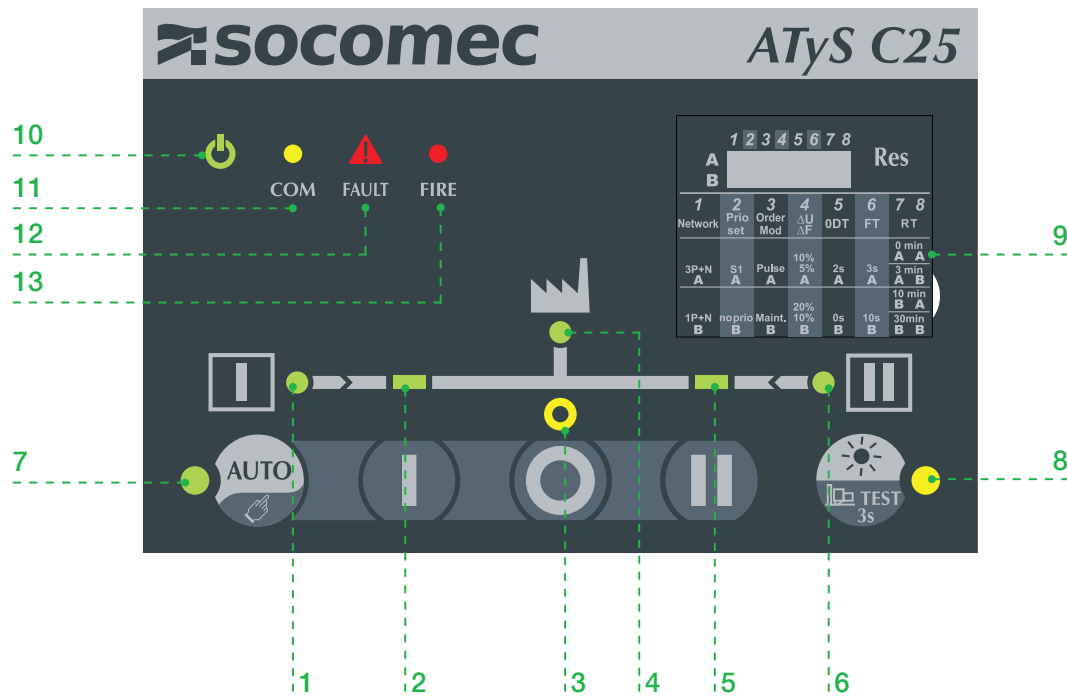
(1) See "Copper bar connection pieces".

(2) To fully shroud front, rear, top and bottom 4 references required. To shroud front switch top and bottom 2 references required (Whenever a bridging beam is fitted, it is then only possible to fit 3 times the reference for the terminal cover).

(3) Factory mounting only.

ANNEX I.

Reminder C25 HMI :



1. Source 1 availability information (Green fixed when source 1 is present and available within threshold limits, green blinking when source 1 is present but outside of threshold limits, off when under 50VAC).
2. Switch 1 LED position indication (Green fixed when in position 1).
3. Zero position LED indication (Yellow when in position 0).
4. Load supplied information (Green fixed when load is supplied by an available source) blinking when supplied by a source which is present by outside of threshold limits.
5. Switch 2 LED position indications (Green fixed when in position 2).
6. Source 2 availability information (Green fixed when source 2 is present and available within threshold limits, green blinking when source 2 is present but outside of threshold limits, off when under 50VAC).
7. Auto LED indication (Green fixed when in automatic, blinking when a transfer is ongoing or during a fault, off when in manual mode or inhibited).
8. Test LED (Yellow fixed when test on load is ongoing) ,blinking when waiting for test validation, off in all other cases.
9. Configurations dip switches (8 dip switches with 2 positions A and B see chapter "12. Programming", page 24 for configuration details).
- 10.Run LED (Green when product is powered).
- 11.COM LED (yellow blinking when RS communications is ongoing , fixed if communication parameters have been modified (press RES 15s to restore communication parameter to the default values).
- 12.Fault LED (Red blinking – long blink when fault or product in inhibited, fast blink when a dip switch parameter has been changed and needs validation).
- 13.Fire (Red when fire input is activated).

