Transfer Panel ATI

Technical Instruction Manual

socomec
Innovative Power Solutions

GENERAL SAFETY INSTRUCTIONS

a. This leaflet provides indispensable instructions in terms of the safety, the connection and the operation of the automatic transfer switch.

b. This system must exclusively be installed by specialised, qualified personnel.

c. Before making the connections, it is essential that the earth cable be connected.

d. Keep the cabinet clean using a dry cloth.

e. It is recommended that this leaflet be kept in a place easily accessible to all those who may need it.

f. The maintenance operations must be carried out exclusively by authorised and appropriately trained personnel.

g. This system complies with the community directives applicable to this product. Thus, it bears the CE mark.

CE

h. Compliance with IEC 60947-6-1.

i. Information available in this instruction manual are not contractual.

ENGLISH

INTRODUCTION

GENERAL INTRODUCTION

NEW ATI enclosure integrates a new 4-pole changeover switch including electronic's control to meet standard IEC 60947-6-1. Thanks to the changeover switch technology, it is always possible to manually operate the system to guarantee the changeover panel operation in any situation.

The new enclosure design allows switch front panel access to:

- Avoid opening of the enclosure for manual operation
- Allow electronic module access for programming and monitoring
- Simplify connections between the mechanical switch and the electronic module.

With the mode switch in manual position, Padlocking, as well as handle insertion operations are then directly accessible from the front panel.

The electronic module, also accessible from the front panel, includes:

- Sources monitoring
- Metering display (V and f as standard)
- Test operations and Sequences programming using keypad.

ATI TRANSFER PANEL RANGE

The new ATI panel range will be available from 250 A to 1600 A.

New ATI range models

MODEL

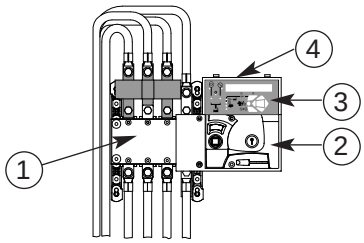
- ATI 250 A
- ATI 400 A
- ATI 630 A
- ATI 800 A
- ATI 1000 A
- ATI 1250 A
- ATI 1600 A

Standard offer includes Bottom cable entry. Top cable entry is offered as an option.

NEW MOTORIZED CHANGEOVER SWITCH

The new switch included in the enclosure is made of 3 different parts:

1. A mechanical switch.
2. A motorized block to operate the switch electrically.
3. An electronic module on the top of the motorized block, driving loss of mains and main's return sequence.
4. A reset button.



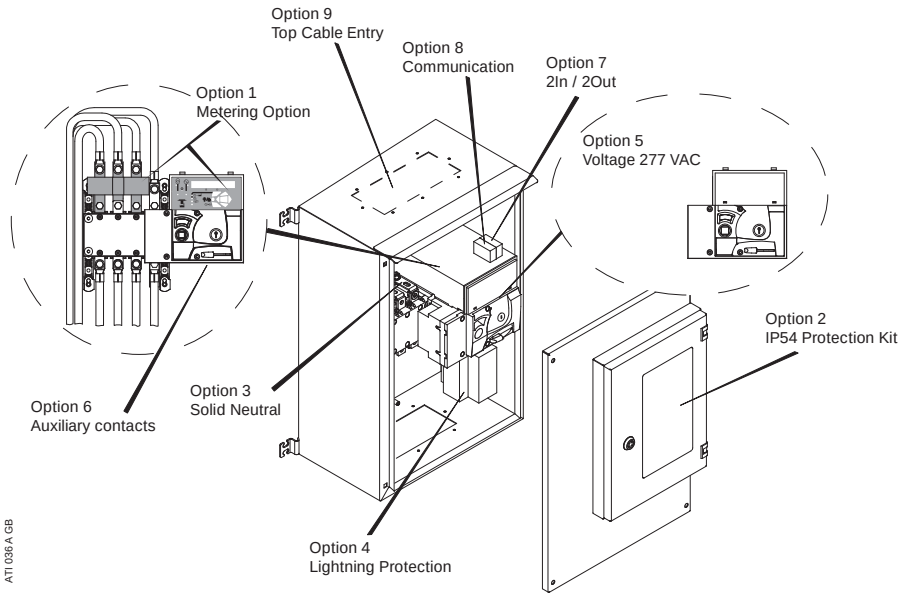
ATI 035 A

Features and benefits:

- The new Motorisation block is included in a moulded case
- It is possible to remove the motorized block and the electronic module without being obliged to disconnect the power cables
- Manual operation directly acts on the shaft of the mechanical switch for better reliability
- The complete enclosure meets standard IEC 60947-6-1 (ATS applications)
- The enclosure is self-powered (from Main and Gen sources). There is no need for an external power source to allow automatic sequence after loss of power
- All thresholds and timers can be set using the display and the keypad, or via modbus (optional)
- The standard product integrates voltage and frequency control for better diagnostic
- Main sensing circuit is 3 phases and Gen sensing circuit is single phase
- Standard product includes, phase to phase + phase to neutral voltage measurement and displays system frequency (phase 1) and switch number of operations.
- The product including metering allows current measurement as well as power metering (kW, kVar, kVA and PF).

INTRODUCTION (continued)

OPTIONS AVAILABILITY



ENGLISH

Factory options are delivered pre-installed in the enclosures

Option 6:

- **Auxiliary contacts** for switch position information, padlocking and Auto / Manual mode information are optionally available. Option code is TAUX.

Option 1:

- A **metering module** allowing standard features + current and power metering facilities on a larger backlit display. This option also integrates option 6 (TAUX). Option code is TMET & TAUX.

Option 9:

- **Top Cable Entry.** For cables to be routed through the top rather than bottom. Option code is TICT.

Option 5:

- A switch allowing **277 Vac** specific voltage **option** for customers requiring voltage code V601 (480/277 Vac). Option code is THVM.

Loose options are available, for customer mounting in the enclosures

Option 2:

- **IP54** protection rating is available as an option. A specific protection window must be installed on the front panel of the enclosure to avoid water infiltration in the enclosure. Option code is TIP5.

Option 3:

- **Solid neutral** link is available as an option on the switch itself, when switching of the neutral cable is not required. Option code is TLNK.

Option 4:

- **Lightning protection** is also available as an option to avoid ATS damage in case of a strike on the power cables. This option is highly recommended in stormy areas. Option code is TLPR and TI02 is included.

Option 7:

- **2IN / 2OUT.**1 plug in module allowing auxiliary contacts for Main and Generator available information is also available as an option. Option code is TIO2.

Option 8:

- 1 plug in **communication** module, JBUS / MODBUS protocole, can optionally be ordered allowing remote communication of the changeover system. Option code is TCOM.

INTRODUCTION (continued)

ENVIRONMENT

The complete enclosure meets following environmental requirements:

- Ingress protection of IP41 with overall rating of IP21
- Operating temperature of – 10 °C to 40 °C without de-rating
- Operating temperature of 40 °C to 65 °C with de-rating
- Maximum storage is one year at:
  - Maximum temperature +55°C
  - 95% humidity non condensing
- 80 % humidity non condensing at 55 °C
- 95 % humidity non condensing at 40 °C
- Maximum operating altitude without switch de-rating is 2 000 m above sea level.

TECHNICAL CARACTERISTICS

Characteristics

Thermal Current Ith (40 °C)	250 A	400 A	630 A	800A	1000A	1250 A	1600 A
Assigned isolement voltage Ui (V)	800	800	1000	1000	1000	1000	1000
Assigned voltage to chocks Uimp (kV)	8	8	12	12	12	12	12

IEC 60947-6-1 Characteristics

Assigned current Ie (A) (B categorie)							
415 Vac AC31B	250	400	630	800	1000	1250	1600
Operating Class							
Material class	PC	PC	PC	PC	PC	PC	PC
Maximum short circuit current using gG DIN fuse							
Max short circuit (kA eff)	50	18	70	50	100	100	100
Fuse size (A)	250	400	630	800	1000	1250	2 x 800
Peak current value: withstand and closing operation (kA peak)	23	23	45	48	75	75	75
Short circuit Operation							
Rated short time withstand current (kA eff)	10	10	12.6	16	20	25	32
Rated short circuit making capacity (kA max)	17	17	25.2	27.2	40	52.5	67

Other Characteristics

Commutation duration							
I-II ou II-I (s) (1)	1.3	1.3	1.3	2.6	2.6	2.8	2.8
I-o ou II-0 (s) (1)	0.85	0.85	0.85	1.6	1.6	1.7	1.7
Black time durating during commutation under Un (ms)	600	600	600	1 500	1500	1700	1700
Power input							
230 Vac mini / maxi (V)	184/276	184/276	184/276	184/276	184/276	210/310	210/310
277 Vac mini / maxi (V) - Option 5	221/332	221/332	221/332	221/332	221/332	240/380	240/380
Consumption during switching operation							
230 Vac maxi / average (VA)	400/100	400/100	420/110	450/120	450/120	470/128	470/128
277 Vac maxi / average (VA) - Option 5	400/110	400/110	420/115	450/125	450/125	470/128	470/128
Mechanical characteristics							
Number of commutation (durability)	8000	8000	5000	4000	4000	3000	3000
Weight (complete std enclosure) kg	39	44	66	125	130	230	330

All these characteristics are given as information and are not contractual
(1): Between order sent and final position (under nominal conditions)

Temperature Derating

Nominal Rating	**Cable Size**	**De rate**			**IEC 947-3**			
(40 °C Max)		**50 °C**	**60 °C**	**65 °C**	**40 °C 415 V**		**60 °C 415 V**	
(A)	**(mm²)**	**(A)**	**(A)**	**(A)**	**AC 22**	**AC 23**	**AC 22**	**AC 23**
250	120	250	220	200		AC23A 250A		AC23A 200A
400	240	360	300	250	AC22A 400A	AC23A 250A		AC23A 250A
630	2 x 185	550	500	400	AC22A 630A	AC23A 500A		AC23A 400A
800	2 x 240	720	640	540	AC22A 800A	AC23A 800A		AC23A 540A
1000	4 x 150	880	800	680	AC22A 1000A	AC23A 1000A		AC23A 680A
1250	4 x 240	1150	1000	820	AC22A 1250A		AC22A 1000A	
1600	5 x 240	1300	1100	930	AC22A 1600A		AC22A 1100A	

Single phase configuration

Table available for single phase configurations using a 4 poles switch and connecting 2 poles in parrallel
Max ambiant Temperature = 40 °C

Nominal Rating 3 phase configuration (A)	Nominal Rating 1phase configuration (2 poles in //) (A)
250	400
400	630 (1)
630	800 (2)
800	1250
1000	1600 (3)
1250	1800
1600	2500 (4)

(1) Short circuit level required for 630A not acceptable for 400A version
(2) Short circuit level required for 800A not acceptable for 630A version
(3) Short circuit level required for 1600A not acceptable for 1000A version
(4) Short circuit level required for 2500A not acceptable for 1600A version

Metering accuracy

Voltage and frequency: 1 % on power input range.

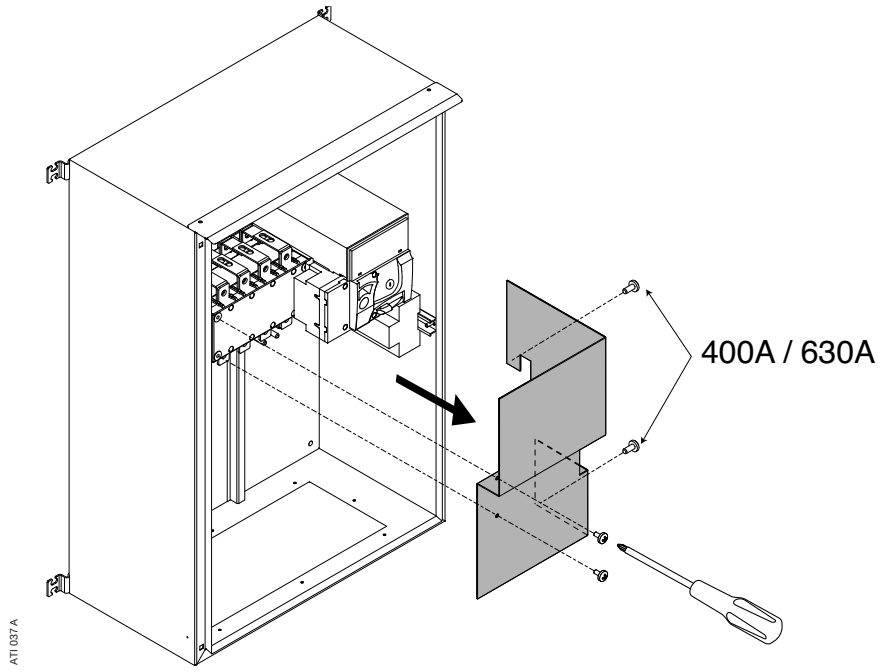
ENCLOSURES INSTALLATION

FIRST OPERATIONS

- The system is delivered in position 0 in manual mode, start generator contact closed.

Shroud

- Remove the shroud to allow terminals access.



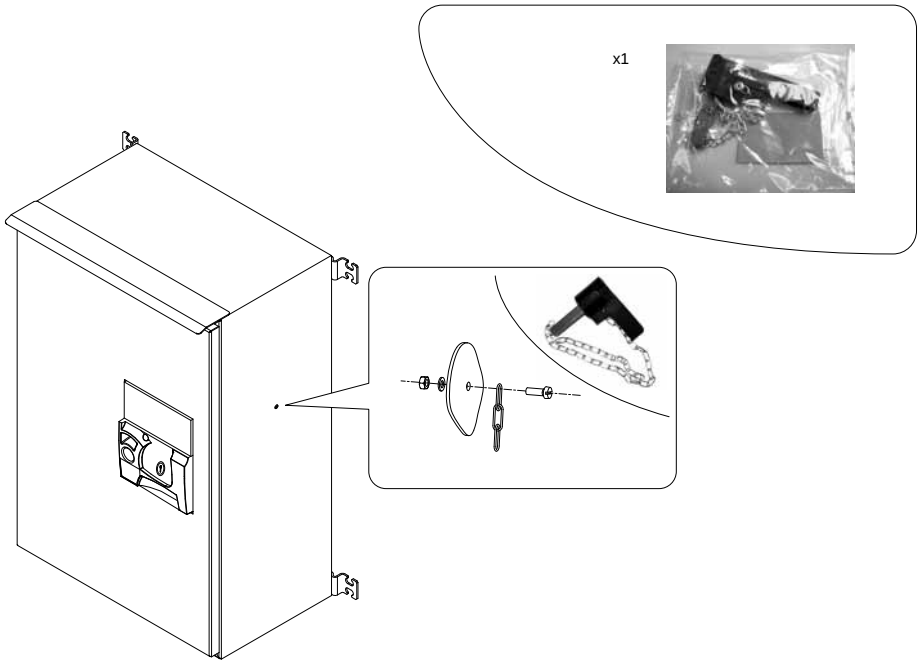
Remove the plastic protection of the plexiglas cover.

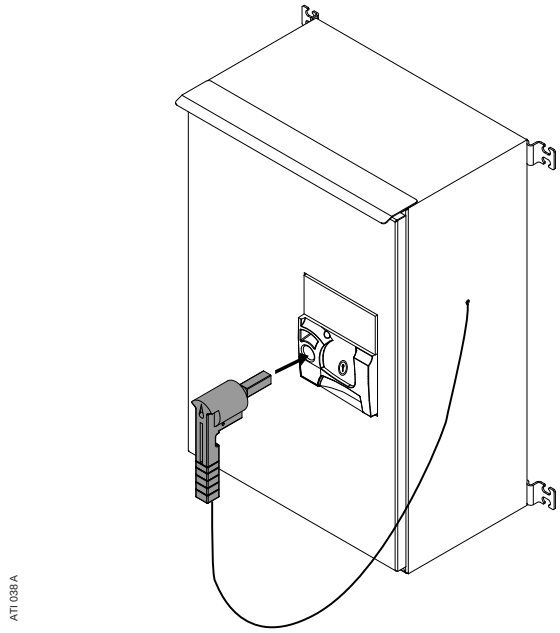
⚠ For a correct use in hard environmental conditions, it is essential to use the cable gland plate, in order to protect the product.

ENCLOSURES INSTALLATION (continued)

Handle with chain

- Fix the handle + chain on the enclosure itself.

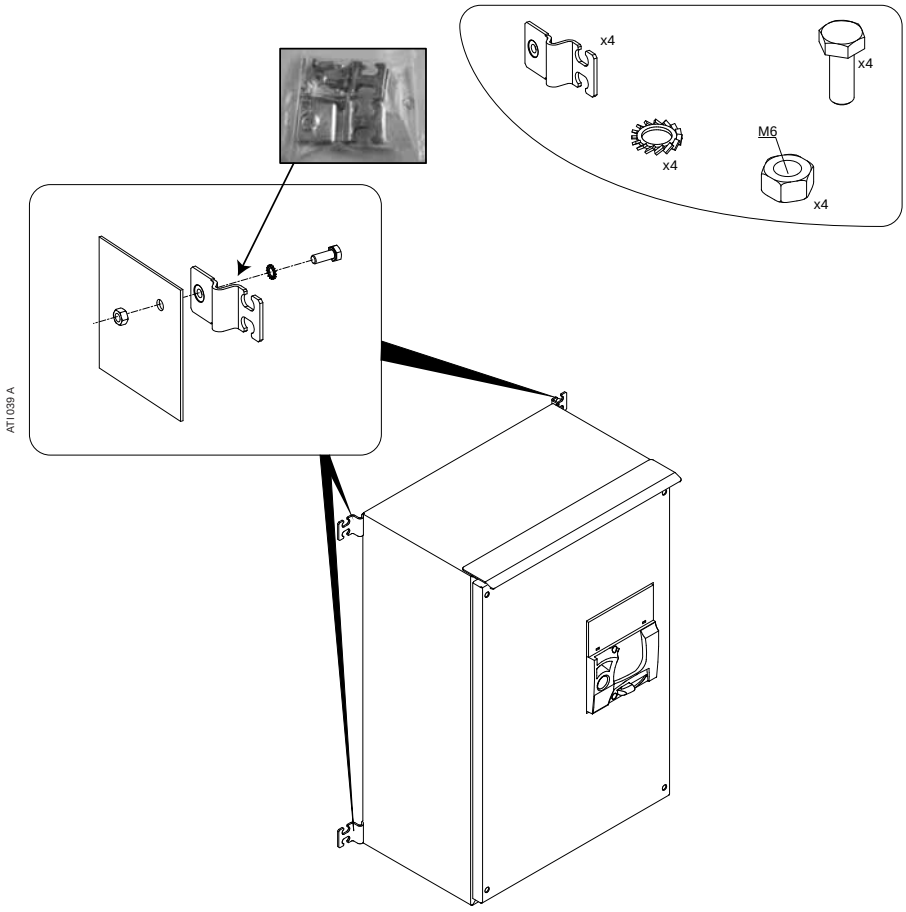




ENCLOSURES INSTALLATION (continued)

Wall mounting brackets

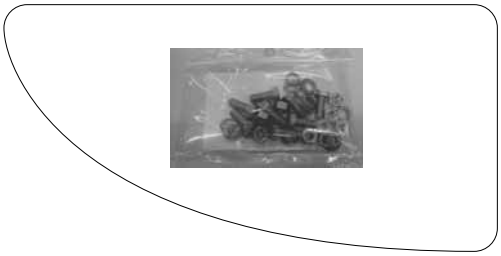
- Use the mounting brackets delivered in a bag inside the enclosure to fix the enclosure on a wall.

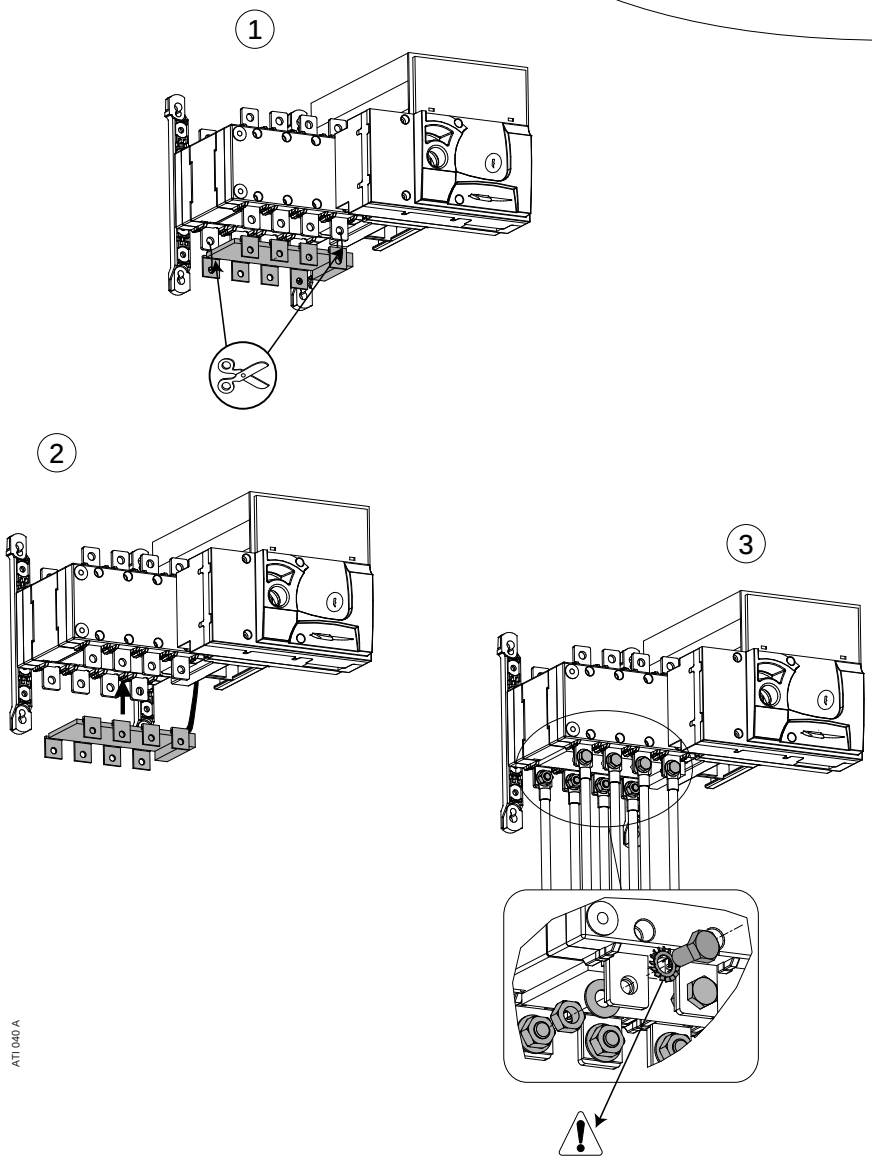


ENCLOSURES INSTALLATION (continued)

Voltage sensing kit

- Cut the voltage sensing kit clips to allow cables connections using screws/nuts/contact washers delivered in a bag inside the enclosure.





