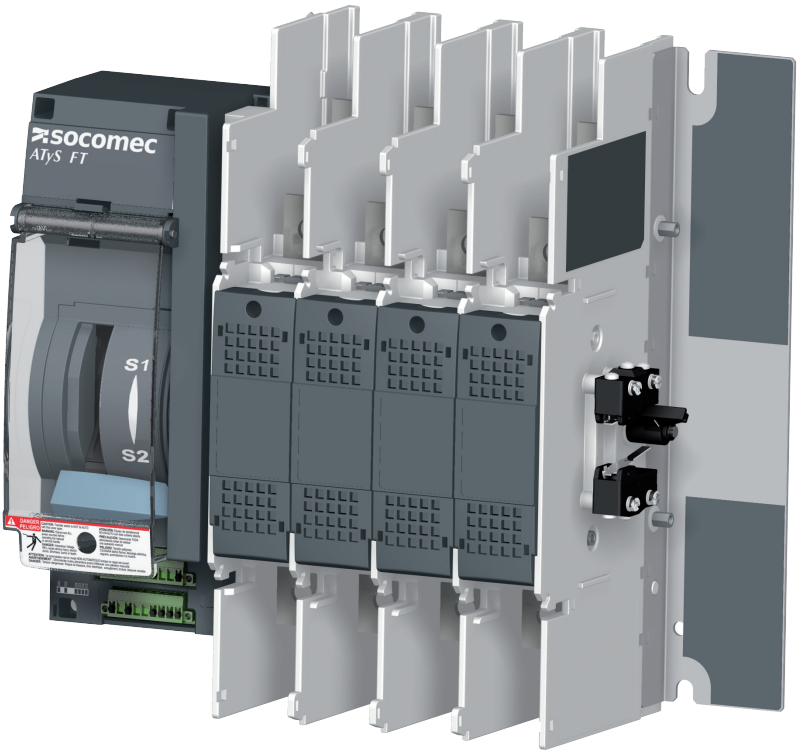
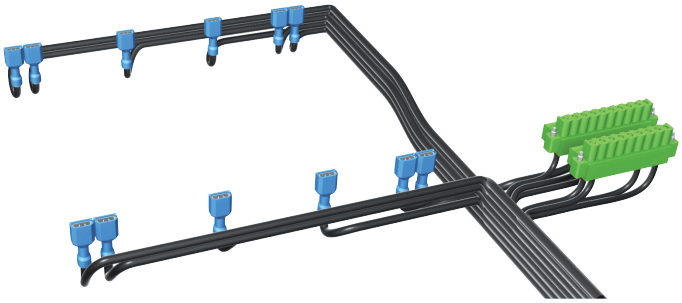
INSTALLATION AND OPERATING MANUAL

EN

Fast transfer
UL 1008 Transfer switching equipement
ATyS FT





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CONTENTS

1. GENERAL SAFETY INSTRUCTIONS

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

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

- As a minimum the ATyS FT comply with the following international standards:
  - UL 1008 – Emergency Systems

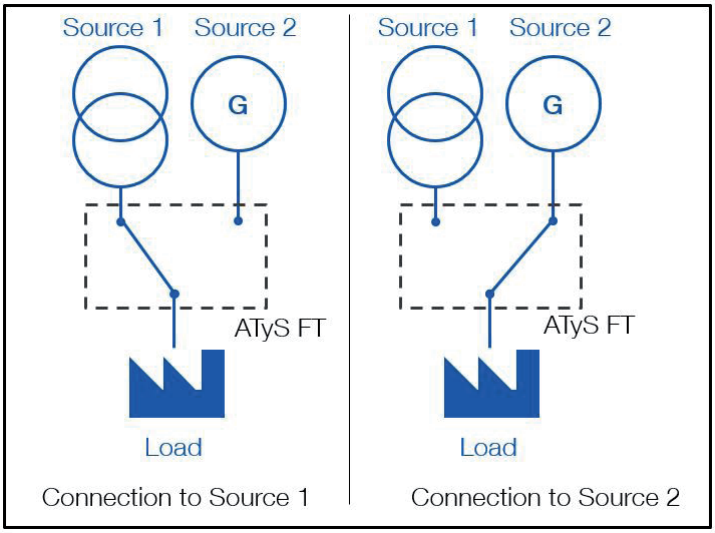
  Refer to the specific references numbers on this document to order the correct UL 1008 products and associated accessories.

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

WARNING ! This product can expose you to chemicals including bisphenol A, which is known to the State of California to cause birth defects. For more information go to : www.P65Warnings.ca.gov

2. INTRODUCTION

ATYS FT (Fast Transfer) are open type, two position automatic transfer switches listed to UL 1008 for standby, legally required and emergency systems. They are designed specifically for use in low voltage power applications for the safe transfer of a load supply between a normal and an alternate source.



These automatic transfer switches are designed to meet NFPA 110 requirements for NFPA 110 for Emergency and Standby Power systems and the National Electrical Code (NEC) Articles 700, 701 and 702.

ATyS transfer switching equipment ensures:

- A safe transfer between a normal and alternate source
- A complete product and tested solution
- Intuitive and simple for local operation
- Inherent failsafe mechanical interlocks
- Quick easy and safe “off load” manual operation
- A mechanical inhibit of the motor when the product is in manual operation
- Auxiliary contacts to indicate if the product is not in AUTO Mode (Manual Mode)
- Straightforward installation with effective ergonomics
- Simple and secure control interface
- Easy mounting and smart configuration
- Accessories to suit specific requirements
- Integrated and fully rated solid neutral within the 4th pole
- Suitable for up to NEMA 3R, 12 protection degree (once mounted)

Glossary:

ATS: Automatic Transfer Switch
FT: Fast Transfer
DT: Delayed Transition
SCPD: Short Circuit Protection Device
CT: Curent Transformer
VT: Voltage Transformer
GND: Ground
I/O: Inputs/Outputs
RTC: Real Time Clock
ECS: Easy Config System
CTT: Contact transfer time
S1: Source 1
S2: Source 2

3. QUICK START

QUICK START GUIDE

EN

548695F

ATyS FT

c UL us LISTED

100 A, 200 A, 260 A, 400 A

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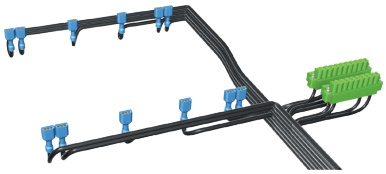


Preliminary operations

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 1 x ATyS FT
  - Qty 1 x C66 Controller
  - Qty 1 x Harness

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

Accessories are not included and must be ordered seperatly
- Terminal shrouds (see step 6A).
- Additional aux contacts (ref. 96990021).
- Digiware I/O 10 (ref. 48290140).
- Transformer 480 - 240 VAC (SPARTAN SP350MQMJ).
- Controller 24 VDC aux power supply (6W minimum type SELV) mandatory with I/0 10 Modules.
- Power terminal lugs (see step 1D).

For further details refer to the product instruction manual under chapter “Spares and Accessories”.

Spares

- ATyS C66 Controller (ref. 16000066).
- UL 1008 ATyS FT (ref. 960XXXXX).
- Connector kit (ref. 16090002).
- Controller Nema 3R gasket (ref. 16090001).
- Controller mounting screws (ref. 16090004).
- Controller mounting feet (ref. 16090005).
- Cable harness without transfomer (ref. 96964001).
- Cable harness with transfomer (ref. 96974001).

Reference configurator

9	6	X	X	X	XXX

N° of poles
2: 2P
3: 3P
4: 4P

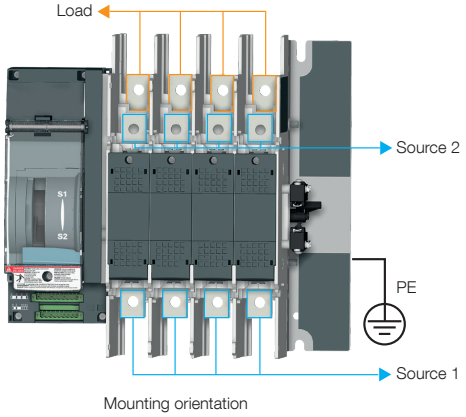
Rating
010: 100 A
020: 200 A
026: 260 A
040: 400 A

0: spare switch for networks up to 480 VAC
8: ATSE assembly for 480 V.a.c 3 wire network
A: ATSE Assembly for networks up to 480 VAC

0: Without solid neutral
1: With solid neutral

1A Switch installation

⚠ For Use on a Flat Surface of a Types 1, 3R, 12 and/or 12k enclosure.

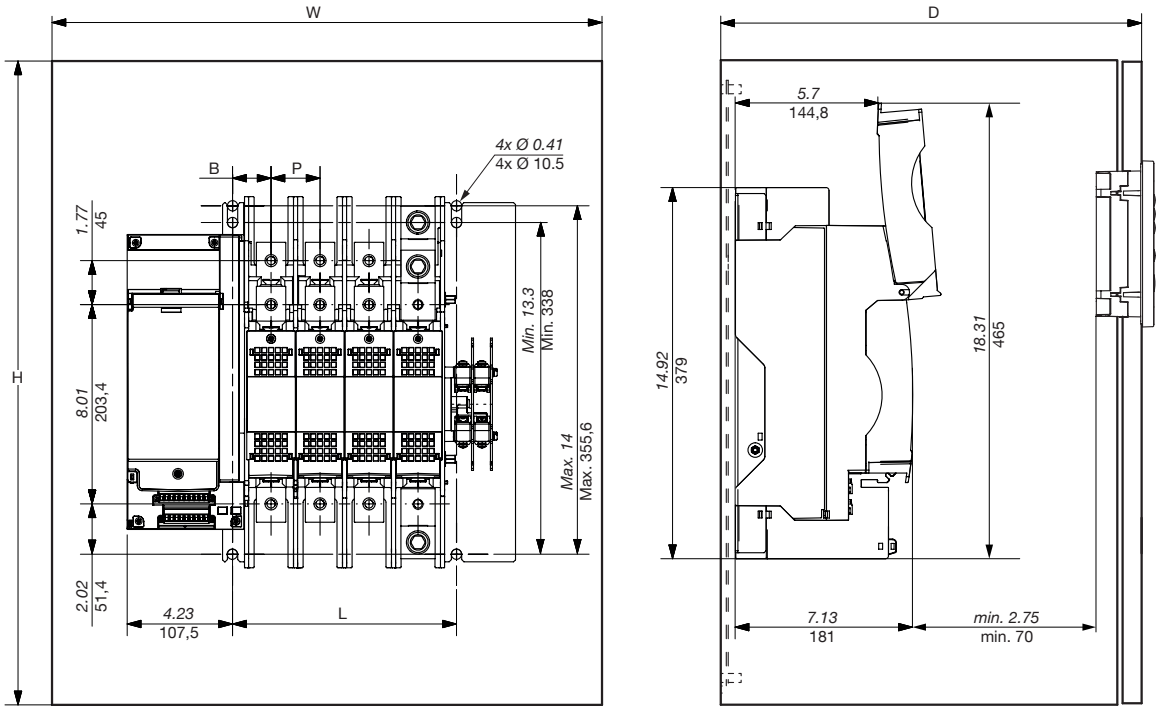


Mounting orientation

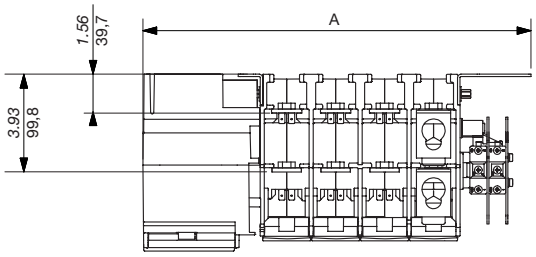
1B Product dimensions

Switch & minimum enclosure size dimensions (4th pole represented with lugs installed.)

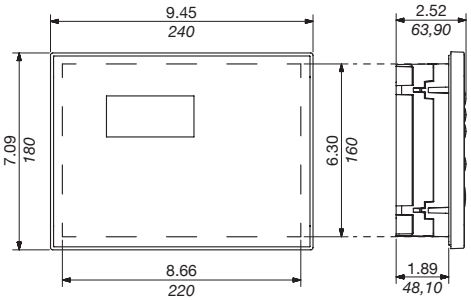
Dual Dimensions
in/mm



Switch top view



Controller dimensions

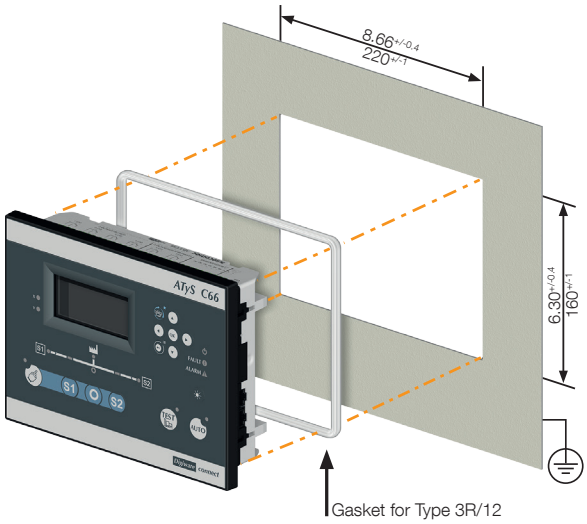


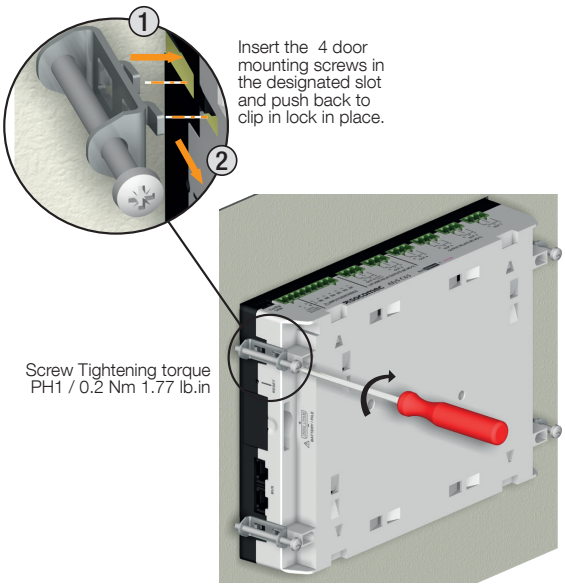
		Switch dimensions								Minimum enclosure size					
		A		B		L		P		H		W		D	
		in	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm
100-200A	2P	*10.47*	266,30	*1.25*	31,80	*3.85*	98,70	*1.38*	35	*20*	508	*16*	406	*12*	305
	2P+N/ 3P	*11.85*	301,30	*1.25*	31,80	*5.49*	133,70	*1.38*	35	*20*	508	*16*	406	*12*	305
	3P+N/ 4P	*13.24*	336,30	*1.25*	31,80	*6.60*	168,70	*1.38*	35	*20*	508	*16*	406	*12*	305
260-400A	2P	*11.67*	296,30	*1.55*	39,30	*5*	128,60	*1.97*	50	*48*	1220	*24*	610	*12*	305
	2P+N/ 3P	*13.63*	346,30	*1.55*	39,30	*7*	178,60	*1.97*	50	*48*	1220	*24*	610	*12*	305
	3P+N/ 4P	*15.60*	396,30	*1.55*	39,30	*8.97*	228,60	*1.97*	50	*48*	1220	*24*	610	*12*	305

1C Mounting & connecting controller

Door mounting

For use on a flat suface of Types 1, 3R, 12 and/or 12K enclosure.

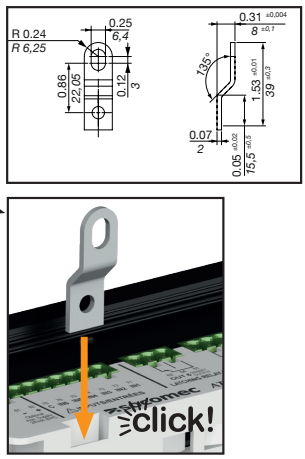




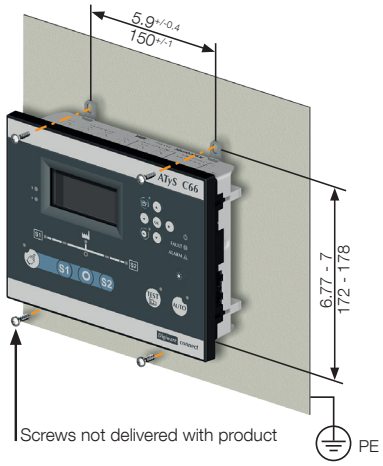
Insert the 4 door mounting screws in the designated slot and push back to clip in lock in place.

Screw Tightening torque
PH1 / 0.2 Nm 1.77 lb.in

Backplate mounting



Clip the mounting feet in the designated slot



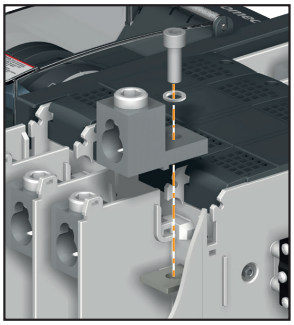
Screws not delivered with product

1D Installing terminal lugs (optional accessory)

Use terminal screws and washers supplied with the ATSE

Product Rating (A)	Designation	Ref. lugs	Quantity per reference	Openings per lug	Size / Section (AWG)		Pressure screw torque				Bolt torque					
					min.	max.	lb.in	Nm		Size in	lb.in	Nm		Size	in	mm
100A	Ilsco D0957	Contact us		1	14	1/0	*50*	5,65	⊖	8	70.8	8	○	5 mm	*0.625*	15,9
200A	Ilsco D2831	Contact us		1	6	250 KCMIL	*275*	31,1	○	5/16	70.8	8	○	5 mm	*1*	25,4
100-200 A	CMC LA-300R	39542020	2	1	6	300 KCMIL	*275*	31,1	○	5/16	70.8	8	○	5 mm	*1.12*	28,4
		39543020	3													
		39544020	4													
260-400 A	CMC LA-630R	39542040	2	1	4	600 KCMIL	*550*	62,1	○	1/2	310	35	○	8 mm	*1.79*	45,7
		39543040	3													
		39544040	4													
260-400 A	Ilsco D3096	Contact us		1	4	600 KCMIL	*600*	67,8	○	1/2	310	35	○	8 mm	*1.79*	45,7

Power cable connections : For 100A use 1/0 AWG / For 200A use 250 KCMIL / For 260A use 300 Kcmil / For 400A use 600 Kcmil copper cables.



⚠ Mount the load terminal lugs on the switch terminals before mounting source 2 terminal lugs.

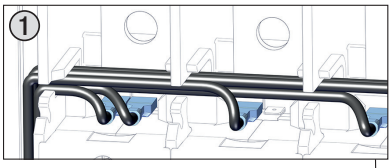
2A Mounting & connecting the cable harness

For details on the cable harness wiring diagram and integration see Cable harness Quickstart guide **ref 551401.**
Cable harness without transformer (**ref. 96964001**) delivered with **96AX XXXX** products.
Cable harness for connections with transformer (**ref. 96974001**) delivered with **968X XXXX** products.
Note: transformers not delivered with the product.

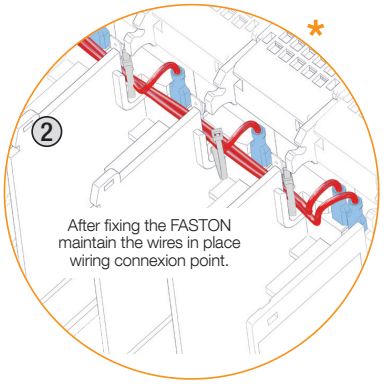
2B Mounting the cable harness on the Switch

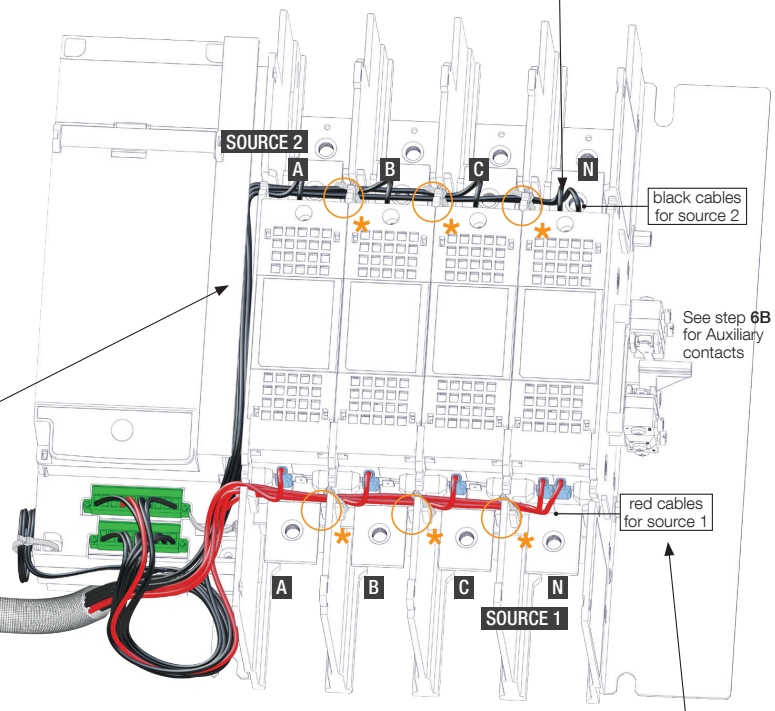
Type	Terminal N°	Description	Characteristics	Recomended Cross Section
Switch power input	101-102	Order switch to position S1	194-304 VAC 8 A for at least 100 ms 50/60 Hz	17-14 AWG 1-2.5 mm²
	201-202	Order switch to position S2		
Switch Signalization output	333-334	Contact closed if cover is closed	Internal use for ATyS C66 controller	
	313-314	Contact closed if the switch is in position S1		
	323-324	Contact closed if the switch is in Position S2		

⚠ Wires must not be in contact with active voltage points such as unused FASTON connections and lugs. In order to do so any unused or loose cables must be tensed then fixed on a non conductive part of the transfer switch (use cable tie fixation points as shown in the images below).

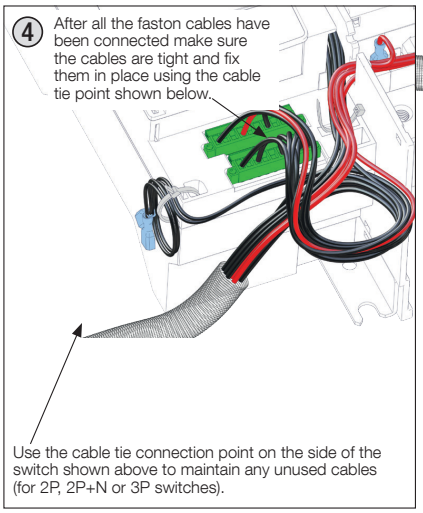


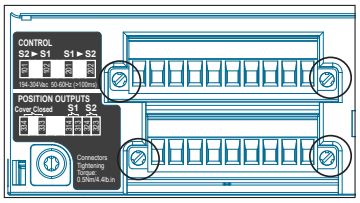
Fix FASTON connectors according to the table in step **2C.**
(Max 2 FASTON per pole).



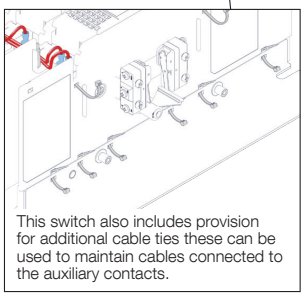


3 Pass wiring harness in the integrated cable duct.





Connector tightening torque
0.3 N.m / 2.7 Lb.in



This switch also includes provision for additional cable ties these can be used to maintain cables connected to the auxiliary contacts.

2C Connection of harness on the switch

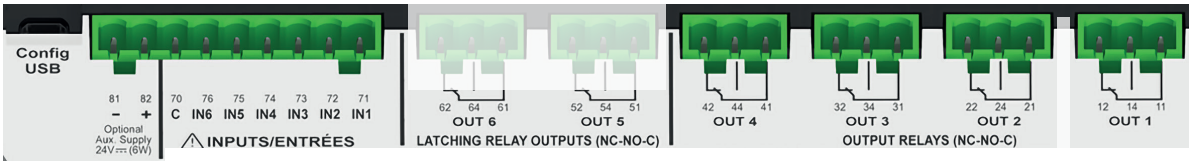
Connect the faston on the switch connexion according to your network and the table below:

			RTSE faston connections				Voltage Transformer			
							480 VAC		240 VAC	
							Primary		Secondary	
Network type	Type	Source	A	B	C	N	H1	H4	X1	X4
240 VAC	2P	S2	S2A & 201	S2B	None (1)	None (1)				
		S1	S1A & 102	S1B	None (1)	None (1)				
120/240 VAC	2P + N	S2	S2A & 201	S2B	None (1)	S2N				
		S1	S1A & 102	S1B	None (1)	S1N				
208 VAC	3P	S2	S2A & 201	S2B	S2C	None (1)				
		S1	S1A & 102	S1B	S1C	None (1)				
120/208 VAC	3P+N / 4P	S2	S2A & 201	S2B	S2C	S2N				
		S1	S1A & 102	S1B	S1C	S1N				
277/480 VAC	3P+N / 4P	S2	S2A	S2B	S2C	S2N & 201				
		S1	S1A	S1B	S1C	S1N & 102				
480 VAC + transfo	3P	S2	2xS2A	2xS2B	S2C	-	T2A	T2B	T2A'	T2B'
		S1	2xS1A	2xS1B	S1C	-	T1A	T1B	T1A'	T1B'

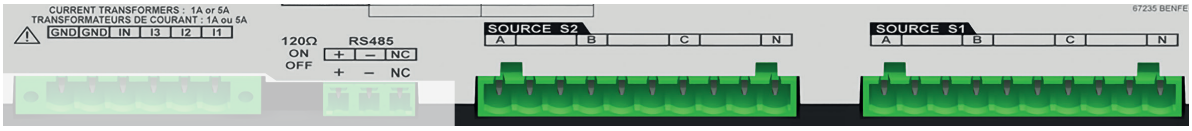
(1) Cables which are not used are to be fastened as shown in image 4 of step 2B.

2D Controller connection details

Wiring harness connectors to place on controller.



