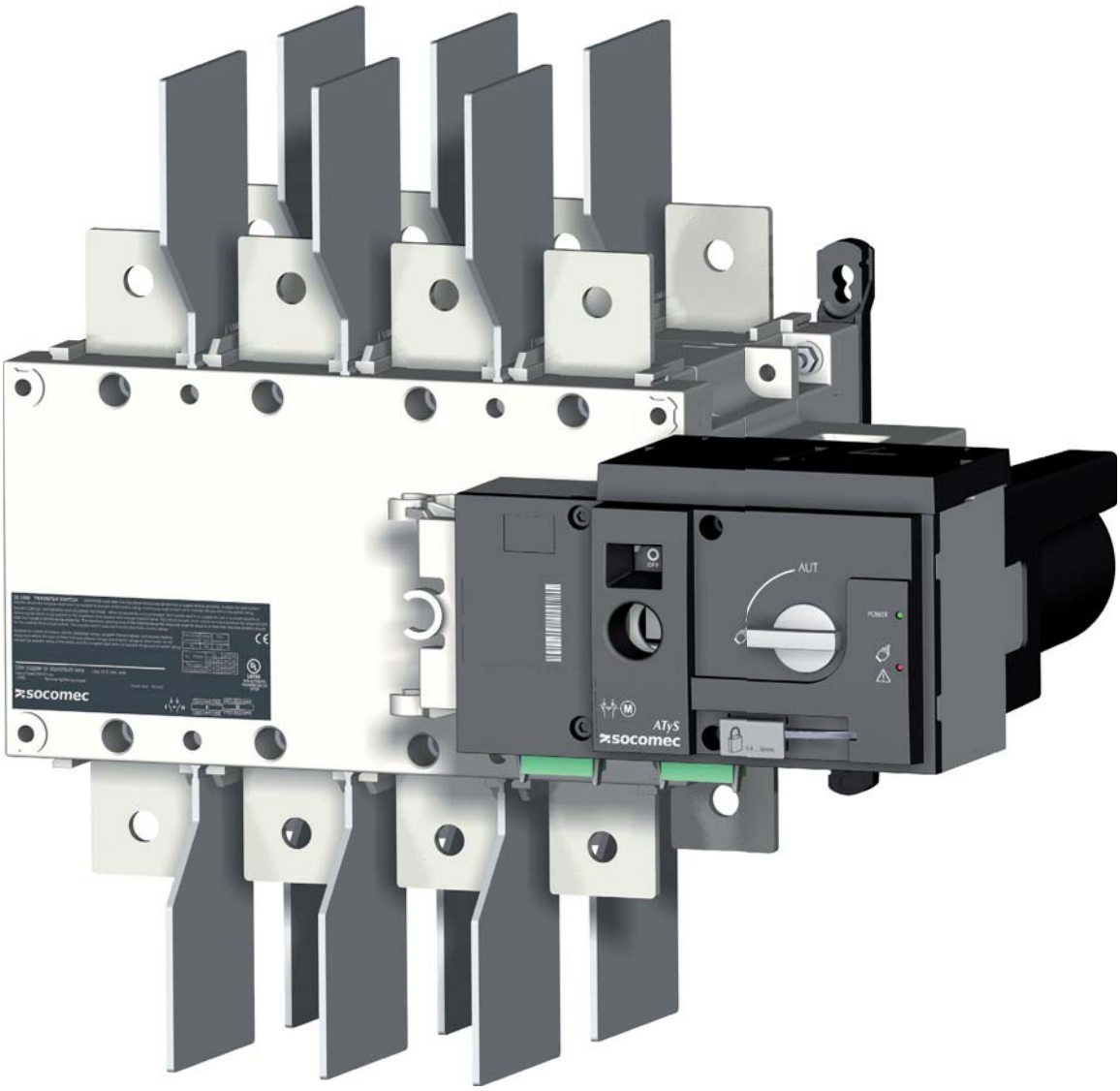
INSTRUCTION MANUAL

ATyS UL 1008

Transfer Switching Equipment
100, 200, 260, 400A

EN



www.socomec.com
http://www.socomec.com/en/atys-ul-1008
To download, brochures, catalogues and technical manuals.

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INDEX

1. GENERAL SAFETY INSTRUCTIONS

- This manual provides instructions on safety, connections and operation of the ATYS transfer switch manufactured by SOCOMEC.
- Whether the ATYS is sold as a loose product, as a spare, as an enclosed solution or as any other configuration, this device must always be installed and commissioned by qualified and experienced personnel, in line with the manufacturers recommendations, following good engineering practices and after having read and understood the details in the latest release of the relative product instruction manual.
- Maintenance on the product and any other associated equipment including but not limited to servicing operations must be performed by adequately trained and qualified personnel.
- Each product is shipped with a label or other form of marking including rating and other important specific product information. One must also refer to and respect markings on the product prior to installation and commissioning for values and limits specific to that product.
- Using the product outside the intended scope, outside SOCOMEC recommendations or outside the specified ratings and limits can cause personal injury, death and/or damage to equipment.
- This instruction manual must be made accessible so as to be easily available to anyone who may need to read it in relation with the ATYS.
- The ATYS meets the harmonised ANCE, CSA, UL 1008 standard (July 2012 approved by ANSI) governing this type of product and includes CE marking on each product.
- 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 voltage may be present on the product directly through the mains or indirectly through external circuits.**
- Voltages associated with this product may cause injury, electric shock, burns or death. Prior to carry out any maintenance or other work on live parts or other parts in the vicinity of exposed live parts, ensure that the switch including all control and associated circuits are de-energized.

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

- As a minimum the ATYS complies with the following international standards:

  - UL 1008

  - IEC 60947-6-1
  - GB 14048-11
  - EN 60947-6-1
  - BS EN 60947-6-1
  - NBN EN 60947-6-1
  - IEC 60947-3
  - IS 13947-3
  - EN 60947-3
  - NBN EN 60947-3
  - BS EN 60947-3

  Refer to the specific reference numbers at the back of this document to order the right UL 1008 and other IEC certified products.

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

2. INTRODUCTION

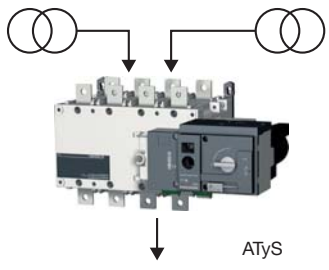
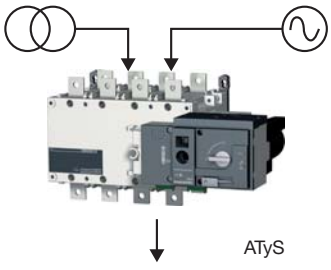
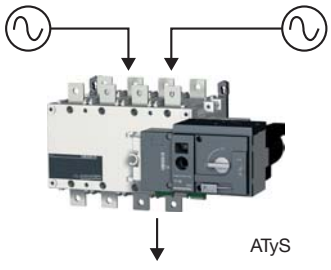
ATYS transfer switches are designed for use in **total system optional standby** power applications for the safe transfer of a load supply between a normal and an alternate source. The changeover is done in open transition and with minimum supply interruption during transfer ensuring full compliance with UL 1008, IEC 60947-6-1, GB 14048-11 and other international TSE standards as listed.

The ATYS is a full load break (switch type) transfer switching equipment where the main switching components are proven technology devices also fulfilling requirements in UL98 and IEC 60947-3 standards.

ATYS transfer switching equipment ensures:

- Power Control and Safety between a normal and an alternate source.
- A complete product delivered as a fully assembled and tested solution.
- Intuitive HMI for local operation.
- Integrated and robust switch disconnection.
- A stable OFF position with built in padlocking to facilitate safe maintenance.
- A window with clearly visible position indication I – 0 - II.
- An inherent failsafe mechanical interlock.
- Stable positions (I – 0 – II) non affected by typical vibration and shock.
- Constant pressure on the contacts non affected by network voltage.
- Energy Efficient with virtually no consumption whilst on the normal, alternate or off positions.
- Quick, easy and safe dual “on-load” emergency manual operation.
  (Manual operation is functional with and without the motorization in place).
- Straight forward installation with effective ergonomics.
- Minimal downtime with the possibility to perform easy maintenance.
- Simple and secure motorization remote controls interface.
- Integrated switch position auxiliary contacts.
- An active “product availability” status feedback.
- Ample accessories to suit specific requirements.
- Compatibility with virtually any make of ATS, AMF, Genset controller provided with volt free contacts.

- Power supply continuity for most total system optional standby power applications.

Mains / Mains	Mains / Genset	Genset / Genset
		

3. QUICK START

3.1. Quick Start ATYS UL 1008 Frame B4 to B5 (100A to 400A)

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QUICK START

ATyS

Transfer Switch
UL 1008: Optional Standby Power
100A, 200A, 260A, 400A

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
  - Qty 1 x Emergency handle and fixing clip
  - Quick Start instruction sheet

Warning

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

This Quick Start is intended for personnel trained in the installation and commissioning of this product. For further details refer to the product instruction manual available on the 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 authorised personnel.
- Do not handle any control or power cables connected to the product when voltage may be, or may become present on the product, directly through the mains or indirectly through external circuits.
- Always use an appropriate voltage detection device to confirm the absence of voltage.
- Ensure that no metal objects are allowed to fall in the cabinet (risk of electrical arcing).

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

⚠ Risk of damaging the device

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

Accessories

- Bridging bars and connection kits.
- Terminal screens.
- Auxiliary contacts (Additional).
- Terminal lugs.

Spares

- Motorisation module

For further details for spares and accessories, please refer to the instruction manual in chapter - "Spare parts and accessories"

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http://www.socomec.com/en/atys-ul-1008

Printing informations: 1 color Black. White paper 90g/m². Printing size: 420x297. Final size 210x297. This page visible first.

542 563 C - 12/14 - EN

CE UL 1008

Installation and Commissioning

STEP 1 Cabinet / Back Plate Installation

STEP 2 Connecting the POWER section

STEP 3 COMMAND / CONTROL terminal connections

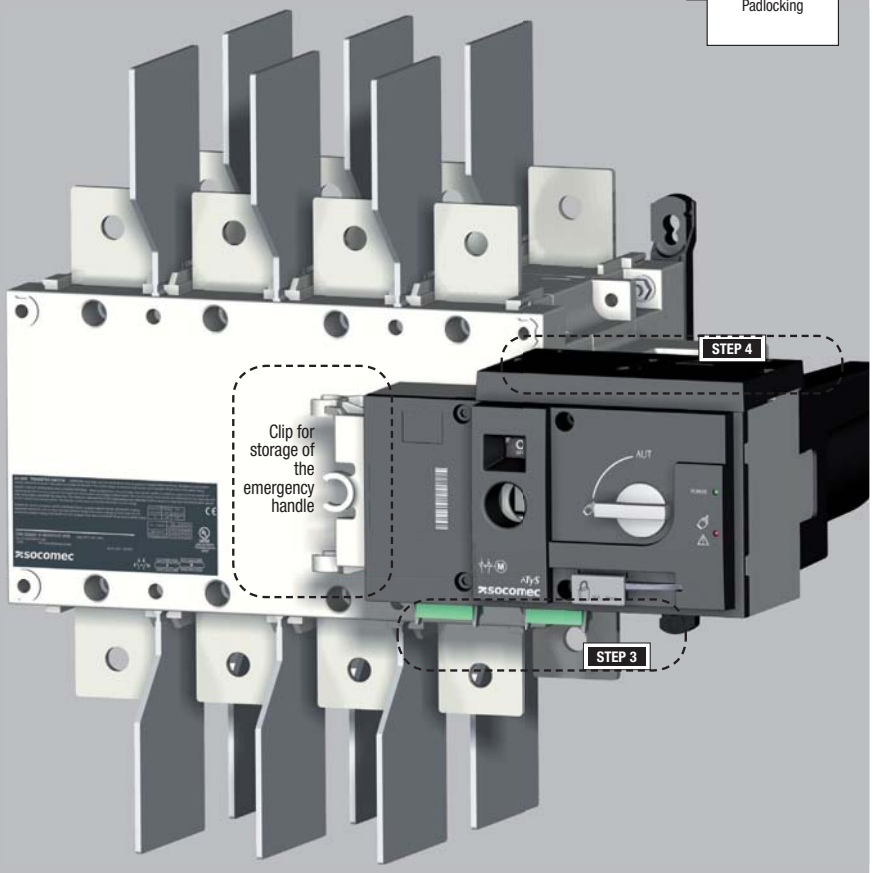
STEP 4 Power SUPPLY terminal connections