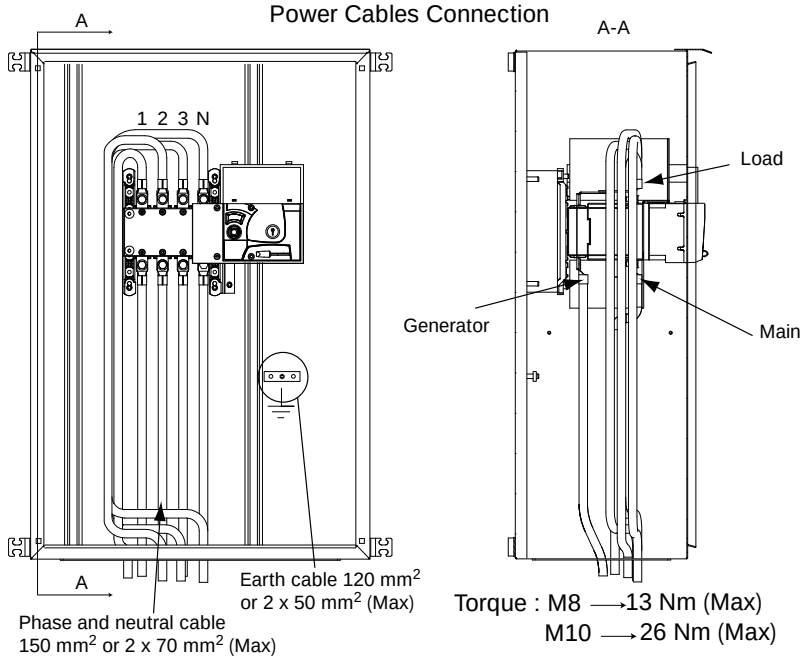
ENCLOSURES INSTALLATION (continued)

BOTTOM CABLE ENTRY ENCLOSURES

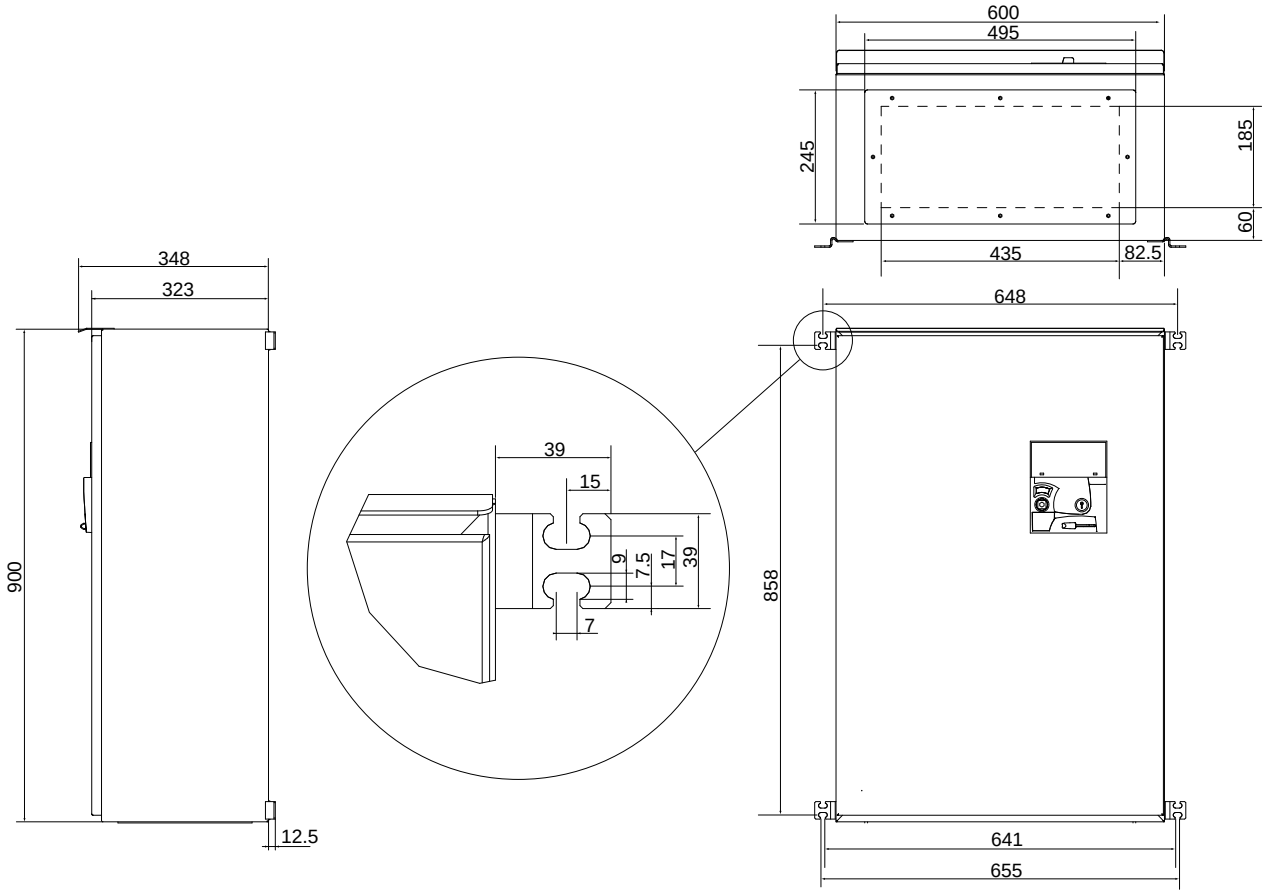
250 A rating

Power Cables Connection

Power Cables Connection



Torque : M8 ⟶13 Nm (Max)
M10 ⟶26 Nm (Max)



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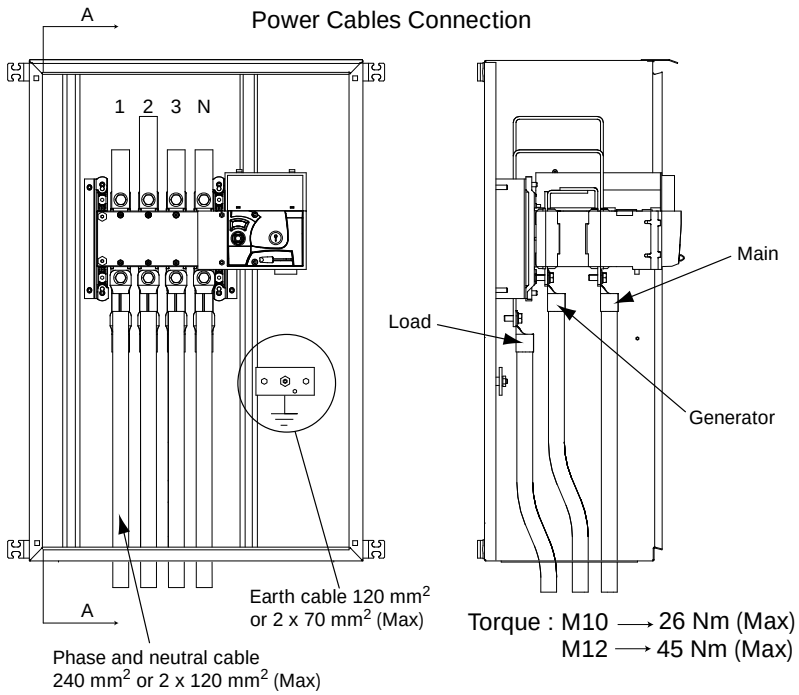
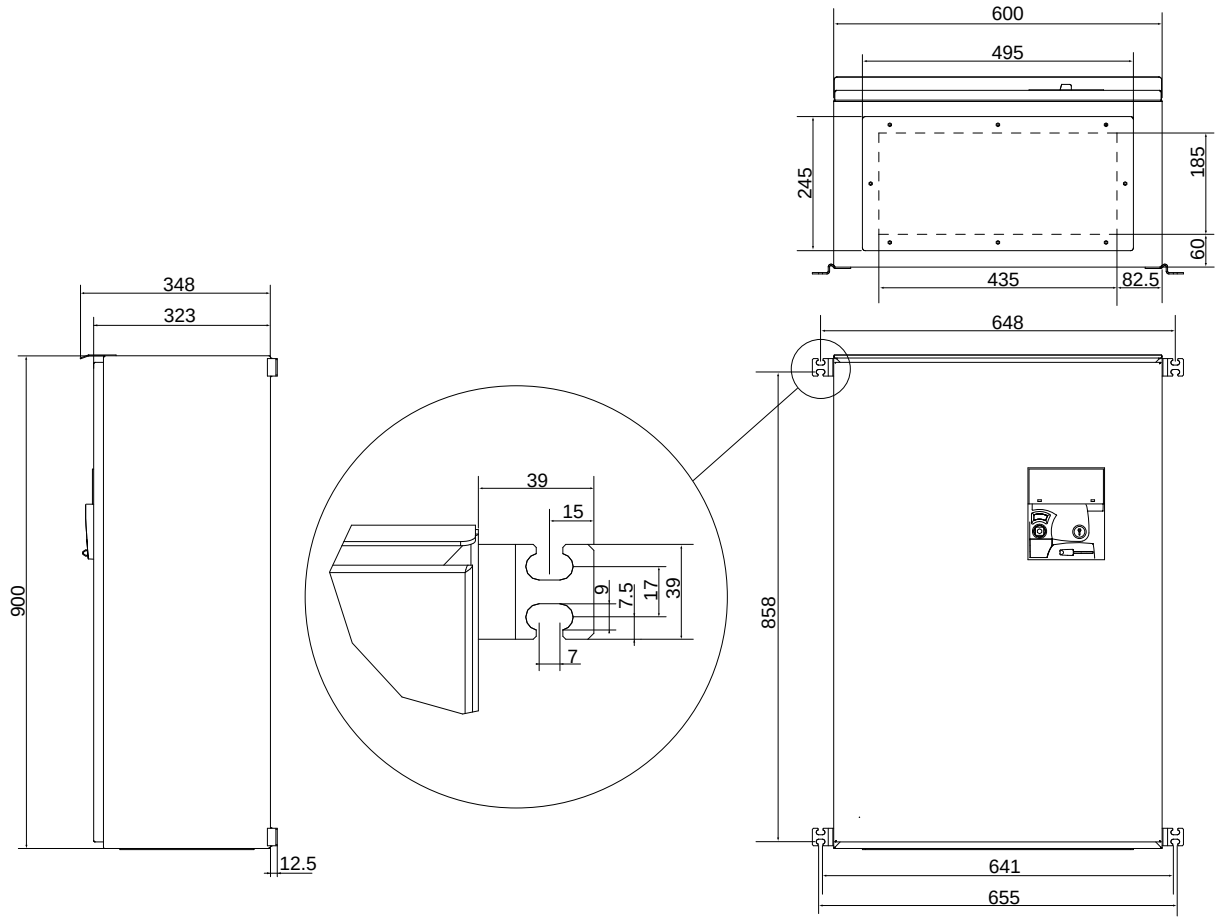
ENCLOSURES INSTALLATION (continued)

400 A rating

Power Cables Connection



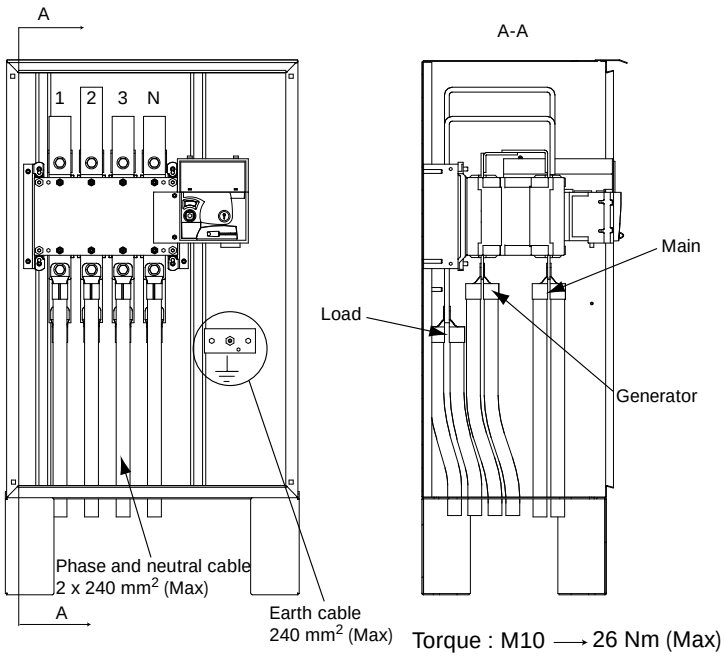


ATI 043 A GB

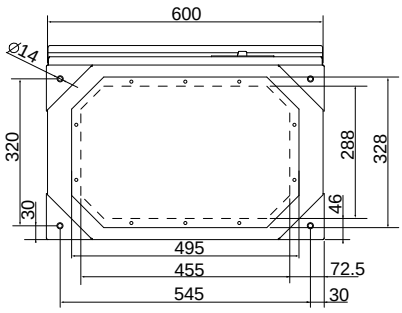
ENCLOSURES INSTALLATION (continued)

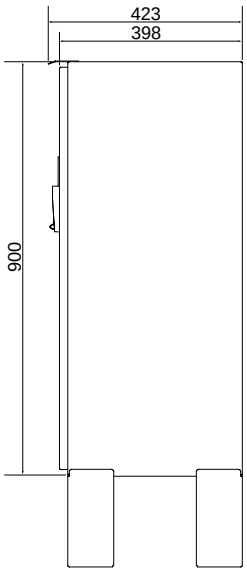
630 A rating

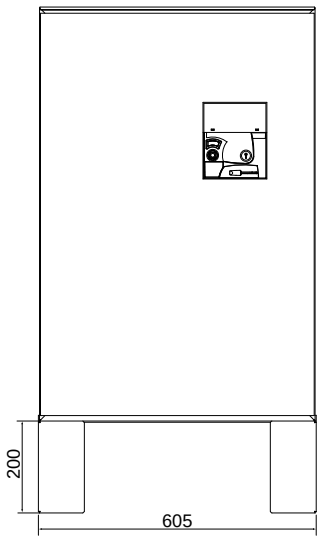
Power Cables Connection



Torque : M10 ⟶ 26 Nm (Max)
M12 ⟶ 45 Nm (Max)





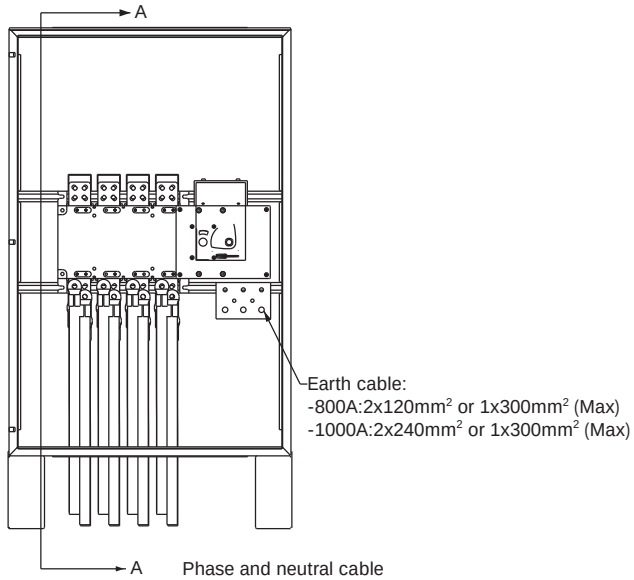


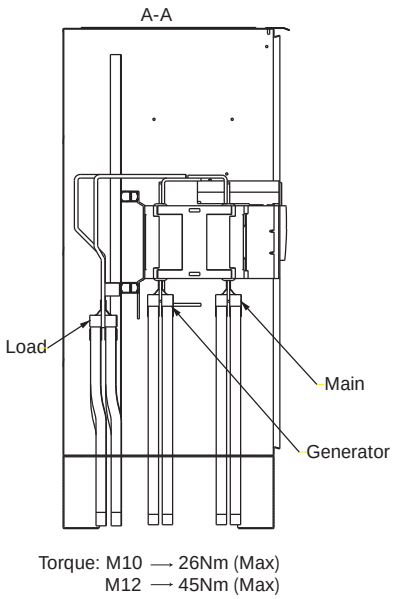
ATI044 A

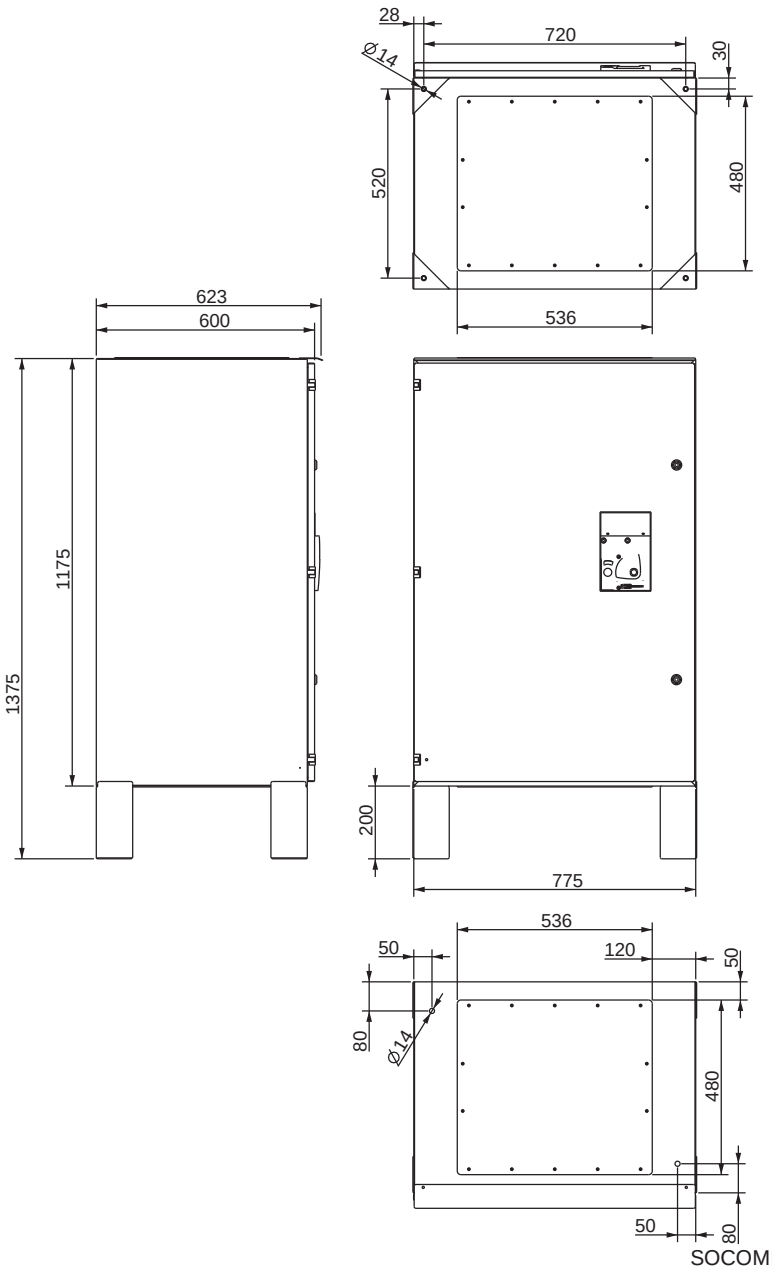
ENCLOSURES INSTALLATION (continued)

800 A / 1000 A ratings

Power Cables Connection





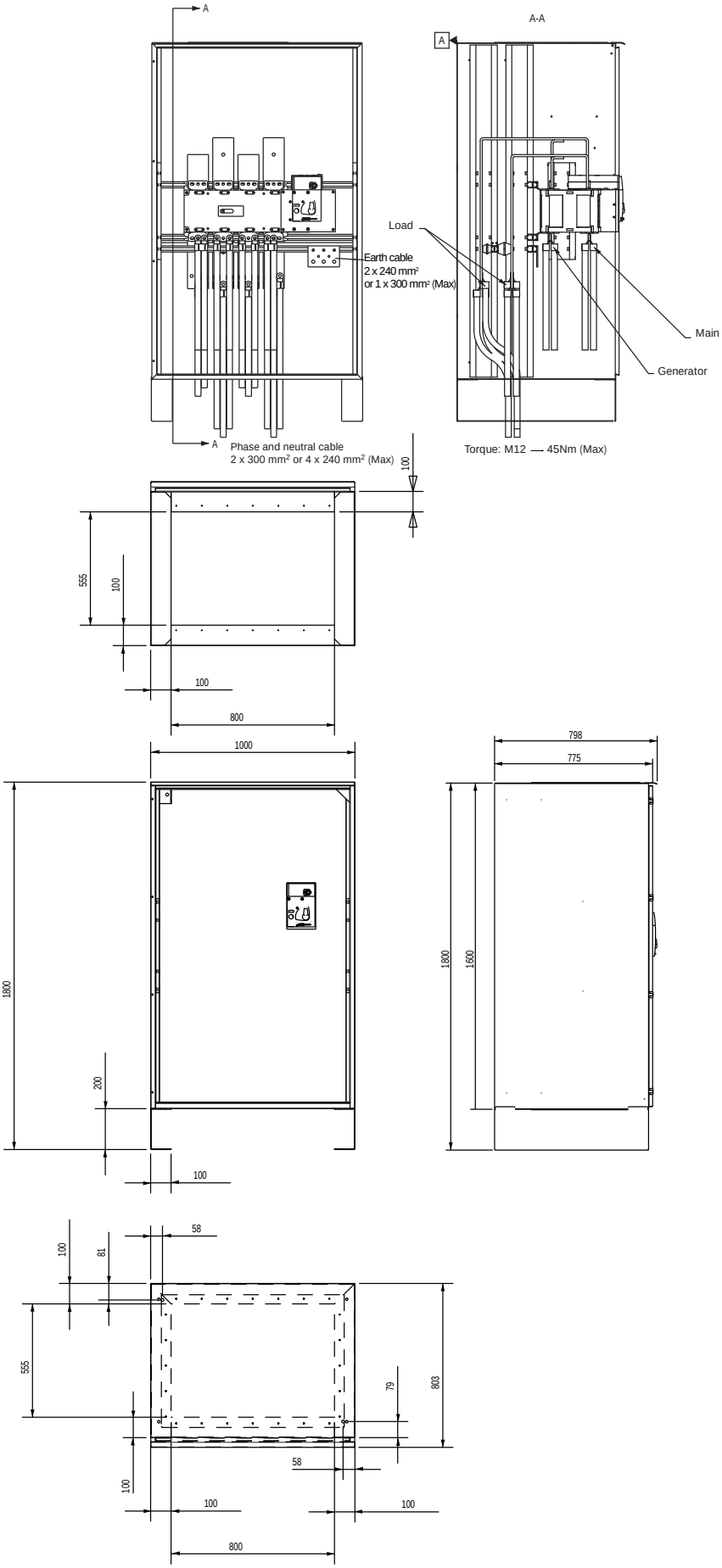


ATYS127 A GB

ENCLOSURES INSTALLATION (continued)