Top view



Bottom view

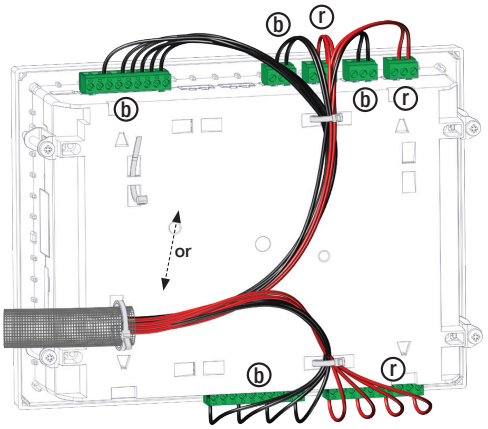
Type	Terminal N°	Description	Characteristics	Recomended cross section	Tightening torque
Sensing source 1	SOURCE 1 L1/L2/L3/N	Voltage sensing inputs source 1 & voltage supply (L1-L2)	Sensing voltage 50 - 575 V.a.c P-P - 50/60 Hz (+/- 10%) Supply voltage (L1-L2) 88 - 576 V.a.c - 50/60Hz (+/- 10%) Ui 600V	AWG 18-14 0.75-2.5mm²	4.4-5.3 lb.in 0.5-0.6 Nm
Sensing source 2	SOURCE 2 L1/L2/L3/N	Voltage sensing inputs source 2 & voltage supply (L1-L2)			
Inputs	71	IN1: SWITCH IN POS1	Do not connect to any external power supply	AWG 20-14 0.5-2.5mm²	
	72	IN2: SWITCH IN POS 2			
	73	IN3: DOOR OPEN			
	74	IN4: programmable input 4			
	75	IN5: programmable input 5			
	76	IN6: programmable input 6			
	70	Common point for inputs			
Aux power supply	81/82	- : negative terminal for aux supply +: positive terminal of aux supply	12-24 Vd.c.		
Outputs	12/14/11	OUT1: POS 1 ORDER	Dry contacts 8A / 277 VAC 50/60 Hz 5A / 24 VDC	AWG 16-14 1.5-2.5mm²	
	22/24/21	OUT2: POS 2 ORDER			
	32/34/31	OUT3: POS 1 ORDER			
	42/44/41	OUT4: POS 2 ORDER			
	52/54/51	OUT5: programmable output 5 (latching)			
	62/64/61	OUT6: genset start relay			
Current transformers	IN/I3/I2/I1	CT neutal / 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	LiYCY shielded twisted pair 30-14 AWG / 0.14 to 1.5 mm²	1.9 - 2.2 Lb.in 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

2E Mounting the cable harness on the controller

For details on the controller connectors refer to step 2D, after inserting the required connectors use the cable tie connection points shown below to maintain the cables in place:

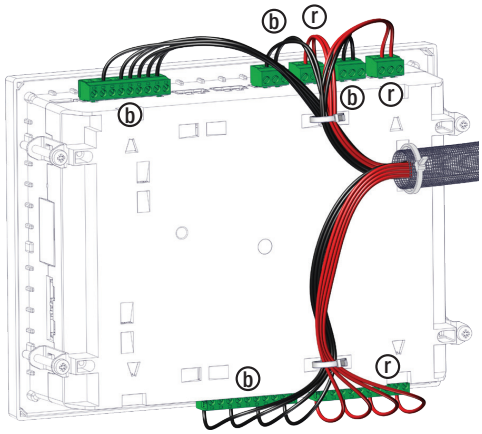
Left side hinge door



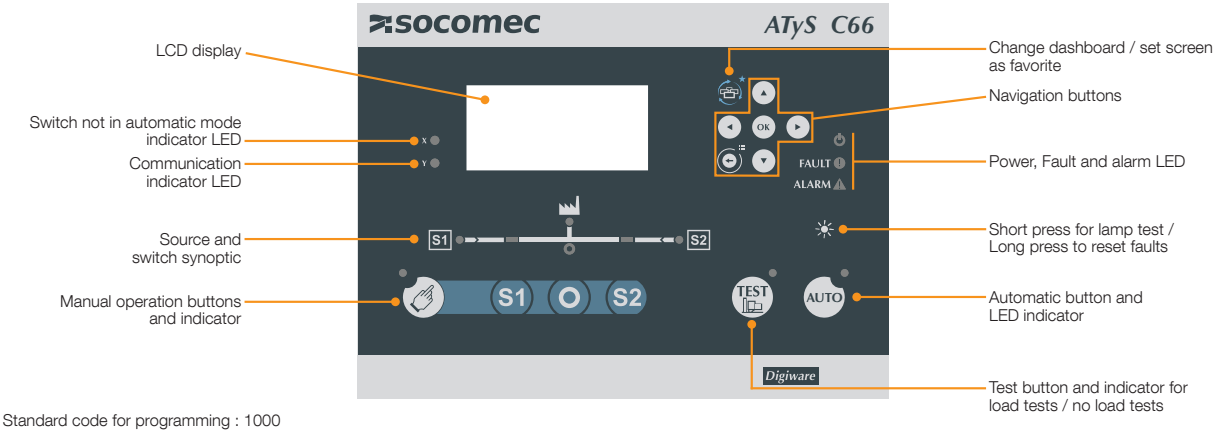
b black cables

r red cables

Right side hinge door



3 Controller Interface



Standard code for programming : 1000

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:

Language → Time & date → Source config → Switch & Application → Product Name → Communication

For advanced configuration go to parameters menu.

⚠ In STEP 5/8 of the wizard config make sure the network detected matches your network.
In STEP 6/8 make sure the "switch technology" parameter is set to "ATyS FT".

⚠ If a fault is shown on the controller, correct the associated fault and clear by doing a long press (>3s) on the lamp test button.

4 Operational limits

Operating voltage @ 50/60 (+/- 10%) Hz		
Network	Minimum Coil Operating voltage (VAC)	Maximum Coil Operating voltage (VAC)
277/480 VAC	194 (Ph/N)	304 (Ph/N)
120/208 VAC	194 (Ph/Ph)	304 (Ph/Ph)
120/240 VAC	194 (Ph/Ph)	304 (Ph/Ph)
480 VAC with transformer	194 (Ph/N)	304 (Ph/N)

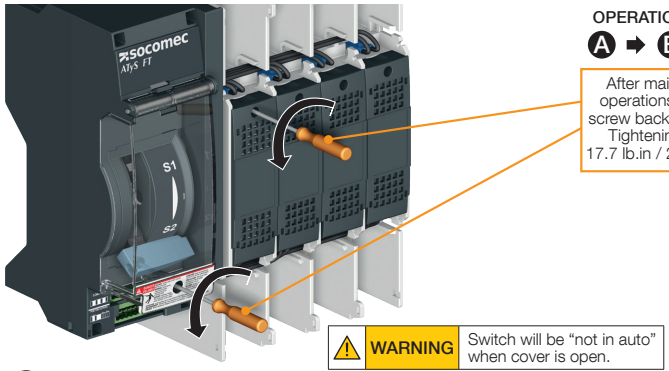
Operating temperature		
Switch and Transformer	I0 /10	Controller
32 to 131°F 0 to +55°C	14 to 158°F -10 to +70°C	-22 to 158°F -30 to +70°C with limitation on the LCD screen that may show distortion below 32°F / 0°C

	Operating times (1)				
Rating	Transfer description	Minimum transfer time (ms) (Normal to alternate)	Minimum transfer time (ms) (Atlternate to normal)	Maximum transfer time (ms) (Normal to alternate)	Maximum transfer time (ms) (Atlternate to normal)
100-200 A	Contact transfer time (2)	24	21	31	27
	Total transfer time (3)	100	280	127	486
260-400 A	Contact transfer time (2)	30	27	45	32
	Total transfer time (3)	106	286	141	491

(1) All times measured without load and at 240 VAC at ambient temperature, actual times may vary depending on network and load.
(2) Time for which load is disconnected from both source 1 and source 2 with both sources available.
(3) Total time to transfer including detection of source total failure and transfer times.

5 Manual operation (for maintenance purpuses only)
Instructions for manual, non-electric, offload operations for service

⚠ **WARNING** More than one live circuit! Disconnect all sources of supply before servicing and/or before using the manual operation.



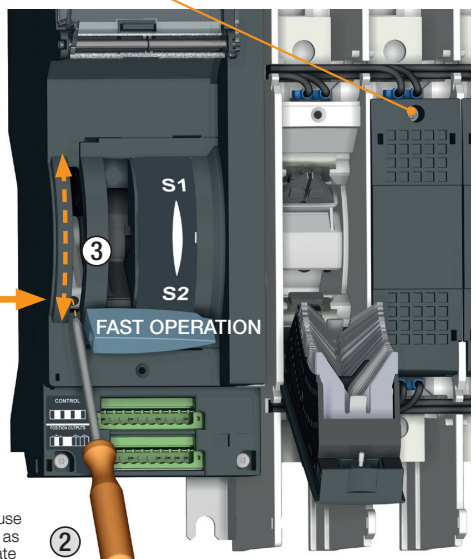
OPERATION ORDER
A ➡ B ➡ C

After maintenance operations are done screw back the covers: Tightening torque 17.7 lb.in / 2 N.m / PH2

⚠ **WARNING** Switch will be "not in auto" when cover is open.

A **Unscrew handle cover and arc chutes cover**

C **Use the slow or fast handle to visualize the state of the contacts**

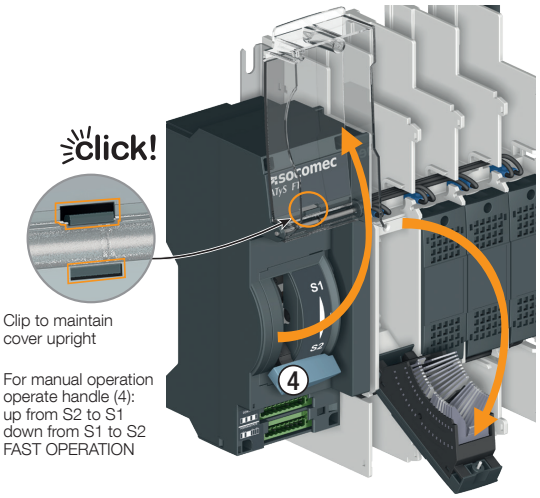


① Slide cover to access service handle hole.

For inspection use a standard tool as shown to operate (not included).

0.25 in / 6mm diam max.
SLOW OPERATION

② Inspection of power contacts



Clip to maintain cover upright

For manual operation operate handle (4):
up from S2 to S1
down from S1 to S2
FAST OPERATION

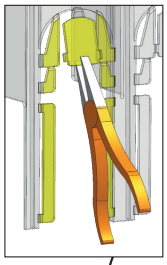
B **Open the cover and click in place and open the arc chute**

Recommendation : carry out one offload manual operation with handle ④ (FAST OPERATION) before putting the switch back in service.

Reverse the procedure to close.
Ensure that all is closed properly before putting back in service.
In case any part of the ATyS FT switch is found to be damaged in any way, replace the complete switch.

6A Installing power terminal shrouds (optional accessories)

Top and bottom protection against direct contact with terminals or connecting parts.

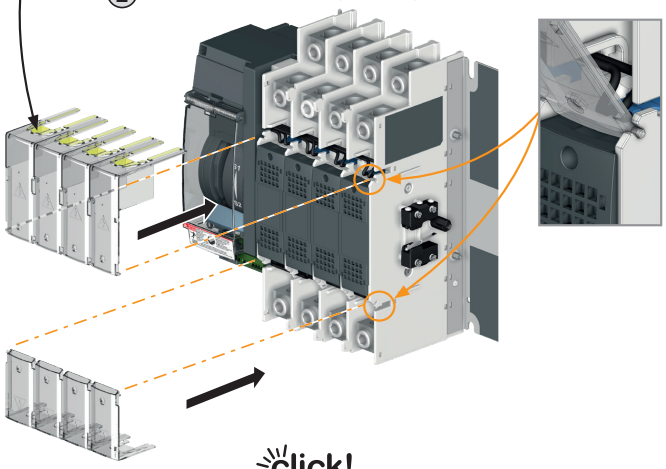


1 For 250, 300 & 600 KCMIL (200 , 260 400A) break off all removable parts (highlighted on the picture).
For 1/0 & (100A) do not remove any parts.

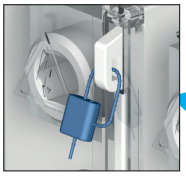
	No. of poles	Reference*
100-200A	2P	96982020
	3P/2P+N	96983020
	4P/3P+N	96984020
260-400A	2P	96982040
	3P/2P+N	96983040
	4P/3P+N	96984040

* Refs: top and bottom

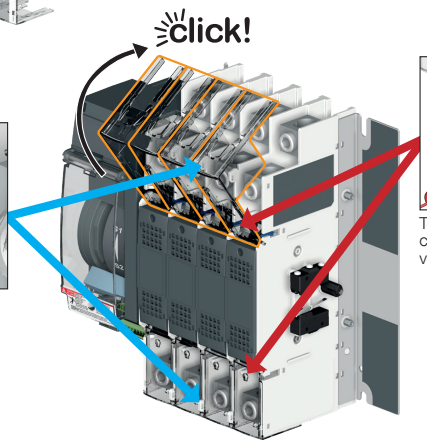
2 Fix the terminal shrouds in place and push back

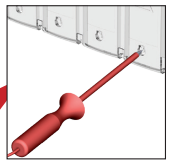


3 Push back to click in place.



Terminal shrouds can be locked in place using locking points





Terminal shrouds contain provisions for voltage sensing

PERIODIC MAINTENANCE

The ATyS FT shall be maintained in accordance with industry standards and as per instructions in the ATyS FT instruction sheet.

As per NFPA 110 requirements for emergency and standby power systems the ATyS FT should be inspected and should be exercised under load at least monthly.

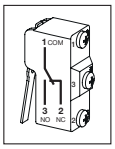
Refer to step 5 for instructions for manual, "non-electric", offload operations for service.

⚠ WARNING	More than one live circuit. Disconect all sources of supply before servicing and/or before using the manual operation.

CORPORATE HQ CONTACT: SOCOMEC SAS, 1-4 RUE DE WESTHOUSE, 67235 BENFELD, FRANCE.
Print: 80 g/m² - open format 432 x 279 mm - folded 216 x 279 mm with staples - R/V - B&W.
The bar code must be visible once the document is folded.

6B Additional auxiliary contacts

Switch has 2 pre-installed auxilliary contacts, the kit below is for 2 additional contacts with protection against direct contact.

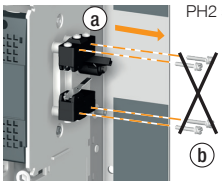


Terminal tightening torque
7.9 lb.in / 0.9 Nm

Auxiliary contact electrical characteristics	
Rated current (125-480 VAC)	22 A
Rated current (125 VDC)	0.5A
Rated current (250 VDC)	0.25 A
Rated horse power up to 250 VAC	½ HP
Rated horse power up to 480 VAC	¼ HP
Recommended wire section for 22A	10 AWG 4 mm²

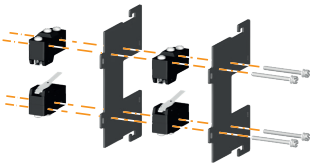
⚠ Use the correct protection according to your auxiliary contact circuit and your load

1 Remove pre-installed auxillary contact

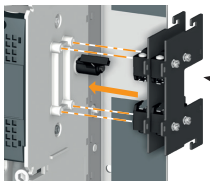


PH2 screwdriver

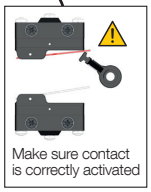
2 Assemble contacts with parts from kit as shown below



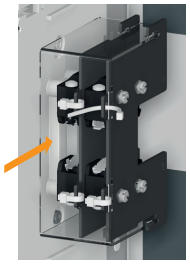
3 Assemble optional aux contact and pre-installed aux contact together



Tightening torque
17.7 lb.in / 2 N.m / PH2



Make sure contact is correctly activated



4 Place the transparent plastic piece to cover the auxiliary conacts and lock in place in order to protect from direct contacts.

Ref : 96990021

4. GENERAL OVERVIEW

The Open Type ATYS FT include:

- 1 transfer switch (fast transfer)
- 1 set of terminal connection screws
- 1 ATyS C66 ATS controller
- 1 ATyS C66 NEMA 3R gasket
- 1 ATyS C66 door mounting kit
- 1 ATyS C66 back plate mounting kit
- 1 Connector kit for C66 controller
- 1 Cable harness for connections between the switch and the controller
- 20 Cable ties for harness fixation
- 1 quickstart guide points

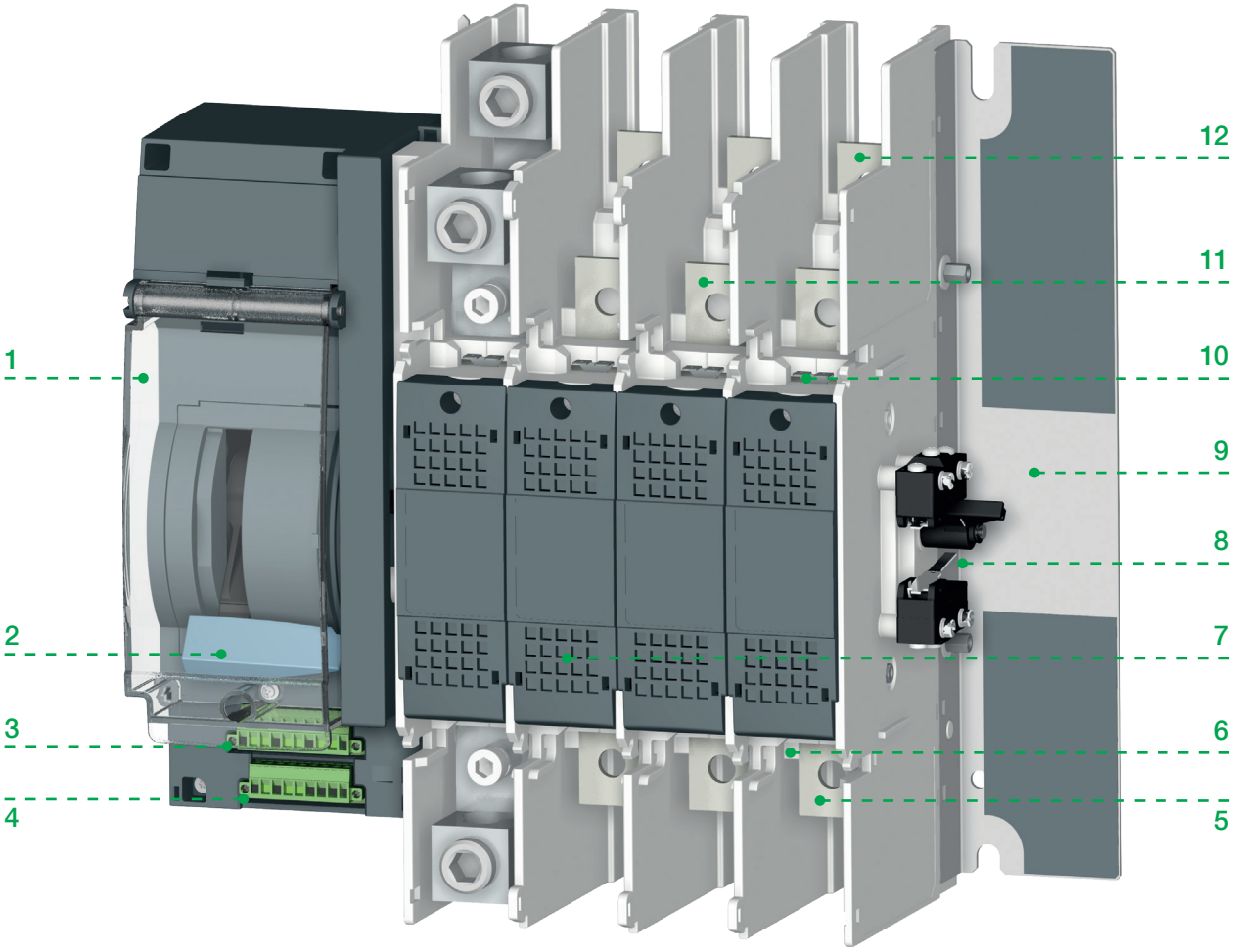
All other components described in this instruction sheet are accessories and are sold separately.

If any components are missing from the list described above contact your local Socomec contacts.

4.1. ATyS FT (fast transfer) switching mechanism

The ATyS FT is a I-II position UL 1008 transfer switch, available from 100 to 400A.

Here is a view of the customer accessible elements on the switching mechanism:



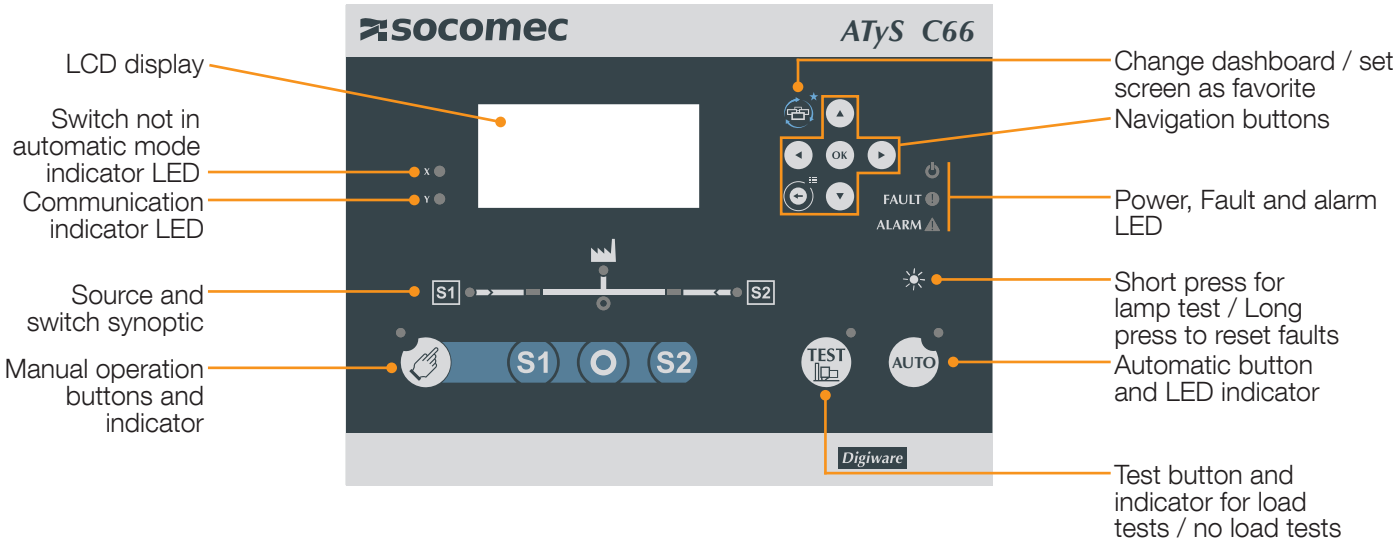
1. Plastic cover for off load manual operation
2. Manual handle for off load operations
3. Input connector (coil voltage supply)
4. Output connector (internal position and cover auxiliary contacts)
5. Source 1 power terminals
6. Source 1 faston voltage sensing terminals
7. Hinged arc chamber for easy inspection of the power contacts
8. Position auxiliary contacts (NO / NC)
9. Back-plate mounting legs
10. Source 2 faston sensing terminals
11. Source 2 supply power terminals
12. Load side power terminals

4.2. ATyS C66 ATS Controller

The ATyS C66 controller is an ATS controller designed to function as an emergency system automatic transfer switch when used with the ATyS FT and ATyS DT switching mechanism.

In this instruction manual we will go over the basic settings for the association of the ATyS C66 with the ATyS FT switch, for more information on the detailed configuration of the C66 download the following instruction sheet :

https://www.socomec.us/wp-content/uploads/2020/04/ATYS-C66-INSTRUCTION-MANUAL_INSTRUCTION-MANUAL_2020-02_549868_EN-USA.pdf



4.3. ATyS FT Cable Harness

The ATyS FT is delivered with a wiring harness, which includes all connections points for sensing, supply voltage to the coils and controller, and input/outputs from the switch mechanism to the controller.

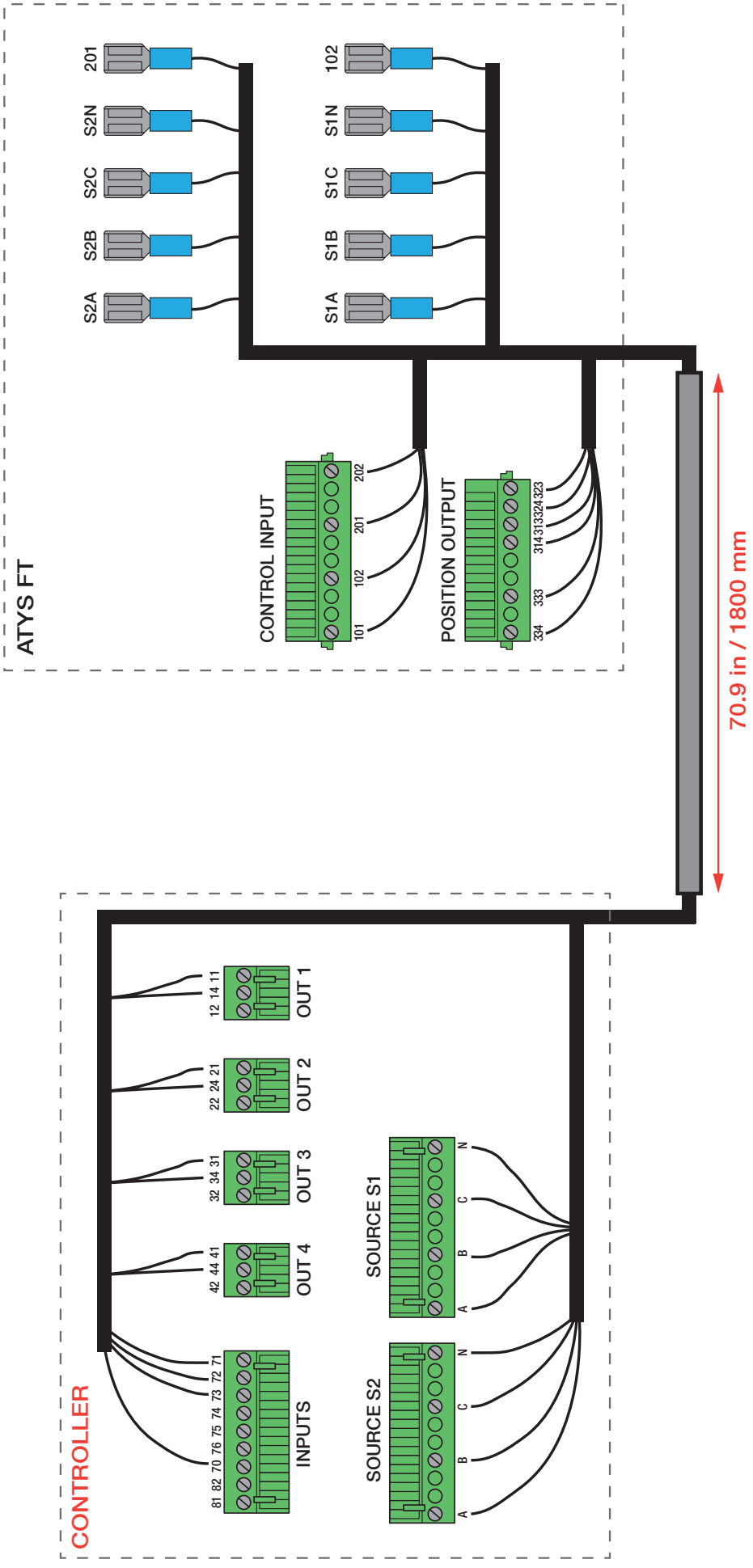
Cable harnesses are in compliance with pollution degree III.

Wires are stranded copper wires rated up to 600/347 V.a.c, Max. 7A, 18 AWG (0.75 mm^2) cross section.

There are two different ATyS FT cable harnesses:

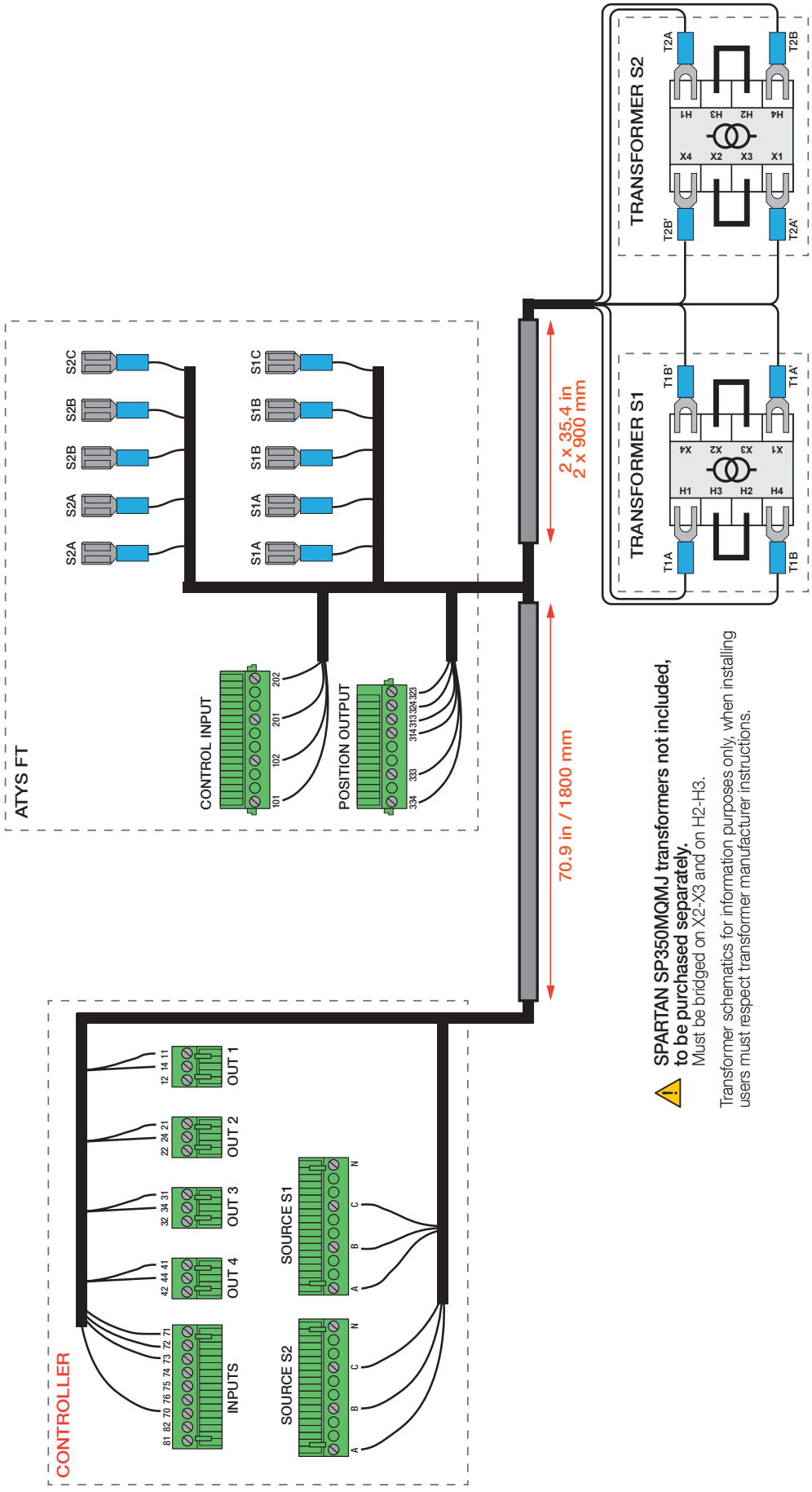
4.3.1. Without Transformer connection points

Ref: 9696 4001 for use with ATyS FT **ref 96AX XXXX**
(X variable number depending on number of poles and rating of the switch).