STEP 5 CHECK

STEP 6A Control by an external order (AUTO)

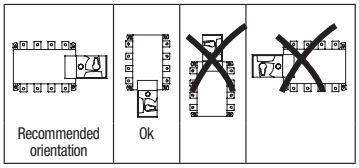
STEP 6B Emergency Manual Operation

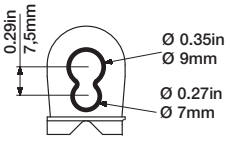
STEP 6C Padlocking

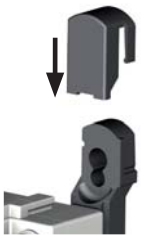


STEP 1A *Installation*

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

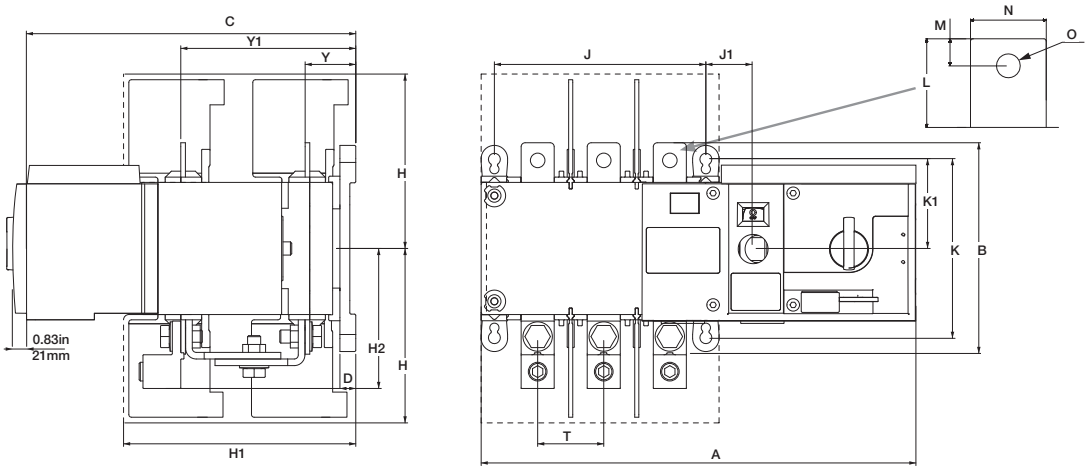






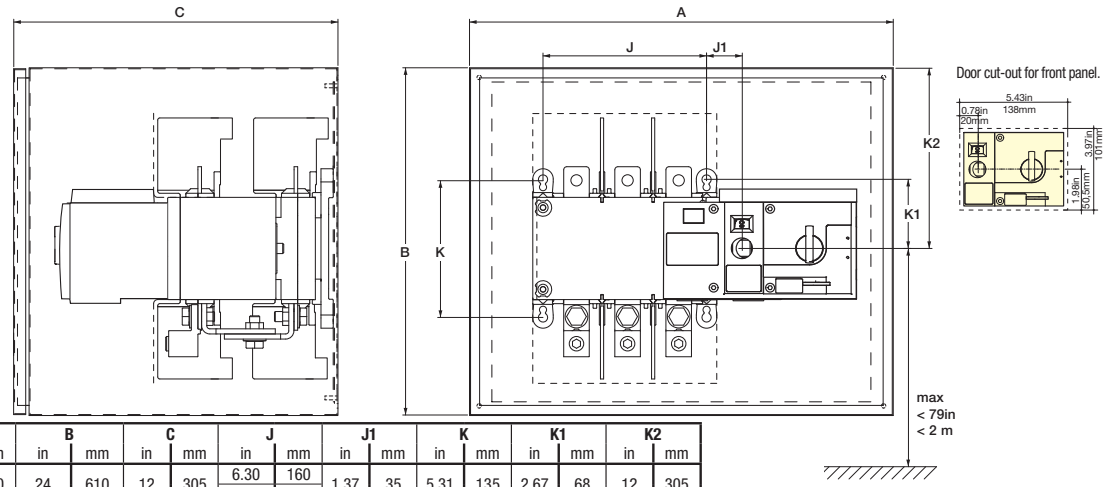
	FRAME B4						FRAME B5					
	100 A			200 A			260 A			400 A		
	2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P
Ref ATyS UL	97232010	97233010	97234010	97232020	97233020	97234020	97232026	97233026	97234026	97232040	97233040	97234040
Dim. code	❶	❶	❷	❶	❶	❷	❸	❸	❹	❸	❸	❹

STEP 1B



Dimensions in/mm

Ref. code		A in	A mm	B in	B mm	C in	C mm	D in	D mm	H in	H mm	H1 in	H1 mm	H2 in	H2 mm	J in	J mm	J1 in	J1 mm	K in	K mm	K1 in	K1 mm	L in	L mm	M in	M mm	N in	N mm	O in	O mm	T in	T mm	Y in	Y mm	Y1 in	Y1 mm
❶	2/3P	12.91	328	6.30	160	9.60	244	0.41	10,5	5.08	129	6.8	173	4.21	107	6.30	160	1.37	35	7.67	195	3.84	97,5	1.18	30	0.53	13,3	0.98	25	0.43	11	2	50	1.51	38,5	5.21	132,5
❷	4P	14.88	378													8.26	210																				
❸	2/3P	14.84	377	10.23	260	12.62	320,5	0.41	10,5	8	200	9.7	247	6.53	166	8.26	210	1.37	35	7.67	195	3.84	97,5	1.96	50	0.49	20	1.38	45	0.51	13	2.6	65	2.04	52	7.48	190
❹	4P	17.20	437													10.63	270																				

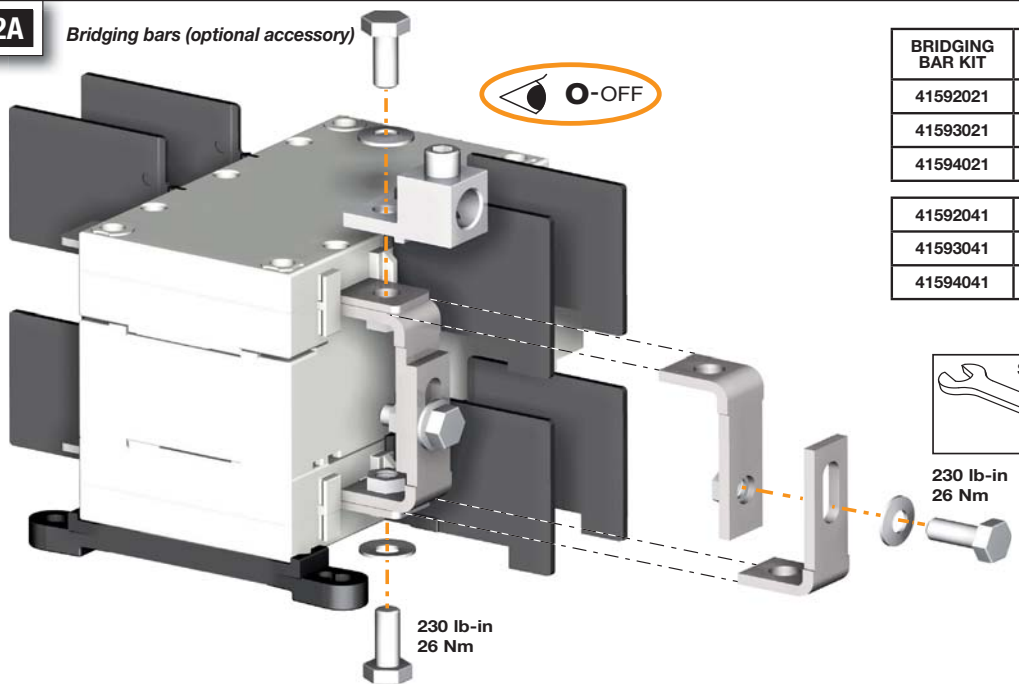


Dimensions in/mm

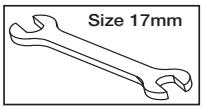
Ref. code		A in	A mm	B in	B mm	C in	C mm	J in	J mm	J1 in	J1 mm	K in	K mm	K1 in	K1 mm	K2 in	K2 mm
❶	2/3P	24	610	24	610	12	305	6.30	160	1.37	35	5.31	135	2.67	68	12	305
❷	4P							8.26	210								
❸	2/3P	32	813	32	813	16	406	8.26	210	1.37	35	7.67	195	3.84	97,5	15	381
❹	4P							10.63	270								

STEP 2A

Bridging bars (optional accessory)



BRIDGING BAR KIT	USED FOR ATYS REF.
41592021	97232010 / 97232020
41593021	97233010 / 97233020
41594021	97234010 / 97234020
41592041	97232026 / 97232040
41593041	97233026 / 97233040
41594041	97234026 / 97234040



3.1. Quick Start ATYS UL 1008 Frame B4 to B5 (100A to 400A) continued

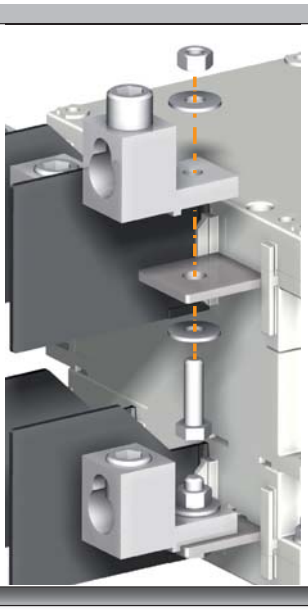
STEP 2B

Power Terminal Connections (optional accessories)

To be connected using terminal lugs, rigid or flexable busbars.

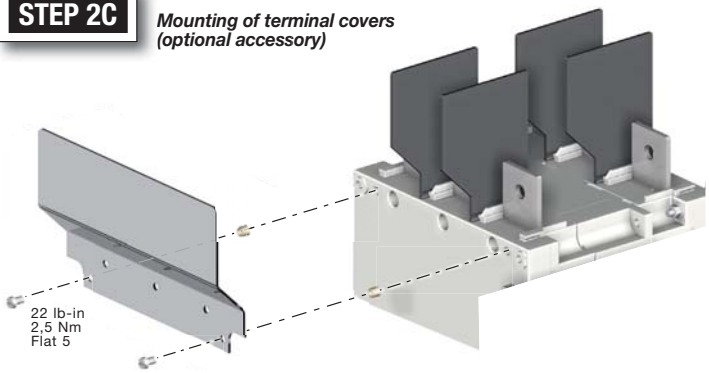
	FRAME B4						FRAME B5					
	100 A			200 A			260 A			400 A		
	2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P
Ref ATyS	97232010	97233010	97234010	97232020	97233020	97234020	97232026	97233026	97234026	97232040	97233040	97234040
Ref lugs	39542020	39543020	39544020	39542020	39543020	39544020	39542040	39543040	39544040	39542040	39543040	39544040
Qty per reference	2	3	4	2	3	4	2	3	4	2	3	4
Ref qty to order	x3	x3	x3	x3	x3	x3	x3	x3	x3	x3	x3	x3
Désignation	 CMC LA300-R						 CMC LA630-R					
Size (AWG) min.	# 6						# 4 1/0					
Size (AWG) max.	300 Kcmil						600 Kcmil - 250 Kcmil					
Opening per lug	1						1 2					
Size of screw	13						17					
Torque lb.in / mm	160 / 18						310 / 35					

When ordering ensure to order QTY 3 for each lug reference
(Quantity 2 for incoming power cables and quantity 1 for outgoing cables)

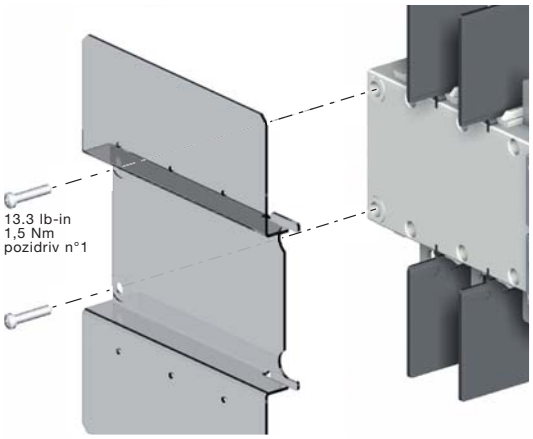


STEP 2C

Mounting of terminal covers (optional accessory)