1250 A rating

Power Cables Connection

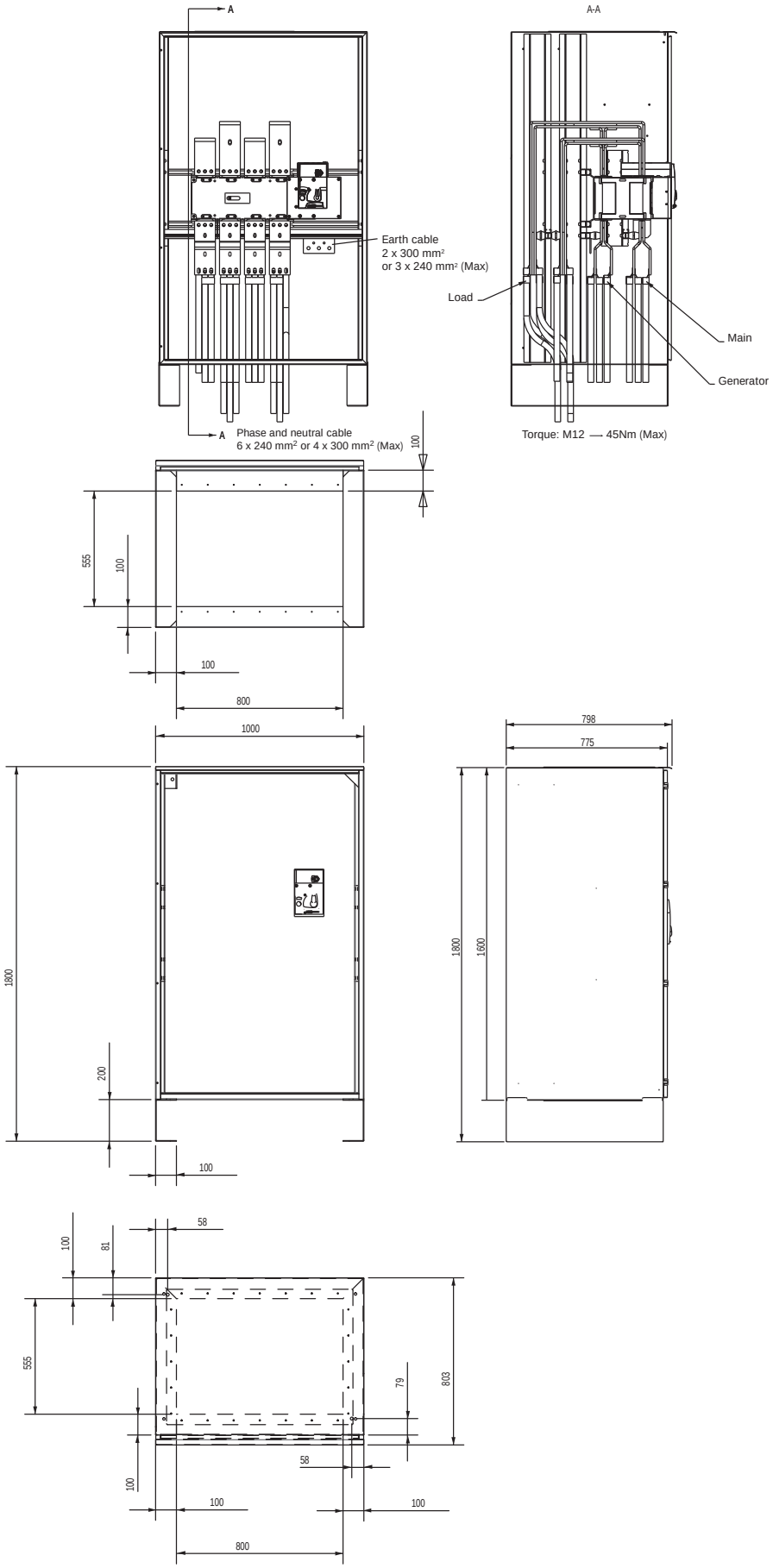


ATYS 131 B GB

ENCLOSURES INSTALLATION (continued)

1600 A rating

Power Cables Connection



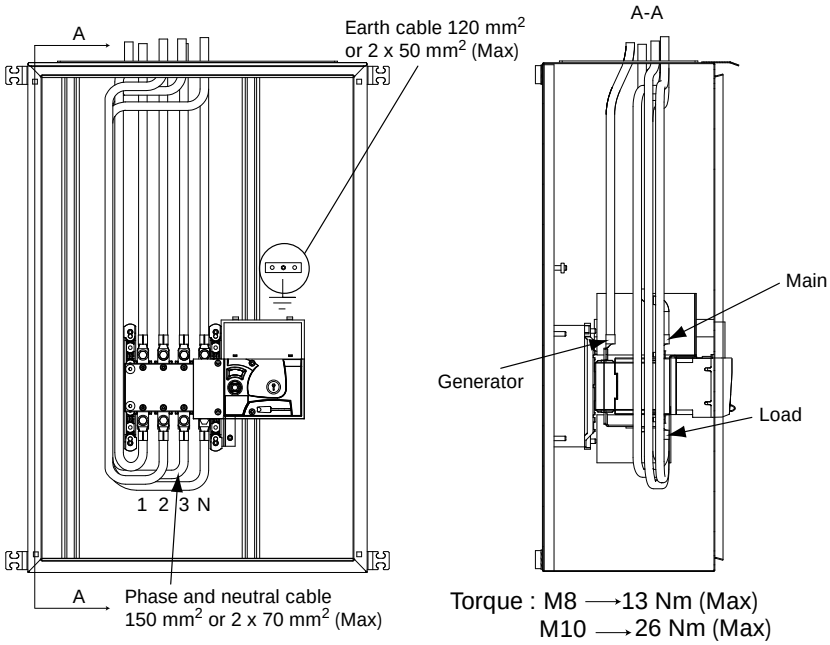
ATYS 132 B GB

ENCLOSURES INSTALLATION (continued)

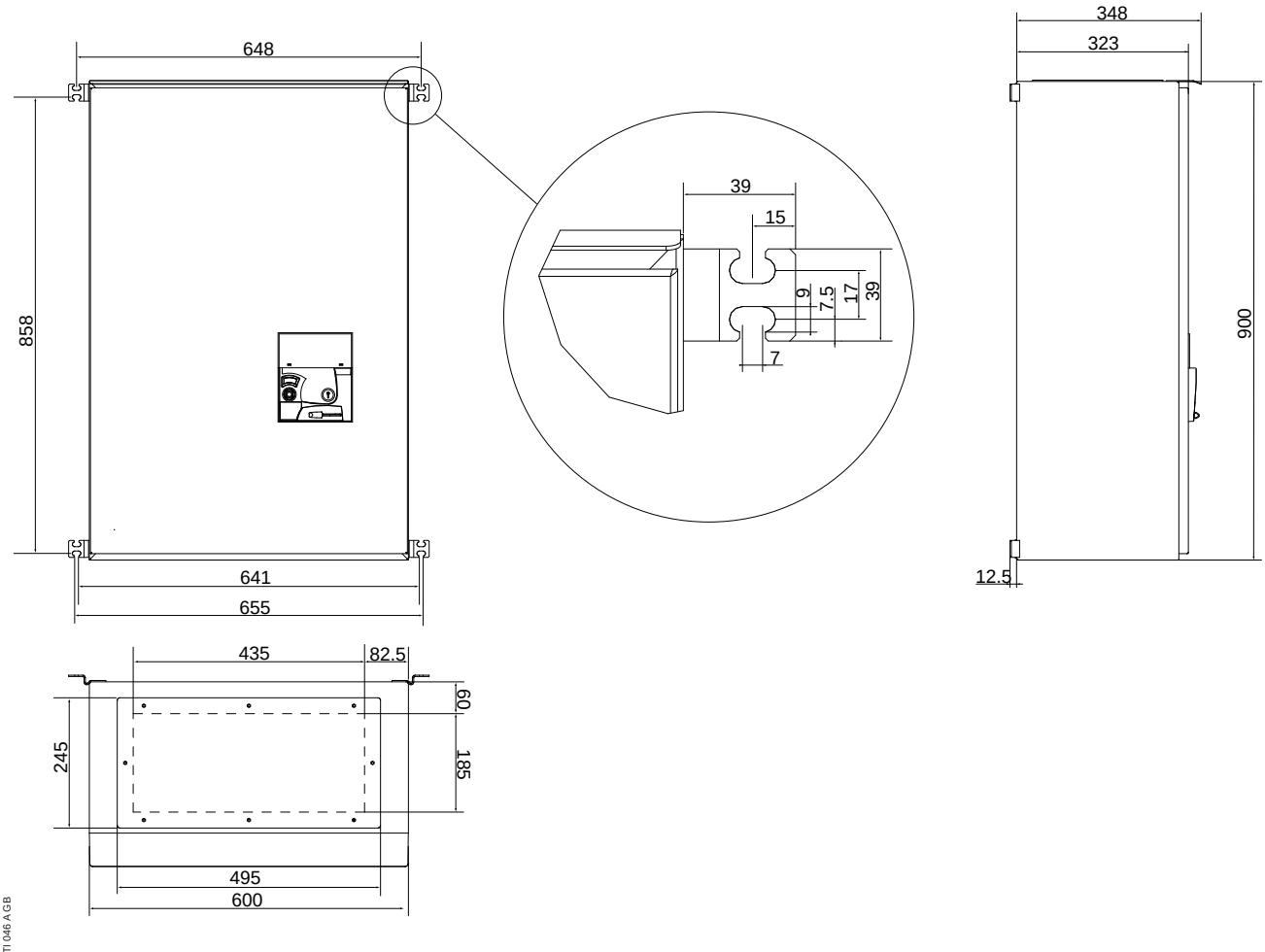
TOP CABLE ENTRY ENCLOSURES

250 A ratings - Top cable entry

Power Cables Connection



Torque : M8 ⟶13 Nm (Max)
M10 ⟶26 Nm (Max)

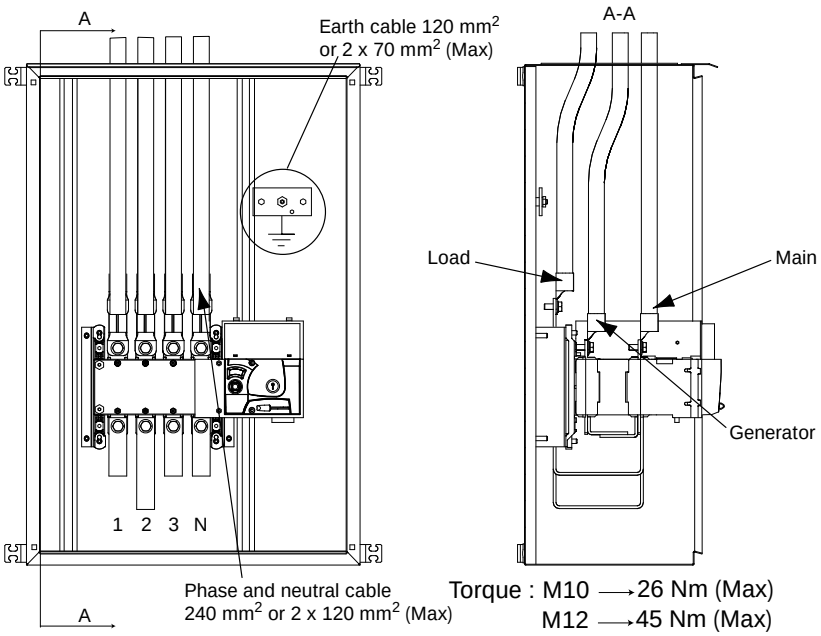


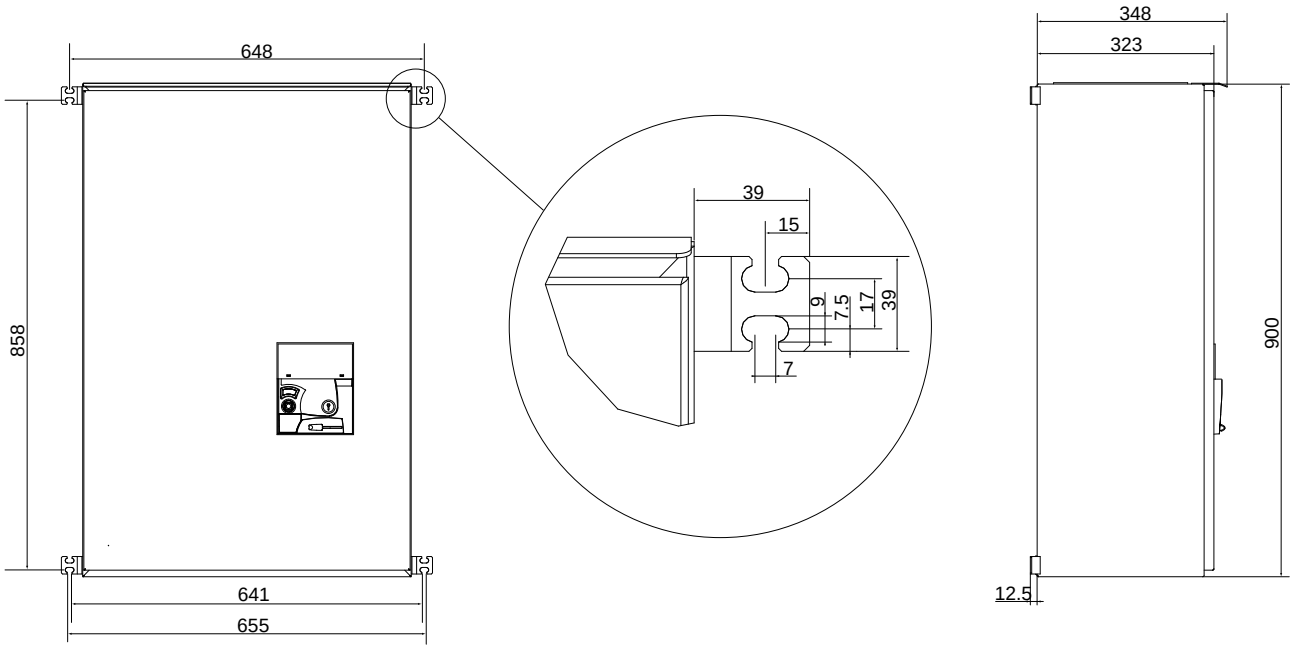
ATI 046 A GB

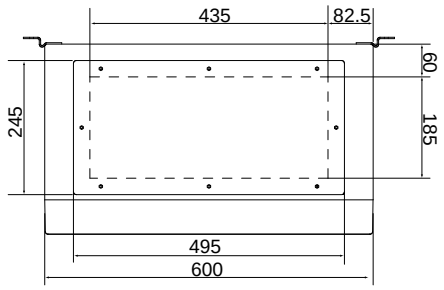
ENCLOSURES INSTALLATION (continued)

400 A ratings - Top cable entry

Power Cables Connection





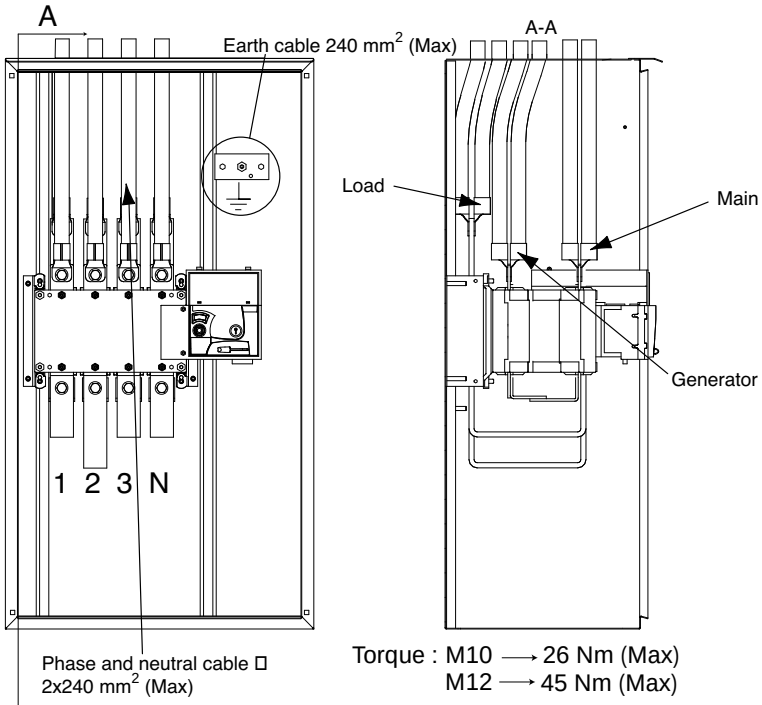


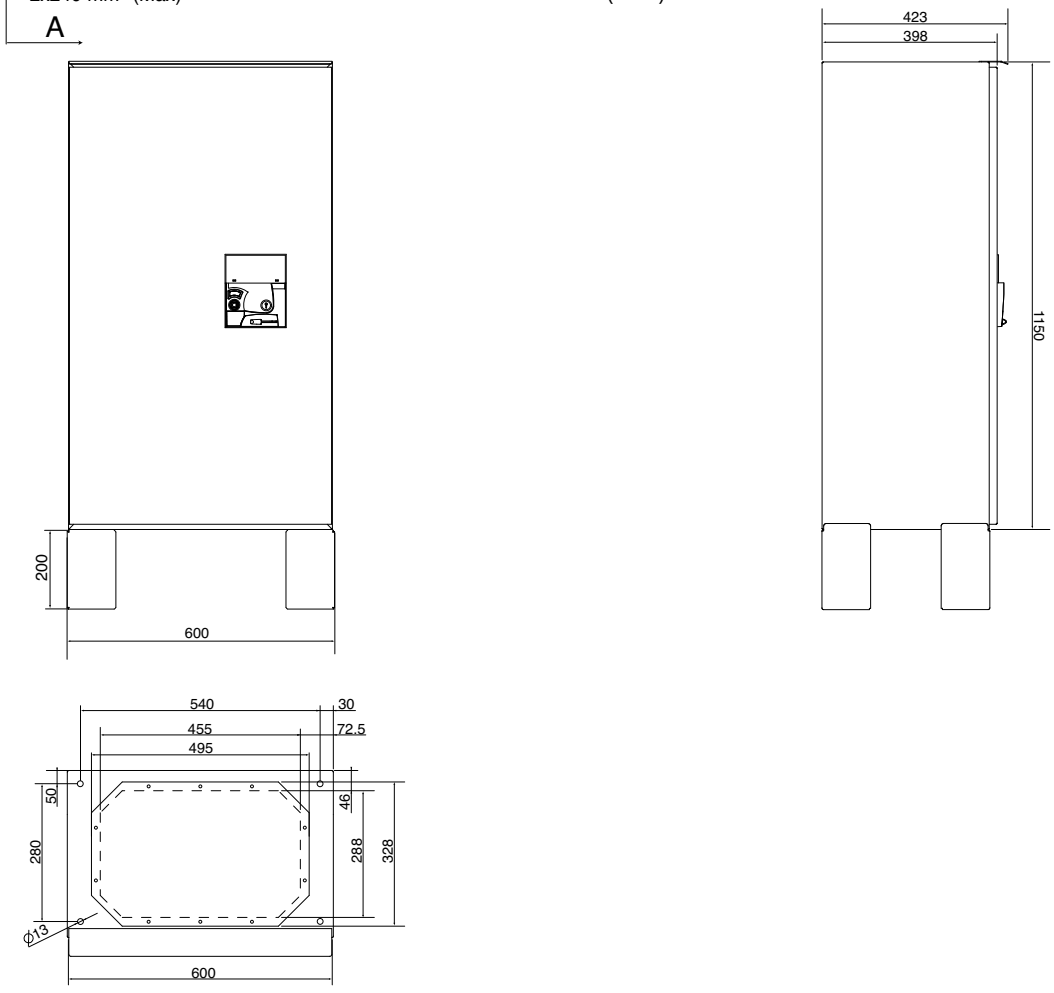
ATI 047 A GB

ENCLOSURES INSTALLATION (continued)

630 A ratings - Top cable entry

Power Cables Connection



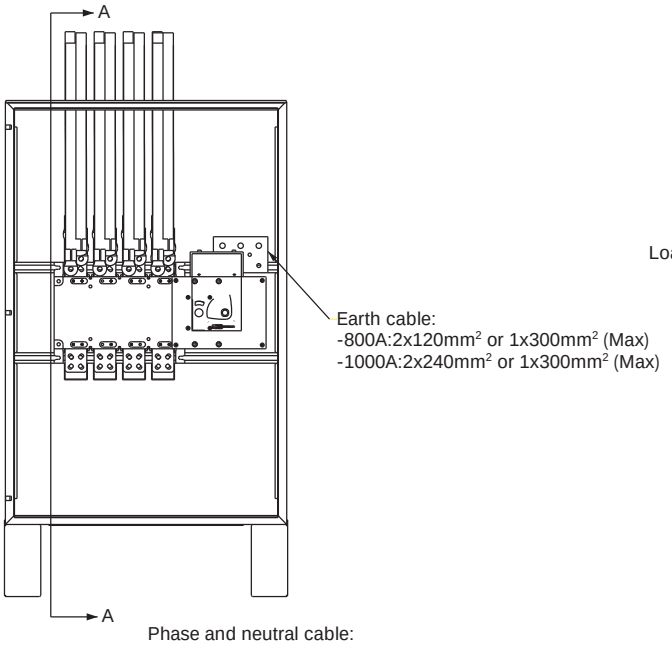


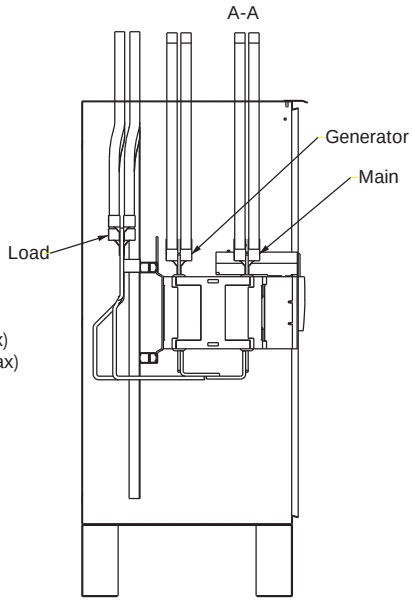
ATI 048 A

ENCLOSURES INSTALLATION (continued)