4.3.2. With Transformer connection points

Ref: 9697 4001 for use with ATyS FT **ref 96AX XXXX**
(X variable number depending on number of poles and rating of the switch).



Note: in line with section 7.1.25 of UL 1008 edition 8 control circuits that are dependent upon for the proper operation of the transfer switch, do not include protective devices connected.

4.4. Optional accessories

The accessories listed below are not included in the ATyS FT kit and must be ordered separately.

Terminal screens

Use

Top and bottom terminal screens to protect from direct contact to the terminals. These protection screens can be locked and secured on the switch, are pre-cut for all compatible wire sizes and include holes for voltage and heat sensing.

Rating (A)	No. of poles	Reference (1)
100 ... 200 A	2 P	**9698 2020**
	3 P / 2 P + N	**9698 3020**
	4 P / 3 P + N	**9698 4020**
260 ... 400 A	2 P	**9698 2040**
	3 P / 2 P + N	**9698 3040**
	4 P / 3 P + N	**9698 4040**

(1) Top and bottom.

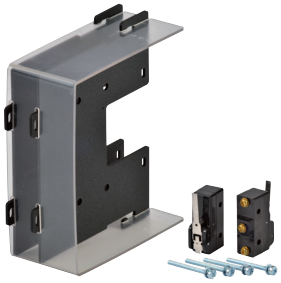
Additional auxiliary contact kit

Use

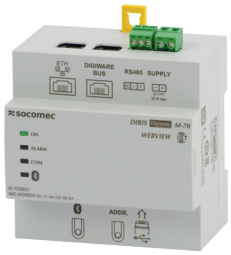
The ATyS FT and the ATyS DT ship with 2 NO/NC auxiliary contacts already mounted on the switch. If additional auxiliary contacts are needed this kit includes 2 additional auxiliary contacts as well as a polycarbonate protection cover to protect from direct contact on auxiliary contact terminals.

These additional auxiliary contacts are installed on top of the existing auxiliary contacts.

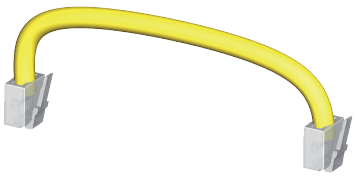
Reference **96990021**, see chapter ««6.5.3. Extra auxiliary contact and cover», page 40 for more details.



4.4.1. Digiware connected devices

Part Number	Image	Description
4829 0140		DIRIS Digiware IO-10 for ATySC66 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	1A / 5A Current Transformers	

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	

4.4.2. Auxiliary DC power supply:

This power supply is optional when using the controller without digiware accessories, it is mandatory to use it when using digiware connected accessories. See chapter «6.5.4. I/O 10», page 42 for more details on digiware compatible products.

Power supply		Reference
P15	Power supply 100-240 VAC / 24 VDC 15 W	**4829 0120**

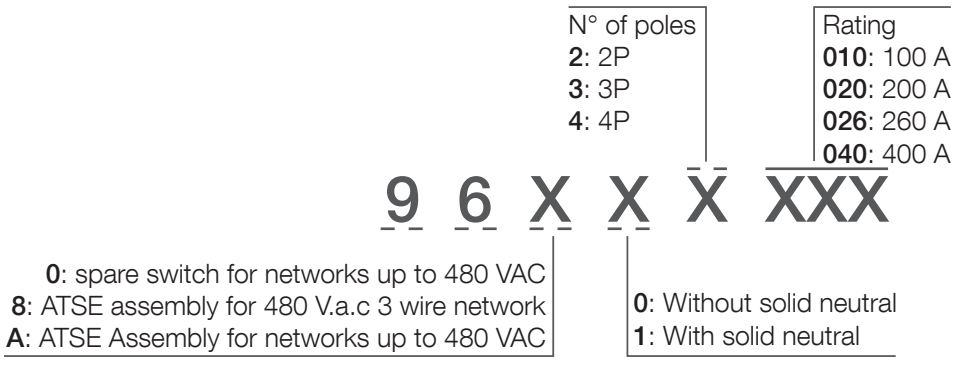
4.4.3. Lugs

Use terminal screws and washers supplied with the ATSE

Product Rating (A)	Designation	Ref. lugs	Quantity per reference	Openings per lug	Size / Section (AWG)		Pressure screw torque				Bolt torque					
					min.	max.	lb.in	Nm	Size in		lb.in	Nm	Size		in	mm
100A	 Ilsco D0957	Contact us		1	14	1/0	50	5,65	⊖	8	70.8	8	○	5mm	0.625	15,9
200A	 Ilsco D2831	Contact us		1	6	250 KCMIL	275	31,1	○	5/16	70.8	8	○	5mm	1	25,4
100-200 A	 CMC LA-300R	39542020	2	1	6	300 KCMIL	275	31,1	○	5/16	70.8	8	○	5mm	1.12	28,4
		39543020	3													
		39544020	4													
260-400 A	 CMC LA-630R	39542040	2	1	4	600 KCMIL	550	62,1	○	1/2	310	35	○	8mm	1.79	45,7
		39543040	3													
		39544040	4													
260-400 A	 Ilsco D3096	Contact us		1	4	600 KCMIL	600	67,8	○	1/2	310	35	○	8mm	1.79	45,7

Power cable connections : For 100A use 1/0 AWG / For 200A use 250 KCMIL / For 260A use 300 Kcmil / For 400A use 600 Kcmil copper cables.

4.5. Reference configurator:



4.6. Environmental

The ATyS products meets the following environmental requirements:

4.6.1. Operating Conditions

4.6.1.1. Temperature

- **Controller**
  From -22°F to +158°F (-30°C to +70°C).
  NOTE: With limitations on the LCD screen that may show temporary distortion below 14°F (-10°C).

- **Switch mechanism:**
  From: 32°F to 131°F (0°C to +55°C).
  Max 380 A at 122°F (50°C) for 400A switches. Max 350 A at 131°F (55°C) for 400 A switch.
  For a more precise calculation of the temperature derating for your application please contact Socomec.

- **Wire harness**
  From -4°F up to +158°F (-20°C to +70°C).

4.6.1.2. Hygrometry

- 80% humidity without condensation at +131°F (+55°C).
- 95% humidity without condensation at +104°F (+40°C).

4.6.1.3. Resistance to impacts

- IK 05 as defined in IEC 62262 on the switch front face.
- IK 08 (6.8 J) rating as defined in UL 61010-2-201 on the controller front face.

4.6.1.4. Altitude

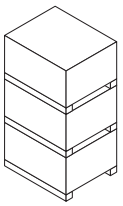
- Up to 6561 feet (2000m) in altitude without derating.

For a calculation of the product derating for altitudes over 6561 feet (2000m), for your application please contact Socomec.

4.6.2. Storage

Products should be store for a maximum of 12 months, it is recommended to store product in dry, non-corrosive and non-saline atmospheric conditions. Recommended storage room temperature (77°F / 25°C) maximum storage temperature range from -4°F up to +158°F (-20 °C up to +70°C).

A maximum of three boxes may be stacked vertically.



4.6.3. ATyS FT Volume and shipping weight by reference:

Rating	N° of Poles	Solid Neutral	Network type	Reference Number	Weight (kg)				Volume
					Net		Gross		
					Lb.	Kg	Lb.	Kg	
100	2	Without	Up to 240 VAC	96A0 2010	23.37	10.6	57.72	26.18	(inch) 31.5x23.6x13.4 (mm) 800X600X340
100	2	With	Up to 480 VAC	96A1 2010	25.35	11.5	59.70	27.08	
100	3	Without	Up to 480 VAC	96A0 3010	28.00	12.7	62.35	28.28	
100	3	Without	480 VAC	9680 3010	28.00	12.7	62.35	28.28	
100	3	With	Up to 480 VAC	96A1 3010	28.44	12.9	62.79	28.48	
100	4	Without	Up to 480 VAC	96A0 4010	29.45	13.36	63.80	28.94	
200	2	Without	Up to 240 VAC	96A0 2020	23.37	10.6	57.72	26.18	
200	2	With	Up to 480 VAC	96A1 2020	25.35	11.5	59.70	27.08	
200	3	Without	Up to 480 VAC	96A0 3020	28.00	12.7	62.35	28.28	
200	3	Without	480 VAC	9680 3020	28.00	12.7	62.35	28.28	
200	3	With	Up to 480 VAC	96A1 3020	28.44	12.9	62.79	28.48	
200	4	Without	Up to 480 VAC	96A0 4020	29.45	13.36	63.80	28.94	
260	2	Without	Up to 240 VAC	96A0 2026	27.12	12.3	61.46	27.88	
260	2	With	Up to 480 VAC	96A1 2026	30.20	13.7	64.55	29.28	
260	3	Without	Up to 480 VAC	96A0 3026	30.28	13.78	64.73	29.36	
260	3	Without	480 VAC	9680 3026	30.28	13.78	64.73	39.36	
260	3	With	Up to 480 VAC	96A1 3026	33.95	15.4	68.3	30.98	
260	4	Without	Up to 480 VAC	96A0 4026	34.74	15.76	69.09	31.34	
400	2	Without	Up to 240 VAC	96A0 2040	27.12	12.3	61.46	27.88	
400	2	With	Up to 480 VAC	96A1 2040	30.20	13.7	64.55	29.28	
400	3	Without	Up to 480 VAC	96A0 3040	30.28	13.78	64.73	29.36	
400	3	Without	480 VAC	9680 3040	30.28	13.78	64.73	39.36	
400	3	With	Up to 480 VAC	96A1 3040	33.95	15.4	68.3	30.98	
400	4	Without	Up to 480 VAC	96A0 4040	34.74	15.76	69.09	31.34	

4.6.4. Marking

The association of controller, harness and switching mechanism as well as other accessories is UL listed to UL 1008 (cULus marking), individually components (spare parts) are UL recognized (cURus marking).

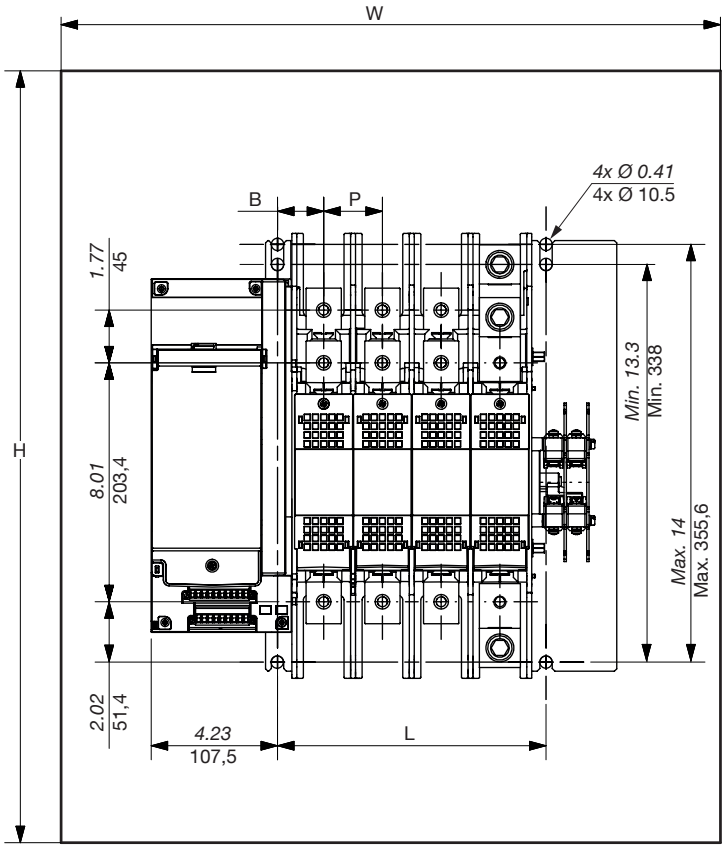
c UL us LISTED

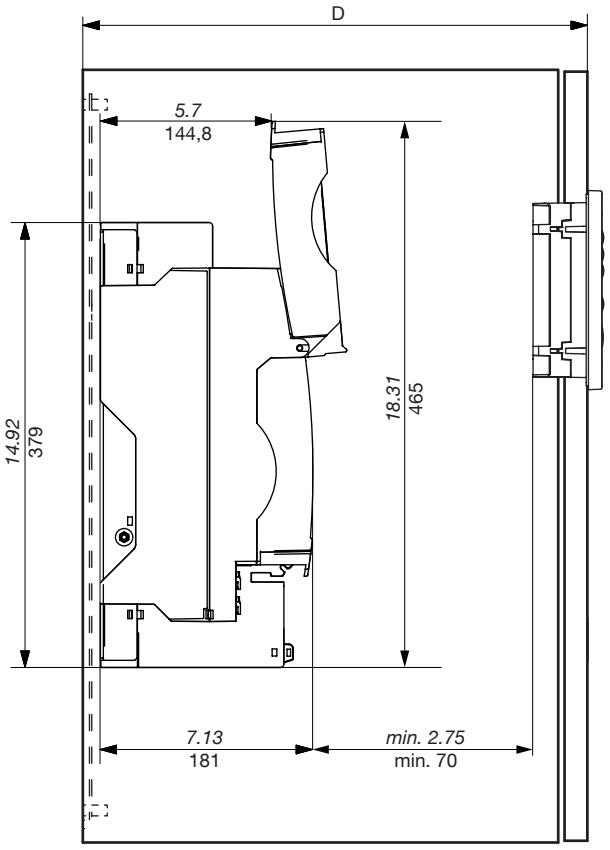
5. PRODUCT DIMENSIONS

Drawings below include switch dimensions as well as minimum enclosure size.

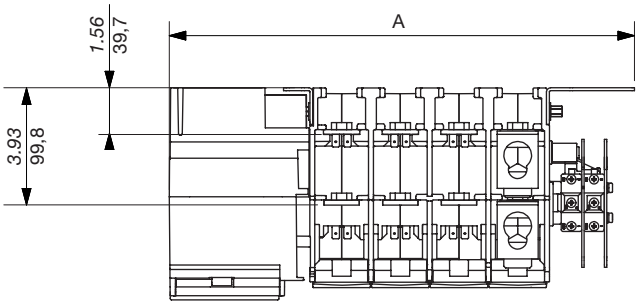
Switch dimensions

Dual Dimensions
in/mm

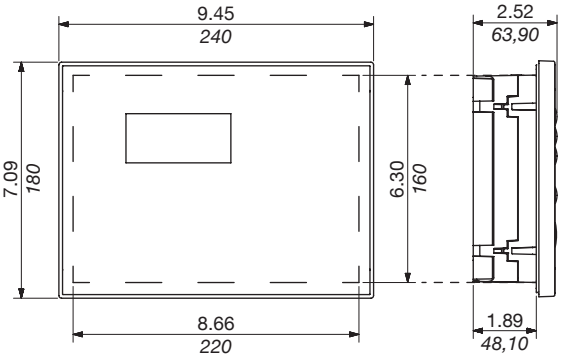




Switch top view

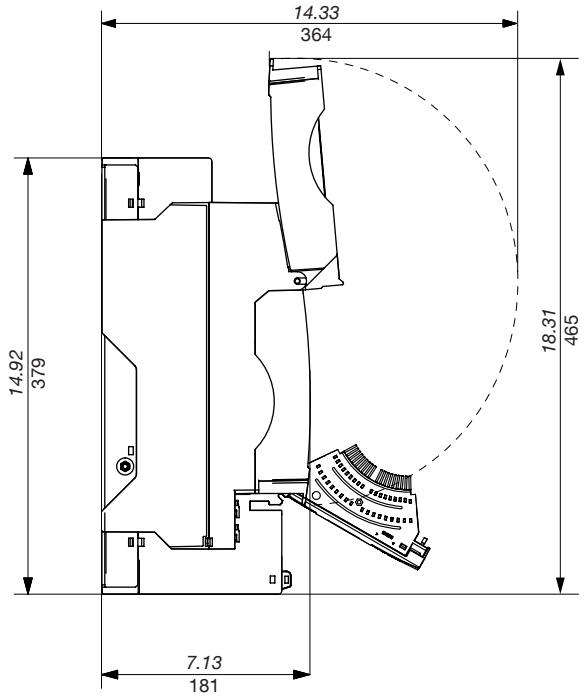


Controller dimensions



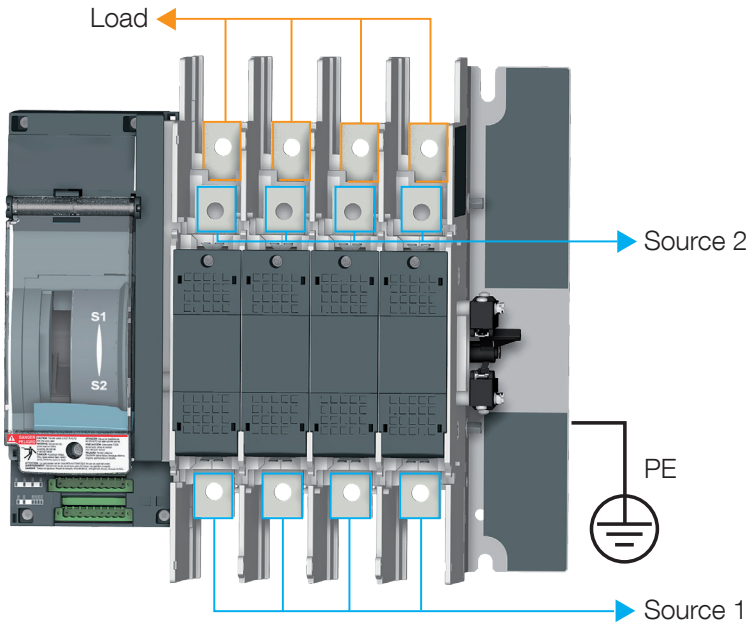
		Switch dimensions								Minimum enclosure size					
		A		B		L		P		H		W		D	
		in	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm
100-200A	2P	*10.47*	266,30	*1.25*	31,80	*3.85*	98,70	*1.38*	35	*20*	508	*16*	406	*12*	305
	2P+N/ 3P	*11.85*	301,30	*1.25*	31,80	*5.49*	133,70	*1.38*	35	*20*	508	*16*	406	*12*	305
	3P+N/ 4P	*13.24*	336,30	*1.25*	31,80	*6.60*	168,70	*1.38*	35	*20*	508	*16*	406	*12*	305
260-400A	2P	*11.67*	296,30	*1.55*	39,30	*5*	128,60	*1.97*	50	*48*	1220	*24*	610	*12*	305
	2P+N/ 3P	*13.63*	346,30	*1.55*	39,30	*7*	178,60	*1.97*	50	*48*	1220	*24*	610	*12*	305
	3P+N/ 4P	*15.60*	396,30	*1.55*	39,30	*8.97*	228,60	*1.97*	50	*48*	1220	*24*	610	*12*	305

Side view covers open



6. MOUNTING INSTRUCTIONS

6.1. Installation



Mounting orientation

Socomec recommends connecting the Emergency (or alternate) source on the Source 2 power connections and the Normal (primary) source on the Source 1 power connectors.

However, it is possible to invert the position of the Normal and emergency sources on both the controller and on the switch; in this case source priority must also be inverted on the controller.

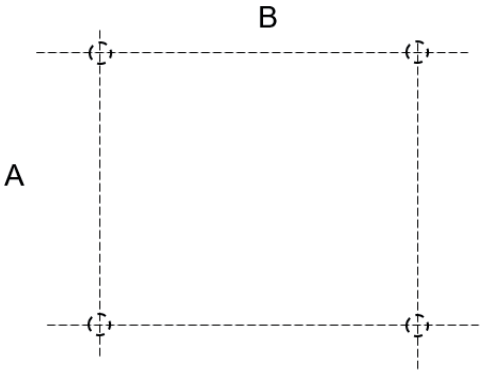
DANGER ! Product must be installed vertically (cf image above) on a flat surface of a type 1, 3R, 12 and/or 12K enclosure, select an enclosure according to the minimum enclosure size indicated in the previous chapter.

6.2. Mounting the switching mechanism

The recommended ATyS FT switching mechanism installation sequence is the following:

STEP 1: Prepare the four mounting screws:

Fix the four screws according to the diagram,



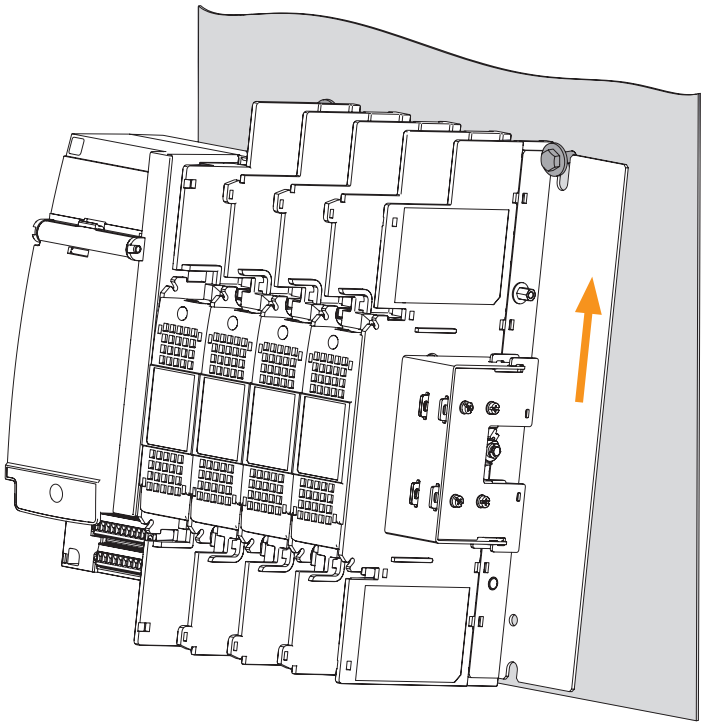
Max screw diameter 0.33 in (M10)

In/mm	100-200 A			260 – 400 A		
	2P	2P+N/3P	3P+N/4P	2P+N/3P	3P+N/4P	2P+N/3P
A	13.3 / 355	13.3 / 355	13.3 / 355	13.3 / 355	13,3 / 355	13.3 / 355
B	3.85 / 98.70	5.49 / 133.70	6.60 / 168.70	5 / 128.6	7 / 178.6	9 / 228.6

Note: switch mounting screws are not delivered with the product.

STEP 2: Inserting the top side of the switch

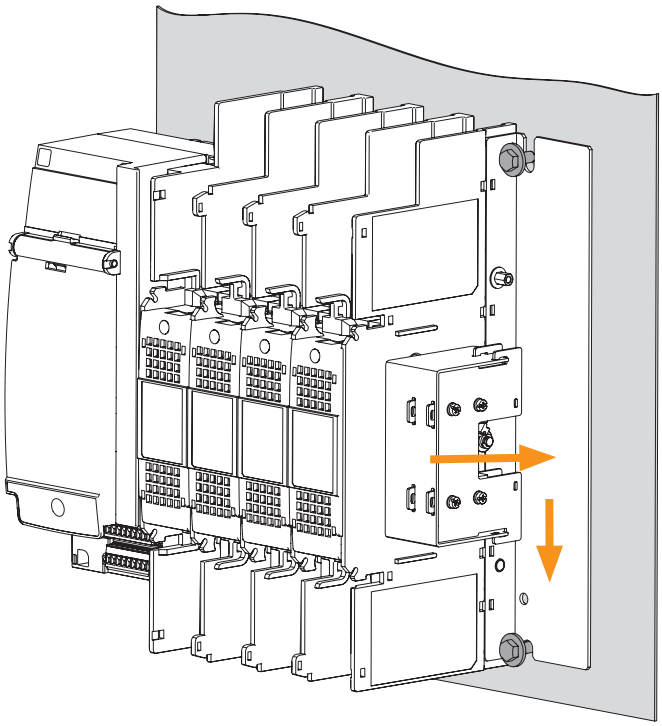
Insert the oblong holes of the mounting legs in the top side screws.



STEP 3: Positioning the switch

Position the two-bottom mounting legs on the bottom screws.

The switch is now stable and resting on the four screws, and then tighten the four screws until the switch is fixed securely into place. (For tightening torque and screw type, refer to the enclosure backplate manufacturer information).



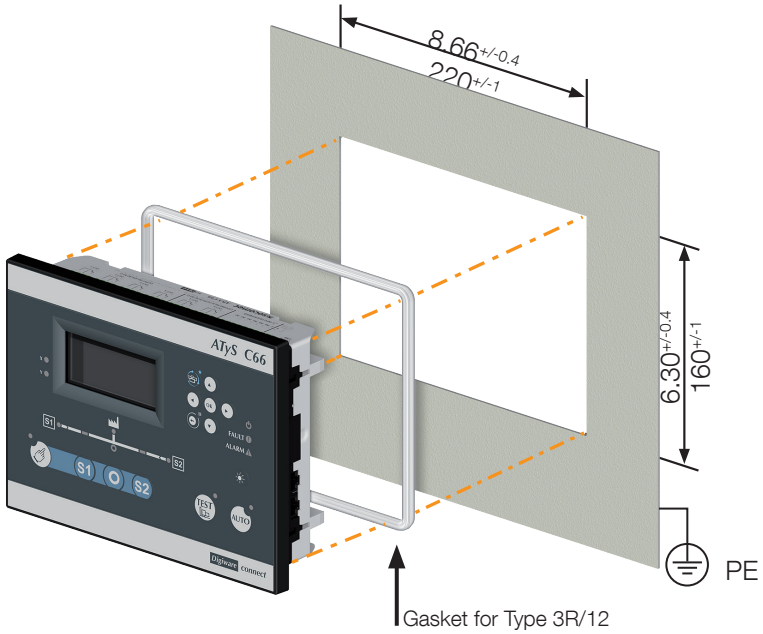
6.3. Mounting the C66 controller

6.3.1. Door Mounting

The ATyS C66 can be mounted Surface must be Types 1, 3R, 12 and/or 12K enclosure doors with up to 0.15 in (4mm) thickness.

STEP 1: Cut out for the controller

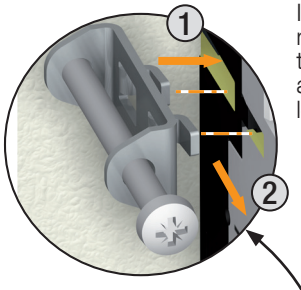
Cut a rectangle hole of 8.66 x 6.3 in (220x160mm) on the enclosure door.



For NEMA 3R12 protection the gasket must be placed and fitted on the inside perimeter of the controller.

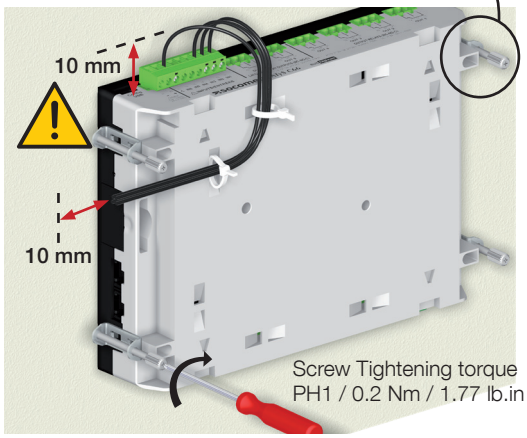
STEP 2: Fixing the controller on the door:

Place the switch inside of the cutout and clip the door mounting screw delivered with the product, on the side of the controller (2 screws per side). Tighten at 1.77 lb.in (0.2 N.m).



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

Example of cable way.



Caution! Cables must be more than 0.4 in (10mm) away from the RTC battery cover and USb connector.