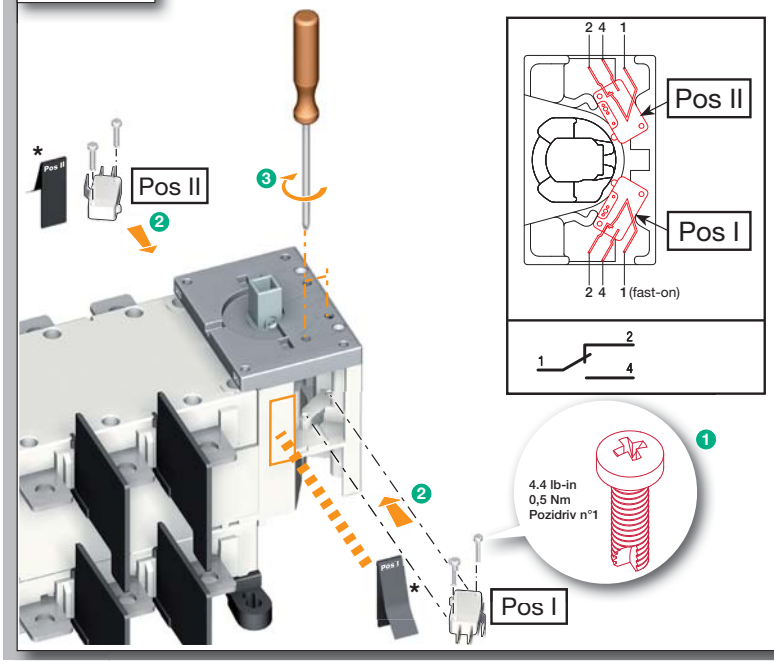
Ref. TOP or BOTTOM	USED FOR
41583041	97232026 / 97232040 97233026 / 97233040
41584041	97234026 / 97234040



Ref.	USED FOR
41583021	97232010 / 97232020 97233010 / 97233020
41584021	97234010 / 97234020

STEP 3A

Mounting of additional auxiliary contacts (optional accessories)

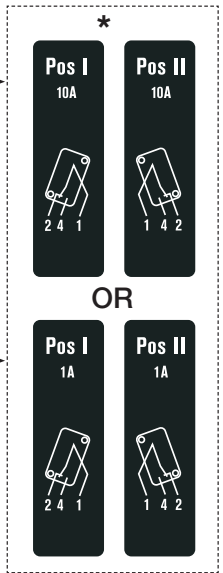


41590021

125 - 250 V a.c. 60 Hz
General Use 10A
1/2 HP
I min. 100 mA

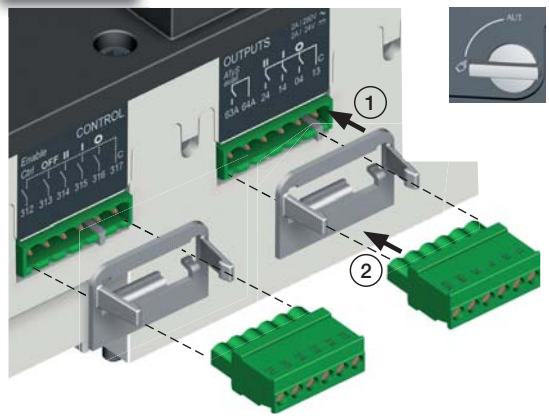
41590022

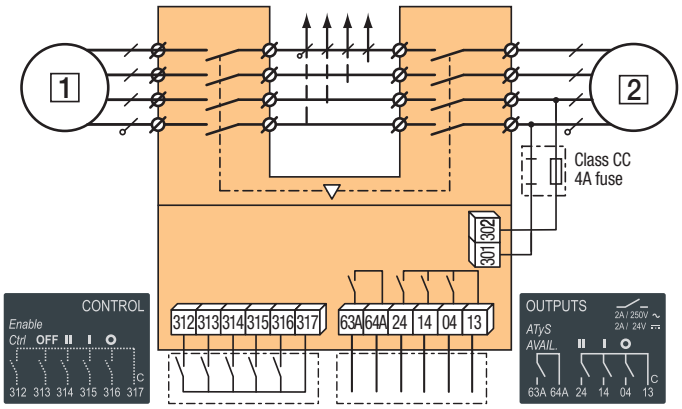
125 V a.c. 60 Hz
General Use 1A



STEP 3B

CONTROL / COMMAND Terminals - Ensure that the product is in Manual Mode.

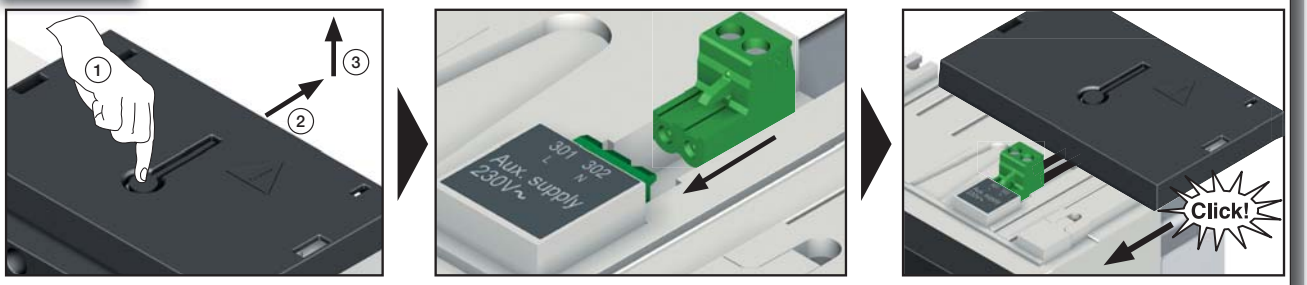




Connect the product with a cable of section of 24 to 16 AWG.
Screw M3 - Tightening torque: min.: 5 lb-in - max. 7 lb-in.

STEP 4

Power Supply Terminal - Remove the Top cover to access and connect the terminal - Replace the cover before putting in service.



STEP 5

Check

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

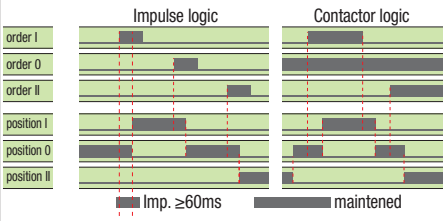
LED “Power” Green: ON
LED Manuel/Defaut Red (Product not Available): ON

NOTE: Nominal Aux. Supply Voltage : 208 – 277Vac

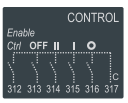
STEP 6A

Motorised Operation

Ensure that the emergency handle is not inserted in the product and turn the mode selector to the AUT position.
LED “Power” Green: ON
LED Manuel/Default: OFF

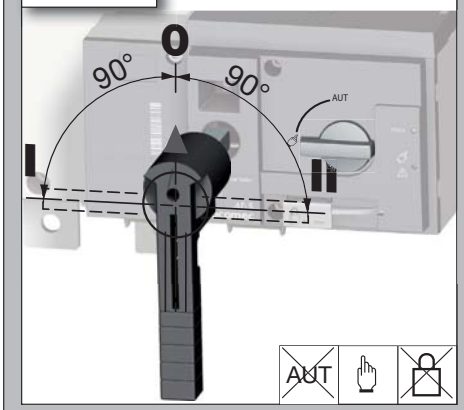


To enable control, close contact 312 with 317.
To force the product to 0 position/OFF bridge the contact 313 with 317.
For contactor logic bridge contact 316 with 317.
To operate: close the contact corresponding to the desired position.



STEP 6B

Emergency Manual Operation

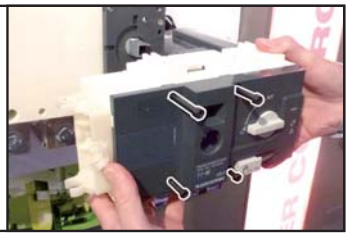


STEP 6C

Padlocking Mode (in position O)

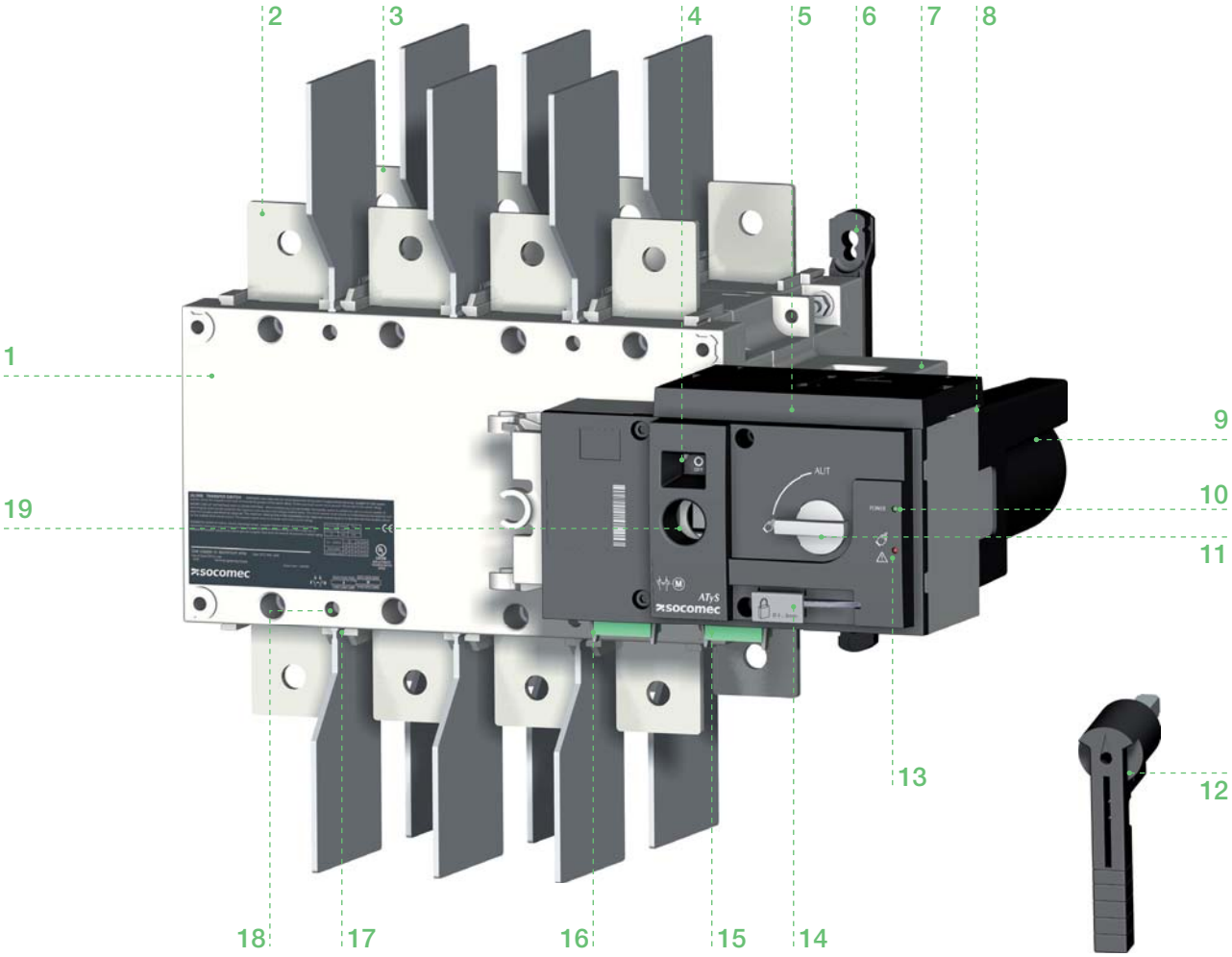
Spares: Motorisation module

Ref. Spare part motorisation	USED FOR ATyS REFERENCE			
97095010	100A	2, 3, 4 P	B4	97232010 / 97233010 / 97234010
97095020	200A	2, 3, 4 P		97232020 / 97233020 / 97234020
97095026	260A	2, 3, 4 P	B5	97232026 / 97233026 / 97234026
97095040	400A	2, 3, 4 P		97232040 / 97233040 / 97234040



