

ATS Controller

ATyS C55/65



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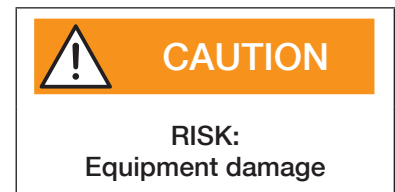
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1. GENERAL SAFETY INSTRUCTIONS

- This manual provides instructions on safety, connections instructions on the SOCOMEC ATyS C55 / C65 ATS controller.
- Whether the ATyS C55 / C65 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 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 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 to the use, installation or maintenance of the ATyS C55/C65
- The ATyS C55/C65 meets the requirement for the IEC 60947-6-1 standard for transfer switching equipment and the IEC 61010-2-201 standard for control equipment; the product includes the labels and marking with details on each standard.
- No covers on the ATyS C55/C65 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 C55/C65 when voltages 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.



- The ATyS C55/C65 complies with the following international standards:
 - - IEC 60947-6-1 – Transfer switching equipment
 - - IEC 61010-2-201 – Particular requirements for control equipment
 - - IEC 61010-1 – Electrical safety requirements
 - - Annex C of GB/T 14048.11

Refer to the specific references numbers on this document to order the correct products and associated accessories.

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 C55 and C65 ATS controllers are compliant to international product standards and are designed specifically for use in low voltage power applications to ensure the safe transfer of a load supply between a normal and an alternate source.

Besides product standards the C55 and C65 are designed to meet IEC 60364 and IEC 61439 installation standard requirements as well as NFPA 110 and NFPA 70 (NEC) when using the specific UL controller C66.

This version of instruction sheet is based on C55 and C65 products with firmware version 2.3.

The latest firmware versions are available on the Socomec website : <https://www.socomec.com>.

The firmware upgrade is done using the Product Upgrade Tool software (also available on the Socomec website), and connecting the PC to the Micro USB port of the C55/C65.

ATyS C55/65 range of automatic transfer switch (ATS) controllers ensure:

- Safe controls for transfer between a normal and alternate source.
- A manufacturer assembled and tested solution.
- Intuitive and simple controls for local operation.
- Quick easy and safe electrical manual operation.
- Straightforward installation with effective ergonomics.
- A simple and secure control interface.
- Easy mounting and smart configuration.
- Suitable for indoor and outdoor applications (IP65) when the gasket is installed.

Glossary:

ATS:	Automatic Transfer Switch
ACB:	Air Circuit Breaker
MCCB:	Molded Case Circuit Breaker
FT:	Fast Transfer
DT:	Delayed Transition
SCPD:	Short Circuit Protection Device
CT:	Current Transformer
VT:	Voltage Transformer
GND:	Ground
I/O:	Inputs/Outputs
RTC:	Real Time Clock
ECS:	Easy Config System
EMC:	Electromagnetic compatibility
S1:	Source 1
S2:	Source 2
RMS:	Root mean square / effective value

3. QUICK START

QUICK START GUIDE

EN

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Innovative Power Solutions



549782E

ATyS C55/65

ATS CONTROLLER

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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 1x C55 or C65 Controller
 - Qty 1x Controller IP65 gasket (C65 only)
 - Qty 4x Door mounting screws
 - Qty 1x Connector kit
 - Qty 4x Backplate mounting feet

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 SOCOMEC website.

- This product must always be installed and commissioned by qualified and approved personnel.
 - Maintenance and servicing operations should be performed by trained and authorized 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 practices 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.
Installation standards must be respected.

Accessories

- Digiware I/O 10 (ref. 48290140)
- Gateway M70 (ref. 48290222)
- Controller 24 VDC aux power supply (6W minimum type SELV) mandatory with I/O 10 Modules

For further details refer to the product instruction manual under chapter "Spares and Accessories"

Spares

- Connector kit (ref. 16090002)
- Controller backplate mounting feet (ref. 16090005)
- Controller door mounting screws (ref. 16090004)
- Controller IP65 gasket (ref. 16090001) (C55/65)

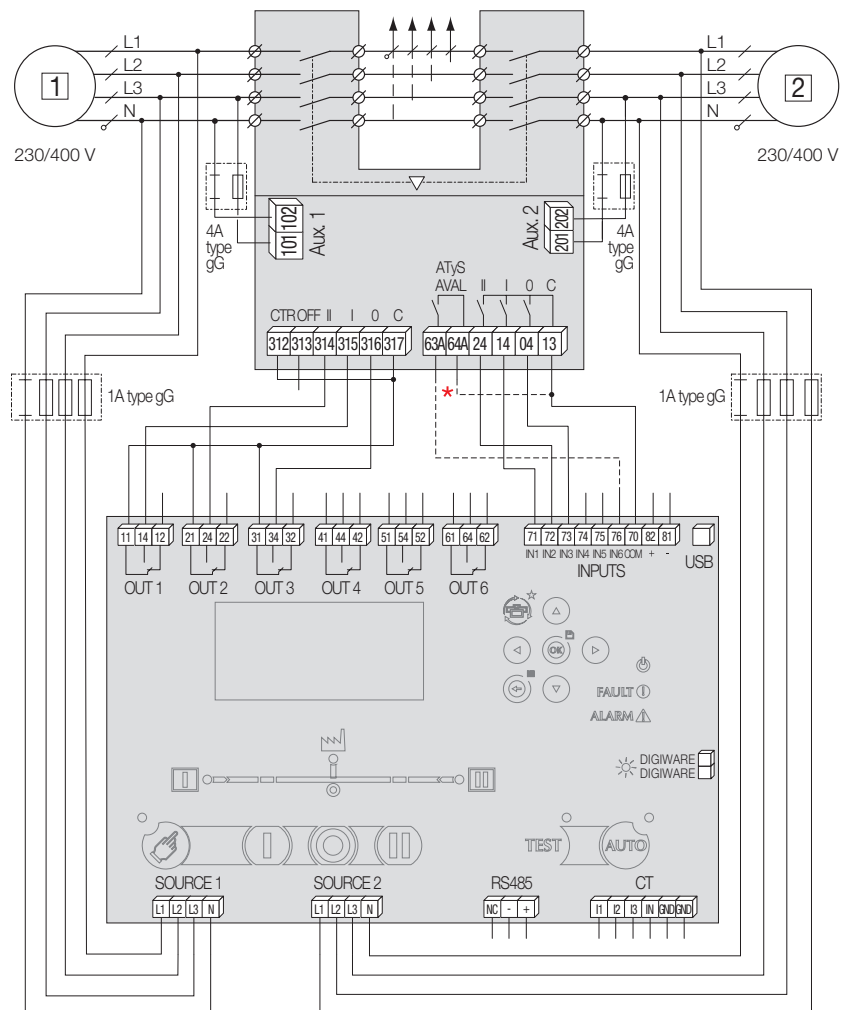
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67235 BENFELD, FRANCE

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IEC 61010



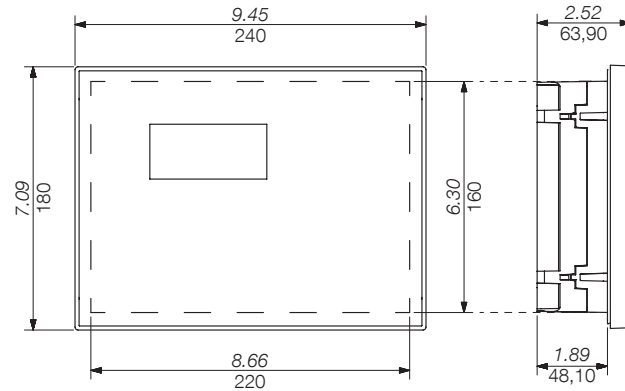
Connection diagram with ATYS d



* The use of this input is optional, when used configure IN6 to «DOOR OPEN» in mode «NC».

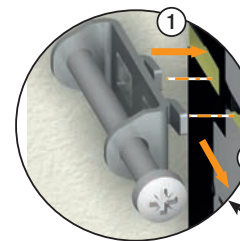
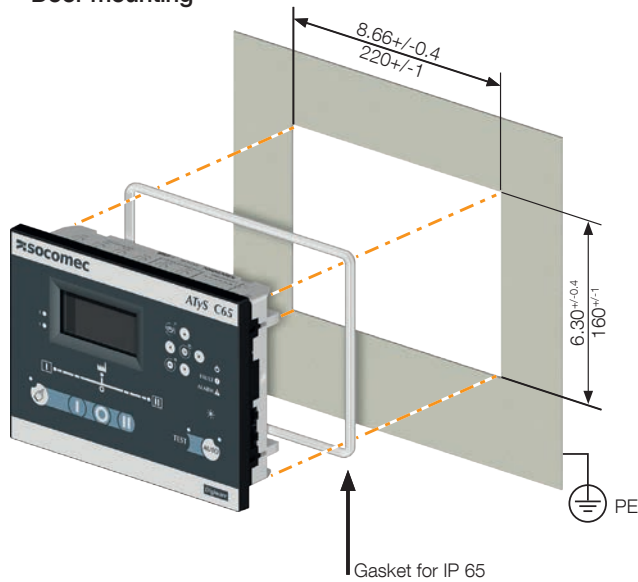
Product dimensions

Dual Dimensions
in/mm



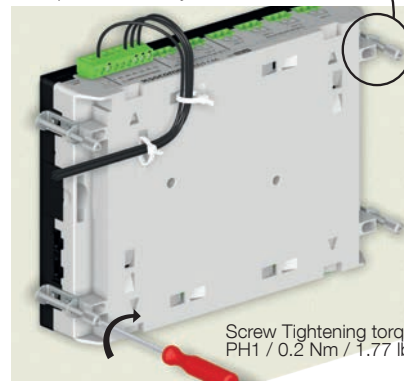
1 Mounting & connecting controller

Door mounting

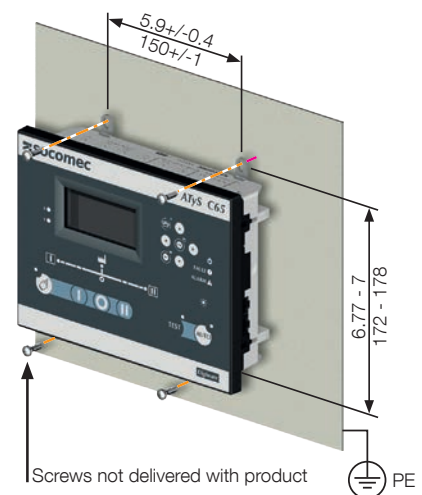
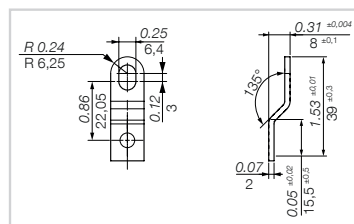
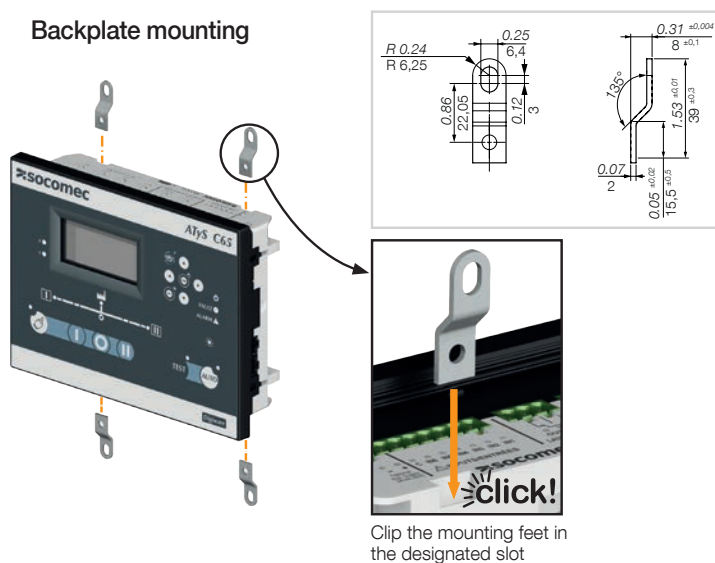


Insert the 4 door mounting screws in the designated slot and push back to lock in place.

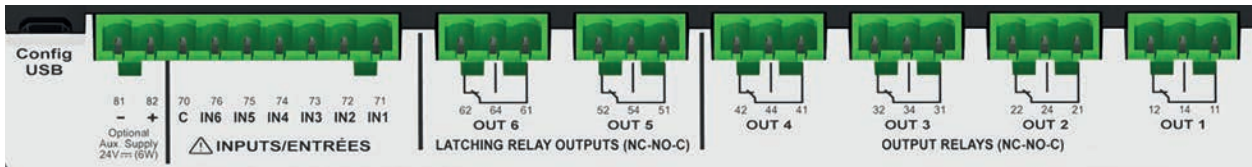
Example of cable way.



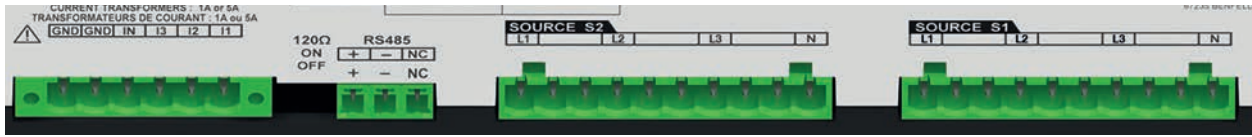
Backplate mounting



2 Controller wiring



Top view

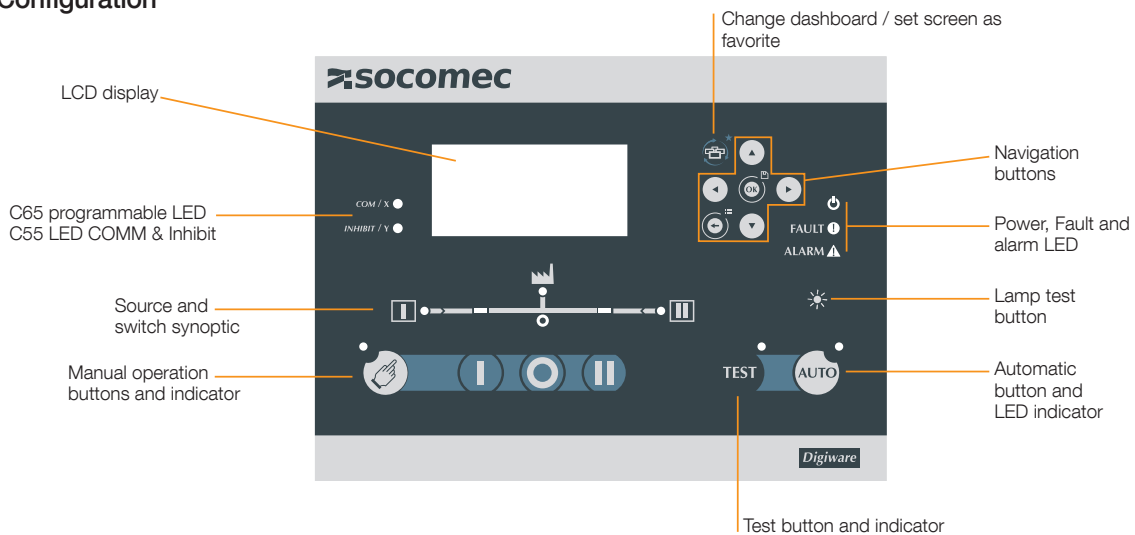


Bottom view

TYPE	TERMINAL N°	DESCRIPTION	CHARACTERISTICS	RECOMENDED CROSS SECTION	TIGHTENING TORQUE
Sensing source 1	SOURCE 1 L1/L2/L3/N	Voltage sensing inputs source 1 & voltage supply (L1-L2)	Sensing voltage 50 - 575 V.a.c P-P - 50/60 Hz (+/- 10%) Supply voltage (L1-L2)	0.75-2.5mm ² AWG 18-14	0.5-0.6 Nm 4.4-5.3 lb.in
Sensing source 2	SOURCE 2 L1/L2/L3/N	Voltage sensing inputs source 2 & voltage supply (L1-L2)	88 - 576 V.a.c - 50/60Hz (+/- 10%) Uf 600V		
Inputs	71	IN1: programmable input 1	Do not connect to any external power supply	0.5-2.5mm ² AWG 20-14	
	72	IN2: programmable input 2			
	73	IN3: programmable input 3			
	74	IN4: programmable input 4			
	75	IN5: programmable input 5			
	76	IN6: programmable input 6			
Aux power supply	81/82	- : negative terminal for aux supply + : positive terminal of aux supply	12-24 Vd.c.		
Outputs	12/14/11	OUT1: programmable output 1	Dry contacts 8A / 277 VAC 50/60 Hz 5A / 24 VDC	1.5-2.5mm ² AWG 16-14	
	22/24/21	OUT2: programmable output 2			
	32/34/31	OUT3: programmable output 3			
	42/44/41	OUT4: programmable output 4			
	52/54/51	OUT5: programmable output 5 (latching)			
	62/64/61	OUT6: programmable output 6 (latching)			
Current transformers	IN/3/12/11	CT neutral / CT phase C / CT phase B / CT phase A	CT input 1A or 5A		
Serial connection	RS485	Connection RS485 - : negative terminal of RS485 bus + : positive terminal of RS485 bus NC : Ground	RS485 bus insulated	LiVCY shielded twisted pair 0.14 to 1.5 mm ² 30-14 AWG	0.22 - 0.25 Nm
Digiware*	DIGIBUS	Connection point for I/O 10 optional accessories & digiware connection (must use 24 VDC input)	RJ 45 digiware cable	-	-

* For more information check I/O module instruction sheet ref 545597

3 Configuration



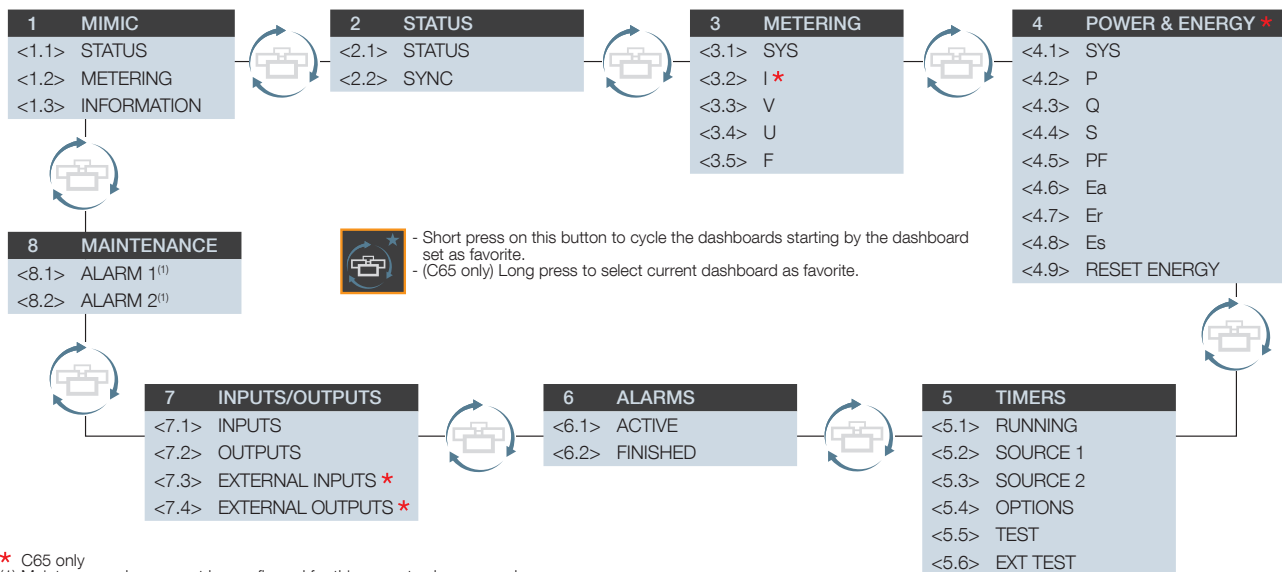
SMART WIZARD CONFIG:

When powered for the first time the controller will prompt the user to configure using the wizard. To access the wizard input code 1000 then the configuration will go as follow:



For advanced configuration go to parameters menu.

4 Visualization



* C65 only

(1) Maintenance alarms must be configured for this menu to show any values.

5 Menu & programming



- Short press on this button to go back one level.
 - Long press to access the menus.

MAIN MENU	SPECIFIC FUNCTIONS	PARAMETERS	TIMERS
CONTROL	MANUAL RETRANSFER	NETWORK	OPERATION
LOG	INPHASE TRANSFER *	LOAD	GENSET SOURCE 1
STATISTICS	RETURN TO 0	DISPLAY	GENSET SOURCE 2
GENSET SCHEDULER	LOAD CTRL *	TIMERS	TESTS ON LOAD
PARAMETERS	FORCED LOAD SHEDDING *	I/O	TESTS OFF LOAD
SPECIFIC FUNCTION	SMART LOAD SHEDDING *	COMMUNICATION	
MAINTENANCE	POWER UP IN AUTO	ALARMS	
ABOUT	DBT TIMER IN CTRL *	PASSWORDS	
	HVAC COMPRESSOR	WIZARD	
CONTROL	TRIPPING ACTION		I/O
MODE / POSITION	LOAD ADDING	NETWORK	INPUTS
TEST	CYCLER	AUTODETECT	OUTPUTS
MANUAL RETRANSFER	COMMIT TO TRANSFER *	SETUP	EXTERNAL I/O DETECTION *
		APPLICATION	EXTERNAL I/O CONFIG *
		OP RANGE S1	
STATISTICS		OP RANGE S2	COMMUNICATION
CYCLES			MODBUS ADDRESS
OPERATIONS		LOAD	RS485 MODBUS
OPERATING HOURS		LOAD STATUS	DIGIBUS COMM
SOURCE 1		LOAD TYPE	DIGIWARE MODE
SOURCE 2		INOM	
GENSET 1		LOAD NAME	ALARMS
GENSET 2		CT PRIMARY	MEASURE ALARMS
BREAKER		CT SECONDARY	MAINTEN. ALARMS
BYPASS		NEUTRAL CT PRIMARY	COMBI ALARMS *
		NEUTRAL CT SECONDARY	LOGICAL ALARMS
LOG		LINE I1 WAY	SYSTEM ALARMS
EVENT LOG		LINE I2 WAY	
EVENT BY DATE *		LINE I3 WAY	PASSWORDS
ALARM LOG		LINE I4 WAY	CHANGE OPERATOR PWD
FAULT LOG			CHANGE CONFIG PWD
		DISPLAY	CHANGE MAINTENANCE PWD
SCHEDULER		SCREEN	BACK
GENERAL PARAMETERS		DATE AND TIME	
CUSTOM 1		LED CONFIG *	
CUSTOM 2 *		OPTIONS	
CUSTOM 3 *		CHANGE PRODUCT NAME	
CUSTOM 4 *		SCREENSAVER TEXT	

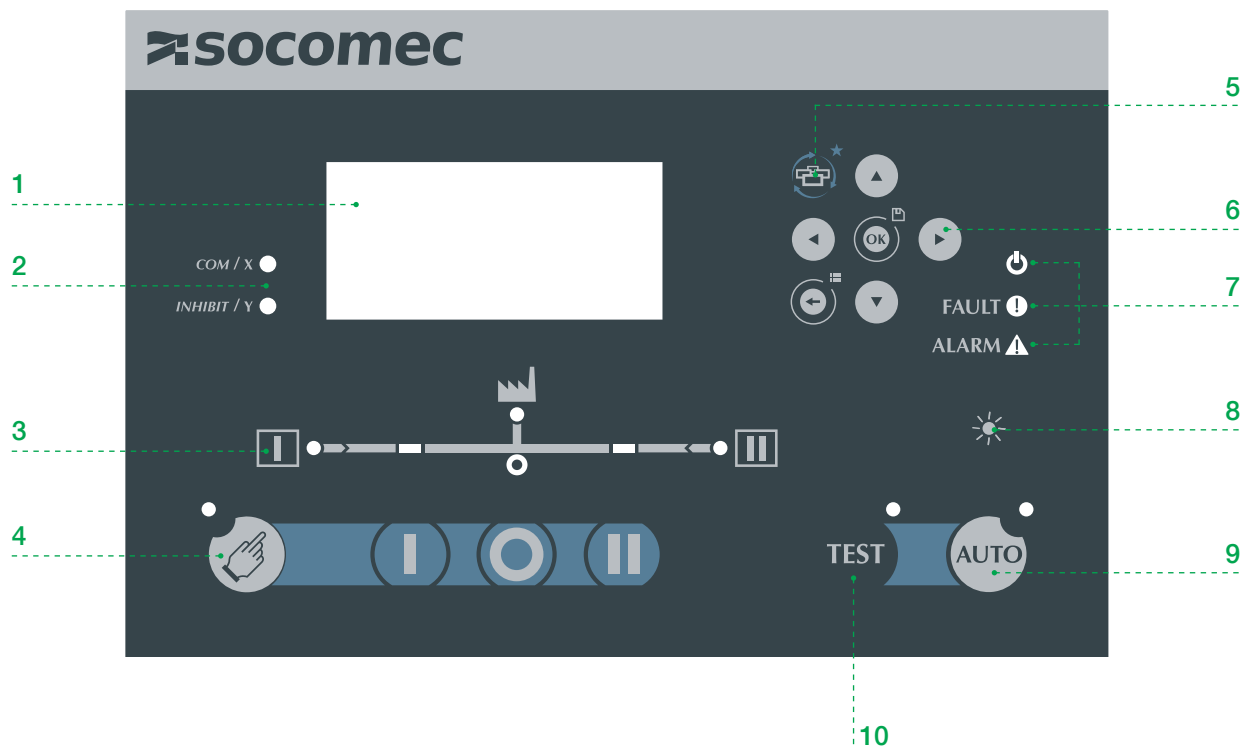
* C65 only

4. GENERAL OVERVIEW

The ATyS C55/C65 ATS Controller reference includes:

- 1 ATS Controller
- 1 ATyS C65 IP65 gasket (available as accessory for C55)
- 1 ATyS Cx5 door mounting kit
- 1 ATyS Cx5 backplate mounting kit
- Quickstarts instruction sheet

All other components described in this instruction manual are available as accessories and sold separately.



1. LCD display
2. C65 programmable LED's / C55 Fixed LED's for COMM & Inhibit
3. Source availability and switch position synoptic
4. Electric manual operation push buttons and status indicator
5. Change dashboard screen / set screen as favorite (hold 1.5s to set screen as favorite)
6. Navigation arrows (Up/Down/Left/Right)
7. Power, Fault and alarm LED
8. Lamp test button / Clear faults (hold 1,5s to clear faults)
9. Automatic mode push button and LED status indicator
10. Test button and status indicator

5. ENVIRONMENTAL

The ATyS C55/65 controllers meet the following environmental requirements:

5.1. IP Rating



- IP65 door mounted with gasket.
- IP30 door mounted without gasket.
- IP2X on the back of the controller.

5.2. IK Rating

- IK 8 (6.8 J) rating according to IEC 61010-2-201.
-

5.3. Operating Conditions

5.3.1. Temperature



- From -30 to +70°C.



Note: with limitations on the LCD screen that may show temporary distortion below -10°C.

5.3.2. Hygrometry



- 95% humidity without condensation at 55°C.

5.3.3. Altitude



- Up to 2000m.
-

5.4. Storage Conditions

5.4.1. Temperature



- From -40 to +70°C.

5.4.2. Hygrometry



- Recommendation: to be stored in dry, non-corrosive and non-saline atmospheric conditions.

5.4.3. Storage duration period



- Maximum storage up to a period of 12 months.

5.4.4. Storage position



- Maximum of 5 boxes may be stacked vertically.



5.4.5. Volume and shipping weights by reference ATyS

Product	Reference Number	Weight (kg)		Volume (mm) inc. packing
		Net	Gross	
ATyS C55	1600 0055	1.060	1.500	295x255x115 (LxWxH)
ATyS C65	1600 0065	1.080		

5.4.6. EMC

The ATyS C55 & C65 controllers are compliant to EMC requirements as described in IEC 60947-6-1, (Products intended to be installed in an «Industrial, Commercial and/or Residential Environment» therefore respecting both Class A as well as Class B EMC requirements).

6. STANDARD COMPLIANCE AND MARKING

CE marking



Cmim



EAC



Lead free process



WEEE Directive 2012/19/EU



UKCA



Standards compliance

Certified according to :

IEC 61010-2-201

IEC 61010-1

GB/T 14048.11 Annex C

Conform to the requirements of :

IEC 60947-6-1 when used with an IEC 60947-6-1 certified RTSE (Remotely operated transfer switch).

NFPA 70* (Specific UL Reference).

NFPA 110* (Specific UL Reference).

(*) For a UL certified product, SOCOMEC provide reference 1600 0066 (ATyS C66, that is UL61010 listed and UR 1008 recognised as a standalone ATS controller as well as UL1008 listed in association with ATyS FT or ATyS DT transfer switching equipment)

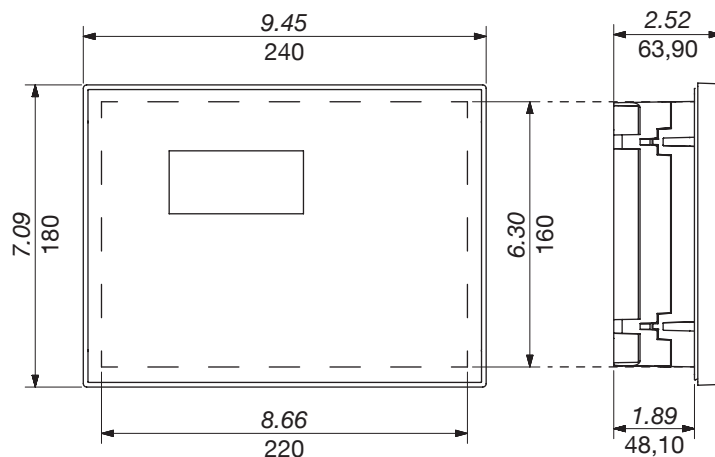
7. CONTENT OF PACKAGING

The ATyS C55/C65 packaging includes:

- Qty 1 x Quickstart guide
- Qty 1 x C55 or C65 Controller
- Qty 1 x Connector kit
- Qty 1 x Controller IP65 gasket (C65 only)
- Qty 4 x Door mounting screws
- Qty 4 x Backplate mounting feet

8. INSTALLATION

8.1. Product dimensions (in/mm)



8.2. Mounting

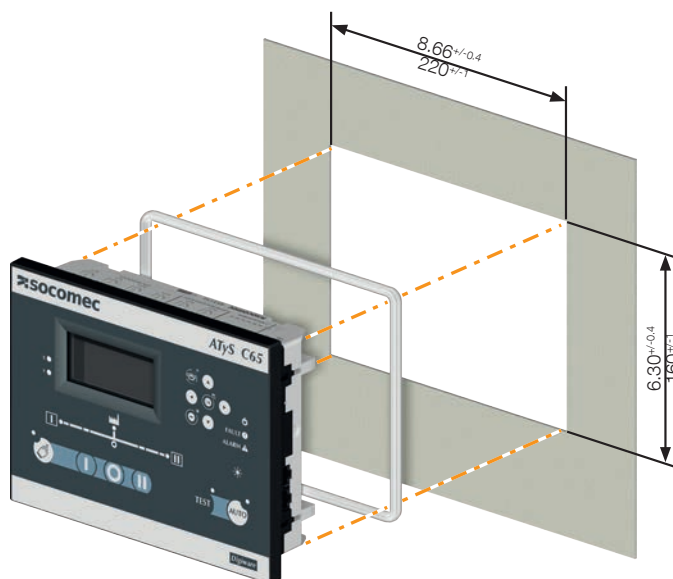
The ATyS C55/65 can be mounted either on the door or on the backplate of an enclosure (both mounting kits are delivered with the product).

8.2.1. Door mounting

The ATyS C55/C65 can be mounted on doors up to with a thickness 4mm (0.15in).

STEP 1: Cut out for the controller

Cut a rectangle hole of 220x160mm / 8.66 x 6.3in on the enclosure door as shown below.

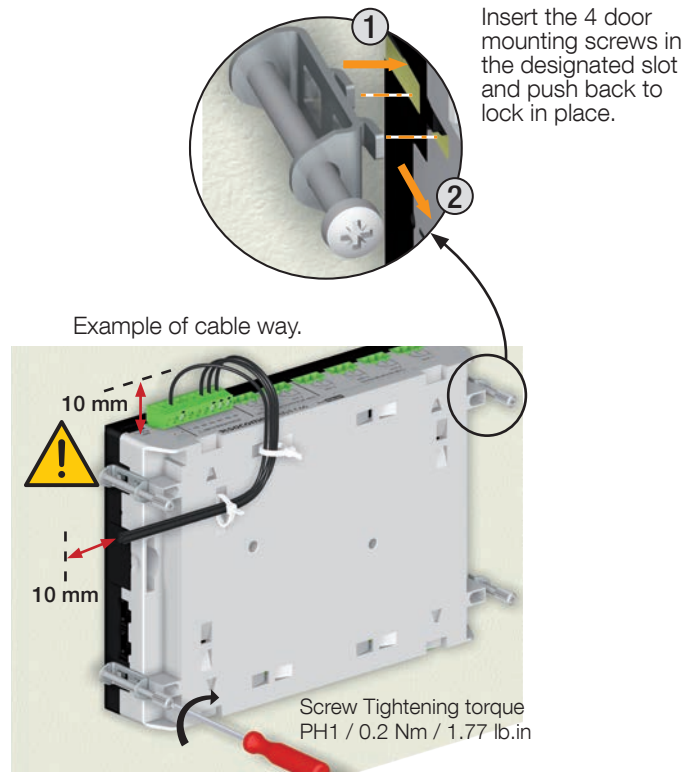



CAUTION ! For IP65 protection, the gasket must be placed and fitted around the inside edge of the controller as shown above.


STEP 2: Fixing the controller on the door:

Remove all connectors then place the ATS controller inside the door cut-out and clip the door mounting screws into the side of the controller (2 screws on each side). It is important to respect the tightening torque indicated below and follow good engineering practice when installing the ATS controller.

The back of the controller includes fixing points for cable collars (see illustration below).



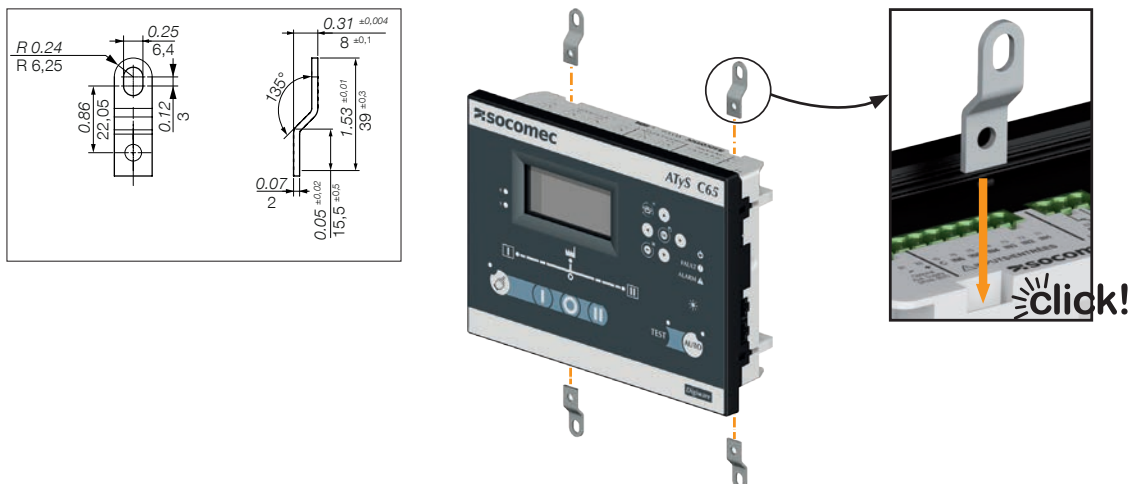
 Cable must be more than 10mm away from the RTC battery cover and USB.

 Do not drill holes above the controller after it has been mounted.

8.2.2. Backplate mounting

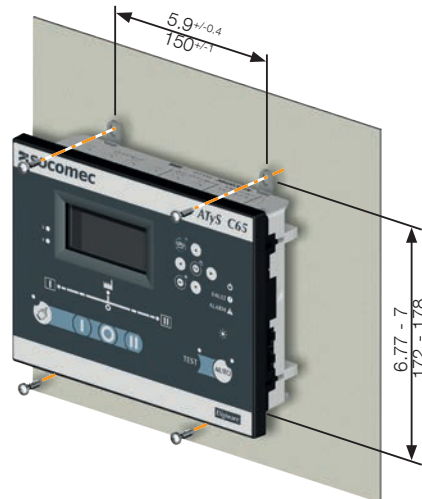
STEP 1: Placing the 4 mounting legs on the controller

Insert the mounting legs into the 4 slots (2 top side and 2 bottom side, (cf. below top side view).



STEP 2: Fixing the controller on the backplate

Drill mounting holes in the backplate to match the fixing holes as shown and indicated below. Fix the controller through the mounting legs to the backplate with a maximum screw diameter of 6mm/0.22in.



Mounting of Digital I/O extension modules (Accessory for C65 only):

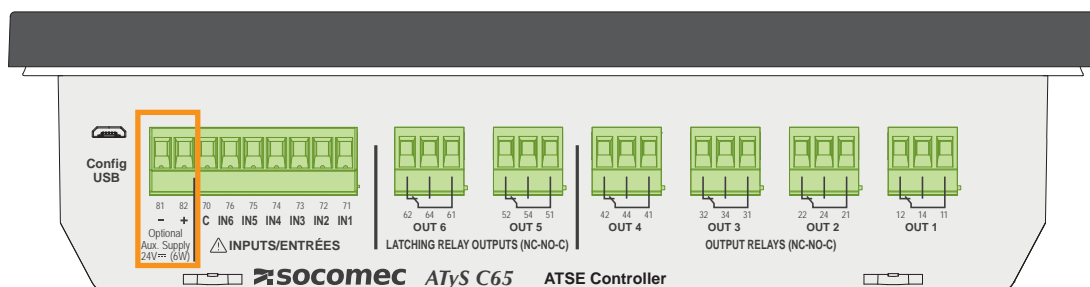
Digital I/O modules are accessories not delivered with the product. These optional modules can be ordered using the references below:




Digital I/O modules provide additional inputs /outputs to be used with/by the ATyS C65. The maximum length of the Digiware bus is 100 meters.



CAUTION ! The maximum number of I/O optional modules that can be added through the Digiware bus to the controller is 6; this is equivalent to 24 digital inputs and 12 digital outputs. In order to use the I/O modules the 24VDC input of the C65 controller must be supplied with 24 VDC.