800 A/1000 A ratings Top cable entry

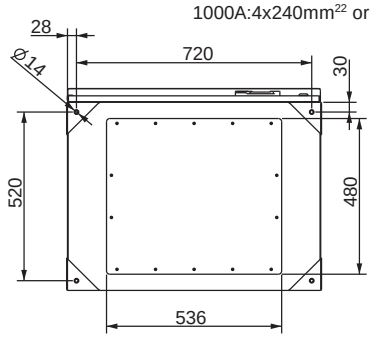
Power Cables Connection

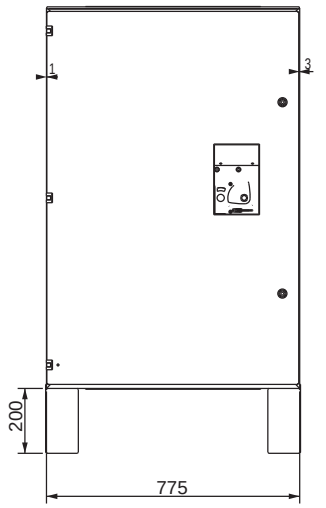


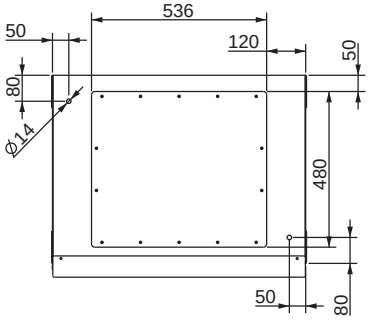


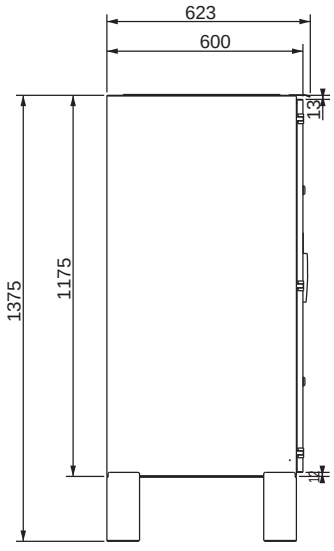
Phase and neutral cable:
800A:3x240mm² or 2x300mm² (Max)
1000A:4x240mm²² or 2x300mm² (Max)

Torque: M10 ⟶ 26Nm (Max)
M12 ⟶ 45Nm (Max)







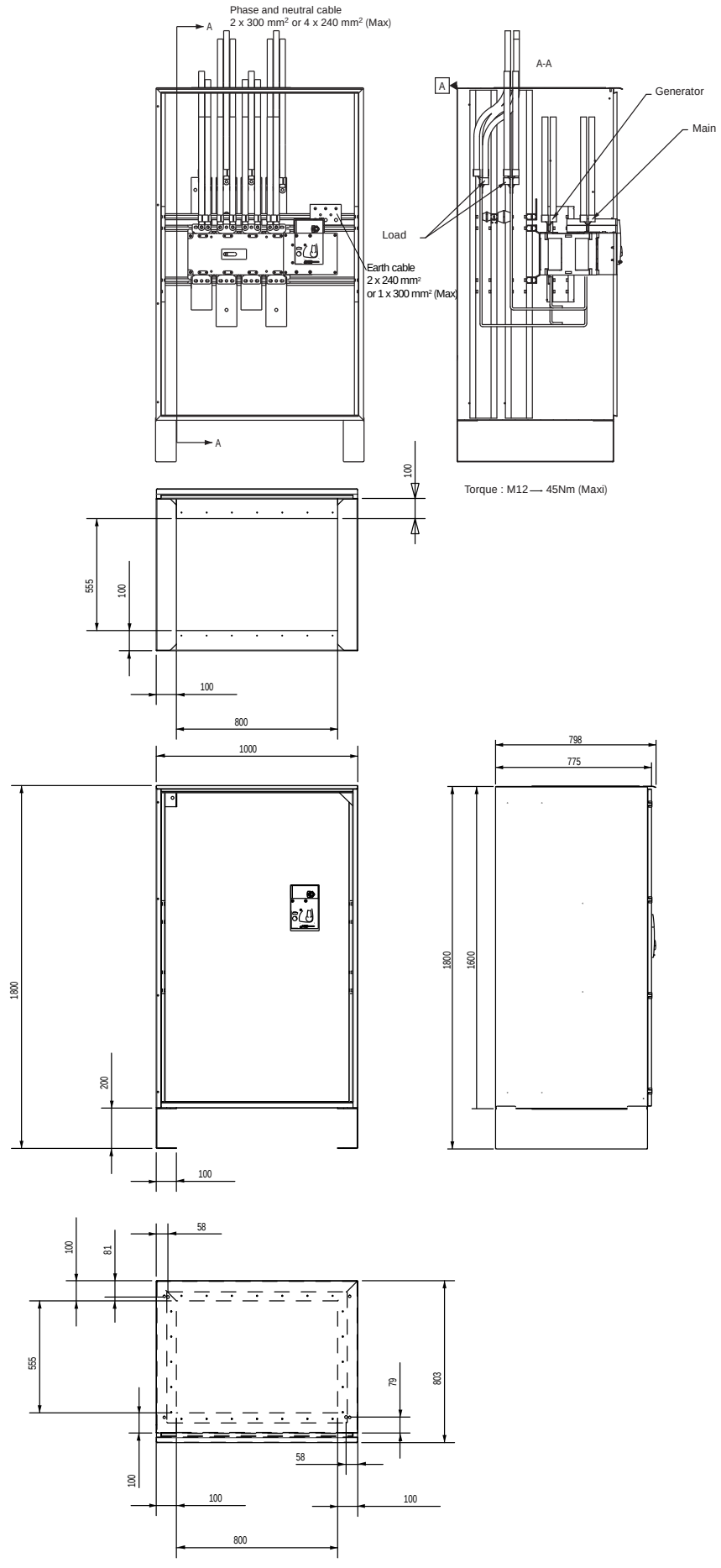


ATI048 C GB

ENCLOSURES INSTALLATION (continued)

1250 A rating Top cable entry

Power Cables Connection



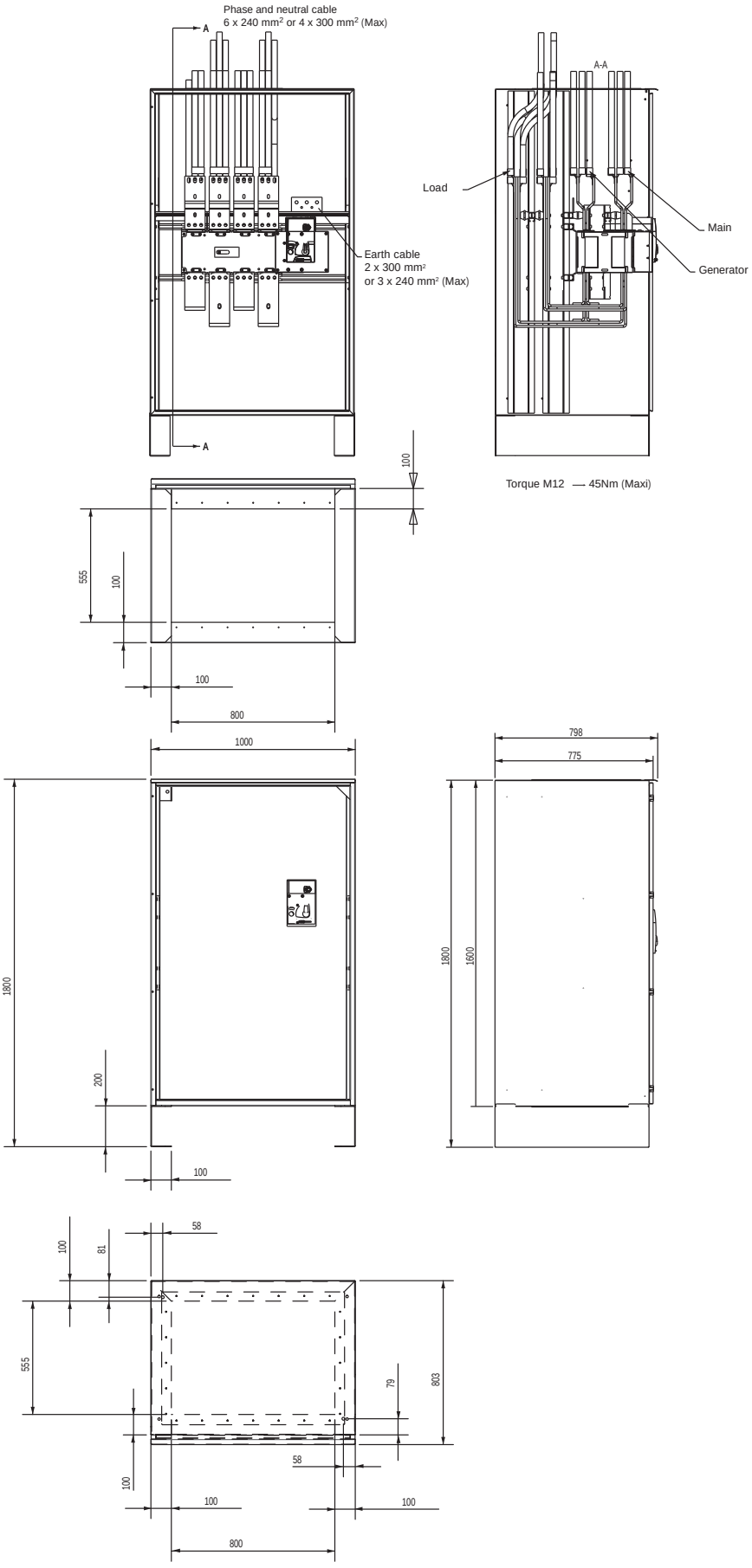
ATYS 133 B GB

ENGLISH

ENCLOSURES INSTALLATION (continued)

1600 A rating Top cable entry

Power Cables Connection



ATYS 134 B GB

ENCLOSURES INSTALLATION (continued)

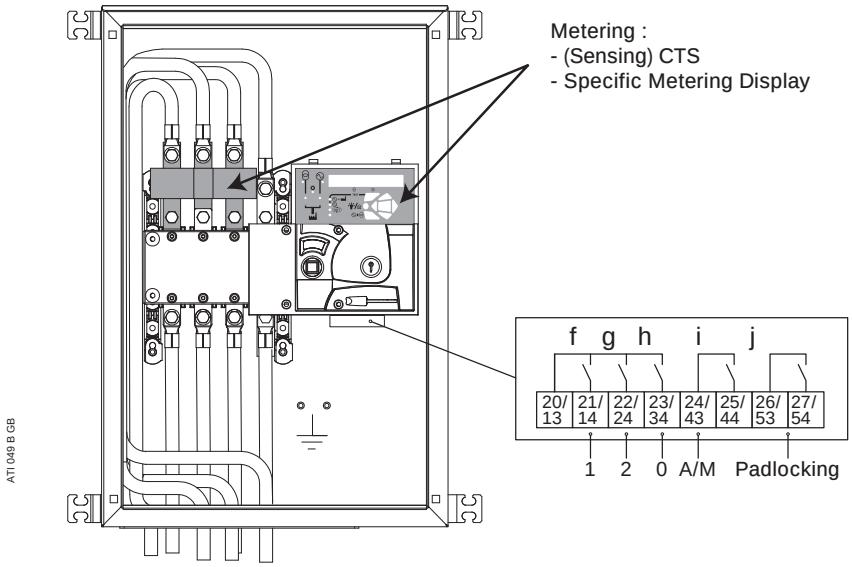
⚠ Verify there is no voltage on the terminals before mounting the options.

OPTIONAL CONNECTIONS

Option 1

Metering + Auxiliary contacts Option
Available from third release 2004. This option is factory fitted and includes a specific metering display + metering CTs to allow current + power metering.

Auxiliary contacts for 0,1,2 position, padlock and Auto/Manual Mode.
Available from factory.



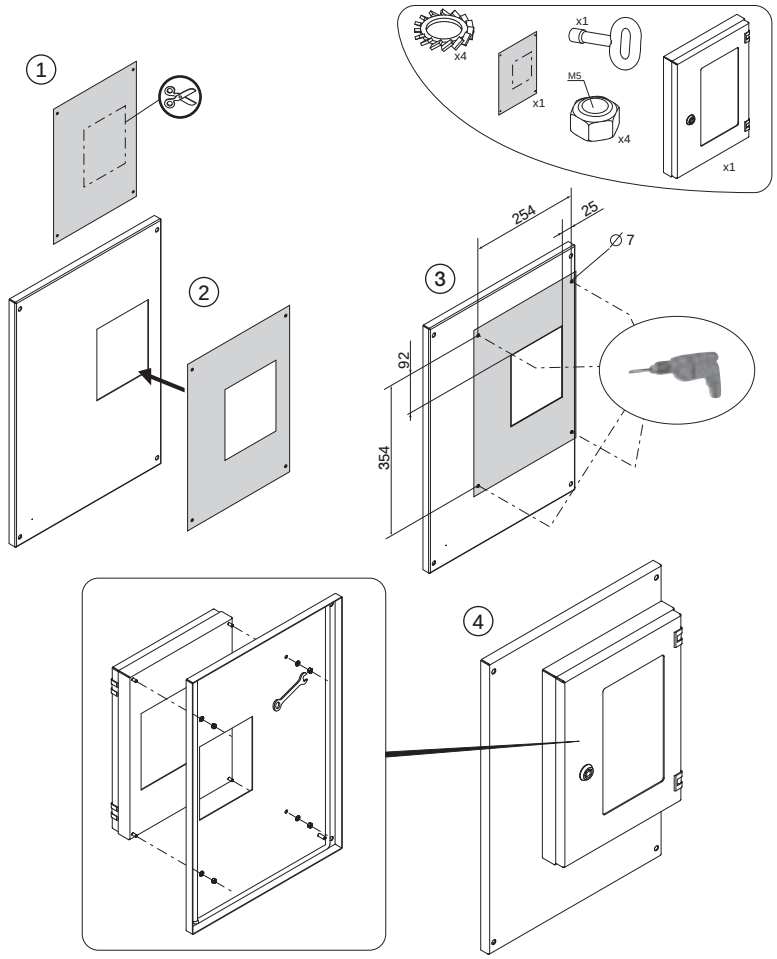
Identification	Terminals	Type	Feature	Rating
f	13-14 or 20-21	Output	Position 1 Auxiliary contact Contact closed when switch is in position 1	• Resistive load: 10 A • Inductive load: 3 A Max Vac: 250 - Max operations: 5×10^7
g	13-24 or 20-22	Output	Position 2 Auxiliary contact Contact closed when switch is in position 2	
h	13-34 or 20-23	Output	Position 0 Auxiliary contact Contact closed when switch is in position 0	
i	43-44 or 24-25	Output	Auto / Manu information Contact closed when Automatic mode is active	
j	53-54 or 26-27	Output	Padlocking information Contact closed when the switch is padlocked	

Contact **f**, **g** and **h** are closed when the switch is in position 1, 2 or 0.
Contact **i** is closed when the switch is in Automatic mode.
Contact **j** is closed when the switch is padlocked.

ENCLOSURES INSTALLATION (continued)

Option 2

IP54 protection kit

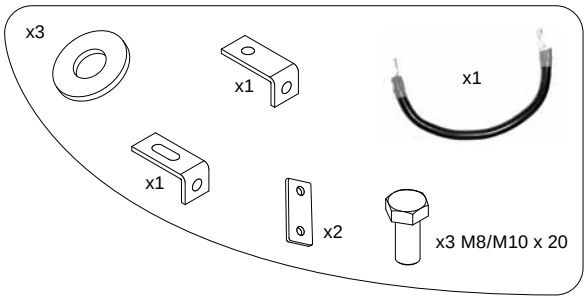


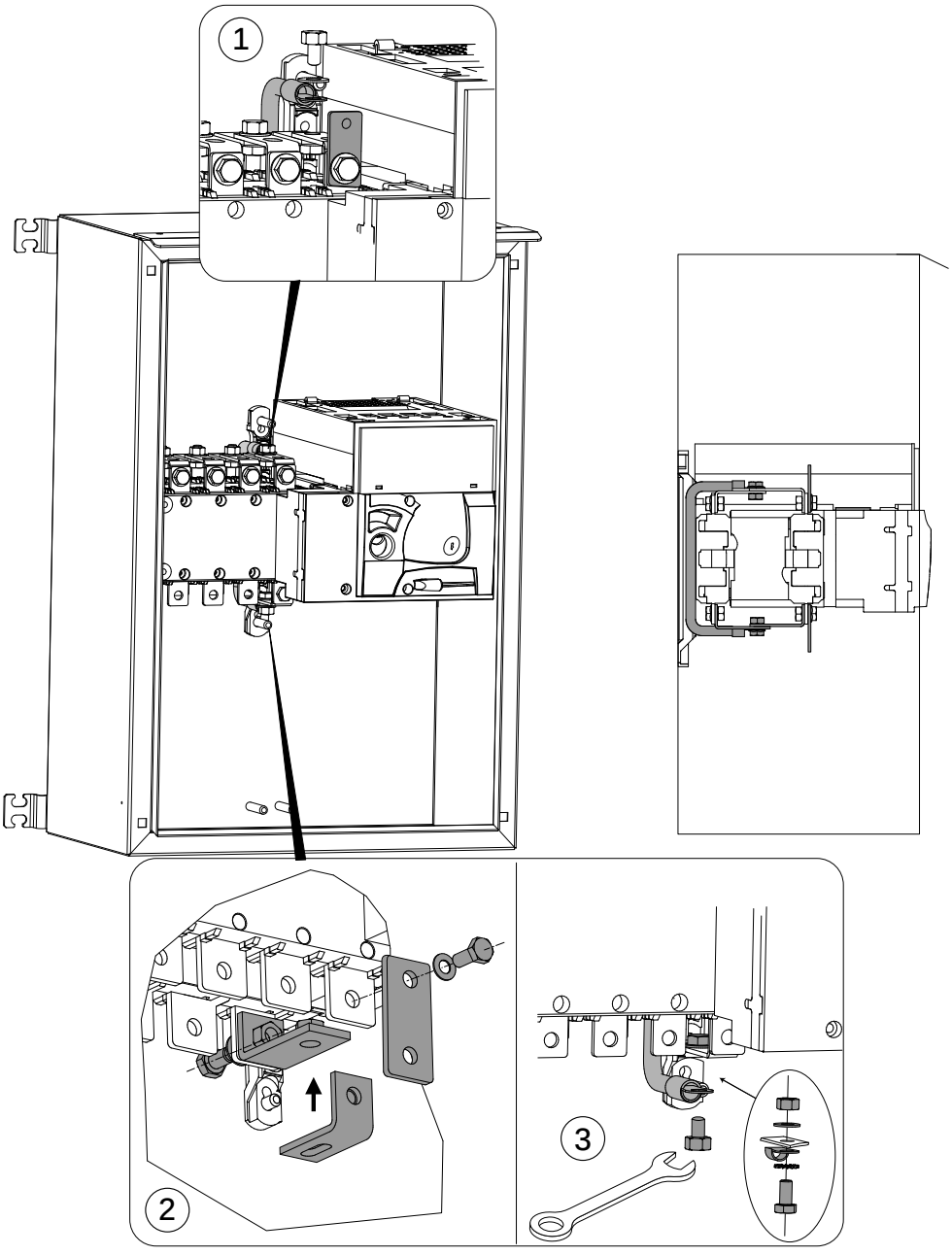
ATI 050 B

ENCLOSURES INSTALLATION (continued)

Option 3

Solid neutral kit
250A rating





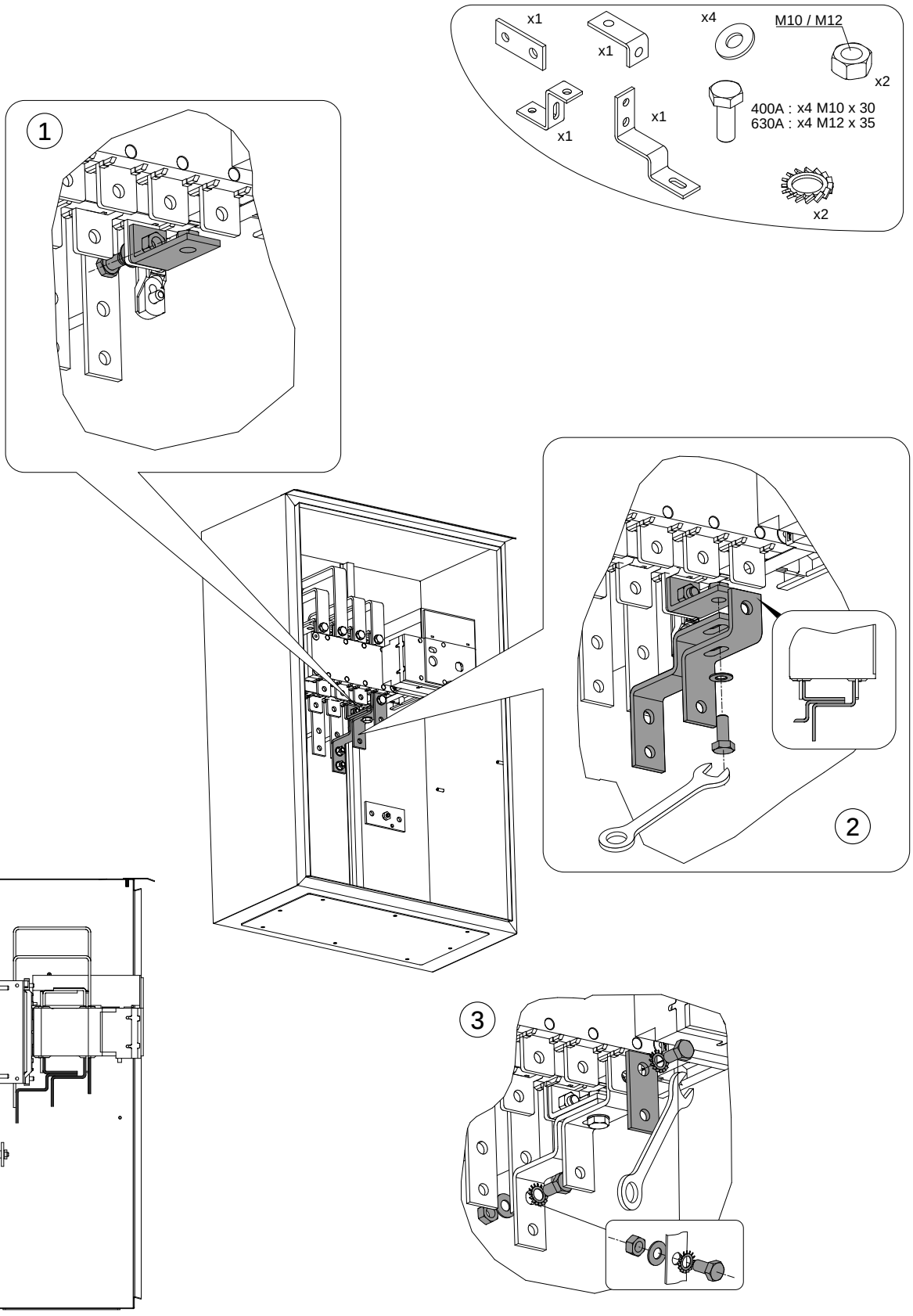
ATI 052 A

Torque : M8 —> 13 Nm (Max)
M10 —> 26 Nm (Max)

ENCLOSURES INSTALLATION (continued)