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

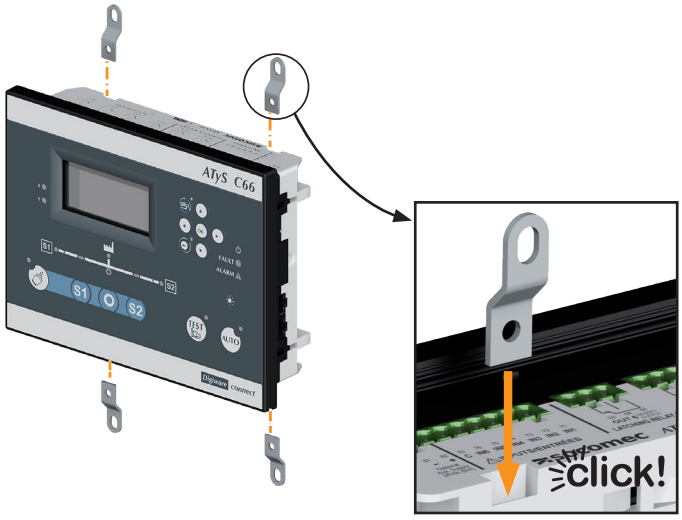
6.3.2. Backplate mounting

An alternative to mounting the controller on the door is to mount it on a backplate inside the enclosure.

This is especially useful to limit the access to the controller.

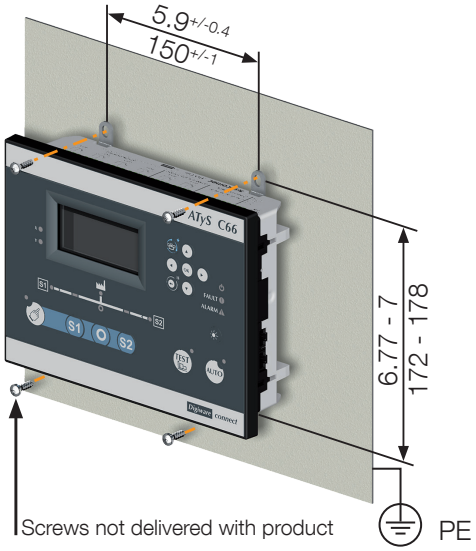
STEP 1: Placing the 4 mounting legs on the controller

Insert the mounting legs into the four slots (2 top side and 2 bottom side (c.f. below topside view)).



STEP 2: Fixing the controller on the backplate

Fix the controller through the mounting legs to the backplate, maximum screw diameter 0.22in/6mm.



Note: screws for backplate mounting are not delivered with the product

6.4. Mounting the ATyS FT cable harness

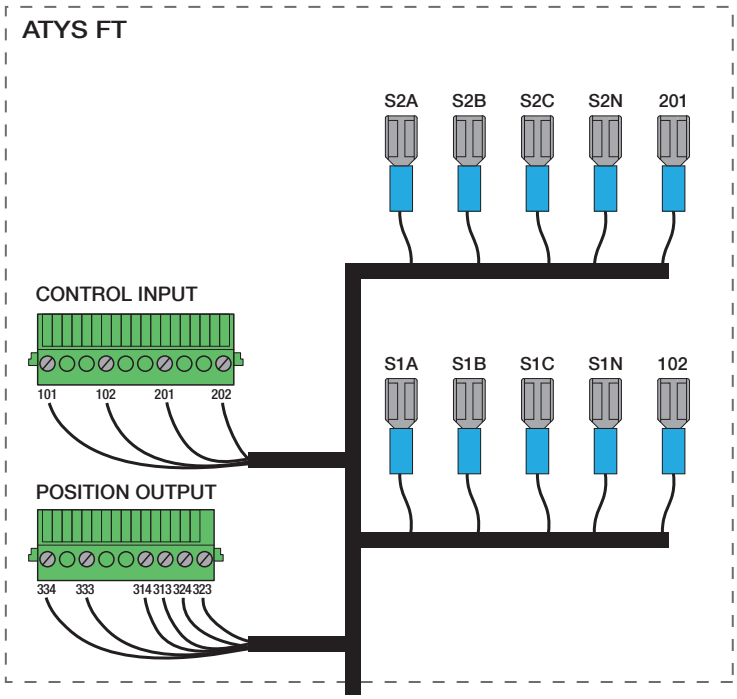
6.4.1. Fixing the faston connectors

As shown on the wire harness schematics in chapter 4.3 the wiring harness includes 5 fast on connectors per source (5 connectors for source 1 and 5 connectors for source 2).

For Product references 96AX XXX these connectors are labeled:

Source 1 side:
- S1A
- S1B
- S1C
- S1N
- 102

Source 2 side:
- S2A
- S2B
- S2C
- S2N
- 201



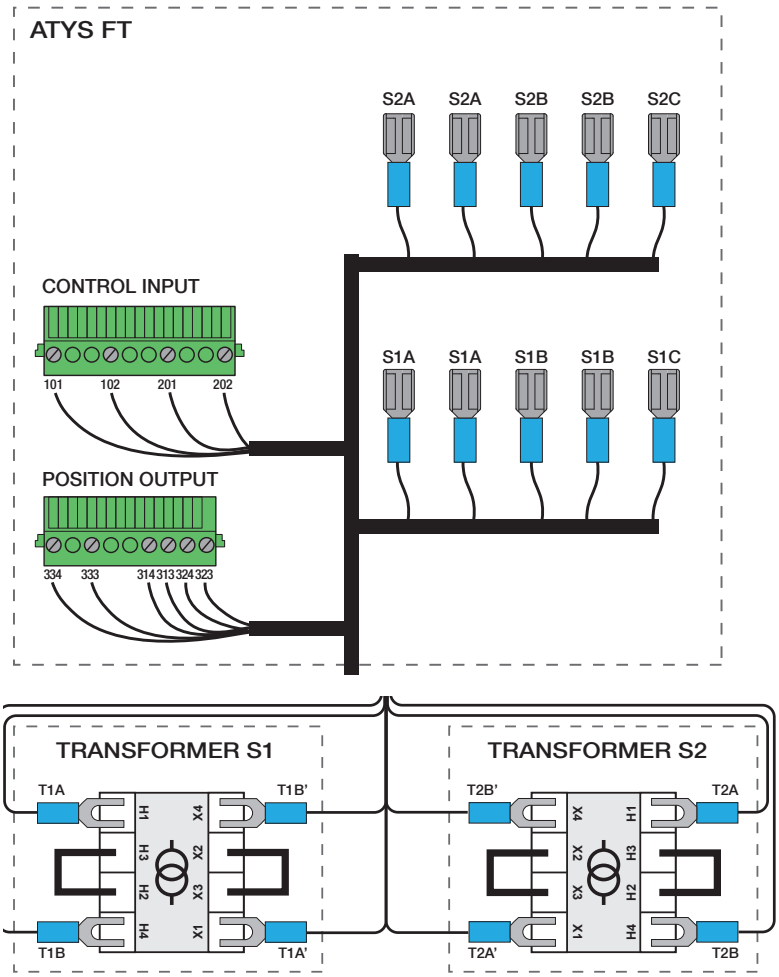
For Product references 968X XXX, these connectors are labeled:

Source 1 side:
- S1A
- S1A
- S1B
- S1B
- S1C

Source 2 side:
- S2A
- S2A
- S2B
- S2B
- S2C

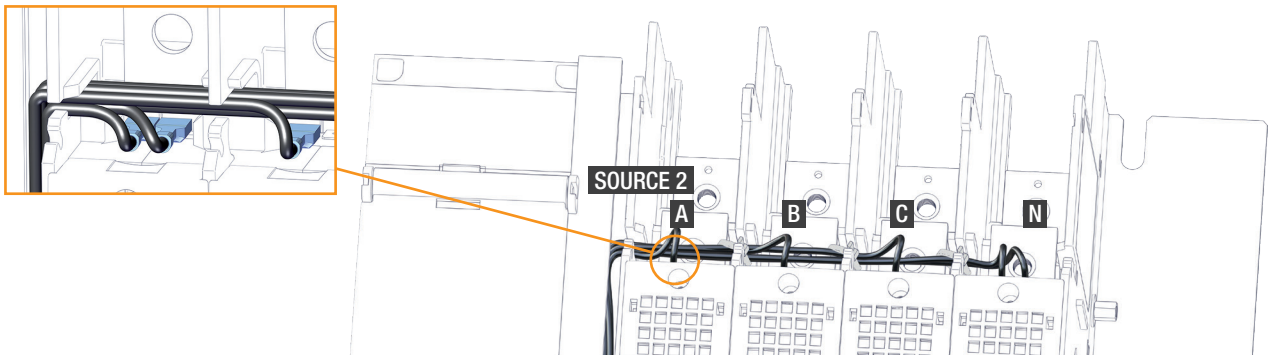
Transformer 1 :
- T1A
- T1B
- T1A'
- T1B'

Transformer 2 :
- T2A
- T2B
- T2A'
- T2B'



These Faston are to be connected in the switching mechanism on source 1 and source 2 poles under the power connectors as shown below.

A maximum of 2 faston connectors can be placed on each pole.



The Faston connectors must be placed specifically to match your network, in order to do this refer to the tables below:

For harness without transformer:

			Faston connection points*			
Network type & voltage	Switch type	Source (S1 or S2)	Pole / Phase A	Pole / Phase B	Pole / Phase C	Pole / N
240 VAC	2P	S2	S2A &** 201	S2B	NONE***	NONE***
		S1	S1A &** 102	S1B	NONE***	NONE***
120/240 VAC	2P + N	S2	S2A &** 201	S2B	NONE***	S2N
		S1	S1A &** 102	S1B	NONE***	S1N
208 VAC	3P	S2	S2A &** 201	S2B	S2C	NONE***
		S1	S1A &** 102	S1B	S1C	NONE***
120/208 VAC	3P+N / 4P	S2	S2A &** 201	S2B	S2C	S2N
		S1	S1A &** 102	S1B	S1C	S1N
277/480 VAC	3P+N / 4P	S2	S2A	S2B	S2C	S2N &** 201
		S1	S1A	S1B	S1C	S1N &** 102

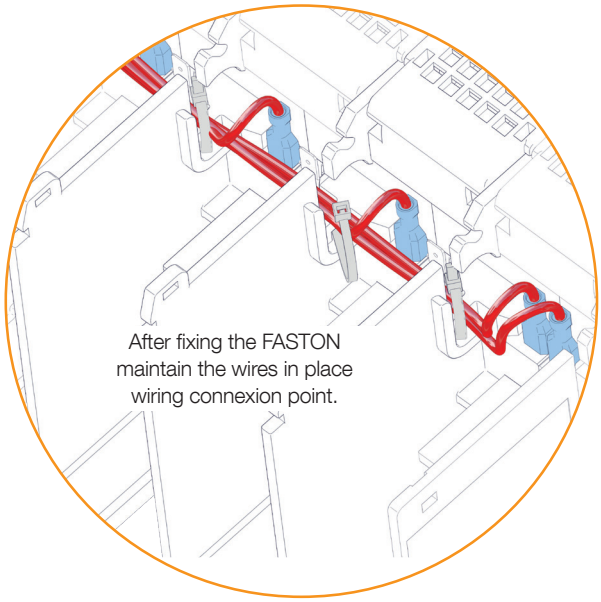
*Position and connection points shown in picture above
** "&" indicates that both faston connectors must be placed on the designated pole.
***See chapter "»6.4.2. Switch side connectors», page 32 for information on how to connect unused cables.

For harness with transformer:
The harness with transformer includes connection point to the transformer.
Reminder on the transformer points X2-X3 and H2-H3 must be bridged.

			Faston connection points*			Transformer connection points			
						480 VAC		240 VAC	
						Primary		Secondary	
Network type & voltage	Switch type	Source (S1 or S2)	Pole / Phase A	Pole / Phase B	Pole / Phase C	H1	H4	X1	X4
480 VAC + transfo	3P	S2	S2A &** T2A	S2B &** T2B	S2C	T2A	T2B	T2A'	T2B'
		S1	S1A &** T1A	S1B &**T1B	S1C	T1A	T1B	T1A'	T1B'

*Position and connection points shown in schematic above
** "&" indicates that both faston connectors must be placed on the designated pole.

WARNING ! Wires must not be in contact with active voltage points such as unused FASTON connections and lugs. In order to do so any unused or loose cables must be tensed then fixed on a nonconductive part of the transfer switch (use cable tie fixation points as shown in the images below).

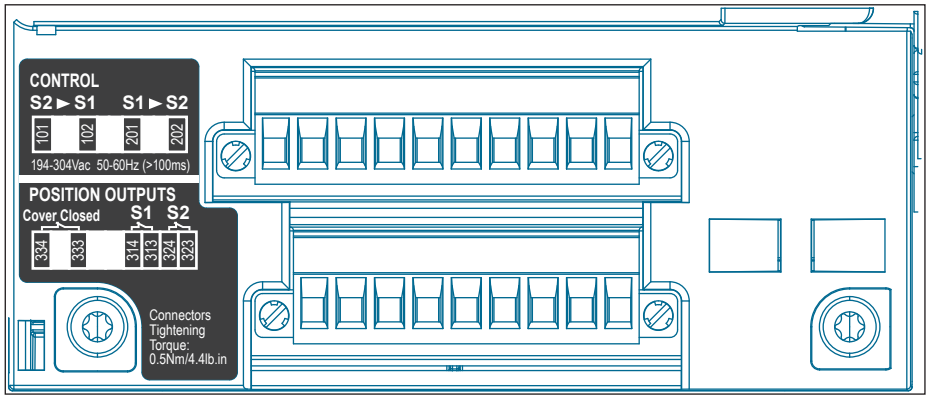


For unused cable harness, faston cables see chapter «6.4.4. Cable management & enclosure integration», page 34.

6.4.2. Switch side connectors

Connect and tighten the two connectors (10 pin and 8 pin) on the correspond slots located below the plastic cover. The cables inserted in each connector will correspond to the label on the left of the two connectors.

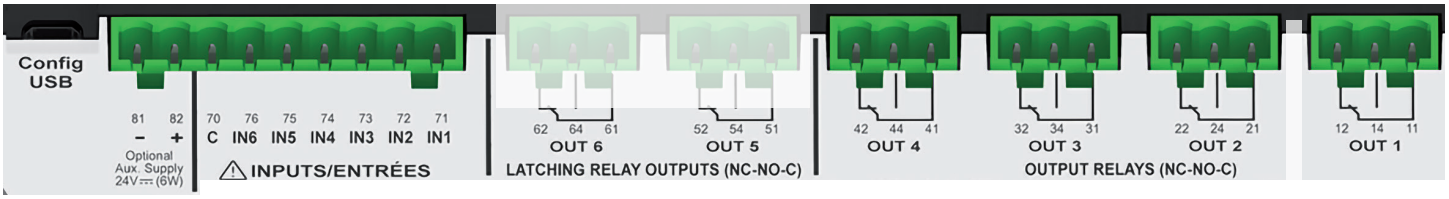
Tighten using a Flat 3mm screwdriver with a 2.7 Lb. torque (0.3 N.m).



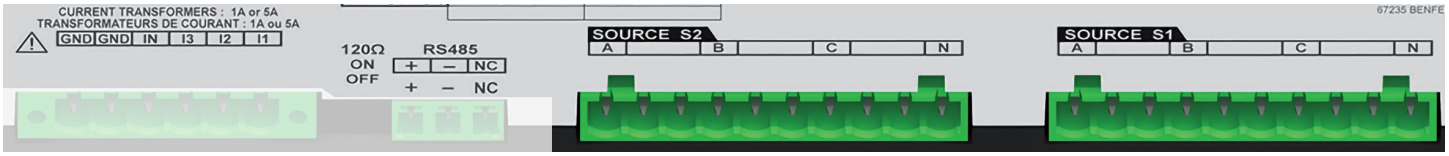
6.4.3. Controller side connectors

6.4.3.1. Connectors with harness

The remaining connectors of the cable harness must be placed on the controller; the location of these connectors is highlighted below:



Top view



Bottom view

CAUTION ! Take care to correctly identify connectors when inserting “OUT1”, “OUT2” connectors, “SOURCE 1”, and “SOURCE 2” connectors, as they are interchangeable.

The remaining connectors are included in connector kit (separate from harness) these can be used for customer input/ outputs, RS485 communication and current sensors.

6.4.3.2. User available connectors

For details on user available connection points refer to the table below:

(in grey connection points integrated in the harness in white available connection points)

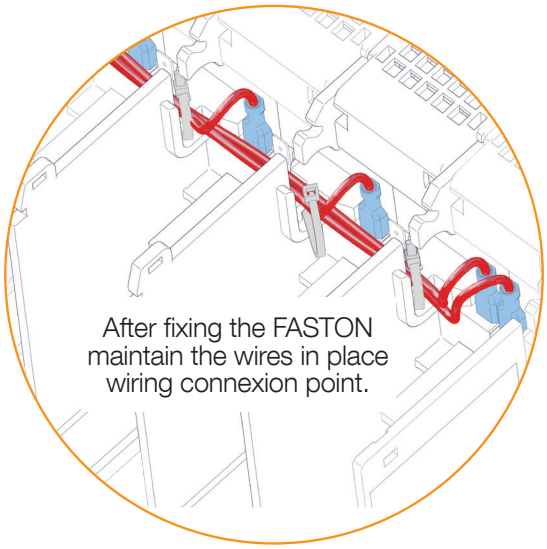
Type	Terminal N°	Description	Characteristics	Recomended cross section	Tightening torque
Sensing source 1	SOURCE 1 L1/L2/L3/N	Voltage sensing inputs source 1 & voltage supply (L1-L2)	Sensing voltage 50 - 575 V.a.c P-P - 50/60 Hz (+/- 10%) Supply voltage (L1-L2) 88 - 576 V.a.c - 50/60Hz (+/- 10%) Ui 600V	AWG 18-14 0.75-2.5mm²	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)			
Inputs	71	IN1: SWITCH IN POS1	Do not connect to any external power supply	AWG 20-14 0.5-2.5mm²	
	72	IN2: SWITCH IN POS 2			
	73	IN3: DOOR OPEN			
	74	IN4: programmable input 4			
	75	IN5: programmable input 5			
	76	IN6: programmable input 6			
	70	Common point for inputs			
Aux power supply	81/82	- : negative terminal for aux supply +: positive terminal of aux supply	12-24 Vd.c.		
Outputs	12/14/11	OUT1: POS 1 ORDER	Dry contacts 8A / 277 VAC 50/60 Hz 5A / 24 VDC	AWG 16-14 1.5-2.5mm²	
	22/24/21	OUT2: POS 2 ORDER			
	32/34/31	OUT3: POS 1 ORDER			
	42/44/41	OUT4: POS 2 ORDER			
	52/54/51	OUT5: programmable output 5 (latching)			
	62/64/61	OUT6: genset start relay			
Current transformers	IN/I3/I2/I1	CT neutal / 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	LiYCY shielded twisted pair 30-14 AWG / 0.14 to 1.5 mm²	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

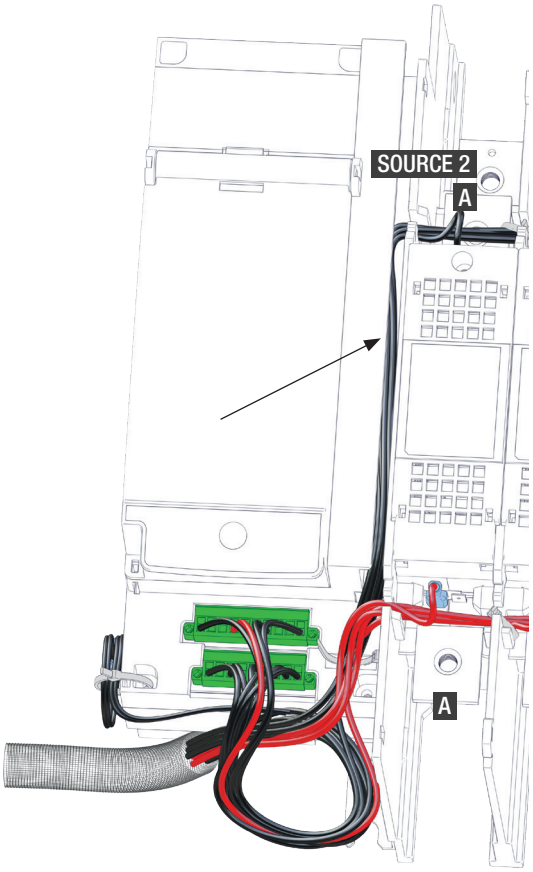
6.4.4. Cable management & enclosure integration

6.4.4.1. Switch side cable management

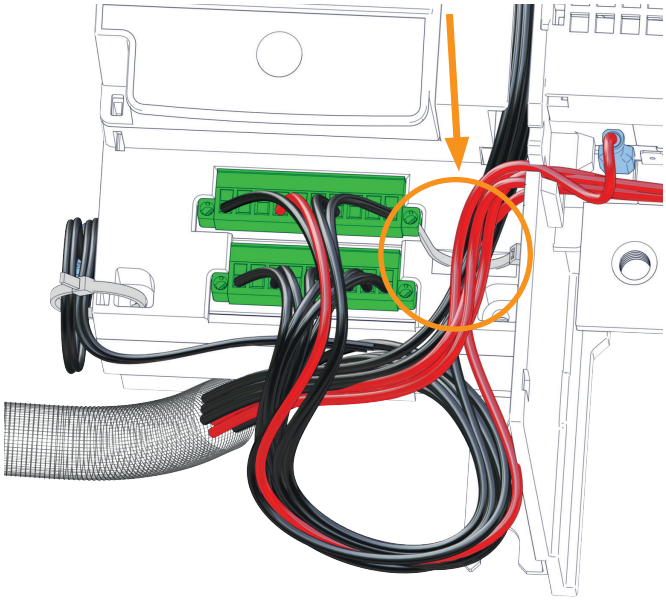
As indicated in «6.4.1. Fixing the faston connectors», page 30 of this chapter wires with faston connectors must be maintained in place using cable ties.



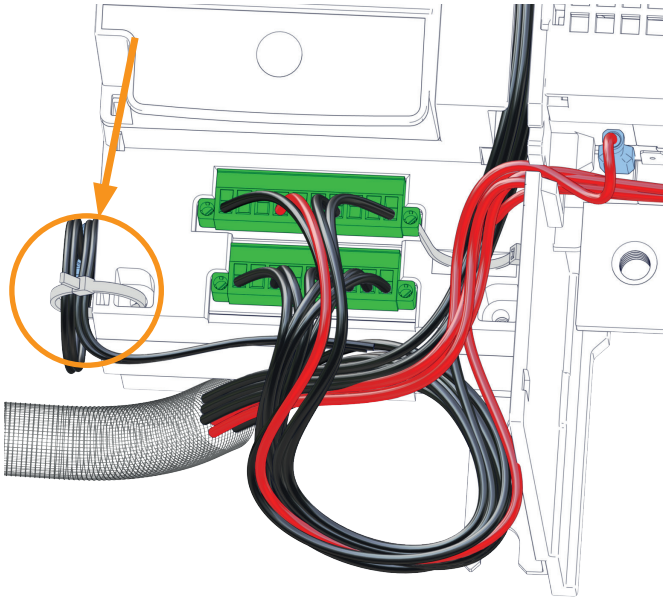
The wires should be passed along the cable duct as shown below (this includes cables with unused Faston connectors).



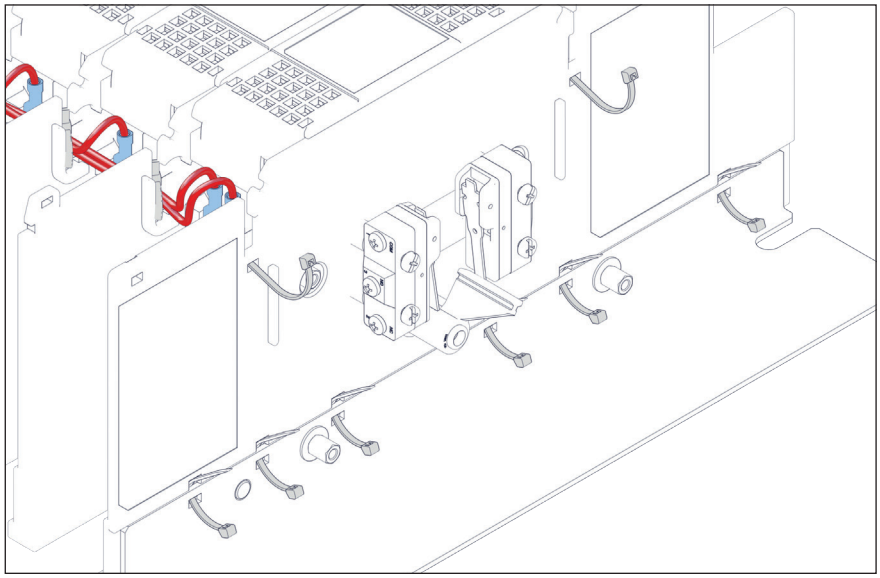
Pull the cables down so that all wires are tight and use a cable tie to maintain all cables coming from the cable duct into place (cf. image below):



Then fix any cables with unused faston connectors on the side of the switch as shown below:



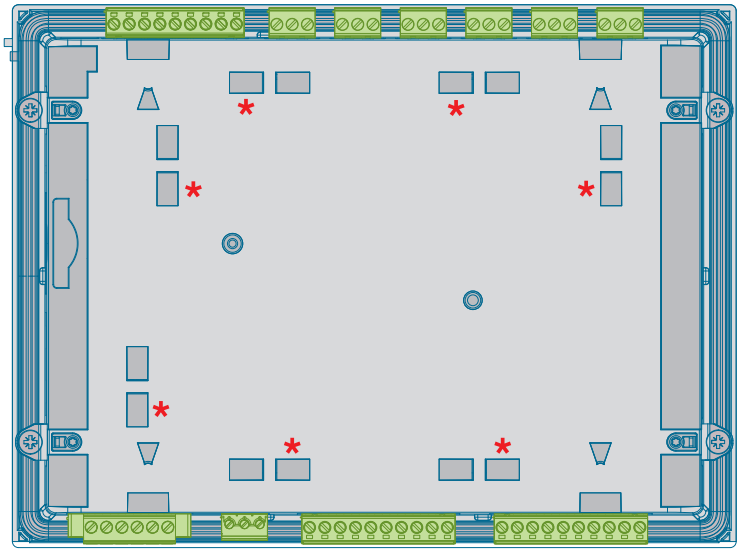
This switch includes additional cable tie fixation points as show in the following image.



For example, these can be used to maintain cables in place when connecting wires to the customer position auxiliary contacts.

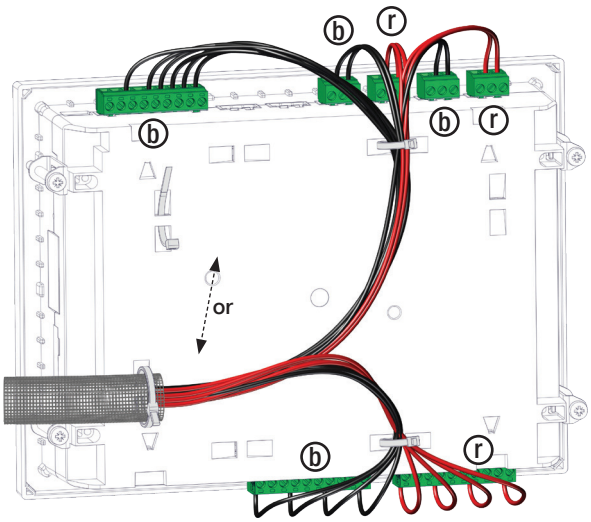
6.4.4.2. Controller side cable management

The controller also includes provisions for connection cables ties, see image below:



Cable ties used should be adapted according to the position of the door:

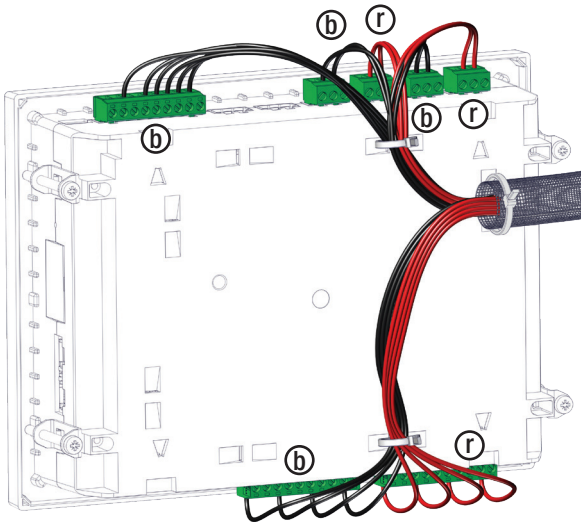
Left side hinge door



b black cables

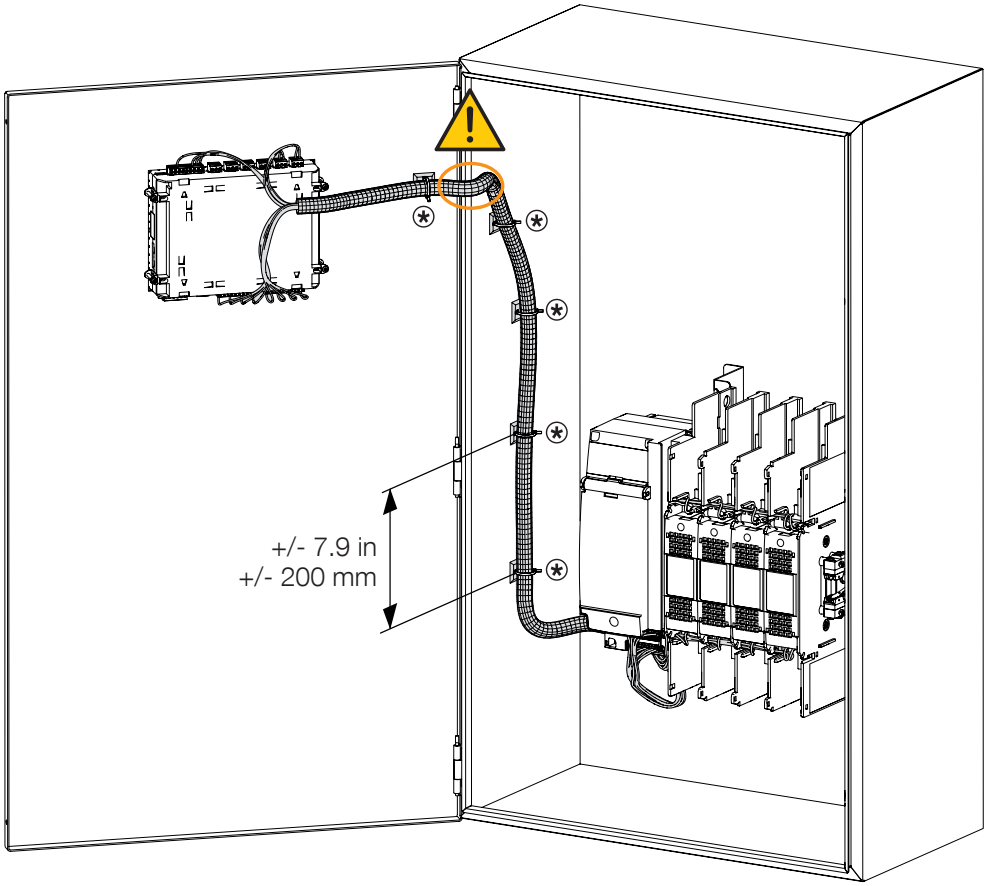
r red cables

Right side hinge door



CAUTION ! Cables must be more than 0.4 in (10mm) away from the RTC battery cover and USB connector.