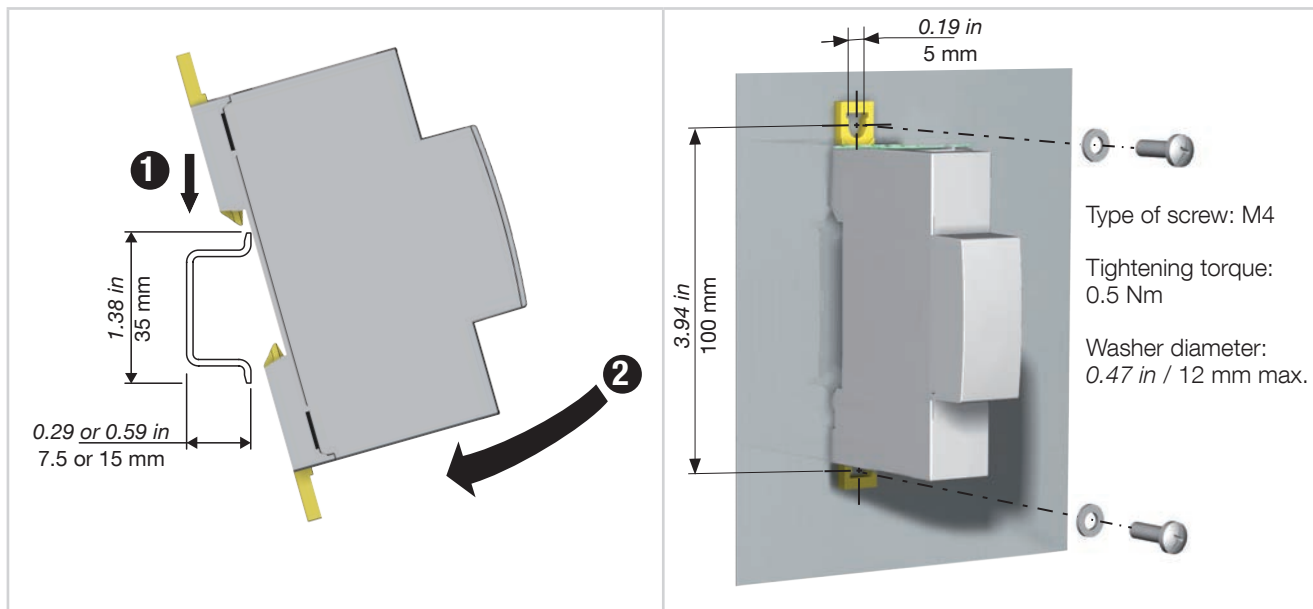


An end-of-the-bus resistor is necessary for a correct communication between the modules and the controller:

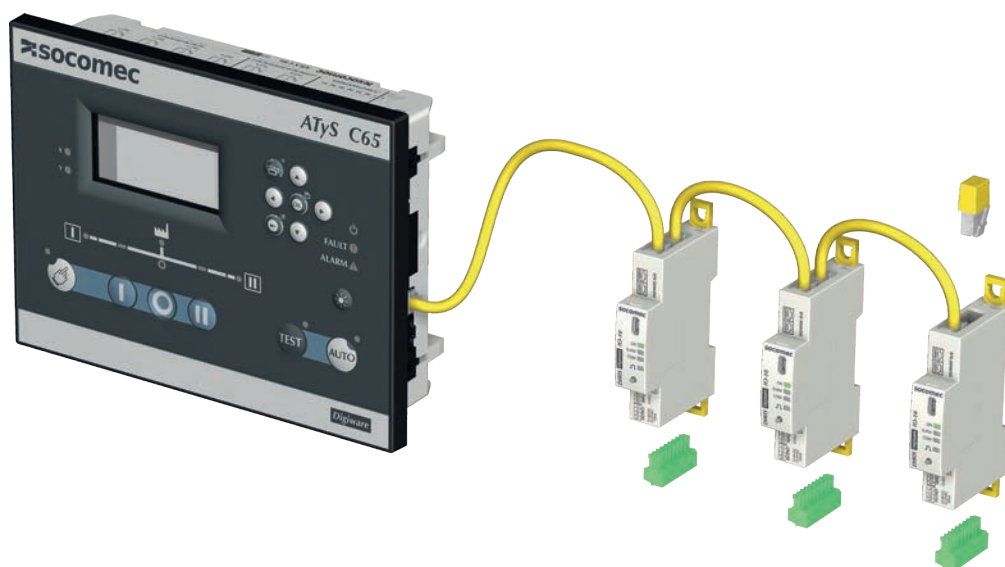
	Quantity	Part number
	1	4829 0180

Mounting the I/O modules:

Position the I/O modules on DIN rail or on backplate as shown on the image below.



The connection between modules and to the ATyS C65 Digiware input is on the side of the controller by means of an RJ45 connector and after this the other modules are daisy chained (up to 6 modules).



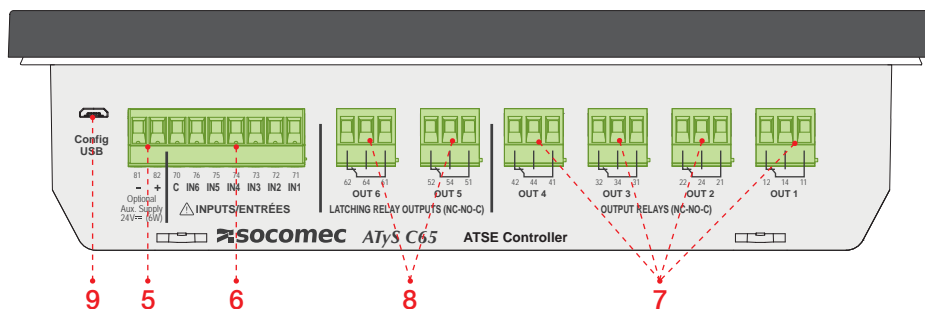
After connecting your I/O modules see chapter "14.1.6.5. I/O module connections", page 68 for details on how to detect and program the I/O modules.

The configuration and the state (function and active or off) of the additional I/O can be visualized at any time by going to Dashboard 7 "I/O" and selecting sub-menus 7.3 "EXTERNAL INPUTS" and 7.4 "EXTERNAL OUTPUTS".

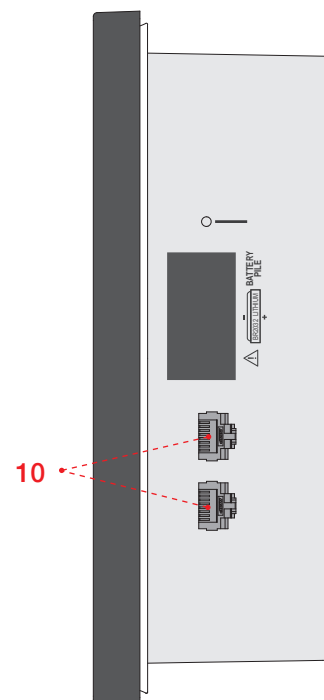
9. CONNECTION

9.1. Connectors

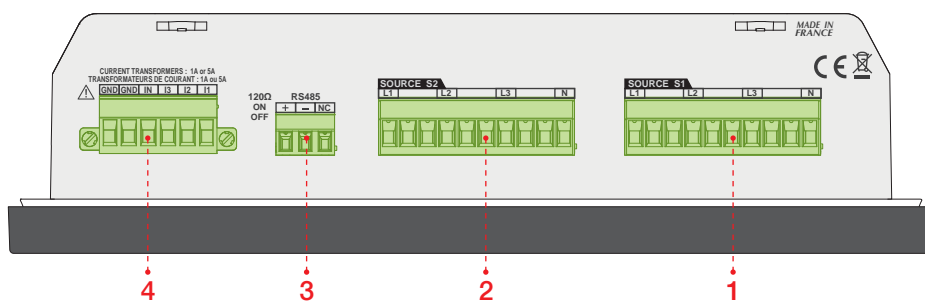
Top view:



Right side view:

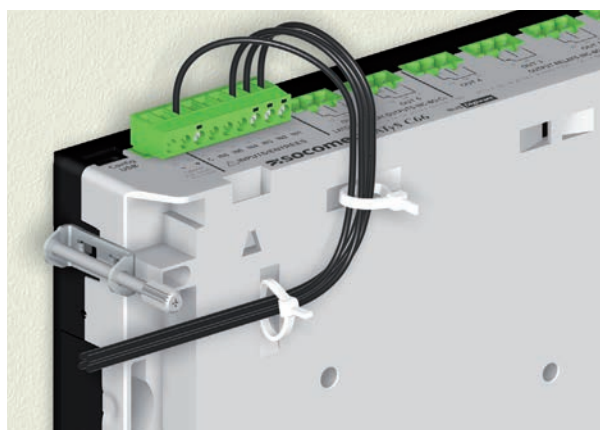


Bottom view:



To help secure the control cables during the wiring, the controller includes seven fixing supports on the back of the controller to retain the cables in place using cable ties.

Example of cable way.



N°	Denomination	Terminal	Description	Characteristics	Recommended Cable Section	Tightening torque
1	Voltage sensing source 1	L1 / A	Phase 1 / A	1Ph / 3Ph 50 - 332 / 575VAC (50/60 Hz) (+/- 10%) Impulse V. Withstand Test: 6/8kV* Ui 600V	0.75 - 2.5 mm ² AWG 18-14	0.5-0.6 N.m 4.4-5.3 lb.in
		L2 / B	Phase 2 / B			
		L3 / C	Phase 3 / C			
		N	Neutral			
2	Voltage sensing source 2	L1 / A	Phase 1 / A	1Ph / 3Ph 50 - 332 / 575V 575VAC (50/60 Hz) (+/- 10%) Impulse V. Withstand Test: 6/8kV* Ui: 600V	0.75 - 2.5 mm ² AWG 18-14	0.5-0.6 N.m 4.4-5.3 lb.in
		L2 / B	Phase 2 / B			
		L3 / C	Phase 3 / C			
		N	Neutral			
3	RS 485	+	DATA + (A)	-	LiYCY sheilded twisted pair 0.14 to 1.5 mm ² / AWG 30 - 14	0.22-0.25 N.m 4.4-5.3 lb.in
		-	DATA - (B)			
		NC	Ground			
4	CURRENT TRANSFORMERS	I1 /Ia	CT phase 1 / A	CT Input /1A or /5A	1.5-2.5 mm ² AWG 16-14	
		I2 /Ib	CT phase 2 / B			
		I3 /Ic	CT phase 3 / C			
		In	CT neutral			
		GND	Ground			
		GND	Ground			
5	Optional Aux. Supply 24Vdc	81	-	9-28VDC 24VDC -20%/+20% for I/O modules		
		82	+			
6	PROGRAMMABLE INPUTS	70	COMMON	Do no connect to any power supply. To be used with dry contacts Line maximum length100m	0.5-2.5 mm ² AWG 20-14	0.5-0.6 N.m 4.4-5.3 lb.in
		71	Input 1			
		72	Input 2			
		73	Input 3			
		74	Input 4			
		75	Input 5			
		76	Input 6			
7	PROGRAMMABLE OUTPUTS	11-12 NC/ 11-14 NO	Output 1	Dry contacts 8A / 277 VAC 50/60 Hz 5A / 24 VDC	1.5-2.5 mm ² AWG 16-14	
		21-22 NC/ 21-24 NO	Output 2			
		31-32 NC/ 31-34 NO	Output 3			
		41-42 NC/ 41-44 NO	Output 4			
8	LATCHING RELAYS	51-52 NC/ 51-54 NO	Output 5			
		61-62 NC/ 61-64 NO	Output 6			
9	Config USB	Micro USB	USB 2.0 for configuration	-	Micro USB Type B	-
10	Digiware bus	BUS	2x RJ45 DIGIWARE BUS	CAT V - 600V RJ45 UTP	RJ45 DIGIWARE CABLE	-



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.

* Impulse voltage withstand tests at 6kV between phases of the same source and 8kV between phases of a different source.

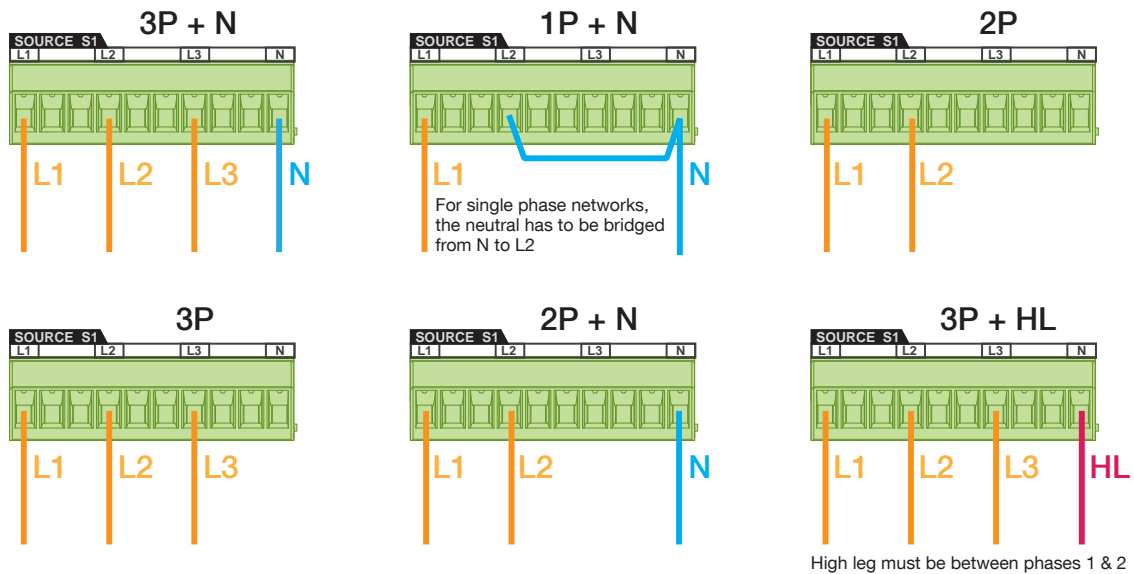
9.2. Power Supply

The ATyS C55/65 controller is Self-powered from the voltage sensing when the source is present and within the AC voltage range defined in the next chapter. The controller may also be powered (as a backup) from the DC auxiliary power input (24VDC). Additionally for the controller (C65 only) also includes an internal energy backup of 15 seconds (default value, adjustable up to 30s) to keep the controller and communication in operation during a power outage and during the Genset startup.

9.3. AC Dual Power Supply / Sensing

The ATyS C55/65 controller will be automatically supplied from the voltage sensing connectors of both sources thanks to an internal DPS (dual power supply) that in case main source failure, will immediately switch to the secondary source supply the device.

i Note: the nominal auxiliary power supply feeding the voltage sensing terminals must be within the limits of 88-576 VAC in order to power the controller.



i Note: the C55/65 standalone ATS controller must include a SCPD such as fuses on each phase of the voltage sensing control wiring. 1A gG fuses are recommended.

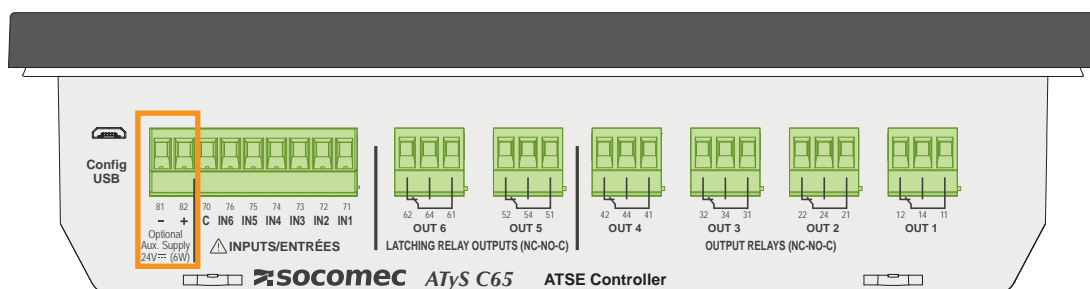
9.4. DC Power Supply

The ATyS C55/65 includes an optional DC power supply input to power the controller in case both sources are off. The DC power supply voltage needed to power up the controller is between 9VDC and 28VDC. The 24VDC power supply is mandatory when using the C65 with additional external I/O modules.



WARNING ! DC supply is optional when using the controller alone, but necessary in case of using Digiware extension modules (I/O module). When using a DC supply please follow the recommendations below :

- The 24Vdc is SELV (safety extra low voltage) and must be fused and grounded in the installation.
- The current measurement and the digiware will be at the same potential as the 24Vdc.
- RS485 includes functional insulation.



9.5. Energy Backup

The ATyS C65 has an internal energy backup that will keep the ATS controller powered for up to 30 seconds. This setting is configured to 15 seconds by default and can be modified inside the maintenance menu "MAIN MENU" > "MAINTENANCE" > "ENERGY BACKUP". The energy backup will activate when both sources are not available and there is no DC power supply included. The backup energy will keep the main functions of the controller powered so as to inform the user about the ATSE status as follows:

- ATS function (sensing, automatism, relays, genset start...)
- Display screen (with back light)
- Menus navigation and control pushbuttons
- Communications

i Note: the Energy backup will supply the ATyS C65 controller excluding accessories such as I/O or other digiware connected devices.

i Note: during backup time of the C65, inputs will keep their last state in memory, position return information will become blind (position LED info blinking).

On C65 only monostable relays (OUT1 to 4) are still working during the first 15s, then they will be deactivated to minimize power consumption.

For both C55 & C65 if the 2 latching relays (OUT5 and OUT6, contacts 51-54 and 61-64) were not closed before the controller lost all sources of power supply, they will use their own independent backup power to change position in order to guarantee that the generator(s) have been started.

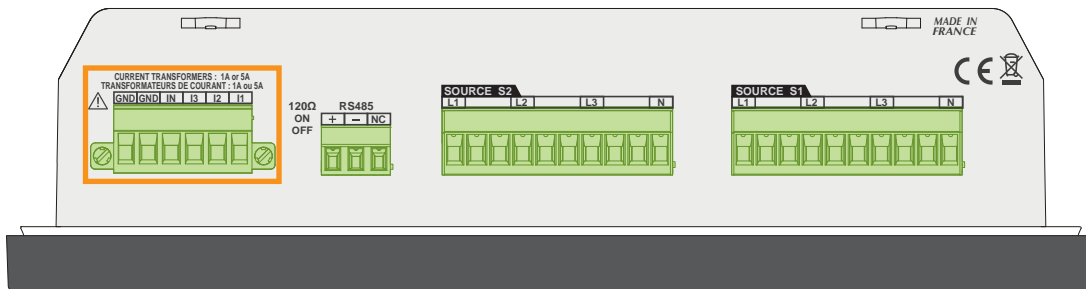
This will occur even if the controller is off, the priority source failure timer will be counted before changing position (maximum delay is 60s, even if failure timer is configured at a higher value). The OUT5 & 6 will be activated this way in case of power loss even if they are not programmed to GENSET START and even if the application does not include a generator.

9.6. Current Measurement (C65 only)

Current measurement can be done with current transformers by connecting the secondary of the transformer between the phases I1, I2, I3 and the GND. Neutral current can be measured using an additional current transformer connected to In, if the neutral is not connected the neutral current will be calculated using the phase values.

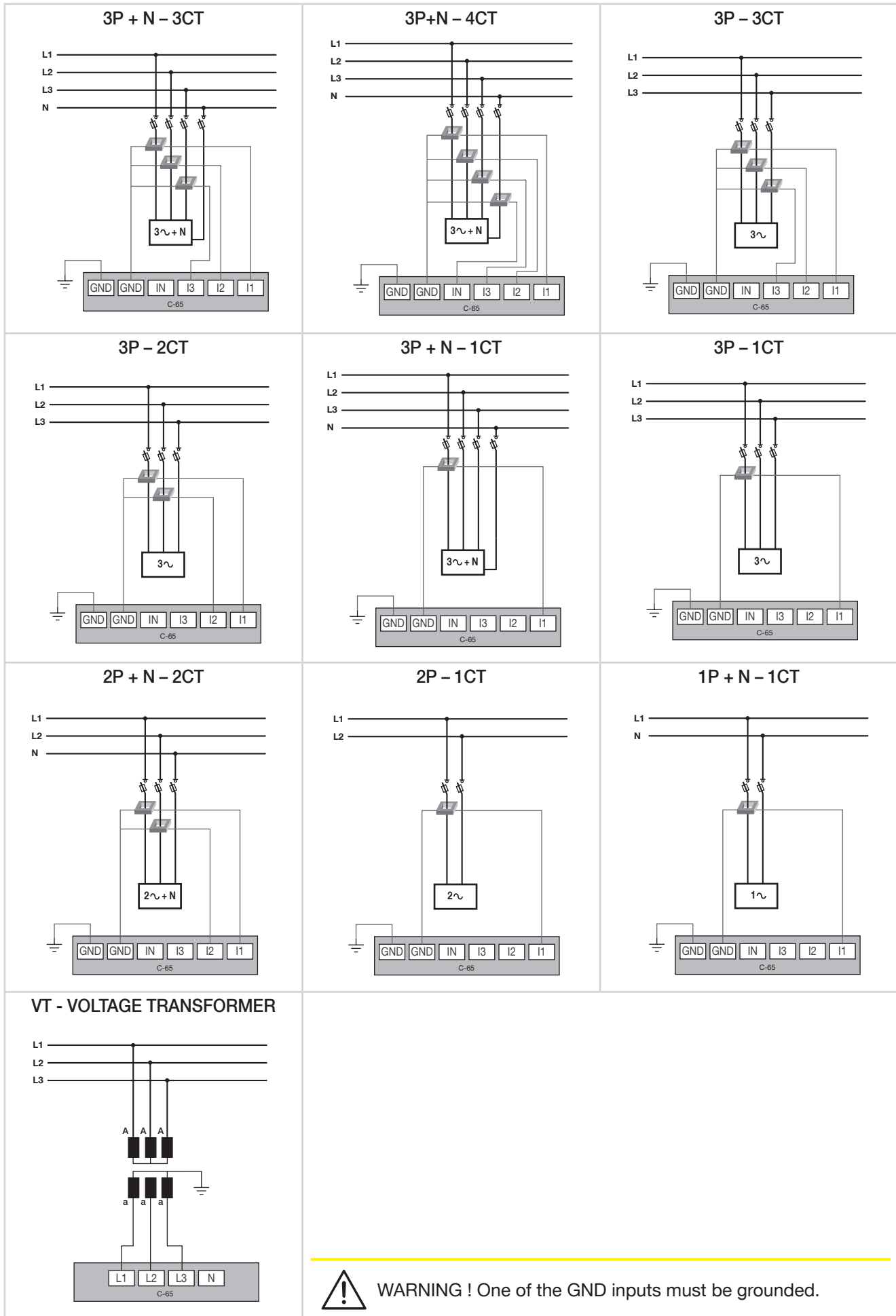
Current transformer's secondary should be /1A or /5A and this configuration needs to be set in "MAIN MENU" > "PARAMETERS" > "LOAD". The accuracy of the current measurement on the controller is +/- 1%.

Recommended cable cross sectional: 1.5mm².

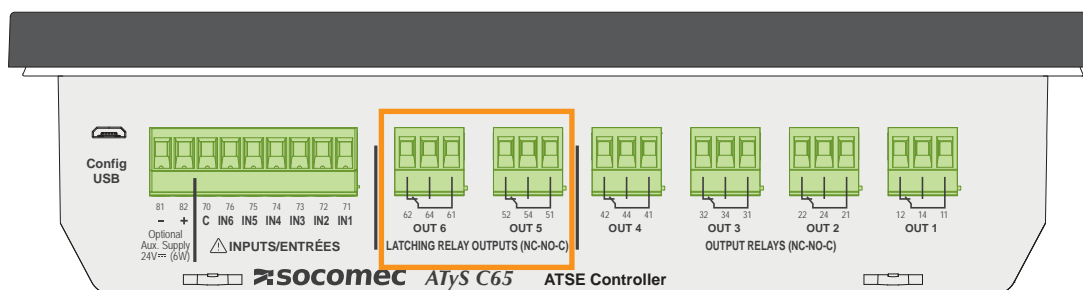


The configuration for the measurement should be done in the Parameters/Load menu (see chapter "14.1.2. LOAD parameters menu (C65 Only)", page 55).

All secondaries of current transformers should be connected between the correct phase and ground (GND):



9.6.1. Command circuits



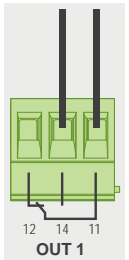
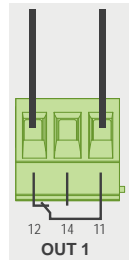
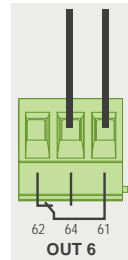
By default, the inputs and outputs in the C55/65 are set up as follows:

		By default	Configuration changes when changing RTSE technology			
		ATyS r/d	Breakers	Contactors	ATyS FT	ATyS DT
INPUTS	Input 1	SWITCH IN POS 1	BRK1 CLOSED	SWITCH IN POS 1	SWITCH IN POS 1	SWITCH IN POS 1
	Input 2	SWITCH IN POS 2	BRK2 CLOSED	SWITCH IN POS 2	SWITCH IN POS 2	SWITCH IN POS 2
	Input 3	SWITCH IN POS 0	BRK1 OPEN	-	-	SWITCH S1 IN POS 0
	Input 4	INHIBIT	BRK2 OPEN	-	-	SWITCH S2 IN POS 0
	Input 5	MANUAL RETRANS ⁽¹⁾	-	-	-	-
	Input 6	RTSE IN MAN	-	-	-	-
OUTPUTS	Output 1	POS 1 ORDER	CLOSE BRK1	POS 1 ORDER	POS 1 ORDER	POS 1 ORDER
	Output 2	POS 2 ORDER	CLOSE BRK2	POS 2 ORDER	POS 2 ORDER	POS 2 ORDER
	Output 3	POS 0 ORDER	OPEN BRK1	-	-	POS 0 ORDER S1
	Output 4	FORCED SHEDDING (C65) ⁽¹⁾ S1 AVAILABLE (C55)	OPEN BRK2	-	-	POS 0 ORDER S2
	Output 5	LIFT (C65) S2 AVAILABLE (C55)	-	-	-	-
	Output 6	GENSET START	-	-	-	-
Logic		Impulse ⁽²⁾	Impulse	Maintained	Impulse	Impulse

⁽¹⁾ See chapter specific functions for more details.

⁽²⁾ Impulse duration, time between retries and number of retries can be configured in "MAIN MENU" > "PARAMETERS" > "NETWORK" > "APPLICATION".

All inputs and outputs can be configured and functions can be changed by going in "MAIN MENU" > "PARAMETERS" > "I/O".
For the cabling, please consider the following table of functioning:

Controller config		Cabling Output relays 1-4		Cabling Output Latching relays 5 & 6	
		STATE (relay)	 Normally Open (NO) (11-14)	 Normally Closed (NC) (11 - 12)	 Normally Open (NO) (61-64)
Output configured as NO	OFF (not active)	Open	Closed	Open	Closed
	ON (activated by firmware)	Closed	Open	Closed	Open
	Controller not supplied	Open	Closed	Closed*	Open*
Output configured as NC	OFF (not active)	Closed	Open	Closed	Open
	ON (activated by firmware)	Open	Closed	Open	Closed
	Controller not supplied	Open	Closed	Closed*	Open*

* The ATyS C55/C65 include two bi-stable relays with backup energy, when the controller loses all sources of power supply (DPS, DC supply), the outputs 5 & 6 will activate using their independent backup power after the fail timer has timed out or 60s max from power failure detection. This is a safety feature is designed to ensure power availability to the load in Main-Genset or Genset-Genset application by forcing generators to start in case of total power loss. It is highly recommended to configure the outputs 5 and 6 Normally Open (NO) in order to benefit from this function.

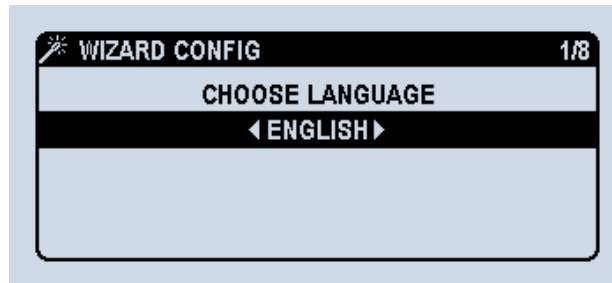
10. FIRST POWER UP – SMART WIZARD

Once the controller is connected to the switch with the cable harness, as soon as the controller is powered up, it will automatically start in MANUAL mode and, in order to facilitate the commissioning, a smart wizard will appear to guide the user through the main configuration parameters.



The first out of 8 questions will be the language. User can choose between the following 9 languages:

- English
- French
- German
- Italian
- Polish
- Spanish
- Turkish
- Chinese
- Portuguese



Next the following options will be available :

- Start now (will start the assisted configuration now).
- Remind me the next power on (will prompt user to go through the configuration during the next controller power up).
- Never ask me again (will not prompt user again).

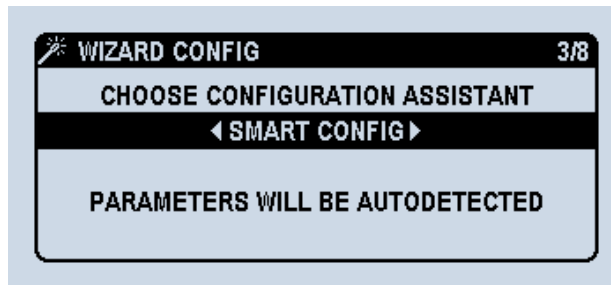
The wizard will always be remain accessible in "MAIN MENU" > "PARAMETERS" > "WIZARD" in case it is missed the first time.



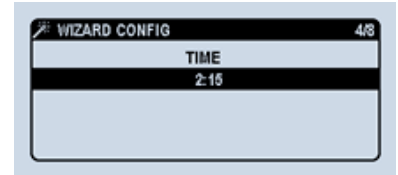
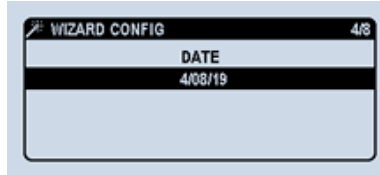
If "NOW" is selected, then the options are:

- To use the smart configuration: parameters like voltage, frequency and phase rotation will be auto detected and users will be able to validate or modify the detected values.
- To use the manual configuration: users will enter manually all network configuration values.

The controller will then require the configurator 4-digit password (by default, 1000).

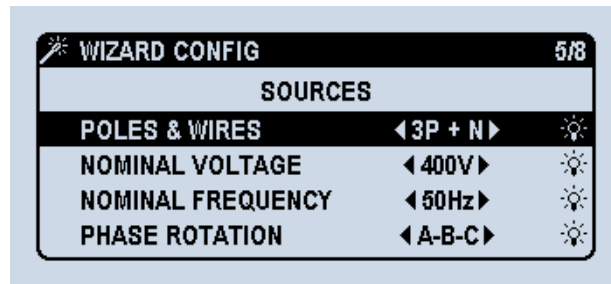


Once the configuration starts, users will enter the date format, date and time as follows:



These time/date values will be saved and from that moment the RTC battery will keep the clock running even if the supply to the controller is lost.

Once these parameters are set, the next step is the sources settings, where users will confirm the values suggested by the controller (in case of smart configuration) or enter the values (in case of manual configuration) for the number of poles of the switch / wires coming from the sources, nominal voltage, nominal frequency and phase rotation.



This is followed by the installation parameters.


APPLICATION TYPE stands for the type of sources coming to the controller. The options are:


- **MAIN-GEN** (by default): Power supply coming from a transformer as source 1 and from a diesel generator as source 2.
- **MAIN-MAIN**: Power supply coming from a transformer for both sources 1 and 2.
- **GEN-GEN**: Power supply coming from a diesel generator for both sources 1 and 2.

SOURCE PRIORITY stands for the preferred source in automatic mode when both sources are fully available.

The options are:

- **SOURCE 1**: the source connected to source 1 sensing on the switch will become the preferred source and the transfer switch will automatically transfer to this source as long as it is available and the timers are respected.
- **SOURCE 2**: the source connected to source 2 sensing on the switch will become the preferred source and the transfer switch will automatically transfer to this source as long as it is available and the timers are respected.
- **NO PRIORITY**: no preferred source. The switch will stay in the same source as long as it is available and will only transfer automatically when it will be lost. In case a source comes back the switch will not transfer automatically as long as the current source is available.

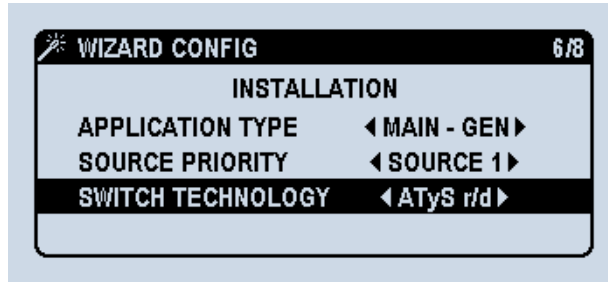
 Note: in MAIN-GEN it is possible to connect either the transformer or the genset to both source 1 or 2 the source set as the priority source will be assigned to the transformer (it is not possible to set NO PRIORITY in MAIN-GEN application).

 **CAUTION !** Make sure that the settings match your installation for the correct functioning of the transfer switch.

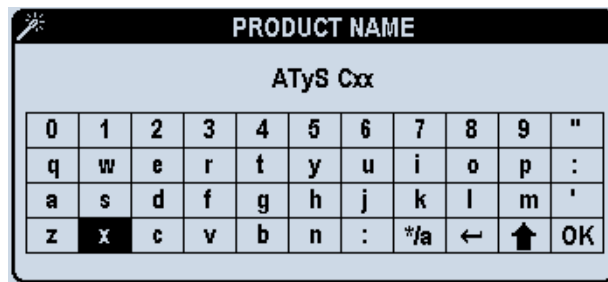
SWITCH TECHNOLOGY stands for the type of switch (RTSE) used with the controller. The options are:

- **ATyS r/d:** to be selected when using a motorized RTSE such as ATyS r, ATyS d/dM/dH, ATyS S or ATyS UL.
- **CONTACTOR:** to be selected when using 2 separated circuit contactors.
- **CIRCUIT BREAKER:** to be selected when using 2 separated circuit breakers / air circuit breakers (MCCB or ACB).
- **ATyS FT / (OPEN TRANSITION):** to be selected when using an open transition single operator power contactor switch with 2 stable positions: I-II. In this configuration, the in-phase transfer & monitoring will be automatically enabled.
- **ATyS DT / (DELAYED TRANSITION):** to be selected when using an delayed transition dual operator power contactor switch with 3 stable positions: I - center off – II.
- **ATyS BYPASS:** to be selected when using the controller in a full bypass system.

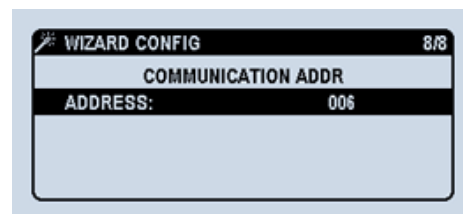
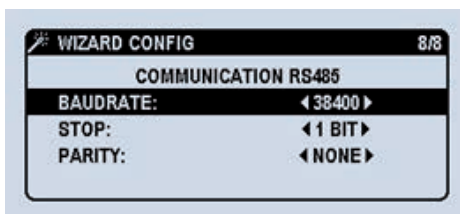
The technology chosen will automatically configure the INPUTS and OUTPUTS (see values by default in chapter "9.6.1. Command circuits", page 25 and I/O detail in chapter "Command circuits", page 2525) but they can always be modified in the menu "PARAMETERS" > "I/O" later on.



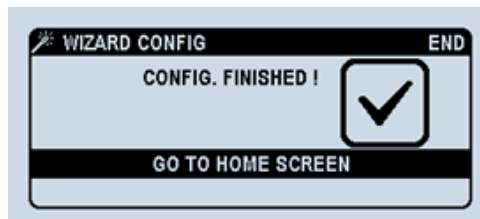
The 7th step will not affect the functioning of the transfer switch but allows the user to select a name for the product. Default name is ATyS C55/65, but it can be changed to any combination of letters, numbers and signs, for instance, "Cooling", "Line 1" or "DTC/21".



To finalize the configuration, the wizard asks for the communication parameters, such as the slave address (by default 6) and the communication parameters:



After entering and confirming these parameters, the wizard informs that the minimum parameters needed for the transfer switch to work. Users can configure more parameters and functions manually (see next chapter).

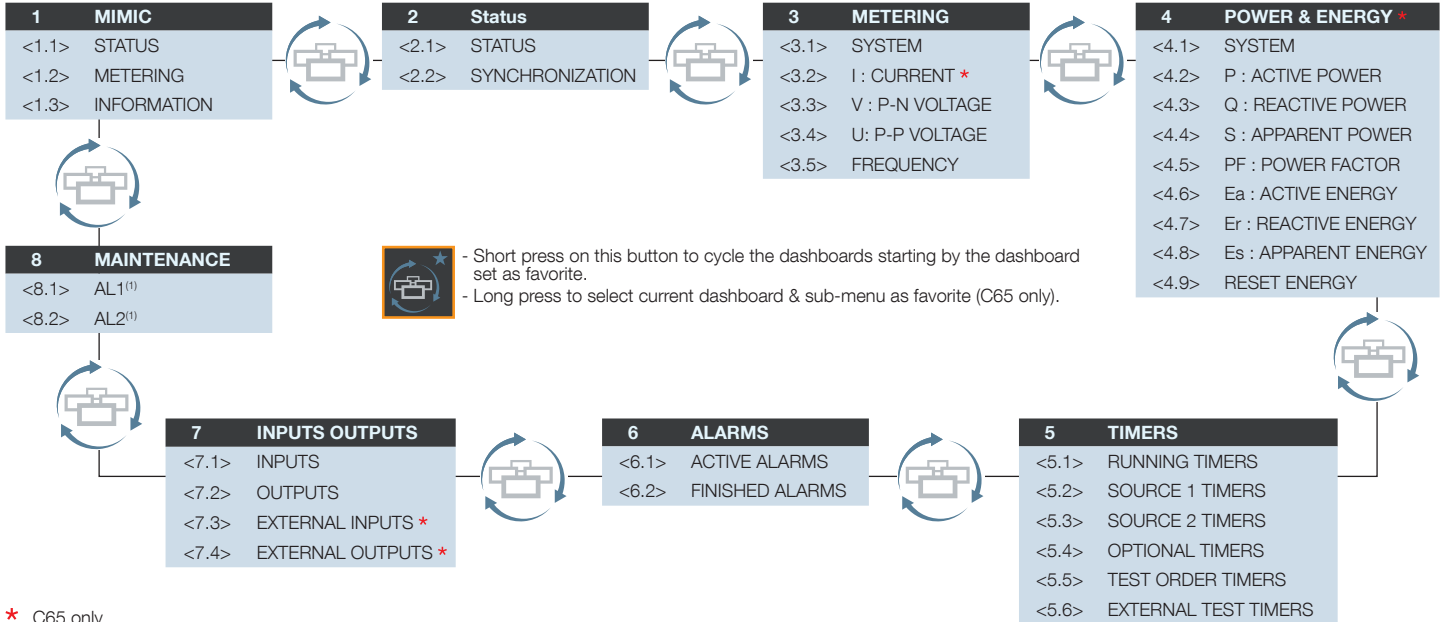


Note: for a detailed configuration please consult chapter "14. Configuration", page 47.