Option 3

Solid neutral kit
400A / 630A rating

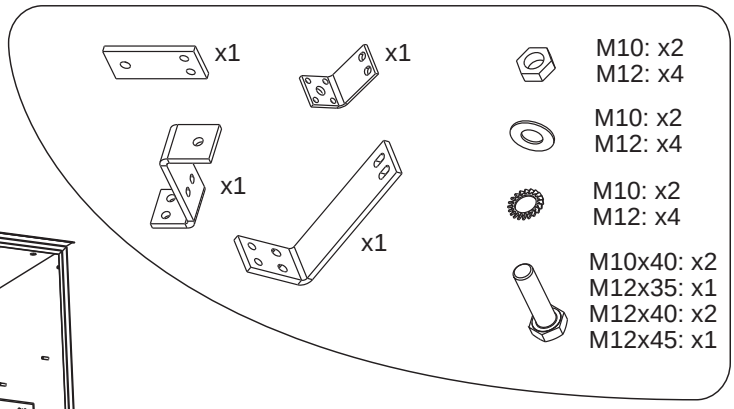


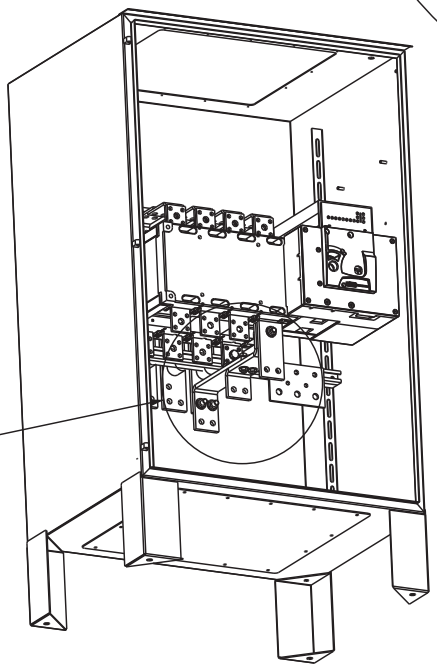
Torque : M10 —> 26 Nm (max)
M12 —> 45 Nm (max)

ENCLOSURES INSTALLATION (continued)

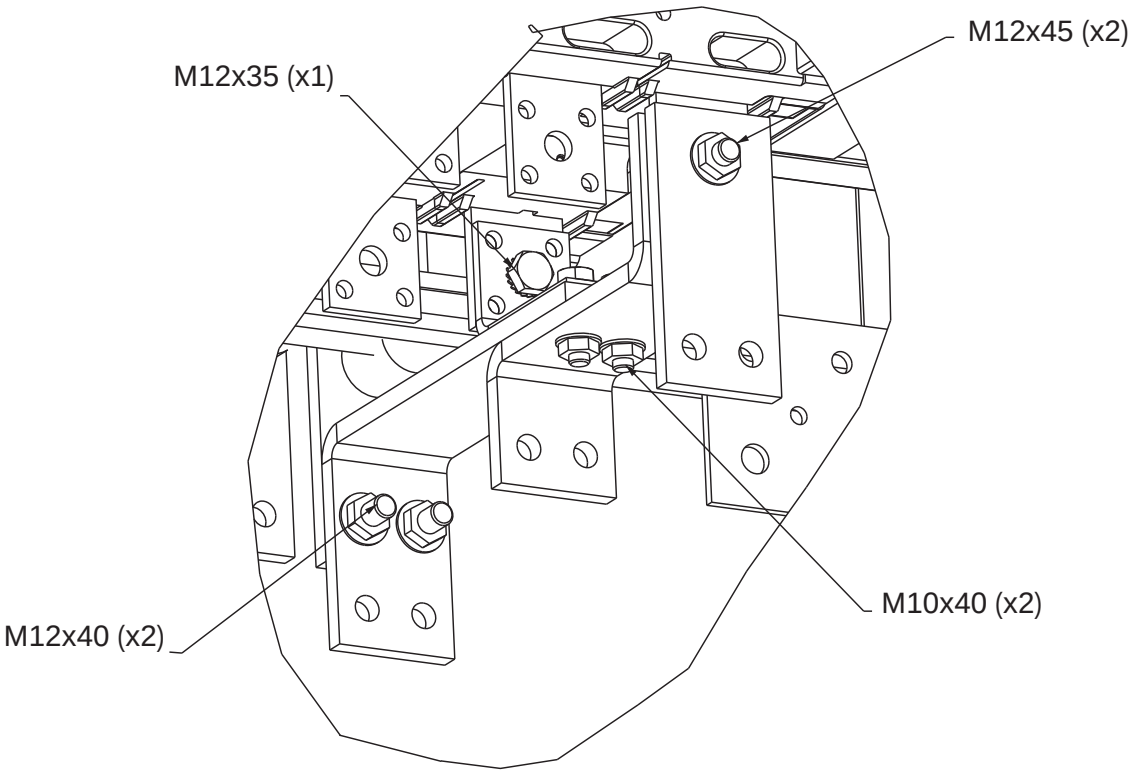
Option 3

Solid neutral kit
800A rating





detail A
1/2



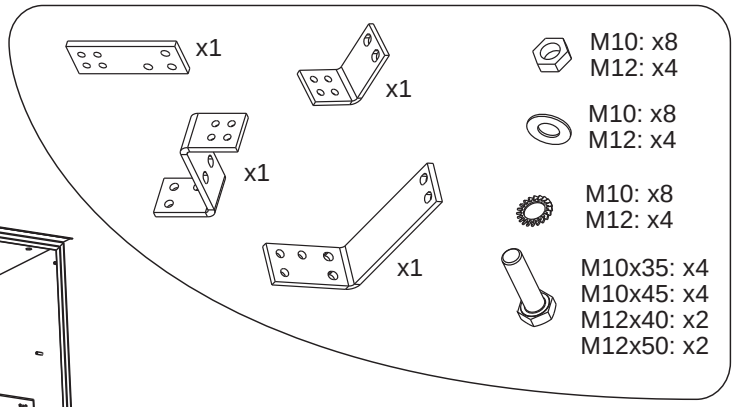
ATYS129 A GB

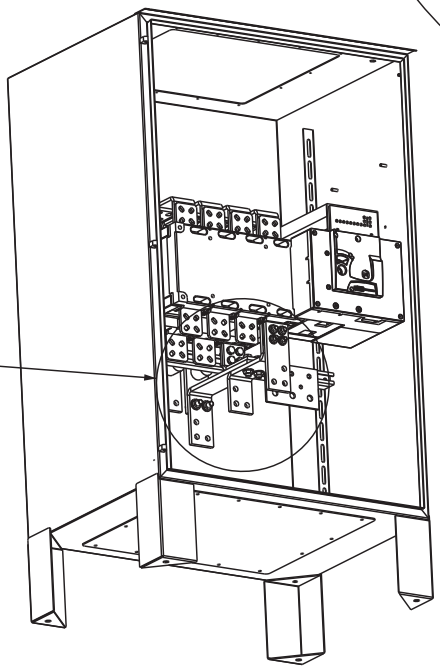
Torque: M10 —> 26 Nm (max)
M12 —> 45 Nm (max)

ENCLOSURES INSTALLATION (continued)

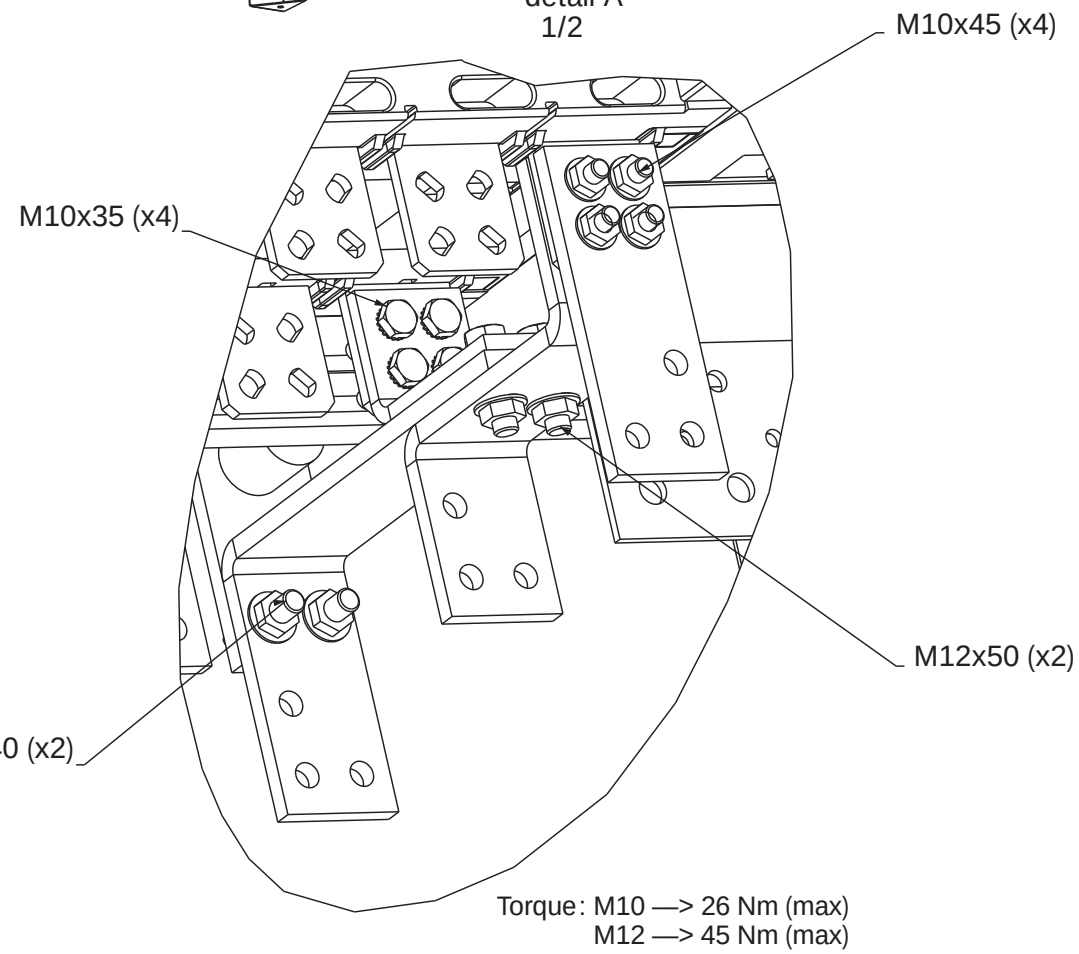
Option 3

Solid neutral kit
1000A rating





detail A
1/2



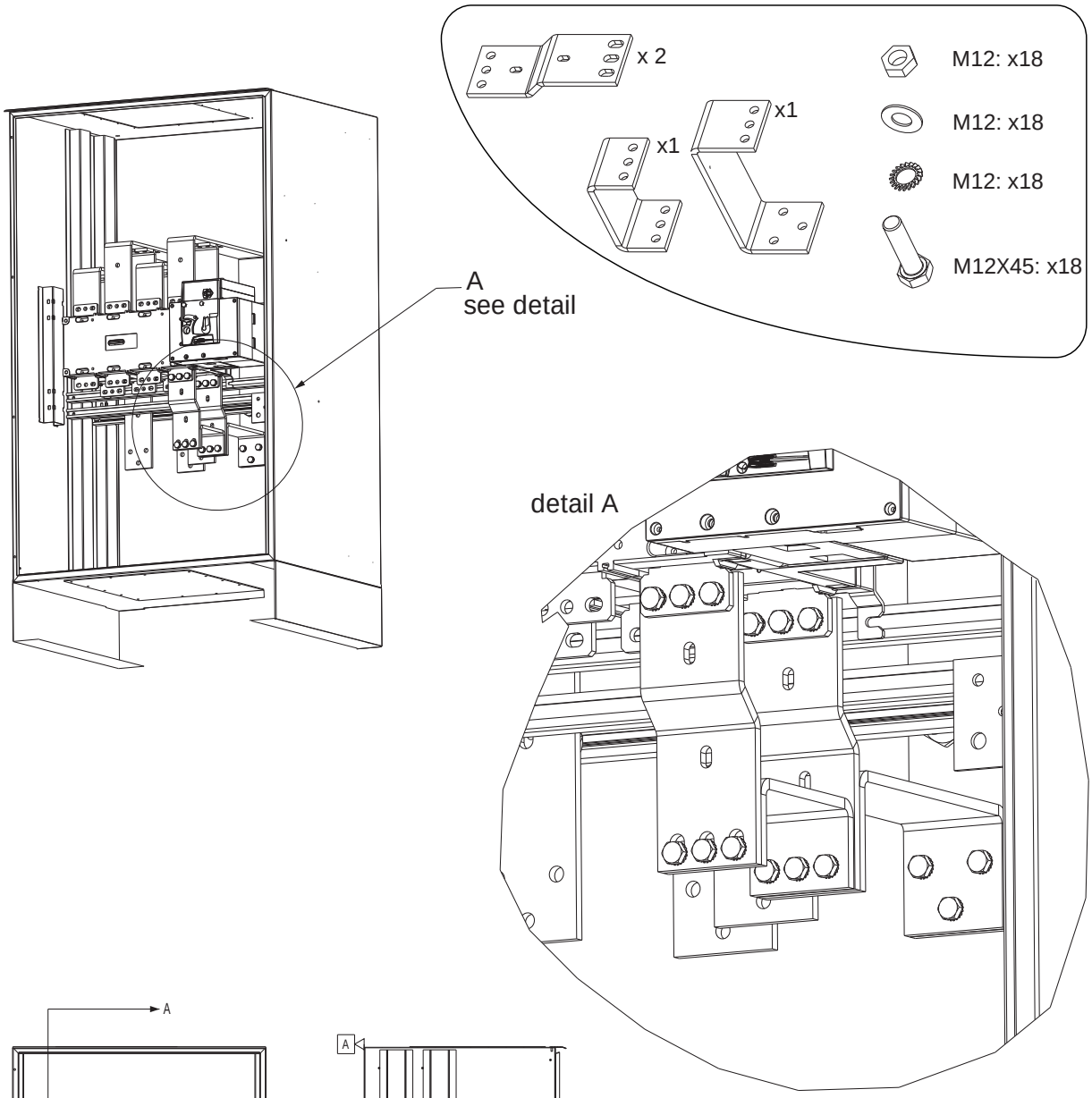
Torque: M10 —> 26 Nm (max)
M12 —> 45 Nm (max)

ATYS 130 A

ENCLOSURES INSTALLATION (continued)

Option 3

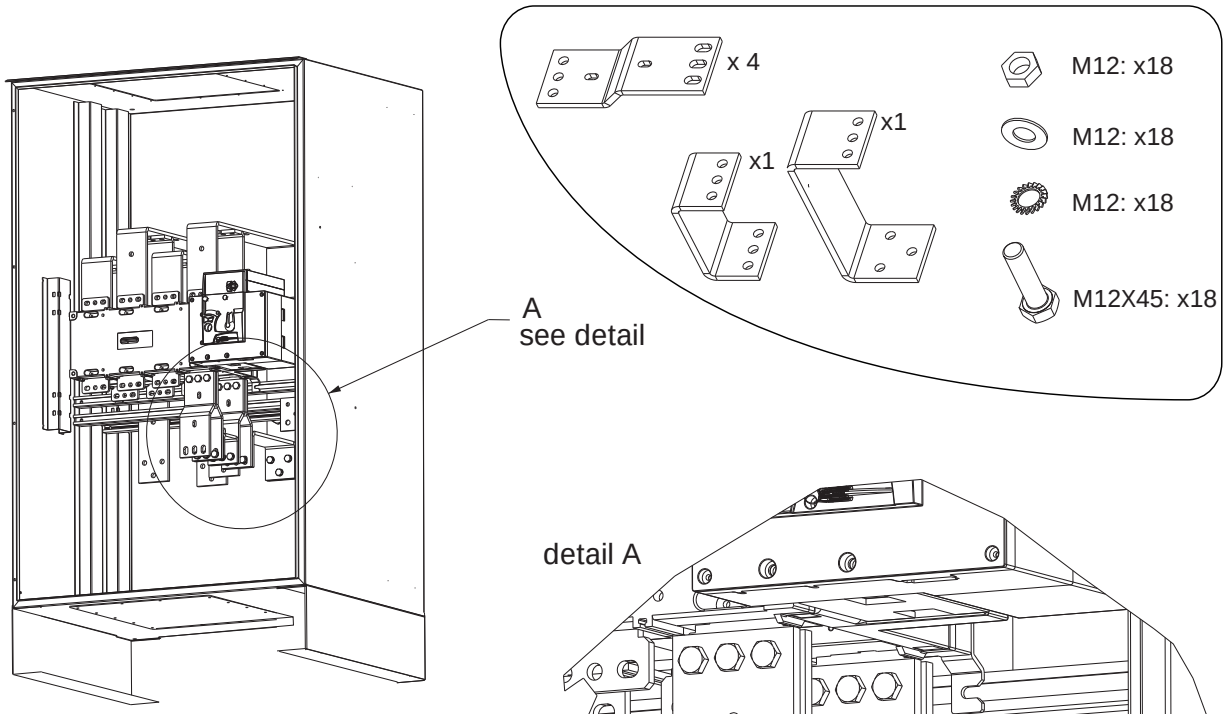
Solid neutral kit
1250A rating

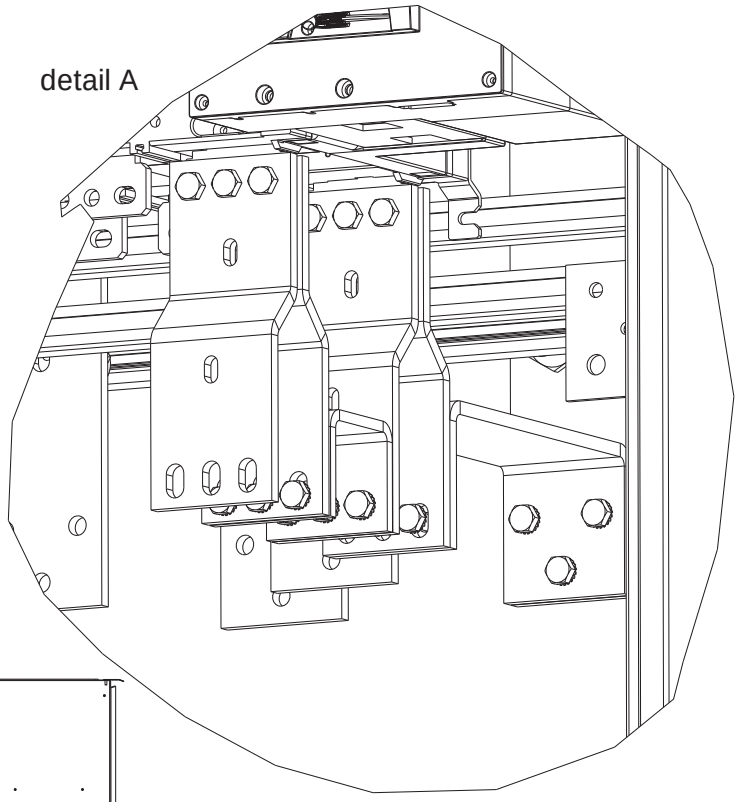


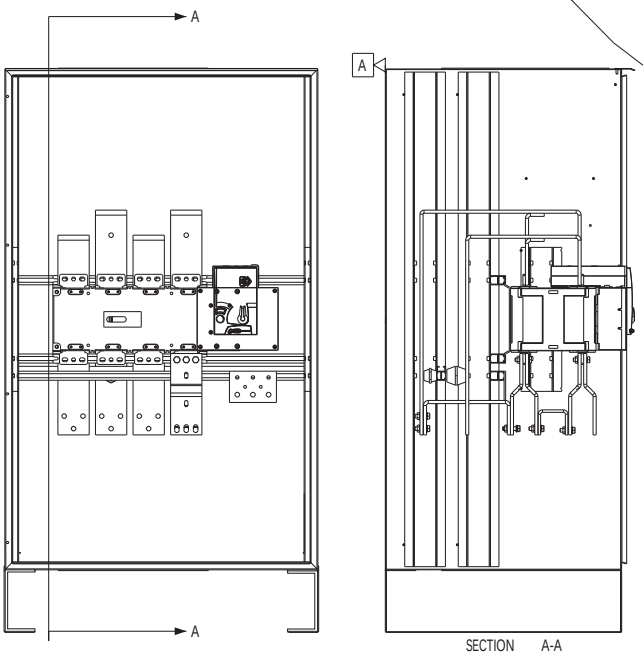
ENCLOSURES INSTALLATION (continued)

Option 3

Solid neutral kit
1600A rating







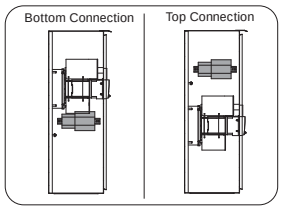
ATYS 136 B

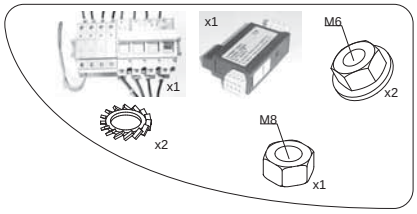
ENCLOSURES INSTALLATION (continued)

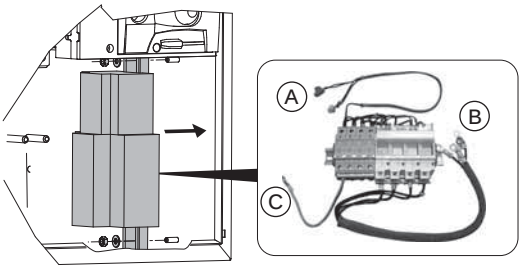
Option 4

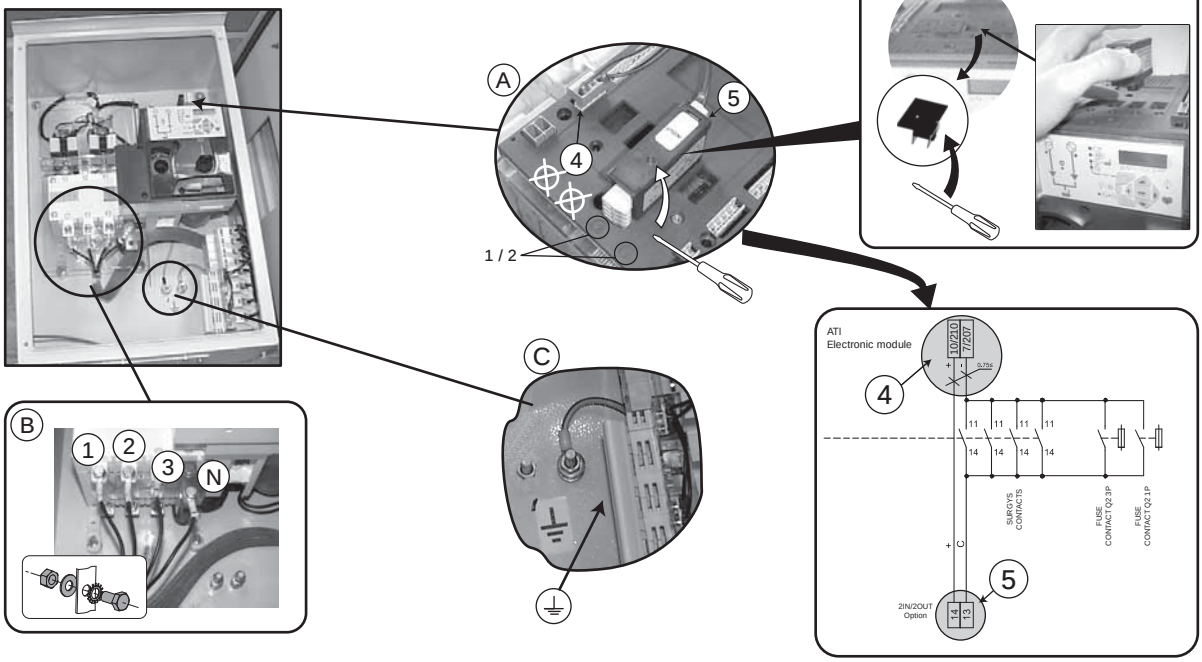
Lightning protection

⚠ A 3 minutes power off action is required before startup to allow option recognition.