Annex I - 1. LED Functioning modes

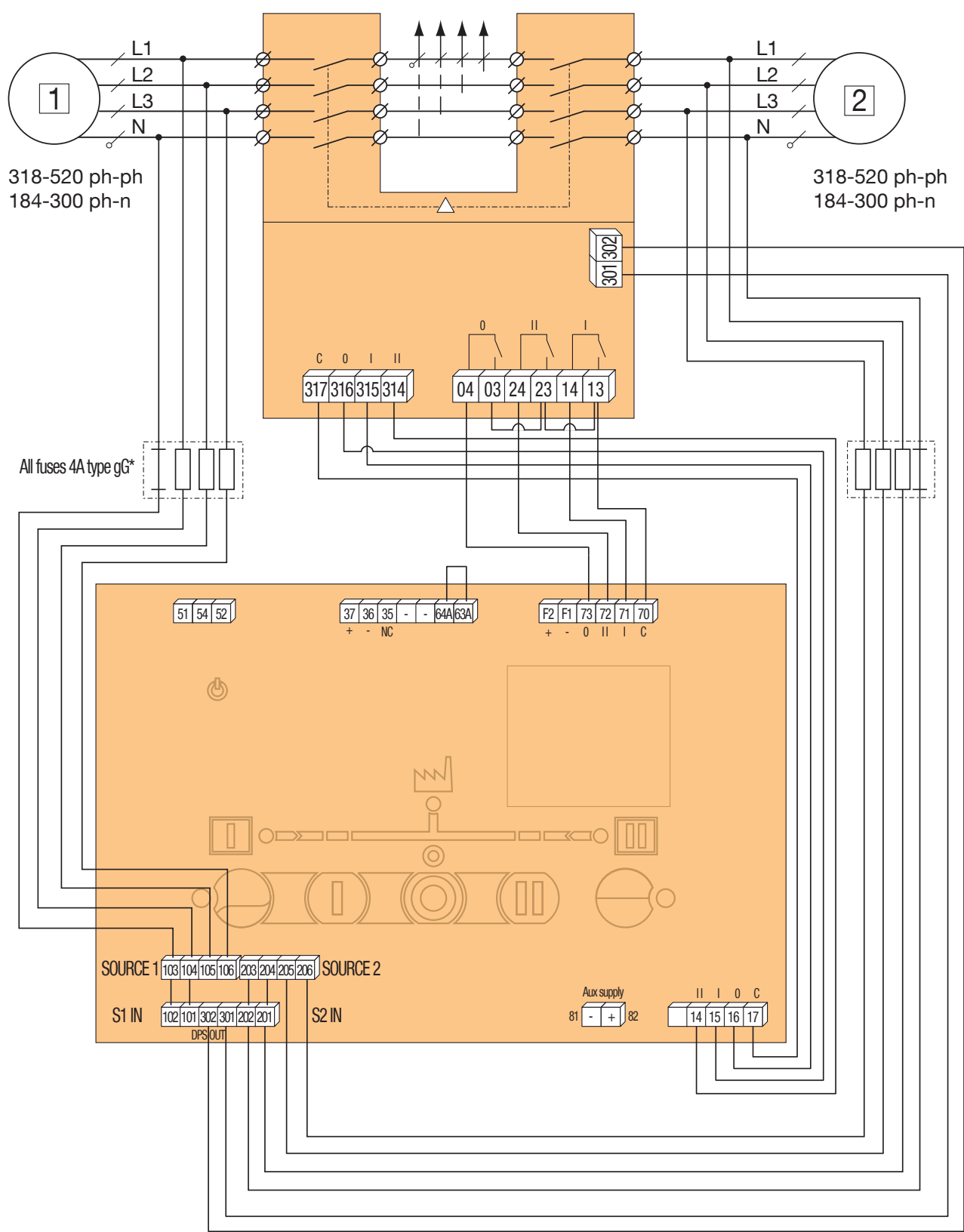
LED indicator (cf HMI image)	LED blinking	LED ON**	LED OFF*
1: Source 1 availability	Source 1 present but not available for following possible reason: -Source undervoltage / under frequency -Source overvoltage /over frequency -Phase rotation order of source 1 & 2 are different	Source is available	Source is not available
2: Position I indicator	Position order I sent by controller awaiting feedback from RTSE	RTSE is in position I / Load is connected to source 1	RTSE is not in position 1 / Load is not connected to source 1
3: Position 0 indicator	Position order 0 sent by controller awaiting feedback from RTSE	RTSE is in position 0 / Load is not connected to source 1 or source 2	RTSE is not in position 0 (no feedback from position 0 input)
4: Load supplied indicator	Load is connected to a source which is out of configuration range or with timers running	Load is being supplied by a source which is available	Load is not being supplied by a source which is available
5: Position II indicator	Position order II sent by controller awaiting feedback from RTSE	RTSE is in position II / Load is connected to source 2	RTSE is not in position II / Load is not connected to source 2
6: Source 2 availability	Source 2 present but not available for following possible reason: -Source undervoltage / under frequency -Source overvoltage /over frequency -Phase rotation order of source 1 & 2 are different	Source is available	Source is not available
7: AUTO/MANUAL indicator	A timer is counting down and a transfer will be initiated. (If the fault LED at the same time as AUTO, first make sure the fault is resolved then clear the fault by pressing the AUTO button)	The controller is in automatic mode	Controller is not in automatic mode possible modes : -Manual -Inhibited
8: TEST led	Waiting for confirmation on the "O" button before starting test	Test is ongoing	No test ongoing
10: Power	/	Controller is powered up	Controller is OFF
11: Communication	Controller is sending / receiving information	Communication parameters have been modified (Baud rate / Parity / address)	No communications orders are currently being sent or received
12 : Fault indicator	Fast blinking (3Hz): one or more Dip switch has changed and configuration as not been saved. Long blinking (1Hz): Inhibit input is active or fault is active	/	Inhibit is not active / no faults active and dip switch configuration has been saved.