11. VISUALISATION OPTIONS

11.1. The visualization DASHBOARDS

The dashboards can be accessed by short pressing the key. To cycle dashboards press the same key again, dashboards will always cycle in the same order. Dashboards can include different numbers of sub-menus, to cycle sub-menus use the left and right arrow keys. Each dashboard is numbered from 1 to 7 (Ex. 3. METERING) and the sub-menus are numbered using a second digit (Ex. 3.1 METERING - SYSTEM).



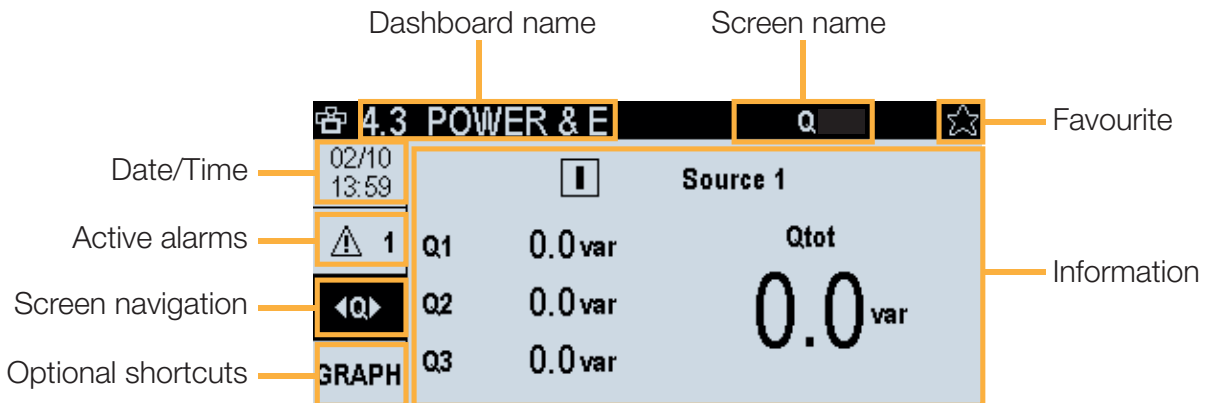
* C65 only
 (1) Maintenance alarms must be configured for this menu to show any values.

The dashboards can be visualized and cycled without the use of a password (any configuration or action requires the use of passwords so using dashboards is a risk-free solution to visualize the state of the product).

Pressing the key gives direct access to the dashboards (no matter the current menu screen), starting by the screen selected as favorite (On C65 only, for C55 first dashboard will always be 1.1). On the C65 to select a screen as favorite maintain the pressed for 1.5 seconds (long-press) while the dashboard and sub-menu to register as favorite is shown*. When a dashboard screen is selected as favorite (only ATyS C65) the star in the top right hand corner will be shown filled: .

*This is available only for the screens of the dashboard menu

All the dashboards have the same display format as follows:



11.2. Mimic

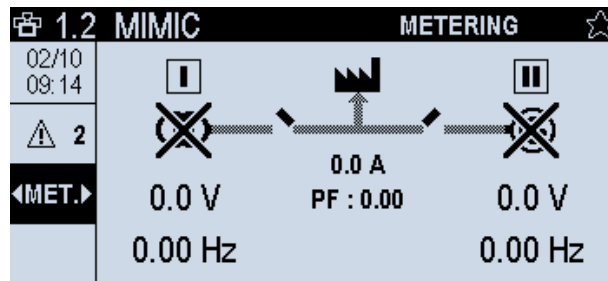
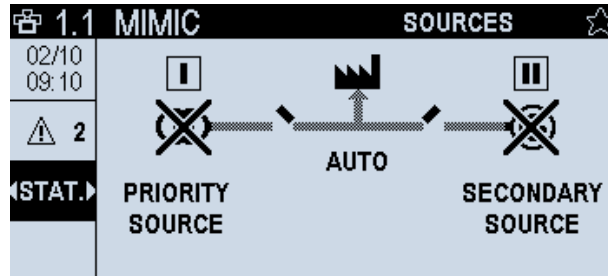
This screen gives the user information on the availability of the sources, the position of the switch. The user can cycle 3 sub-menus using the left & right navigation arrows, all of the screens in the MIMIC dashboard include a diagram of the installation showing the position of the switch and source availability (available source will not be crossed out and position is shown by the switch on either side of the load).

In addition to this information each sub-menu will give the following additional information:

1.1 STAT.: Gives the user information o source priority and controller working mode.

1.2 MET.: Gives the user basic metering information of each source (Voltage, frequency, current and power factor for C65).

1.3 INFO.: Gives information on the time running of each source as well as controller working mode.



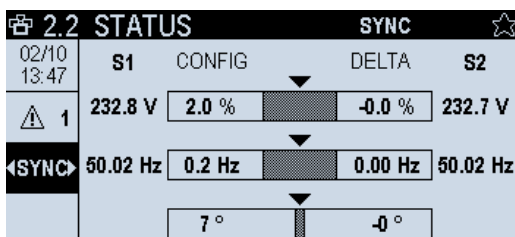
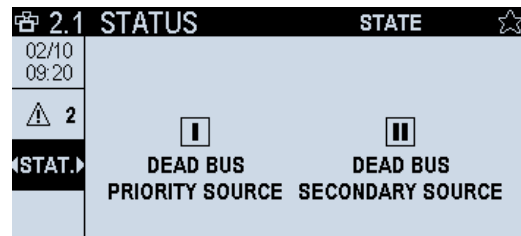
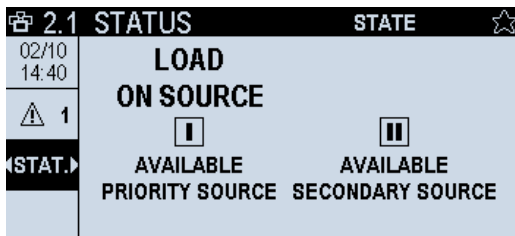
The sources will appear crossed if they are not available and not crossed if they are on. Source availability and load connection can also be visualized on the STATUS screen 2.1.

11.3. Status

This dashboard provides users with additional details regarding the sources.

2.1 STAT: Informs the user on the availability of each source and which source the load is connected to.

2.2 SYNC: Information on the voltage, frequency and phase angle difference of both sources. This sub-menu is especially useful when using the in-phase transfer function with and ATyS FT type RTSE.



11.4. Metering

Allows the user to visualize voltage and current (C65 only) measured by the controller. This screen is divided into 5 sub-menus:

- 3.1 SYS:** Global metering view of the system, shows the voltage, frequency and current (C65 only and connected source only) of source 2 & source 1.
- 3.2 I:** (C65 only with CT connected) Shows the current on each phase and the global current of the connected source.
- 3.3 V:** Shows the voltage between each phase and the neutral as well as the average PH-N voltage for both sources.
- 3.4 U:** Shows the voltage between phases as well as the average PH-PH voltage for both sources.
- 3.5 F:** Shows the frequency measured on each source.

3.1 METERING		SYS	
02/10 13:52	I	II	
⚠ 1	Isys	0.0A	
◀SYS▶	Vsys	233.1V	233.1V
	F	50.0Hz	50.0Hz

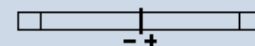
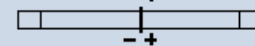
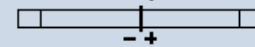
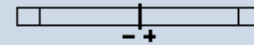
11.5. P&E (C65 only)

Allows the user to visualize the power and energy used by the load. (Current sensors must be used to enable this function). The information can be shown in numerical or both numerical and bar graph, to switch from numerical to graph highlight the "GRAPH" using the down arrow then press "ok".

This menu consists of 9 sub-menus:

- 4.1 SYS:** System information including Ptot (total active power used), Qtot (total reactive power used), Stot (total power used) and PFtot (power factor).
- 4.2 P:** Active power phase by phase.
- 4.3 Q:** Reactive power phase by phase.
- 4.4 S:** total apparent power phase by phase
- 4.5 Pf:** Power factor phase by phase.
- 4.6 Ea:** Active energy.
- 4.7 Er:** Reactive energy.
- 4.8 Es:** Apparent energy.
- 4.9 RST E :** Resets the partial energy counters.

4.3 POWER & E		Q	
02/10 13:59	I	Source 1	
⚠ 1	Q1	0.0 var	Qtot
◀Q▶	Q2	0.0 var	0.0 var
GRAPH	Q3	0.0 var	

4.3 POWER & E		Q	
02/10 14:03	I	Source 1	
⚠ 1	Q1		0.0 var
◀Q▶	Q2		0.0 var
GRAPH	Q3		0.0 var
	Qtot		0.0 var

4.1 POWER & E		SYS	
02/10 13:55	I	Source 1	
⚠ 1	Ptot	0.0 W	PFtot
◀SYS▶	Qtot	0.0 var	0.0
	Stot	0.0 VA	

11.6. Timers

This dashboard will show users all details regarding the timers and their configuration. These screens are useful to check that the controller settings for timers match the requirement and to visualize all ongoing timers.

- 5.1 RUN:** Shows all the ongoing timers, and allows the user to bypass the timers, this can be done by highlighting “Bypass timer” using the down navigation key and pressing enter, before bypassing any timer the controller will ask for confirmation. If multiple timers are running at the same time the oldest timer (first to appear) will be shown on the top, when selecting bypass timer in this case it will only bypass the timer at the top of the list.
- 5.2 S1:** Shows all timers settings linked to source 1.
- 5.3 S2:** Shows all timers settings linked to source 2.
- 5.4 OPT:** Shows all optional timers (specific function timers and dead band timers).
- 5.5 TOx:** Shows timer settings for internal tests.
- 5.6 EOx:** Shows timer settings for external tests.

5.1 TIMERS		RUNNING	
02/10 09:24		Source 1 Failure	00:56:18
		Source 2 Failure	00:56:18
⚠ 2			
◀RUN▶			
Bypass Timer			

11.7. Alarms

Allows the user to visualize active and finalized alarms. This dashboard also provides a quick access to the Alarms menu by selecting “ALARM” using the down navigation key and pressing “ok” this will however require the operator password. This dashboard includes two sub-menus :

- 6.1 ACT:** Shows all active alarms.
- 6.2 FIN:** Shows all finalized alarms, these are alarms that are over but not yet acknowledged/cleared by the user.

See more information about the alarm LOG in chapter "Log/event history", page 41.

6.1 ALARMS		ACTIVE	
02/10 09:28		TYPE	ALARM NAME
		Warn	RTC LOW BATT
		DATE/TIME	01/15/21 14:49:13
⚠ 2			
◀ACT▶			
GO TO ALARM			

11.8. I/O

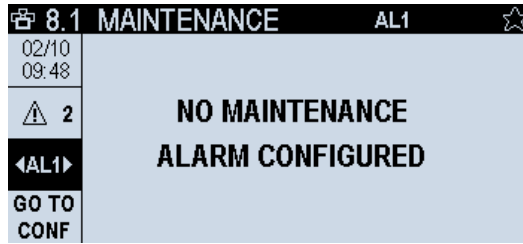
Allows the user to visualize the configuration of the I/O. The settings for the inputs and outputs on the controller will be shown as well as the external I/O modules (if used), as well as if it is “ACTIVE” or “OFF” (“ACTIVE” meaning the contact with common point is closed).

- 7.1 IN:** Controller inputs.
- 7.2 OUT:** Controller outputs.
- 7.3 E.IN:** External inputs (IO10 modules).
- 7.4 E.OUT:** External outputs (IO10 modules).

7.1 I/O		INPUTS	
02/10 09:34		1	SWITCH IN POS 1
			ACTIVE
		2	SWITCH IN POS 2
			OFF
⚠ 2		3	NONE
			OFF
◀IN▶		4	NONE
			OFF
		5	NONE
			OFF
		6	NONE
			OFF

11.9. Maintenance

Allows the user to visualize the progression and state of the maintenance alarms. If no maintenance alarms are configured this dashboard will only show "NO MAINTENANCE ALARM CONFIGURED".



Pressing ok on "GO TO CONF" will lead to the maintenance alarm configuration menu, this will require the maintenance password.

In this dashboard each of the sub-menu will show the value of configured maintenance alarms, the current level of the parameter being checked as well as a progression graph of the alarm.

For example if the maintenance alarm 1 has been set to "OPERATION EXC." (maximum number of operations) with a threshold set to 5000, and the current number of operation is 500, then the screen will show :

OPERATION EXC
THRESHOLD 5000 OPS
VALUE 500 OPS

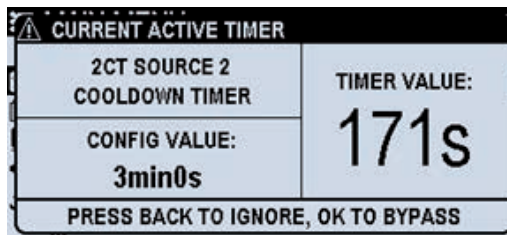
With a graph showing a progression of 10%.

11.10. The visualization POP-UPS

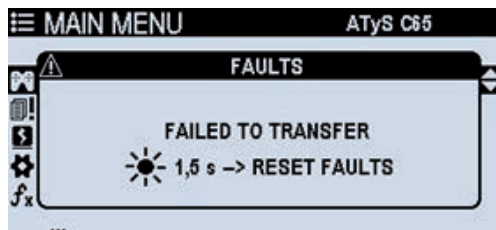
The controller will inform the customer about the main real-time events through a pop-up. This pop-up can have 2 types of purpose:

Timer running: timer pop-ups show the name of the timer active, the configured value and the countdown of the timer. This is a dynamic pop-up that gives 2 options to the user: press the return navigation button (BACK) to ignore (hide the pop-up), the timer will keep running and can be seen in the TIMERS dashboard.

The user also has the option to bypass the timer shown on the screen by pressing the "ok" button (action will ask for confirmation by asking to press "ok" again) password is not required to bypass the timers. It is also possible to skip the timer shown on the screen using a programmable input "BYPASS TIMER" or with a modbus command, disabling timer pop-up will however disable this function. To bypass multiple timers activate the input or modbus command multiple times.



Validation / Action requested: different events can use this type of pop-up, such as fault clearing, confirmation to run a test, confirmation to change parameters, validation to bypass a timer,... These of pop-ups can be ignored by pressing the return (back) navigation button or the pop-up will provide instructions on how to clear the message.



While it is not recommended to do so, it is possible to disable timer or alarm or both pop-ups. To change the configuration go to "MAIN MENU" > "PARAMETERS" > "DISPLAY" > "OPTIONS" > "POPOP DISPLAYED".

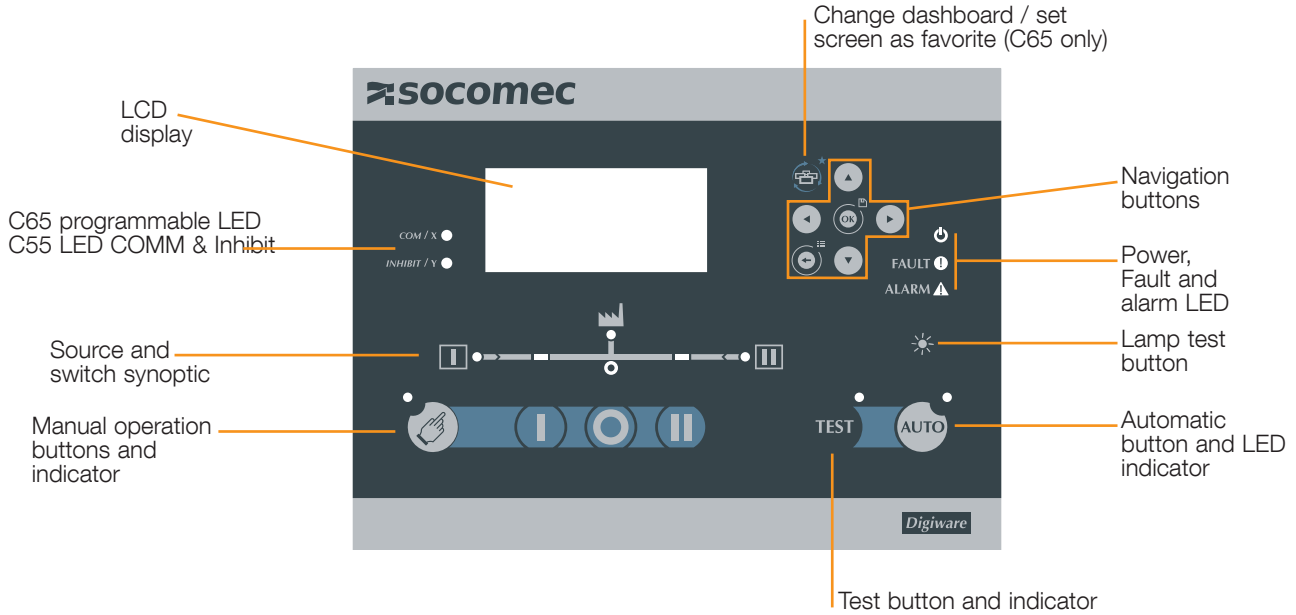
 Note: if timer pop-ups are deactivated the function to bypass current active timer with inputs or communication will not be functional. (Bypass timers through the TIMER dashboard will still be functional).

12. OPERATION AND CONTROL

12.1. HMI use




On the front face of the controller there are 14 keys/buttons that are used to configure, operate and visualize the ATS values anytime.

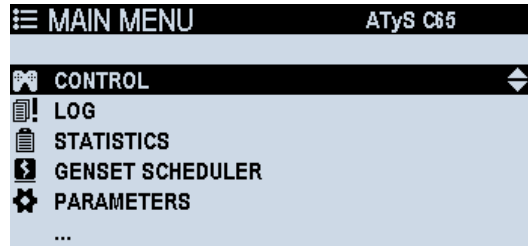
Summary of the HMI buttons:



Button	Operation
Manual	Turns on CTRL mode. Allows the use of the I, 0, II buttons that will send position orders to the RTSE.
Automatic	Turns on AUTO mode. Controller will automatically give position orders to the RTSE according to configuration.
I	Position I (source 1) manual order. Only in CTRL mode.
0	Position 0 (center-off) manual order. Only in CTRL mode.
II	Position II (source 2) manual order. Only in CTRL mode.
TEST	Performs a TEST (as defined inside Parameters/Display/Options menu).
Arrows	Navigation through different screens, menus, options and values.
Lamp Test/Fault clear	Short press: lamp test and information about LED on screen. Long press: Clear faults pop-up (only if faults active).
Return/Menu	Short press: return (back) to previous screen or clear pop-up. Long press: Back to Main Menu page.
Dashboard/Favorite	Short press: Go to the favorite Dashboard / Change between dashboard type (1 to 8, in a loop). Long press: Sets the current dashboard screen as favorite (C65 only).
OK/Save & Quit	Short press: Enter / OK / set a value / accept / confirm. Long press: (only for configuration) Save and Quit (back to previous configuration screen).

12.2. Navigation Menu

The Menu on the display can be accessed with the Return/Menu button  on the front face of the controller (if a menu other than dashboard or home screen is active press this button multiple times or hold for 3 seconds). It is structured in different chapters and is easy to navigate through it with the navigation arrows. To select a screen use the navigation arrows , then press the "ok" key  to validate the selected screen.



CONTROL: This menu allows to change the operation mode as well as to test position orders and engine start signals (See chapter "13.1. Control Menu", page 40).

LOG: In this menu, the operator can see the list of past events, search an event by date (C65 only), and manage faults and alarms. (See chapter "13.2. Log/event history", page 41).

STATISTICS: This menu gives users information on the use of the ATS system such as, number of cycles, runtime on sources etc...

GENSET SCHEDULER: The operator can set different customized engine start programs and schedule them in a cyclic or non-cyclic mode. (See chapter "Genset scheduler / Engine Exerciser Menu", page 43)

PARAMETERS: In this menu all the configuration parameters of the ATSE can be set, as well as timers, communication, alarms, I/O and display parameters. Passwords and specific functions can also be set in this menu. (See chapter "Configuration through the display", page 47)

SPECIFIC FUNCTIONS: All functions that are specific for the controller are inside this menu. See all the options in chapter "14.2. Specific Functions Menu", page 76

MAINTENANCE: This menu is reserved for maintenance purposes (service team). (See chapter "15.3. Maintenance of the controller", page 91)

ABOUT: The main information of the controller is showed on this menu: product serial number, firmware, communication address and the maintenance telephone to call for the service.




The Home screen (Main Menu) can always be accessed by long-pressing the  button from any other screen.


12.3. Operating modes

The controller has 4 types of operation modes:


Manual Operation (CONTROL mode): it allows the user to manually send orders to the RTSE in this mode the automatic procedures are disabled (Specific function timers such as DEADBAND timer can still be respected when transferring manually).

To enter manual mode, click the Manual operation button: 


The LCD will prompt the user to enter the operator password. The Manual mode LED will light up and the manual operation buttons will be enabled. Select  to switch to source 1,  to go to source 2 and  to go to center off position (if existing).

 Note: in manual mode, if a source is lost, the genset (if any) will start but the controller will not force a transfer. The purpose is to keep the supply of the control and the communications.

Automatic Operation: in automatic mode the controller will send orders to the switching device according to users settings (operating range, timers, etc).


To switch from manual mode to Automatic mode, make sure there are no external inhibitions to automatic mode (inputs, cover open, etc..) and click the automatic operation button: .

The LCD will prompt the user to enter the operator password. The automatic mode LED will light up.


 The switch may transfer as soon as automatic mode has been enabled.

Test Mode: This allows an authorized maintenance person to initiate a transfer to the backup source (default Source 2) and to decide when to go back to the priority source (default Source 1). The test can be initiated in the "TEST" menu located in "MAIN MENU" > "CONTROL", user can select a Label is "TEST OFF LOAD" (to start the generator only with no load transfer) or Label is "TEST ON LOAD" (start the genset and transfer the load).

The test can also be initiated directly by pressing the "TEST" button on the HMI, by default this button will launch a TEST ON LOAD but this button can be changed to TEST OFF LOAD in the menu TEST BUTTON USE in "MAIN MENU" > "PARAMETERS" > "DISPLAY" > "OPTIONS". The TEST mode can be launched from both MANUAL or AUTOMATIC modes.


To switch to TEST mode, make sure there are no external inhibitions and press the test button: .

The LCD will prompt the user to enter the operator password. The TEST mode LED will light up.

 The switch may transfer as soon as TEST mode has been enabled, (during a test all timers will be taken into account including timers linked to specific functions).

Inhibit Mode: This mode is activated in case of major faults or with inputs such as "INHIBIT" or "RTSE IN MAN". In inhibited mode the switch will not be operable using the controller.

These modes can also be selectable through the display in the CONTROL menu, through inputs or through communications; The current operating mode will be indicated by HMI LED (X or Y LED for C65, INHIBIT LED for C55) or in the MIMIC and STATUS dashboards.

 Note: to change the operation mode, a password might be required.

12.4. Availability conditions

There are 3 different status for the sources:

Dead bus: No voltage present on the source (all voltages below 50V).

Source present: Voltage present (at least 1 phase above or equal to 50V) but availability conditions are not reached (see "Source available" below).

Source available: To consider the source available the following conditions have to be met:

- The voltage and frequency should be inside the limits set in the operating range
- All phases should be present (according to the network configuration selected)
- The input "FORCE SOURCE UNAVAIL." should not be activated.
- Phase rotation should match settings (if check rotation is activated)

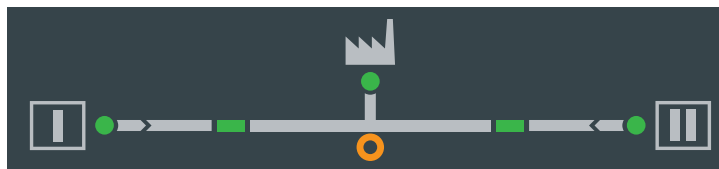
For phase / neutral wire loss detection:

Loss of Neutral: will be detected in all cases except for balanced networks with balanced loads, in this case the controller will not detect the loss of the neutral connector unless the load has a minimum value of unbalance.

Loss of Phase: will be detected in all cases.

 Note: The controller will not detect any phase/neutral wire failure downstream of the switching device.

The LED synoptic on the C55/65 controller informs the user on the status of the sources:



The round green LED next to S1 or S2 indicates if the source is available or not.

- If the LED is on but not blinking then the source is considered as available .
- If the LED is blinking, source is seen as present but not available.
- If the LED is off, then controller detects that the busbar is dead.

The 2 rectangle green LEDs indicate the position of the switch.


- If the LED is on, the switch is closed on that position (I or II).
- If the LED is blinking, the controller considers the switch is in that position, but there is no feedback from the switch (no inputs have been configured to this position).
- If the LED is off, the switch is not in that position.


The green LED in the center-up of the diagram indicates if the load is powered.

- If the LED is on, the load is supplied by either source 1 or source 2, which means that the source is available and the switch is in one of these positions.
- If the LED is blinking, the load is supplied but a load shedding is taking place.
- If the LED is off, the load is not supplied (switch not closed on an available source).

The “O” amber LED under the load LED indicates the center-off position.

- If the LED is on, the switch is in center-off position (only if there is a 0 position)
- If the LED is off, the switch position is either on S1, S2 or unknown (should always be off for technologies without 0 position)
- If the LED is blinking, the controller considers the switch is in that position, but there is no return from the switch (no input has been configured to the 0 position)

 The state of the position LED is entirely dependent on the inputs programmed for position inputs. If no position inputs are programmed the position LED will blink based on the expected position of the switch (controller will expect that switching orders have been taken into account correctly by the switch immediately).

 The source LEDs will not be impacted by the programmable outputs “FORCE SOURCE UNAVAIL.” & “FORCE SOURCE AVAIL.” (OA1, OA2, OU1, OU2).

12.5. Test operating mode


TEST button on the HMI can be used to perform a TEST ON LOAD (default setting) or TEST OFF LOAD (this requires a change of configuration in the field TEST BUTTON USE in "MAIN MENU" > "PARAMETERS" > "DISPLAY" > "OPTIONS").

TEST ON LOAD : a test on load sequence will start by sending a start-gen signal to the secondary source (if in Main-Gen) , and will initiate a transfer to the secondary source, once the test has ended the switch will transfer back to the priority source.

A **TEST OFF LOAD** will start the genset and check that is it correctly started within the configured time, but will not give the order to transfer to the secondary source when it becomes available.

The duration of the tests can be limited (in the configuration) or can be set to Unlimited, when set to unlimited press the test button again to stop the test.

This operation can also be performed with an input or through the Modbus communication, using the EXTERNAL TEST ON LOAD function.

 **TEST ON LOAD** will cause a load supply interruption when testing the transfer function as the load will change from one source to another in open transition.

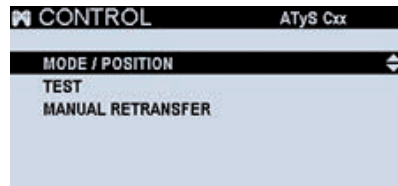
For more information on the tests sequence see "Annex 16 - 5. Operating sequences", page 110.

13. MAIN MENUS DETAILS

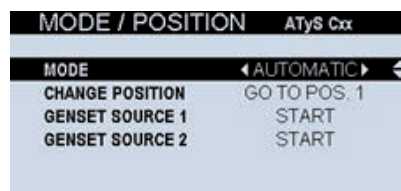
13.1. Control Menu

There are 3 types of commands available in the control menu and all of them require the operator profile password.

Those commands are:



MODE / POSITION: permits changing the operating mode, change position in CTRL mode and start/stop the gensets remotely (also in CTRL mode), this menu is divided in 4 :



MODE: This will define the control mode used (cf chapter 12.3 Operating modes), this is an alternative way to push buttons and inputs to change the control mode of the ATSE. To change mode cycle through the following options and press “OK” to validate (a pop-up will ask for confirmation press “OK” again to confirm):


- **AUTOMATIC:** Standard automatic functioning of the controller
- **CONTROL (MANUAL):** Control of the switch manually using the controller to give orders to the switch. Buttons I-0-II are unblocked on the front face.
- **INHIBIT:** Both CONTROL and AUTOMATIC functions are inhibited until the mode changes (both automatic transfers and manual orders through pushbuttons will be inhibited).
- **PARTIAL INHIBIT:** Both CONTROL and AUTOMATIC functions are inhibited until the mode changes, but the genset start signal will be activated if the priority source is lost.

Once the control mode has been selected repeat the operation to change mode again or use the pushbuttons or inputs (inputs will have priority over push buttons and this menu).

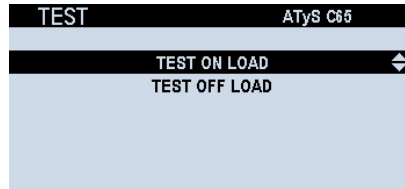
 Note: total inhibition (to block the use of the AUTO & MANUAL pushbuttons) can only be launched through modbus or programmable inputs.

CHANGE POSITION: (Only in CONTROL mode) This menu has the same function as the POS1 ,POS2, POS0 pushbutton, user can select the RTSE position wanted and press “OK” to initiate the transfer.

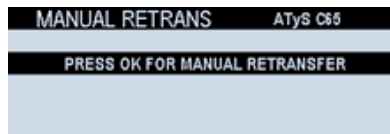
GENSET SOURCE 1/2: Allows users to start the generators on source 1 or source 2 (if the source is defined as a generator).

 Note: the MODE / POSITION menu is an “order” menu, to activate commands, but it doesn’t show the current mode or position (to visualize the active mode use dashboard screens, or the LEDs on the HMI). Example: mode can be inhibited, but when entering the menu the mode will say “automatic” (which is not the current mode).

TEST: This menu allows users to start a TEST ON LOAD or a TEST OFF LOAD. See chapter "12.5. Test operating mode", page 39.

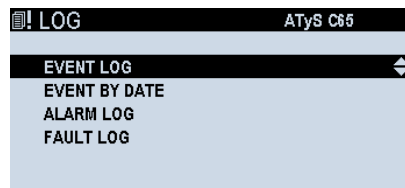


MANUAL RETRANSFER: when "manual retransfer" option is activated in "SPECIFIC FUNCTIONS" > "MANUAL RETRANSFER", the operator will need to validate the retransfer, this can be done directly using the pop-up window which prompts users (see image below), or if this pop-up has been ignored users can use the "MANUAL RETRANSFER" in the "CONTROL" menu. (Manual retransfer can also be activated using programmable inputs).



13.2. Log/event history

The LOG menu contains all the history/register/log of EVENTS (operations, timers, mode changes, configuration changes, product status, source availability..) ALARMS (user-selectable alerts) and FAULT (major alerts, not selectable by user, set by default). All the LOG menu elements are protected by the "operator" password (see chapter "14.1.8. PASSWORDS", page 75).



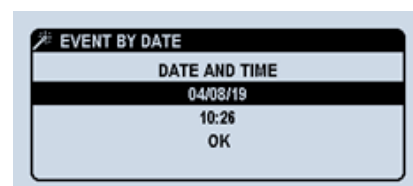
EVENTS LOG: The controller C65 can store up to 3000 events while the C55 can store up to 300 events using FIFO (first in, first out) to replace older events when the memory is full.

The event log will show the recorded information on the controller/ATS with timestamp and description. For a more detailed description of each event users can use the D70 or M70 digiware gateways with the webserver WEBVIEW , WEBVIEW also allows users to export all log and alarms to .csv format.

To navigate through the event log, the UP and DOWN arrows can be used to advance on the event list one by one and the LEFT and RIGHT arrows each screen will show 6 events.

As the controller can host a large number of registers in the log, the EVENT BY DATE functions is a search engine that permits to go directly to a selectable date and time and see the events that took place at that moment (C65 only).

EVENTS LOG	ATyS Cxx
Phone number changed	04/08/19 08:14:42
S2 Not Started	04/08/19 08:14:31
S2 Wait for Start Timer Stop	04/08/19 08:14:31
S2 Lost	04/08/19 08:14:00
S1 Lost	04/08/19 08:14:00
S2 Underfrequency	04/08/19 08:14:00



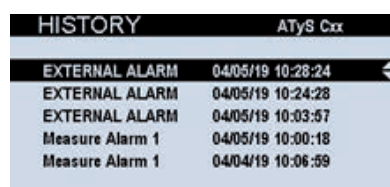
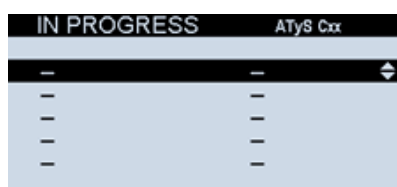
ALARM LOG: Alarms can be configured by users to activate when certain conditions are met see chapter “14.1.7 ALARM parameter menu” for more details on alarm settings. When alarms are active the alarm LED on the HMI will be blinking.

The log can store up to 100 alarms. Inside alarm log screen, there are 2 options: in progress and history. “In progress” shows all active alarms and the history shows all the last finalized alarms.

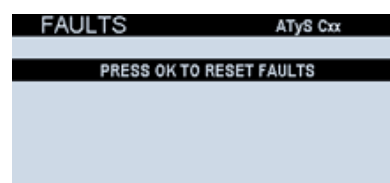
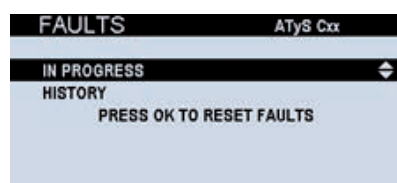


For each alarm, the following information will be shown:

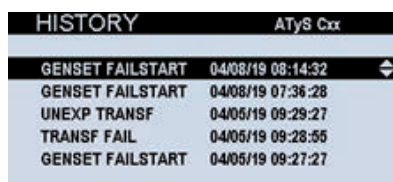
- Type of alarm
- Status
- Starting time and date
- Duration of the alarm active (counter running for active alarms)
- Criticality of the alarm



FAULTS: Fault are non-programmable alarms which can impact the functioning of the controller, on the HMI if a fault is active the fault LED will be blinking. The controller registers up to 100 faults, they are divided into “in progress” and “history”. This menu also has an option to clear current ongoing faults using the option “PRESS OK TO RESET FAULTS” and confirming on the pop-up that appears on screen (resetting faults will not clear the history this operation can be done using the maintenance menu see chapter “14.3 Maintenance menu”).



Each log will show the fault description and the time & date when it occurred.



For more details on faults see chapter “15.2. Fault management and troubleshooting”.

13.3. Statistics menu

This menu gives the value of counters on the following information :

CYCLES: Shows information on duration of operation, number of cycles, number of cycles in automatic mode, number of cycles in manual mode.

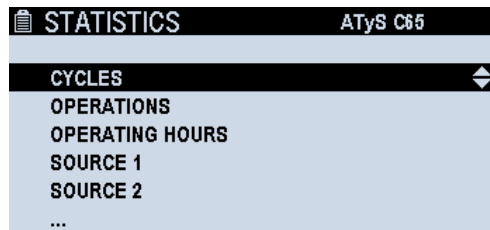
OPERATIONS: Shows the total number of operations as well as the number of operations for each position.

OPERATING HOURS: Shows the total and partial operating hours (partial operating hours can be reset in the maintenance menu).

SOURCE 1/2: Shows the total and partial time spent on the source as well as the time since last operation on the source.

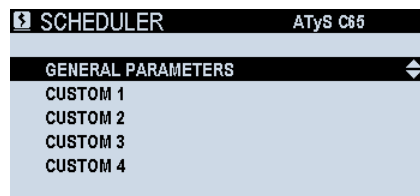
GENSET 1/2: Shows the time the corresponding genset has been running, the number of time the genset has been started and the time the genset spent connected to the load. (If the corresponding source is not configured as a genset the screen will only show "SOURCE 1/2 IS NOT A GENSET").

BREAKER: Shows the number of trip actions and time since last trip action took place. The switch must be in "CIRCUIT BREAKER" technology to use this menu. Trip actions will only be counted if TRIP BRK1/2 is programmed as an input.



13.4. Genset scheduler / Engine Exerciser Menu

This menu allows users to configure automatic periodic tests, these tests once configure will activate without needing user intervention (unless the function "MANUAL RETRANSFER" is activated).



GENERAL PARAMETERS: This menu includes a GENSET IDLE TIMEOUT setting, this setting defines for how long the genset must be turned off before another automatic test can be started (this timer is reset any time the genset is started it does not take into account if the genset has been started manually or automatically).

This setting allows users to protect their generator for being started too frequently.

By default this setting is set to 0min and can be configured up to 60 000min.

CUSTOM: This menu allows users to configure the parameters to use for the periodic testing. There are 4⁽¹⁾ selectable engine exerciser programs that are set in order of priority on the display. Meaning that the program "CUSTOM 1" is priority over the "CUSTOM 2" if both tests are scheduled to occur at the same time. This is to avoid additional constraints on the genset.

⁽¹⁾ Only for ATyS C65, ATyS C55 has 1 Custom engine exerciser program.

For each program (CUSTOM 1-4), the following settings can be defined individually:

TYPE SET: The type of tests to use on this program, users can select TEST ON LOAD, TEST OFF LOAD, or NOT USED (by default this setting is set to NOT USED).

 Note: on all switches, a TEST ON LOAD will cause a load supply blackout when testing the transfer function. The programs will take into account the TEST ON LOAD END and TEST OFF LOAD END timers before ending the tests.

PERIODIC SCHEDULE: This will define how often the automatic test takes place, users can select the following settings:

- **NON-CYCLIC:** Testing will not be carried out repeatedly.
- **DAILY:** Will be started every day.
- **BI-DAILY:** Will be started every two days.
- **WEEKLY:** Will be started every week.
- **BI-WEEKLY:** Will be started every two weeks.
- **28 DAYS:** Will be started every 28 days.
- **MONTHLY:** Will be started every month.
- **BIMONTHLY:** Will be started every two months.
- **SEMI-YEARLY:** Will be started every 6 months.
- **YEARLY:** Will be started every year.


By default this setting is set to **YEARLY**.

TEST DURATION (s): This defines the full duration of the tests, this includes the time it takes for the generator to start as well as any other timer, this does not define the time spent on the alternate source. For example if the test duration is set to 40s if the generator takes 10s to start and if the DEADBAND TIMER is set to 5s the RTSE will stay 25s on the alternate source.

By default this value is set to 0s and can be configured up to 21600s.

START DATE/TIME: Users can define the date&hour when this periodic program will start (for example, starting on January 5th at 1pm). (date and hour when first TEST will take place)

CUSTOM 1	
ATyS Cxx	
TYPE SET	◀NOT USED▶
PERIODIC SCHEDULE	YEARLY
TEST DURATION (s)	00000
START DATE	01/01/00
START TIME	00:00

 **WARNING !** If using “Manual retransfer” specific function, the transfer to the main source will not take place when the test ends, a user confirmation is required.