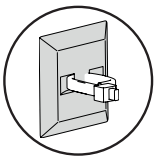
6.4.4.3. Enclosure cable management



WARNING!: Wire harness must not be subject to stretching when the door is fully open.

***Socomec recommends having fixation points every 7.9 inches (200 mm) in order to insure the harness is correctly maintained.**

Not supplied



6.5. Mounting optional accessories

The accessories mentioned in this chapter are not included inside the ATyS FT package and must be ordered separately.

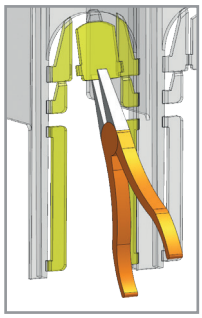
For accessory list, see chapter «4.4. Optional accessories», page 19.

6.5.1. Terminal shrouds

Terminal shrouds can be installed to protect against direct contact on active conductive parts, order this accessory according to the table below, each part number includes both top (source 2 and load) and bottom (source 1) protection.

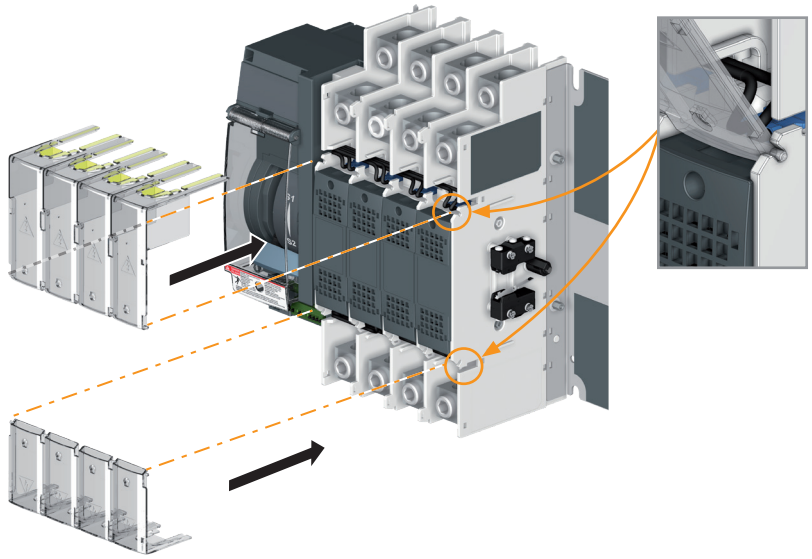
	No. of poles	Reference*
100-200A	2P	96982020
	3P/2P+N	96983020
	4P/3P+N	96984020
260-400A	2P	96982040
	3P/2P+N	96983040
	4P/3P+N	96984040

Before mounting the terminal shrouds, break off the removable plastic part corresponding with the switch rating and cables used:



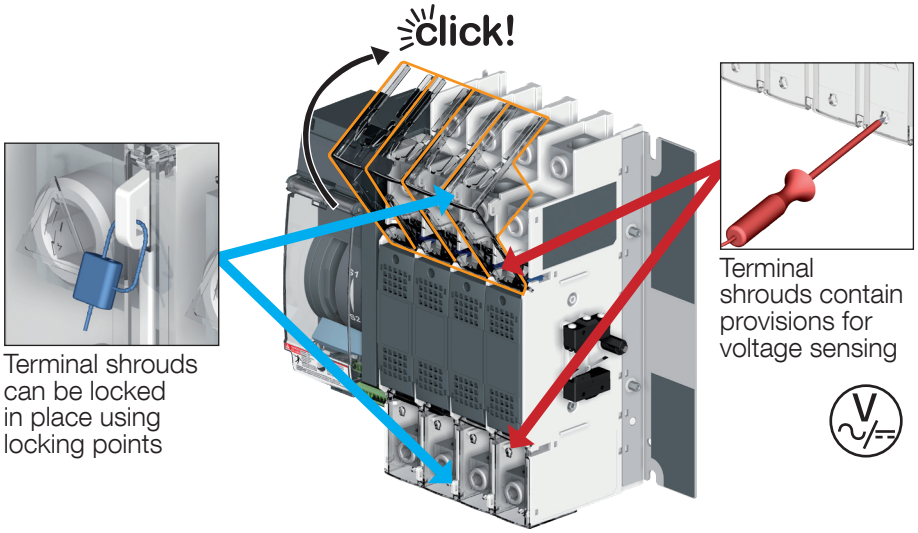
For 250, 300 & 600 KCMIL (200 , 260 400A) break off all removable parts (highlighted on the picture).
For 1/0 & (100A) do not remove any parts.

Fix the terminal shrouds in place and push back.



When fixing the shrouds make sure the pieces fit in the switch as shown in the image above then push back to clip in place.

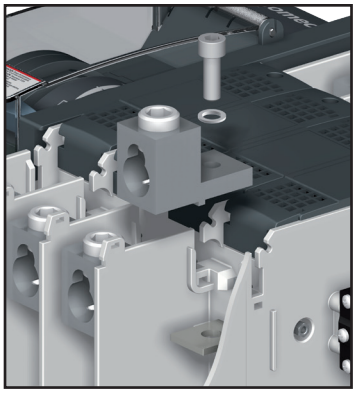
Push back to click in place.



Terminal shrouds can also be fixed in place using cable ties as shown below, they also include small diameter holes to allow for voltage sensing without removing the covers.

6.5.2. Lugs

Switch are delivered with crimped nuts on each pole as well as the corresponding screws, use the screws when connecting lugs.



CAUTION ! Only use screws delivered in product, in case of loss of screws please contact Socomec.

Note: on the top side of the switch, it is recommended to mount the terminal lugs for the load before mounting the source 2 terminal lugs.

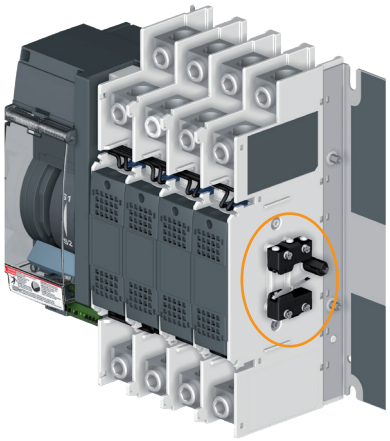
100A switches tested with 1/0 AWG copper wires.
200A switches tested with 250 KCMIL copper wires.
260A switches tested with 300 KCMIL copper wires.
400A switches tested with 600 KCMIL copper wires.

Refer to the table below for tightening torques:

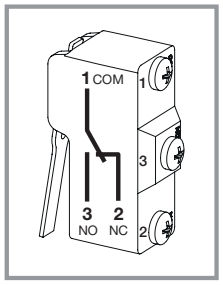
Product Rating (A)	Designation	Ref. lugs	Quantity per reference	Openings per lug	Size / Section (AWG)		Pressure screw torque				Bolt torque					
					min.	max.	lb.in	Nm	Size in		lb.in	Nm	Size		in	mm
100A	Ilsco D0957	Contact us		1	14	1/0	50	5,65	⊖	8	70.8	8	○	5mm	0.625	15,9
200A	Ilsco D2831	Contact us		1	6	250 KCMIL	275	31,1	○	5/16	70.8	8	○	5mm	1	25,4
100-200 A	CMC LA-300R	39542020	2	1	6	300 KCMIL	275	31,1	○	5/16	70.8	8	○	5mm	1.12	28,4
		39543020	3													
		39544020	4													
260-400 A	CMC LA-630R	39542040	2	1	4	600 KCMIL	550	62,1	○	1/2	310	35	○	8mm	1.79	45,7
		39543040	3													
		39544040	4													
260-400 A	Ilsco D3096	Contact us		1	4	600 KCMIL	600	67,8	○	1/2	310	35	○	8mm	1.79	45,7

6.5.3. Extra auxiliary contact and cover

The ATyS FT switches are delivered with two Pre-installed C-Form auxiliary contacts (one for each position) on the left side of the switch:



The auxiliary contacts have the following characteristics:



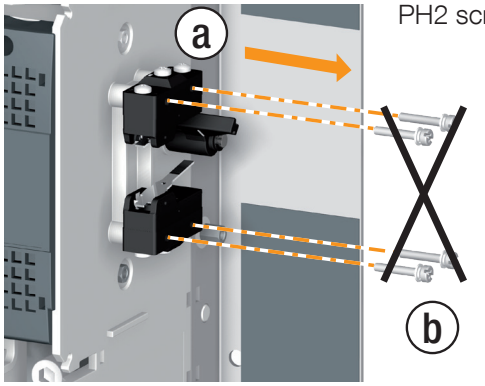
Terminal tightening torque
7.9 lb.in / 0.9 Nm

Auxiliary contact electrical characteristics	
Rated current (125-480 VAC)	22 A
Rated current (125 VDC)	0.5A
Rated current (250 VDC)	0.25 A
Rated horse power up to 250 VAC	½ HP
Rated horse power up to 480 VAC	¼ HP
Recommended wire section for 22A	10 AWG 4 mm²

WARNING ! Use the correct protection according to your auxiliary contact circuit and your load.

The additional auxiliary contact kit allows user to add two additional auxiliary contacts on the side of the switch and comes with barriers to protect against direct contacts with live parts.

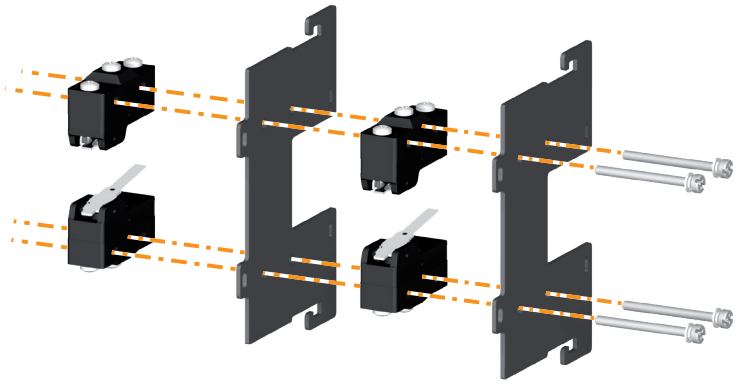
To install additional contacts, first remove the contacts in place using a PH2 screwdriver:



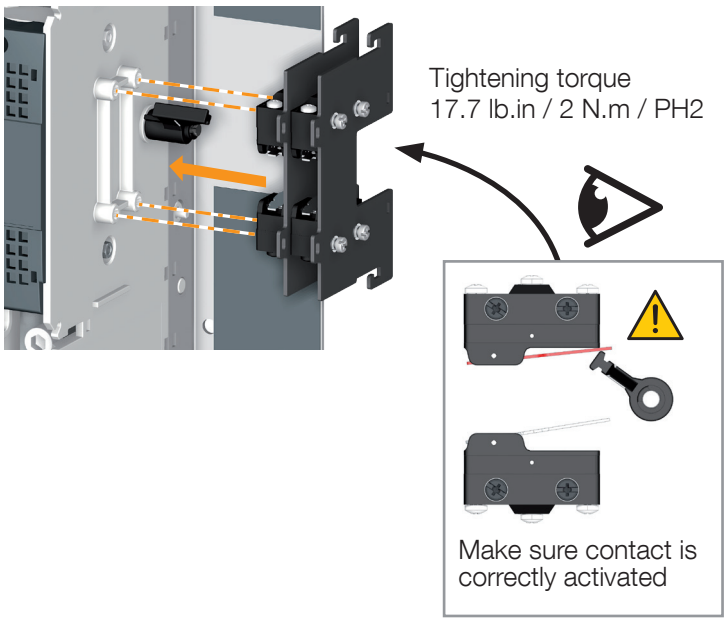
PH2 screwdriver

Pre-installed screws can be discarded.

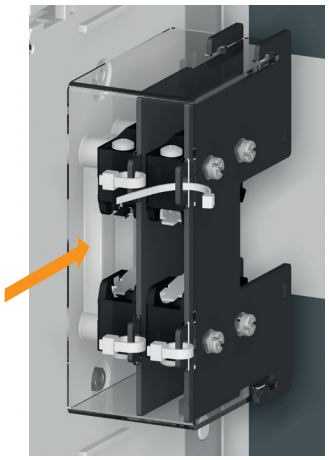
Then assemble the existing contacts as well as the contacts of the kits and the barriers using the screws supplied in the kit as shown below:



Then fix the assembled products on the switch:



Finally place the plastic cover, push the cover to clip into the two inter-contact barriers.



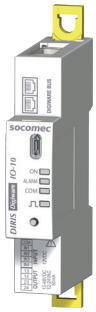
This barrier can then be locked in place using cable ties.

(To remove squeeze the top and bottom parts of the transparent piece and pull out).

6.5.4. I/O 10

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

IO input/output modules

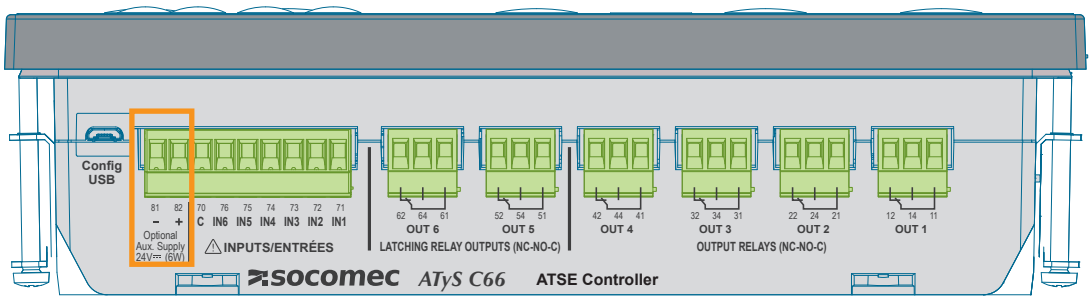


DIRIS Digiware IO-10
Digital inputs/outputs
DIRIS Digiware IO-10
Ref. 4829 0140

Digital I/O modules provide additional inputs /outputs to be used with/by the C66 controller.

The maximum length of the Digiware bus is 4000 feet (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 C66 controller must be supplied with 24 VDC.

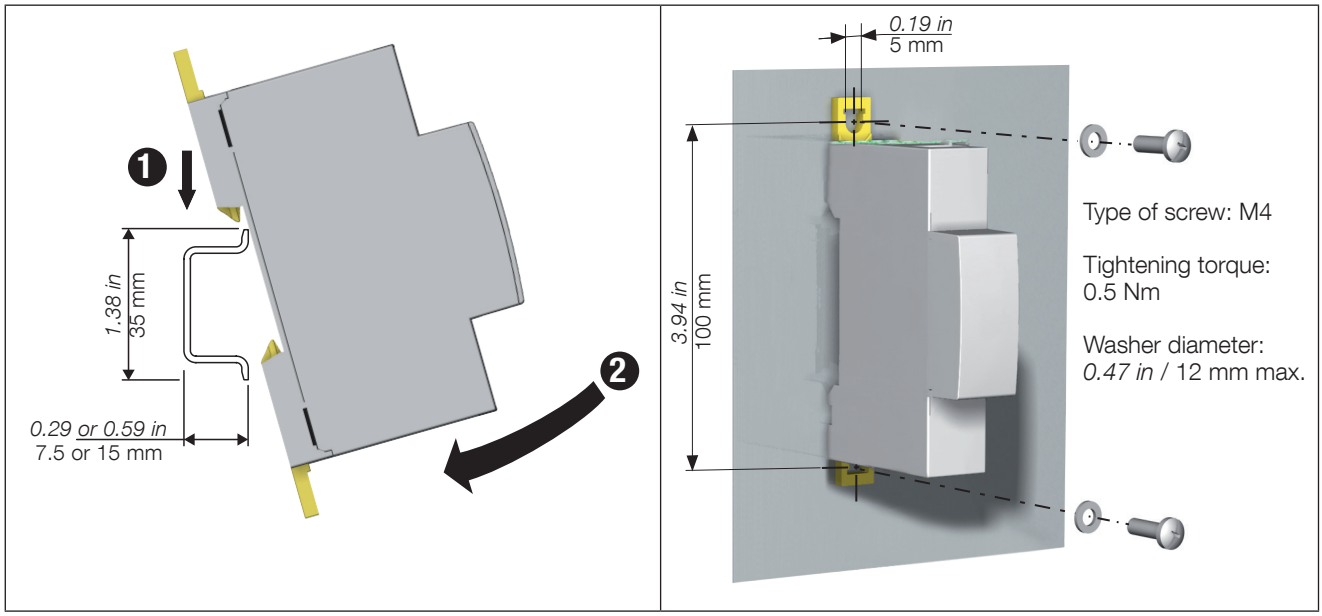


An end-of-the-bus resistor is necessary for a correct communication between the modules and the controller:

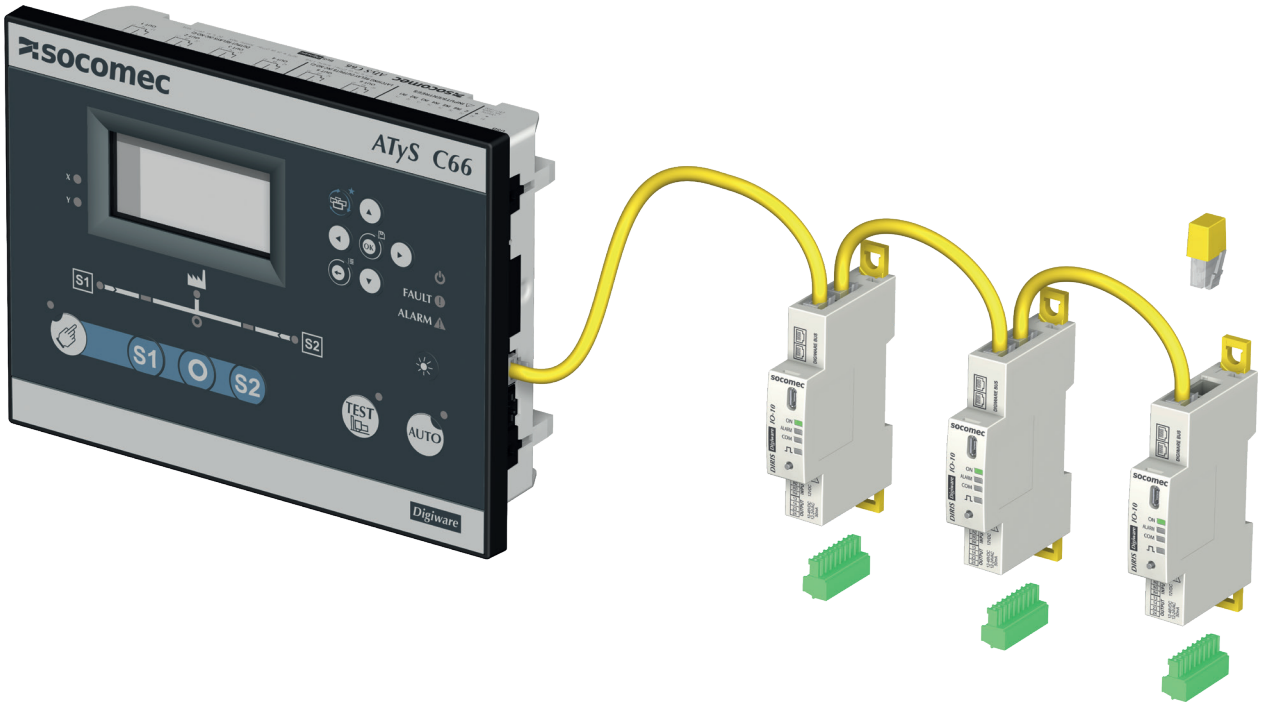
	Quantity	Part number
	1	4829 0180

Mounting the I/O modules:

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



The connection between modules and to the ATyS C66 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).



7. CONFIGURATION

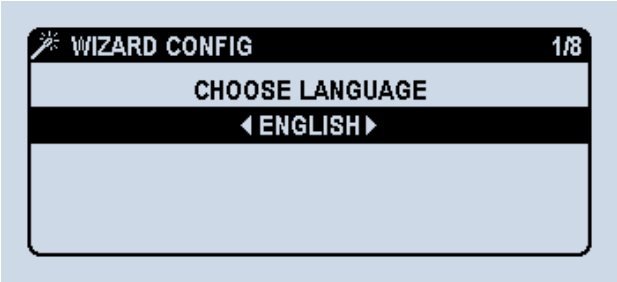
This document will cover basic programming of the C66 controller in the ATyS FT application, for more details on timers, specific function, input/output configurations and others refer to the ATyS C66 instruction sheet (549868) available on the Socomec website:

https://www.socomec.us/range/atys-c66/

When powered up for the first time the C66 will prompt users to go through the installation wizard.

The first out of 8 questions will be the language. User can choose between the following 3 languages:

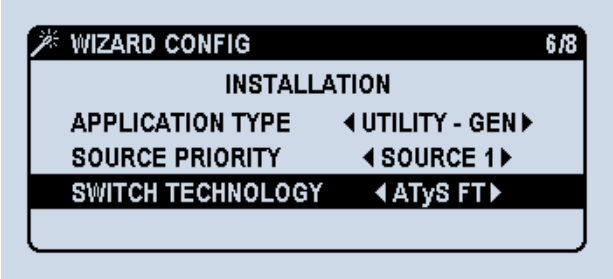
- English
- French
- Spanish



Then it will follow the option to start the wizard with the following options:

- Start now
- Remind me the next power on
- Never ask me again

The wizard will remain accessible inside the menu PARAMETERS/WIZARD.

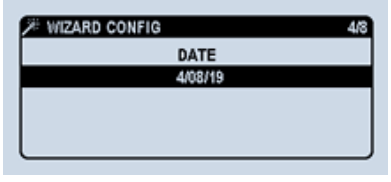


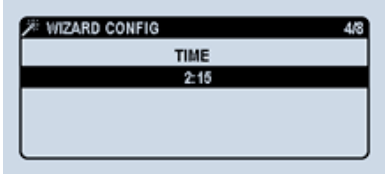
In case the decision taken is to begin with the wizard configuration, then the options are:

- To use the smart configuration: parameters like voltage, frequency and phase rotation will be auto detected and proposed to the user.
- To use the manual configuration: the user needs to enter the values manually.

The controller will require the configurator 4-digit password before the configuration (**by default set to 1000**).

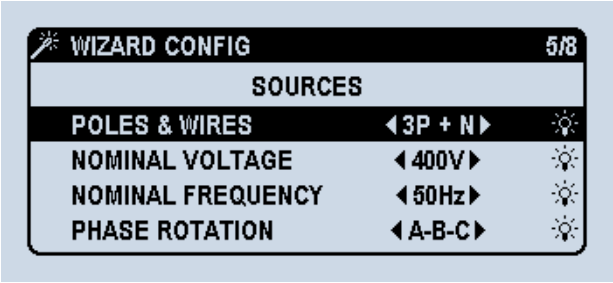
Once the configuration starts, the user needs to enter the date format, date and time as follows:





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 source settings, where the user has to confirm the values proposed 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.



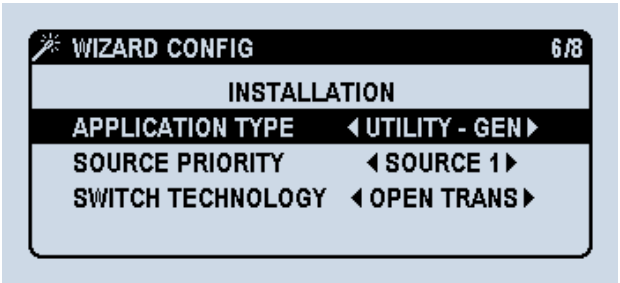
Step 6 is about the installation parameters.

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

- Main-Genset (by default): Power supply coming from a transformer on the priority source and from a Genset on the non-priority source.
- Main-Main: Power supply coming from a transformer for both sources 1 and 2.
- Genset-Genset: Power supply coming from a diesel generator for both sources 1 and 2.

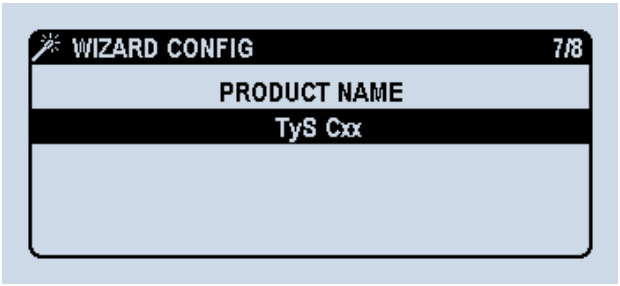
Source priority stands for the preferred source in automatic mode when both sources are fully available.
The options are:

- 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.

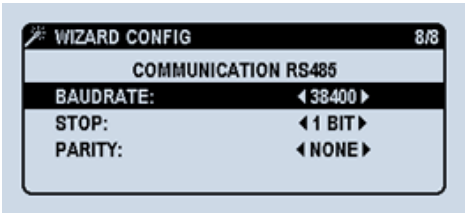


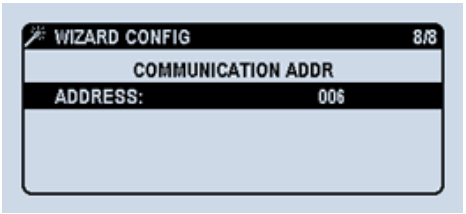
Important: Switch technology must be set to “ATyS FT”.

The 7th step is not affecting the functioning of the transfer switch but permits the user to select a name for the product. As default, it’s ATyS C66, but it can be changed for any combination of letters, numbers and signs, for instance, “Cooling”, “Line 1” or “DTC/21”.



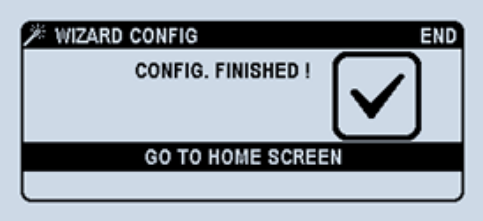
To finalize the configuration, the wizard asks for the communication parameters, such as the slave address (by default 6) and the communication parameters:





After entering and confirming these parameters, the wizard informs that the minimum parameters needed for the transfer

switch to work are set and invites to go to the menu home screen where the user can set more parameters and functions manually (see next chapter).



Note: as standard the “in phase transfer” function; which allows transfer between two lives sources only when both are fully synchronized (Voltage, Frequency, Phase angle); will be active and set to “USER CHOICE”.