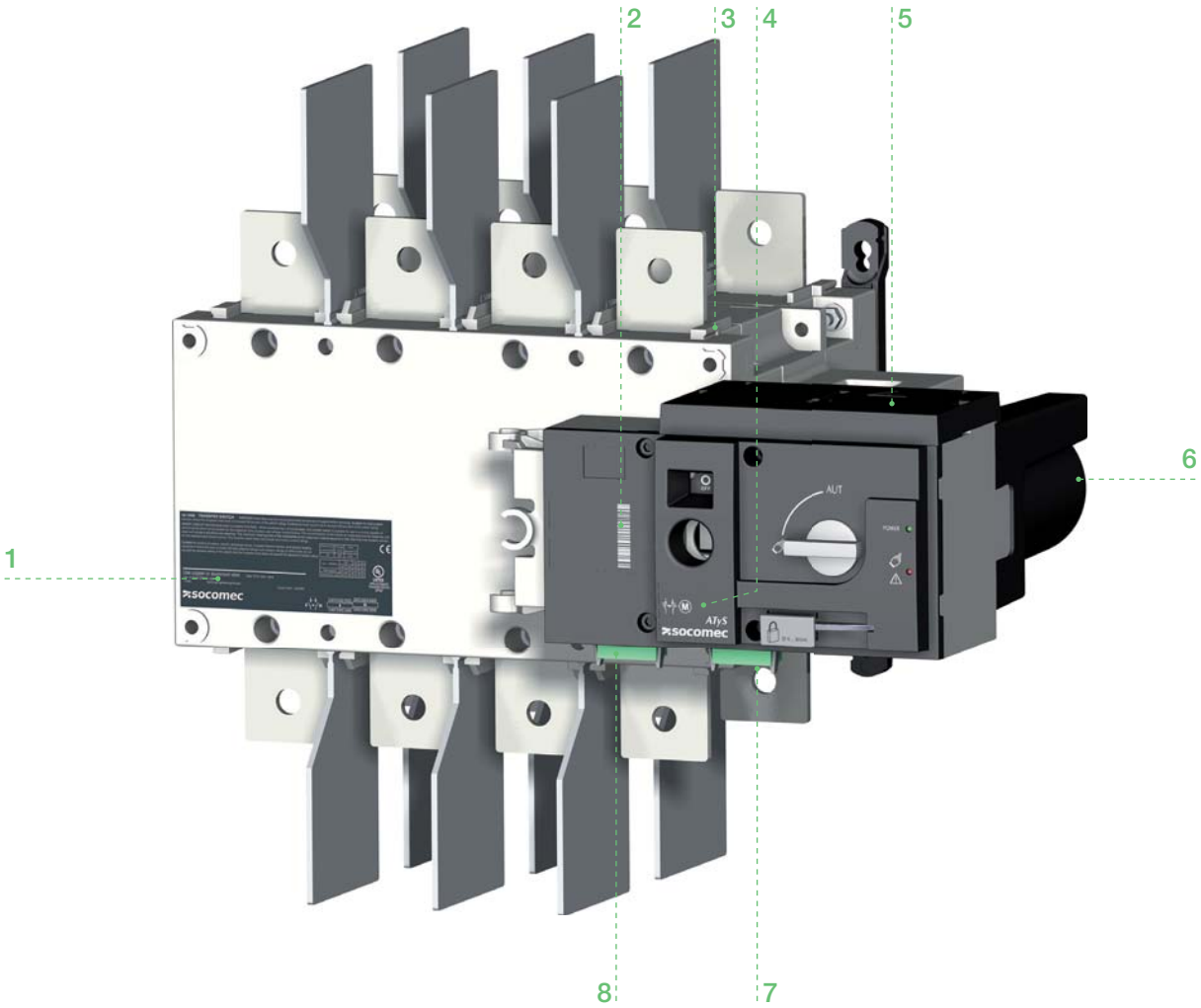
4. GENERAL OVERVIEW

4.1. Product introduction



1. Power Section : Changeover switch assembly with inherent mechanical interlock
2. Front : Switch number 1 terminals (2, 3 or 4 pole)
3. Back : Switch number 2 terminals (2, 3 or 4 pole)
4. Switch position indication window :- I (On) – O (Off) – II (On)
5. Auxiliary power supply cover: 230Vac (208 – 277Vac)
6. Back-plate mounting ATYS fixing lugs
7. Additional Pre breaking and signaling position (I and II) auxiliary contacts.
8. Motorized Control Unit
9. Motor housing
10. Green LED Indication : Power *(ATYS control voltage input within specified range).*
11. Auto / Manual mode selector switch
12. Emergency manual operation “Direct Handle”
13. Red LED Indication : Product Unavailable / Manual Mode / Fault Condition
14. Padlocking facility (Up to 3 padlocks of dia. 4 – 8mm / 0.15-0.31in)
15. Output contacts x 4 *(Position indication I-O-II and product availability outputs)*
16. Input contacts x 5 :-
    Position order I-O-II
    Remote control enable
    Override controls and force to Off position
17. Phase barriers
18. Fixing holes for terminal Shields
19. Emergency manual operation shaft location (Accessible only in manual mode)

4.2. Product identification



1. Main changeover switch identification label:
   Electrical characteristics
   Applicable standards and
   Terminal incoming and outgoing wiring details.
2. Complete ATYS product serial number and barcode.
3. Switch 1 (Front) and Switch 2 (back) identification labels
4. ATYS product current rating and reference number label
5. Auxiliary power supply contacts identification label (under the protection cover)
6. Motor barcode and serial number
7. Output contacts identification label
8. Input contacts identification label

4.3. Environmental

The ATYS product meets the following environmental requirements:

4.3.1. IP Rating IEC 60529 

- IP2X against direct contact for the ATYS motorization control unit.
- IP2X against direct contact for the power section with the connections in place and when including suitable, correctly installed incoming and outgoing terminal shields.
- IP 0 for the bare power section without terminal shields in place.

4.3.2. Operating Conditions

4.3.2.1. Temperature 

- From -20 to +40°C (-4°F to +104°F) without derating

4.3.2.2. Hygrometry 

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

4.3.2.3. Altitude 

- Up to 2000m (6562ft) in altitude without derating

4.3.3. Storage Conditions 

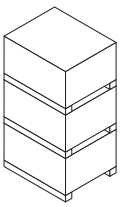
4.3.3.1. Temperature 

- From -40 to +70°C (-40°F to +158°F)

4.3.3.2. Storage duration period

- Maximum storage up to a period of 12 months
- (Recommendation: To be stored in dry, non corrosive and non saline atmospheric conditions)

4.3.3.3. Storage position

A maximum of 3 boxes may be stocked vertically. 

4.3.4. Volume and shipping weights by reference ATYS

Frame Size	Rating	N° of Poles	Reference Number	Weight (kg)		Volume (length x width x height cm) inc Packing
				Net	Gross	
B4	100A	2	97 23 **2 010**	6.41	9.87	470 x 355 x 350
		3	97 23 **3 010**	6.76	10.61	470 x 355 x 350
		4	97 23 **4 010**	7.64	11.49	470 x 355 x 350
	200A	2	97 23 **2 020**	6.41	9.87	470 x 355 x 350
		3	97 23 **3 020**	6.76	10.61	470 x 355 x 350
		4	97 23 **4 020**	7.64	11.49	470 x 355 x 350
B5	260A	2	97 23 **2 026**	10.76	15.76	535 x 490 x 425
		3	97 23 **3 026**	12.20	17.20	535 x 490 x 425
		4	97 23 **4 026**	14.44	19.44	535 x 490 x 425
	400A	2	97 23 **2 040**	10.76	15.76	535 x 490 x 425
		3	97 23 **3 040**	12.20	17.20	535 x 490 x 425
		4	97 23 **4 040**	14.44	19.44	535 x 490 x 425

4.3.5. UL marking

4.3.6. CE marking

The ATYS complies the with the European directive for:

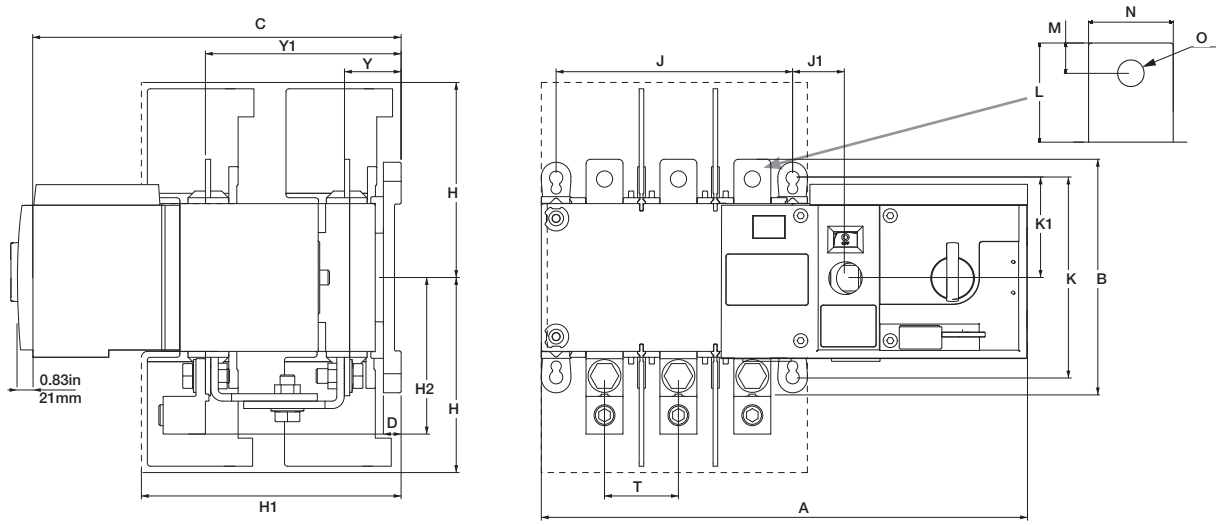
- The Electromagnetic compatibility no. 2004/108/CE dated 15th of December 2004.
- Low voltage directive no. 2006/95/CE dated 12th of December 2006.

4.3.7. 2011/65/EU RoHS

- The ATYS follows a lead free porcess and complies with the European directive for RoHS.