*Considering that the controller is powered.

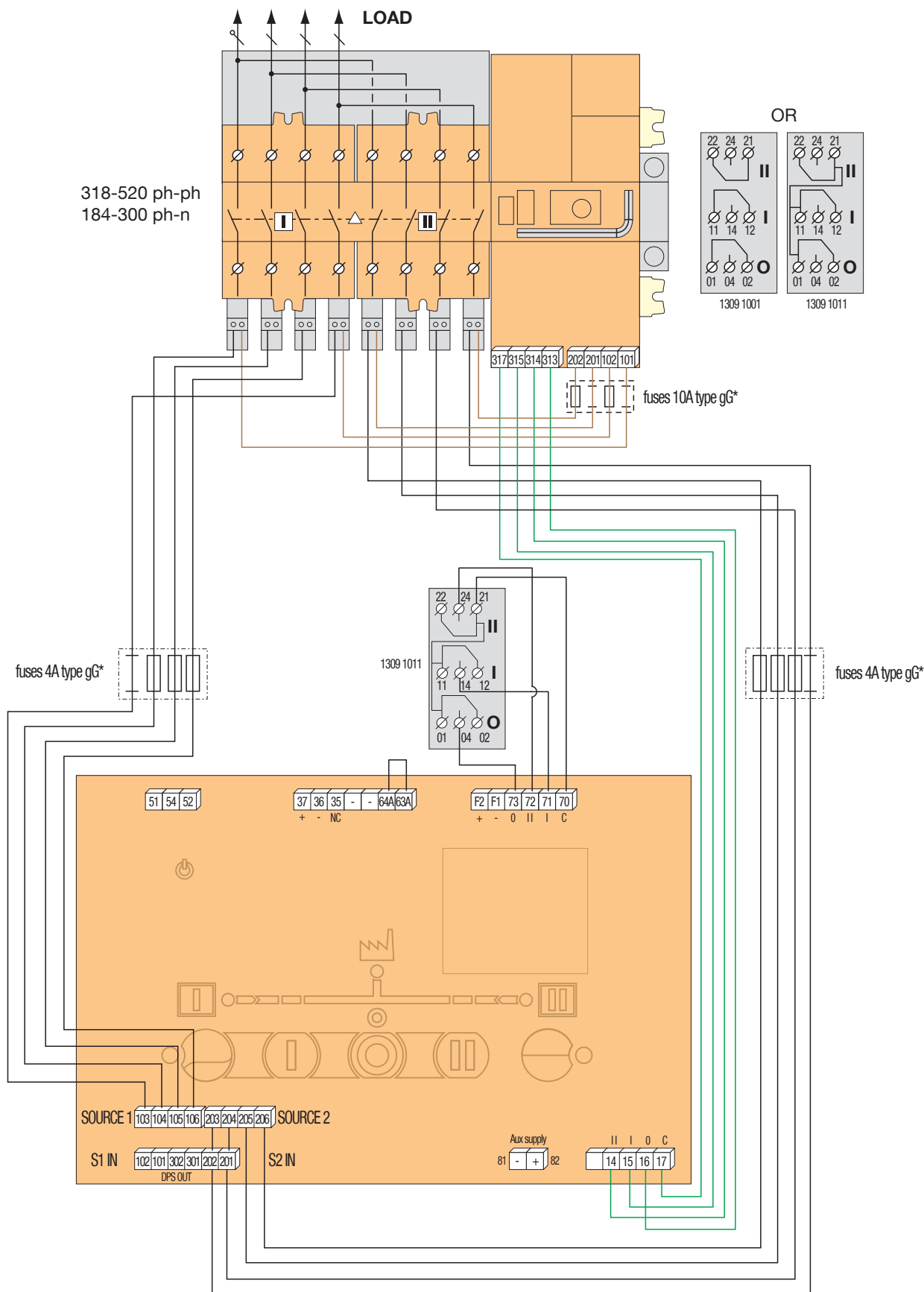
**Considering that lamp TEST has not been initiated