This means that a transfer between two unsynchronized live sources will only take place with manual validation from users (through HMI or inputs).

In order to increase the product duration it is recommended to keep this setting however it can be modified in “Main menu” > “Specific functions” > “In-Phase transfer”:

User can de-activate fully the function or modify the following settings:

Setting	Description	Default value
DELTA VOLTAGE (%)	Maximum % of difference between the voltages of the sources.	x
DELTA FREQUENCY (Hz)	Maximum difference in Hz between the frequencies of the sources.	x
DELTA ANGLE (°)	Maximum difference in phase angle between the voltages of the sources.	x
IPT TIMER (ms)	Time window for which all synchronization values (settings above) must be within the configured settings	x
IN PHASE RESEARCH DELAY (s)	Maximum time allowed to transfer in-phase, if this timer times out the FAIL TO SYNCH OPTION will be applied.	x
FAIL TO SYNC OPT	“USER CHOICE” or “FORCE TRANSFER”, “USER CHOICE” will prompt user to validate a transfer without synchronization or will keep searching for a correct transfer window, “FORCE TRANSFER” will initiate a transfer at the end of the configured IN PHASE RESEARCH DELAY without checking the synchronization of the sources.	USER CHOICE

Note: when the in-phase transfer function is activated it will be active whenever a transfer between two available is taking place, this includes remote manual transfer (using the C66 HMI) or during a TEST.

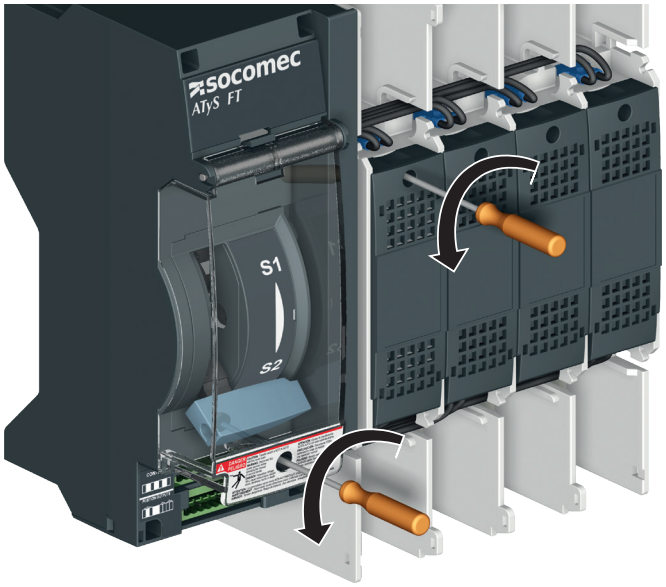
8. MAINTENANCE

WARNING ! 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.

8.1. Mechanical manual operations for maintenance purposes

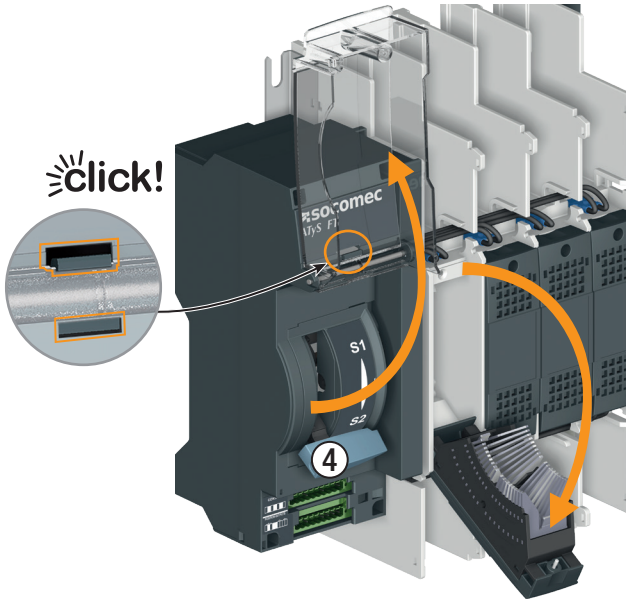
DANGER ! More than one live circuit! Disconnect all sources of supply before servicing and/or using the manual operation.

To access the manual handle unscrew the plastic cover, **this will inhibit the supply of voltage to the coil, so both automatic and remote operations will not be available as long as this cover is not screwed back**.



Push back the plastic cover until it is clearly fixed in place, for contact inspection, the arc chute will be maintained in the open position if the switch is mounted vertically in the enclosure.

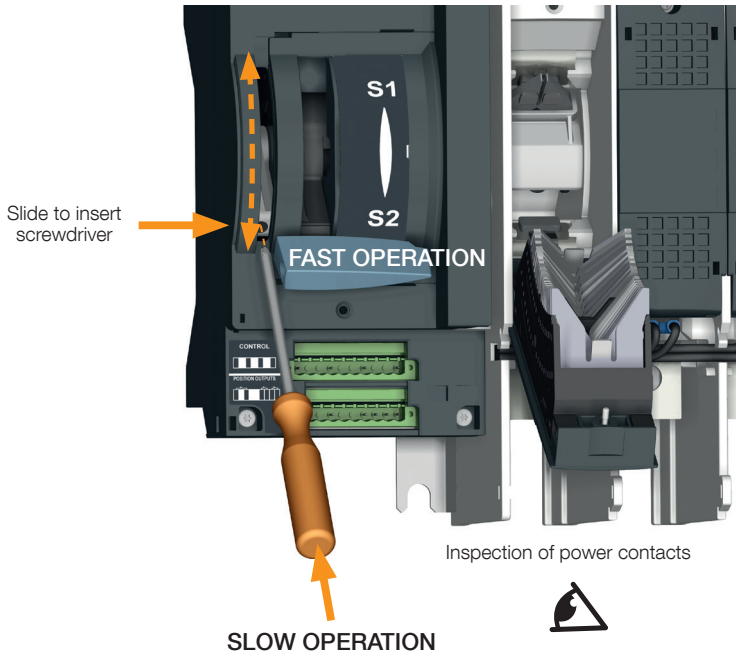
- Users then have access to two types of handles (see following image for illustration of both handles):



- Using Standard operation handle (marked “FAST OPERATION” on the image below) which will operate contacts at the same speed as they would normally operate using electrical operation, independently of the speed used to operate the handle.

- Using the maintenance operation handle accessible by sliding the cover indicated by the orange arrow below and inserting a screwdriver (0.25 in / 6mm diameter max) in the socket revealed, the screwdriver can then be used as a handle to change the switch position.When using this handle the movement of the contacts will directly be linked to the movement of the handle, this allows users to move the contacts slowly for easier inspection of switch mechanisms and contacts. After using the maintenance operation it is recommended to do at least one manual operation with the Standard operation handle (Fast operation) before putting back in service.

When operating either of the handle the position of the switch is indicated on the handle itself, when the handle is on the bottom side the switch is connected to source 2, to switch to source 1 lift the handle until the source 1 position is reached. When the handle is on the top side the switch is connected to source 1 to switch to source 2 lower the handle until position 2 is reached.



CAUTION ! Once all manual operations are completed make sure to screw back the arc chutes and plastic protection cover in place, tightening torque 17.7 Lb.in (2 N.m) using PH2 type screwdriver.

8.2. Electrical manual operation

Manual Operation (CTRL mode): it allows the user to take the control of the commands sent by the controller and the automatic procedure is disabled.

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 S1 to switch to source 1, S2 to go to source 2 and O to go to center off position (if existing).

Note: in manual mode, if a source is lost, the genset (if any) will start and the controller will not force an automatic transfer. The controller will remain in manual mode until reverted to Auto by the user.

8.3. LOAD TEST and NO LOAD TEST

Test Mode : This allows an authorized maintenance person to perform a transfer to perform a transfer to backup source (default Source 2) and to decide when to go back to the priority source (default Source 1). The testing of the ENGINE START can be performed using a NO LOAD TEST test in the menu or assigning the TEST button to this function. 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 click the Test operation button: TEST

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

Note: the switch may transfer as soon as TEST mode has been enabled, respecting the elevator timers, in-phase timers (for open transition switches with positions I-II) and center-off position timer (if the switch has a 0 position).

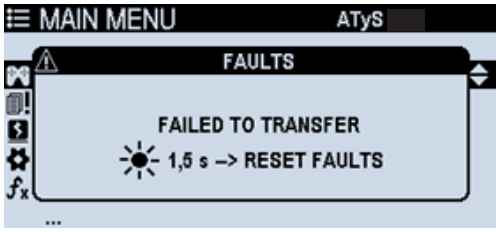
8.4. Clearing faults

For faults with a pop-up, the pop-up will either be cleared when the fault is cleared or by pressing any button on the front face of the controller. The total number of faults logged on the controller is dynamic, whilst the total number of “faults + alarms” is 100. Total events excluding faults and alarms 3000 and uses a FIFO listing.

To clear Faults through the HMI, it is possible through 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 no longer active, they will be logged in the “history” log.

Clearing the fault will be automatically proposed by the controller through a pop-up:



8.5. Recommendations for maintenance

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

The ATyS C66 controller is conceived to be a maintenance free controller 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 + transfer switch) every year.

The ATyS FT shall be maintained in accordance with industry standards and as per this manual.

As per NFPA 110 requirements for emergency and standby power systems the ATyS FT should be inspected and should be exercised under load at least monthly.

Refer to the manufacturer’s instructions for any manual, non-electric, offload operations recommended for service.

There are no user serviceable parts in the controller except for the RTC replaceable battery. In case of a malfunction, do not attempt to open the product and contact your local supplier. In this case the model, firmware version and serial number of the unit will be useful to provide and can be found inside the ABOUT menu as well as on the product labels and QR code on the rear side of the controller.

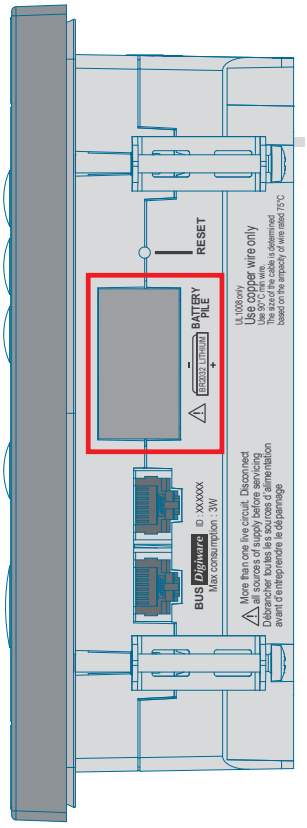
RTC Battery replacement

Depending on the working and environmental conditions the battery will need to be replaced when the controller displays a message «RTC Low Battery». A low battery may result in the time & date at power up to be incorrect.

To replace the RTC battery:

1. Safely disconnect all power and voltage to the ATS controller
2. Disconnect all terminals from the controller
3. Release the cover on the side of the controller containing the battery
4. Remove the old battery with an appropriate plastic tool
5. 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.
6. Put back the plastic cover on the side of the controller and pressure slightly until it perfectly fits.
7. Connect back the terminals to the controller
8. Power up and adjust time and date

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



9. TROUBLESHOOTING

Fault on screen	Description (Potential cause)	Action
Unexpected transfer	The controller receives information that position has been changed without having sending a position change order.	Make sure that the “COVER OPEN” input is correctly configured (input 3) and that the cable on input 3 is intact.
Failed to transfer	Position order has been sent to the the switch but position was not reached.	- Make sure that the voltage is present on the source of destination and that it is within the coil operation range of 194-304 VAC. - Check that position inputs are correctly configured (Input 1 : Position 1, input 2 position 2) and that the cable is not damaged.
Maximum operation per minutes	The maximum number of operations has been reached.	- Wait a few minutes before sending new orders to transfer. - Check that the controller voltage and frequency thresholds are adapted to your network.
Maximum password attempts reached	The user has entered too many incorrect passwords.	Will automatically reset after a certain time (time to reset is user configurable using the controller maintenance password).
Genset Fail start	Genset has not started within the configured time.	- Check your genset. - Increase the genset startup timer to allow more time to start the genset.
COVER OPEN	Input 3 linked to the switch manual handle cover is active.	Check that the cover protecting the manual handle is correctly screwed in place.

ANNEX I. SINGLE LINE DIAGRAMS

The following single line diagrams show the wiring each include a power section (wiring of the poles to each of the sources and load) and control circuit (includes voltage sensing and order connection from the controller to the switch).

FOLIO	DESIGNATION FOLIO
01	Page de garde / Cover sheet
02	Liste des folios / Sheet list
10	Schéma circuit puissance / Power circuit diagram
11	Schéma circuit commande / Command circuit diagram ATYS FT
12	Schéma circuit commande / Command circuit diagram CONTROLLER C66

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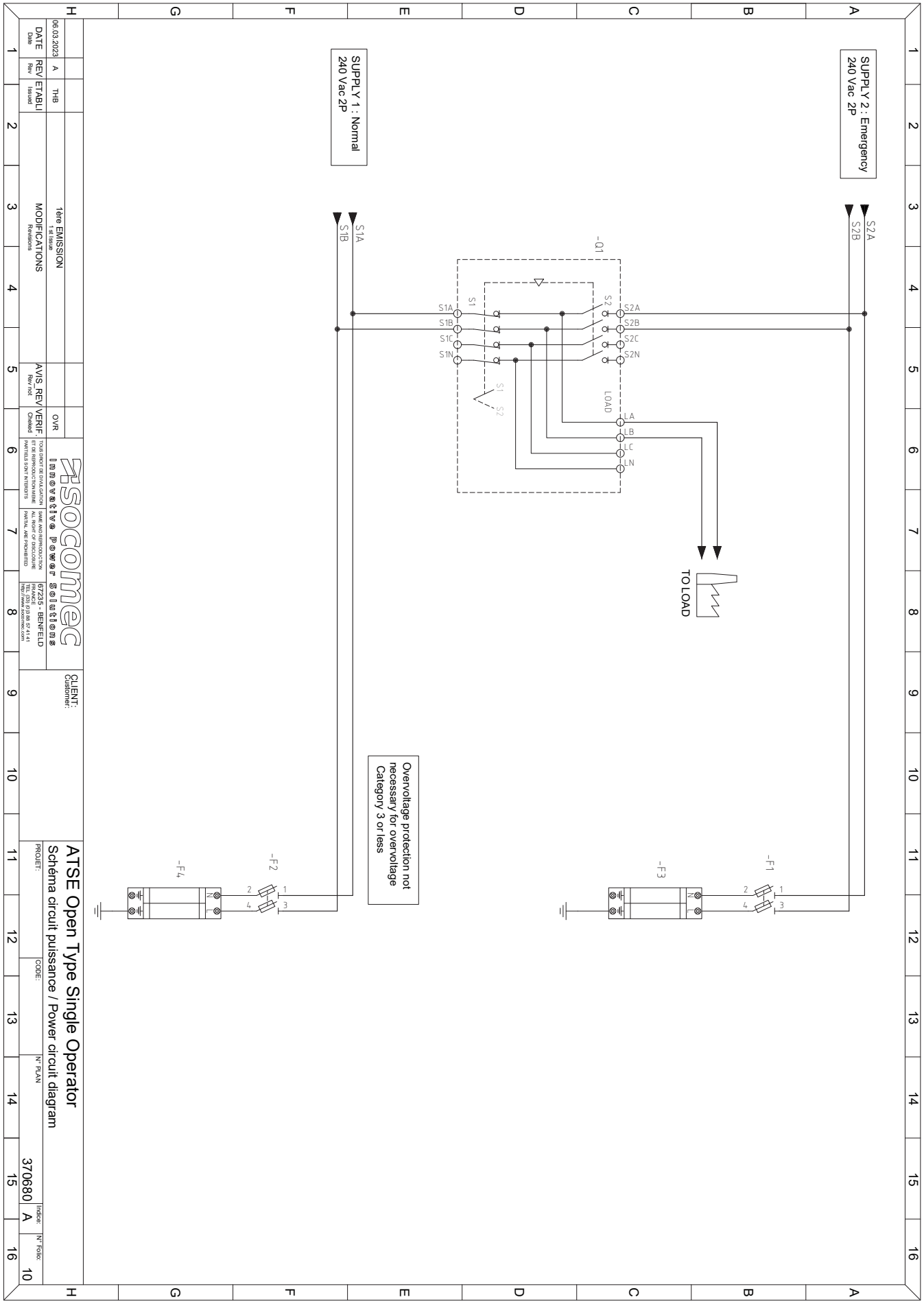
SUPPLY 2 : Emergency
240 Vac 2P
SUPPLY 1 : Normal
240 Vac 2P
S2A
S2B
S1A
S1B
-Q1
S1
S2
S1C
S1N
S2C
S2N
LOAD
LA
LB
LC
LN
TO LOAD
-F1
-F2
-F3
-F4
Overvoltage protection not
necessary for overvoltage
Category 3 or less
ATSE Open Type Single Operator
Schéma circuit puissance / Power circuit diagram
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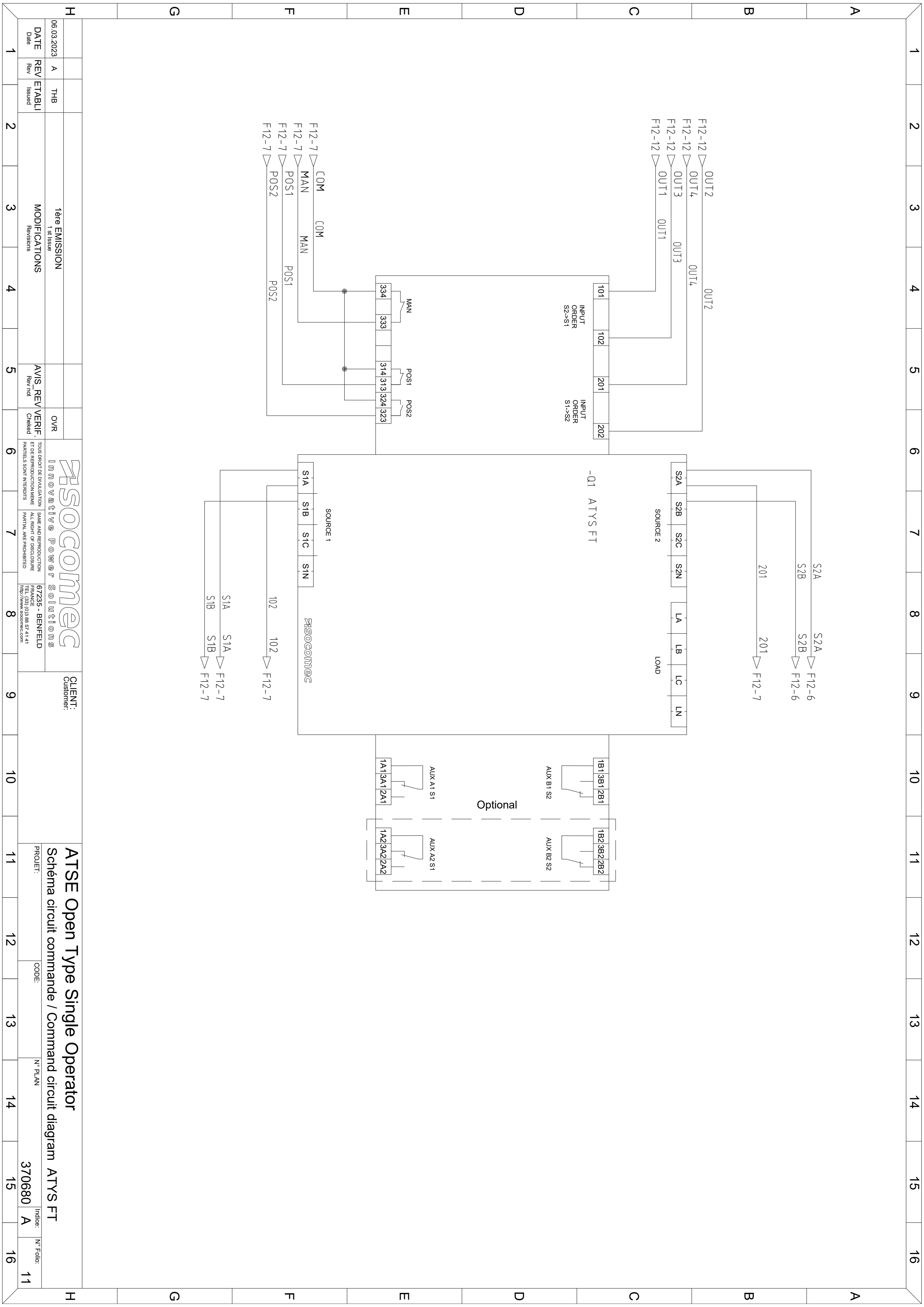
ATSE Open Type Single Operator
Schéma circuit commande / Command circuit diagram ATYS FT
DATE Date
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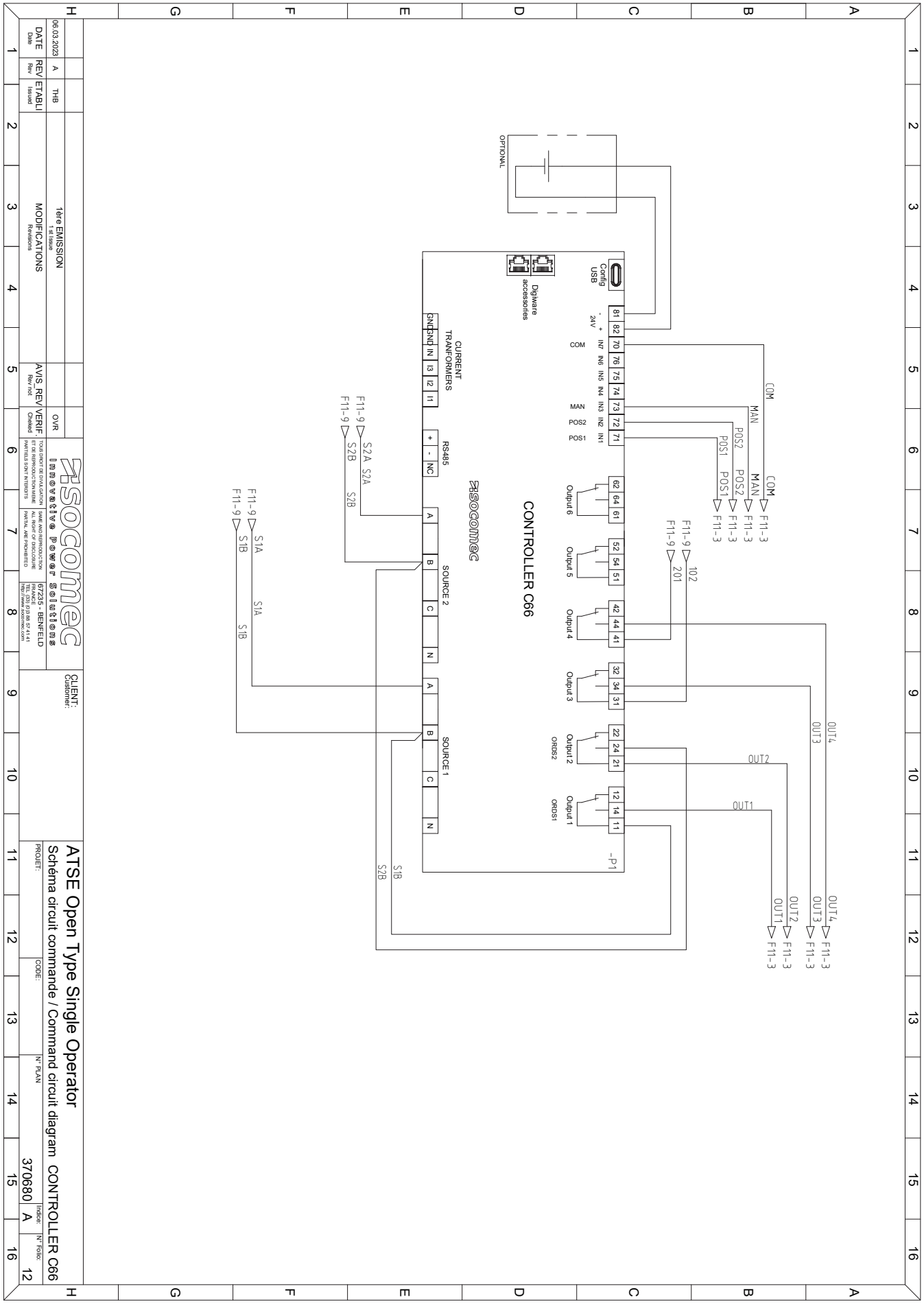
CLIENT: Customer:
PROJET:
CODE:
N° PLAN
370680
Indice:
A
N° Folio:
11
-Q1 ATYS FT
SOURCE 1
SOURCE 2
LOAD
INPUT ORDER S2->S1
INPUT ORDER S1->S2
MAN
POS1
POS2
COM
OUT1
OUT2
OUT3
OUT4
F12-7
F12-6
F12-12
S1A
S1B
S1C
S1N
S2A
S2B
S2C
S2N
LA
LB
LC
LN
101
102
201
202
334
333
314
313
324
323
AUX A1 S1
AUX B1 S2
AUX A2 S1
AUX B2 S2
1A1 3A1 2A1
1B1 3B1 2B1
1A2 3A2 2A2
1B2 3B2 2B2
Optional



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PROJET:

CODE:

N° PLAN

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ATSE Open Type Single Operator