Example: Here we present an example of custom program for the following settings :

TYPE: TEST ON LOAD

PERIODIC SCHEDULE: MONTHLY

TEST DURATION (s): 900 (15min)

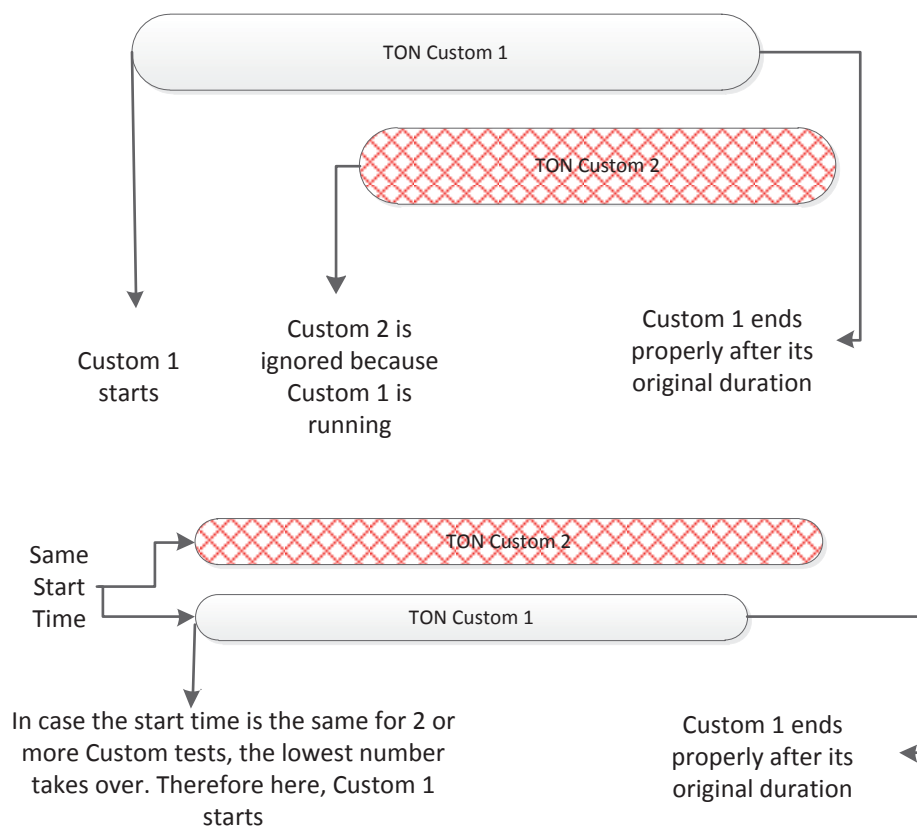
START DATE: 05/01/21

START TIME : 13:00

The exerciser program will do the following:

Exerciser will carry on a full test on load (starting genset if any, counting timers and operating the switch and transferring loads from priority source to alternate source) on Jan 5th at 1pm for 15 minutes. This will be repeated every month at the same time (1pm) for the following months.

In the case of overlapping several exerciser/scheduler programs, the priority one (lower custom number) will take place and not the others. Examples:



13.5. About

ABOUT		ATyS Cxx
PRODUCT TYPE	ATYS C65	
LAST INSPECTION	01/01/00 00:00	
SERIAL NUMBER	1910201001116000065	
FIRMWARE VERSION	2.1	
COMM ADDR	6	
MAINTENANCE TEL	000-000-0000	

About contains:

- Product type information (C55/C65)
- Date of last inspection which can be updated using the maintenance menu:
"MAIN MENU" > "MAINTENANCE" > "INSPECTION DATE" (requires maintenance level password)
- Product serial number
- Product firmware version
- Modbus communication address
- Maintenance telephone which is shown in case maintenance is required on the product, this number is set to 000-000-000 as default and can be modified in the maintenance menu:
"MAIN MENU" > "MAINTENANCE" > "INTRODUCE PHONE NUMBER"

13.6. Other main menus


The menus, parameters, specific functions and maintenance are detailed in the next chapter configuration.


For the full menu architecture see "Annex 16 - 7. Full menu architecture", page 115.

14. CONFIGURATION

The configuration on the ATyS C55/65 can be done:

- Directly on the HMI.
- By USB connection to the controller (using Easy Config System software, available for free download at www.socomec.com).
- Through communication (DIGIWARE or RS485).

 Note: The configuration can be done even without cabling the AC or DC supply to the controller, only connecting it to a computer with an USB cable. The controller will use the USB to power up the screen, buttons and main functions, permitting the configuration through any of these methods.

 For safety reasons, if the controller is connected to the switch, it is strongly recommended to configure in Manual or Inhibit mode.

14.1. Configuration through the display

This chapter describe to configure the main parameters manually using the display.

PARAMETERS MENU

To access this menu users will need to enter the “configurator” password (default 1000) this menu is divided into the following settings :

NETWORK :Configuration of the nominal voltage and frequency, the phase rotation, the type of switch and the sources priorities, as well as the operating range where the controller will consider a source as available. See chapter "NETWORK parameters menu", page 48

LOAD: Configuration of the nominal current and the transformers used to measure the current on the load side of the switch. See chapter "LOAD parameters menu (C65 Only)", page 5555.

DISPLAY: Configuration for language, date&time. The test button use (“LOAD TEST” or “NO LOAD TEST”) and X&Y LED configuration (C65 only). Product name and screensaver text. See chapter "DISPLAY parameters menu", page 56.

TIMERS: Configuration for operational timer. See chapter "TIMERS parameters menu", page 59.

I/O: Configuration of the Inputs and Outputs of the controller and the external I/O modules. See chapter "I/O", page 6363.

COMMUNICATIONS: Configuration of the communication parameters such as the Modbus address or the baudrate but also the use of the RJ45 outputs (Only on ATyS C65). See chapter "COMMUNICATION parameters menu", page 65.

ALARMS: Permits programming different alarm types that can be linked to outputs and will show the information on the screen of the ATyS C65 and on the webserver (only available with M70 or D70 gateways). See chapter "ALARMS parameters menu", page 69.

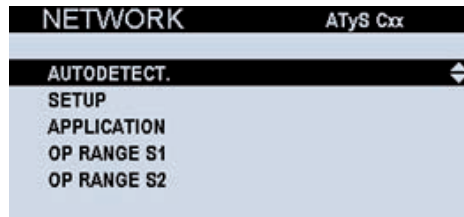
PASSWORDS: Permits changing the passwords for the different users. See chapter "PASSWORDS", page 75.

WIZARD: Allows user to go through the wizard configuration again.

 Important Note: when doing the configuration through the display, do not forget to put the controller in AUTO mode after the configuration is over to start the AUTOMATIC mode.

14.1.1. NETWORK parameters menu

The NETWORK menu contains all the settings needed to define the installation. Inside NETWORK, there are 5 different sub-menus:

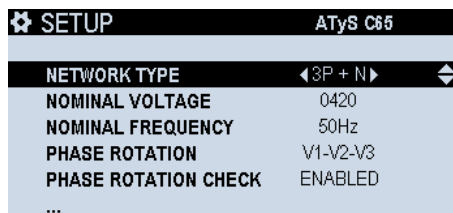


14.1.1.1. AUTODETECT. :

This menu will launch an auto-detection of the current network measured by the controller. Press “OK” one time then controller will ask for confirmation press “OK” one more time to start detecting network values. The controller will detect the network type, the nominal voltage and frequency and the phase rotation. After the autodetection users can view the results in the SETUP menu and save the parameters.

14.1.1.2. SETUP:

This menu contains the main settings linked to the voltage network :



NETWORK TYPE: Type of network used (number of phases and neutral connector) See detail on page "Types of network" inside this chapter.

NOMINAL VOLTAGE: The rated voltage of this installation, when setting the threshold values this will be the reference for the voltage (100%).

NOMINAL FREQUENCY: The rated frequency (50 or 60 Hz) for this installation, when setting the threshold values this will be the reference for the frequency (100%).


PHASE ROTATION: This parameter defines the correct phase rotation (V1-V2-V3 or V1-V3-V2), this setting will only be used on networks for which phase rotation is detected (see chapter “types of network”).

PHASE ROTATION CHECK: Users can select to ENABLE or DISABLE the phase rotation check. This can be useful for installations that use portable generators and are not affected by a change in phase rotation. By default this setting is set to ENABLED.

VT USED: This setting allows the use of a voltage transformer on the voltage sensing inputs. Voltage transformers may be used to monitor networks with voltages higher than the maximum voltage that the controller can withstand (576 VAC ph-ph). Example: 600/480VAC transformers for 600VAC Networks. This ratio must be added to the next two lines in parameters “VT primary” and “VT secondary”.

VT PRIMARY: Voltage of the primary on the voltage transformer used.

VT SECONDARY: Voltage of the secondary on the voltage transformer used.

 **WARNING !** In order to save the settings it's mandatory to select SAVE CONFIG on the bottom of the screen or press the "OK" button for 1.5s and a pop-up will appear asking for confirmation before “save & exit”.


14.1.1.3. APPLICATION


This menu contains settings linked to the use of the controller (which type of switch, type of sources, priorities...):

APPLICATION	ATyS
SWITCH TECHNOLOGY	◀ ATyS FT ▶
APPLICATION TYPE	MAIN - GEN
SOURCE 1 NAME	Source 1
SOURCE 2 NAME	Source 2
SOURCE PRIORITY	SOURCE 1
...	

SWITCH TECHNOLOGY: This setting defines the type of RTSE / switching technology that is connected to the RTSE options are:

- **ATyS r/d:** Users should select this option when using any Socomec type ATyS r, ATyS d, ATyS dM, ATyS dH, ATyS S/ Sd switches or equivalent motorized three position switch-based (PC Type) RTSE.
- **ATyS FT (C65 only):** Users should select this option when using Socomec ATyS FT (fast transfer) switches or equivalent 2 position PC type switches with fast transfer (<50ms). In-phase transfer is available and activated by default when using this option.
- **ATyS DT:** Users should select this option when using Socomec ATyS DT (delayed transition) switches or equivalent 3 position, dual operator PC type transfer switch.
- **CIRCUIT BREAKER:** Users should select this option when using a CB type RTSE based on circuit breakers (MCCB or ACB). Each source circuit breaker must be equipped (motorized) with means to switch from ON (CLOSED) to OFF (OPEN) as well as auxiliary contacts to inform the controller of the breaker position. Depending on the circuit breakers used an external DPS (dual power source) might be required to power motors from both sources.
- **CONTACTOR:** Users should select this option when using an CC type RTSE based on circuit contactor. Each contactor should be equipped with auxiliary contacts to inform the controller of the switch position. When selecting this technology the parameter "LOGIC" will be changed from "IMPULSE" to "MAINTAINED".

 Note: to make configuration easier, the controller automatically changes the I/O configuration for position orders (outputs) and position return feedback (inputs) from the switch (using preset values see chapter "Command circuits", page 25) according to the technology that will be set in the controller.

 Note: for safety reasons the change of technology can only be done in Manual mode and requires the configurator profile password.

 Note: When using CC type RTSE and CB type RTSE if the switches change position without a request from the controller side, the controller will interpret this as an "UNEXPECTED TRANSFER".

APPLICATION TYPE: This setting defines the type of network connected to each source. options are :

- **MAIN-MAIN:** Select this option when both source 1 and source 2 are connected to transformers, the mains, the utility, a UPS or any other source which does not require a start signal.
- **MAIN-GEN:** Select this option when using one generator type source (source needing a start signal and/or cool-down sequence), the source linked to the generator will be the secondary source (source which is not set as priority).
- **GEN-GEN:** Select this option when using two generators type sources (source needing a start signal and/or cool-down sequence).

SOURCES NAME: Users can enter a name for each source. By default "Source 1" and "Source 2".


SOURCE PRIORITY: Users can use this option to select which should be the preferred source (controller will prioritize this source when available) this can be set to:

- **SOURCE 1:** When source 1 is available and the controller is in automatic mode it will transfer to this source, in MAIN-GEN application the generator will be linked to source 2.
- **SOURCE 2:** When source 2 is available and the controller is in automatic mode will transfer to this source, in MAIN-GEN application the generator will be linked to source 1.
- **NO PRIORITY:** When this option is used the controller will not change source in automatic mode unless the current connected source is lost. This option is not available in MAIN-GEN mode.

LOGIC: These settings will allow users to define the duration of the closing of outputs linked to RTSE orders (CLOSE BREAKER, OPEN BREAKER, GO TO POS). This modulates the impulse duration of the electrical signal sent to the RTSE used to control it. Other settings in this menu will act on the repetition and frequency of this signal. Users can configure the following :

- **IMPULSE:** The output from the controller will close for a short period of time, creating a pulsed signal with a defined duration to the switch to change position (settings for pulse duration, number of retries can be configured in APPLICATION).
- **SMART IMPULSE:** The impulse will be maintained until the switch has reached the requested position or the duration set in "PULSE LENGTH" has elapsed (whichever comes first). If this option is selected there will be no retries if the switching fails. This option can be used to limit the impulse duration for RTSE which do not indicate the minimum pulse duration needed to confirm position orders.
- **CONTACT: (Maintained)** The output from the controller will close and stay closed indefinitely as long as the switch is requested to stay in a position. This logic is used mainly with contactors but in some cases can also be used with breakers and class PC switches that accept it. For example when switching to the source 2 the output "POS 2 ORDER" will be closed (active) until the next transfer, then either "POS 1 ORDER" will be active to switch to source 1 or both position orders will be inactive to switch to the position 0 (center off / isolated).


TEST / EXT TEST ON LOAD PRIO: These two options allow users to prioritize tests over the loss of sources. When a test is taking place if the tested source is lost the test will keep going until the tests timers have elapsed. By default both of these settings are set to "NO" (disabled).

 Note: if the test is set as Unlimited, the switch will stay in test position until the user manually ends the test.

RETRY NUMBER: This setting is available with IMPULSE logic only. Users can choose to send the position order a number of times (0-10), if the position is not reached after a first pulse of position order the controller will send the position order again (retry). After all retries have occurred if the intended position is still not reached the controller will detect this as a "FAILED TO TRANSFER" fault. If this value is set to 0 the controller will only send a single pulse when giving position orders. Once the requested position is reached retries will stop even if there are remaining retries available. By default this value is set to 3.

RETRY DELAY: Can be adjusted from 600 to 10000ms. It defines time interval between each retry. Minimum is always pulse length + 500ms, this delay starts counting at the beginning of the impulse. By default this value is set to 1000ms.

PULSE LENGTH: Can be adjusted from 100 to 5000ms. It defines the duration of the pulse (only for IMPULSE mode). Indicates max pulse length in SMART IMPULSE mode. By default this value is set to 100ms.

 Note: in order to save the settings it's mandatory to select SAVE CONFIG on the bottom of the screen or press the "OK" button for 1.5s and a pop-up will appear asking for confirmation before "save & exit".

14.1.1.4. OP RANGE S1 and S2

This menu contains all the settings regarding the limits of acceptability for the sources 1 and 2 voltages and frequency.

OP RANGE S1		ATyS Cxx
S1 OV FAIL (%)	115	↕
S1 OV RESTORE (%)	110	
S1 UV FAIL (%)	85	
S1 UV RESTORE (%)	95	
S1 UB FAIL (%)	00	
...		

OP RANGE S2		ATyS Cxx
S2 OV FAIL (%)	115	↕
S2 OV RESTORE (%)	110	
S2 UV FAIL (%)	85	
S2 UV RESTORE (%)	95	
S2 UB FAIL (%)	00	
...		

This menu contains the following abbreviations :

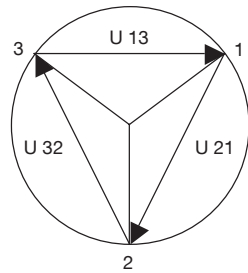
OV= over voltage

UV= under voltage

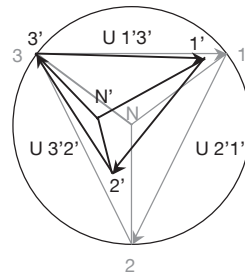
OF = over frequency

UF = under frequency

UB = unbalance



Balanced network



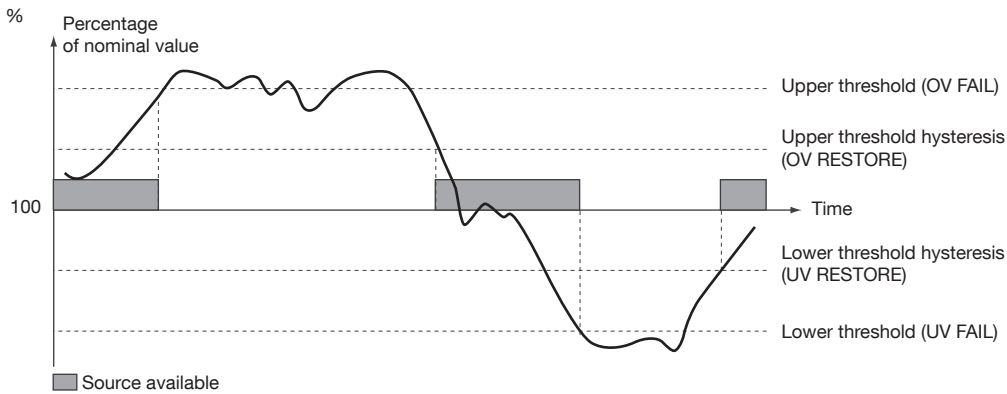
Unbalanced network

For each parameter, the limits can be set in % of the nominal value (for both voltage and frequency).

There are four parameters to set: the threshold values (upper and lower) that will make the source be considered unavailable (FAIL) and the hysteresis values (upper and lower) that will make the source be considered available again (RESTORE).

The thresholds and hystereses are defined as percentages of nominal voltage & frequency.


The hystereses define return to normal levels following an under-voltage or over-voltage.



	Definition	** Adjustment Range	DEFAULT VALUE
OV FAIL	Over voltage threshold: Source Supply 1	102 – 130%	115%
OV RESTORE	Over-voltage hysteresis: Supply 1	101 – 129%	110%
UV FAIL	Under voltage threshold: Supply 1	60 – 98%	085%
UV RESTORE	Under voltage hysteresis: Supply 1	61 – 99%	095%
UB FAIL	Phase unbalance threshold: Supply 1 Refer to next paragraph for further details	0 – 30%	000%
UB RESTORE	Hysteresis unbalance threshold: Supply 1 Refer to next paragraph for further details	0 – 29%	000%
OF FAIL	Over Frequency Threshold: Source 1	102 – 130%	105%
OF RESTORE	Over Frequency Hysteresis: Source 1	101 – 129%	103%
UF FAIL	Under Frequency Threshold: Source 1	60 – 98%	095%
UF RESTORE	Under Frequency Hysteresis: Source 1	61 – 99%	097%

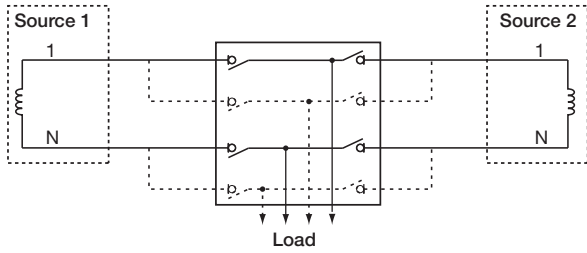
** Adjustment range given:

- As a % of U nominal for Over and Under voltage
- As a % of U avg in case of unbalances.
- As a % of nominal frequency

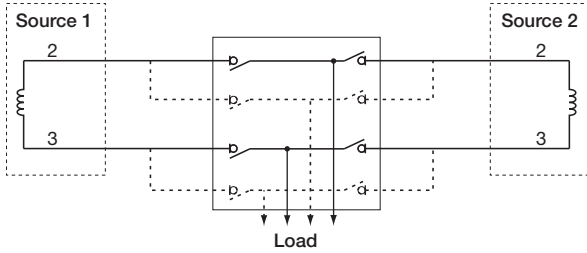
 Note: in order to save the settings it's mandatory to select SAVE CONFIG on the bottom of the screen or press OK button for 1.5s and a pop-up will appear asking for confirmation before "save & exit".

Types of Network

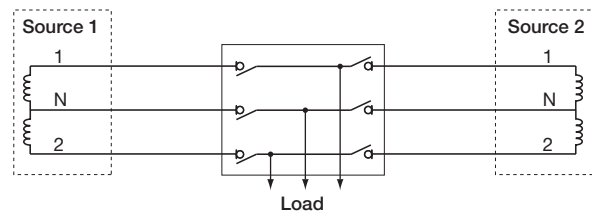
1P+N Single phase network



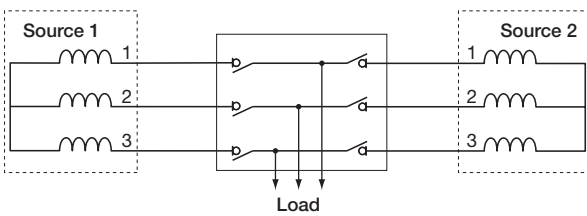
2P Two phase network without neutral



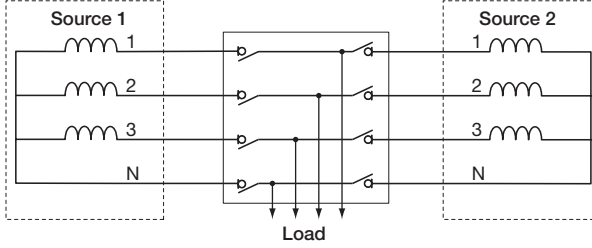
2P+N Two phase network with neutral



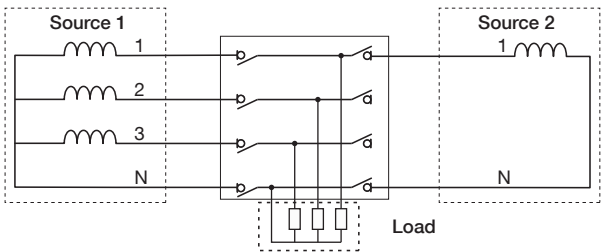
3P Three phase network without neutral



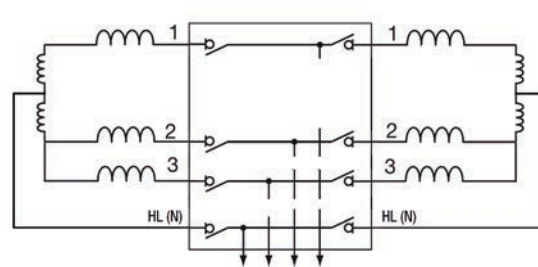
3P+N Three phase network with neutral



3P+N Source 1: Three phase network with neutral 1P+N Source 2: Single phase network with neutral



3P+HL Three phase network with neutral



Metering and sensing details

Network type							
	1P	2 P	2P+N	3P	3P+N	3P+N / 1P+N	3P+HL (only C65)
Source [1]	1 phase 2 wire	2 phase 2 wire	2 phase 3 wire	3 phase 3 wire	3 phase 4 wire	3 phase 4 wire	3 phase 4 wire
Source [2]						1 phase 2 wire	
Source [1]							
Source [2]							
CT cabling (load side)							User choice
Voltage sensing							
Source [1]	- V1	U12	U12 V1, V2	U12, U23, U31	U12, U23, U31 V1, V2, V3	U12, U23, U31 V1, V2, V3	U12, U23, U31, V1 (1-HL), V2 (2-HL), V3 (3-HL)
Source [2]	- V1	U12 -	U12 V1, V2	U12, U23, U31 -	U12, U23, U31 V1, V2, V3	- V1	U12, U23, U31, V1 (1-HL), V2 (2-HL), V3 (3-HL)
Source presence (source available)	✓	✓	✓	✓	✓	✓	✓
Source in ranges (U, V, F)	✓	✓	✓	✓	✓	✓	✓
Rotation phase order	-	-	-	✓	✓	S1 only	✓
Voltage unbalanced is lower than threshold	-	-	-	✓	✓	S1 only	✓
Metering applicable to ATyS C65 ONLY							
If CT connected (load side)	- - - PT, QT, ST, PFT	- - - PT, QT, ST, PFT	P1, Q1, S1, PF1 P2, Q2, S2, PF2 - PT, QT, ST, PFT I1, I2	P1, Q1, S1, PF1 P2, Q2, S2, PF2 P3, Q3, S3, PF3 PT, QT, ST, PFT I1, I2, I3	P1, Q1, S1, PF1 P2, Q2, S2, PF2 P3, Q3, S3, PF3 PT, QT, ST, PFT I1, I2, I3, In	P1, Q1, S1, PF1* P2, Q2, S2, PF2 P3, Q3, S3, PF3 PT, QT, ST, PFT I1, I2, I3, In	P1, Q1, S1, PF1* P2, Q2, S2, PF2 P3, Q3, S3, PF3 PT, QT, ST, PFT I1, I2, I3, In

(1) High leg (Neutral) must be between phase 1 and 2.

14.1.2. LOAD parameters menu (C65 Only)

This menu allows users to configure settings linked to the current, and power measurement of the load. Options include :

LOAD STATUS: Users can choose “ENABLED” or “DISABLED” for information linked to current measurement. If this option is set to “DISABLED” the dashboards information that use current measurement are hidden (“POWER & ENERGY”, “I”, “Isys”, etc..). By default this setting is set to ENABLED (if this settings is enabled but no CTs (Current Transformers) are installed all current linked values will be shown at 0).

LOAD TYPE: This setting allows users to define the type of network on the load side and the number of CT used to measure the current. Based on the number of CT used the controller will calculate any wires not monitored:

Network Type	LOAD TYPE	Position of CT's	NOTES
1P+N	1P+N_1 CT	On L1	Standard solution. Calculated neutral.
2P	2P_1 CT	On L1	Standard solution.
2P+N	2P+N_2 CT	On L1 and L2	Standard solution. Calculated neutral.
3P	3P_3 CT	On L1, L2 and L3	Standard solution.
	3P_2 CT	On L1 and L2	Accuracy reduced by 0.5%. Calculated L3.
	3P_1 CT	On L1	Only for balanced loads
3P+N	3P+N 4 CT	On L1, L2, L3 and N	Maximum accuracy. Measured Neutral.
	3P+N 3 CT	On L1, L2 and L3	Standard solution. Calculated neutral.
	3P+N 1 CT	On L1	Only for balanced loads.
3P+HL	User choice	User choice	Standard solution.
3P+N/1P+N	3P+N 4 CT	On L1, L2, L3 and N	Maximum accuracy. Measured Neutral.
	3P+N 3 CT	On L1, L2 and L3	Standard solution. Calculated neutral.
	3P+N 1 CT	On L1	Only for 1ph loads (from S2).

Inom: nominal current for the loads.

LOAD NAME: Users can choose the name of the load, or group of loads connected to the transfer switch. This information will be shown on the webserver and can help identify the load.

CT PRIMARY: Current of the primary on the current transformer (up to 6500A).

CT SECONDARY: The current of the secondary on the transformer, users can choose 1A or 5A.

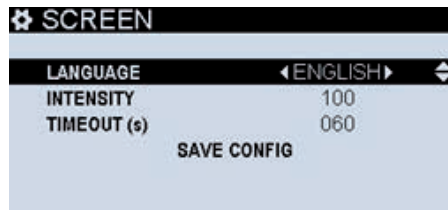
NEUTRAL CT PRIMARY and SECONDARY: As the neutral current transformer can have different sizing, it can be selected independently. The current on the secondary of the neutral is also limited to 5A or 1A.

LINE I1,I2,I3,I4 WAY: This setting defines the direction of the current transformer. For example, if the current transformers have been installed in the opposite direction, using this options it is possible to correct without having to re-install the CT.

14.1.3. DISPLAY parameters menu

The PARAMETERS / DISPLAY menu allows users to set change the HMI configuration (Screen, programmable LED and TEST Buttons).

14.1.3.1. SCREEN PARAMETERS



LANGUAGE: This will change the language of the texts on dashboards, timers, faults and menus

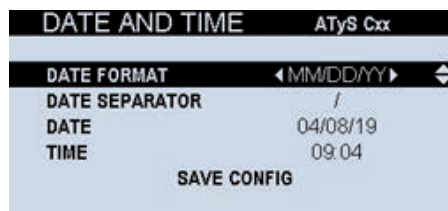
Languages available:

- English
- French
- Spanish
- Italian
- Chinese
- Turkish
- Portuguese
- German
- Polish

INTENSITY: This will change the brightness of the screen back light.

TIMEOUT: This sets the time in seconds before the screen back light is turned off (this timer resets whenever a button is pressed, or an pop-up appears on the screen). Default value is 60 seconds.

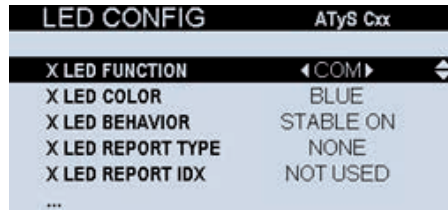
14.1.3.2. DATE AND TIME



The date and time will remain running thanks to the RTC battery even if all sources are off. However users can modify the date and date format using this menu.

14.1.3.3. LED CONFIG (C65 Only)

This menu allows users to configure the X and Y LED (left side of the HMI) functioning mode, this is only available on the C65. For C55 these LED are fixed to the functions COM (LED active when switch is communicating) and Inhibit (LED is active when inhibit, partial inhibit or total inhibit is activated).



LED CONFIG		ATyS Cxx
X LED FUNCTION	◀COM▶	↕
X LED COLOR	BLUE	
X LED BEHAVIOR	STABLE ON	
X LED REPORT TYPE	NONE	
X LED REPORT IDX	NOT USED	
...		

Users can choose the function, color and behavior of the X and Y LEDs .

X/Y LED FUNCTION: There are several functions that can be chosen:

- **ALWAYS ON:** LED permanently on.
- **BUTTON RESPONSE:** Every time a button is pressed it will become active (blink only).
- **COM:** communication report (active when communicating through RS485)
- **SCHEDULER/EXERCISER ACTIVE:** ON while the Engine Exerciser / Genset Scheduler is active (any of the programs)
- **INPUT REPORT:** On when the selected input is active.
- **OUTPUT REPORT:** On when the selected output is active.
- **NOT IN AUTO:** On when the product is not in automatic mode (manual, inhibited, fault...).
- **INHIBIT MODE:** On when the controller has been inhibited.
- **LOAD SHED ACTIVE:** On when load shedding (forced or smart) active.
- **GENSET COOLDOWN:** On while cooldown timer is running (genset is cooling down before being turned off).
- **LOAD CTRL:** LOAD CONTROL output signal is active.
- **TRANSF ONGOING:** Transfer is taking place (it counts from detection/request of transfer to transfer finalized, position reached)
- **MAINTEN. ALARM:** LED will be active when a maintenance alarm is ongoing.
- **SERVICE:** LED will be active when servicing is needed on the ATS system (based on the configured time between inspection).
- **NONE:** LED not used.

COLOR: Users can choose between Blue or Yellow for the color of each X & Y LED.


BEHAVIOR: Users can choose the behavior of the LED when the function linked to it is active. The LEDs can be set to STABLE ON (the LED will be active as long as the linked function is active) or BLINK (the LED will be blinking at a frequency of 1Hz).


REPORT TYPE: This setting is available only when the “LED FUNCTIONS” has been set to “INPUT REPORT” or “OUTPUT REPORT”. This option allows users to choose between an INTERNAL input/output (input/output on the controller itself) or “I/O MODULE X” input/output (input/output linked to an I/O module).

REPORT IDX: This setting is available only when the “LED FUNCTIONS” has been set to “INPUT REPORT” or “OUTPUT REPORT”. This option selects the input or output number to report.

14.1.3.4. OPTIONS


This menu allows users to change the details of the HMI functioning mode.

TEST BUTTON USE: This options changes the functioning mode of the TEST BUTTON . Users can choose between TEST ON LOAD (default value) or TEST OFF LOAD (The TEST OFF LOAD option is not available in MAIN-MAIN application). For details on the different types of tests see chapter 12.5 “Test operating mode”

LAMP TEST DURATION (s): This will allow users to change the duration of the lamp test button  available on the HMI. (All LED will light during the set period of time in order for users to check that all LEDs are functional).The lamp test can be interrupted by pressing the lamp test button again before the end of the test. By default the duration of the lamp test is set to 5s, this setting can be changed from 1 to 10s.

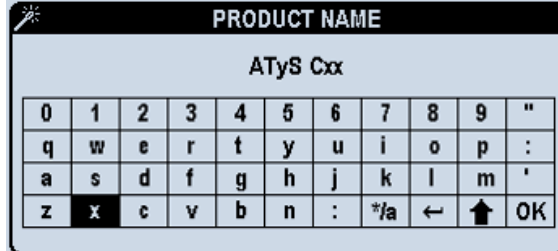
POPUP DISPLAY: Users can choose which pop-up will be shown on the screen. The default and recommended setting is "DISPLAY ALL" which will show all pop-up indications.

Users can also chose to hide alarms "HIDE ALARM" (this will apply to alarms only not faults), hide the timer pop-up "HIDE TIMER", or hid both timers and alarms "HIDE ALARM & TIMER (this will apply to alarms and timers only not fault pop-ups).

 If users choose to hide timer pop-ups, bypassing timers using the input BYPASS TIMER or using the modbus command will not be functional (in this case timers can be bypassed only through the TIMER dashboard).

 If users choose to hide timers, the AUTO LED (or MANUAL LED if product is in manual) will be blinking if a timer is counting.

CHANGE PRODUCT NAME: Users can change the name of the ATS. This information will appear on all the dashboards and menus on the top-right of the screen. To change the name select this menu and press “OK” again, a keyboard will appear in order to select the new name. By default the name of the controller is “ATyS C55” or “ATyS C65” depending on the type of controller, the new controller name is limited to 31 characters.



SCREENSAVER TEXT: User can replace the default Socomec logo on the home screen by 4 lines of personalized text. This can be useful to promote the brand, the loads or installation connected or provide maintenance team with information. This menu is divided into the following settings:

- **TEXT POLICE:** Users can choose size of the text (by default ARIAL 12) options are ARIAL 12 Light, 12, 16, 16 BOLD and 40. Using a larger font size will limit the amount of characters and line that can be used.

- **LINE 1-4 TEXT:** To change a line of text select the text line to change and press the “OK” button, a keyboard will appear and prompt users to enter the text. The number of characters that can be inserted in a line will change depending on the TEXT POLICE.

- **PREVIEW:** When this menu is selected press the “OK” button to preview the result of the text inserted. To save the results stay pressed on the “OK” button for 1.5s or press “OK” when “SAVE CONFIG” is highlighted.

- **DEFAULT LOGO:** Press the “OK” button when this option is selected to return the to the default HOMO logo (Socomec logo).

14.1.4. TIMERS parameters menu

All the operational timers can be set on this menu. They are up to 26 general timers split into 4 groups:

 Note: the timers linked to specific functions are not included in this chapter. Consult the Timers Annex in chapter "Annex 16 - 2. Timers list", page 101 to have the full list.

14.1.4.1. OPERATION

This menu contains the timers linked to the general operation of the ATSE, for source loss, source return and time spent disconnected.

OPERATION	ATyS Cxx
S1 FAILURE (s)	03.0
S1 RETURN (s)	0003
S2 FAILURE (s)	03.0
S2 AVAILABLE (s)	0005
SAVE CONFIG	

S1/S2 FAILURE TIMER (s): This timer defines the time it takes to consider the source as lost.

This timer will start counting when source 1/2 is outside the voltage or frequency thresholds (or phase rotation is changed). If the source returns within the hysteresis limits before the timer ends the source will not be considered as lost. This timer will fully reset when the source 1/2 returns within the hysteresis settings value for the full duration of the "S1/S2 RETURN TIMER". If source fall outsides the voltage or frequency thresholds before the "S1/S2 FAILURE TIMER" is fully reset this timer will resume countdown based on its previous value.

At the end of this timer, the controller will initiate the transfer sequence to the opposite source if it is available, or will send the generator start signal if the opposite source is a generator.

In case of complete power loss (the controller is not powered by source 1, source 2, 24 VDC or usb), this timer will still be taken into account before starting the generator, this is limited to 60s max, after 60s of complete power loss the generator start signal will be sent regardless of this settings.

After a reboot (when the controller turns on after the power returns), if the source is not available within the first 3s the corresponding source timer S1/S2 FAILURE TIMER will be considered as elapsed.


By default this timer is set to 3s, it can be configured from 0000.0s up to 6500.0s by increments of 0.1s.

S1/S2 RETURN TIMER (s): This timer defines the it takes for a source to be considered available. This timer is available only if the corresponding source configured to a "MAINS" (transformer).

This timer will start counting when the source 1/2 returns within the hysteresis setting range (voltage and frequency is within hysteresis range and phase rotation is correct).

At the end of the timer the corresponding source will be considered as available, if this source is the only available source or the priority source the controller will initiate the transfer sequence to this source.

By default the "RETURN TIMER" is set to 180s, this timer can be configured from 0s up to 9999s.

 Note: If the "DYNAMIC RETURN" specific function is enabled (by default this is the case). If the priority source is within hysteresis settings and it is the only source considered as available if the "DYNAMIC RETURN TIMER" is shorter than the "SOURCE RETURN TIMER", the "DYNAMIC RETURN TIMER" will bypass the return timer and initiate a transfer to the priority source when it has elapsed.

S1/S2 AVAILABLE TIMER (s): This timer defines the time it takes for a generator to be considered as available once it has reached the configured voltage and frequency parameters. This setting is available only if the corresponding source is set to GEN (generator).

This timer will start counting when the source 1/2 returns within the hysteresis setting range (voltage and frequency is within hysteresis range and phase rotation is correct).

At the end of the timer the corresponding source will be considered as available, after this timer is over, if this source is the only available source or the priority source, the controller will initiate the transfer sequence to this source.

By default the "AVAILABLE TIMER" is set to 5s, this timer can be configured from 0s up to 9999s by increments of 1s.

S1 DEAD BAND (s): This timer is available on the C65 only and only for switching technology with a 0 position or center off position. It defines the time that the load must spend without voltage before transferring from source 1 to source 2.

This timer starts counting when the load voltage is <50VAC, if the source 1 voltage is lost (<50VAC) this timer will start counting when the ATSE is still connected to source 1 simultaneously with the "S1 FAIL TIMER". If the source 1 is outside thresholds but not completely lost (>50VAC) then this timer will start counting when the ATSE is in position 0 (center off) and will stay in this position until it is fully elapsed. Once this timer is over connection to source 2 will be authorized.

By default this value is set to 0003.0s and can be configured from 0000.0s up to 6500.0s by increments of 0.1s.

S2 DEAD BAND (s): This timer is available on the C65 only and only for switching technology with a 0 position or center off position. It defines the time that the load must spend without voltage before transferring from source 2 to source 1.

This timer starts counting when the load voltage is <50VAC, if the source 2 voltage is lost (<50VAC) this timer will start counting when the ATSE is still connected to source 2 simultaneously with the "S2 FAIL TIMER". If the source 2 is outside thresholds but not completely lost (>50VAC) then this timer will start counting when the ATSE is in position 0 (center off) and will stay in this position until it is fully elapsed. Once this timer is over connection to source 1 will be authorized.