5. INSTALLATION

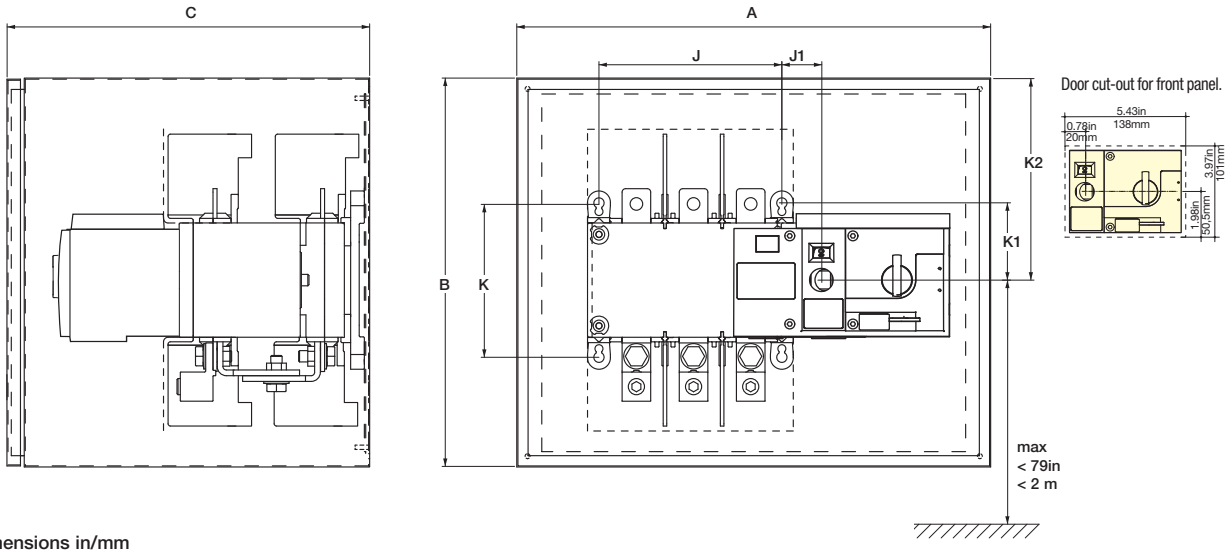
5.1. Product dimensions: Frame B4 to B5 (100A to 400A)



Dimensions in/mm

Rating	Ref. code		A		B		C		D		H		H1		H2		Y		Y1	
			in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
100 - 200A	97232010 / 97233010 / 97232020 / 97233020	2/3P	12.91	328	6.30	160	9.60	244	0.41	10,5	5.08	129	6.8	173	4.21	107	1.51	38,5	5.21	132,5
	97234010 / 97234020	4P	14.88	378																
260 - 400A	97232026 / 97233026 / 97232040 / 97233040	2/3P	14.84	377	10.23	260	12.62	320,5	0.41	10,5	8	200	9.7	247	6.53	166	2.04	52	7.48	190
	97234026 / 97234040	4P	17.20	437																

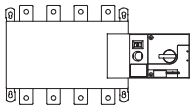
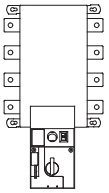
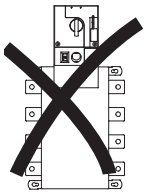
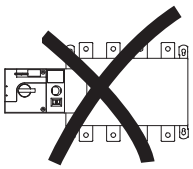
Rating	Ref. code		J		J1		K		K1		L		M		N		O		T	
			in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
100 - 200A	97232010 / 97233010 / 97232020 / 97233020	2/3P	6.30	160	1.37	35	7.67	195	3.84	97,5	1.18	30	0.53	13,3	0.98	25	0.43	11	2	50
	97234010 / 97234020	4P	8.26	210																
260 - 400A	97232026 / 97233026 / 97232040 / 97233040	2/3P	8.26	210	1.37	35	7.67	195	3.84	97,5	1.96	50	0.49	20	1.38	45	0.51	13	2.6	65
	97234026 / 97234040	4P	10.63	270																



Dimensions in/mm

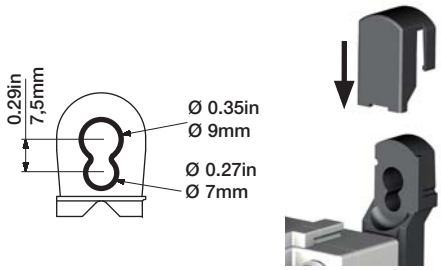
Rating	Ref. code		A		B		C		J		J1		K		K1		K2	
			in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
100 - 200A	97232010 / 97233010 / 97232020 / 97233020	2/3P	24	610	24	610	12	305	6.30	160	1.37	35	5.31	135	2.67	68	12	305
	97234010 / 97234020	4P							8.26	210								
260 - 400A	97232026 / 97233026 / 97232040 / 97233040	2/3P	32	813	32	813	16	406	8.26	210	1.37	35	7.67	195	3.84	97,5	15	381
	97234026 / 97234040	4P							10.63	270								

5.2. Mounting orientation

			
Recommended orientation	OK	Not Allowed	Not Allowed

CAUTION	Always install the product on a flat and rigid surface.

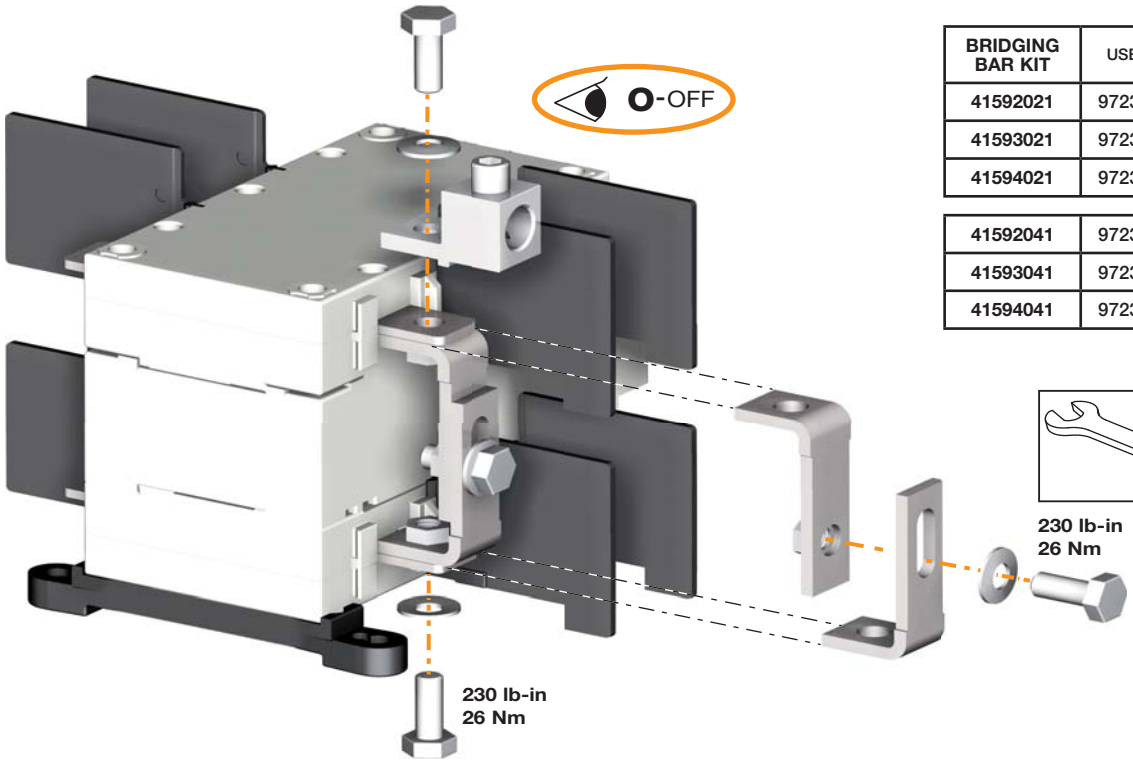
5.3. Product mounting lugs



5.4. Assembly of customer mounted accessories

DANGER	Never handle any customer mounted accessories while there may be the risk of voltage being or becoming present.

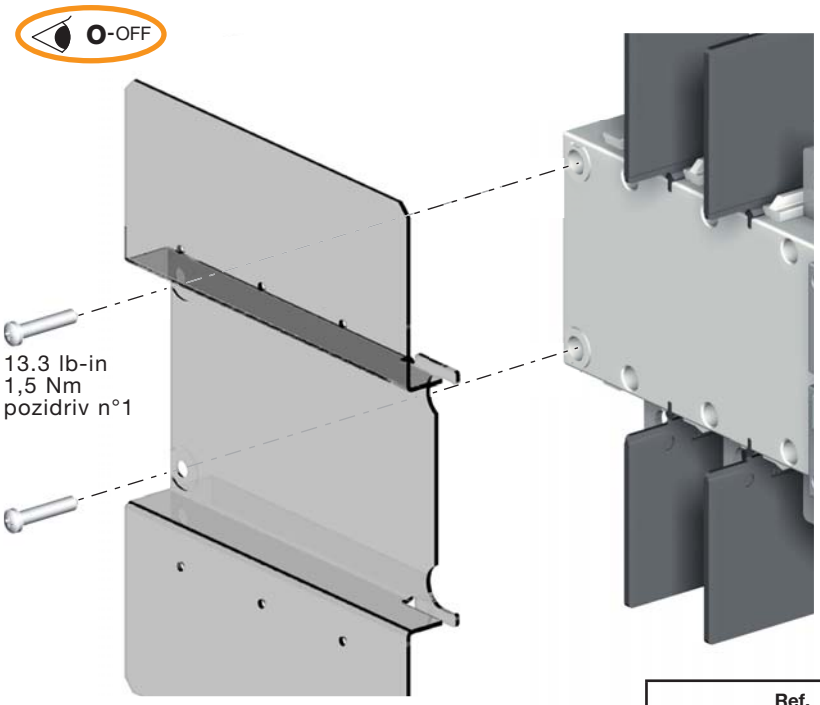
5.4.1. Bridging bars (optional accessory)



BRIDGING BAR KIT	USED FOR ATYS REF.
41592021	97232010 / 97232020
41593021	97233010 / 97233020
41594021	97234010 / 97234020
41592041	97232026 / 97232040
41593041	97233026 / 97233040
41594041	97234026 / 97234040

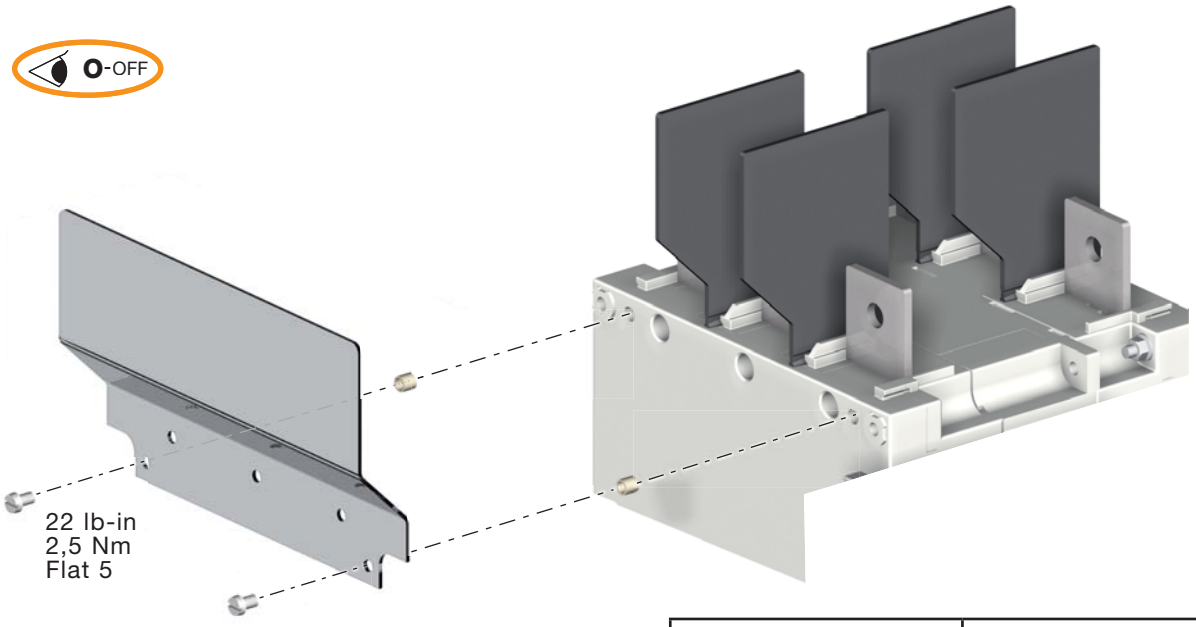
5.4.2. Mounting of terminal covers (optional accessory)

5.4.2.1. Terminal cover for 100 - 200A



Ref.	USED FOR
41583021	97232010 / 97232020 97233010 / 97233020
41584021	97234010 / 97234020