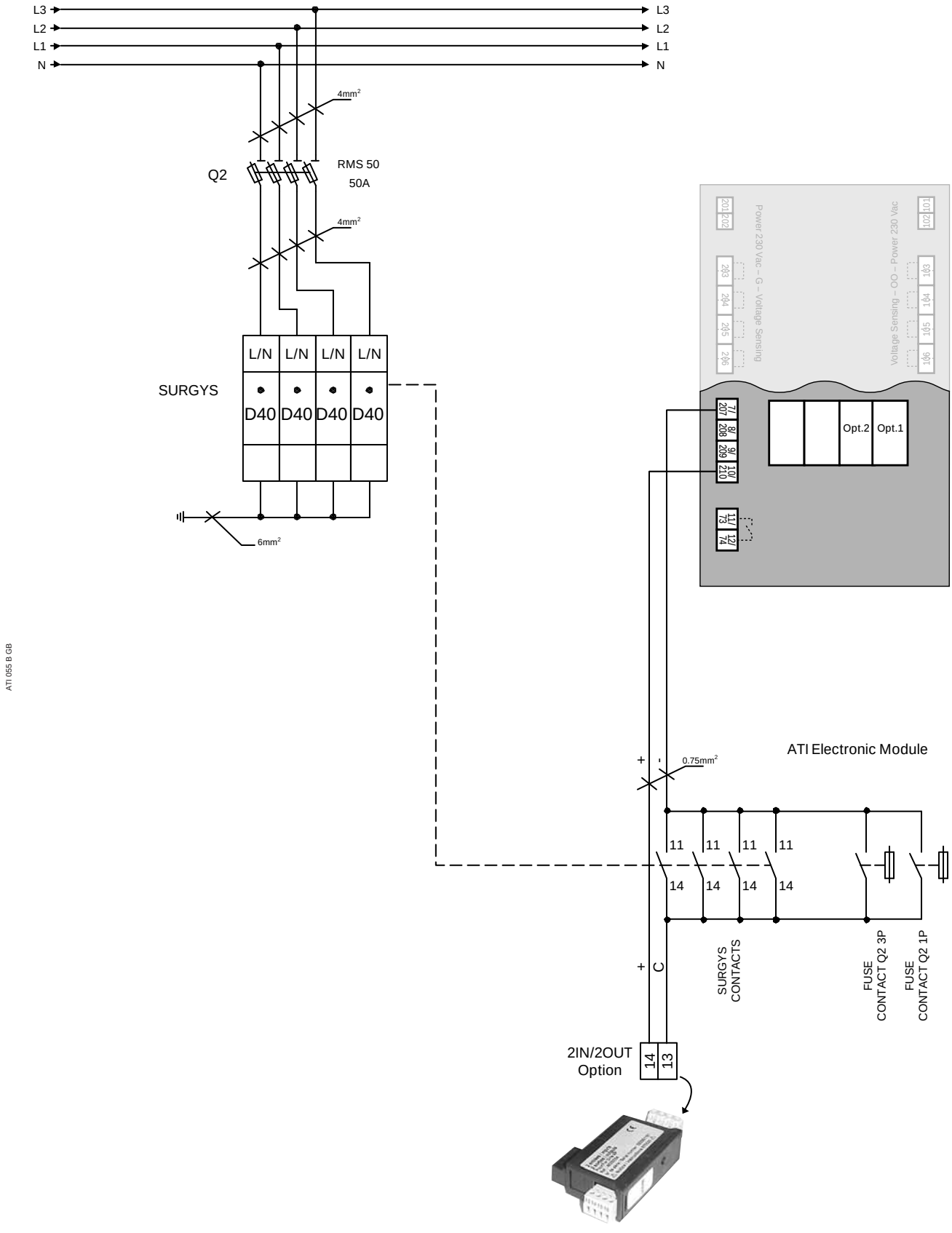
ATI 054 C GB

A specific menu in the metering architecture allows monitoring of the protection. Cf variable LIP in the monitoring menu.
LIP variable = 1 as soon as the protection operates (fuse blow or lightning protection operation).
This information is verified every 5 seconds.
Error led also blinks to inform of LIP operation.
It might then either be required to change a fuse or the lightning module.

ENCLOSURES INSTALLATION (continued)

Option 4 (continued)

Lightning protection equipment Connection diagram



ATI 055 B GB

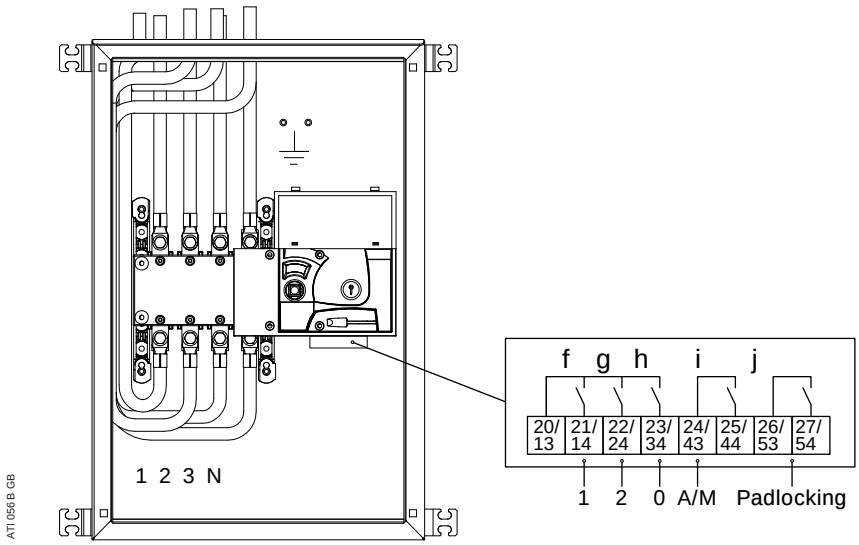
ENCLOSURES INSTALLATION (continued)

Option 5

277 Vac option
Switch is available in 277 Vac version.

Option 6

Auxiliary contacts for 0,1,2 position, padlock and Auto / Manual Mode.
Available from factory.



Identification	Terminals	Type	Feature	Rating
f	13-14 or 20-21	Output	Position 1 Auxiliary contact Contact closed when switch is in position 1	• Resistive load: 10 A • Inductive load: 3 A Max Vac: 250 - Max operations: 5×10^7
g	13-24 or 20-22	Output	Position 2 Auxiliary contact Contact closed when switch is in position 2	
h	13-34 or 20-23	Output	Position 0 Auxiliary contact Contact closed when switch is in position 0	
i	43-44 or 24-25	Output	Auto / Manu information Contact closed when Automatic mode is active	
j	53-54 or 26-27	Output	Padlocking information Contact closed when the switch is padlocked	

Contact **f**, **g** and **h** are closed when the switch is in position 1, 2 or 0.
Contact **i** is closed when the switch is in Automatic mode.
Contact **j** is closed when the switch is padlocked.

ENCLOSURES INSTALLATION (continued)

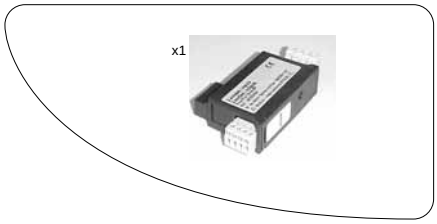
Option 7

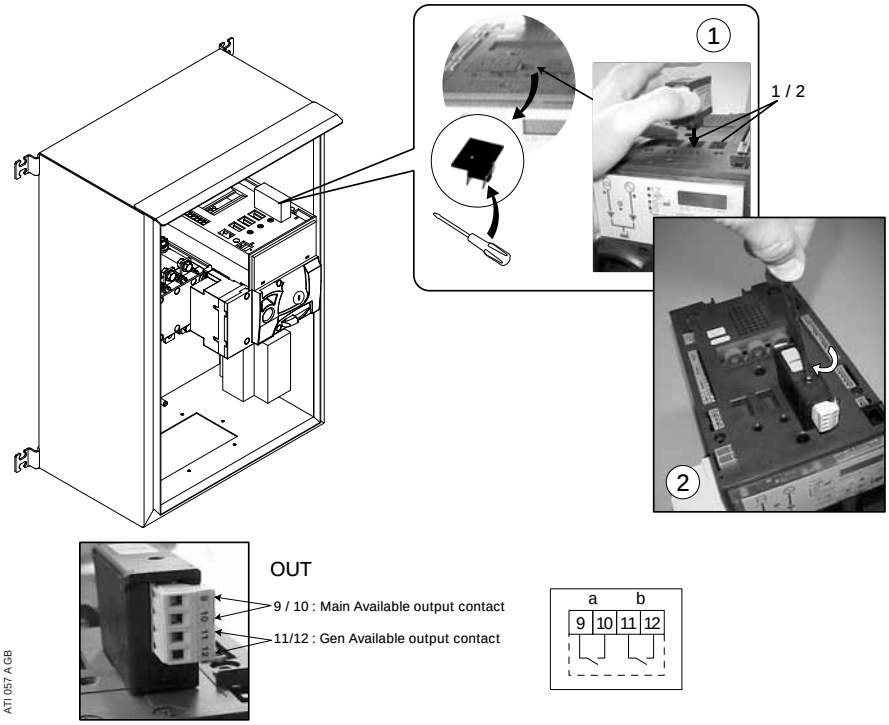
2 IN / 2 OUT option

Main available / Gen available output contacts.

The contact closes as soon as the source is available.

⚠ A 3 minutes power off action is required before startup to allow option recognition.

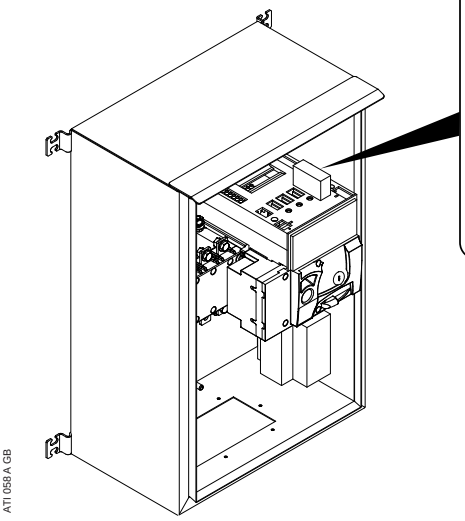




Identification	Terminals	Type	Feature	Rating
a	9-10	Output	Main available information	230 Vac - 5 A - 1150 VA Max operations ≤ 10^5 - Galvanic insulation 2,5 kV (1 min 50 Hz)
b	11-12	Output	Gen available information	

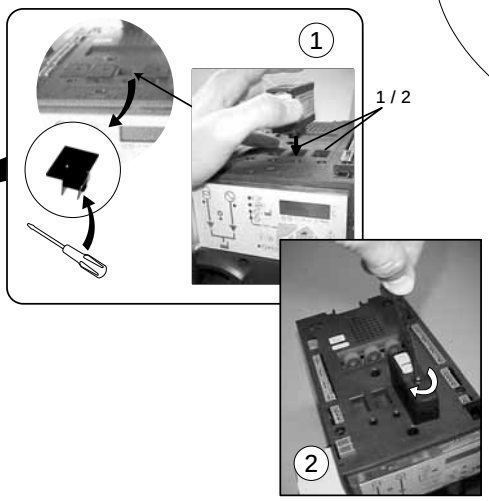
ENCLOSURES INSTALLATION (continued)

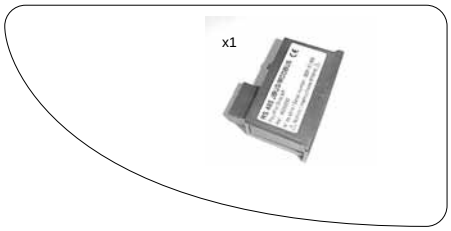
⚠ A 3 minutes power off action is required before startup to allow option recognition.



Option 8

Communication module
Read paragraph communication for instructions.
Installation of this module allows RS485 connection. Protocoles avaible are JBUS / MODBUS®.





RS485	2 or 3 wires half duplex
Protocol	JBUS / MODBUS® protocol / RTU mode
Speed	2400, 4800, 9600, 14400, 19200, 28800, 38400 Bauds
Galvanic insulation	4 kV (1 min 50 Hz)

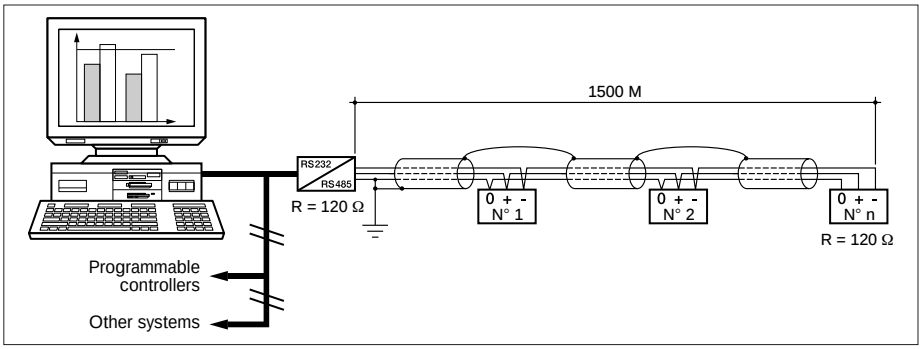
GENERAL POINTS

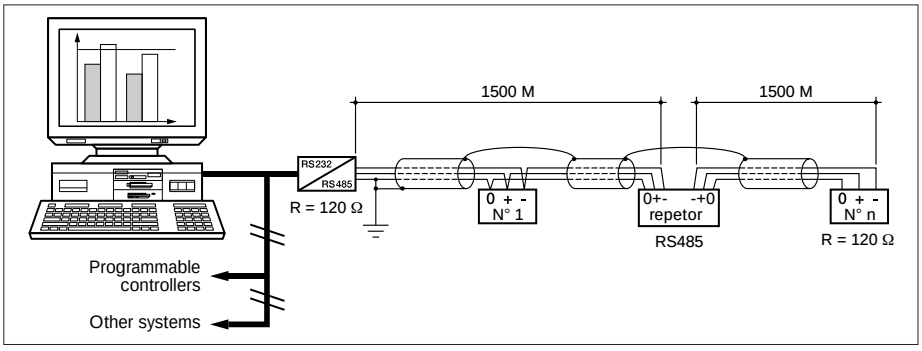
For standard configurations, an RS 485 link is used to connect up to 31 ATI with a PC or a PLC over a distance of 1500 metres, using JBUS / MODBUS© protocol.

Recommendations:
You should use a shielded twisted pair (LIYCY type). In a disturbed environment or large network (in terms of length) we recommend the use of 2 shielded pairs (type LIYCY-CY). In this case, one pair is used for the + and the –, and another pair, where the 2 wires are short-circuited, for the 0 V.
A repeater (1 channel) or an arrestor (4 channels) should be used if you intend to exceed the distance (1500 m) and / or maximum number (31) of ATI. Please contact us for more information.

NB:
A 120 ohm resistance (found on the additional module) must be fixed at both ends of the link.

Other solutions are available (modem, optical fibre, etc.). Please contact us.





VOLTAGE CONFIGURATIONS

VOLTAGE OPTIONS

To meet all voltages required by the market, 2 ATI versions have been developed:

Standard 230 Vac +/- 20 %

50 Hz 3 phase 4 wires - 3P4L Star connections		60 Hz 3 phase 4 wires – 3P4L Star connections	
FG Wilson option code	Voltage	FG Wilson option code	Voltage
V502	415/240V	V603	440/254V (2)
V503	400/230V	V605	380/220V
V504	380/220V	V608	220/127V
V507	220/127V	V610	208/120V (3)
V510	200/115V (1)	V611	240/139V

(1): +20%/-12%
(2): +13%/-20%
(3): +20%/-15%

50 Hz 3 phase 3 (4) wires - 3P3(4)L Delta connections		60 Hz 3 phase 3 (4) wires – 3P3(4)L Delta connections	
V506	230/115V	V606	240/120V
V508	220/110V	V607	230/115V
		V609	220/110V

50 Hz single phase 3 wire – 1P3L		60 Hz single phase 3 wire – 1P3L	
V522	240/120V	V622	240/120V
V524	230/115V	V624	230/115V
V526	220/110V	V626	220/110V

50 Hz single phase 2 wire – 1P2L		60 Hz single phase 2 wire – 1P2L	
V521	240V	V621	240V
V523	230V	V623	230V
V525	220V	V625	220V

Optional 277 Vac (+/-20 % for rating below 630 A, +20/-15 % for rating 800 A and above)

50 Hz 3 phase 4 wires - 3P4L Star connections		60 Hz 3 phase 4 wires – 3P4L Star connections	
FG Wilson option code	Voltage	FG Wilson option code	Voltage
		V601	480/277V

CABLE CONNECTIONS BETWEEN SWITCH AND ELECTRONIC MODULE

A voltage sensing kit is used to provide sensing and power connections from the switch terminals to the electronic module terminals.
The ATI enclosures are delivered as standard for 3 phases 4 wires applications, 400/230 Vac nominal voltage.
In some 3 phase 4 wires, all 3 phases 3 wires, or single phase 2 or 3 wires applications, sensing connections keep the same, but power connections must be modified according to guidelines included before connection diagrams.

In standard ATI (bottom entry) generator cable is red and main cable is black. In top entry ATI main cable is red and generator cable is black.

VOLTAGE CONFIGURATIONS (continued)

⚠ Verify voltage between 101/102 & 201/202 = 220/240 Vac±20 %

ELECTRONIC MODULE CONNECTIONS

The Voltage sensing kit provides power and sensing to the electronic module from the generator and the main side.

Main sensing is 3 phases sensing:
- 103: Neutral
- 104: Phase 3
- 105: Phase 2
- 106: Phase 1

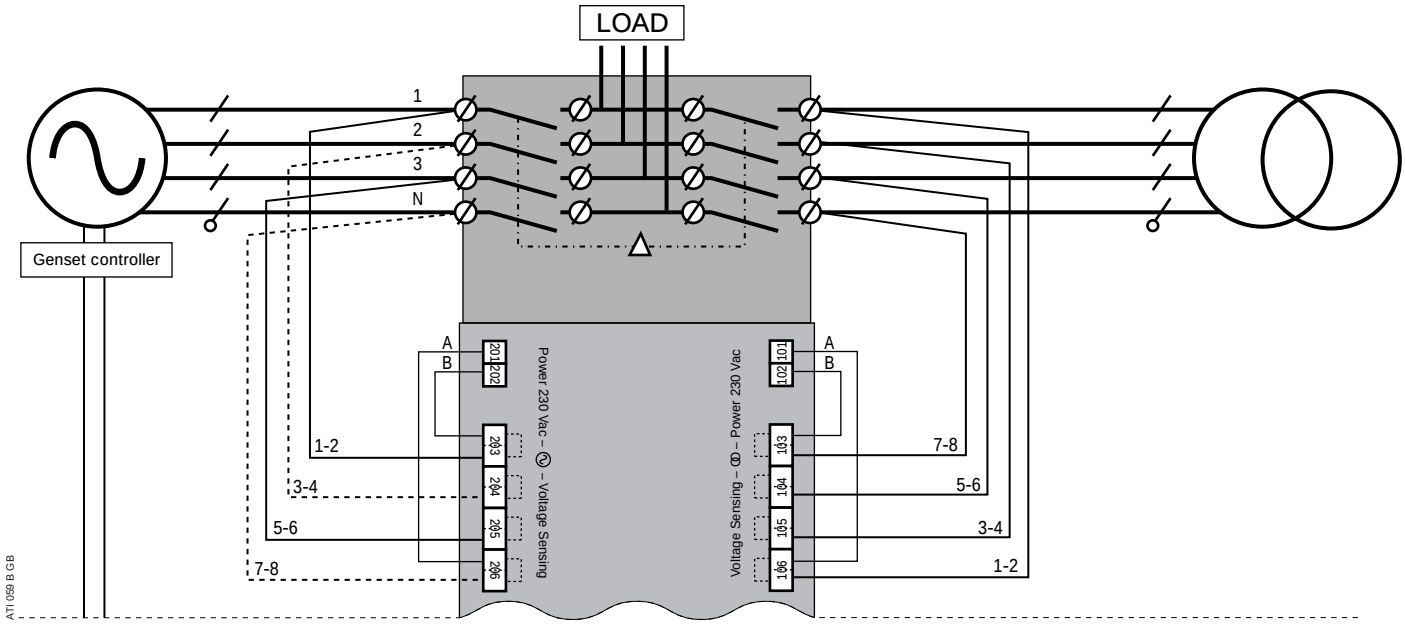
Gen sensing is single phase sensing:
- 203: Phase 1
- 205: Phase 3

3 Phases 4 Wires connections - 3P4L

A. No wiring change required from standard delivery

Configurations:

V502 415/240 Vac 50 Hz
V503 400/230 Vac 50 Hz
V504 380/220 Vac 50 Hz
V603 440/254 Vac 60 Hz
V605 380/220 Vac 60 Hz
V601 480/277 Vac 60 Hz - Special Voltage Option 5 = 277 Vac



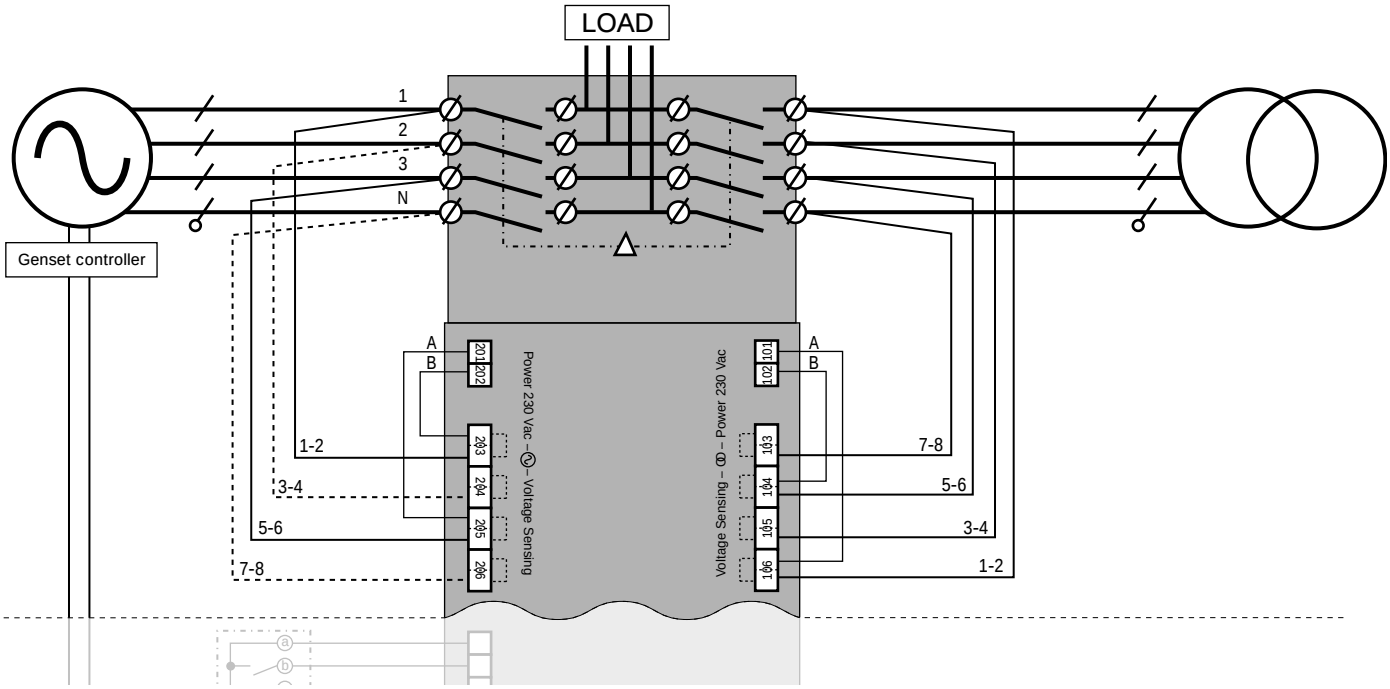
VOLTAGE CONFIGURATIONS (continued)

3 Phases 4 Wires connections - 3P4L

B. Wiring change required from standard delivery: A & B power wires from terminals 206 & 103 must be connected to terminals 205 & 104 to provide 220/230 Vac or 240 Vac to the power inputs 101/102 and 201/202.