By default this value is set to 0003.0s and can be configured from 0000.0s up to 6500.0s by increments of 0.1s.

DEAD BAND TIMER: This timer is available on the C55 only and only for switching technology with a 0 position or center off position. It defines the time that the load must spend without voltage before transferring from one source to another.


This timer starts counting when the load voltage is off (<50VAC), if the current source voltage is lost (<50VAC) this timer will start counting when the ATSE is still connected to current source simultaneously with the "S1/S2 FAIL TIMER". If the current source is outside thresholds but not completely lost (>50VAC) then this timer will start counting when the ATSE is in position 0 (center off) and will stay in this position until it is fully elapsed. Once this timer is over connection to opposite source will be authorized.

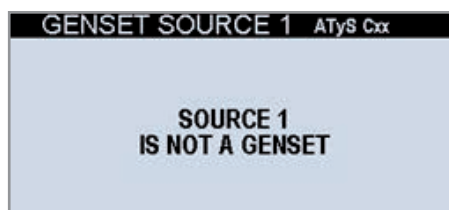
By default this value is set to 0003.0s and can be configured from 0000.0s up to 6500.0s by increments of 0.1s.

 Note: see "Annex 16 - 5. Operating sequences", page 110 for operational timer graph and see TIMER Annex for more details on configurable values for these timers

14.1.4.2. GENSET SOURCE 1/2

This menu contains all generator related timers. This menu is available for the corresponding source when it is linked to a generator.

 Note: if the source is not linked to a genset the following message will be shown:



If the source is not linked to a generator, verify that the application is set to MAIN-GEN or GEN-GEN and if the application is set to MAIN-GEN check that the current source is not the priority source.


Each source timer menu contains the following timers :

GENSET SOURCE 2	ATyS
S2 GENSET COOLDOWN (s)	180
S2 START TIMEOUT (s)	030
GENSET TIMEOUT S2 (h)	001
BATT CHARGE DURATION S2 (s)	0050
SAVE CONFIG	

GENSET COOLDOWN (s): This timer will count down once the load leaves the source with a genset, when this timer expires the genset start signal linked to this source will be deactivated. This timer allows user to keep the generator running a set period of time off load in order to give it time to cool down after changing source. By default this timer is set to 180s, the configuration range is from 0000 up to 9999s.

START TIMEOUT (s): Maximum time for the genset to start. The generator voltage, frequency and phase rotation must be within the set parameters for the duration of the "S1/S2 AVAILABLE TIMER" before this timer ends.


If the "START TIMEOUT" ends before the "S1/S2 AVAILABLE TIMER", the controller will signal a "GENSET FAIL TO START" fault. By default this timer is set to 30s, the configuration range is from 1s to 600s.

 The "START TIMEOUT" timer must be greater than the source "AVAILABLE TIMER" or the genset will always be considered as fail to start.

 Note: GENSET TIMEOUT (h) and BATT CHARGE DURATION are both linked the output "BATTERY CHARGER". Both of these timers are only available on the ATyS C65 controller.

GENSET TIMEOUT (h): (Only available on C65) The purpose of this timer is to make sure that if the generator is turned off for long period of time the generator internal battery is not depleted. This timer will start when the genset is off, when this timer ends the BATTERY CHARGER output will be activated, this output can be linked to a battery charger. This timer will reset if the genset is on for the duration of BATT CHARGE DURATION, or if the output "BATTERY CHARGER" is activated for the duration of BATT CHARGE DURATION. By default this timer is set to 168h (7 days), the configuration range is from 0h to 168h.

BATT CHARGE DURATION (s): (Only available on C65) This timer represents the time needed to fully charge the generator battery. The timer will count down when the "BATTERY CHARGER" output is active or when the genset is available. The end of this timer will reset the GENSET TIMEOUT TIMER. By default this timer is set to 1800s, the configuration range is from 1s to 9999s.

 In GEN-GEN The "GENSET TIMEOUT" and "BATT CHARGE DURATION" timers as well as the "BATTERY CHARGER" output will apply only to the secondary genset.

14.1.4.3. TEST ON/OFF LOAD

These two menus contains the timers linked to the test features. The following settings can be configured:


LOAD TESTS		ATyS Cxx
LOAD TEST	◀ UNLIMITED ▶	⬇
LOAD TEST (s)	00010	
LOAD TEST END (s)	0005	
EXT LOAD TEST PRE (s)	0005	
EXT LOAD TEST	UNLIMITED	
...		

NO LOAD TESTS		ATyS Cxx
NO LOAD TEST	◀ UNLIMITED ▶	⬇
NO LOAD TEST (s)	00600	
EXT NO LOAD TEST PRE (s)	0005	
EXT NO LOAD TEST	LIMITED	
EXT NO LOAD TEST (s)	00600	
...		

TEST ON/OFF LOAD TYPE: Users can choose if a test on/off load is “LIMITED” or “UNLIMITED”. If “LIMITED” is selected once started, the test procedure will follow the configured timer and end automatically (unless the function manual retransfer is activated). If “UNLIMITED” is selected the test will stay active (ATSE connected to the non priority generator source for TEST ON LOAD, or generator running for TEST OFF LOAD) until users stop the test manually (using the HMI pushbutton, programmable input or communications). By default this setting is set to UNLIMITED.

TEST ON/OFF LOAD DURATION (s): This timer is active only if “LIMITED” has been selected on the previous option (TEST ON LOAD TYPE). It defines the duration of the test, this timer starts counting as soon as the test is started (this timer will start counting before the ATSE connected to the generator). By default this setting is set to 10s, the configuration range is from 0s to 21600s.


TEST ON LOAD END (s): (Only for TEST ON LOAD, is not applicable for TEST OFF LOAD) This timer defines the time to stay connected on the secondary source after the test has ended. This timer will start counting after the “TEST ON LOAD DURATION” has fully elapsed. The default value for this setting is 5s can be configured from 0s to 1800s.


 Note: TEST ON/OFF LOAD timers apply only to tests started with the HMI button or inputs “TEST ON/OFF LOAD” EXT. TEST ON/OFF LOAD timers apply to tests started with inputs “EXT. TEST ON/OFF LOAD” or communications.

EXT. TEST ON/OFF LOAD PRE (s): The external test on/off load will start at the end of this timer (start the generator and change position). This timer is taken into account even if the EXT. TEST ON LOAD is UNLIMITED. The default value for this setting is 5s can be configured from 0s to 1800s.

EXT TEST ON/OFF LOAD TYPE: Similarly to the parameter in TEST ON/OFF LOAD TYPE, this defines if the type of test (limited or unlimited) when starting and external load test (load test activated using "EXT TEST ON LOAD" or "EXT TEST OFF LOAD" inputs or communication).

EXT. TEST ON/OFF LOAD POST (s): This timer defines the time to stay connected on the secondary source after the test has ended. This timer will start counting after the “TEST ON LOAD DURATION” has fully elapsed. The default value for this setting is 5s can be configured from 0s to 1800s.

 Note: When programmed on an INPUT, tests sequence will start on the rising edge of the input (when the input is activated), if the test is set to “LIMITED” the test countdown timers will start on the falling edge of the input (when the input is deactivated). It is therefore recommended to use pushbuttons rather than selector switches for test functions programmed to “LIMITED”.

 Note: see "Annex 16 - 5. Operating sequences", page 110 for operational timer graph and see TIMER Annex for more details on configurable values for these timers.

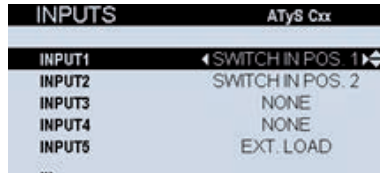
14.1.5. I/O

This menu contains all the parameters for inputs and outputs. By default, the controller has 6 inputs and 6 outputs on the controller (called internal Inputs / Outputs) and up to 6 optional I/O 10 modules with 4in/2out can be added (only C65) achieving up to 30 inputs and 18 outputs total.

14.1.5.1. INPUTS

This menu allows users to select the input functions for all internal inputs 1-6, the "INPUT TYPE" parameter allows users to change the logic from "NO" (normally open the default value, input is active when contact with common point is closed) to "NC" (normally closed, input is active when the contact with the common point is open).

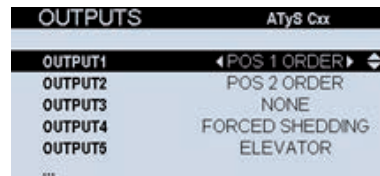
The default value of the Inputs will vary depending on the "SWITCH TECHNOLOGY" used in the "APPLICATION" menu.



14.1.5.2. OUTPUTS

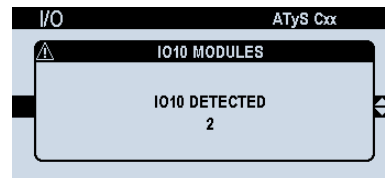
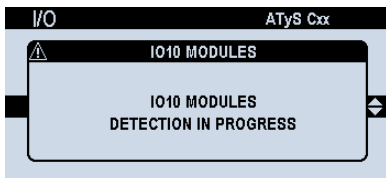
This menu allows users to select the output functions for all internal inputs 1-6, the "OUTPUT TYPE" parameter allows users to change the logic from "NO" (normally closed the default value, active when contact with common point is closed) to "NO" (normally closed, active when the contact with the common point is open).

The default value of the outputs will vary depending on the "SWITCH TECHNOLOGY" used in the "APPLICATION" menu.



14.1.5.3. EXTERNAL I/O DETECTION

Press the "OK" on this menu to start detecting connected I/O modules. A Pop-up will signal the start and end of the IO module detection as well as the number of I/O modules detected, this detection can take a few minutes to complete.



If the "OK" or "Return" button is pressed the pop-up message will be cleared but the detection will still be ongoing.

i Note: I/O module detection and I/O module configuration will not be functional if in the "COMMUNICATION">"DIGIWARE MODE" the controller is not set to "MASTER OVER I/O".


14.1.5.4. EXTERNAL I/O CONFIG:


This menu allows users to configure the input and output functions of the I/O modules. The first window "EXT I/O CONFIG" will list the I/O module detected, each module will be linked to a number and identifiable using its ID.


EXT I/O CONFIG		ATyS Cxx
IO10 MODULE 1 ID:	76891A	↕
IO10 MODULE 2 ID:	4AC29B	
IO10 MODULE 3 ID:	C8B3DB	
IO10 MODULE 4 ID:	FACB2C	

IO10 MODULE 1		ATyS Cxx
INPUT1	◀ NONE ▶	↕
INPUT2	NONE	
INPUT3	NONE	
INPUT4	NONE	
INPUT 1 TYPE	NO	
...		

To configure the Inputs and outputs select the module to configure and press "OK". Users will then be able to change the 4 input functions, the 4 input type, the 2 output function and 2 output type.

 Note: Inputs and outputs which are needed to control and receive the position of the RTSE cannot be used on external I/O modules.

 Note: the specific functions that are related to the I/O might require some settings to be configured on the SPECIFIC FUNCTIONS menu. Consult the I/O Annex 16 - 3, page 105104 and Annex 16 - 4, page 107106 to have the full list of functions to be configured on the I/O.

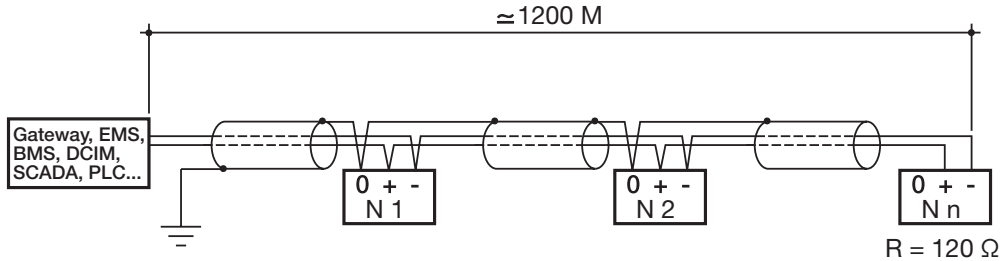
 Warning! after each menu configuration do not forget to save by pressing "SAVE CONFIG" or pressing the "OK" button for at least 1.5 seconds.

14.1.6. COMMUNICATION parameters menu

14.1.6.1. Connection method for RS485

The MODBUS RTU protocol available on the ATyS C55/C65 communicates via an RS485 series link (2 or 3 wires) which is used to operate, configure or read parameters from a PC or an API.

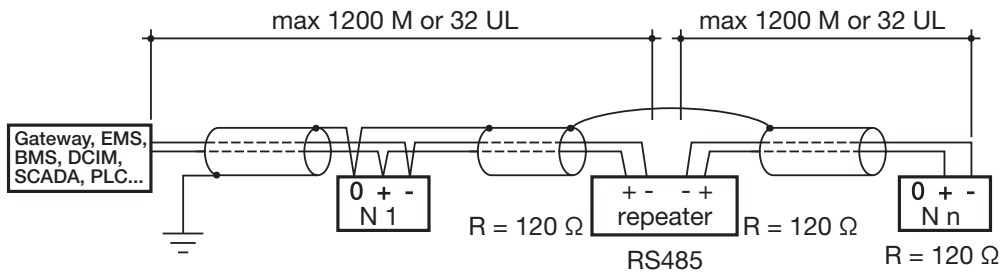
In a standard configuration, a RS485 connection is used to connect 32 products to a PC or a controller up to 1200metres (1300yds) far.



A LIYCY shielded twisted pair must be used. Socomec recommends using a shielded twisted pair with a general LIYCY-CY shielding in a environment where there is interference or in a very long network with a number of products.

If the distance of 1200 m is exceeded and/or the number of products is greater than 32, a repeater must be added to enable additional products to be connected.

A 120 Ohm resistor must be fixed at both ends of the connection.



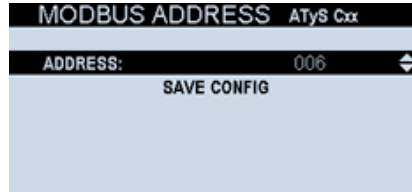
Modbus Communication tables for the ATyS C55 & ATyS C65 can be found on the website at the following address:
www.socomec.com



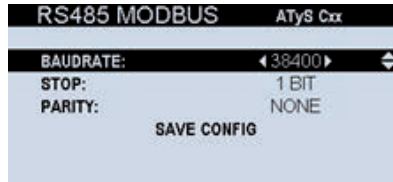
14.1.6.2. COMMUNICATION (menu)

This menu allows users to change the MODBUS RTU parameters for both the digiware connection and RS458 connection.

MODBUS ADDRESS: Used to modify the modbus address; By default this value is set to 6, can be configured from 1 to 247. This value will be taken into account for both the digiware communication (for C65 only) and RS485.

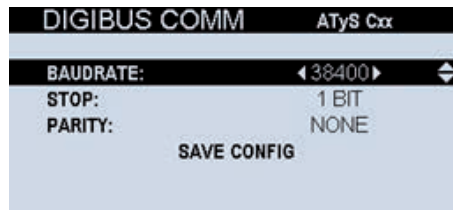


RS485 MODBUS: This menu will define all the MODBUS parameters for the RS485 connection:



- BAUDRATE (1200-2400-4800-9600-19200-38400-57600-115200) By default 38400.
- STOP: (1BIT – 2BITS) By default 1 BIT
- PARITY: (ODD-EVEN-NONE) By default none

DIGIBUS COMM: The same parameters are available for the digiware connection (same default values) This option is only available on the C65.

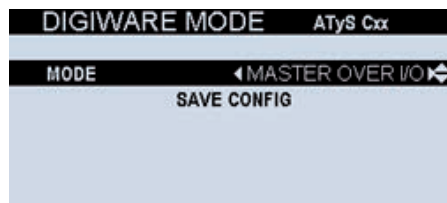


DIGIWARE MODE: (Only for C65) This menu will determine how the controller will be used in the digiware connection bus.

If the controller is set to “SLAVE” this will allow the C65 to share data points to other digiware products using the DIGIBUS, in this case I/O modules will be controller by other digiware products and will not be used by the controller.

If the controller is set to “MASTER OVER I/O” the controller will be able to detect, program and control I/O modules but it will not be able to share information to other digiware products using the DIGIBUS connection.

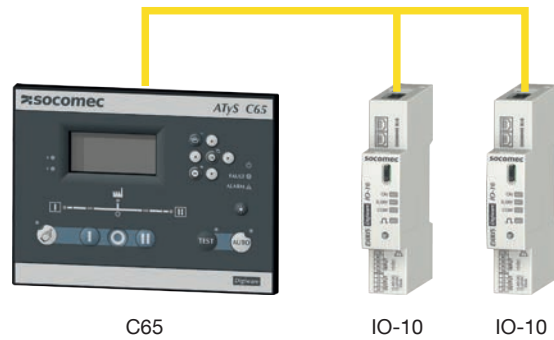
By default the controller is set to “MASTER OVER I/O”.



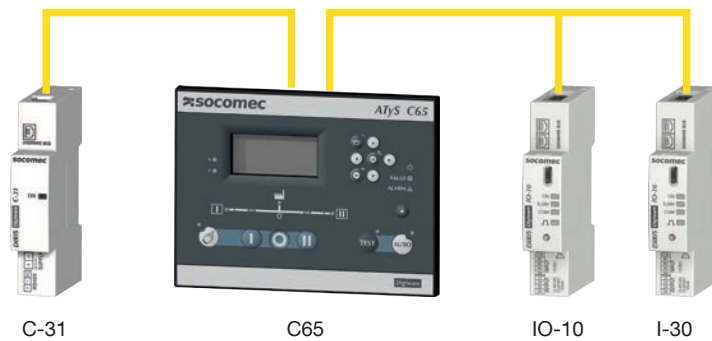
14.1.6.3. Digiware Connection

The product offers the option to choose between controlling external I/O modules through the RJ45 connectors (master) with the Digiware bus or to be integrated into a complete Digiware system as a slave.

Control over I/O modules as a Digiware master.



Controller as a slave, part of a Digiware chain, working as a U10 module that sends the voltage sensing information into the chain to be read by other measurement modules.



These two options can be selected on the menu. To change between slave and master, go to "PARAMETERS">"COMMUNICATION">"DIGIWARE MODE".



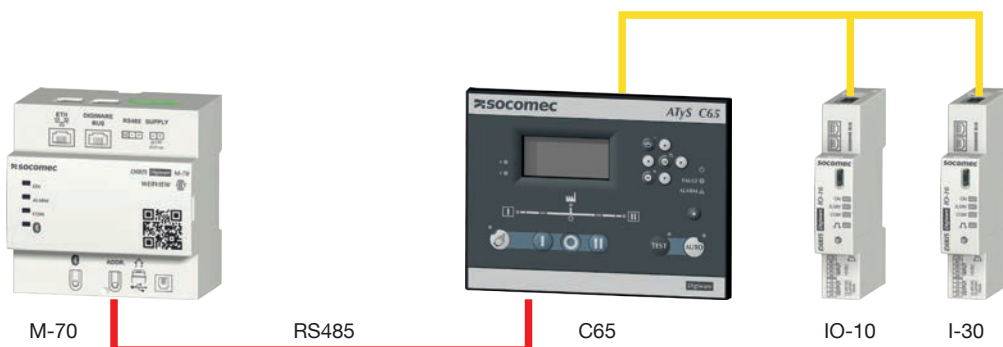
Note: The product cannot be both master over I/O and slave in the Digiware chain.



In slave mode the controller will not configure or control the I/O modules.

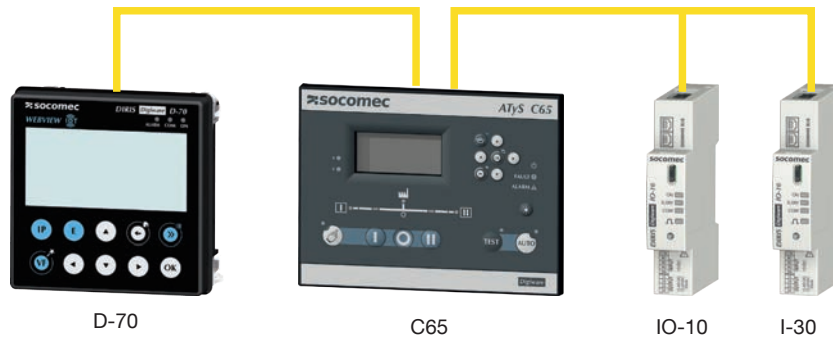
14.1.6.4. Ethernet

For the ATyS C55/65 controller to be able to communicate on MODBUS TCP over Ethernet, it's necessary to add a gateway to convert from RS485 to RJ45 and use TCP protocol:



When the D70 or M70 Socomec gateways are used, the ATyS C55 or C65 can be connected by RS485 or with the DIGIBUS.

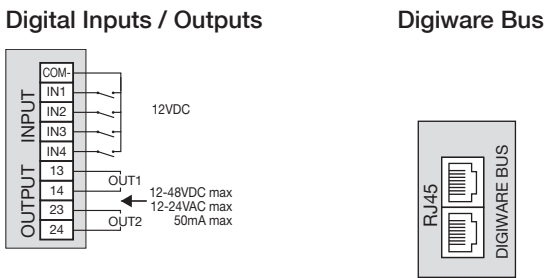
The C65 can also be connected to the gateways using the DIGIBUS (in this case the controller must be configured as "SLAVE" to share information to the gateway).



Using Diris D70 gateway.

i Note: when the controller is part of a Digiware chain, it's not possible to use the external I/O modules in direct connection with the controller.

14.1.6.5. I/O module connections



Total power consumption per module is 0,5W and each 50mts (164 feet) of RJ45 cable 1,5W extra should be considered for the design of the installation.

For more technical details on the Digital I/O modules consult the I/O module Quickstart.


I/O module connection cables:

RJ 45 Digiware bus cables available can be ordered according to their length:

LENGTH (m)	QTY	Order code
0.1	1	4829 0181
0.2	1	4829 0188
0.5	1	4829 0182
1	1	4829 0183
2	1	4829 0184
5	1	4829 0186
10	1	4829 0187
50 m reel + 100 connectors		4829 0185

i Note: these cables are specific RJ45 cable for use with the DIGIWARE bus, do not use standard RJ45 cables. The maximum length of the Digiware bus is 100 meters (328 feet).

A end-of-the-bus resistance is recommended for safe communication between the modules and the controller:

	Quantity	Part number
	1	4829 0180

Configuration of the modules:

Once the controller is powered up with the 24 V.d.c auxiliary power connected, the modules will receive power supply.

 The 24 V.d.c input must be powered in order to use the I/O modules.

To configure these modules follow the steps below:

1. Configuring the controller as master on DIGIWARE Bus:

"PARAMETERS">"COMMUNICATION">"DIGIWARE MODE" change the type from "SLAVE" to "MASTER OVER I/O"

2. Detecting the I/O modules:

In "PARAMETER">"I/O">"EXTERNAL I/O DETECTION" press OK on "EXTERNAL I/O DETECTION" the detection process will take a few minutes, when the detection is over a message will indicate that the detection is over. The devices will be detected and added to the list

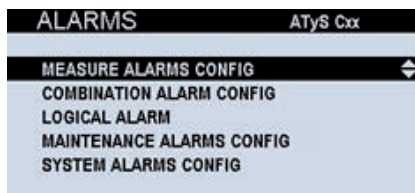
3. Configuring the I/O module's I/Os:

In "PARAMETERS">"I/O">"EXTERNAL I/O CONFIG" user can affect Input and output functions on the I/O module, for full list of available functions see Annex 16.3 Input list & 16.4 output list.

To identify the different modules the "ID" number on the front face of the modules will be shown on the display.

14.1.7. ALARMS parameters menu

This menu allows users to configure alarms, these alarms are different from FAULTS. They are linked to the alarm LED only and are all user configurable. Fault are internal to the controller functioning and cannot be configured, see chapter 12 MAINTENANCE for more details on FAULTS.



The ALARMS menu is divided into 5 different sub-menu depending on the type of alarm. However all alarms have the following common settings :

ALARM ID: This defines the ID of the alarm, it will be shown on the alarm log, screen and communications if the alarm is activated. The number of available alarm ID depends on the type of alarm:

- 4 alarms available for MEASURE
- 6 alarms available for MAINTENANCE
- 4 alarms available for COMBINATION
- 4 alarms available for LOGIC
- 8 alarms available for SYSTEM

STATUS: This setting defines if the alarm is used or not, it can be set to “ENABLED” or “DISABLED”. By default all alarms are set to “DISABLED”.

ACK METHOD: This setting allows users to define the acknowledgment method for each individual alarm. Once acknowledged (if the alarm level is reset) the alarm will be removed from ongoing alarms and the alarm LED will be turned off if no other alarm is ongoing.

Users can choose the following acknowledgment methods:

- **NONE:** Alarm does not need to be acknowledged.
- **DISPLAY/COM:** A popup will appear on the screen that users can use to manually acknowledge the alarm, or this can also be done using the MODBUS communication order.
- **ON INPUT:** Users can program an input to acknowledge the alarm.

By default this setting is set to “NONE”.

INPUT TYPE: This option is only available if the “ACK METHOD” has been set to “ON INPUT”. It defines if the input used to acknowledge the alarm is “INTERNAL” (controller input), or “I/O MODULE X” (X depending on the number of the I/O module). This settings can also be set to “NONE” meaning that no inputs will be used to acknowledge the alarm.

By default this setting is set to “NONE”.

ACK INPUT: This will define which input (number) to use. It can be configured from INPUT 1 to INPUT 6 for INTERNAL inputs, INPUT 1 to INPUT 4 for I/O MODULE inputs. If the “ACK METHOD” is not “ON INPUT” or the “INPUT TYPE” has been set to “NOT USED” this option will not be available. By default this setting is set to INTERNAL.


By default this setting is set to “INPUT 1”.

OUTPUT TYPE: This option allows users to configure outputs to relay the alarm information. Users can “INTERNAL” (controller output), or “I/O MODULE X” (X depending on the number of the I/O module) to use external module outputs .

This settings can also be set to “NOT USED” meaning that no outputs will be used to relay the alarm. By default this setting is set to “NOT USED”.

OUTPUT REPORT: This setting is available is available only if the setting “OUTPUT TYPE” is not configured to “NOT USED”. This will define which output (number) to use. It can be configured from OUTPUT 1 to OUTPUT 6 for INTERNAL inputs, OUTPUT 1 to OUTPUT 2 for I/O MODULE inputs.

CRITICALITY: This defines the level for each alarm, users can choose “INFORMATION”, “WARNING” and “CRITICAL”, this last setting represents the highest level of criticality. This information will be registered in the alarm log and can be consulted with the webserver function on the Diris M-70 gateway module.

 When using inputs or outputs for alarm functions if the inputs are already programmed to other functions the controller warns using a pop-up message, if validated the current functions will be overwritten. Before confirming make sure that the inputs and outputs that will be overwritten are not used in your system, press “OK” again for 1.5s to confirm overwriting the current configuration.

 Note: If using the “AUD – Audible alarm” output, this output will only be active when a alarm set to “CRITICAL” is active.

14.1.7.1. MEASURE ALARMS:

This menu is only available on the ATyS C65, it allows users to link alarms to measurement variables.

MEASURE ALARMS ATyS Cxx	
ALARM ID	◀ 1 ▶
STATUS	DISABLED
CATEGORY	E LOAD
SOURCES	LOAD
PARAMETERS	Partial Ea+
...	

CATEGORY: This defines which type of variable will trigger the alarm, users can choose from the following variables:

- **E LOAD:** Energy (consumption) from the load side.
- **E SOURCES:** Energy (consumption) from the source side.
- **V/U/F LOAD:** The load voltages or frequency.
- **V/U/F SOURCES:** The source voltages or frequency.
- **P/Q/S/PF:** The power values and power factor (load only)
- **I :** The current value (Load only)

SOURCES: This setting allows users to choose which source will be monitored for the variable configured above (only for variables linked to "SOURCES").

PARAMETERS: Each "CATEGORY" is divided into more precise variable, this allows users to choose exactly which value will trigger the alarm.

UPPER/LOWER THRESHOLD: Each parameter will have a configurable upper and lower threshold, when the threshold is reached the alarm will be active until the value of the parameter measured falls under the hysteresis value.

HYSTERESIS (%): When the parameter measured is in the hysteresis value the alarm will be deactivated. The hysteresis value is a percentage of the upper and lower threshold value. Hysteresis can be configured from 0.00% up to 10.0% by increments of 0.1%.

The table below details all the parameters and their associated thresholds:

Category	Parameter	Parameter description	upper/lower threshold range
E LOAD & E SOURCES	Partial Ea-	Partial active energy generated.	0-1000000kwh
	Partial Ea+	Partial active energy consumed.	0-1000000kwh
	Partial Es	Partial apparent energy.	0-1000000kwh
	Partial Er	Partial reactive energy generated.	0-1000000kwh
	Partial Er+	Partial reactive energy consumed.	0-1000000kwh
V/U/F LOAD & SOURCES	F	Frequency.	40-80hz
	Uph OR	Any phase-to-phase voltage .	0-6300000V
	Uph AND	All phase-to-phase voltages.	0-6300000V
	Unba	(SOURCES only) Phase-to-phase amplitude unbalance.	0-6300000V
	Usys	Phase-to-phase average.	0-6300000V
	Uunb	(SOURCES only) Phase-to-phase vectorial unbalance.	0-6300000V
	Vph OR	Any phase-to-neutral voltage.	0-6300000V
	Vph AND	All phase-to-neutral voltages.	0-6300000V
	Vn	Neutral voltage.	0-4000000V
	Vnba	(SOURCES only) Phase to neutral amplitude unbalance	0-4000000V
	Vsys	Average phase-to-neutral voltage.	0-4000000V
	Vunb	(SOURCES only) Phase-to-neutral vectorial unbalance.	0-4000000V
P/Q/S/PF	PF OR	Any phase power factor.	-1.0 - 1.0
	PF AND	All phase power factor.	-1.0 - 1.0
	PFtot	Total power factor.	-1.0 - 1.0
	PF TYPE OR	Any phase power factor type.	0: Undefined 1: Leading 2: Lagging
	PF TYPE AND	All phase power factor type.	0: Undefined 1: LEADING 2: LAGGING
	PF TYPE tot	Total phase power factor.	0: Undefined 1: LEADING 2: LAGGING
	P OR	Any phase active power.	0-9999999 w
	P AND	All phases active power.	0-9999999 w
	Ptot	Total active power.	0-9999999 w
	Q OR	Any phase reactive power.	0-9999999 VAR
	Q AND	All phases reactive power.	0-9999999 VAR
	Qtot	Total reactive power.	0-9999999 VAR
	S OR	Any phase apparent power.	0-9999999 VA
	S AND	All phases apparent power.	0-9999999 VA
Stot	Total apparent power.	0-9999999 VA	
I	Iph OR	Any phase current.	10 000.0A
	Iph AND	All phases current.	10 000.0A
	Inba	Current amplitude unbalance.	10 000.0A
	Iph sys	Total current.	10 000.0A
	Iunb	Current vectorial unbalance.	10 000.0A
	In	Neutral current.	10 000.0A



Note: Partial energies can be reset using the ENERGY “4.9 RESET ENERGY” dashboard

14.1.7.2. MAINTENANCE ALARMS

This menu allows users to set up to 6 alarms to activate according to configurable maintenance thresholds. To access this menu users will need the maintenance password. The alarms configured in this menu will be visible on the maintenance dashboard.

The alarm type will define the maintenance parameter to check, there can be multiple alarms configured on of the same type.

Possible alarm configuration:

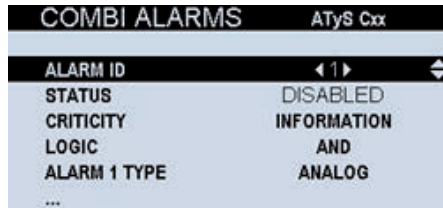
Alarm Type	Alarm Name	Description	Threshold Unit	"Threshold default value"	"Upper Threshold max. value"
1	CYCLE EXC.	"Maximum number of switching cycles. A cycle is when the switch has reached the opposite source and transferred back once (for example 1-off, off-2, 2-off, off-1)"	Number of cycles	5000	10 000
2	OPERATION EXC.	Maximum number of operation (any change of position order including off position)	Number of operations	10 000	10 000
3	GENSET RUNTIME S1	"Total amount of time that the genset 1 has been working (supplying or not the load). Can be used for genset maintenance purposes."	Hours	250	400 000
4	GENSET RUNTIME S2	"Total amount of time that the genset 2 has been working (supplying or not the load). Can be used for genset maintenance purposes."	Hours	250	400 000
5	TOT GS1 TIME ON LOAD	Total amount of time that the genset 1 has been connected to the load. Can be used for genset maintenance purposes.	Hours	250	400 000
6	TOT GS2 TIME ON LOAD	Total amount of time that the genset 2 has been connected to the load. Can be used for genset maintenance purposes.	Hours	250	400 000
7	INSPECTION	"Counts the time after the last inspection (entered in "Inspection Mode" of the maintenance menu). Can be used for periodic inspection/service purposes on the A TS. By default it is set to 300 months which is the maximum value. Socomec recommends 12 months after servicing."	Months	300	300
8	CONNECTED	Maximum number of time the input CONNECTED has been switched on	Action	3	10 000
9	WITHDRAWN	Maximum number of time the input WITHDRAWN has been switched on	Action	3	10 000
10	TOTAL TRIP BRK1	Maximum of time the input TRIP BRK1 has been switched on	Action	3	10 000
11	TOTAL TRIP BRK2	Maximum of time the input TRIP BRK2 has been switched on	Action	3	10 000

MAINTEN. ALARMS ATyS Cxx	
ALARM ID	◀ 1 ▶
STATUS	DISABLED
ALARM TYPE	1
	CYCLES EXC.
UPPER THRESHOLD (Cycle)	5000
...	

14.1.7.3. COMBINATION ALARMS

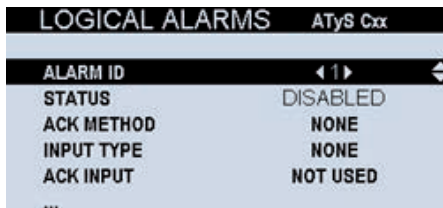
This alarm option is only available on the ATyS C65. This menu allows users to combine alarms using boolean combinations in order to create a new alarm. For example combine a MEASUREMENT ALARM and a MAINTENANCE ALARM with the AND operator (when both alarms are active the COMBINATION ALARM will also be active).

Up to 4 alarms can be created with this combination logic. To combine alarms select the alarm types from ANALOG (MEASUREMENT), LOGICAL, MAINTENANCE and select the alarm ID of the corresponding type, then select the operator to use (AND , OR).



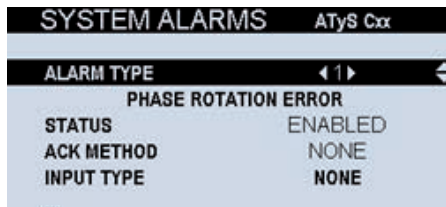
14.1.7.4. LOGICAL ALARMS

This alarm options allows users to create alarms based on the state of INTERNAL or I/O module inputs.



14.1.7.5. SYSTEM ALARMS

This menu allows users to create alarms to detect failures on the installations. Up to 8 SYSTEM ALARMS can be created. There are up to 8 system alarms that can be used to detect minor failures on the installation.



The alarm type will define the parameter to check, for these alarms the alarm type replaces the alarm ID. Only one of each alarm can be active simultaneously.

Alarm Type	Alarm Name	Description
1	PHASE ROT	Activated if a change of phase rotation is detected.
2	EXTERNAL ALARM	Activated when an external alarm input is active.
3	I0-10 FAILED	Activated if a configured I/O module is not detected (only on C65)
4	CONTROLLER UNAVAILABLE	Activated if the controller is not able to perform automatic operations (major faults or product inhibited)
5	LOAD NOT SUPPLIED	Activated if the load is not connected to a power source
6	RTC LOW BATT	Activated if the internal RTC battery needs to be replaced
7	DC AUX PB	Activated if the auxiliary DC supply connected is less than 10 VDC
8	GENSET RUNNING	Activated if the source linked to a generator is available 10 seconds after the genset signal has been removed (after cool-down timer).

14.1.8. PASSWORDS

The controller includes four levels of users (4 levels of security) :

Standard user (no password): This level is designed for Standard users can access all the dashboards, bypass timers which appear on the pop-screens and reset faults.

Operator: This password is designed for users which will regularly do interventions on the product without changing the configuration. Operator level password allows users to start tests using the HMI, the CONTROL menu, the LOG menu, the STATISTIC menu and program engine exercisers and alarms.

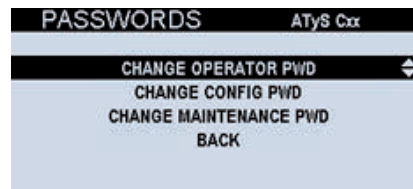
Configurator: This password level is designed for users who can change the parameters of the products. It gives access to all operator menus as well as the PARAMETERS menu, and SPECIFIC FUNCTIONS menu. This password level also allows users to change the operator password.


Maintenance: This is the highest level password, it gives access to all configurator level menus as well as the maintenance menu, this password also allows users to modify all other passwords.

Passwords by default (factory settings):

User (access to visualization)	No password
Operator (access to control functions)	4000
Configurator (access to parameter setting)	1000
Maintenance (access to service menu)	1010

These default passwords can be changed in the "PARAMETERS"> "PASSWORD"



 **WARNING !** If the maintenance password is lost it cannot be restored. Please contact SOCOMEC to retrieve and modify these passwords.

14.2. Specific Functions Menu

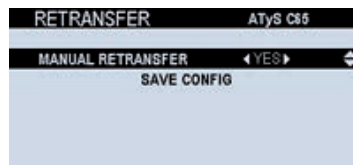
This menu allows users to adapt the functioning of the ATS to match specific use cases. Users may activate multiple specific functions at the same time. By default all specific function as set to “DISABLED”. To access this menu users will need the “Configurator password”

14.2.1. MANUAL RETRANSFER

This function allows users to choose when the retransfer to the priority source takes place after it returns. This can be useful to plan the transfer in order to minimize the impact on loads and users (for example for a factory plan the retransfer after working hours).

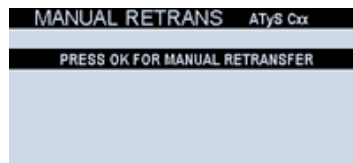
If this function is active (“YES”), the controller will request confirmation before transferring from the secondary source to the priority source.

When loads are supplied from the emergency source, the controller will not come back to the normal source when this one comes back until a confirmation order is received through the display or through an input (configured to do so). This applies also to TEST ON LOAD requests, a manual retransfer will be required to go back to the priority source.



This can take place after a main source failure and return, a test on load or a change of source priority (for MAIN-MAIN and GEN-GEN).