Annex I - 2. Connection diagrams

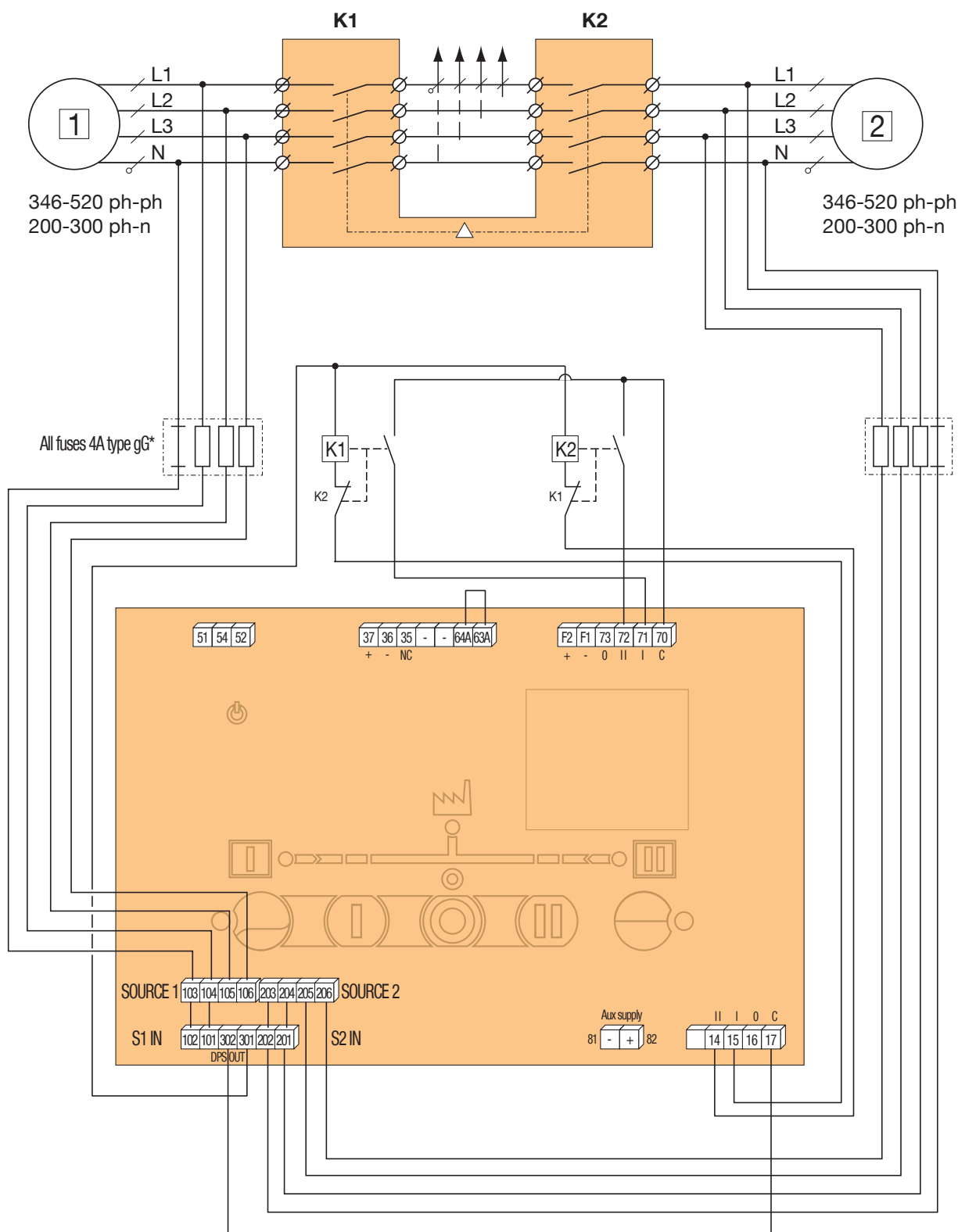
Annex I - 2.1. Connections with ATyS S - Order mode impulse (DIP switch 3 on position A).