ATyS FT
Wiring Diagram : 120 / 240 Vac 2P+N

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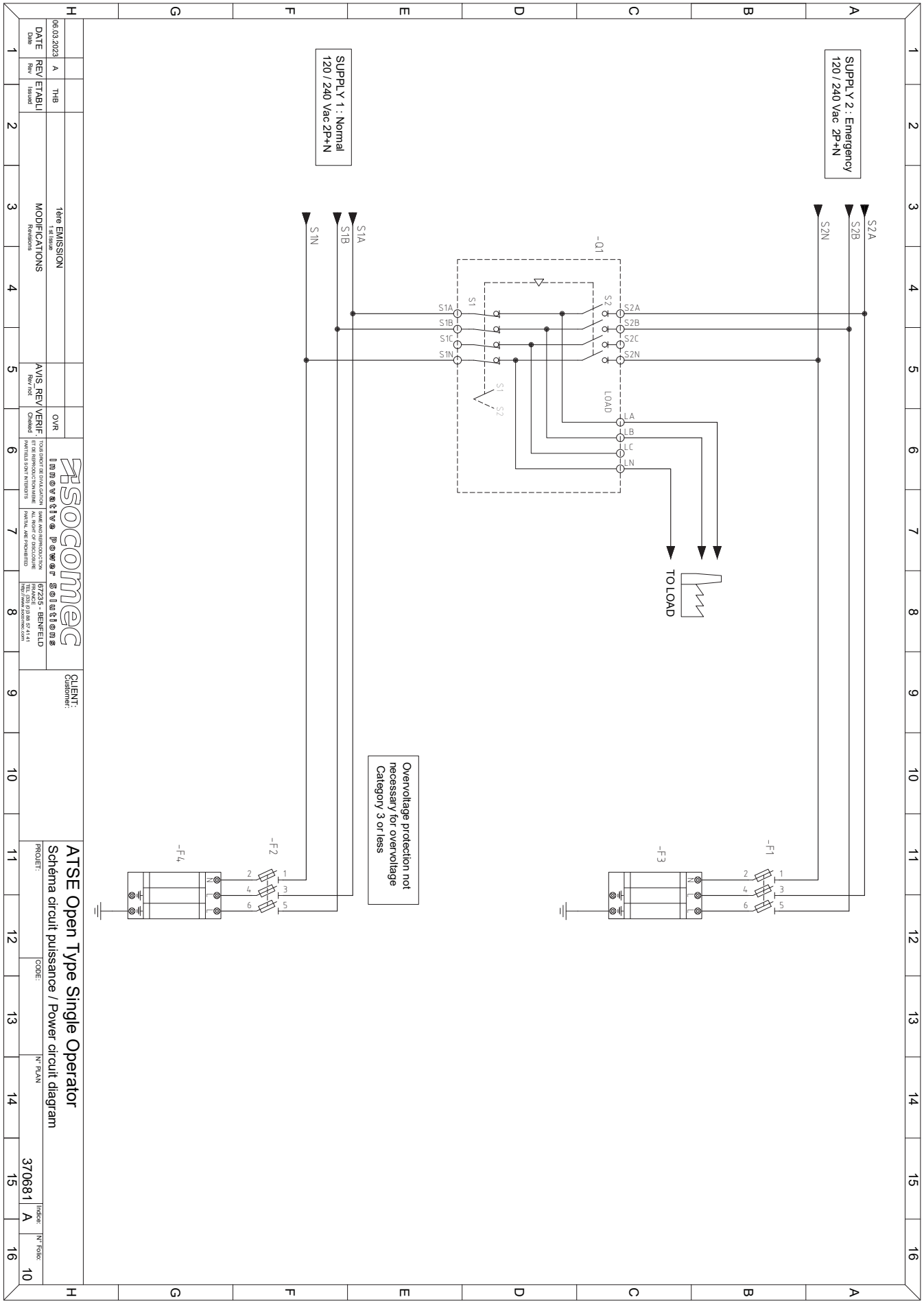
SUPPLY 2 : Emergency
120 / 240 Vac 2P+N
SUPPLY 1 : Normal
120 / 240 Vac 2P+N
S2A
S2B
S2N
S1N
S1A
S1B
-Q1
S1
S2
S1A
S1B
S1C
S1N
S2A
S2B
S2C
S2N
LOAD
LA
LB
LC
LN
TO LOAD
-F1
-F2
-F3
-F4
Overvoltage protection not
necessary for overvoltage
Category 3 or less
ATSE Open Type Single Operator
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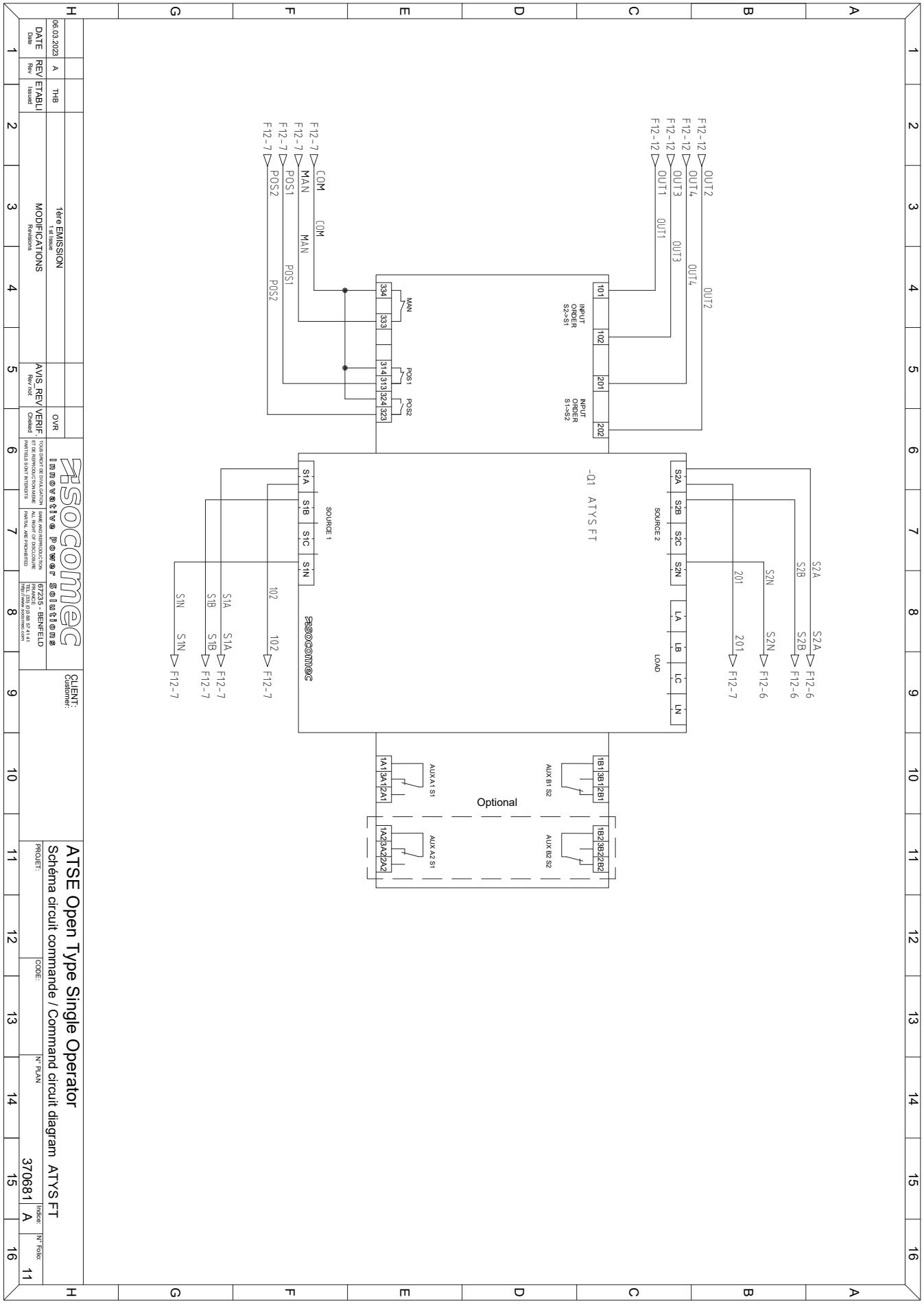

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Schéma circuit commande / Command circuit diagram ATYS FT

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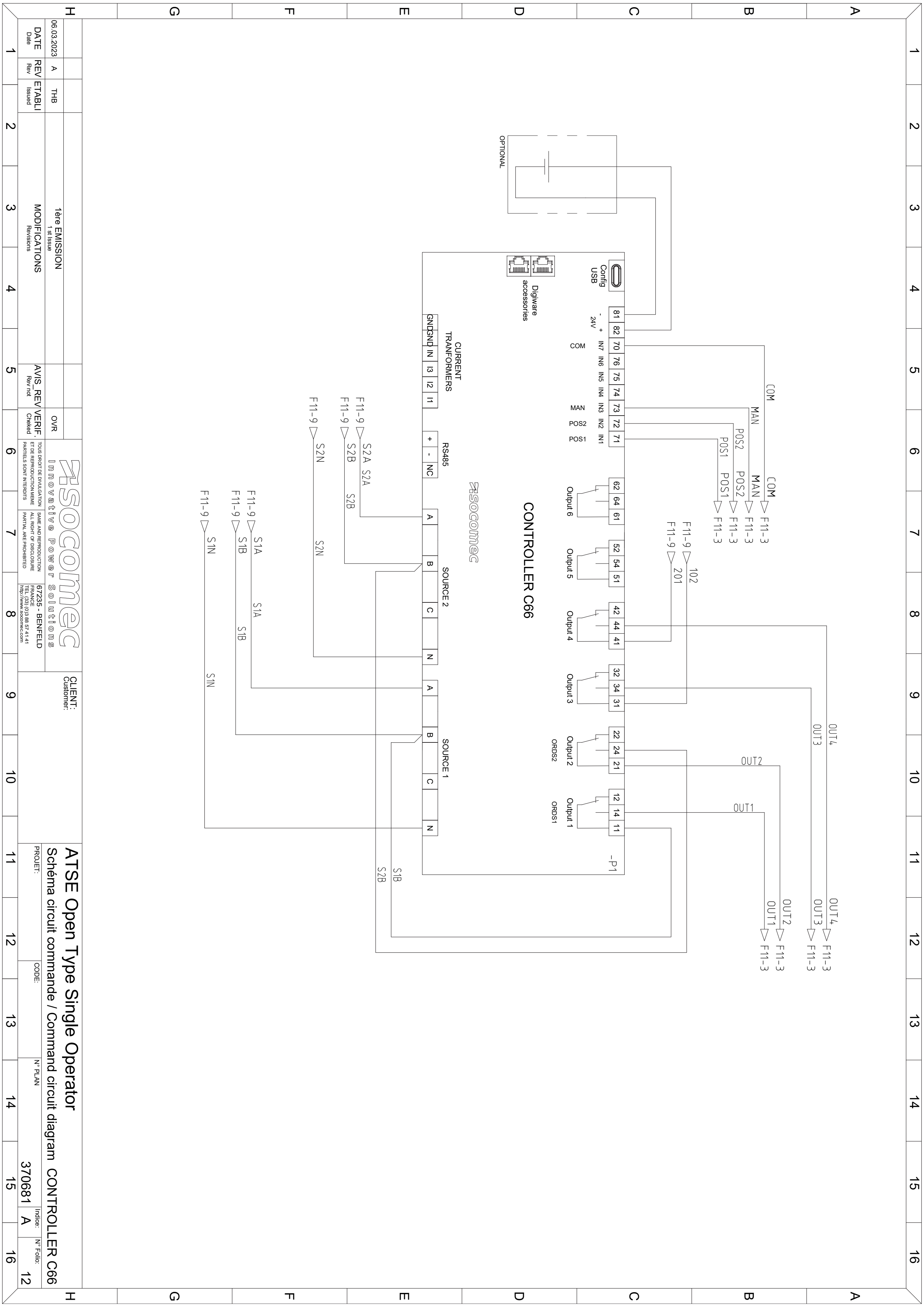

ATSE Open Type Single Operator
Schéma circuit commande / Command circuit diagram CONTROLLER C66
CONTROLLER C66
OPTIONAL
Config USB
Digiware accessories
24V
COM
MAN
POS2
POS1
CURRENT TRANFORMERS
RS485
SOURCE 2
SOURCE 1
Output 1
Output 2
Output 3
Output 4
Output 5
Output 6
ORDS1
ORDS2
-P1
F11-3
F11-9
S1A
S1B
S1N
S2A
S2B
S2N
OUT1
OUT2
OUT3
OUT4
201
102
DATE
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ATSE Open Type Single Operator

ATyS FT
Wiring Diagram : 120 / 208 Vac 3P+N

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ATSE Open Type Single Operator
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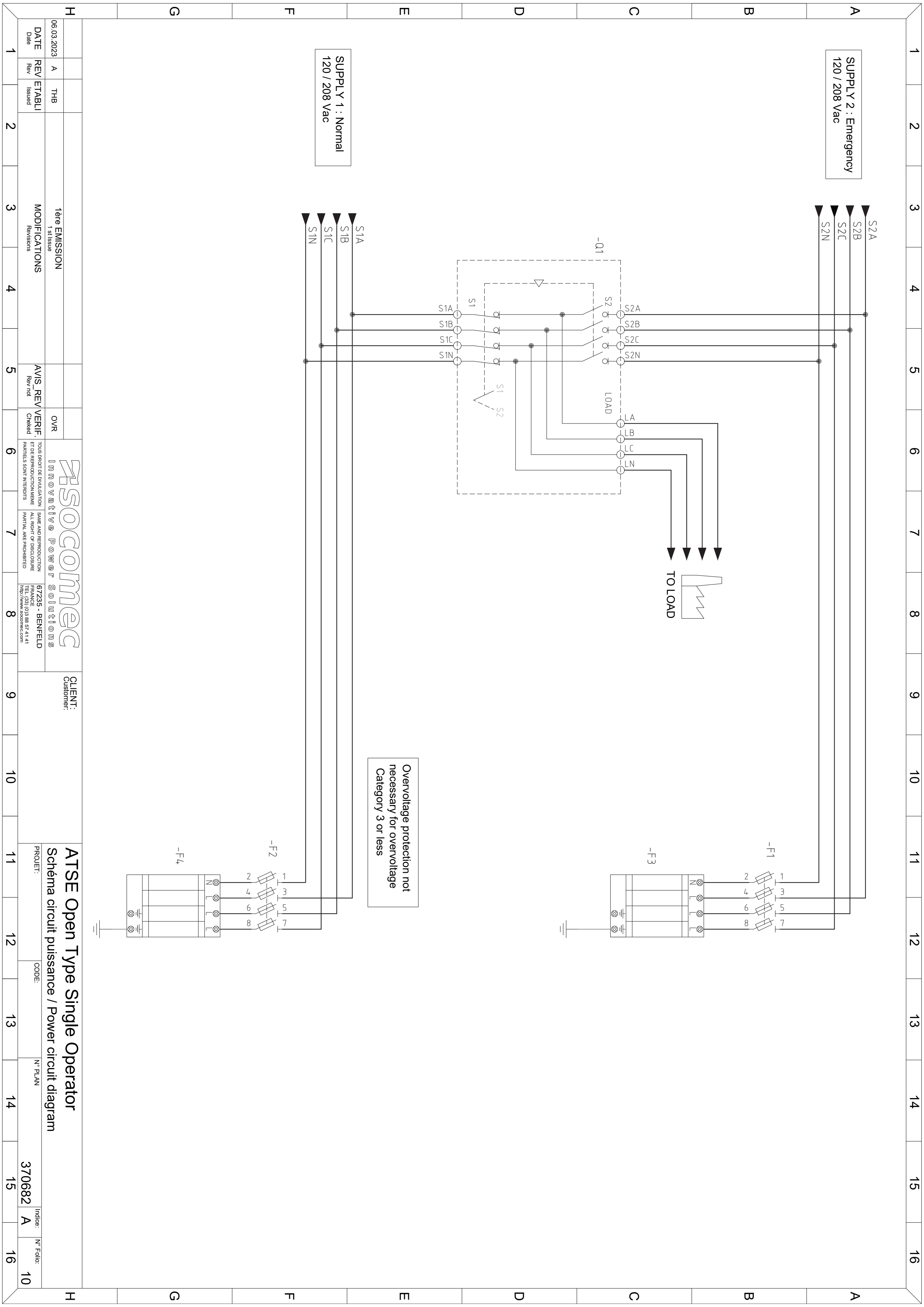
SUPPLY 1 : Normal
120 / 208 Vac
SUPPLY 2 : Emergency
120 / 208 Vac
S1A
S1B
S1C
S1N
S2A
S2B
S2C
S2N
-Q1
S1
S2
LOAD
LA
LB
LC
LN
TO LOAD
Overvoltage protection not necessary for overvoltage Category 3 or less
-F1
-F2
-F3
-F4
ATSE Open Type Single Operator
Schéma circuit puissance / Power circuit diagram
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N° Folio:
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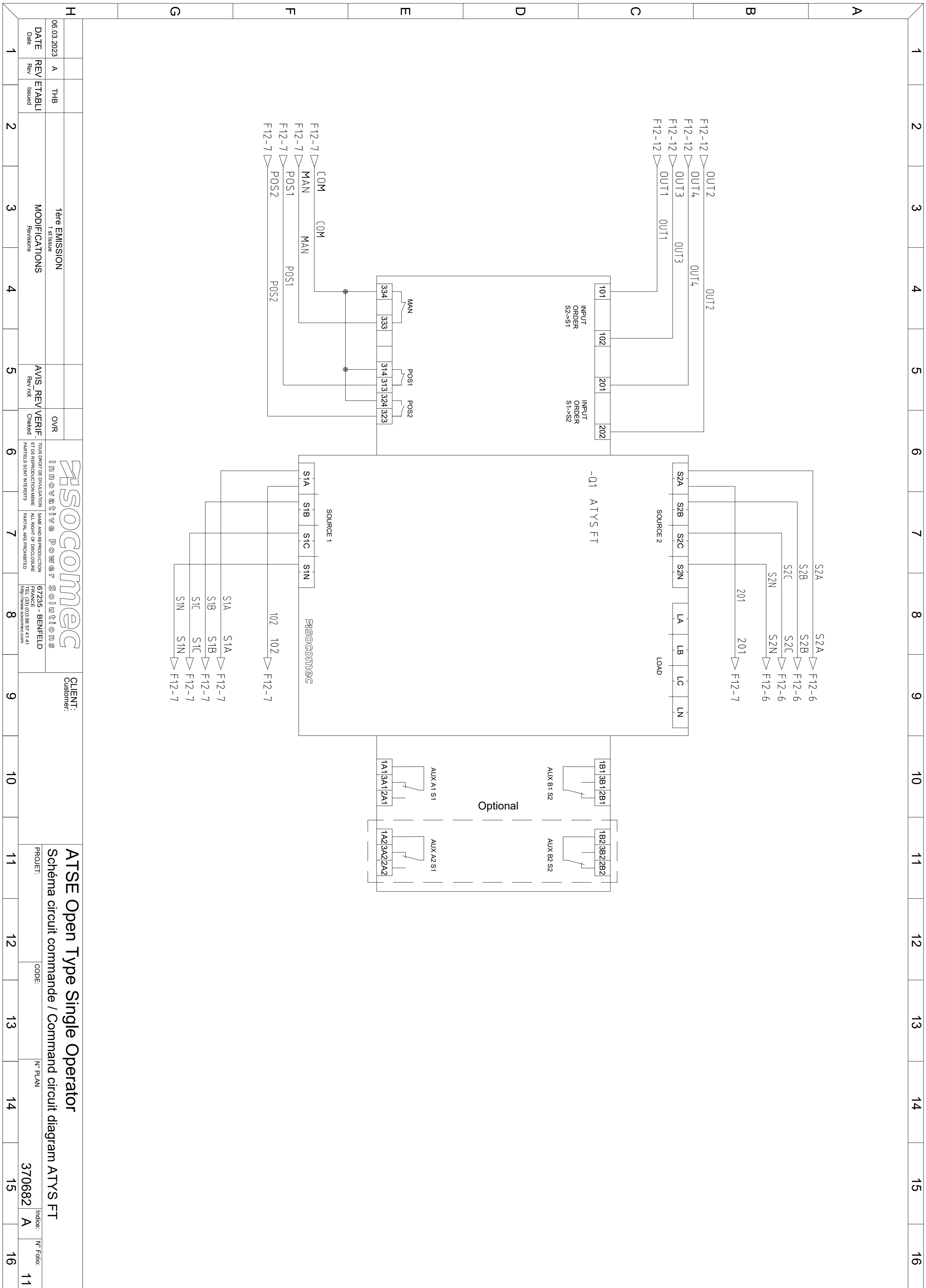
ATSE Open Type Single Operator
Schéma circuit commande / Command circuit diagram ATYS FT
-Q1 ATYS FT
SOURCE 1
SOURCE 2
LOAD
INPUT ORDER S2->S1
INPUT ORDER S1->S2
MAN
POS1
POS2
COM
OUT1
OUT2
OUT3
OUT4
AUX A1 S1
AUX B1 S2
AUX A2 S1
AUX B2 S2
Optional
F12-7
F12-6
F12-12
DATE
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370682
Indice:
N° Folio:
11
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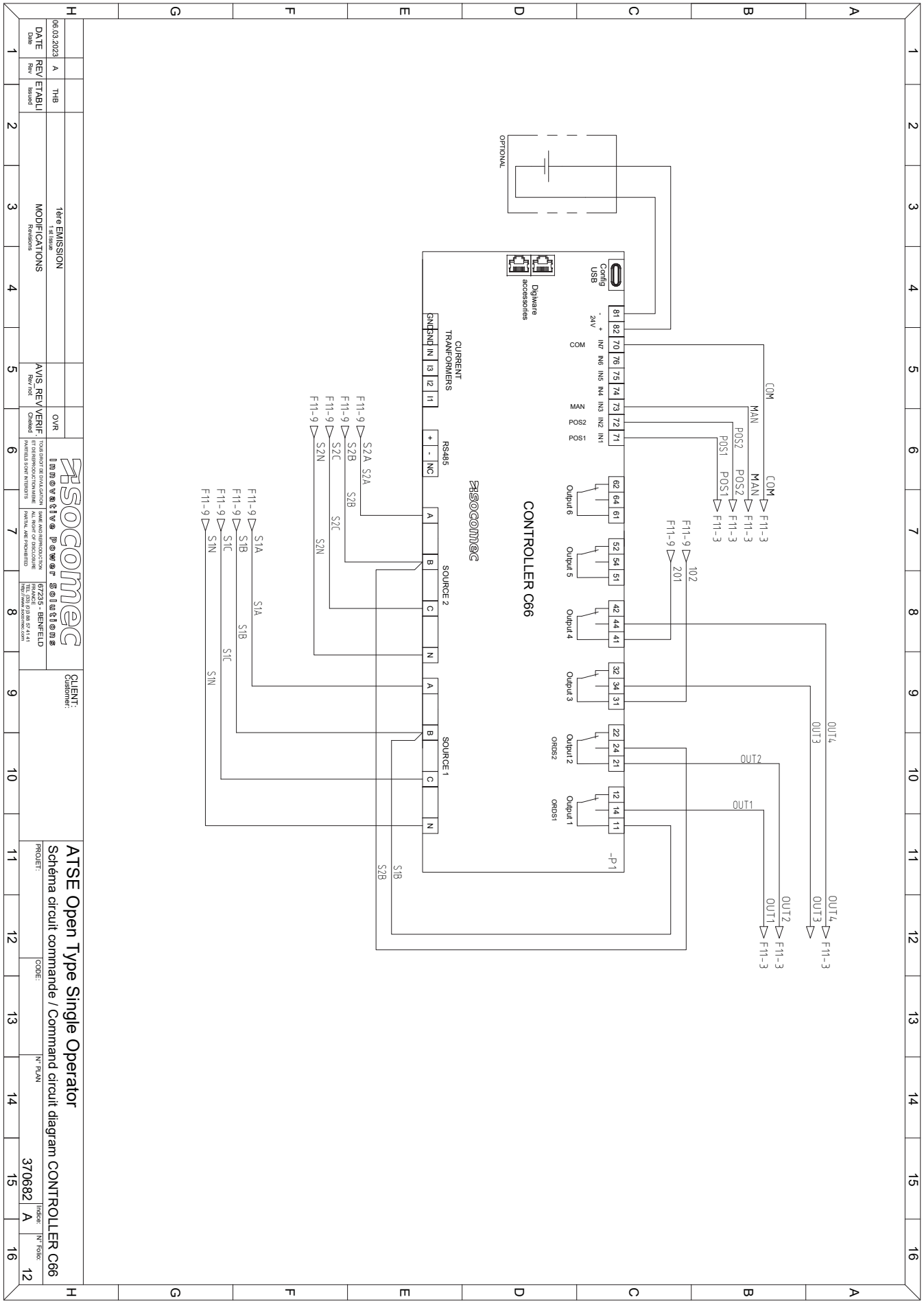

ATSE Open Type Single Operator

Schéma circuit commande / Command circuit diagram CONTROLLER C66

ATSE Open Type Single Operator

ATyS FT
Wiring Diagram : 208 Vac 3P

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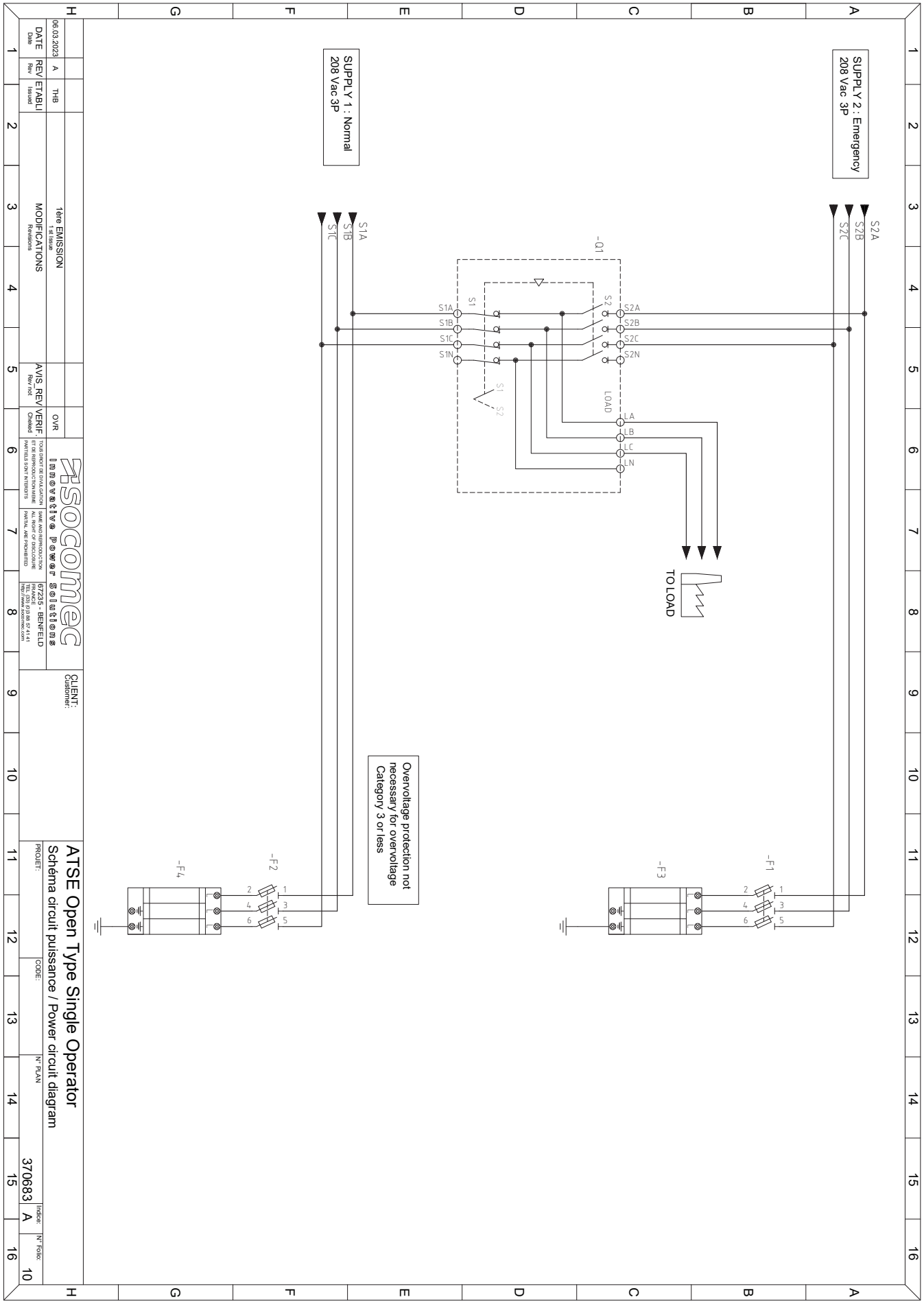
SUPPLY 2 : Emergency
208 Vac 3P
SUPPLY 1 : Normal
208 Vac 3P
S1A
S1B
S1C
S2A
S2B
S2C
-Q1
S1
S2
S1N
S2N
LOAD
LA
LB
LC
LN
TO LOAD
-F1
-F2
-F3
-F4
Overvoltage protection not necessary for overvoltage Category 3 or less
ATSE Open Type Single Operator
Schéma circuit puissance / Power circuit diagram
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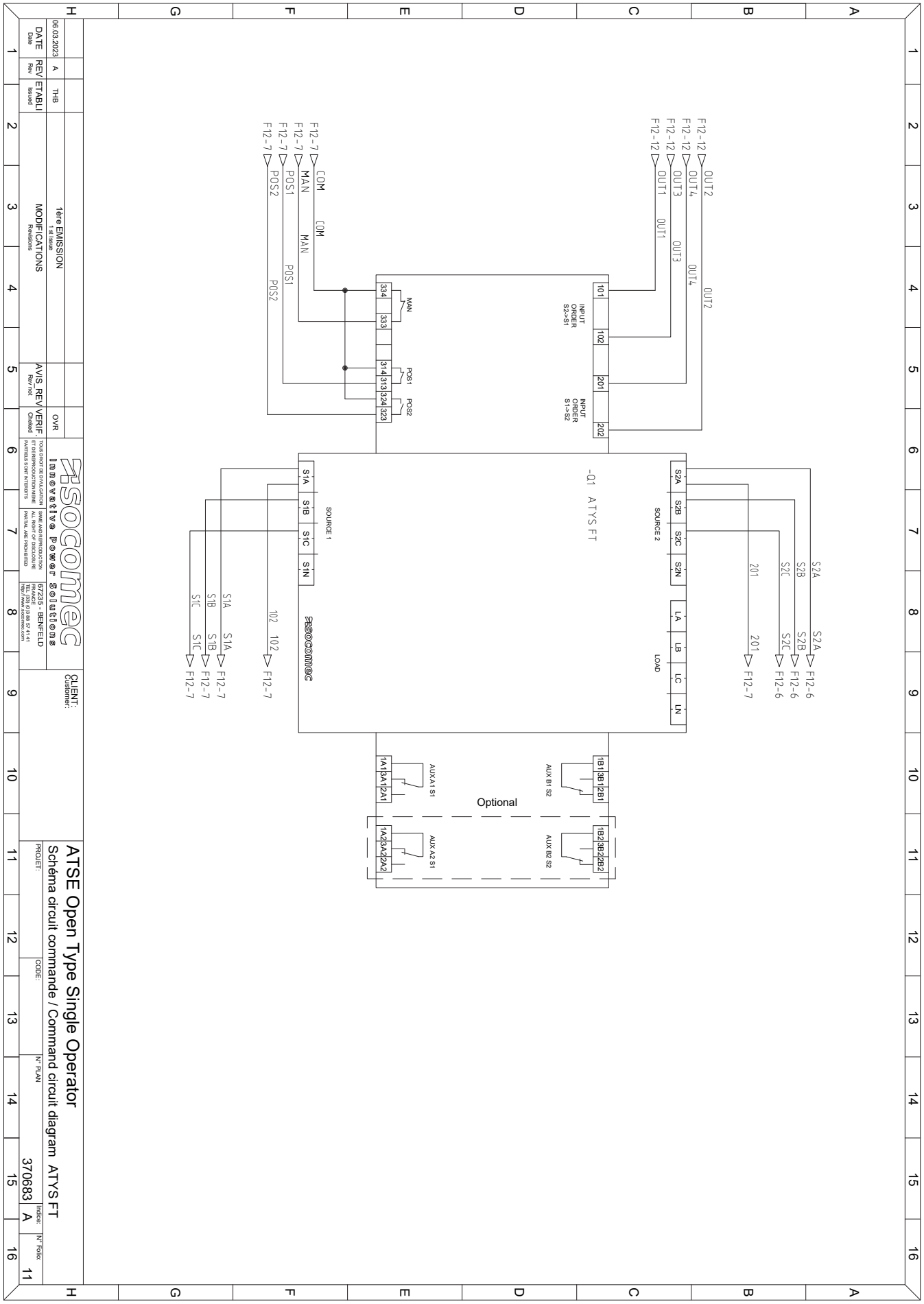