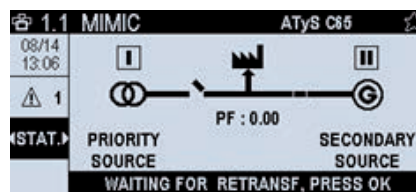
When active a pop-up will appear on the screen to guide users to the retransfer menu, this pop-up can be cleared using the return button if retransfer should be done at a later time. This menu can also be accessed by going in “CONTROL” > “MANUAL RETRANSFER”. (If used on the pop-up retransfer will not require a password, if the pop-up is cleared users will need the operator password to access the “CONTROL” menu.



Users can also choose to program an input to “MANUAL RETRANS”. When active this input will validate the retransfer without needing to validate on the screen.

It is also possible to validate a retransfer using MODBUS commands.

When the controller is waiting for user confirmation to retransfer, the dashboard 1.1 of MIMIC & STATUS will indicate this with the following message “WAITING FOR RETRANSFER PRESS OK”, pressing the “OK” button on either of these dashboards will bring users directly to the retransfer validation menu.



It is also possible to program an output to “WAIT MAN RETRANSF”, this output will be active when the controller is waiting for user confirmation to retransfer.

14.2.2. INPHASE TRANSFER (C65 only)

This function allows users to transfer sources when they are in-phase (with similar voltage values) this reduces the impact of the transfer on the loads and increases RTSE lifetime when the transfer is done by a fast RTSE (transfer time <50ms).

The in-phase transfer function is available only for ATyS FT typology of RTSE or equivalent (2 position switch Class PC, I-II) switches must change position in less than 50ms.

This function will ask the controller monitor, the voltage, the frequency and the phase angle of both sources. When a transfer is requested from one available source to another the controller will verify that these parameters are sufficiently close in value before transferring.

Users can change the following settings of this function to define the acceptable difference in the sources:

All settings for the in-phase monitoring transition with the ATyS FT switch:

DELTA VOLTAGE (%): This defines the maximum difference in voltage amplitude between the two sources. This value can be configured from 0.5 to 20% of nominal voltage, by default this is set to 2%.

DELTA FREQUENCY (Hz): This defines the maximum difference in frequency between the two sources. This setting can be configured from 0.1 to 0.5 Hz, by default this is set to 0.2 Hz.

DELTA ANGLE(°): This defines the maximum difference in phase angle between the two sources. This setting can be configured from 1 to 30°, by default this is set to 7°.

IPT TIMER (ms): This is the dwell time, the time necessary to stay in the correct voltage window before a transfer can be authorized. This value is configurable from 0 to 5 000ms and the default value is 500ms.


IN PHASE RESEARCH DELAY (s): This is the maximum time that is allowed to find a synchronism between both sources. This value is configurable from 0 to 1200s, by default this value is set at 180s.

FAIL TO SYNC OPT: This option will determine what action will be done if the “IN PHASE RESEARCH DELAY” has elapsed; Options are :

- **USER CHOICE:** a pop-up message will prompt users to decide between a normal transfer (without synchronism) or continue waiting for the correct window.
- **FORCE TRANSFER:** The transfer will take place at the end of the research timer even if both sources are not synchronized.

At any time, the synchronism status of the 2 sources can be checked on the dashboard 2.2 STATUS / SYNC:

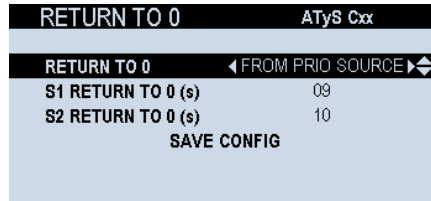
2.2 STATUS		ATyS C65		
08/14 13:10	S1	CONFIG	DELTA	S2
⚠ 1	247.7 V	2.0 %	0.0 %	247.9 V
◀ SYNC ▶	50.02 Hz	0.2 Hz	-0.02 Hz	50.00 Hz
		7 °	-0 °	

 Note: in-phase transfer is only available for I-II switches, selected technology must be ATyS FT, this function cannot be enabled when using other technologies.

14.2.3. RETURN TO 0

This function allows the switch to go to center-off position (only typologies with 0 or center-off position) when the current connected source is lost or not available (supply to the load is not good enough due to undervoltage, phase lost, overvoltage, frequency out of limits,...).

It can be used to avoid providing bad quality energy to the loads for extended periods of time and also to avoid the power ramp and transients that may occur before the source is stable to go to the loads, as some loads might be sensitive to these events.



The following options are available :


RETURN TO 0: Status of the function, user can choose when to activate the function :

- **DISABLED:** Function not used.
- **ALWAYS ENABLED:** Return to 0 will be active on both sources.
- **FROM PRIORITY SOURCE:** The switch will return to the 0 position only when the priority source is lost.
- **FROM SECONDARY SOURCE:** The switch will return to the 0 position only when the alternative source is lost.

S1 RETURN TO 0 (s): This defines the time that S1 is unavailable before the position 0 (center-off) order is sent (This timer will be taken into account only if is linked to the previous parameter). This can be configured from 0-10s, by default it is set to 2s.

S2 RETURN TO 0 (s): This defines the time that S2 is unavailable before the position 0 (center-off) order is sent (This timer will be taken into account only if is linked to the previous parameter). This can be configured from 0-10s, by default it is set to 10s.

 Note: If these timers are shorter than the FAILURE TIMER, then in case of source loss the RTSE will be sent to the 0 position before the corresponding source is considered as lost.

 Note: This function will only work if both the switch and the controller are still supplied (by the opposite source, an external source, UPS or others, independent from the emergency and normal source).

If the typology of the switch (technology) doesn't allow the function, a message will pop up as follows:



14.2.4. LOAD CTRL (C65 only)

The load control function is used to communicate to sensitive loads such as elevators, motors, compressors, or other loads, that the controller is ready to perform a transfer.

When ENABLED this function will activate an output “LOAD CTRL” (to program this output go to “PARAMETER”>”I/O”>”OUTPUTS”) before and after a transfer takes place. This output can be linked to the load controls so that they can be ready to be ready for the transfer.

This function has two parameters:

PRE TRANSFER TIMER(s): This is the time that the output will be active before the transfer takes place. This timer can be configured from 0s to 9999s, by default it is set to 5s.

POST TRANSFER TIMER(s): This is the time that the output will remain active after the transfer has finished. This timer can be configured from 0s to 9999s, by default it is set to 5s.



Note: These timer can delay the transfer function.

LOAD CTRL		ATyS Cxx
STATUS	◀ DISABLED ▶	
PRE TRANSFER TIMER (s)	0010	
POST TRANSFER TIMER (s)	0015	
SAVE CONFIG		

14.2.5. FORCED LOAD SHEDDING (C65 only)

This function is used to send orders to an external switch in order to shed non-essential loads when connected to the alternate source. This is useful to ensure critical loads remains on, when the secondary source can generate less power than the main source.

When ENABLED, this function will activate the output “FORCED SHEDDING”. It will be active for a set time before connecting to the alternate source; during connection on the alternate source; and for a set time after returning to the priority source. This output should be linked to the switch which will open the contact with the non-essential loads.

User can program the following timers:

PRE TRANSFER TIMER (s): The output “FORCED SHEDDING” will be active for the duration of this timer before transferring to the secondary source. This timer will also delay the transfer to the secondary source. This timer can be configured from 0s to 60s, by default it is set to 4s.

POST TRANSFER TIMER (s): After transferring to the priority source the output “FORCED SHEDDING” will remain active for the duration of this timer. This timer can be configured from 0s to 60s, by default it is set to 1s.

LOAD SHEDDING		ATyS Cxx
STATUS	◀ ENABLED ▶	
PRE TRANSFER TIMER (s)	10	
POST TRANSFER TIMER (s)	05	
SAVE CONFIG		

14.2.6. SMART LOAD SHEDDING (C65 only):

This function like the “FORCED LOAD SHEDDING” allows users to shed non-essential loads. The difference with the previous function is that loads will be shed based on the current level of power being used.

Users can define a level in kVA of threshold (FAIL) and hysteresis (RETURN), when the power on the load reaches the threshold, the output “SMART SHEDDING” will be active. When the kVA level falls under the kVA threshold the output will return to the inactive state.

The output “SMART SHEDDING” should be linked to a motorized switch able to disconnect non-essential loads.

LOAD SHEDDING		ATyS Cxx
S1 Auto load shed (kVA)	0000	↕
S2 Auto load shed (kVA)	0000	
S1 Auto load shed restore (kVA)	0000	
S2 Auto load shed restore (kVA)	0000	
SAVE CONFIG		


User can define the following values:

S1 Auto load shed (kVA): This is the threshold level for Source 1 (when the load is connected to source 1), past this value the “SMART SHEDDING” output will be active. This value can be configured from 0 to 6000kVA, by default it’s set to 0kVA.

S2 Auto load shed (kVA): This is the threshold level for Source 2 (when the load is connected to source 2), past this value the “SMART SHEDDING” output will be active. This value can be configured from 0 to 6000kVA, by default it’s set to 0kVA.

S1 Auto load shed restore (kVA): This is the return value (hysteresis), when the power values on a load connected to source 1 falls below this threshold if the output “SMART SHEDDING” is active it will become inactive. This value must be less than the value set in “S1 Auto load shed (kVA)”. This value can be configured from 0 to 5999kVA, by default it’s set to 0kVA.

S2 Auto load shed restore (kVA): This is the return value (hysteresis), when the power values on a load connected to source 2 falls below this threshold if the output “SMART SHEDDING” is active it will become inactive. This value must be less than the value set in “S2 Auto load shed (kVA)”. This value can be configured from 0 to 5999kVA, by default it’s set to 0kVA.

 Note: for Smart load shedding it is necessary to use current transformers with the product. See chapter "9.3. AC Dual Power Supply / Sensing", page 22.

14.2.7. Power up in auto

Enabling “power up in auto” will force the controller to start in automatic mode every time the controller recovers power (even if mode before the power failed was manual). Set to "DISABLED" as default.

14.2.8. DBT Timer in CTRL (C65 only)

In CONTROL mode (manually operating the switch through the controller buttons or via communications), this function will force the controller to take into account the “dead band timer” when transferring from one source to the other.

14.2.9. HVAC compressor (C65 only)

This is a specific function designed to preserve the lifetime of the compressors in HVAC or other sensitive loads. It allows users to set a period of time for which compressors must be disconnected when transferring to the priority source before they can be activated again allowing them to end their cycle properly.

This function is linked to the output “HVAC COMPRESSOR”, this output should be linked to a motorized switch that will connect or disconnect the compressors.

When transferring from the secondary source to the priority source this function will activate the output “HVAC COMPRESSOR” when the transfer sequence is initiated, and will de-activate this output at the end of the set timer, the timer starts counting when the opposite source is reached.

Users can set the following parameters:

STATUS: “ENABLED” or “DISABLED” (note that the output “HVAC COMPRESSOR” must be programmed to make use of the function). By default this is set to “DISABLED”.

HVAC COMPR. TIMER (s): This defines the time the compressors (the output “HVAC COMPRESSOR”) must be disconnected after re-transferring to the priority source. By default this timer is set to 20s it can be configured from 0 up to 3600s by increments of 1s.

14.2.10. Tripping actions

This specific function allows user to configure how the controller should react if one or either of the breakers used in the RTSE or as upstream protection of the RTSE sends a signal indicating that it has tripped.



Note: for these functions to be used 2 inputs must be configured to "TRIP BRK1" and "TRIP BRK2".

Settings in the menu are the following:

SWITCH: This setting defines which breaker the next settings will be applied to, breaker 1 and breaker 2 can use different settings. The options are “**BREAKER 1**” this setting is active when the input “TRIP BR1” is active, and “**BREAKER 2**” when the input “TRIP BRK2” is active.

TRIP ACTION: This setting will define how the controller will react when the inputs “TRIP BRK1” (if “SWITCH” is set to “BREAKER 1”) or if “TRIP BRK2” (if “SWITCH” is set to “BREAKER 2”) are active. The following options are available:

- **TOTAL INHIBITION:** Controller will be inhibited until the “TRIP BRK” input is deactivated. With this type of inhibit both manual and automatic operations will be blocked, and the generator start signal will also be blocked (the generator start signal will only be blocked as long as the controller is powered on).
- **TRIP = SOURCE LOST:** As long as the “TRIP BRK” input is active the corresponding source (Source 1 for BRK1, source 2 for BRK2) will be considered as not available, in this case the controller will continue to work in automatic mode.
- **PARTIAL INHIBITION:** Only the automatic mode is inhibited, manual mode, and the generator start signal remain functional.
- **INHIBITION:** The automatic mode is inhibited, in case of main source failure the generator start signal will not be activated (as long as the controller remains powered on). The manual mode remains accessible.
- By default this menu is set to “TOTAL INHIBIT”.

OP MODE AFTER TRIP: This option allows users to select which operating mode will be active once the “TRIP BRK” input is inactive. The following options are available :


- **PREVIOUS MODE:** The controller will return to the working mode active before the “TRIP BRK” input was received (automatic, manual, inhibited).
- **PARTIAL INHIBITION:** Only the automatic mode is inhibited, manual mode, and the generator start signal remain functional.
- **INHIBITION:** The automatic mode is inhibited, in case of main source failure the generator start signal will not be activated (as long as the controller remains powered on). The manual mode remains accessible.

By default this setting is set to “INHIBITED”.

CHRG. TIME STATUS: This setting allows users to configure a charging time before transferring, this is designed for RTSE based on circuit breakers that require time to charge spring or other energy accumulating mechanisms. When activated this setting will wait the specified time before sending out another position order (open or close) on the breaker. Users have the following options :

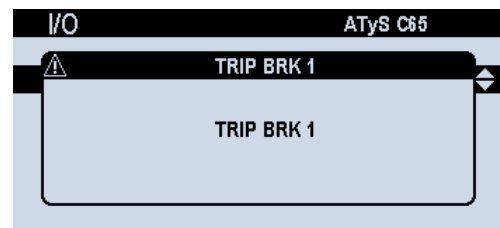
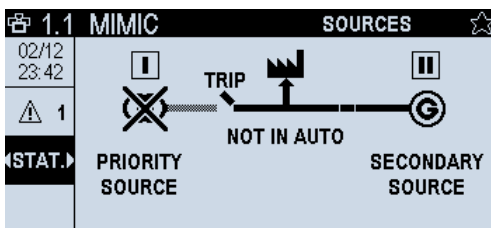
- **DISABLED:** Controller will not take into account charging times when transferring, transfer orders will be given as soon as the standard operation timers have elapsed.
- **WHEN OPEN:** After the breaker has opened (BREAKER 1 or BREAKER 2) the CHARGING TIME will be taken into account before sending another order to the same breaker.
- **WHEN CLOSED:** After the breaker has closed (BREAKER 1 or BREAKER 2) the CHARGING TIME will be taken into account before sending another order to the same breaker.


CHARGING TIME (s): Time it takes for the breaker to charge in order to be able to change position. If the breaker has a charged output to indicate that the breaker is charged the controller input “BREAKER 1/2 CHARGED” can be configured, when this input is activated the charging time will be bypassed.

 Note: Configuring a charging time may delay the transfer sequence.

TRIPPING ACTION		ATyS C65
SWITCH		◀ BREAKER 1 ▶
TRIPPING ACTION	TOTAL INHIBITION	
OP MODE AFTER TRIP	INHIBITION	
CHRG. TIME STATUS	DISABLED	
CHARGING TIME (s)	00.0	
...		

When a tripping action is detected (“TRIP BRK1” or “TRIP BRK2” is active) the controller will inform the user with a pop-up, the information that the breaker is tripped. This information will also be visible on the main synoptic.



 **WARNING !** When using a CB type RTSE, if either of the breakers trip without using the “TRIP BRK1” or “TRIP BRK2” inputs this will be considered as an “UNEXPECTED TRANSFER” fault. To avoid such faults it is therefore recommended to use the above function and inputs.

14.2.11. LOAD ADDING DELAY

The load adding delay function allows user to gradually add separate loads (up to 7 for C65, up to 3 for C55) when transferring between sources.

This function can be used to manage and control the inrush-current in the installation after a transfer by gradually adding loads.


These timers available in "SPECIFIC FUNCTION" > "LOAD ADDING" are linked to outputs "ON DELAY 1-7" (variable from 1 - 7 corresponding to timer number). To program these outputs go to "PARAMETERS" > "I/O" > "OUTPUTS".

The settings in the menu are as follow:

STATUS : to Select when the load adding function is applied, option are :

- DISABLED (function not active)
- TO SOURCE 2 (function will be active only when transferring to source 2)
- TO SOURCE 1 (function will be active only when transferring to source 1)
- ALWAYS ENABLED (function will be active in all cases of transfer)

PRE TRANSFER TIMER (s): this allows user to configure the time for which all loads should be removed before the transfer. During this time all "ON DELAY" outputs will be active. This timer is only counted when transferring between two available sources; in case of loss of source, this timer will not be counted.

 This timer will delay the transfer by the amount set.

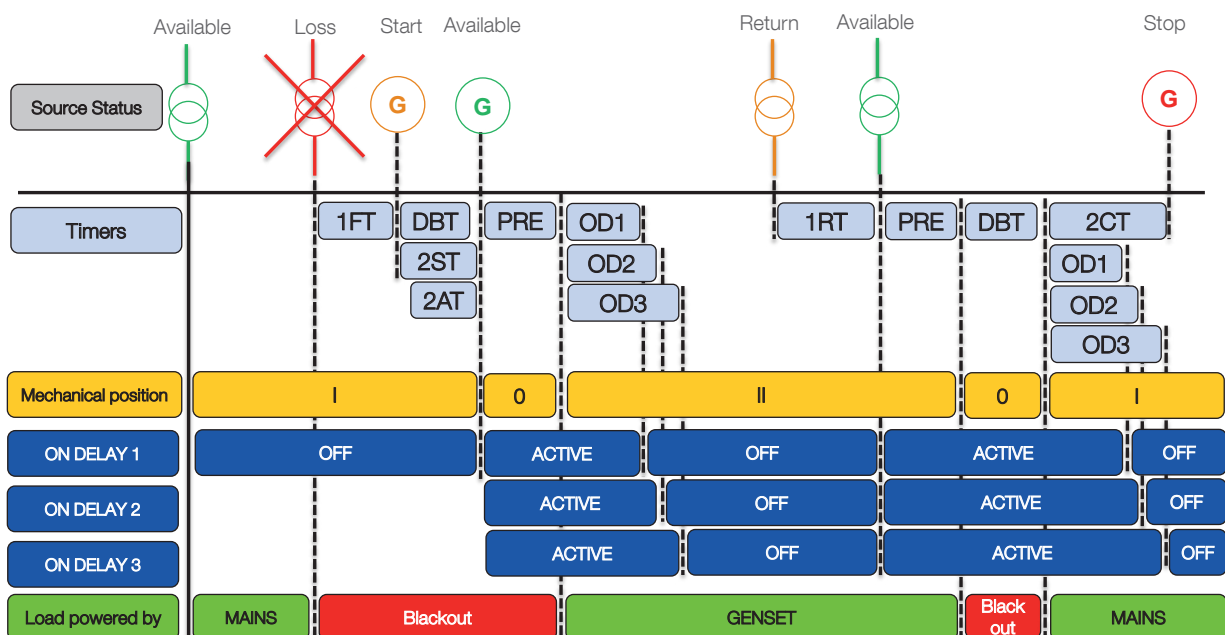
ON DELAY 1 TIMER (s): Time for which the output "ON DELAY 1" is active after a transfer (default 20s, max 3600s)

ON DELAY 2 TIMER (s): Time for which the output "ON DELAY 2" is active after a transfer (default 40s, max 3600s)

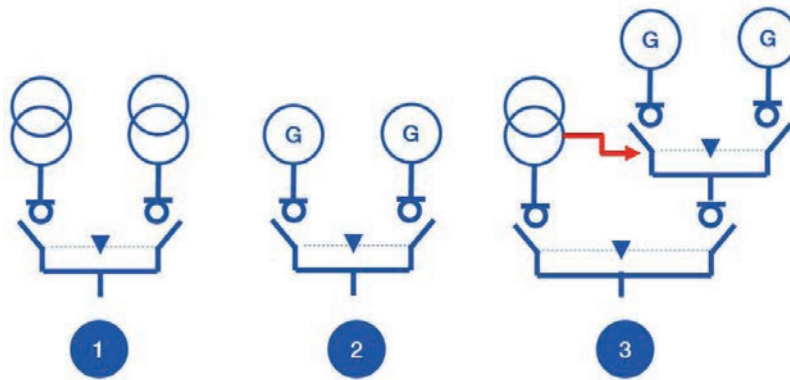
ON DELAY 3 TIMER (s): Time for which the output "ON DELAY 3" is active after a transfer (default 60s, max 3600s)

LOAD ADDING		ATyS C65
STATUS	◀ TO SOURCE 1 ONLY ▶	
PRE TRANSFER TIMER (s)	10	
ON DELAY 1 TIMER (s)	0020	
ON DELAY 2 TIMER (s)	0040	
ON DELAY 3 TIMER (s)	0060	
...		

The following chronograph details the load adding function:



14.2.12. CYCLER



This function allows users in Main-Main (1) and Gen-Gen (2) to cycle the load periodically on each source.

Cycle functions are generally used to divide equally the use on the transformers or generators upstream or to change the sources to minimize electricity costs using night/day billing.

To activate this function controller must be in Main-Main Or Gen-Gen application.

CYCLER		ATyS C65
STATUS	◀ DISABLED ▶	
TRANSFER METHOD	AUTOMATIC	
S1 CYCLER DURATION (h)	0001	
S2 CYCLER DURATION (h)	0001	
TRANSFER TIME	00:00	
...		

Once the function is enabled users will be able to configure the transfer validation method (automatic or transfer at a specific time) the time of transfer (if specific time has been selected in transfer method) as well as the duration of a cycle.

In case of a loss of source during a cycle, the controller will switch to the available source and stay there until the lost source becomes available and the cycle is over.

The settings in “BACKUP GEN GEN START MODE” are used in GEN-GEN mode only, when the input “BACKUP GENGEN” is active. This input usually comes from another ATS system or any other device indicating that the primary source is lost (schematic 3 on the image above), in this case the controller is used to cycle or manage two backup generators which are active when the priority source is lost.

To activate the backup gen-gen mode the controller must be in Gen-gen application, with an input configured to “BACKUP GENGEN”, in backup mode the 24 V.d.c auxiliary supply is mandatory to keep the genset start signals inactive (if the controller is not powered the outputs for generator start (5 & 6) will activate).

When an input is programmed to “BACKUP GENGEN, the controller will wait in the 0 position until the input is active. When the input is active the controller will go to the source which is set as the current priority source according to the configuration below. When the input is disabled again the controller will return to the 0 position.

This menu contains the following settings :

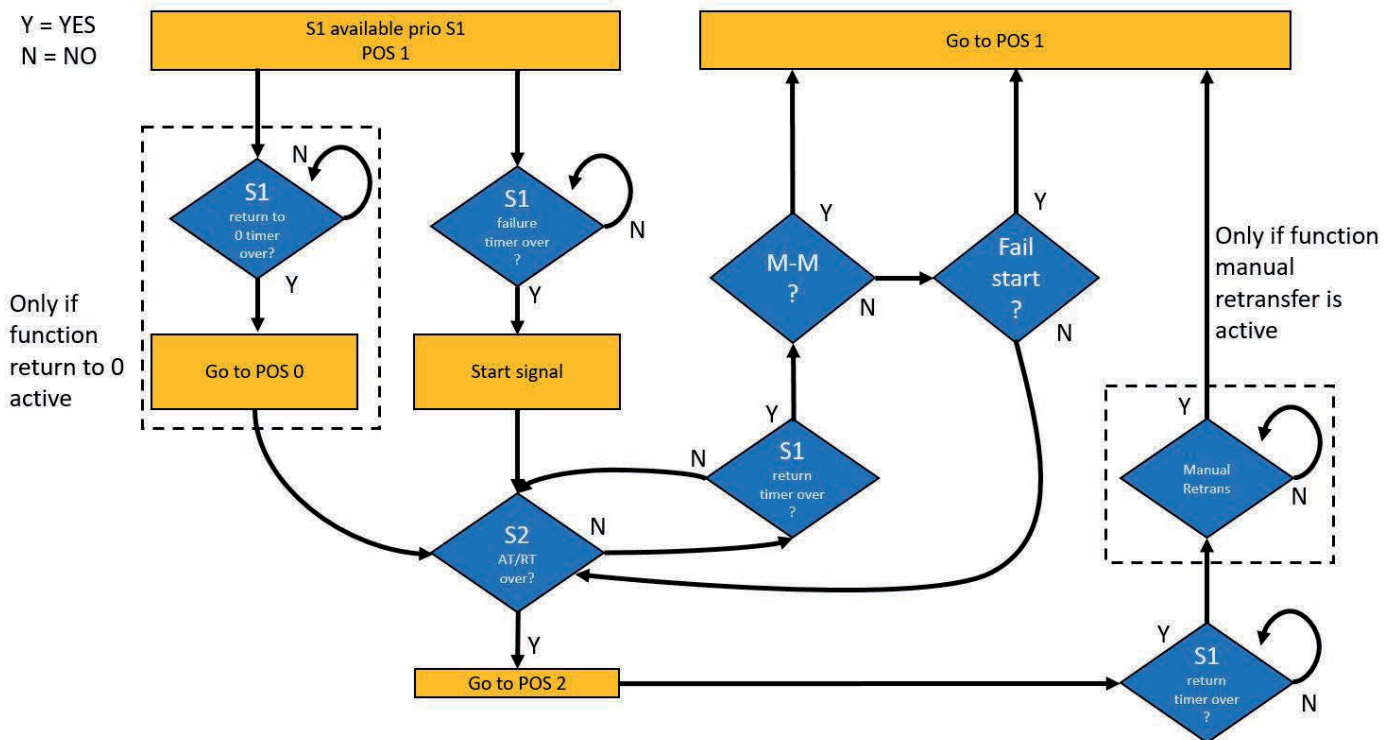
Setting	Option	Description
STATUS	ENABLED, DISABLED	Option to activate or not the cycling function, application must be GEN-GEN or MAIN-MAIN to enable.
TRANSFER METHOD	AUTOMATIC, SPECIFIC TIME	If AUTOMATIC is selected transfer will take place as soon as the set cycle duration is over. If specific time is selected transfer will take place only at the time configured if the cycler duration is completed.
S1 CYCLER DURATION (h)	0-9999	Duration of a cycle for source 1.
S2 CYCLER DURATION (h)	0-9999	Duration of a cycle for source 2.
TRANSFER TIME	00:00 - 23:59	Time of the day at which the transfer will take place (only if SPECIFIC TME has been set in TRANSFER METHOD).
BACKUP GEN GEN START MODE (active only if an input is programmed to "BACKUP GENGEN")		
PRIO SELECTION	PRIORITY SOURCE, FULL CYCLE, LEAST USED, ALTERNATE	"This setting is only active when the BACKUP GEN-GEN input has been programmed. It will determine which genset to start first in backup gen-gen mode: - PRIORITY SOURCE: genset on the source programmed as priority source. - FULL CYCLE : If cycler is ENABLED, the genset which has not completed its full cycle duration will start. - LEAST USED : will start the genset with the least run time. - ALTERNATE : will start the genset which was NOT the last to be active".

14.2.13. COMMIT

The commit function is used to force the transfer to the secondary source after loss of the priority source in the eventuality that source 1 returns before the transfer has been done, this function can be paired with the "MANUAL RETRANSFER" function allowing users to stay on source 2 in order to return only after maintenance has been verified on the source 1.

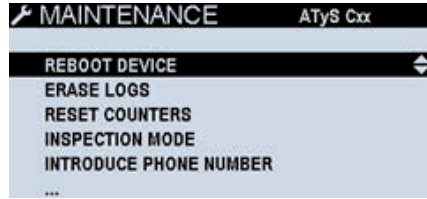
By default this function is set to DISABLED.

See graphic below for COMMIT function logic:

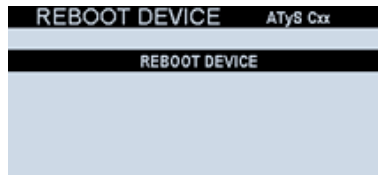


14.3. Maintenance Menu

The maintenance allows users to perform service-reserved actions on the controller. Users will require the maintenance password (default 1010) in order to access this menu.



REBOOT DEVICE: Pressing the “ok” button when this menu is highlighted will re-start the controller (turn off and on).The controller will request confirmation before starting the reboot:



No data will be erased during a reboot.

MAX OPERATIONS: This allows users to define the maximum number of operations for a set period of time. Users can modify the number of operations and the time period. This information should match the performances of the associated RTSE device and the installation.

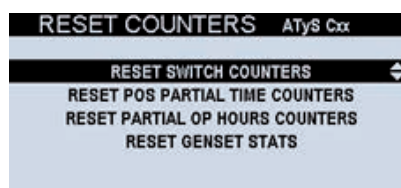
- **MAX OPERATIONS:** maximum number of operations allowed in the set period of time. By default this value is set to 10 this value can be configured from 1 to 60.
- **Delay (min):** The period of time for which the maximum number of operations apply. By default this is set to 1 min can be configured up to 5 min (by steps of 1 min).

ERASE LOGS: This menu allows users to erase the event log or the alarm log. A second confirmation will be required.



RESET COUNTERS: This allows users to reset the counters to 0 the following counters, before erasing the counters the controller will ask for confirmation. The following counters can be reset:

- **RESET SWITCH COUNTERS:** Counter for the number of operation on the switch / breakers.
- **RESET POS PARTIAL TIME COUNTERS:** Resets the counter for the partial time on position.
- **RESET PARTIAL OP HOURS COUNTERS:** Resets the counter for the partial operating time in hours.
- **RESET GENSET 1 STATS:** Resets all statistics for source 1 if source 1 is a generator.
- **RESET GENSET 2 STATS:** Resets all statistics for source 2 if source 2 is a generator.
- **RESET BYPASS COUNTERS:** Resets the number time the bypass was used.
- **RESET BREAKER 1 COUNTERS:** Resets the number of trips on the breaker 1.
- **RESET BREAKER 2 COUNTERS:** Resets the number of trips on the breaker 2.

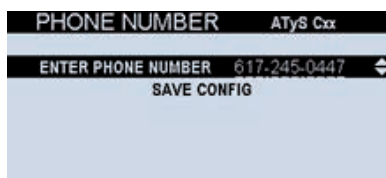


INSPECTION DATE: Allows users to enter the last inspection date & time.

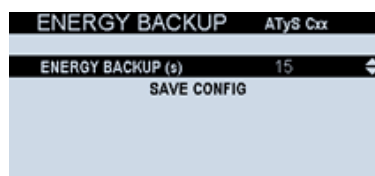
This should be entered after servicing the product, this information can be consulted on the main menu / ABOUT section by all the users.



INTRODUCE PHONE NUMBER: Allows users to enter a phone number this information will be shown on the ABOUT screen as the maintenance phone number, this can be used to enter the maintenance or emergency contact for the electrical installation.



ENERGY BACKUP (only on C65): The energy backup time can be set from 0 to 30 seconds. By default it is set to 15 seconds, this defines the time that the C65 can stay powered on after it is charged when both sources and auxiliary power is lost. The product is designed to guarantee 15s of backup power for 8 years.



14.4. Configuration through EasyConfig System software

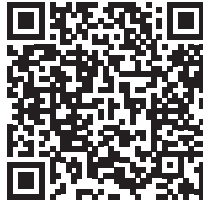
EasyConfig System is a software tool that permits to fully configure the ATyS C55/C65 and other Socomec products with a very intuitive interface and that permits also preparing configurations when not connected to the product, save preset configurations and loading them to the controller(s) when being in front of the product. This is very useful when many controllers have to be configured with (almost) the same settings.

How to configure the main parameters by using Easyconfig System software:

Connect via communications or USB to the controller, open the Easyconfig software and follow the different screens to set all the parameters.

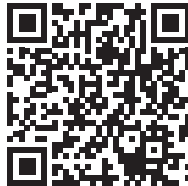
You can download EasyConfig for free from the following link:

https://www.socomec.com/easy-config-software_en.html



You can download the Instruction Manual on the following link:

https://www.socomec.com/operating-instructions_en.html



15. MAINTENANCE

15.1. About the controller

All the main information about the controller can be directly found inside the ABOUT menu, accessible through the main menu of the controller:

i ABOUT		ATyS C65
PRODUCT TYPE	ATYS C65	
LAST INSPECTION	01/01/00 00:00	
SERIAL NUMBER	19102010011R6000066*	
FIRMWARE VERSION	1.0	
COMM ADDR	6	
MAINTENANCE TEL	+33 000 000 000	

PRODUCT TYPE: Model of the product (ATyS C55 / ATyS C65)

LAST INSPECTION: This date is modified in the MAINTENANCE MENU / INSPECTION MODE by the service team by adding the new INSPECTION DATE after servicing the product for the first time. If there is no modification of this parameter, by default it will show "01/01/00 00:00".



SERIAL NUMBER: Serial number of the product. The number can also be found on the top marking of the product as "N° S/N" followed by a number. This number might be asked by Socomec service team whenever technical support is required.

FIRMWARE VERSION: Version of the controller firmware. This will only change in case of a product firmware upgrade. New firmware versions can be found on the Socomec website.

COMMUNICATION ADDRESS: Modbus RTU communication address for the controller. It can be set through the wizard or inside the COMMUNICATION parameters (see chapter 11.1.6).

MAINTENANCE TEL: This value is configurable inside the MAINTENANCE menu / INTRODUCE PHONE NUMBER option to integrate inside the ABOUT menu a phone number by the user related to the maintenance of the product (for example, Socomec's contact number or the maintenance manager in contact with the service team number).

Product references:


Part Number	Image	Description
1600 0055		ATyS C55 ATS Controller with mid-level functionalities
1600 0065		ATyS C65 ATS Controller with advanced functionalities

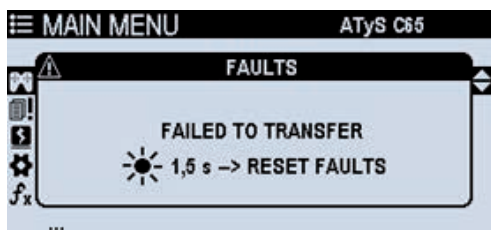
15.2. Faults management and Troubleshooting

There are several events that can cause a Fault on the controller. Unlike the alarms, the faults are not user-selectable, they will always be considered and actions will take place as follows:

Fault	Description (cause)	Actions	Acknowledge / Cleared	Fault log	Pop-up	Fault LED	Output
Unexpected Transfer	The controller receives a feedback/return from the switch without sending any order (auto or manu). Also if loss feedback of current position.	Mode stays the same.	Can also be cleared through display or through RST - Reset Fault input.	Yes	Yes, "Unexpected Transfer"	BLINKS (priority)	FLT - Fault active
Failed to Transfer	Position not reached after an order sent by controller (auto or manu) or loss of feedback of the new source after sending a transfer command.	Mode stays the same. Controller will start retries.	Automatically cleared if the requested position is reached or cleared through display or through RST - Reset Fault input.	Yes	Yes, "Failed to transfer"	BLINKS (priority)	FLT - Fault active
Max operation per minutes reached	If the controller performs 10 operations in less than 1 minute (by default) (automatic or controlled/manual)	Mode stays the same. During a timer, the controller will not do or allow any operation.	Automatic after the 1 minute (configurable through software)(value is dynamic).	Yes	Yes, "Max operations per minutes reached"	FIXED (non-critical)	FLT - Fault active
Max password attempts reached	User tries to enter a profile password more than X times set in the maintenance menu (by default 10 attempts)	Mode stays the same. Can't enter any password during X time set in the maintenance menu (by default 2 minutes)	Automatic after the set timeout (maintenance mode).	Yes	Yes, "Max number of tries reached, please wait: X s"	FIXED (non-critical)	FLT - Fault active
Genset Failstart	Controller tries to start a genset (as configured) and after the genset start delay, the genset doesn't start (controller doesn't see the source on)	Mode stays the same. Genset start relay remains active unless other source is available.	Automatic if genset starts or if source is set as Main/Utility.	Yes	Yes, "Engine fail to start"	BLINKS (priority)	FLT - Fault active
External fault	If an input is selected as FTE - External Fault and becomes active	Switch goes to position 0 /center-off directly without timers and the mode is set to Partial Inhibit (genset starts if needed).	Input mustn't be active and reset by user is requested (by RST- Reset Fault input or through display.	Yes	Yes, "External fault"	BLINKS (priority)	FLT - Fault active
Unknown position	Loss of switch position input while no order was given or no position feedback after the start of a transfer	Mode stays the same	Auto-cleared if any position becomes active	Yes	Yes, "Unknown position"	BLINKS (Priority)	FLT - Fault active

For faults with pop-up, the pop-up will be cleared when fault will be cleared or by pressing any button on the front face of the controller. The total number of faults logged on the controller is dynamic, as the total number of "faults + alarms" is 100 (not including the events, which are 3000 on C65 and 300 on C55) and uses a FIFO ordering.

To clear Faults through the display, it is possible inside the LOG/FAULTS menu with the option “PRESS OK TO CLEAR FAULTS”, using the configurator profile password. There is also a shortcut by holding the  button for 1.5s and validating on the pop-up that appears. If the fault is still active, it will be inside the log “in progress” but the fault LED and output will be off. If the faults are not active any more, they will be logged in the “history” log. When a fault is active a pop-up will automatically appear to inform users of this shortcut.



15.3. Maintenance of the controller

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

The ATyS C55/C65 controller is conceived to be a maintenance free, fit and forget unit. However, it is recommended to perform visual inspections periodically on the device, checking the connections, that the display screen is functional and the LED using the lamp test button and ensuring the correct functioning with the switching device and with any possible associated software.

As a best practice, perform at least one full cycle with your equipment (solution with the controller + RTSE) every year.

There are no serviceable parts in the controller. In case of a malfunction, don't hesitate to contact Socomec and/or return the product for a replacement in case warranty is still valid. During conversations with Socomec, you might be asked for the model, firmware version or the serial number of the unit. This information can be found inside the ABOUT menu. If the controller screen is not functional, then use the labels and QR code on the back side of the controller to inform our service team.

RTC Battery replacement


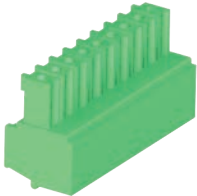
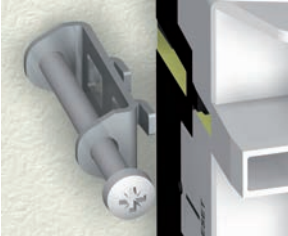

Depending on the working and environmental conditions the battery will need to be replaced when the controller displays a message "RTC Low Battery". Should the time & date at power up be incorrect it will be time to replace the battery.