Annex I - 2.2. Connections with ATyS dM - Order mode impulse (DIP switch 3 on position A).



Annex I - 2.3. Connections with standard CC type based TSE - Order mode maintained (DIP switch 3 on position B).



WARNING ! Controller output relays 14-15-16-17 are rated for 5A , 250 VAC AC1 - general use, 1.5A 240 VAC AC-15. DPS output is rated for 6A 250VAC general use, 1.5A 240 VAC AC 15. When supplying the RTSE motor/coils or power through these outputs make sure that the CC based RTSE used is compatible with these characteristics, if not use relays in-between outputs and RTSE supply.



CAUTION ! Using the 24VDC auxiliary power with monostable contactor will generate a fault due to unexpected transfer during power off. It is therefore recommended to not use 24 VDC with RTSE based on CC with non stable positions.



CAUTION ! Due to the numerous types of RTSE type CC (contactors) available on the market, compatibility and specific wiring designs must be carried out and qualified by others.

Annex I - 3. Phase rotation check

When both sources are available the controller will check that both sources have the same phase rotation.

If the two sources have different phase orders the source LED (1 & 6) will blink , the fault LED will light up and the sources will be considered as not available (switch will not transfer from the current position to the opposite source).

If only 1 source is available the product will not check the phase rotation order.

Annex I - 4. Voltage/Frequency Levels configuration

Voltage and frequency levels can be configured through DIP switch (DIP switch 4).

1 2 3 4 5 6 7 8							
A				Res			
1	2	3	4	5	6	7	8
Network	Prio set	Order Mod.	$\Delta U/\Delta F$	0DT	FT	RT	
3P+N	S1	Pulse	10% 5% A	2s	3s	0 min A 3 min A 10 min B 30min B	
1P+N	no prio	Maint.	20% 10% B	0s	10s		
B	B	B	B	B	B	B	B

Configuration through DIP switch

The DIP switch configuration allows setting the voltage and frequency limits to $\pm 10\%$ of nominal voltage & $\pm 5\%$ of nominal frequency or $\pm 20\%$ of nominal voltage & $\pm 10\%$ of nominal frequency.

In both cases the hysteresis is 20 % of the selected value (meaning hysteresis threshold are $\pm 8\%/4\%$ of nominal voltage/nominal frequency or $\pm 16\%/8\%$ of Nominal voltage/Nominal frequency). The default value for nominal voltage is 230 V.a.c and the default value for nominal frequency is 50Hz (see graph in Annexe I-5 for a graphic view of the threshold levels).

To reboot the product press the **Res** button for 15s, this will restart the product and take into account any changes on the DIP switches (even if the controller was in AUTO mode at the time of restart). In case of a configuration change the controller Buzzer will beep twice.