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ATSE Open Type Single Operator

Schéma circuit commande / Command circuit diagram ATYS FT

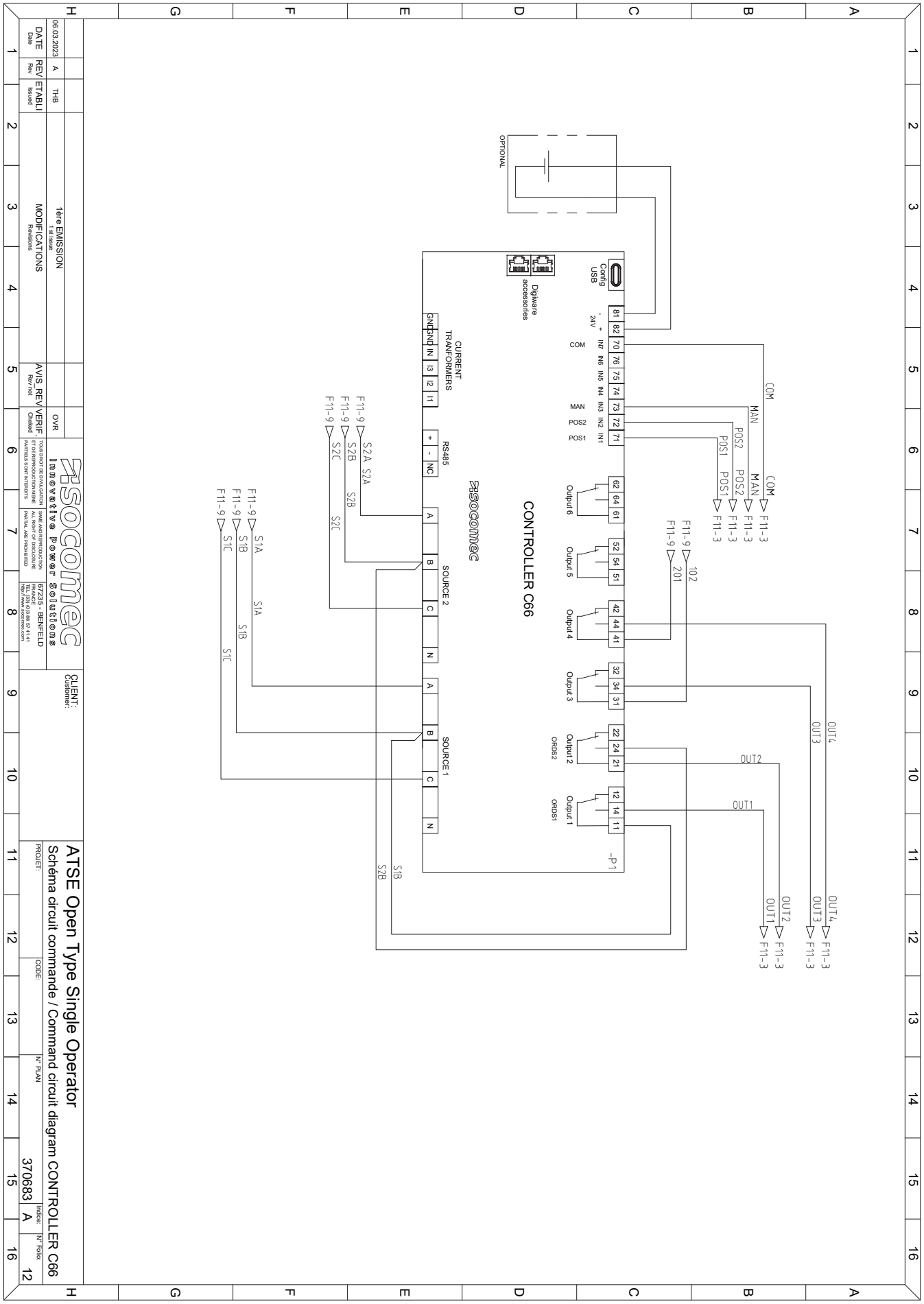

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Schéma circuit commande / Command circuit diagram CONTROLLER C66

PROJET: | CODE: | N° PLAN: 370683 | Indice: A | N° Folio: 12

ATSE Open Type Single Operator

ATyS FT
Wiring Diagram : 480 Vac 3P

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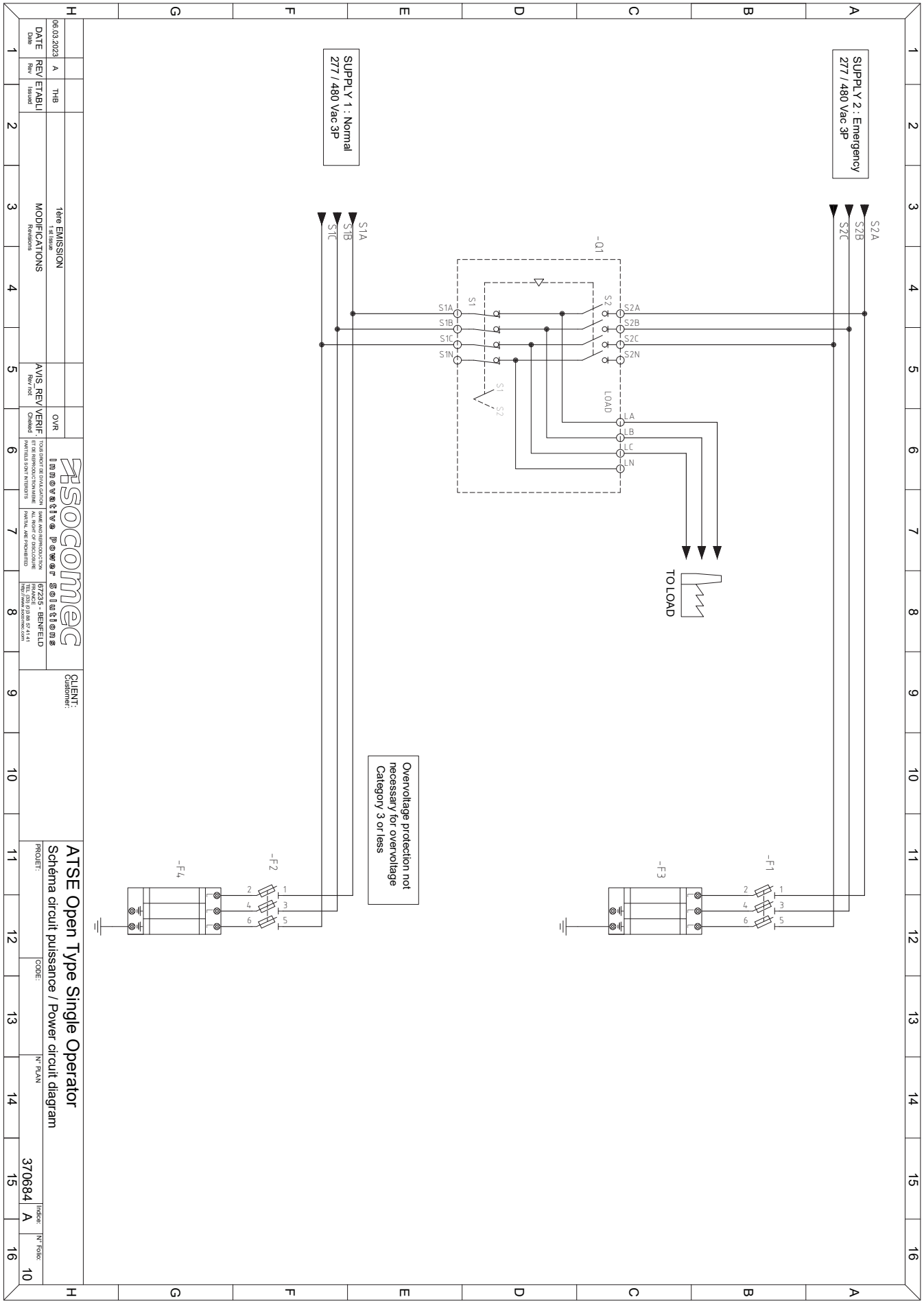
SUPPLY 2 : Emergency
277 / 480 Vac 3P
SUPPLY 1 : Normal
277 / 480 Vac 3P
S1A
S1B
S1C
S2A
S2B
S2C
-Q1
S1
S2
S1N
S2N
LOAD
LA
LB
LC
LN
TO LOAD
-F1
-F2
-F3
-F4
Overvoltage protection not necessary for overvoltage Category 3 or less
ATSE Open Type Single Operator
Schéma circuit puissance / Power circuit diagram
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Customer:
PROJET:
CODE:
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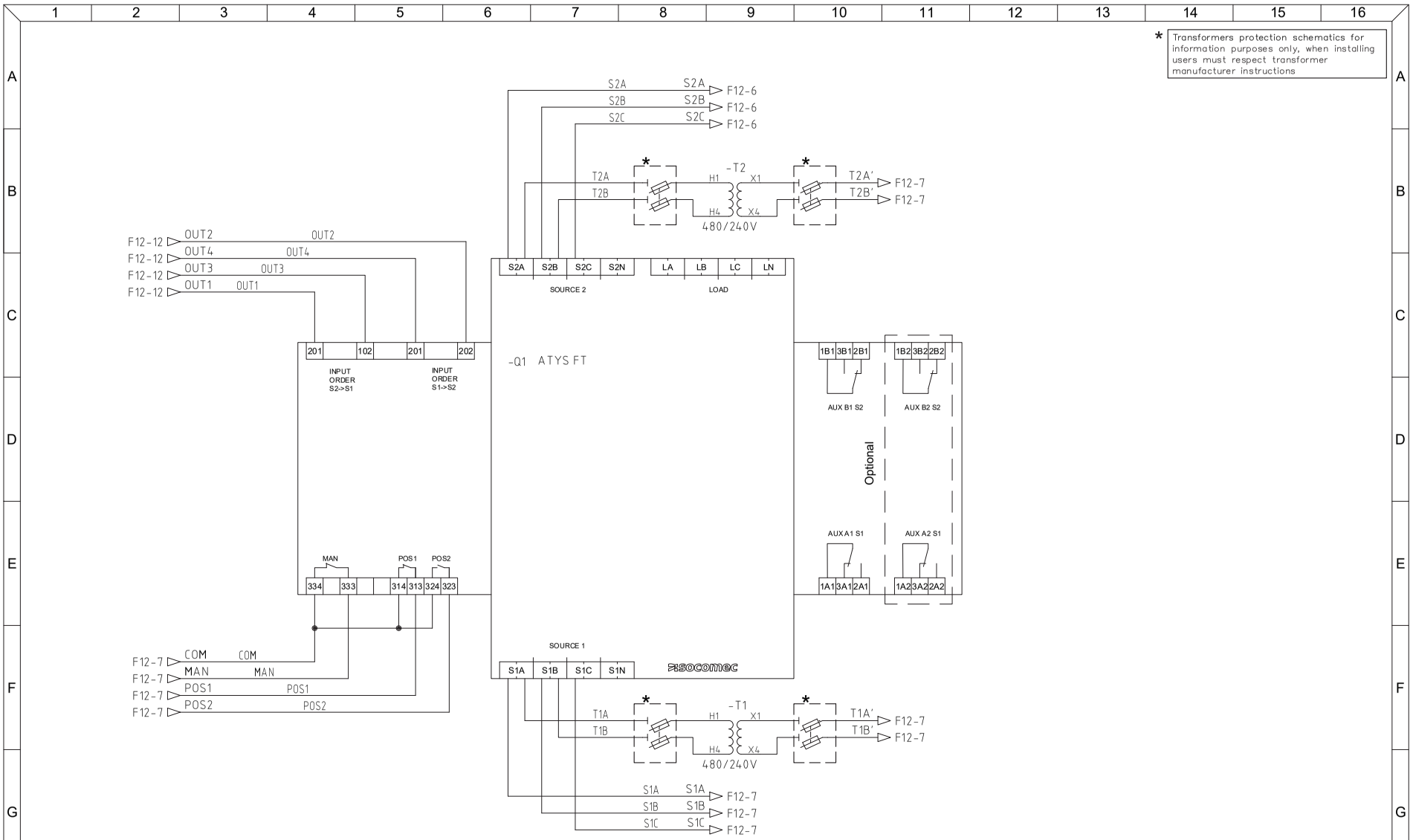

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PROJET:	CODE:	N° PLAN	Indice:	N° Folio:
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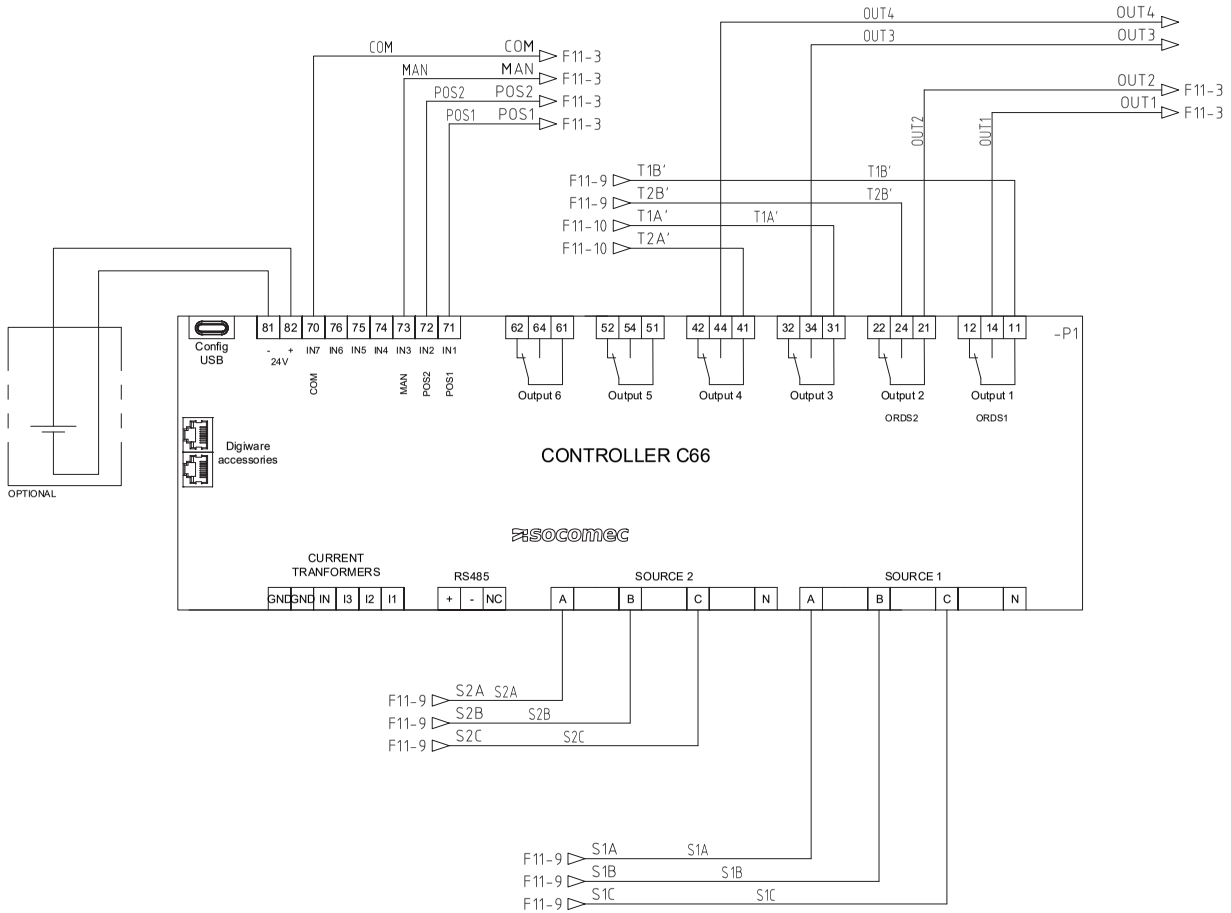

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Schéma circuit commande / Command circuit diagram CONTROLLER C66

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ATSE Open Type Single Operator

ATyS FT
Wiring Diagram : 277-480 Vac 3P+N

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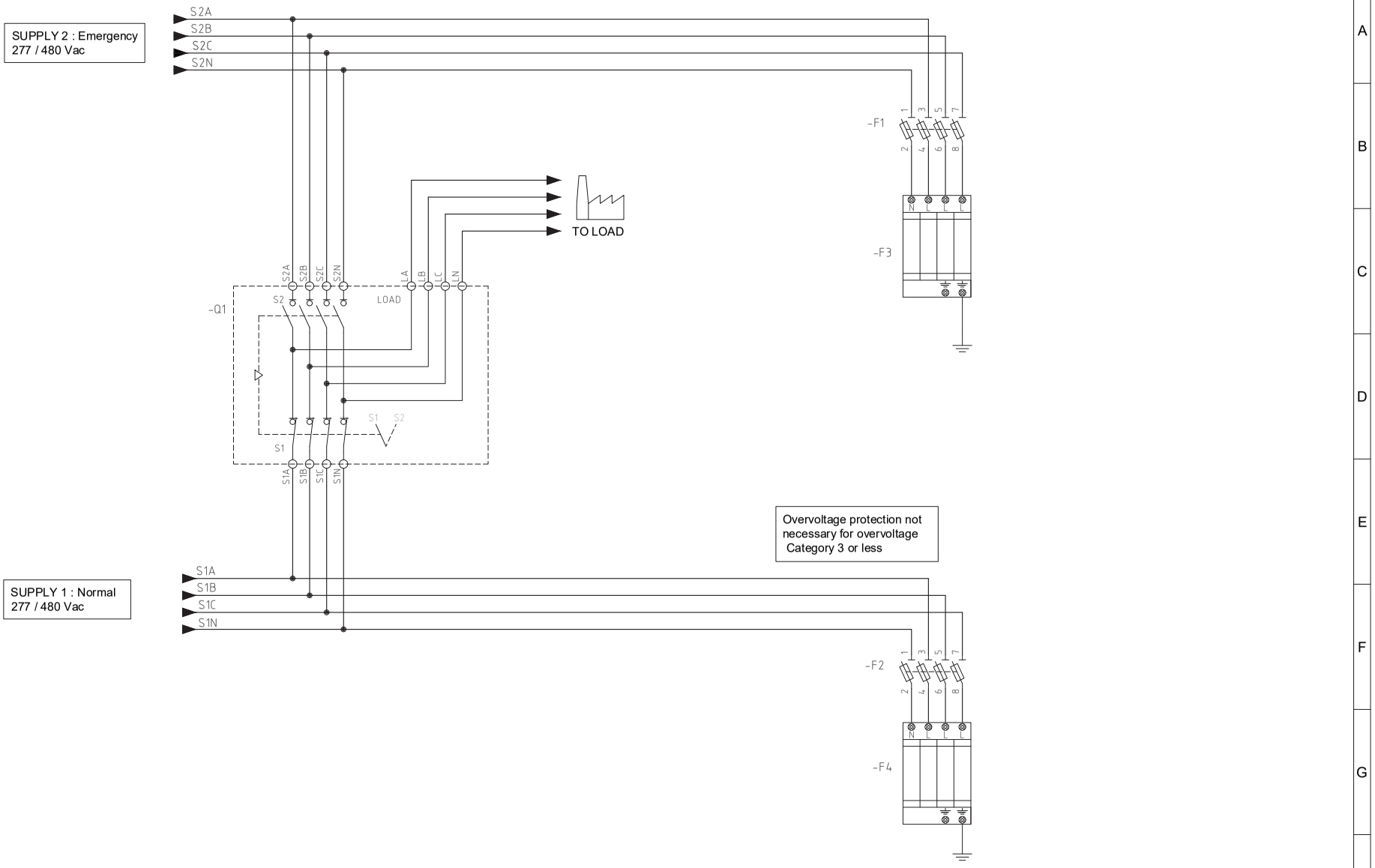
PROJET:	CODE:	N° PLAN	Indice:	N° Folio:
		370685	A	02



DATE	REV	ETABLI	MODIFICATIONS	AVIS_REV	VERIF
06.03.2023	A	THB	1ère EMISSION 1 st Issue		OVR

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Schéma circuit puissance / Power circuit diagram

PROJET:	CODE:	N° PLAN	Indice:	N° Folio:
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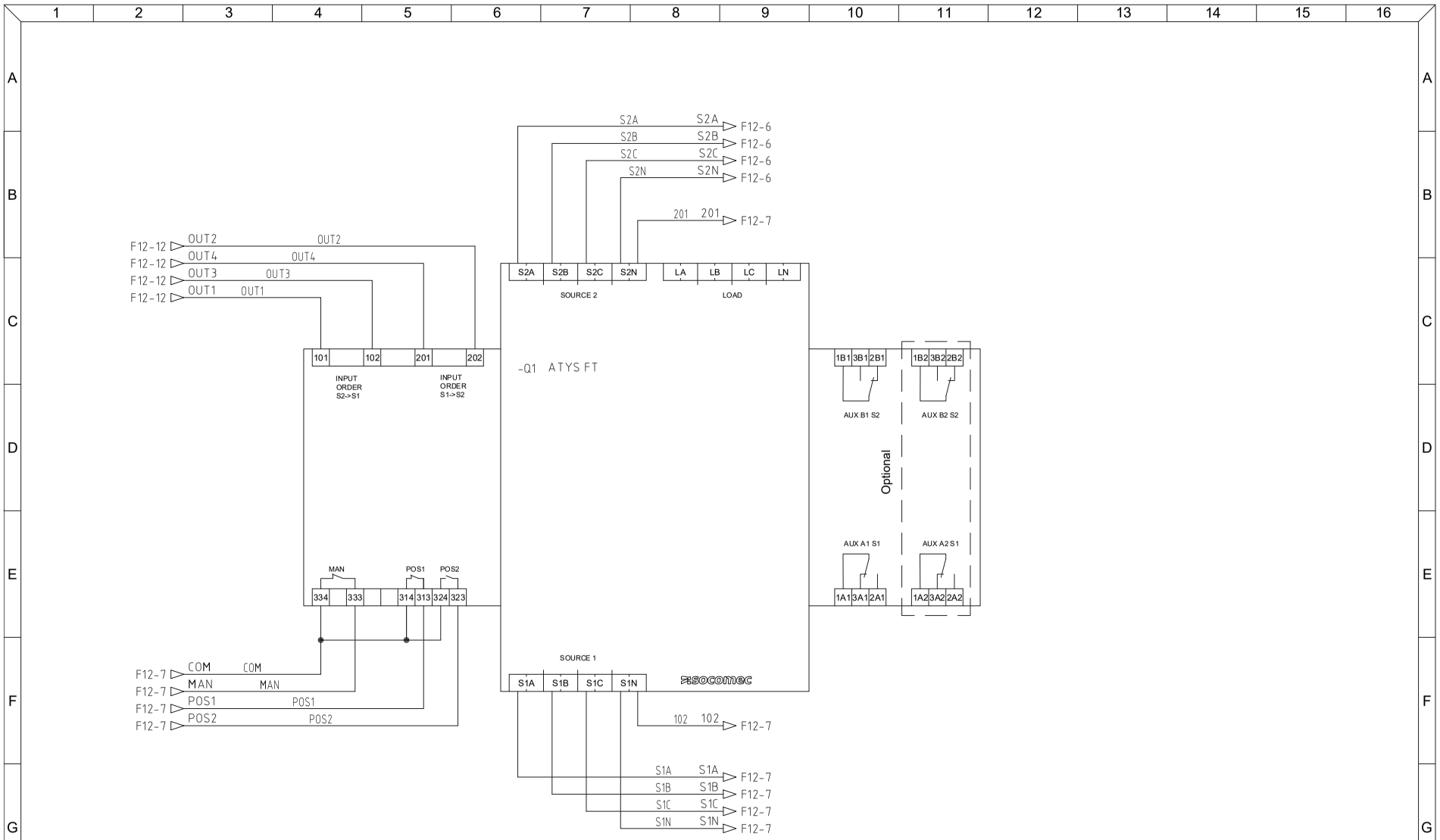

DATE	REV	ETABLI	MODIFICATIONS	AVIS_REV	VERIF
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Schéma circuit commande / Command circuit diagram ATYS FT

PROJET:	CODE:	N° PLAN	Indice:	N° Folio:
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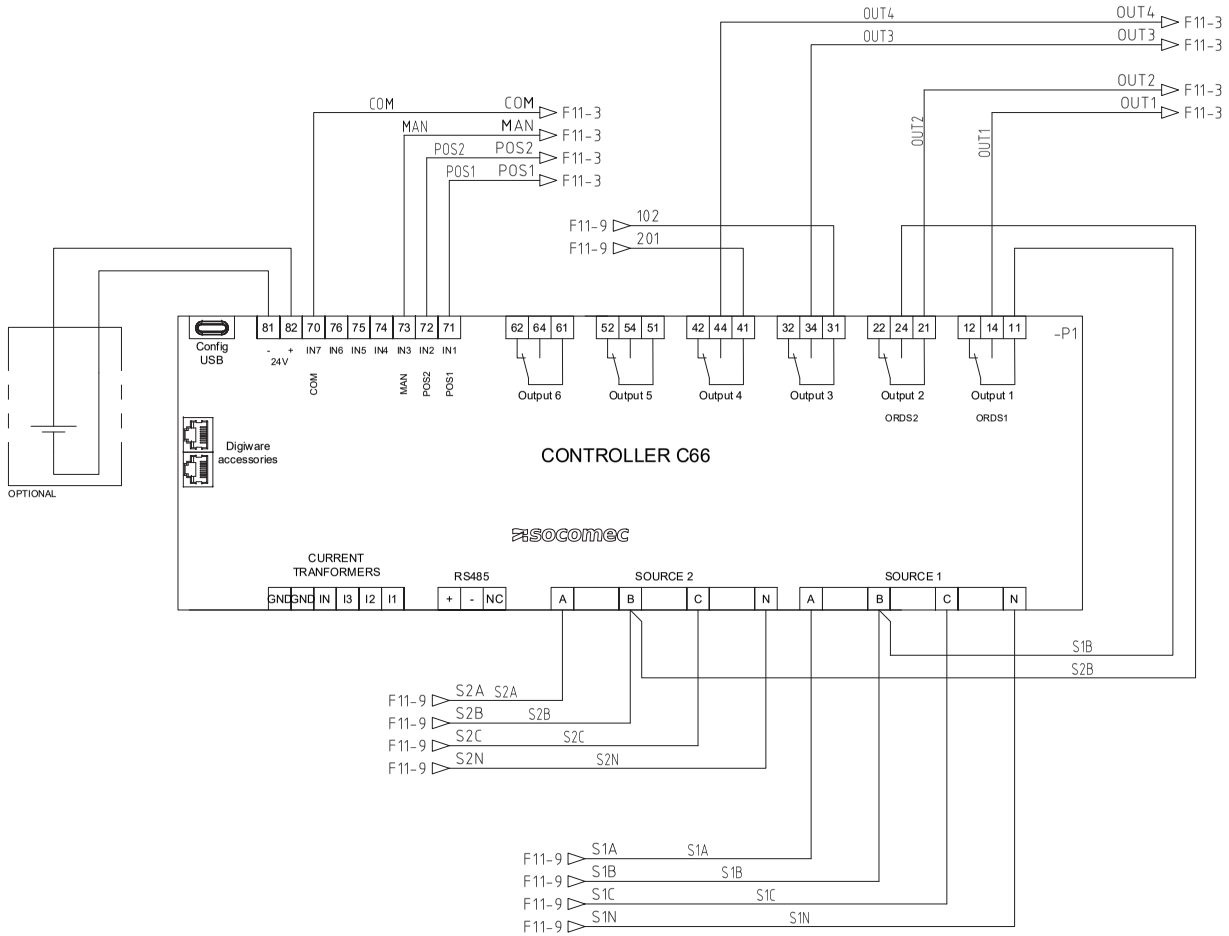

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