To do so:

1. Disconnect all terminals from the controller
2. Release the cover on the side of the controller containing the battery
3. Remove the old battery with an appropriate plastic tool
4. Place the new battery on the correct side (polarity) in the holder from the pcb and push with the finger until it reaches the position of the old one.
5. Put back the plastic cover on the side of the controller and pressure slightly until it perfectly fits.
6. Connect back the terminals to the controller
7. Power up and adjust time and date

For battery replacement, use a BR2032 coin-type cell.

15.4. Spare parts

Part Number	Image	Description
1609 0001		IP65 silicon sealing gasket for door mounting in outdoors
1609 0002		Connector kit (including ATyS C55/65 but also ATyS FT/DT connectors that can be thrown away when using other technologies)
1609 0004		Controller mounting screws / Fixing clips (for door mounting) (kit of 4 units)
1609 0005		Controller mounting feet (for back plate mounting) (kit of 4 units)

15.5. Accessories and expansion modules

Part Number	Image	Description
4829 0140		DIRIS Digiware IO-10 for ATyS C65 4 Digital inputs + 2 Digital outputs expansion module A maximum of 6 modules can be connected to the controller
4829 0222		DIRIS Digiware M-70 communication gateway for Ethernet & Webserver
4829 0202		DIRIS Digiware D-70 communication gateway for Ethernet & Webserver and multi- product display
Consult Socomec		Current Transformers for ATyS C65

For the connection between the controller and the accessories and between modules, a RJ45 Digiware cable is needed. There are different sizes available:

Length (m)	Quantity	Reference
0.1	1	4829 0181
0.2	1	4829 0188
0.5	1	4829 0182
1	1	4829 0183
2	1	4829 0184
5	1	4829 0186
10	1	4829 0187
50 m reel + 100 connectors		4829 0185

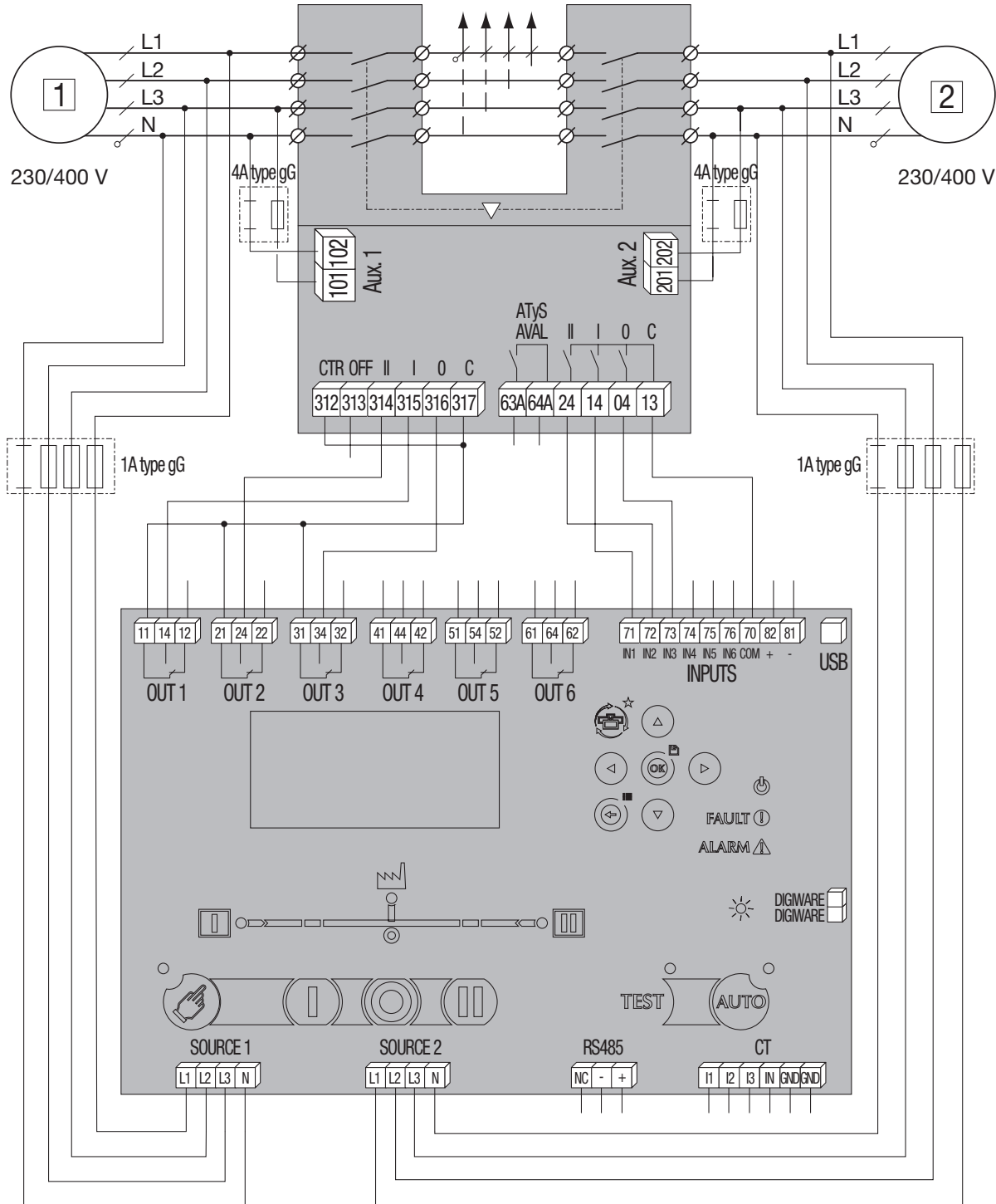


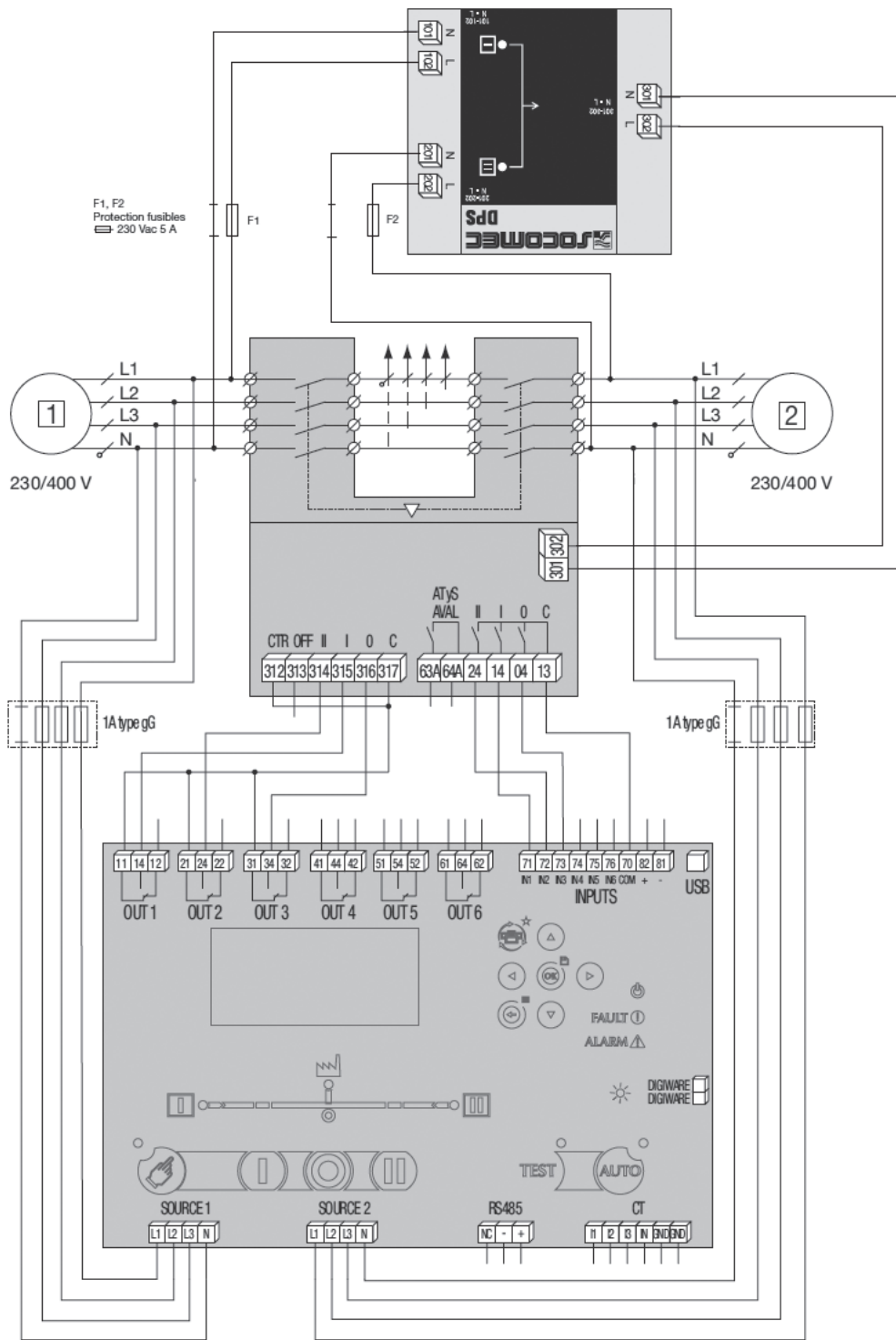
16. ANNEXES

Annex 16 - 1. Wiring Diagrams

The below diagrams detail the connections of the ATyS C55/C65 with ATyS Switches as well as the generic wiring diagram for circuit breakers.

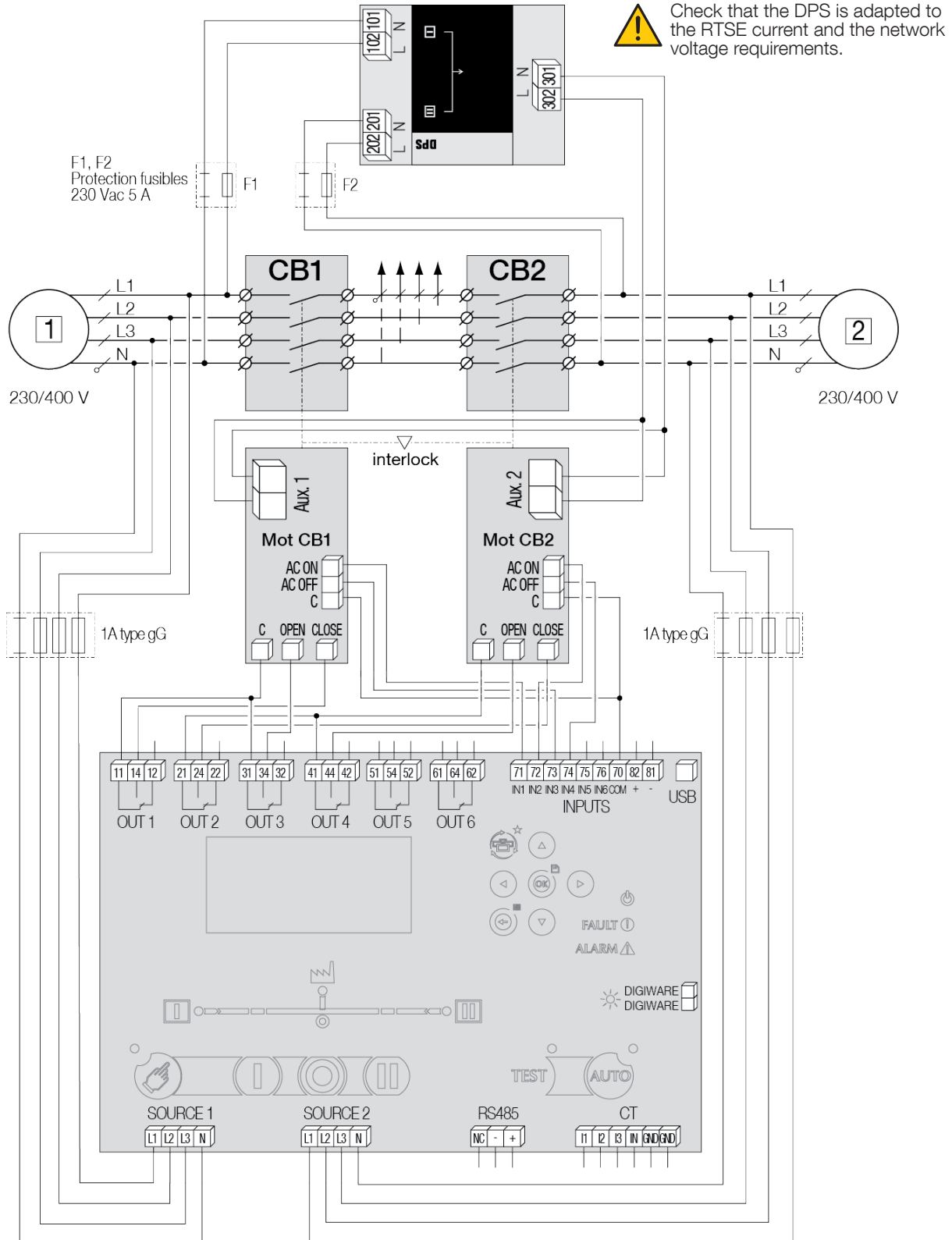
16.1.1. Connection diagram with ATYS d





16.1.2. Connection diagram with Circuit Breakers

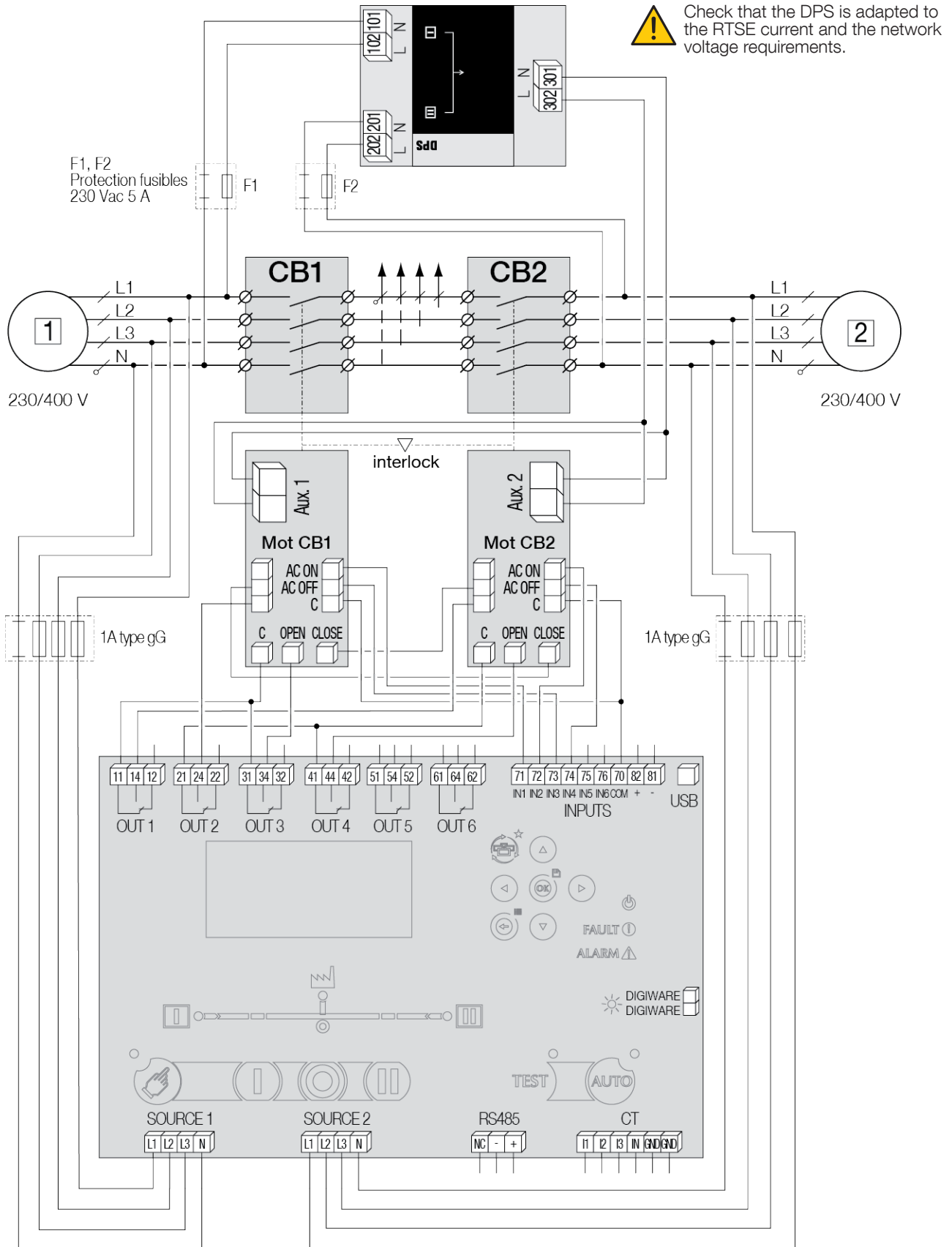
16.1.2.1. With mechanical interlock



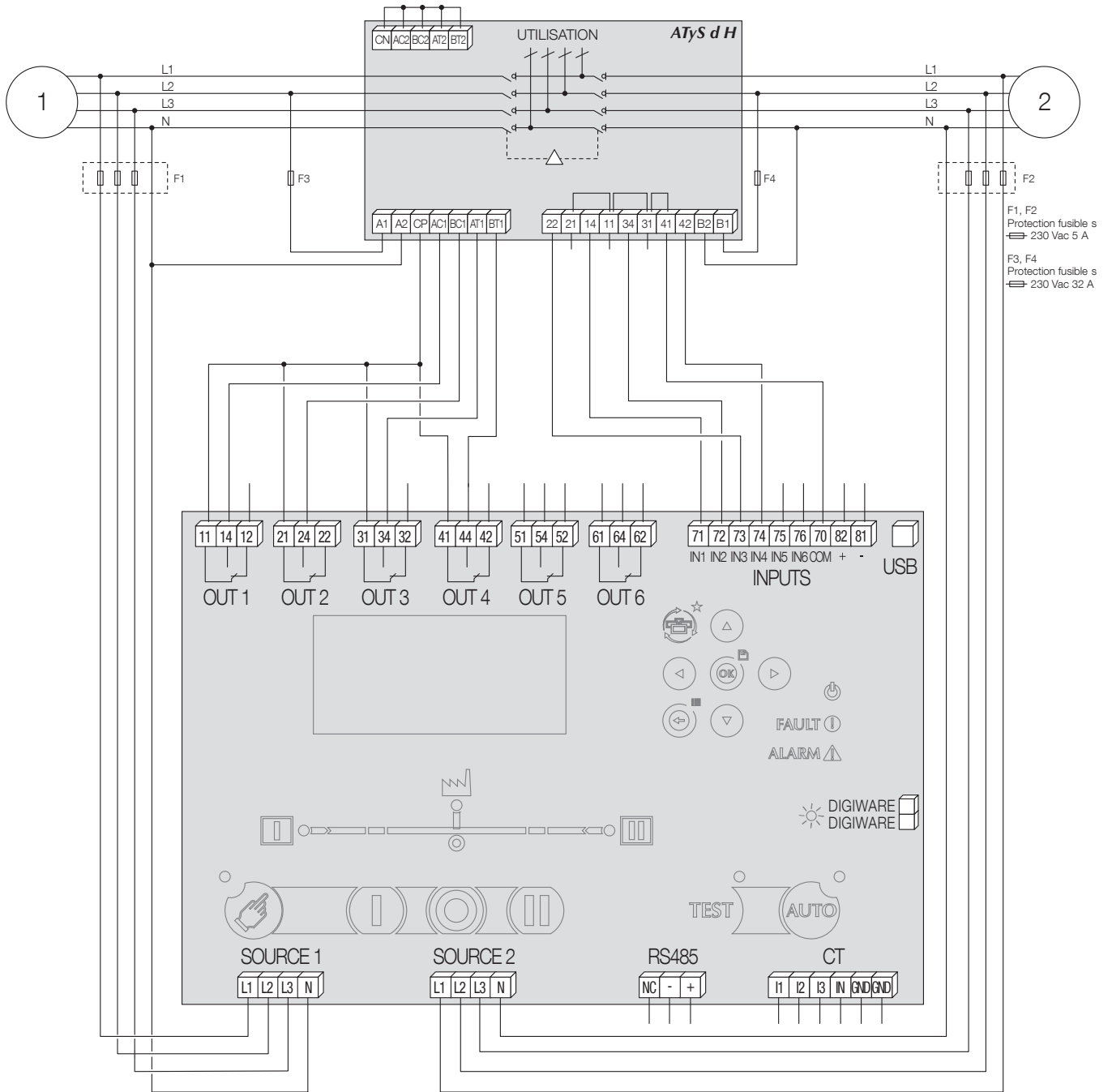
- Please consider Inputs and Outputs cabling are related to the configuration parameters. This diagram corresponds to the ATS controller presets for the Circuit Breaker technology. The presets for each type on technology can be found in chapter "9.6.1. Command circuits", page 25.

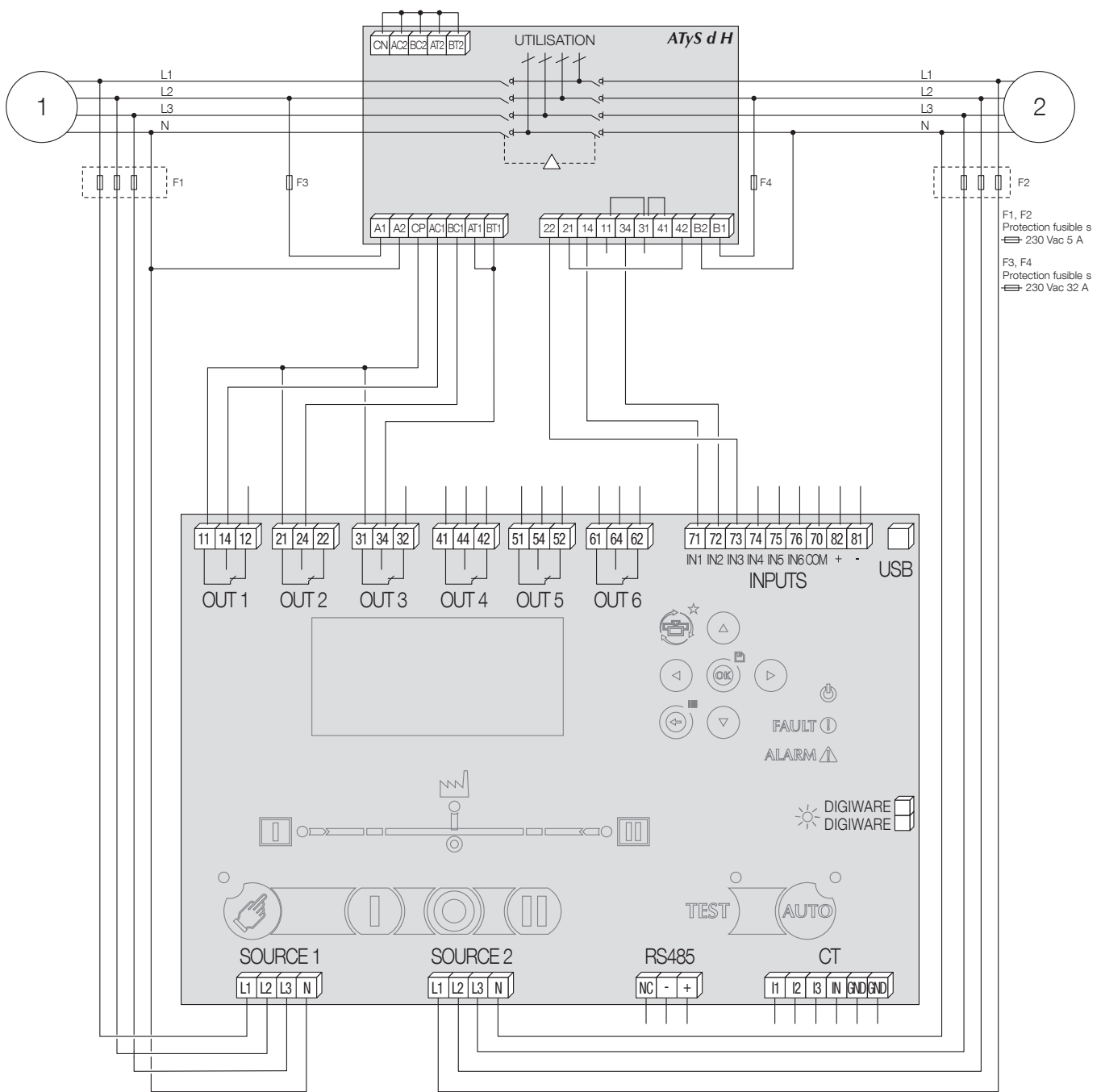
CAUTION ! Due to the numerous types of RTSE type CB (circuit breakers) available on the market, compatibility and specific wiring designs must be carried out and qualified by others.

16.1.2.2. With electrical interlock

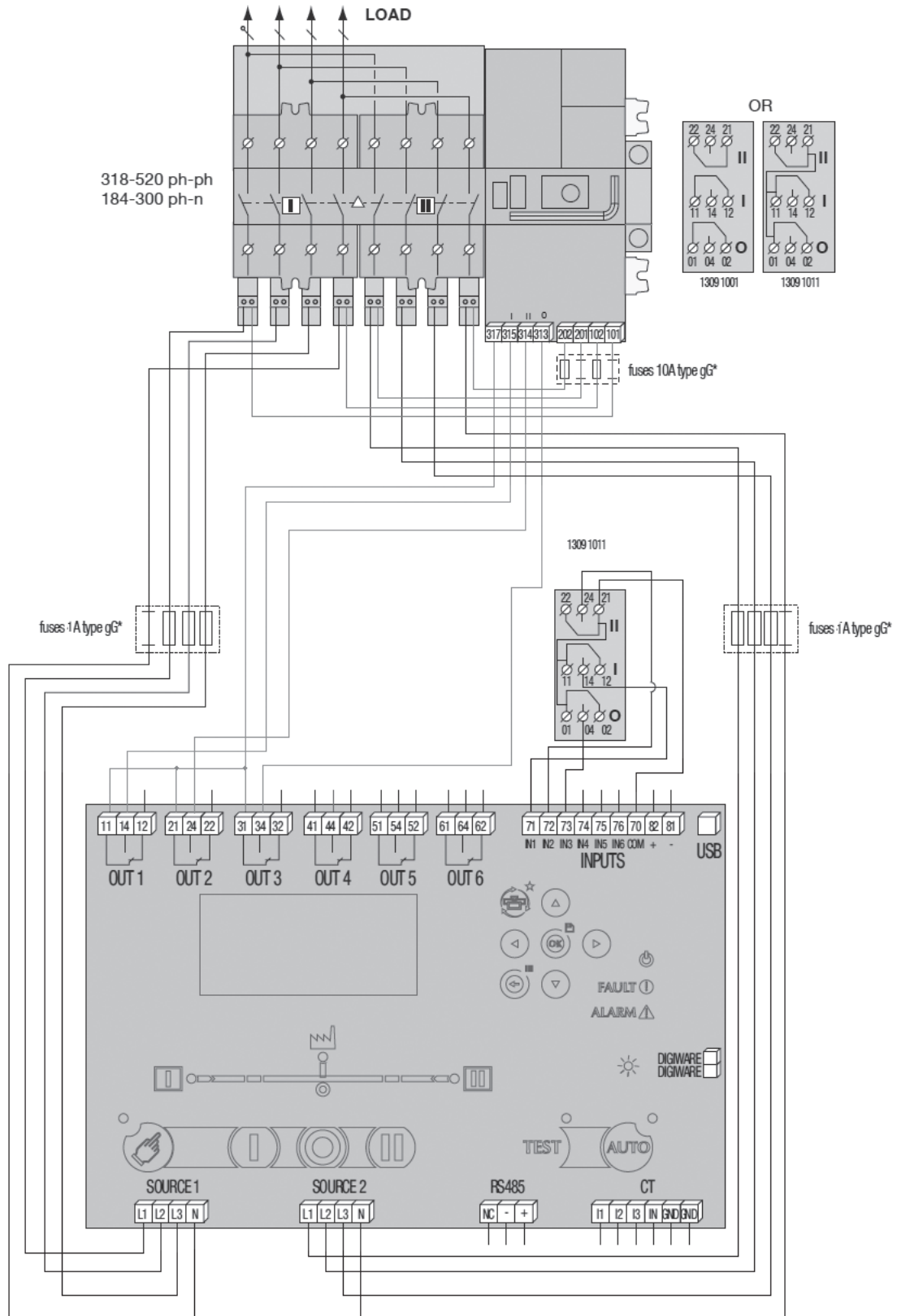


16.1.3. Connection diagram with ATyS dH





16.1.4. Connection diagram with ATyS dM



Annex 16 - 2. Timers list

For more details on timer use see annexe "Annex 16 - 5. Operating sequences", page 110.

 Note: please note that the number of timers available on C55 and C65 are not the same.

These options can be configured in the Parameters / Timers menu:


OPERATION TIMERS

Trigram (ECS)	Timer	Description	Selectable range	By default
1FT	S1 FAILURE TIMER (s)	Source 1 Failure Timer: When source 1 is considered lost, 1FT is started. If source 1 is considered restored before the end of 1FT, the changeover sequence will not be engaged.	0-60sec	3sec
1RT	S1 RETURN TIMER (s)	Source 1 Return Timer: When source 1 returns, 1RT is started. At the end of 1RT, source 1 is then considered to be present. Should source 1 disappear before the end of 1RT, the changeover will not be carried out. In case the alternate source disappears during 1RT, the DYNAMIC TIMER (default 3s) delay will override the 1RT time setting value. ⚠ NOTE: this timer is only available if source 1 is a Utility, it is replaced by AVAILABILITY timer 1AT if source is a genset.	0-3600sec	180sec
2FT	S2 FAILURE TIMER (s)	Source 2 Failure Timer: When source 2 is lost, 2FT is started. If source 2 is restored before the end of 2FT, the changeover sequence is not started.	0-60sec	3sec
2RT	S2 RETURN TIMER (s)	Source 2 Return Timer: When source 2 returns, 2RT is started. At the end of 2RT, source 2 is then considered to be present. Should source 2 disappear before the end of 2RT, the changeover will not be carried out. ⚠ NOTE: this timer is only available if source 2 is a Utility, it is replaced by AVAILABILITY timer 2AT if source is a genset.	0-3600sec	5sec
1AT / 2AT	S2/S1 AVAILABILITY TIMER (s)	Source (1/2) Available Timer: Stabilisation time delay for voltage and frequency on Source (1/2) . 1/2AT starts as soon as the source voltage is above the hysteresis value. Transfer to Source 1/2 may be done at the end of this time delay. ⚠ NOTE: this timer is only available if source is a genset, it is replaced by RETURN timer 1RT / 2RT if source is a utility.	0-3600sec	180sec
DBT1/ DBT2 ⁽¹⁾	S1 or S2 DEAD BAND TIMER (s)	Dead Band Timer: This is the minimum electric dead time (blackout time) to respect when the source is lost or when transferring between source. This defines the minimum load supply downtime so as to allow residual voltages that may be generated by the load (such as motors) to decay.	0-20sec	3sec

(1) For the C55 there is only 1 DBT dead band timer, which will be applied for both sources.

GENSET TIMERS

Trigram (ECS)	Timer	Description	Selectable range	By default
1CT / 2CT	S1/S2 GENSET COOLDOWN (s)	Source 1 or 2 (Genset) Cool Down Timer: Following a return to primary source sequence, the genset on backup source is kept running for the 1CT/2CT timer duration. This is intended to cool down the genset (off load) before switching off.	0-600sec	180sec
1ST / 2ST	S1/2 START TIMEOUT (s)	Source 1 or 2 Genset start timeout delay: This time delay is started as soon as the genset start signal is given. Should source 1 or 2 not become available after timer 1ST/2ST has elapsed a "GENSET FAIL TO START" error message is displayed on the product LCD.	0-600sec	30sec
EET1	GENSET TIMEOUT S1 (h)	S1 maximum reset timer - Battery Charger maximum Off Timer. This timer defines the minimum time that the Genset must be switched off to activate the output EES (Battery Charger Signal). This doesn't involve any transfer, it's just to charge the genset batteries.	0-1100h	168h
EET2	GENSET TIMEOUT S2 (h)	S2 maximum reset timer - Battery Charger maximum Off Timer. This timer defines the minimum time that the Genset must be switched off to activate the output EES (Battery Charger Signal). This doesn't involve any transfer, it's just to charge the genset batteries.	0-1100h	168h
EDT1	BATTERY CHARGE DURATION S1 (s)	S1 Run timer (for batt charger). The output EES will be deactivated after this duration and battery charge will stop.	0-9999s	1800s
EDT2	BATTERY CHARGE DURATION S2 (s)	S2 Run timer (for batt charger). The output EES will be deactivated after this duration and battery charge will stop.	0-9999s	1800s

 Note: in order to ensure a good operation, make sure that 1ST and 2ST timers are longer than 1AT and 2AT. Otherwise there will be a fault appearing on the screen saying "Fail to start". This is due to the fact that the genset will always take longer to become available.

TEST ON LOAD TIMERS

Trigram (ECS)	Timer	Description	Selectable range	By default
TOT (lim/unlim)	TEST ON LOAD	Test on load limited/unlimited	-	UNLIMITED
TOT	TEST ON LOAD (s) - TIME / DURATION	Test On Load Duration Timer: This timer defines the On Load Test time. It starts counting when the Test is initiated. The return to the main supply takes place at the end of TOT. Note: TOT is configurable when TOT (LIM/UNL) above is set to LIM.	0-21600s	10s
T3T	TEST ON LOAD END (s)	Test On Load – End Delay Timer: This time delay starts counting at the end of TOT Timer. The return to the main supply takes place at the end of T3T time.	0-1800s	5s
E1T	EXTERNAL TEST ON LOAD PRE / BEFORE	External Order Test ON Load - Start Delay Timer. This time delay starts at the same time as the External On Load (EOL) order is received. At the end of this time delay, the Genset start order is activated. The load will be transferred to the Genset supply.	0-1800s	5s
E2T (lim/unlim)	EXTERNAL TEST ON LOAD	External Test on load limited/unlimited	-	UNLIMITED
E2T	EXTERNAL TEST ON LOAD (s) - TIME / DURATION	External Order Test On Load - Duration Timer: This timer starts counting when the Test is initiated. The return to the main supply may initiate at the end of E2T time. Note: E2T duration timer is configurable in the timers menu when at least 1 input is configured as EOL and with E2T (UNL/LIM) set to UNL.	0-21600s	10s
E3T	EXTERNAL TEST ON LOAD POST / AFTER	External Order Test On Load – End Delay Timer: This time delay starts counting at the end of E2T Timer. The return to the main supply takes place at the end of E3T time.	0-1800	5s

TEST OFF LOAD TIMERS

Trigram (ECS)	Timer	Description	Selectable range	By default
TFT (lim/unlim)	TEST OFF LOAD	Test off load limited/unlimited	-	UNLIMITED
TFT	TEST OFF LOAD (s) - TIME / DURATION	Test Off Load - Duration Timer: This time delay defines the Off Load Test time. It starts counting when the Test is initiated. Note: TFT is configurable in the timers menu when TFT (LIM/UNL) above is set to LIM.	0-21600s	600s
E5T	EXT TEST OFF LOAD PRE / BEFORE (s)	External Order Test Off Load - Start Delay Timer. This time delay starts at the same time as the External off Load Test (EOF) order is received. At the end of this time delay, the Genset start order is activated. The load will not be transferred to the Genset supply.	0-1800s	5s
E6T (lim/unlim)	EXT TEST OFF LOAD	External Test off load limited/unlimited	-	UNLIMITED
E6T	EXT TEST OFF LOAD (s) - TIME / DURATION	External Order Test Off Load - Duration Timer: This timer starts counting when the Test is initiated.	0-21600s	600s
E7T	EXT TEST OFF LOAD POST / AFTER (s)	External Order Test On Load – End Delay Timer: This time delay starts counting at the end of E6T Timer. The Genset signal will switch at the end E7T.	0-1800s	5s

SPECIFIC FUNCTIONS TIMERS

FUNCTION	Trigram (ECS)	Timer	Description	Selectable range	By default
In-phase Transfer	IPT	DWELL TIMER / IN-PHASE TIMER	In-phase Timer: During this timer the in-phase parameters should be inside the accepted window of values to perform an in-phase transfer.	0 - 5 sec	500ms
In-phase Transfer	IPD	DWELL TIMER RESET / IN-PHASE RESEARCH DELAY	In-phase Timer: During this timer the controller will monitor the synchronism between the 2 sources to perform an in-phase transfer when the parameters are ok during the configured dwell timer.	0-20min	3min
Load control	ELD	LOAD CONTROL Pre Transfer	Load control delay timer: If the output is used, the controller will send a signal to the load through the LOAD CTRL output the value of this timer (sec) before a transfer will take place.	0-9999s	5sec
Load control	ELR	LOAD CONTROL Post Transfer	Load control reset timer: If the output is used, the controller will open the output to finish the signal to the load, the value of this timer (sec) after a transfer takes place to an available source.	0-9999s	5sec
Return to 0	10T / 20T	S1 or S2 RETURN TO 0 (s)	Return to 0 timer: If no source available, time before going to 0 when "return 0" active from the source (S1 or S2)	0 - 10 sec	2s
Forced load shedding	LSD	LOAD SHEDDING PRE-TRANSFER TIMER (s)	Load Shedding - Time Delay (before transfer) Timer. This time delay corresponds to the time available to load shed before the secondary power is connected to the load of the ATS.	0-60s	4s
Forced load shedding	LSR	LOAD SHEDDING POST-TRANSFER TIMER (s)	Load Shedding - Time Delay (after transfer) Timer. This time delay corresponds to the time the load shedding output will remain active after retransferring to the priority source, before loading back the non-priority loads.	0-60s	1s
HVAC Compressor	DCT	HVAC COMPR. TIMER (s)	When going back to priority source position, first the associated output DCT (HVAC COMPRESSOR) contact (to shut down the compressor) before starting the transfer and when the switch reaches position, start a defined number of seconds timer before closing this output again. It avoids stressing the compressor.	0-3600s	20s
Tripping action	CH1/ CH2	CHARGING TIME (s)	Time needed to charge the breaker 1/2 spring mechanism, during this time new orders to transfer will be placed on hold, these timers will be bypassed if the breaker charged inputs are activated.	0-15	0
Load adding	PreODx	PRE TRANSFER TIMER (s)	Timer to delay the transfer with all On delay outputs active. At the end of the timer the transfer will be initiated and the ON DELAY TIMERS will start counting.	0-99	0
Load adding	OD1- OD7	ON DELAY TIMER 1-7 (s)	Time after transfer for which the ON DELAY output will be active (up to 7 timers).	0-3600	Timer number x20s
Cycler	1CY/2CY	S1/S2 CYCLE DURATION (h)	Duration of a cycle for a source, at the end of the cycle the controller will initiate a transfer based on transfer settings.	0-9999	1

Annex 16 - 3. Input list

These options can be configured in the Parameters / I/O / Inputs menu:

TRIGRAM	INPUT NAME	Description	C65	C55
AC1	SWITCH IN POS.1 / BRK 1 CLOSED	Read position 1 from the RTSE	x	x
AC2	SWITCH IN POS.2 / BRK2 CLOSED	Read position 2 from the RTSE	x	x
AC0	SWITCH IN POS.0	Read position 0 from the RTSE	x	x
AC0A	SWITCH A S1 IN POS.0 / BRK1 OPEN	Read position 0 from the SWITCH on S1	x	x
AC0B	SWITCH B S2 IN POS.0 / BRK2 OPEN	Read position 0 from the SWITCH on S2	x	x
MAN	RTSE IN MAN	RTSE In Manual Mode: This input is connected to the switch to inform the controller that the switch is in maintenance mode (door is open for servicing). The controller commands will be inhibited but navigation through the menu and dashboards on the display are allowed. This situation will remain until the input is cleared. Screen will show the following message when the input is activated "INHIBIT MODE RTSE IN MANUAL"	x	x
LCK	PADLOCK	Product padlocked. Screen will show "INHIBIT MODE PRODUCT PADLOCKED" while the input is active. Controller goes to Inhibit mode until input is cleared. The controller commands will be inhibited but navigation through the menu and dashboards on the display are allowed.	x	x
IEE	INH. GENSET SCH.	Inhibit Engine Exerciser: This input will inhibit the Engine Exerciser automatic functioning. All customized exercising programs will be bypassed and not take place whilst this input is active.	x	-
POP	RTSE AVAILABLE	Information coming from the RTSE to inform that the RTSE is operational.	x	x
PS1	GO TO POS.1	External order to go to pos 1 Position command only available if mode is in position CTRL. The last command received has priority.	x	x
PS2	GO TO POS.2	External order to go to pos 2 Position command only available if mode is in position CTRL. The last command received has priority.	x	x
PS0	GO TO POS.0	External order to go to pos 0 Position command only available if the mode is in position CTRL. Command 0 has priority over commands I and II.	x	x
RT0	RETURN TO 0	Overrides the "Return to 0" function inside SPECIFIC FUNCTIONS	x	-
BLK	BLOCKED	Product blocked, meaning that the RTSE is blocked, can't move. The controller will go into Partial Inhibition (starting the genset if necessary) but not transferring. Message on the display "Product blocked".	x	x
TP1	TRIP BRK1	Protection on S1 has tripped.	x	x
TP2	TRIP BRK 2	Protection on S2 has tripped.	x	x
REC	AUTO/MANU	Places the controller in manual mode remotely (can be used to activate the use of inputs "go to position X").	x	x
EST	EMERGENCY SIGN.	Emergency off signal. Controller will pilot to go to position 0 (if any). CTRL will be disabled, AUTOMATIC mode will be off, genset won't be started, "Emergency Off" will be displayed on screen. If Lift/Elevator signal is enabled, its timers will be respected before giving the command to go to 0.	x	x
IPI	IN-PHASE INHIBIT	In-phase transfer inhibition: This input will disable the in-phase transfer function, so if the input is active it will disable the in-phase transfer between sources, allowing a transfer without taking into account the phase monitoring between sources.	x	-
IPB	IN-PHASE BYPASS	In-phase bypass: When this input is active (pulse), the switch will bypass the dwell time reset timer (sync-checking). This input can only be used when there is a in-phase checking already taking place. This input can only be taken into account after the In-phase delay timer is elapsed (DWELL TIMER RESET / IN-PHASE RESEARCH DELAY).	x	-
BCT	BYPASS TIMER	Bypass timer: Bypasses the current timer on the screen / first one of the list of timers running.	x	x
ELB	LOAD CTRL BYPASS	It will bypass the load control delay timer (ELD) when active, if the elevator function is active.	x	-
IS1	INHIBIT S1	Inhibits source 1. Transfer to the source is forbidden and if the load is on that source it will immediately be transferred to the opposite	x	-

TRIGRAM	INPUT NAME	Description	C65	C55
IS2	INHIBIT S2	Inhibits source 2. Transfer to the source is forbidden and if the load is on that source it will immediately be transferred to the opposite	x	-
CH1	BREAKER 1 CHARGED	Gives feedback that the breaker mechanism is charged and ready to transfer.	x	x
CH2	BREAKER 1 CHARGED	Gives feedback that the breaker mechanism is charged and ready to transfer.	x	x
CTT	COMMIT	Activate the commit to transfer function when this input is active.	x	-
EGG	BACKUP GENGEN	Activates the backup Gen-gen mode if the application is set to "GEN-GEN"	x	x
CYC	CYCLER	Activates the cycler function	x	x
DIS1	BRK1 DISCONNECTED	Informs the controller that the breaker 1 is disconnected. When activated a pop-up will appear on the screen and automatic operation will be inhibited.	x	x
DIS2	BRK2 DISCONNECTED	Informs the controller that the breaker 2 is disconnected. When activated a pop-up will appear on the screen and automatic operation will be inhibited.	x	x
MS1	MTSE in position 1	Only for bypass technology indicates the the manual bypass switch is in position 1	x	-
MS0	MTSE in position 0	Only for bypass technology indicates the the manual bypass switch is in position 0	x	-
MS2	MTSE in position 2	Only for bypass technology indicates the the manual bypass switch is in position 2	x	-
WTH	Withdrawn	Only for bypass technology, indicates that the RTSE is withdrawn	x	-
CON	Connected	Only for bypass technology, indicates the the RTSE is connected	x	-
AACK	ALARM ACKNOWLEDGE	Acknowledges the alarm programmed in alarm menu.		
-	NONE	INPUT NOT USED	x	x
INH	INHIBITION	Inhibition of the automatism. Mode inhibition (not automatic). CTRL is permitted. Genset won't start if the source is lost	x	x
INHp	PARTIAL INHIBITION	Inhibition of the automatism. Mode inhibition (not automatic). CTRL is permitted. Genset will start if the source is lost to ensure the supply of the controller, but it will not transfer.	x	x
INHt	TOTAL INHIBITION	Inhibition of the automatism. Mode inhibition (not automatic). CTRL is NOT permitted. Genset won't start if the source is lost	x	x
TON	TEST ON LOAD	Start test on load with dedicated test on load timers	x	x
TOF	TEST OFF LOAD	Start test off load with dedicated test off load timers	x	x
EON	EXT. LOAD	Remote on load test: If set to UNLIMITED, this order will start the cycle to transfer and the controller will not send an order to go back to preferred source until the signal is cleared. If set to LIMITED, a pulse on the input will start the test that will follow the E2T and other timers.	x	x
EOF	EXT. NO LOAD	Remote off load test: If set to UNLIMITED, this order will start the genset and stop the genset according to the external test off load configuration inside the parameters. If set to LIMITED, a pulse on the input will start the test that will follow the configured timers.	x	x
MRT	MANUAL RETRANS	Manual Retransfer to priority source (touching keypad or via INPUT) Remote transfer back to the priority source: This is the same function as "MANUAL RETRANSFER" cleared with the keypad. This variable in the PARAMETERS/SPECIFIC FUNCTIONS menu must be enabled to validate the operation through this input.	x	x
PRI	CHANGE PRIO	Changes the priority between sources	x	x
SS1	BYPASS STAB S1	Bypasses the stabilisation timer for S1 (S1 return timer)	x	x
SS2	BYPASS STAB S2	Bypasses the stabilisation timer for S2 (S2 return timer)	x	x

TRIGRAM	INPUT NAME	Description	C65	C55
ALE	EXT ALARM	External alarm active. It will be logged in the alarm log as External Alarm and the Alarm LED will be active. The alarm will be In progress until input is cleared	x	x
FTE	EXT FAULT	External fault active. The product will transfer to position 0 / center off. CTRL is permitted. Mode will be inhibit. Genset will not start if source is lost. "External Fault will be displayed on screen". It will be logged in the fault log as External Fault and the Fault LED will be active. The fault will be In progress until input is cleared and fault reset.	x	x
MSR	PRIO TEST ON LOAD	EJP / Stay on "backup" source. Priority Test on Load. Order to stay in S2 even if the source is lost or unavailable.	x	x
OA1	FORCE S1 AVAIL.	Force Source 1 as Available	x	x
OA2	FORCE S2 AVAIL.	Force Source 2 as Available	x	x
OU1	FORCE S1 UNAVAIL.	Force Source 1 as Unavailable	x	x
OU2	FORCE S2 UNAVAIL.	Force Source 2 as Unavailable	x	x
RST	RST FAULT STATE	Fault Reset : This input may be used to reset a fault condition after the fault has been cleared. Faults may also be reset through communication or through the display.	x	x
LSB	BYPASS LSD	Bypasses the load shedding pre-transfer timer. Consequence is that load is considered as shed so transfer can take place. It'll immediately load shed.	x	-
CHP	CHANGE POSITION	Changes the position (if no priority defined). It partially inhibits when active. It goes back to Auto when cleared. It has to be a permanent maintained input, it can't be an impulse.	-	x
CIH	CONDITIONAL INHIBITION	In Main-Main mode only, this input function allows users to inhibit the controller except if the main source is lost, in which case the controller will resume normal operation and switch over to secondary source automatically (will also start the genset if secondary source is a genset).	x	x


Annex 16 - 4. Output list

These options can be configured in the "Parameters" > "I/O" > "OUTPUTS" menu:

TRIGRAM	OUTPUT NAME	Description	C65	C55
PO1	POS 1 ORDER / CLOSE BRK1	Switch position order to go to Source 1	x	x
PO2	POS 2 ORDER / CLOSE BRK2	Switch position order to go to Source 2	x	x
PO0	POS 0 ORDER	Switch position order to go to Position 0 (center off)	x	x
PA0	POS 0 ORDER S1 / OPEN BRK1	Switch position order to go to center-off (source 1)	x	x
PB0	POS 0 ORDER S2 / OPEN BRK2	Switch position order to go to center-off (source 2)	x	x
S1A	S1 AVAILABLE	Source 1 available: Output activated if source 1 is considered as available (see conditions of availability in the dedicated chapter of the manual).	x	x
S2A	S2 AVAILABLE	Source 2 available: Output activated if source 2 is considered as available (see conditions of availability in the dedicated chapter of the manual).	x	x
SCA	ANY SOURCE AVAIL.	Source 1 OR source 2 available: This output is activated when at least one source (S1 or S2) is available.	x	x
S1U	S1 UNAVAIL.	Source 1 unavailable: Output activated if source 1 is not considered as available (see conditions of availability in the dedicated chapter of the manual) or the source has been inhibited.	x	x
S2U	S2 UNAVAIL.	Source 2 unavailable: Output activated if source 2 is not considered as available (see conditions of availability in the dedicated chapter of the manual) or the source has been inhibited.	x	x

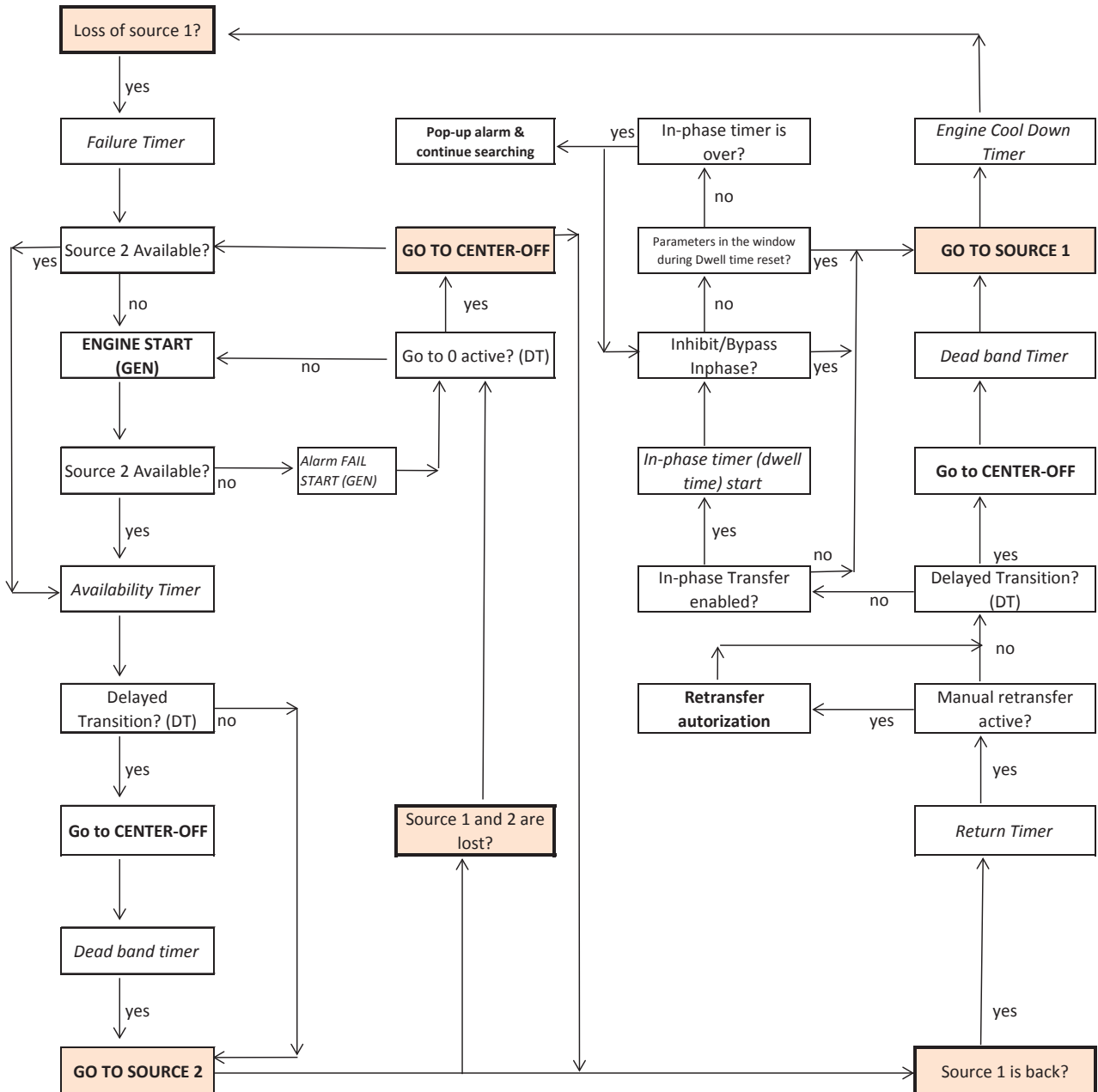
TRIGRAM	OUTPUT NAME	Description	C65	C55
AC1	S1 CLOSED	Source 1 closed: This output has the function of an auxiliary contact. When the controller has the input from the switch to be in source 1, the output will be active. This also considers the case where with no real information about the position, the controller works in blind mode.	x	x
AC2	S2 CLOSED	Source 2 closed: This output has the function of an auxiliary contact. When the controller has the input from the switch to be in source 2, the output will be active. This also considers the case where with no real information about the position, the controller works in blind mode.	x	x
AC0	OFF POSITION	Both sources open (center-off): This output has the function of an auxiliary contact. When the controller has the input from the switch to be in center-off, with both switches open, the output will be active. This also considers the case where with no real information about the position, the controller works in blind mode.	x	x
LO1	S1 CLOSED + AVAIL	Load being supplied by source 1: When active, it indicates that source 1 is supplying the load and within the availability operating range. Source 1 has to reach the availability conditions.	x	-
LO2	S2 CLOSED + AVAIL	Load being supplied by source 2: When active, it indicates that source 2 is supplying the load and within the availability operating range. Source 2 has to reach the availability conditions.	x	-
LSC	FORCED SHEDDING	Active when transferring to source 2 to shed loads by connecting this output to the open order on a circuit breaker or motorised switch. The function Forced Load Shedding has to be active on the specific functions menu.	x	-
FLT	FAULTS ACTIVE	At least 1 fault is active on the controller. Fault report	x	x
POP	PROD. OPERATIONAL	Information about the availability and correct functioning of the ATSE. The input POP should be enabled and linked to the availability output of the RTSE.	x	-
LCK	PRODUCT LOCKED	Report of padlocking of the product.	x	-
COP	CTRL OPERATIONAL	Controller operational: This output will be active while the controller is supplied, with no critical faults active and with the required conditions to perform an automatic operation when needed.	x	-
TOS	TEST ON LOAD	This output is activated if a load test (through the HMI) is ongoing.	x	-
EOS	EXT TEST ON LOAD	This output is activated if a load test (remote order) is ongoing.	x	-
ROS	(EXT) TEST ON LOAD	This output is activated if any load test (either HMI or remote order) is ongoing.	x	x
PTS	SMART SHEDDING	Output active while the smart load shedding is active. To work, the "Smart Load Shedding" function has to be enabled inside the Specific functions menu.	x	-
EES	BATTERY CHARGER	Output to activate the battery charging. It is linked to the battery charger timers.	x	-
TPP	TRIP PARTIAL	Report of protection tripping in one of the sources.	x	-
TPT	TRIP TOTAL	Report of protection tripping on both sources.	x	-
IPT	IPT IN PROGRESS	In Phase Transfer ongoing.	x	-
CO1-CO6	COPY INPUT x	Active when the corresponding input will be active	x	-
EEA	SCHEDULER ACTIVE	This output will be active while any of the programs for the Engine exerciser are active. The settings of the exerciser parameters can be configured in the dedicated menu.	x	-
ELV	LOAD CONTROL	Load control signal output. It should be linked to the load in order to load shed before transferring and reactivate the load after transfer.	x	-
ARO	ALARM REPORT	This alarm output will be active in the case that one of the alarms set in the Alarms menu is active and the option to use the output to report the alarm is enabled.	x	x
DCT	HVAC COMPRESSOR	When going back to principal source position the contact will become active prior to starting the transfer (to shut down the compressor), then the transfer will take place and then after reaching the opposite source, a timer defined in the specific functions menu will elapse before deactivating this output again. It avoids stressing the compressors in HVAC chillers.	x	-
-	NONE	OUTPUT NOT USED	x	x

TRIGRAM	OUTPUT NAME	Description	C65	C55
GS1	GENSET S1 START	Genset start/stop output. Only available on OUT 5 when the source is a generator (when configured as Genset/Genset) or on OUT 6 (when configured as Main/Genset with priority on S2).	x	x
GS2	GENSET S2 START	Genset start/stop output. Only available on OUT 6 when the source is a generator.	x	x
AUD	CRIT. ALM. ACTIVE	Output active when an alarm with the criticality CRITICAL is active	x	x
PHI	PHASE INVERSION	Output activated if the phase rotation measured is different from the one configured in APPLICATION	x	-
OD1-OD7	ON DELAY	Outputs linked to the "on delay timers"	x	x
ARO	ALM REPORT	Reports the alarm configured in the alarm menu.		
PRL	bypass	Bypass only, output report to signal that the bypass is in parallel mode (bypass and ATSE active).	x	-
TST	bypass	Bypass only, output report to signal that the bypass is in test mode.	x	-
EMG	bypass	Bypass only, output report to signal that the bypass is bypassed by emergency manual switch.	x	-
NRM	bypass	Bypass only, output report to signal that the bypass is bypassed by normal manual switch.	x	-
NIA	NOT IN AUTO	Outputs to indicate that the controller is NOT in Auto (same functioning logic as LED)	x	x
WMRT	WAIT MAN RETRANSF	This output is active when the controller is waiting for a manual retransfer (user confirmation to retransfer when "MANUAL RETRANSFER" function is active)	x	x
FP0	POS 0 NOT REACHED	Output active when order to go to position 0 has been sent but the product has not transferred	x	x
FP1	POS 1 NOT REACHED	Output active when order to go to position 1 has been sent but the product has not transferred	x	x
FP2	POS 2 NOT REACHED	Output active when order to go to position 2 has been sent but the product has not transferred	x	x
FO1	FAILED TO OPEN S1	Output active when order to open S1 has been sent but the product has not transferred	x	x
FO2	FAILED TO OPEN S2	Output active when order to open S2 has been sent but the product has not transferred	x	x
FC1	FAILED TO CLOSE S1	Output active when order to close S1 has been sent but the product has not transferred	x	x
FC2	FAILED TO CLOSE S2	Output active when order to close S2 has been sent but the product has not transferred	x	x

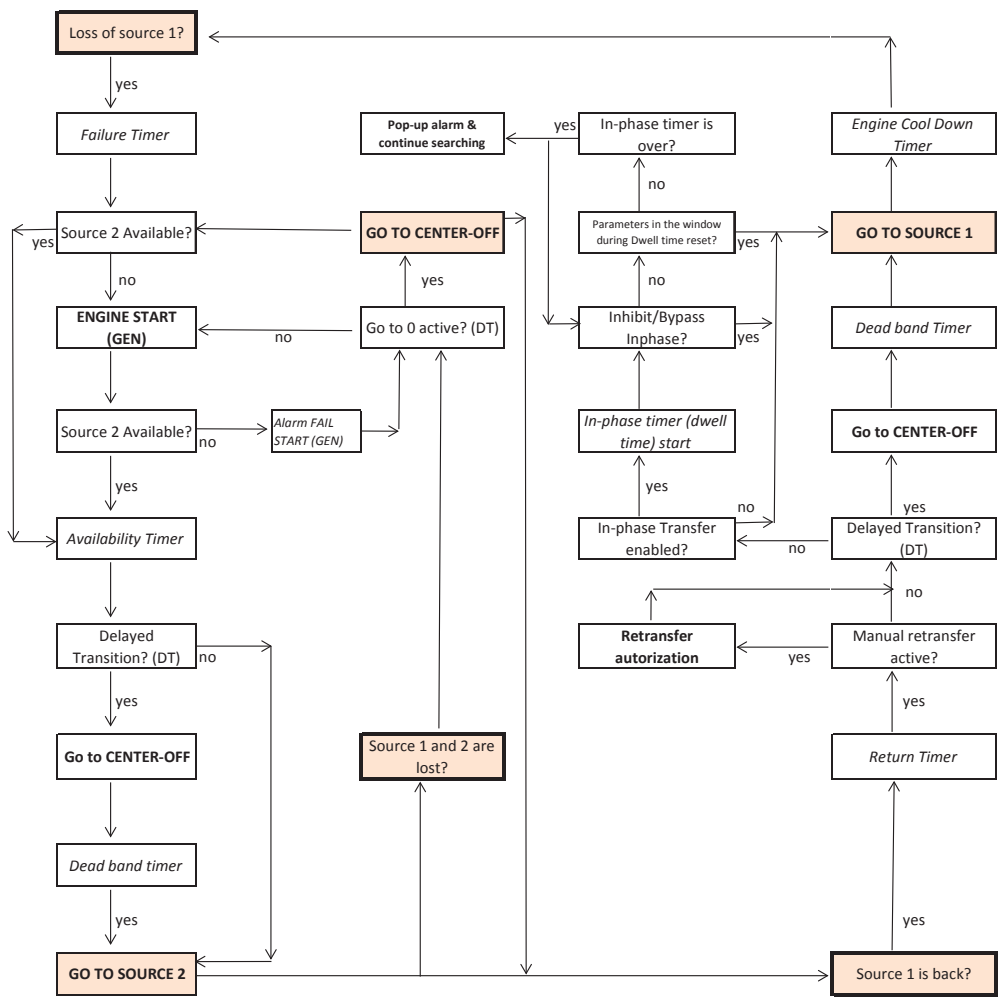
 Note: position orders cannot be used with the OUT 5 and OUT 6 (latching relays). The latching relays can take up to 2 seconds between opposite orders (NO to NC or NC to NO) and for added security when starting a genset will change state based on the timers or when the backup power is exhausted.

Annex 16 - 5. Operating sequences

ANNEXE 16 - 5.1. MAIN-GENSET applications



Annexe 16 - 5.2. MAIN-MAIN Applications






Annex 16 - 6. ATyS C55/C65 Technical characteristics



Mechanical features	
Casing type	Fitted on a door (160x220) or back-plate
Case material	PC (Polycarbonate)
Protection degree	IP65 front panel /IP30 without gasket/ IP20 rear panel
Screen resolution	350x160 pixels – 8 lines of text
Weight	1085gr (controller without spare parts)
AC Power	
Rated voltage	120/208/230/240/277/400/480
Operating limits	110-480VAC (+-20%)
Frequency	50-60Hz +-10%
Drawn/Dissipated power	<10W
Recommended fuses	1A gG
DC Power	
Rated battery voltage DC Aux supply for IO modules	12-24VDC +/-20% 24VDC
Reverse polarity protection	yes
Maximum drawn current	3A peak <10ms
Recommended fuses	1A gG
Voltage sensing	
Ue max. Rated voltage	480Vac
Ui (according 60947-1)	600Vac
Measuring range limits	50-576Va
Frequency range limits	45-66Hz
Measurement type	True RMS (TRMS)
Sample rate	9,6kHz
Measurement input impedance	6MΩ
Accuracy (V, U)	0,5%
Accuracy (f)	0,1%
Current measurement (with external current transformers (Only C65))	
Ie rated current (secondary)	Negative
Measuring range	6A max
Measurement type	True RMS (TRMS)
Permanent thermal limit	5A max
Current Accuracy	1%
Power Accuracy	2%
Active Energy Accuracy	1%
Digital Inputs	
Input type	1A or 5A
Input current	2,3mA at 24Vdc
Low input signal	Let input floating for low signal
High input signal	Link input with common to impose High level
Input signal delay	<200ms


Outputs OUT 5-6	
Output type	latching / form C relay
Operating time	<30ms
Contact type	Volts free configurable NO/NC
Rating	AC1 8A 277Vac 50/60Hz AC15 2A 277Vac 50/60Hz DC1 5A 24Vdc
Outputs OUT 1-4	
Output type	Non-Latching type
Operate time	<30ms
Contact type	Volts free configurable NO/NC
Rating	AC1 8A 277Vac 50/60Hz AC15 2A 277Vac 50/60Hz DC1 5A 24Vdc
RTC	
Battery type	Coin type cell (BR2032)
Battery voltage	3V
Battery lifetime (Average, depends on usage conditions)	6 years
RS485	
Interface type	2 to 3 half duplex wires
Protocol	MODBUS RTU
Baudrate	programmable 1200-115200 bps
Function	Configuration and data reading
Isolation	Functional
Maximum distance	1200m @9600 baud 200m @115200 baud
Termination	internal 120 ohms (selectable DIP switch)
DIGIWARE BUS (Only C65)	
Function	Connection between ATyS C65 and external modules
Cable type	Specific cable with RJ45 connections
Environmental specifications	
Ambient operating temperature	-30° ... +70°C
Storage temperature	-40° ... +70°C
Operating humidity	55°C / 95% HR
Operating altitude	<2000m
Vibrations	IEC 60947-1
Shocks	shocks according to Annexe Q IEC 60947-1
EMC classification	Class A+B
Insulation / Overvoltage cat.	
Impulse V withstand	Uimp=4kV. Test = 8kV between sources/6kV between phases
Installation overvoltage category	OVC III
Degree of pollution	Pollution degree 3
USB	
Connection	USB 2
Type	Type B Micro USB
Protocol	Modbus RTU on USB


Mechanical characteristics	
Height*length*depth	240x180x64
Weight	1085gr
Event recorder	
Capacity	3000 events (only C65, 300 for C55) + 100 alarms
Data storage	non-volatile memory
Type tests L'ensemble des essais CEM sont décrits dans la sequence 4 947-1	
Electrostatic Discharge Immunity - Air	8kV (B)
Electrostatic Discharge Immunity - Direct	4kV (B)
Radiated RF Immunity	10V/m
Electrical Fast Transient / Burst Immunity	2kV power access, 1kV signal access
Surge Immunity	1kV diff
Conducted RF Immunity	10Vrms
Radiated RF Emmision	Class B
Conducted RF Emmision	Class B
Case	
Fire reaction of housing and cover	self-extinguishing UL94-V0
Service life components	
MTBF	>100yr


Annex 16 - 7. Full menu architecture


MENU	SUBMENU 1	SUBMENU 2	SUBMENU 3
DASHBOARD			
 <p>(not in menu access with dashboard button)</p>	MIMIC	STAT.	
		MET.	
		INFO	
	STATUS	STAT.	
		SYNC	
	METERING	SYS	
		I	
		V	
		U	
		F	
		SYS	
	POWER AND ENERGY*	P	GRAPH
		Q	GRAPH
		S	GRAPH
		PF	GRAPH
		Ea	
		Er	
		Es	
		RST E	
		RUN	Bypass Timer
		S1	
	TIMERS	S2	
		OPT	
		Tox	
		Eox	
		ACT	GO TO ALARM
	ALARMS	FIN	GO TO ALARM
IN			
I/O	OUT		
	E. IN		
	E. OUT		
	ALX	GO TO CONF	
CONTROL			
 <p>Operator password needed Default 4000</p>	MODE / POSITION	MODE	
		CHANGE POSITION	
		GENSET SOURCE 1	
		GENSET SOURCE 2	
	TEST	TEST ON LOAD	
		TEST OFF LOAD	
	MANUAL RETRANSFER	PRESS OK FOR MANUAL RETRANSFER	
LOG			
 <p>PWD: 4000</p>	EVENT LOG		
	EVENT BY DATE*		
	ALARM LOG	IN PROGRESS HISTORY	
<p>PWD: 1000</p>	FAULT LOG	IN PROGRESS HISTORY	
		PRESS OK TO RESET FAULTS	
STATISTICS			


MENU	SUBMENU 1	SUBMENU 2	SUBMENU 3
 PWD: 4000	CYCLE		
	OPERATION		
	OPERATING HOURS		
	SOURCE 1		
	SOURCE 2		
	GENSET 1		
	GENSET 2		
	BREAKER		
	BYPASS		
GENSET SCHEDULER			
 GENSET SCHEDULER PWD: 4000	GENERAL PARAMETERS	GENSET IDLE TIMEOUT (min)	
	CUSTOM 1	TYPE SET	
		PERIODIC SCHEDULE	
		TEST DURATION (s)	
		START DATE	
		START TIME	
	CUSTOM 2*	TYPE SET	
		PERIODIC SCHEDULE	
		TEST DURATION (s)	
		START DATE	
		START TIME	
	CUSTOM 3*	TYPE SET	
		PERIODIC SCHEDULE	
		TEST DURATION (s)	
		START DATE	
		START TIME	
CUSTOM 4*	TYPE SET		
	PERIODIC SCHEDULE		
	TEST DURATION (s)		
	START DATE		
PARAMETERS			



MENU	SUBMENU 1	SUBMENU 2	SUBMENU 3	
 PWD: 1000	NETWORK	AUTODETECT.		
		SETUP	NETWORK TYPE	
			NOMINAL VOLTAGE	
			NOMINAL FREQUENCY	
			PHASE ROTATION	
			PHASE ROTATION CHECK	
			VT USED	
			VT PRIMARY	
		VT SECONDARY		
		APPLICATION	SWITCH TECHNOLOGY	
			APPLICATION TYPE	
			SOURCE 1 NAME	
			SOURCE 2 NAME	
			SOURCE PRIORITY	
			LOGIC	
			TEST ON LOAD PRIORITY	
			EXT TEST ON LOAD PRIO	
			RETRY NUMBER	
			RETRY DELAY (ms)	
		PULSE LENGTH (ms)		
		OPERATING RANGE S1	S1 OVERVOLTAGE FAIL (%)	
			S1 OVERVOLTAGE RESTORE (%)	
			S1 UNDERVOLTAGE FAIL (%)	
			S1 UNDERVOLTAGE RESTORE (%)	
			S1 UNBALANCE FAIL (%)	
			S1 UNBALANCE RESTORE (%)	
			S1 OVERFREQUENCY FAIL (%)	
			S1 OVERFREQUENCY RESTORE (%)	
			S1 UNDERFREQUENCY FAIL (%)	
			S1 UNDERFREQUENCY RESTORE (%)	
		OPERATING RANGE S2	S2 OVERVOLTAGE FAIL (%)	
			S2 OVERVOLTAGE RESTORE (%)	
			S2 UNDERVOLTAGE FAIL (%)	
	S2 UNDERVOLTAGE RESTORE (%)			
	S2 UNBALANCE FAIL (%)			
	S2 UNBALANCE RESTORE (%)			
	S2 OVERFREQUENCY FAIL (%)			
	S2 OVERFREQUENCY RESTORE (%)			
	LOAD*	LOAD STATUS		
		LOAD TYPE		
		Inom		
		LOAD NAME		
		CT PRIMARY		
		CT SECONDARY		
		NEUTRAL CT PRIMARY		
		NEUTRAL CT SECONDARY		
		LINE I1 WAY		
LINE I2 WAY				
LINE I3 WAY				
LINE I4 WAY				

MENU	SUBMENU 1	SUBMENU 2	SUBMENU 3
 PWD: 1000	DISPLAY	SCREEN	LANGUAGE
			INTENSITY
			TIMEOUT (s)
		DATE AND TIME	DATE FORMAT
			DATE SEPARATOR
			DATE
		LED CONFIG*	TIME
			X LED FUNCTION
			X LED COLOR
			X LED BEHAVIOR
			X LED REPORT TYPE
			X LED REPORT IDX
			Y LED COLOR
			Y LED BEHAVIOR
			Y LED REPORT TYPE
			Y LED REPORT IDX
		OPTIONS	TEST BUTTON USE
			LAMP TEST DURATION (s)
		CHANGE PRODUCT NAME	POPUP DISPLAYED
		SCREENSAVER TEXT	ATS NAME:
TEXT POLICE			
LINE 1 TEXT			
LINE 2 TEXT			
LINE 3 TEXT			
	LINE 4 TEXT		
	PREVIEW		
	DEFAULT LOGO		

MENU	SUBMENU 1	SUBMENU 2	SUBMENU 3
 PWD: 1000	TIMERS	OPERATION	S1 FAILURE (s)
			S1 RETURN (s) / S2 AVAILABLE (s)
			S1 DEADBAND (s)*
			S2 FAILURE (s)
			S2 RETURN (s) / S2 AVAILABLE (s)
			S2 DEADBAND (s)*
		DEAD BAND (s) (Only C55)	
		GENSET SOURCE 1	S1 GENSET COOLDOWN (s)
			S1 START TIMEOUT (s)
			GENSET TIMEOUT S1 (h)
			BATT CHARGE DURATION S1 (s)
		GENSET SOURCE 2	S2 GENSET COOLDOWN (s)
			S2 START TIMEOUT (s)
			GENSET TIMEOUT S2 (h)
			BATT CHARGE DURATION S2 (s)
		TESTS ON LOAD	TEST ON LOAD
			TEST ON LOAD (s)
			TEST ON LOAD END (s)
			EXT TEST ON LOAD PRE (s)
			EXT TEST ON LOAD
			EXT TEST ON LOAD (s)
			EXT TEST ON LOAD POST (s)
		TESTS OFF LOAD	TEST OFF LOAD
			TEST OFF LOAD (s)
			EXT TEST OFF LOAD PRE (s)
			EXT TEST OFF LOAD
			EXT TEST OFF LOAD (s)
EXT TEST OFF LOAD POST (s)			

MENU	SUBMENU 1	SUBMENU 2	SUBMENU 3
 PWD: 1000	I/O	INPUTS	INPUT1
			INPUT2
			INPUT3
			INPUT4
			INPUT5
			INPUT6
			INPUT 1 TYPE
			INPUT 2 TYPE
			INPUT 3 TYPE
			INPUT 4 TYPE
			INPUT 5 TYPE
			INPUT 6 TYPE
		OUTPUTS	OUTPUT1
			OUTPUT2
	OUTPUT3		
	OUTPUT4		
	OUTPUT5		
	OUTPUT6		
	OUTPUT 1 TYPE		
	OUTPUT 2 TYPE		
	OUTPUT 3 TYPE		
	OUTPUT 4 TYPE		
	OUTPUT 5 TYPE		
	OUTPUT 6 TYPE		
	COMMUNICATION	EXTERNAL I/O DETECTION*	
		EXTERNAL I/O CONFIG*	List of Available IO10 Modules
		MODBUS ADDRESS	ADDRESS
		RS458 MODBUS	BAUDRATE
STOP			
PARITY			
DIGIBUS COMM*		BAUDRATE	
		STOP	
DIGIWARE MODE*	PARITY		
	MODE		

MENU	SUBMENU 1	SUBMENU 2	SUBMENU 3
 PWD: 1000	ALARMS	MEASURE ALARMS CONFIG*	ALARM ID
			STATUS
			CATEGORY
			SOURCES
			PARAMETERS
			UPPER THRESHOLD
			LOWER THRESHOLD
			HYSTERESIS (%)
			ACK METHOD
			INPUT TYPE
			ACK INPUT
			OUTPUT TYPE
			OUTPUT REPORT
			CRITICITY
		MAINTENANCE ALARMS CONFIG	ALARM ID
			STATUS
			ALARM TYPE
			UPPER THRESHOLD
			ACK METHOD
			ACK INPUT
			OUTPUT TYPE
			OUTPUT REPORT
			CRITICITY
			COMBINATION ALARMS CONFIG*
		STATUS	
		CRITICITY	
		LOGIC	
		ALARM 1 TYPE	
		ALARM 1 INDEX	
		ALARM 2 TYPE	
		ALARM 2 INDEX	
		ACK METHOD	
		ACK INPUT	
		OUTPUT TYPE	
		OUTPUT REPORT	
		LOGICAL ALARMS CONFIG	ALARM ID
			STATUS
			LOGICAL INPUT TYPE
			LOGICAL INPUT
			ACK METHOD
INPUT TYPE			
ACK INPUT			
OUTPUT TYPE			
OUTPUT REPORT			
CRITICITY			
SYSTEM ALARMS CONFIG	ALARM ID		
	STATUS		
	INPUT TYPE		
	ACK METHOD		
	ACK INPUT		
	OUTPUT TYPE		
	OUTPUT REPORT		
	CRITICITY		

MENU	SUBMENU 1	SUBMENU 2	SUBMENU 3
 PWD: 1010	REBOOT DEVICE	REBOOT DEVICE	
	MAX OPERATION	MAX OPERATION Delay (min)	
	ERASE LOGS	RESET ALARM LOG RESET EVENT LOG	
	RESET COUNTERS	RESET SWITCH COUNTERS	
		RESET POS PARTIAL TIME COUNTERS	
		RESET PARTIAL OP HOURS COUNTERS	
		RESET GENSET 1 STATS	
		RESET GENSET 2 STATS	
		RESET BYPASS COUNTER	
	INSPECTION MODE	DATE	
		TIME	
	INTRODUCE PHONE NUMBER	ENTER PHONE NUMBER	
ENERGY BACKUP	ENERGY BACKUP		
ABOUT			
 (no PWD)	PRODUCT NAME		
	LAST INSPECTION		
	SERIAL NUMBER		
	FIRMWARE VERSION		
	COMM ADDR		
	MAINTENANCE TEL		

All the menus with "*" are only available for ATyS C65.

Annex 16 - 8. Communications table

Find your product Modbus communication registers online at :
www.socomec.com



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