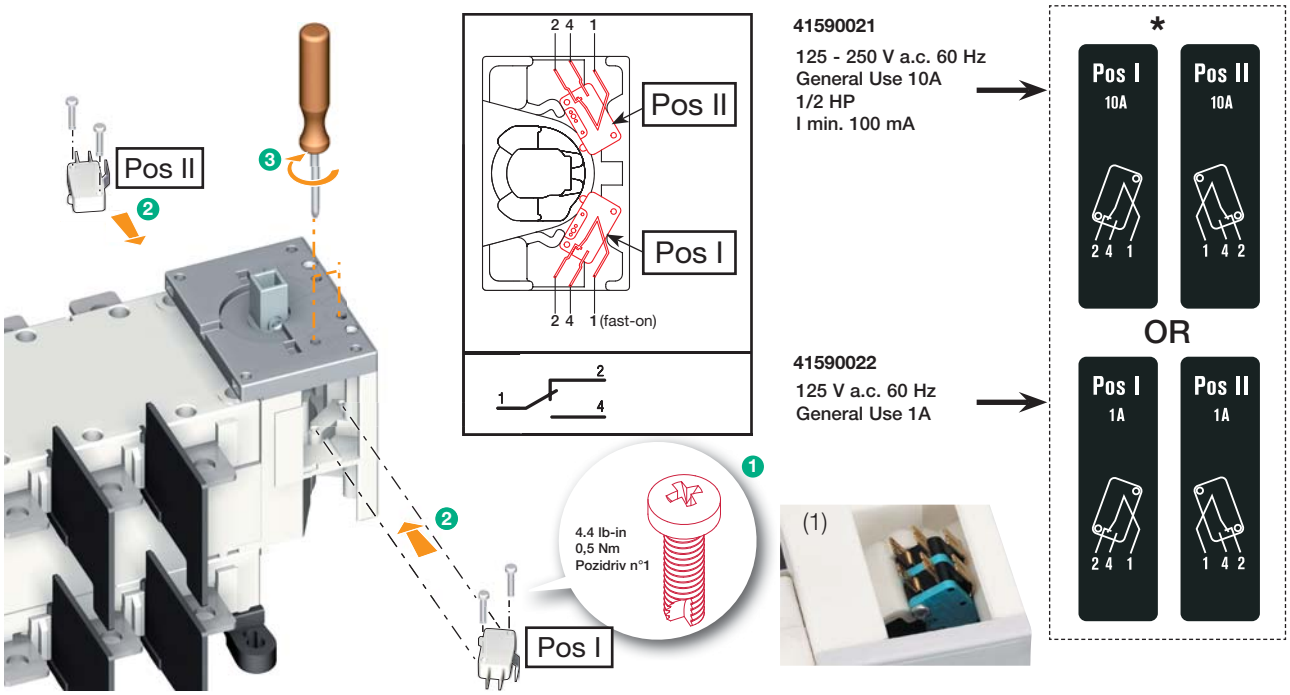
5.4.2.2. Terminal cover for 260 - 400A



Ref. TOP or BOTTOM	USED FOR
41583041	97232026 / 97232040 97233026 / 97233040
41584041	97234026 / 97234040

5.4.3. Mounting of additional auxiliary contacts (optional accessories)

Intended for pre breaking and signaling of positions I and II:
A maximum of 2 NO/NC additional auxiliary contacts can be fitted for each position. (Customer assembly required.)



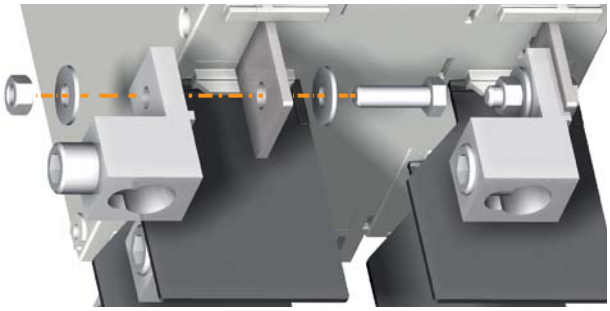
(1) When mounting one auxiliary contact on position I or II, use the short screws provided.
When mounting two auxiliary contacts on position I or II, use the long screws provided.

5.4.4. Power Terminal Connections (optional accessories)

To be connected using terminal lugs, rigid or flexable busbars.

	FRAME B4						FRAME B5					
	100 A			200 A			260 A			400 A		
	2P	3P	4P	2P	3P	4P	2P	3P	4P	2P	3P	4P
Ref ATYS	97232010	97233010	97234010	97232020	97233020	97234020	97232026	97233026	97234026	97232040	97233040	97234040
Ref lugs	39542020	39543020	39544020	39542020	39543020	39544020	39542040	39543040	39544040	39542040	39543040	39544040
Qty per reference	2	3	4	2	3	4	2	3	4	2	3	4
Ref qty to order	x3	x3	x3	x3	x3	x3	x3	x3	x3	x3	x3	x3
Désignation	CMC LA300-R						CMC LA630-R					
Size (AWG) min.	# 6						# 4		1/0			
Size (AWG) max.	300 Kcmil						600 Kcmil - 250 Kcmil					
Opening per lug	1						1		2			
Size of screw	13						17					
Torque lb.in / mm	160 / 18						310 / 35					

When ordering ensure to order QTY 3 for each lug reference
(Quantity 2 for incoming power cables and quantity 1 for outgoing cables)



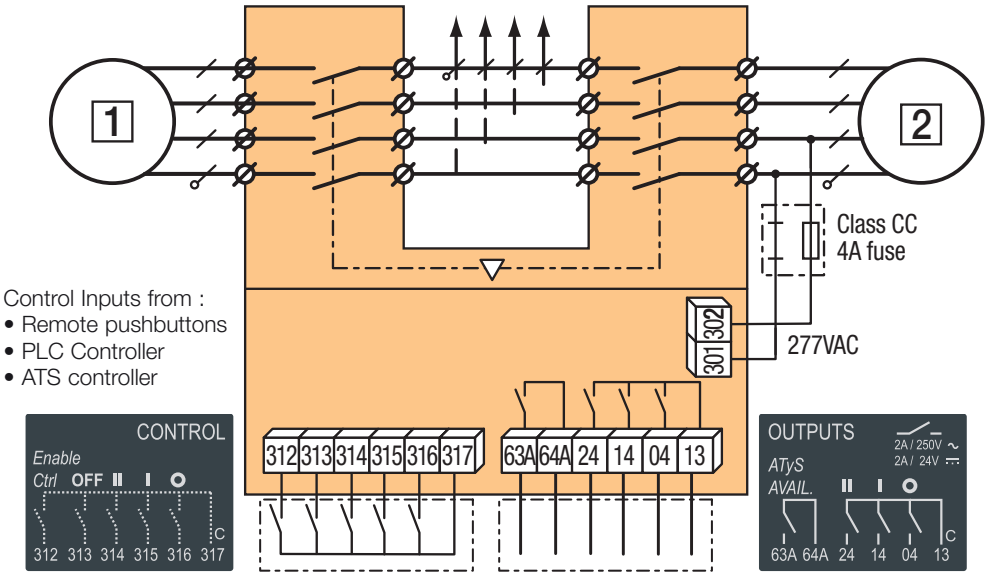
5.5. Control circuits

CAUTION	Verify that the nominal auxiliary power supply feeding terminals 301 and 302 are within the limits of 208VAC -> 277VAC

DANGER	Do not handle any control or power cables connected to the ATYS when voltage may be present.

5.5.1. Typical ATYS wiring (480/277 VAC)

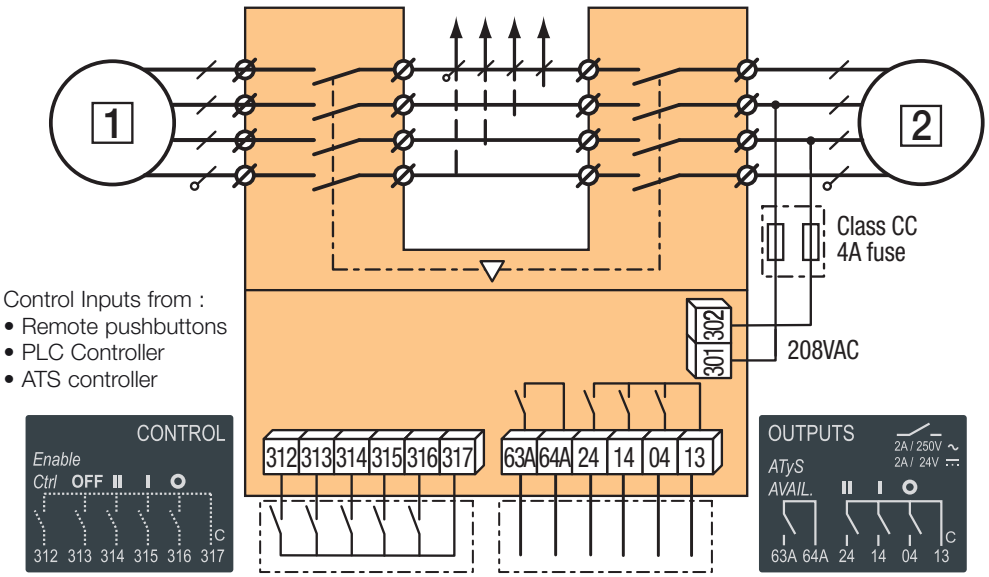
Example: Control wiring for a 480VAC application having a 3 phase and neutral supply.



Connect the product with a cable of section of 24 to 16 AWG.
Screw M3 - Tightening torque: min.: 5 lb-in - max. 7 lb-in.

5.5.2. Typical ATYS wiring (208/120 VAC)

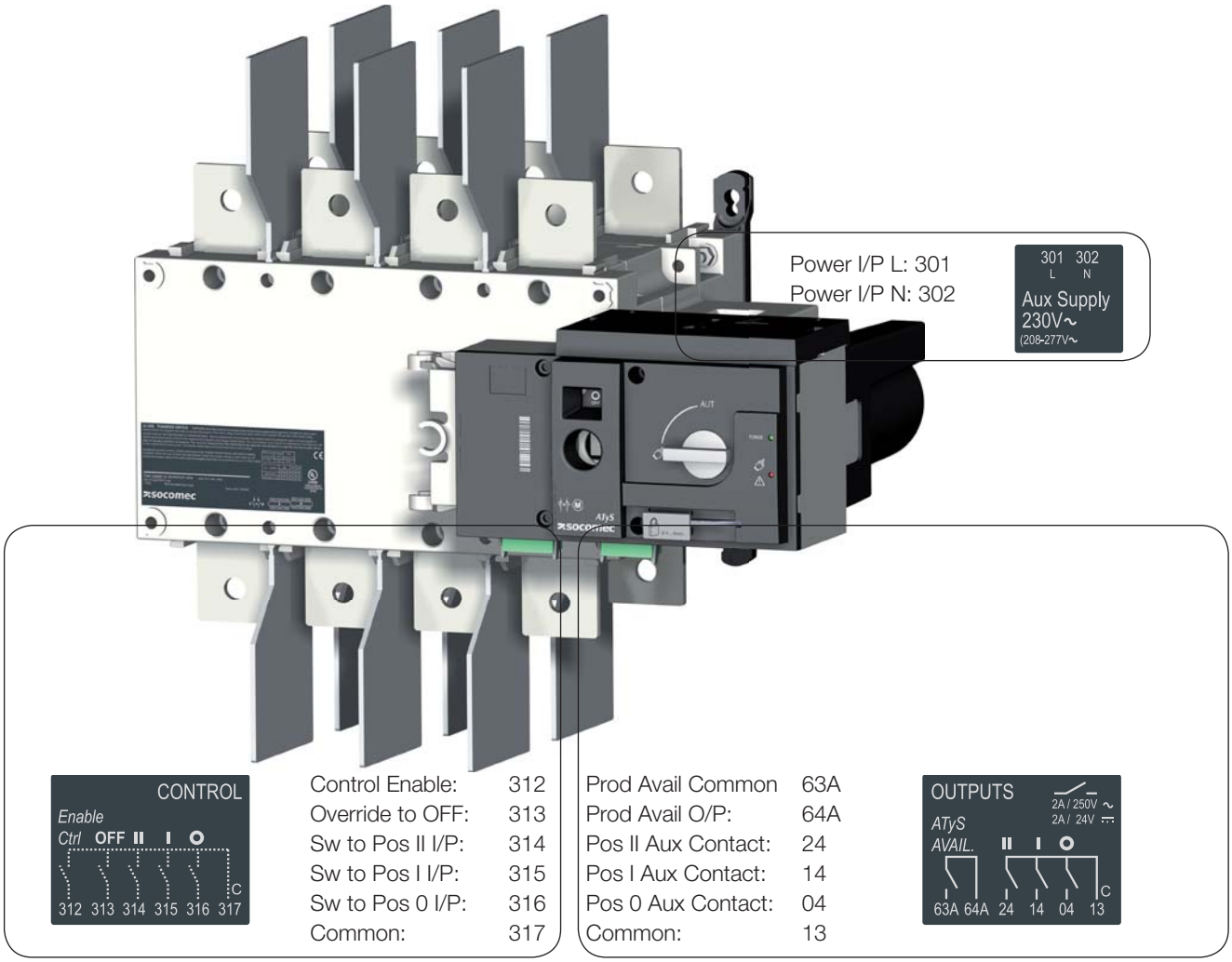
Example: Control wiring for a 208VAC, Ph/Ph application.