Configurations:

V507	220/127 Vac 50 Hz
V510	200/115 Vac 50 Hz
V608	220/127 Vac 60 Hz
V610	208/120 Vac 60 Hz
V611	240/139 Vac 60 Hz

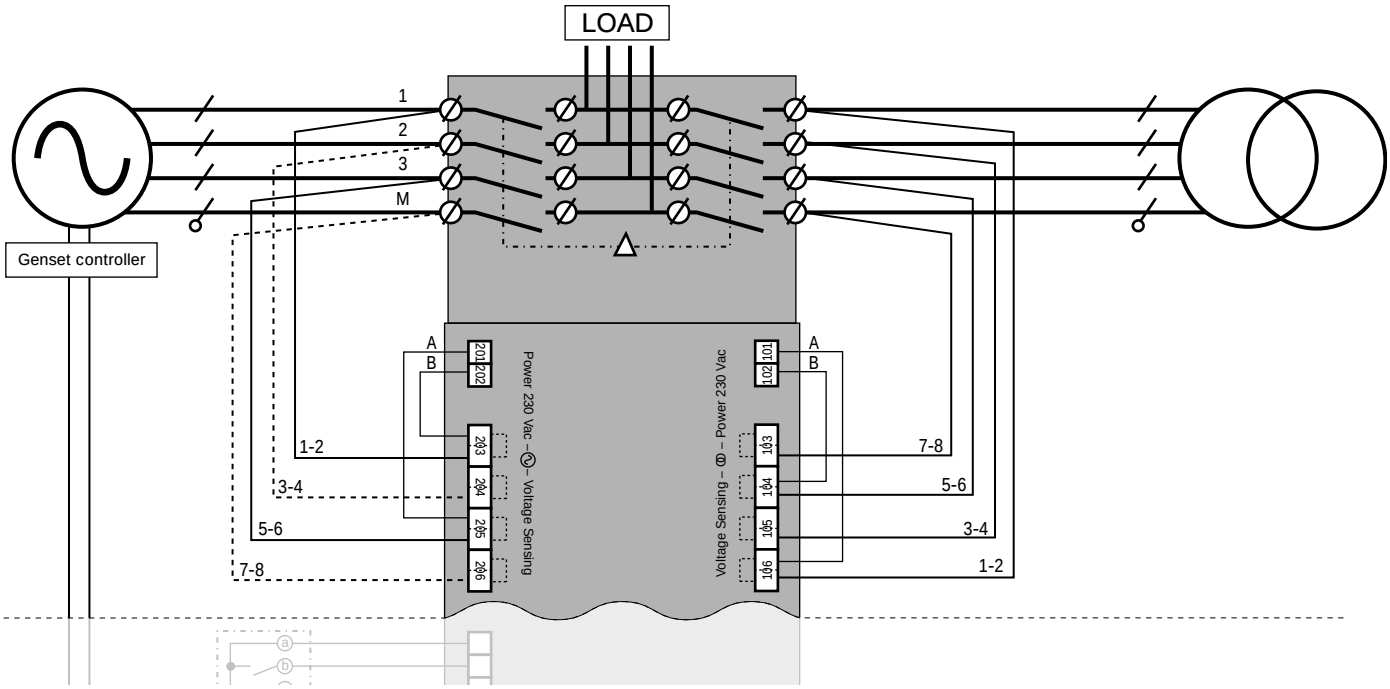


3 Phases 3 (4) Wires connections - 3P3(4)L

Wiring change required from standard delivery: A & B power wires from terminals 206 & 103 must be connected to terminals 205 & 104 to provide 220/230 Vac or 240 Vac to the power inputs 101/102 and 201/202.

Configurations:

V506	230/115 Vac 50 Hz
V508	220/110 Vac 50 Hz
V606	240/120 Vac 60 Hz
V607	230/115 Vac 60 Hz
V609	220/110 Vac 60 Hz

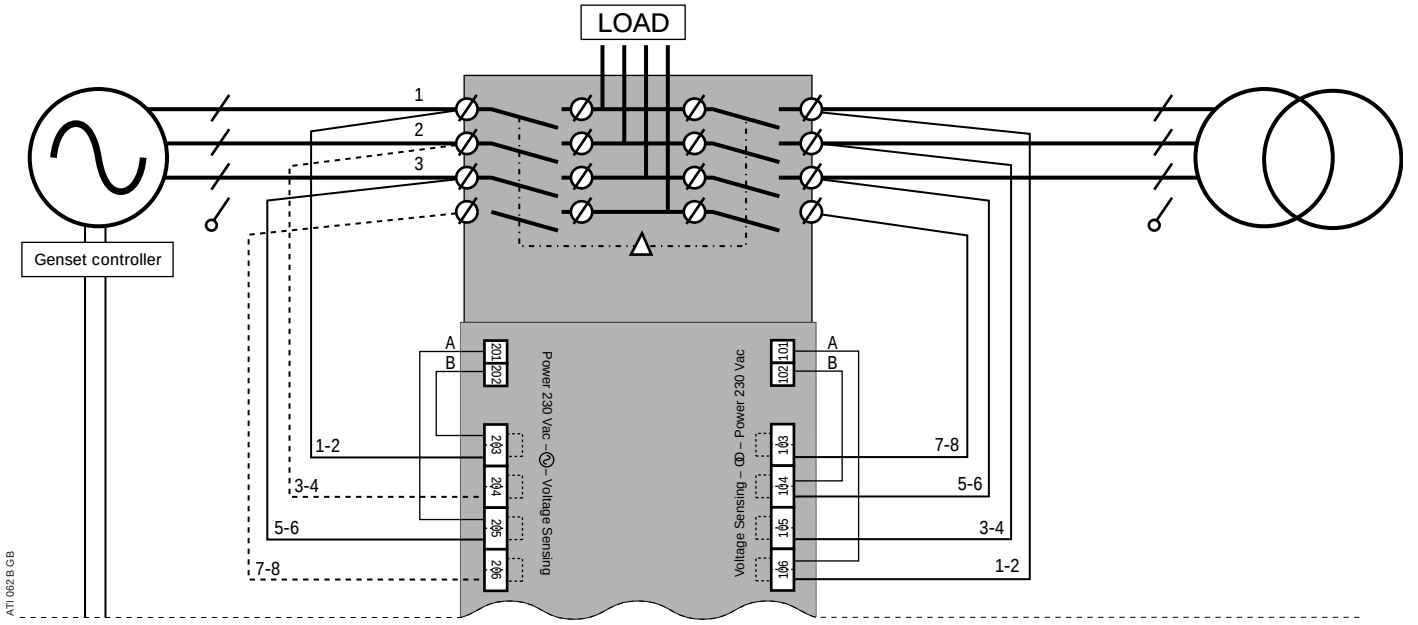


VOLTAGE CONFIGURATIONS (continued)

1 Phase 3 Wires connections - 1P3L

Wiring change required from standard delivery: A & B power wires from terminals 206 & 103 must be connected to terminals 205 & 104 to provide 220 / 230 Vac or 240 Vac to the power inputs 101 / 102 and 201 / 202.

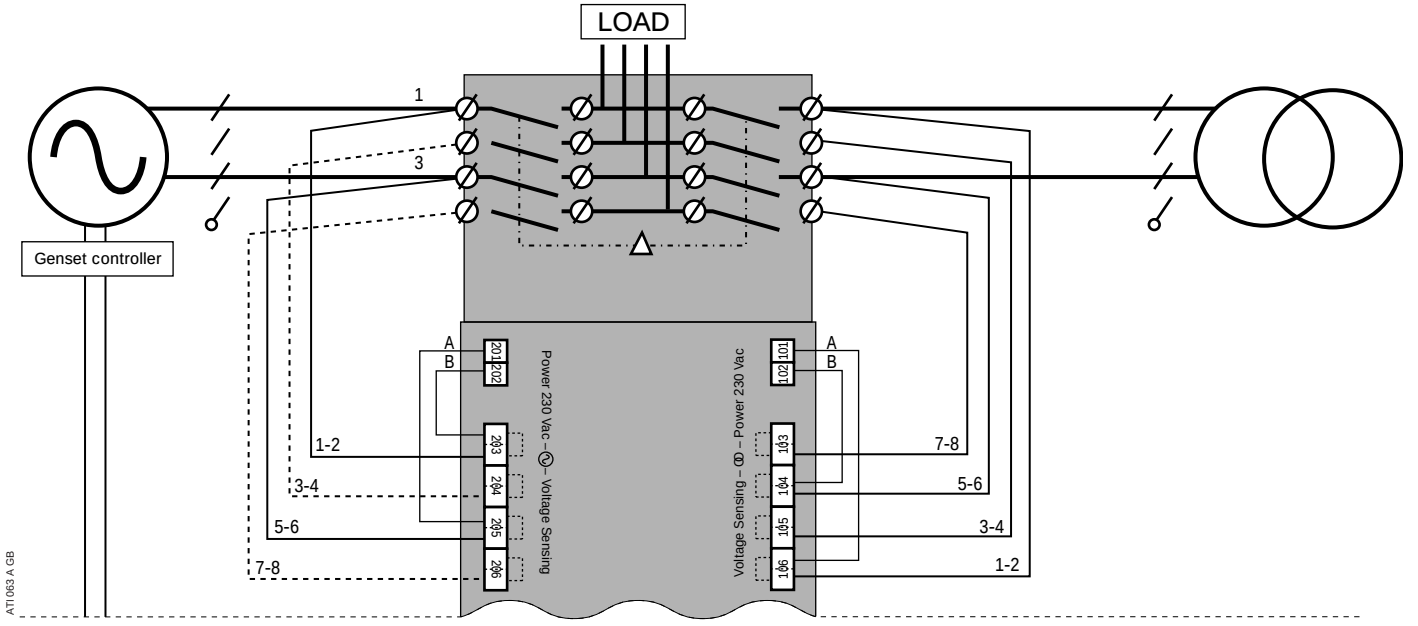
Configurations:	
V522	240 / 120 Vac 50 Hz
V524	230 / 115 Vac 50 Hz
V526	220 / 110 Vac 50 Hz
V622	240 / 120 Vac 60 Hz
V624	230 / 115 Vac 60 Hz
V626	220 / 110 Vac 60 Hz



1 Phase 2 Wires connections - 1P2L

Wiring change required from standard delivery: A & B power wires from terminals 206 & 103 must be connected to terminals 205 & 104 to provide 220 / 230 Vac or 240 Vac to the power inputs 101 / 102 and 201 / 202.

V521	240 Vac 50 Hz
V523	230 Vac 50 Hz
V525	220 Vac 50 Hz
V621	240 Vac 60 Hz
V623	230 Vac 60 Hz
V625	220 Vac 60 Hz

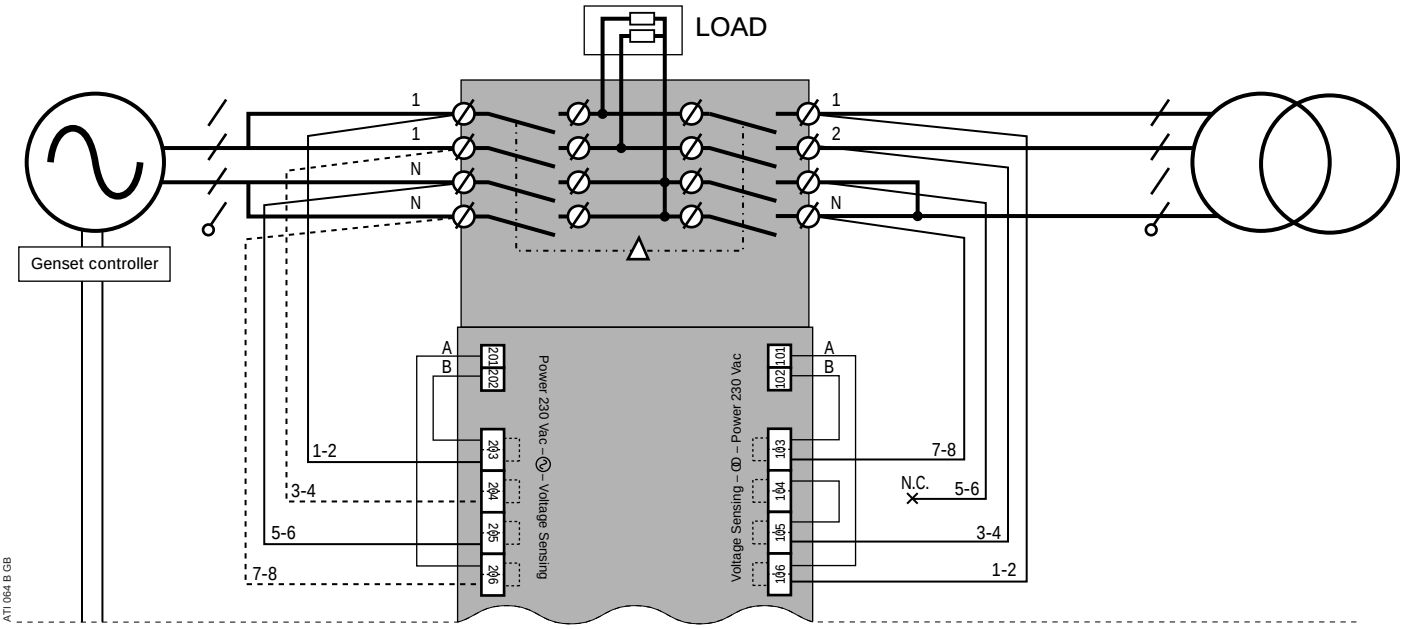


VOLTAGE CONFIGURATIONS (continued)

1PAP

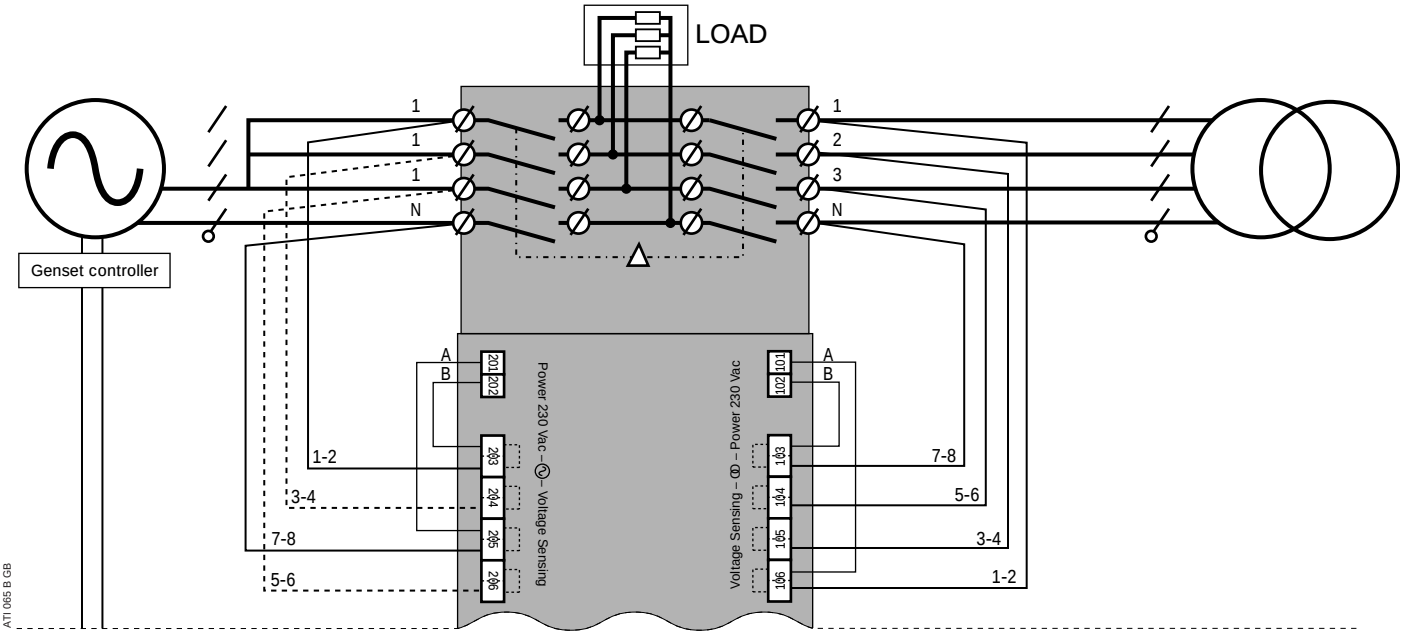
- Split phase network / single phase generator.

This configuration must be used on applications using single phase generators to supply 2 phases networks feeding single phase loads.

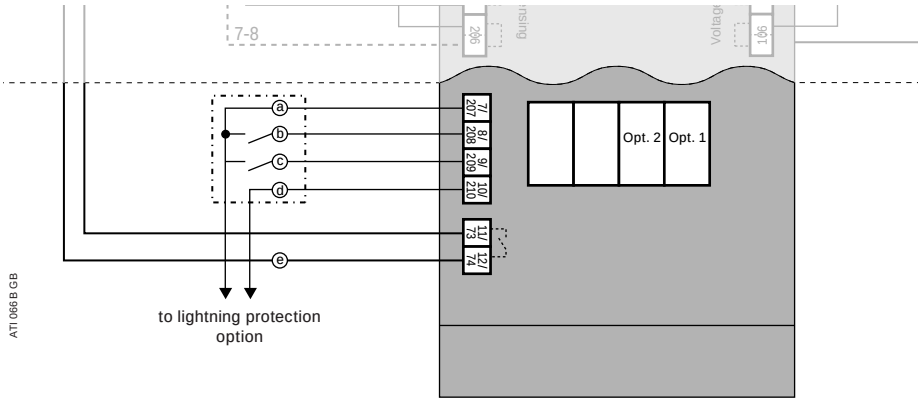


- Three phase network / single phase generator.

This configuration must be used on applications using single phase generators to supply 3 phases networks feeding single phase loads.
Wiring change required. Change 5-6 and 7-8 on 205 & 206.

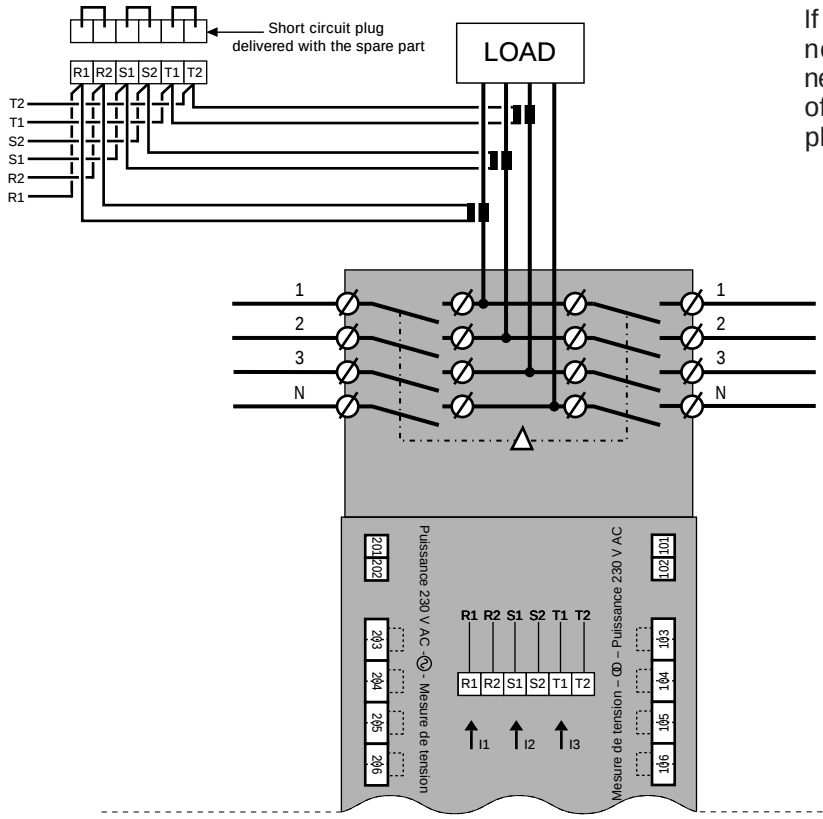


INPUTS AND OUTPUT CONTACTS



Identification	Terminals	Type	Feature	Rating
a	207 or 7		Inputs Common terminal	- Max direct voltage 30 Vdc - Min direct voltage 10 Vdc - Max inverse voltage 30 Vdc - Galvanic insulation 3 kV (1 min 50 Hz) - Min pulse duration 1 s - Max number of operations 10^6
b	207-208 or 7-8	Input	AT Timer inhibit input Dry contact to close between terminals 7-8 to inhibit AT timer	
c	207-209 or 7-9	Input	Remote test on load input Dry contact to close between terminals 7-9 to start remotely a test on load (only available in automatic mode)	
d	210 or 10 (+) 207 or 7 (-)	Power supply	Power supply dedicated to lightning option 5 Vdc < V_{7-10} < 16 Vdc without load 9 Vdc < V_{7-10} < 10 Vdc for 1 to 2 inputs	
e	73-74 or 11-12	Output	Start Gen signal 30 V DC – 1 A	

CURRENT INPUTS (for METERING)



If the load is supplied, before disconnecting the main connector, it is necessary to short-circuit the secondary of the current transformer (short-circuit plug to be mounted).