Annex I - 5. Timers

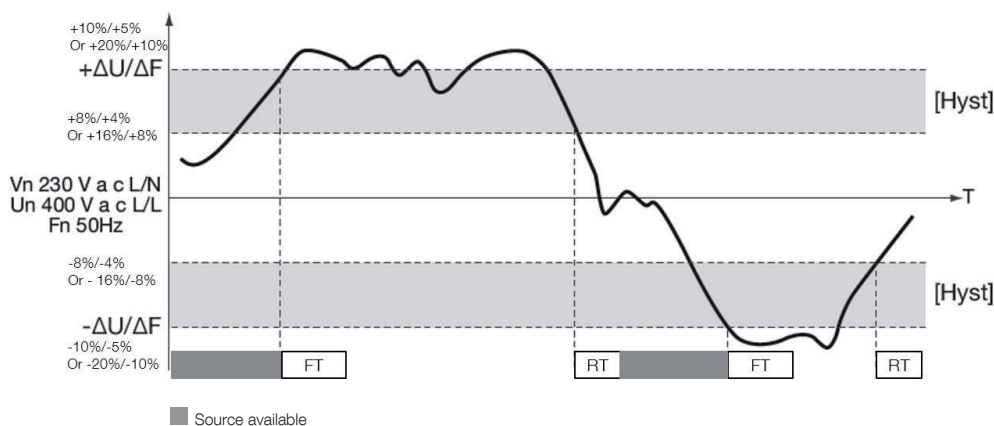
Annex I - 5.1. Fail timers and Return timers

Source failure timers FT and source return timers can be configured using the DIP switches.

The source fail timer FT is the time during which the source can be outside the voltage and frequency threshold before it is considered lost. (cf. graph below)

The source return timer is the time for which the source must be within the voltage and frequency threshold before it is considered available. (cf. graph below)

If only one source is present, the controller will give the order to switch to this source before the return timer has finished counting.



Annex I - 5.2. Cooldown timer

When the switch returns in position I the Cooldown timer will start counting (Default value 180s) during the cooldown timer, the contacts 51-52 will be closed in order to maintain the generator start signal active.

Annex I - 5.3. Dead band timer ODT

The dead band timer ODT can be configured using the DIP switches 5 (2s or 0s). This timer defines the time for which the switch should stay in the 0 position when transferring from one source to another.

Annex I - 6. Priority settings

Priority settings can be configured using the DIP switch 2 “PRIO SET”.

The priority can be set to:

- S1, in this case when source 1 is available the controller will give the order to switch to position I.
- No prio, if both sources are available the controller will give the order to remain in the current position.

Annex I - 7. Tests

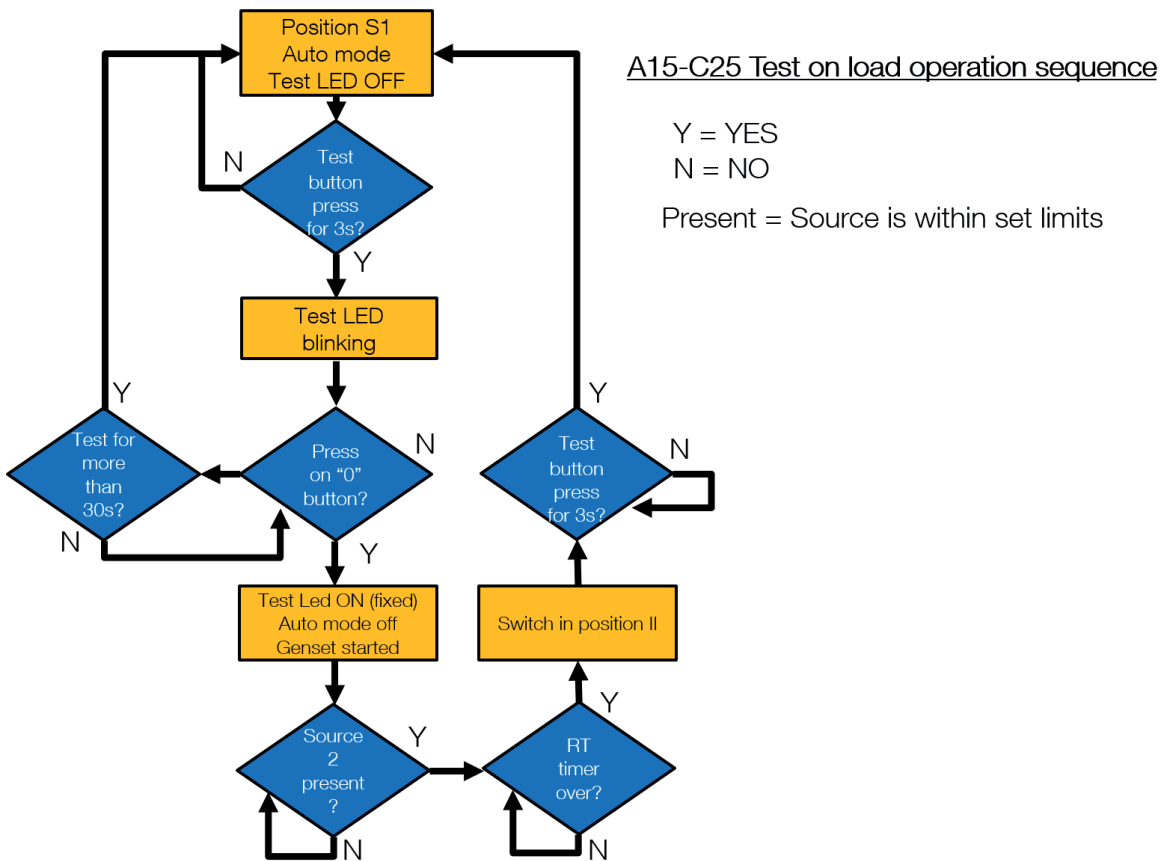
The C25 allows for 2 test functions using the HMI test button:



A short press on this button (<3s) will start a LED test, allowing the user to check that all LEDs are functional.

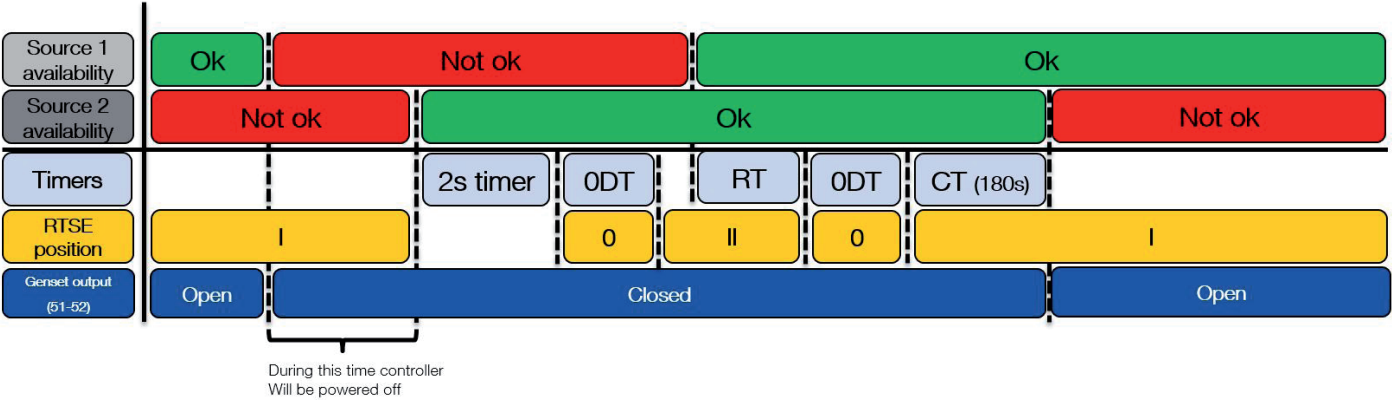
A long press (>3s) on this button will start a TEST ON LOAD sequence, after 3s the Test LED will blink, validate the test by pressing the  button (if a test request is not validated after 30s, the controller will return to the previous mode). This test will start the genset, and transfer to the Source II once the source is considered available.

The product will remain on source 2 until the test ends, to end the test press again the test button for more than 3s to return in the last working mode (Manual or Automatic).



Annex I - 10. Fail and return sequence without permanent 24 VDC

Settings: S1 priority
Source ok if within settings
Source Not ok if outside settings
The 24 VDC optional auxiliary supply is not used
Example if used with RTSE with stable contacts and source 2 is a Genset



ANNEX II. MODBUS COMMUNICATION ADDRESS AND DESIGNATION DETAILS

All communication addresses, except communication parameters (4) are read only RO (read function 03/04).

The communication protocol adopts the standard MODBUS-RTU protocol, with master-slave acknowledgment connection (half duplex).

As standard the baud rate is set to 38400, parity bit to 1 (these settings can be modified through Modbus).

When the product is communicating the COM Led will blink.