Connect the product with a cable of section of 24 to 16 AWG.
Screw M3 - Tightening torque: min.: 5 lb-in - max. 7 lb-in.

5.5.3. ATYS input and output contacts

5.5.3.1. Terminal denomination, description and characteristics.



Denomination	Terminal	Description	Characteristics	Recommended Cable Section
Signalisation Outputs	13	Common I - 0 - II for Aux Contacts	Dry Contacts 2A AC1 / 250V	1,5mm² (≈ 16AWG)
	04	Aux Contact Position 0 - Normally Open Contact		
	14	Aux Contact position I : Normally Open Contact		
	24	Aux Contact position II : Normally Open Contact		
	63A	Product Available : Normally Open Contact. Closed when the ATYS is in Auto mode and motorisation is operational. *(No Fault powered and ready to changeover)*		
	64A			
Power supply Input	301	Power supply	208 - 277VAC: 50/60Hz	1,5mm² (≈ 16AWG)
	302			
Control Inputs	312	Remote Control Mode Enable when closed with 317	Attn: Do not connect to any Power supply Max cable length 100m	1,5mm² (≈ 16AWG)
	313	Position 0 order if closed with 317. (Priority order input forcing the product to remote control mode and 0 position)		
	314	Position II order if closed with 317		
	315	Position I order if closed with 317		
	316	Position 0 order if closed with 317		
	317	Common control terminal for 312 - 316 ATYS (Specific Voltage Supply)		

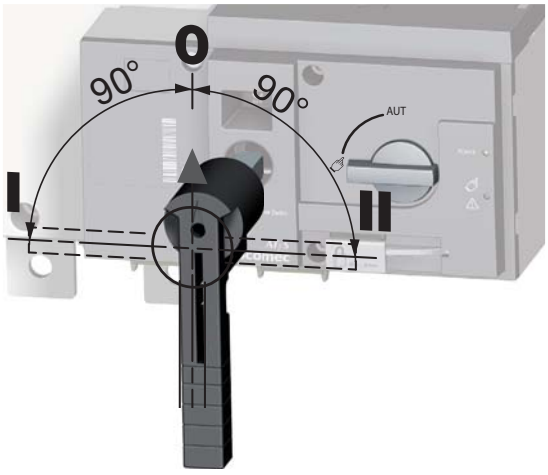
CAUTION	Do not connect terminals 312 to 317 to any power supply. These order inputs are powered through terminal 317 and external dry contacts ONLY.

6. ATYS OPERATING MODES

The ATYS includes 3 safe and distinct operating modes through a selector switch located on the front of the product. As standard the ATYS is delivered with a selector switch however a key lock type selector swith is available on option. (To be specified at order by the addition of “–K” at the end of the standard reference).

The modes of operation are as follows:

- Auto Mode: “Remotely operated transfer switching”
- Manual Mode: “Local emergency manual operation”
- Locked Mode: “Secure locked padlocking facility” (available in manual mode)

AUT MODE		AUT ✗ ✗	**AUTO MODE:** • Activates the remote control inputs. • Inhibits the padlocking facility • Inhibits the insertion of the manual operation handle when in AUT Mode AUTO Mode position is inhibited when padlocked or when the handle for manual operation is inserted into the ATYS.
MODE		✗ ✗	**MANUAL MODE:** **(Not Padlocked)** • Inhibits the control inputs. • Allows to insert the handle for manual operation. • Allows padlocking in O Position. *(With the handle for manual operation removed)* Turning the selector switch to ✋ from AUT and back to AUT resets a fault state.
MODE		✗ ✗	**MANUAL MODE:** **(Padlocked)** • Inhibits the control inputs. • Inhibits insertion of the manual handle. • Allows padlocking when in O Position. POS 0

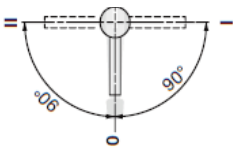
WARNING	Depending on the state of the ATYS the external orders contacts the ATYS may change the switch position as soon as the mode selector is switched to AUT. This is a normal operation.

6.1. Manual operation

The ATYS can be manually operated as a “Manual Transfer Switch” whilst retaining the electrical characteristics and performance of the power switching function. This function is usually used in case of emergencies or during maintenance.

To operate the ATYS manually ensure that no live parts are accessible, turn the front selector switch to the manual position (see page 10) and insert the handle (see page 10) into the emergency handle shaft location hole provided (see page 11).

Turn the handle 90° clockwise or anti-clockwise (depending on the position to be reached) for each consecutive change in position. I -> O -> II -> O -> I.



CAUTION

Ensure to verify the product position and direction of rotation before effecting manual operation.

With the handle inserted into the manual operation shaft location the Auto/Manual selector is blocked on manual.

Ensure to remove the handle from the product before turning the selector switch back towards the AUT position.

6.2. Padlocking

The ATYS can be padlocked in the 0 position. This is usually used during maintenance interventions.

To padlock the ATYS first ensure that the ATYS mode selector switch is on Manual then ensure that the emergency manual operation handle is not inserted into the location hole. (Remove if inserted).

Pull the padlocking mechanism outwards to reveal the slot for inserting up to 3x dia. 4 - 8mm (0.16-0.31in) padlocks.

Padlock the device with approved quality padlocks of minimum diameter 4mm (0.16in) and maximum diameter of 8mm (0.31in). A maximum of 3x 8mm (0.31in) padlocks may be padlocked onto the ATYS padlocking mechanism.

CAUTION	Padlocking is only made possible in the “O position”, when in manual mode and with the emergency handle not inserted.

6.3. Electrical operation

6.3.1. Power supply

The ATYS is to be powered between terminals 301 and 302 with a supply within the limits of :

- 208 – 277Vac
- 50/60Hz ±10%

Current Input:

- 10mA (Standby mode)
- 15A peak (Switching mode)

Surge Protection :

- Vin_sg: 4 / 8KV – 1.2/50µs

Terminal connector:

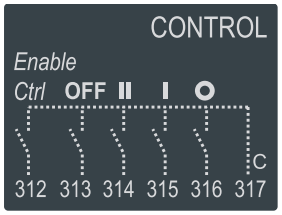
- Minimum 1.5mm² / ≈ 16AWG
- Maximum 2.5mm² / ≈ 14AWG

6.3.2. Fixed inputs

6.3.2.1. Description

The ATYS includes for 5 off fixed inputs through a 6 pin connector installed on the motorisation module. No additional power supply should be used on these contacts as the inputs MUST be used with the common supply taken from terminal 317.

The ATYS Power Supply (301 - 302) must be available to activate inputs 312 to 317. Contact 312 must be closed with 317 to enable these inputs.



Pulse duration for activation of contact inputs: ≥ 60ms.

- **Pin 312:** Remote Control Mode Enable when closed with 317.
This contact must be closed with 317 so as to activate all analogue inputs except for 313 that takes priority and is active immaterial of the state of input 312.

- **Pin 313:** Position 0 order if closed with 317 when in AUTO. **(Force the switch to the OFF Position)**
This is a “Priority Order Input” meaning that when closed with 317 it takes priority over all other electrical commands. The ATYS will remain in 0 position as long as the contact 313 – 317 remains closed. Once the contact is open the ATYS is ready to receive new orders. This contact order is independent of other inputs and is also enabled without 312 connected to 317. Impulse duration to activate and start switching to position O is a minimum of 60ms. The product state will be unavailable (output 63A – 64A open).

- **Pin 314:** Position II order if closed with 317.
This contact is active with the ATYS in AUT mode with contact 312 – 317 closed and 313 – 317 open. Impulse duration to activate and switch to position II is a minimum of 60ms.

- **Pin 315:** Position I order if closed with 317
This contact is active with the ATYS in AUT mode with contact 312 – 317 closed and 313 – 317 open. Impulse duration to activate and switch to position I is a minimum of 60ms.

- **Pin 316:** Position 0 order if closed with 317
This contact is active with the ATYS in AUT mode with contact 312 – 317 closed and 313 – 317 open. Impulse duration to activate and switch to position O is a minimum of 60ms. For contactor logic maintain contacts between terminal 316 and 317 closed.

- **Pin 317:** Common
Common supply for inputs 312 to 316

6.3.2.2. Technical data (fixed inputs)

	Motorisation Module
Input Qty:	5
Direct Current Iin:	0.35 to 0.5mA
Line resistance:	1kΩ
Line length :	100m (Min. wire 1.5mm² #16AWG)
Minimum pulse duration:	60ms
Power per Input:	0.06VA
Surge protection Vin_sg:	4.8kV (1.2/50µs surge)
ESD withstand voltage (Contact/air)	2/4kV
Insulation (Common mode)	4.8kVAC (Between I/P and all common parts)
Terminal connector:	1.5mm² (≈ 16AWG) minimum / 2.5mm² (≈ 14AWG) max
Thighten torque:	Min. 5lb-in, max. 7lb-in

6.3.2.3. Control logic

Switching operation can be driven in AUT mode by external volt free contacts as described above using input contacts 312 to 317.

Depending on the wiring configuration there are two types of logic that may be applied to the ATYS.

- Impulse logic or
- Contactor logic.

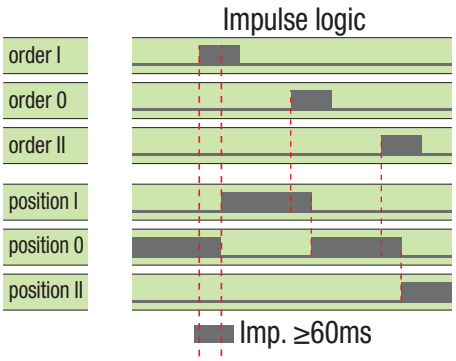
In AUT Mode, the ATYS inputs give priority to orders I and II over 0 therefore contactor logic can be implemented by simply bridging terminals 316 and 317.

(NOTE: 312 – 317 closed / Force ATYS to OFF Position, takes priority over all other orders no matter of the control logic used.)

Impulse logic:

The ATYS is driven to a stable position (I – O – II) after receiving an impulse order.

- A switching command of at least 60 ms is necessary to initiate the switching operation.
- Orders I and II have priority over order 0.

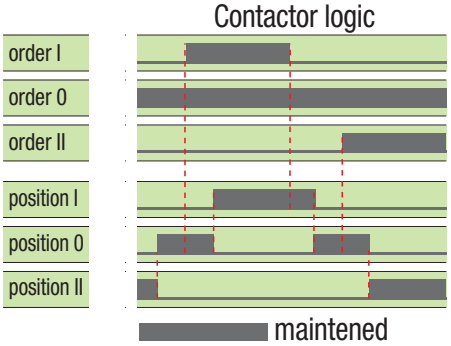


(Note : Excludes position switching delays)

Contactor Logic :

The ATYS is driven to a specific position (I or II) for as long as the order is maintained.

- Order O is maintained. (Bridge 316 – 317)
- Orders I and II have priority over order 0.
- Orders I and II have equal priority. *(1st order received is held until no longer maintained).*
- If order I or II disappears, the device returns to zero position. *(With the power supply available).*

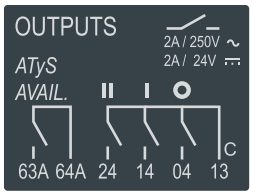


(Note : Excludes position switching delays)

6.3.3. Fixed outputs - Dry contacts

6.3.3.1. Description

As standard, the ATYS is equipped with four fixed outputs located on the motorisation module.



(Dry contacts to be powered by the user).

6.3.3.2. Position auxiliary contact

The ATYS is equipped with integrated position (I – O – II) auxiliary contact outputs through 3 off micro switches.

Pins 13, 04, 14, 24
(Normally Open contacts with pin 13 as common)

6.3.3.3. ATYS Product available output (motorisation)

Pin 63A – 64A
(Normally Open contact that is held closed when the motorisation is available).
This contact gives constant feedback about the product's availability and it's capacity to transfer from the main supply to the alternative.
The ATYS performs a self diagnostics test on the motorisation module at startup, when put from Manual -> Auto and then every 5 minutes. This test ensures that the ATYS is operational in terms of control inputs. Should one of the tests fail, a second test is performed to reconfirm the error state. Should the ATYS motorisation module become unavailable, contact 63A – 64A are opened and the fault LED is activated. The fault LED will remain active for as long as sufficient power is available and the fault condition is not reset.