Annex II - 1. Input / Output state

Dec. Address	Word count	Description	Unit
10011	1	Fire Input state (F1-F2):	0 : OFF 1 : ON
10012	1	CTRL inhibit (63A-64A)	1 : Inhibit 0 : Automatic
10022	1	Genset control output: (51-52-54)	0 : Genset start order OFF 1 : Genset start order ON
10024	1	Control signal output 0 (16-17):	0: Output not activated 1 : Output activated
10025	1	Control signal output I (15-17):	0: Output not activated 1 : Output activated
10026	1	Control signal output II (14-17):	0: Output not activated 1 : Output activated
10120	1	Position I input state (70-71) :	0 : OFF 1 : ON
10121	1	Position II input state (70-72) :	0 : OFF 1 : ON
10123	1	Position 0 input state (70-73) :	0 : OFF 1 : ON

Annex II - 2. Status

Dec. Address	Word count	Description	Unit
10124	1	Source 1 power status	(1)
10125	1	Source 2 power status	(1)
40005	1	C25 operating mode (2-3):	2 : Manual 3 : Automatic
10042	1	Alarm : Position I timeout (position 1 was not reached after order was sent)	0 : alarm not active 1 : alarm active
10043	1	Alarm : Position II timeout (position 2 was not reached after order was sent)	0 : alarm not active 1 : alarm active
10044	1	Alarm : Wrong phase sequence on source 1	0 : alarm not active 1 : alarm active
10045	1	Alarm : Wrong phase sequence on source 2	0 : alarm not active 1 : alarm active
10046	1	Alarm : Different phase rotation on S1 & S2 detected	0 : alarm not active 1 : alarm active

(1)

Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Status
0	0	0	0	0	0	0	0	Normal
1	0	0	0	0	0	0	0	Missing phase
0	1	0	0	0	0	0	0	Over-voltage
0	0	1	0	0	0	0	0	Under-voltage
0	0	0	0	1	0	0	0	Over-frequency
0	0	0	0	0	1	0	0	Under-frequency

Annex II - 3. Voltage sensing

Dec. Address	Word count	Description	Unit
10192	1	Source 1 L1-N voltage value	(V)
10193	1	Source 1 L2-N voltage value	(V)
10194	1	Source 1 L3-N voltage value	(V)
10195	1	Source 1 L-N average voltage	(V)
10196	1	Source 1 L1 -L2 voltage value	(V)
10197	1	Source 1 L2 -L3 voltage value	(V)
10198	1	Source 1 L3 -L1 voltage value	(V)
10199	1	Source 1 L-L average voltage	(V)
10204	1	Source 1 frequency	(0.1 Hz)
10205	1	Source 2 L1-N voltage value	(V)
10206	1	Source 2 L2-N voltage value	(V)
10207	1	Source 2 L3-N voltage value	(V)
10208	1	Source 2 L-N average voltage	(V)
10209	1	Source 2 L1 -L2 voltage value	(V)
10210	1	Source 2 L2 -L3 voltage value	(V)
10211	1	Source 2 L3 -L1 voltage value	(V)
10212	1	Source 2 L-L average voltage	(V)
10217	1	Source 2 frequency	(0.1 Hz)

Annex II - 4. Communication parameters

Dec. Address	Word count	Description	Unit
40017	1	C25 communication node address:	1-247
40018	1	Baud rate :	2 – 2400 3 – 4800 4 – 9600 5 – 19200 6 – 38400
40019	1	Serial Data format : 1-5	1- 8N 2 – 80 3 – 8E 4 – 70 5 – 7E
40020	1	Stop bit:	1 – 2

As standard the baud rate is set to 38400, parity bit to 1, Modbus address 3 these parameters can be changed using the write function 10.

Once the configuration is done, write data 1 at address Dec. 40565. After changing the parameters the product buzzer will sound twice and the Com LED will stay on.

To reset to default parameters press the RES button for 15 seconds, the product will reboot and the standard communication settings will be set.

Annex II - 5. Maintenance

Dec. Address	Word count	Description	Unit
10126	2	Position I operation count in AUTO mode:	0-60 000
10128	2	Position II operation count in AUTO mode:	0-60 000
10130	2	Position I operation count in Manual mode:	0-60 000
10132	2	Position II operation count in Manual mode:	0-60 000
10170 -10179	8	Serial number	-
10186	1	Hardware version	-
10187	1	Software version	-

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