The fault is reset when the product is switched from AUT -> Manual -> Auto mode.

ATYS (Motorisation) Product Available / Unavailable relay will open for any of the following reasons below: For added security, "Product Availability" is informative and does not necessarily inhibit motor operation.

Conditions that render the ATyS motorisation unavailable	Comments	Relay 63A-64A Open	Fault/ Manu LED ON
Fault - The motorisation is not detected	Auto detection is performed by the software every 5 minutes. (Checks that the motorisation is healthy)	X	X
Fault - Motor Auto-Test	Presence of an unusual current in the motor	X	X
Fault – Motorisation aux supply voltage is outside the acceptable ranges	An aux power supply voltage of less than 166Vac or above 332Vac will generate a non-available state.	X	X
Fault – Duty Cycle	The product has undergone >10 operations in <1minute. In this case the product will be unavailable for 1 minute after which it will automatically reset	X	X
Fault – INPUT 312 to 317 Auto test	The software will automatically & periodically test these inputs (every 5 mins) to ensure that they are functional.	X	X
Mech Fault - Position is not reached	Following an order to transfer, given by the ATyS, the expected position was not reached.	X	X
Fault - Selector AUTO / MANU	Selector AUTO/MANU is in MANU mode however the ATyS detects a motorised position change.	X	X
	Product has "locked mode" activated while the internal contact selector is in AUTO	X	X
INPUT 313-317 activation (FORCE to 0 position)	"Force to 0" validation by closing the 313-317 input. This is a Top Priority order making the product unavailable for as long as this contact remains closed.	X	X
The product is in « MANU » mode	Action done by the user with the mode selector switch.	X	X
Product loss the power	The ATyS is unavailable with loss of aux power and the contact will be open.	X	

6.3.3.4. Technical data (fixed outputs)

Auxiliary Contact Quantity	4
Configuration	Normally open
Mechanical Endurance	100k cycles
Response Time	5 – 10 ms
Startup duration	200ms
Rated Voltage / Switching Voltage	250VAC / 24VDC
Rated Current	2A
Surge protection Vin_sg:	4.8kV (1.2/50µs surge)
ESD withstand voltage (Contact/air):	2/4kV
Dielectric Strength contact/parts:	4.8kVAC (Reinforced Insulation)
Insulation:	4.8KVAC
Output Terminal:	1.5mm^2 minimum / 2.5mm^2 maximum ≈ 16-14AWG
Thighten torque:	Min. 5lb-in, max. 7lb-in

7. CHARACTERISTICS

Characteristics according to UL 1008 (Optional standby)

100 to 400 A

Frame	B4		B5	
General use rating	**100 A**	**200 A**	**260 A**	**400 A**
Operation voltage	600	600	600	600
Short circuit rating with ANY CIRCUIT BREAKER (kA/ms)	10 / 25	10 / 25	14 / 50	14 / 50
Short circuit rating at 600 VAC (kA) with fuses	100	100	65	65
Type of fuse	J	J	J	J
Max. fuse rating (A)	400	400	600	600
Short circuit rating at 600 VAC with SPECIFIC CIRCUIT BREAKER (kA)				
Square D JJ breaker 250 A 2 poles 240 VAC / 3-4 poles 480 VAC	65	65	-	-
Schneider Electric NSX-F 160 A 3-4 poles 480 VAC	35	-	-	-
Operational power / current max Operational 1 ph				
240 VAC Total system (A)	100	100	260	400
240 VAC Resistive load (A)	100	200	260	400
Operational power / current max Operational 3 ph				
240 VAC Total system (A)	100	200	260	400
240 VAC Resistive load (A)	100	200	260	400
480 VAC Total system (A)	100	100	260	400
480 VAC Resistive load (A)	100	200	260	400
600 VAC Total system (A)	100	100	200	200
600 VAC Resistive load (A)	100	200	260	400
Mechanical endurance				
Endurance (number of operating cycles)	6050	6050	6050	6050
Connection terminals				
Min. conncetion section / AWG	#6	#6	#4 / 2 x 1/0	#4 / 2 x 1/0
Max. connection section / AWG	300MCM	300MCM	600MCM / 2x 350MCM	600MCM / 2x 350MCM
Aux Power Supply				
Supply voltage VAC 50/60 Hz	208-277 VAC			
Switching time				
I to II or II to I (s)	1.3			
I to 0 or 0 to II (s)	0.85			
Duration of electical blackout (s)	0.6			

8. PREVENTIVE MAINTENANCE

It is recommended to verify the tightening torque of all connections and to operate the product in a full operating cycle (I – 0 – II – 0 – I: Auto Remote and Manual) at least once a year.

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

9. TROUBLE SHOOTING GUIDE

The ATYS does not operate electrically	• Verify the power supply on terminals 301-302: 208 - 277 VAC • Verify that the front selector switch is in position (AUT) • Verify that contacts 313 and 317 are open. • Verify that contacts 317 and 312 are closed. • Verify that the power LED (Green) is On whilst the fault LED (RED) is off. • Verify that the product is available with contacts 63A and 64A closed.
It is not possible to manually operate the switch	• Verify that the front selector switch position is on the Manual position. • Make sure that the product is not padlocked • Verify the rotation direction of the handle • With the emergency handle in the shaft location provided, apply a sufficient progressive action in the direction as indicated on the handle.
Electrical operation does not correspond to external order I,O,II	• Verify the selected control logic wiring (impulse or contactor) • Verify the connector connections.
The fault/manuel LED is ON	• The FAULT / MANUAL LED is on when in manual mode (this is normal) and in AUT Mode when there is an internal fault in the ATYS. To reset a fault condition switch the ATYS from AUT to Manu and back to AUT. Should the fault LED remain on you will need to localize and clear the fault prior to reset. • The FAULT / Manual LED will also be on when contact 313 is closed with 317. (Force the ATYS to off position). This is a normal condition. • Should the Fault LED remain on abnormally, contact SOCOMEC.
Impossible to padlock	• Verify that the front selector switch is in manual position • Verify that the emergency handle for manual operation is not inserted into the ATYS manual shaft location. • Verify that the ATYS is in 0 position.

10. THE ATYS FAMILY

The ATYS has been engineered by the SOCOMEC centre of excellence in France that boasts it's very own in-house 100MVA instantaneous power test lab accredited by COFRAC and working in partnership with: KEMA, CEBEC, UL, CSA, ASTA, Lloyd's Register of Shipping, Bureau Véritas, BBJ-SEP, EZU, GOST-R… and others.

SOCOMEC has been manufacturing power control and safety products since 1922. The first generation SOCOMEC "transfer switches" were introduced in 1990 and today the ATYS brand has become trusted by major players in the power industry worldwide.

The ATYS Family includes a complete range of open transition remotely operated transfer switch equipment as well as automatic fully integrated products and solutions. Selecting the right ATYS will depend on the application as well as the nature of installation in which the ATYS will be installed.

This instruction manual includes details and instructions specific to the "ATYS" UL 1008 transfer switch only. For all other ATYS family of products (IEC range) please refer to the specific instruction manual related to that product. (Available for download on www.socomec.com)

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

Just the right ATYS for your application…

ATyS: Small Footprint

Back to Back Configuration

125A - 3200A

new

ATyS p
Power/Genset Management

40A - 125A

ATyS g
Simple Genset Management

ATyS t
Transformer Management

ATyS d S
Small Genset with DPS

ATyS d
RTSE (DPS)

ATyS S (RTSE)
Small Genset

ATyS r
RTSE

[1]**ATyS** UL
RTSE

ATyS M: Modular Profile

40A - 160A

ATyS p M
Evolved Genset Management

ATyS g M
Simple Genset Management

ATyS t M
Transformer (building) Management

ATyS d M
RTSE (DPS)

Side by Side Configuration

[1] The UL version of ATyS r is available from 100 - 400A

10.1. The ATYS Range Key Features

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

IEC 60947-6-1	ATyS S	ATyS Sd	ATyS r	ATyS d	ATyS t	ATyS g	ATyS p
UL 1008			ATyS UL				
Motorised Changeover with control driven by dry contacts	●	●	●	●	●	●	●
Manual Emergency Operation with external handle	●	●	●	●	●	●	●
Wide band AC control voltage supply	●	●	●	●	●	●	●
Wide band DC control voltage supply	●						
Watchdog relay to ensure product availability			●	●	●	●	●
Ratings from 40 – 125A as indicated or 125A - 3200A for •	40 – 125A	40 – 125A	UL 100-400A	●	●	●	●
Override controls and force switch to zero (off) position			●	●	●	●	●
Integrated position auxiliary contacts (I - O - II)	●	●	●	●	●	●	●
Source availability LED display				●	●	●	●
Remote Display module RJ45 connection for ATYS D10				●	●	●	
Integrated Dual power supply		●		●	●	●	●
Network - Network Applications	●	●	●	●	●		●
Network - Genset Applications	●	●	●	●		●	●
Genset - Genset Applications	●	●	●	●			
Pre-defined fixed I/O			● 5/1	● 5/1	● 9/2	● 11/3	● 5/2
Programmable I/O							● 6/1
Additional programmable I/O modules (Optional up to 4 modules)							● 8/8
Remotely operated Transfer Switching Equipment IEC (RTSE Class PC)	●	●	●	●			
Automatic Transfer Switching Equipment (ATSE Class PC) IEC					●	●	●
Remote + Manual Control	●	●	●	●			
Auto + Remote + Manual Control					●	●	
Auto + Remote + Local + Manual Control							●
Auto-configuration of voltage and frequency levels					●	●	●
Switch Position LED display					●	●	●
Security Sealing Cover					●	●	
Configuration through potentiometers and dip switches					●	●	
Test on load functionality						●	●
Test off load functionality						●	●
Programmable configuration with keypad and LCD display							●
Metering & Measurement: kW; kVar; kVA + kWh; kVarh; kVAh							●
Communication RS485 + Ethernet + Ethernet gateway (Optional)							●
Webserver Access through optional Ethernet module (Optional)							●
Easy Configuration software (Through Ethernet/Modbus)							●
Remote Terminal Unit RJ45 connection for ATYS D20							●
Data Logger for Event Recording with RTC (Through Ethernet/Modbus)							●
Programmable Engine Exerciser functionality (Through Ethernet/Modbus)							●
Multi level password access							●
Load Shedding function							●
Capacity Management functionality							●
Peak shaving functionality							●
4 - 20mA communication module (Optional)							●
KWh Pulsed output module (Optional)							●
Counters KWh, permutation…							●
LCD display for programming, metering, timers and counters							●
Possibility to add optional functionality							●

11. ATYS Family: ORDERING INFORMATION

The following is an ordering guide for ATYS Motorised Transfer Switches delivered inclusive of the emergency handle and storage clip. This guide is intended so as to explain the logic behind SOCOMEC ATYS reference numbers.

When ordering please consult the latest SOCOMEC catalogue.

Typical UL 1008 (Optional Standby Power) ATYS reference

97 2 3 4 0 1 0

Product	Type	Ctrl Voltage	N° of poles	Rating
97 - UL : I - O - II	2 - ATYS	3 - 230VAC (208-277VAC Nominal)	2-2 Pole 3-3 Pole 4-4 Pole	010 - 100A 020 - 200A 026 - 260A 040 - 400A

Note: only valid for UL 1008 products

Typical IEC 60947-6-1 ATYS reference

95 2 3 4 063

Product	Type	Ctrl Voltage	N° of poles	Rating
95 - IEC: I - O - II	2 - ATyS r 3 - ATyS d 4 - ATyS t 5 - ATyS g 7 - ATyS p	3 - 230VAC (166-332VAC)	3-3 Pole 4-4 Pole	012 - 125A 016 - 160A 020 - 200A 025 - 250A 031 - 315A 040 - 400A 050 - 500A 053 - 630A 080 - 800A 100 - 1000A 120 - 1250A 180 - 1600A 200 - 2000A 250 - 2500A 320 - 3200A Ratings Ith @ 40 °C

Note: only valid for IEC 60947-6-1 products

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