BASIC PRODUCT USE

⚠ Verify power applied on the electronic module power inputs terminals 101-102 or 201-202 before powering up the unit.

GENERAL INTRODUCTION

The product provides sources availability monitoring, Automatic / Manual Retransfer, Manual / Automatic or Test operation monitoring, voltage and frequency metering, and good operation or error information.

The product requires at least one type of network configuration and a network nominal voltage configuration to be input via the keypad by the user.
Other default values can be kept or modified according to hereafter programming guidelines.

ATI 067 A

ELECTRONIC MODULE USAGE

Front Panel Introduction

The electronic module is directly mounted on the motorized block.

It integrates the following features:
- Voltage and frequency metering
- Automatic transfer controls

Following diagram introduces product front panel.

Led indication is only active once the product is powered (power led activated).

LCD
- 7 digits to display information
- 14 pointers to inform about displayed information unit or source:
  - Ⓜ: Mains information
  - ∿: Generator information
  - **L1, L2, L3 :** Information regarding Phase 1,2 or 3
  - ☒: Timer active
  - **PROG:** Programming active
  - **Com:** communication active
  - **V:** Volt
  - **Hz:** Hertz
  - **%:** percentage
  - **sec:** second
  - **min:** minute
  - **n°:** number of commutations

Keypad

Error Led
- **1 red led** to indicate a fault
  - **Led is on** = switch error
  Action from software not confirmed by an auxiliary contact. Reset after power off
  - **Led blinks** in case of lightning protection operation
  No reset required (blinking disappears once input is low)

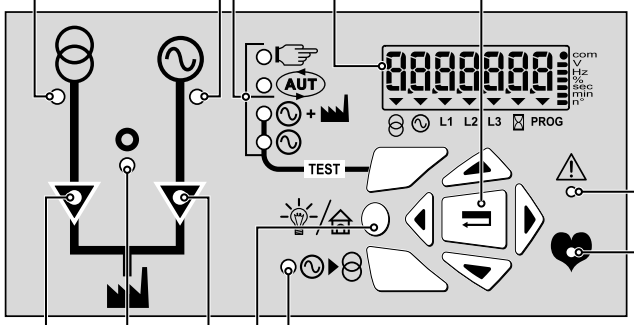
Modes annunciation and Tests
- **1 Top yellow led** for **Manual Mode** position linked to the key position
- **1 green led** for **Automatic Mode** position linked to the key position
- **2 Bottom yellows leds** for **Test On** and **Off Load** position Linked to the **test pushbutton** press

Symbols are represented to make comprehension easier

Source availability
- **2 green Leds** to indicate if Gen and Mains sources are available (voltage and frequency measurement)
- **Led is on** = source available
- **Led is off** = source missing

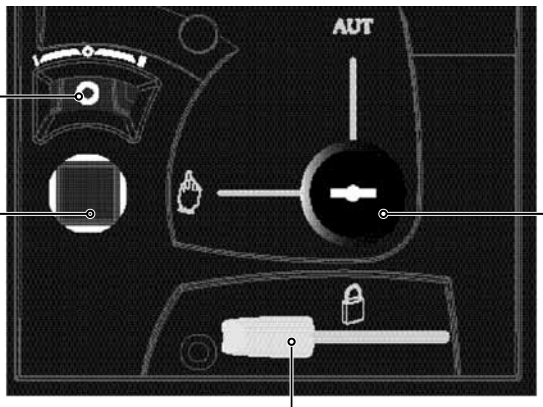
Power Led
- **1 green led**
  - **Blinks** slowly as soon as the product is powered and software runs correctly
  - **Always on** = Power OK and software error
  - **Always off** = Power off or software error if another led is on and LCD is OK

Switch state
- **2 green Leds** to indicate if the switch is opened or closed
  - **Led is on** = switch is closed
  - **Led is off** = switch is opened
- **1 Yellow led** to indicate if both switches are in 0 position
  - **Led is on** = both switches opened
  - **Led is off** = Gen or Mains switch closed



Retransfer Inhibit
- **1 yellow Led**, linked to retransfer inhibit pushbutton
  - **Led is on** = retransfer inhibit feature is active
  - **Led is off** = retransfer inhibit inactive
  - **Led is blinking** = retransfer is blocked, waiting for a push on the retransfer inhibit pushbutton to allow retransfer

Push button
- ⌂ : Home push button during programming
- 💡 : Lamps test button



Switch Position Indications
- 0, 1 or 2 position display

Keyswitch
- **Insert key** to allow switch operational mode modification
- **Turn right** to access automatic mode
- **Turn left** to access manual mode

Manual Operation
- Insert handle to manually operate the switch.
- Manual operation only possible in Manual mode (keyswitch), when not padlocked

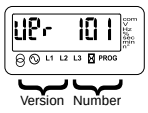
Padlock
- Pull the yellow handle to allow padlock insertion
- Padlocking possible in position 0,1 or 2 but only in Manual mode (keyswitch position), handle out of housing.

ATI 068 A

BASIC PRODUCT USE (continued)

Software version

Software version is displayed on the unit after reset (powering up action after 3 minutes power off to discharge the unit).



ATI 068 A GB

⚠ Before first product use, access programming mode and verify product programming parameters.

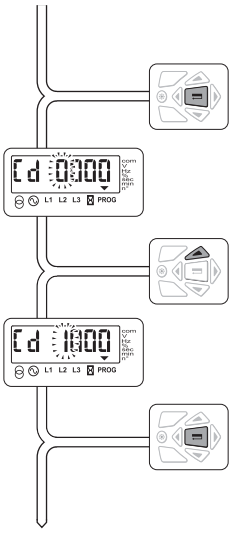
Product Programming

Product Programming is possible in Automatic Mode in position 1 when the Mains Source is available, or in Manual mode.

It is not accessible when a test or an automatic sequence is activated.

PROGRAMMING ACCESS

Programming mode is accessible by pressing and holding the validation push-button for 5 seconds and then entering the code 1000:



Press for 5 seconds

Press once to display 1

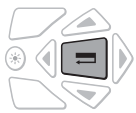
Validate

ATI 070 A

Access to programming Menus

PROGRAMMING EXIT

To exit the Programming and come back to visualisation mode, hold the validation pushbutton for 5 seconds.
Parameters saved permanently once exit.



BASIC PRODUCT USE (continued)

⚠ Default values are loaded as standard.

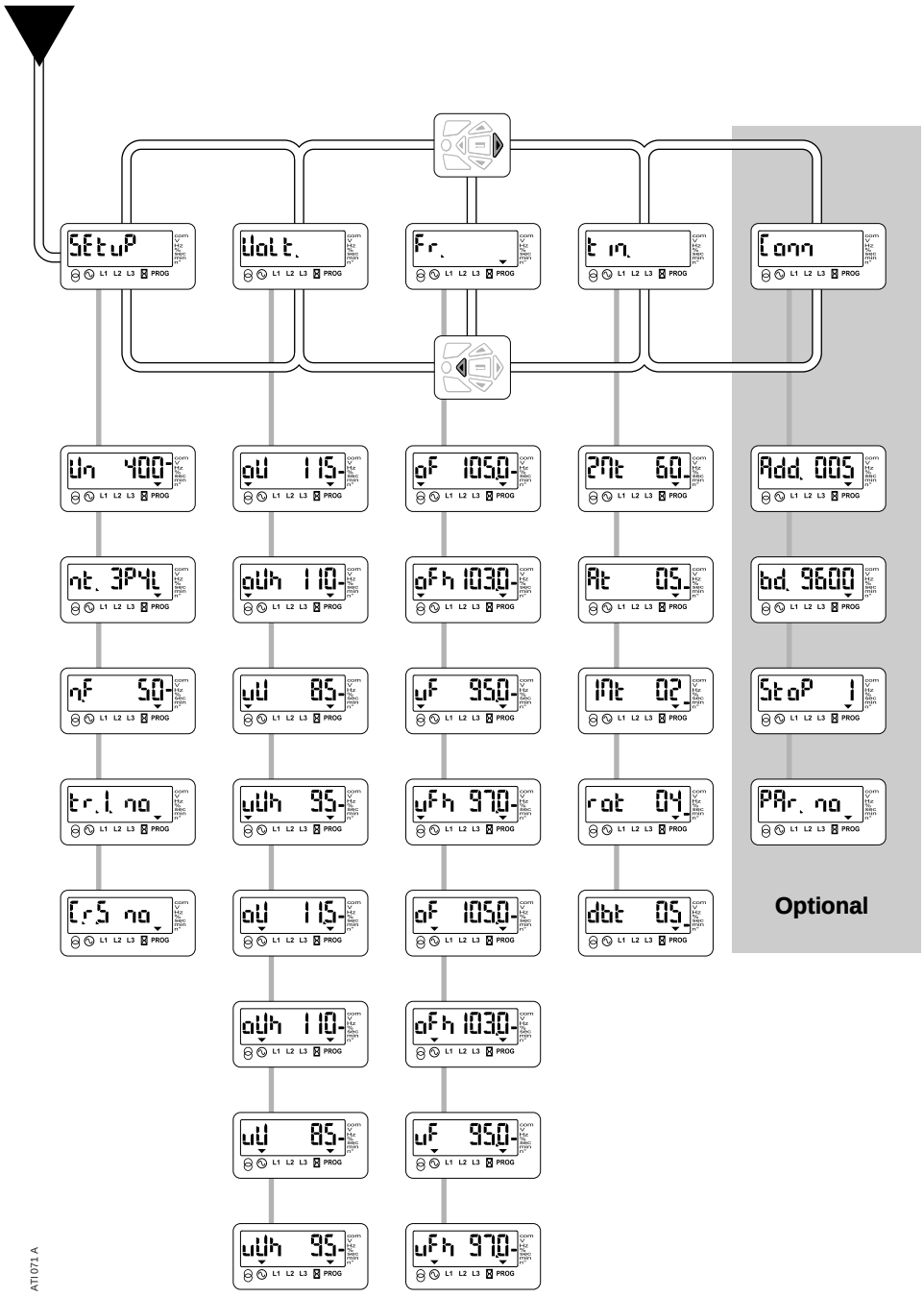
PROGRAMMING MENUS

Architecture and navigation

The programming mode integrates 5 Menus

Setup: Network parameters
Volt: Voltage detection levels
Fr: Frequency detection levels
tim: Automatic timer settings
Comm: Communication parameters (Optional), communication module must be plugged.

Setup parameters must always be verified / modified in accordance to the application.



The first menu to access is the Setup menu

BASIC PRODUCT USE (continued)

SETUP MENU

Parameter Display

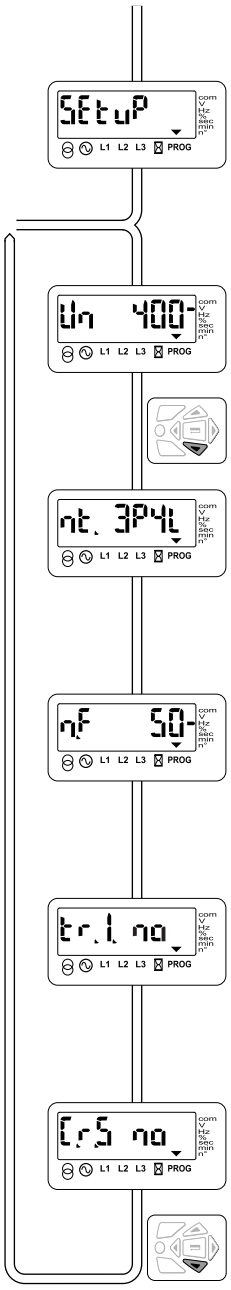
The setup menu integrates 5 parameters described in the table hereunder.

The table explains parameters' definition, settings possibilities, and default values.

Press  Down push button to access parameter required.

Press  Up push button to come back to previous value, or press

or  Home push button to come back to  .



Definition	Setting range	Default value
Un: Phase-Phase nominal voltage.	From 200 to 480 V	400 V AC
nt: Network configuration. Type of metering (1P or 3P phases). Number of active wires (2L, 3L or 4L) definition.	1P2L, 1P3L, 3P4L 3P3L, 1PAP	3P4L
Fn: Nominal frequency.	50 or 60 Hz	50 Hz
trl: Retransfer inhibit feature: press on RTI button required to allow retransfer from gen to main.	Yes or No	No
Crs: Reset number of commutation counter (from Main to Gen). Displays no once reset.	Yes or No	No

AT1073 A

ENGLISH

BASIC PRODUCT USE (continued)

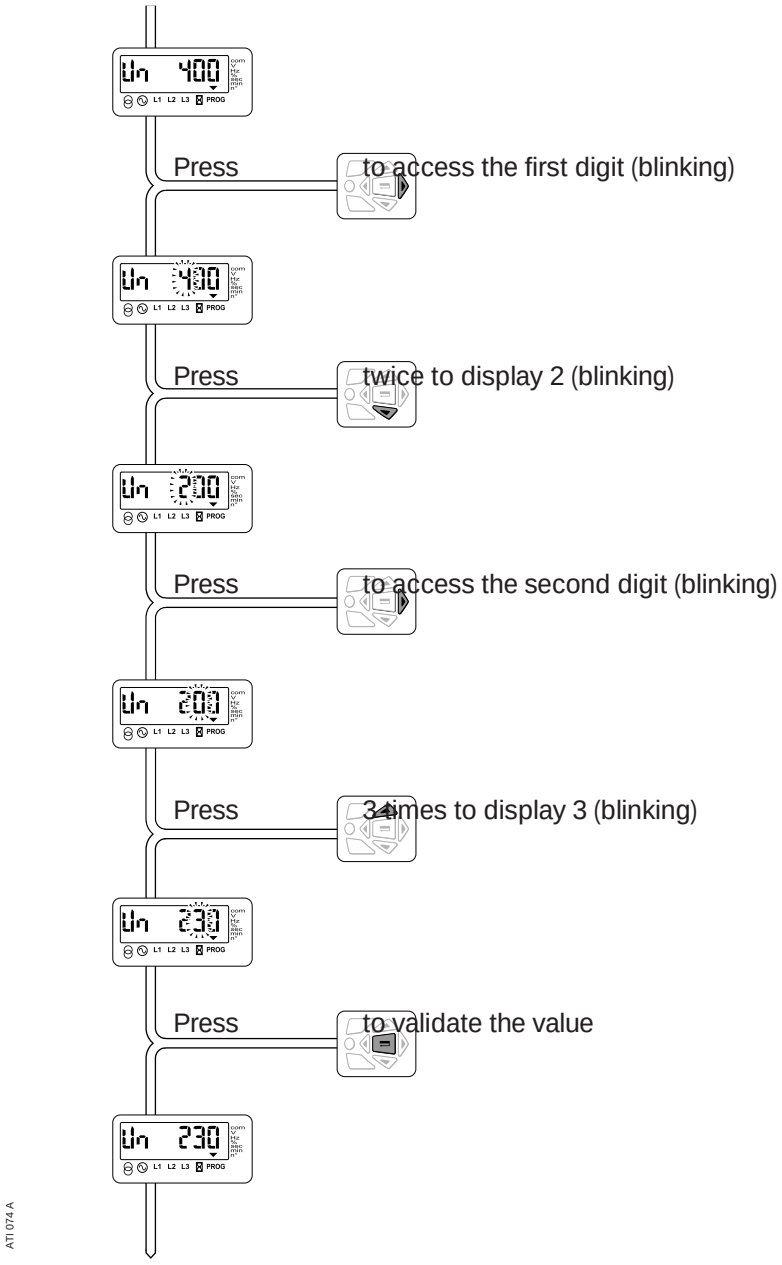
Parameter modification

Display the required parameter for modification.

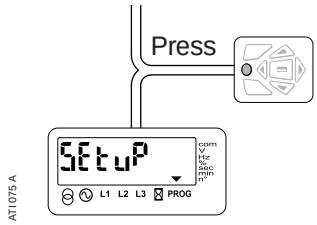
Apply the same procedure described hereunder for network voltage modification, to all other parameters. Possible settings are described in the previous table.

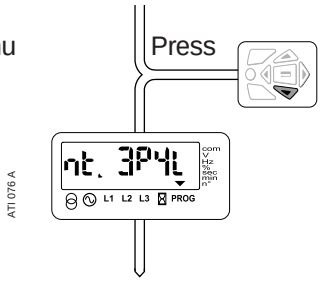
Example:

We want to modify network voltage from 400 V to 230 V.



To return to Setup menu press home pushbutton or press down to continue.





BASIC PRODUCT USE (continued)

VOLTAGE MENU

To reach voltage menu from Setup menu press once .

Parameter Display

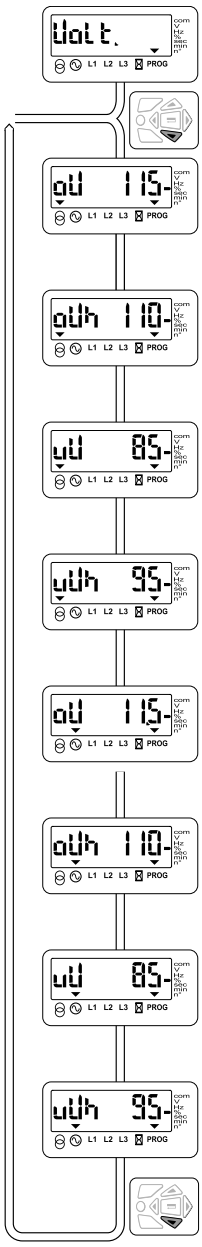
The voltage menu integrates 8 parameters described in the table hereunder.
The table explains parameters' definition, settings possibilities, and default values.
Over and Under voltage conditions are verified on Mains and Generator side to allow operation as per the flow chart.
Mains sensing is 3 phase and Generator sensing single phase.
Over and under voltage detection levels + hysteresis are defined as percentage of nominal voltage.
Hysteresis levels allow under and over voltage conditions reset (voltage needs to pass hysteresis level to reset).

Press Down push button to access parameter required.

Press Up push button to come back to previous value

or Home push button to come back to .

Note:
These values only need to be changed if a value is required other than the default.



AT1077 A

Definition	Setting range	Default value
oU: Main Over voltage detection	102 - 120 %	115 %
oUh: Main Over voltage hysteresis detection	101 - 119 %	110 %
uU: Main Under voltage detection	80 - 98 %	85 %
uUh: Main Under voltage hysteresis detection	81 - 99 %	95 %
oU: Generator over voltage detection	102 - 120 %	115 %
oUh: Generator over voltage hysteresis detection	101 - 119 %	110 %
uU: Generator under voltage detection	80 - 98 %	85 %
uUh: Generator under voltage hysteresis detection	81 - 99 %	95 %

BASIC PRODUCT USE (continued)

Parameter modification

Display the required parameter for modification.
Apply the same procedure as described in Setup Menu for network voltage modification. Possible settings are described in the previous table.

FREQUENCY MENU

To reach frequency menu from voltage menu press once  .

Parameter Display

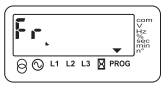
The frequency menu integrates 8 parameters described in the table hereunder.

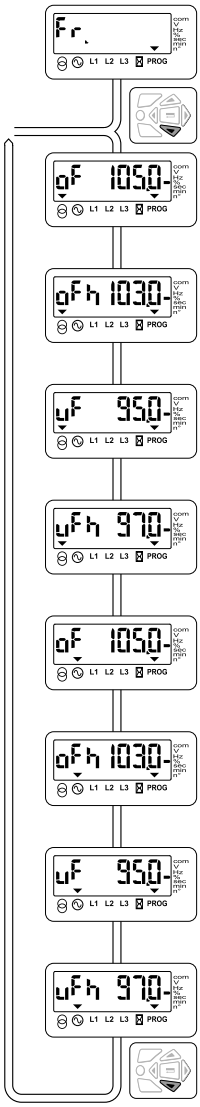
The table explains parameters' definition, settings possibilities, and default values.
Over and Under frequency conditions are verified on Mains and Generator side to allow operation following operational flow chart.

Over and under frequency detection levels + hysterisis are defined as percentage of nominal frequency.
Hysteresis levels allow under and over frequency conditions reset (frequency needs to pass hysteresis level to reset).

Press  Down push button to access parameter required.

Press  Up push button to come back to previous value

or  Home push button to come back to  .



Definition	Setting range	Default value
oF: Main over frequency detection	101 - 120 %	105 %
oFh: Main over frequency hysteresis	100.5 - 119.5 %	103 %
uF: Main under frequency	80 - 99 %	95 %
uFh: Main Under frequency hysteresis	80.5 - 99.5 %	97 %
oF: Generetor over frequency	101 - 120 %	105 %
oFh: Generator over frequency hysteresis	100.5 - 119.5 %	103 %
uF: Generator under frequency	80.5 - 99.5 %	95 %
uFh: Generator under frequency hysteresis	80 - 99 %	97 %

ATI 078 A

BASIC PRODUCT USE (continued)

Parameter modification

Display the required parameter for modification.
Apply the same procedure as described in the Setup Menu for network voltage modification. Possible settings are described in the previous table.

TIMERS MENU

To reach timer menu from frequency menu press once **.**

Parameter Display

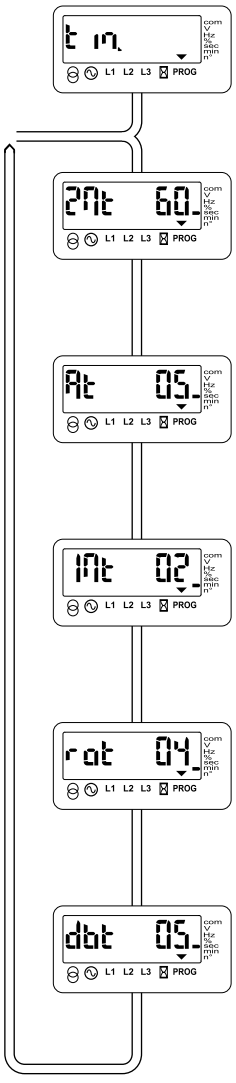
The timers menu integrates 5 parameters described in the table below.

The table explains parameters' definition, settings possibilities, and default values. Timers operation is described in operational flow chart page.

Press Down push button to access parameter required.

Press Up push button to come back to previous value

or Home push button to come back to .



ATI 079 A

Definition		Setting range	Default value
2Mt:	loss of mains validation timer. Once mains has disappeared, 2Mt is started. If Mains comes back before 2Mt ends, the commutation cycle is not started. (Delay on Gen start.)	0 to 60 sec.	5 sec.
At:	Generator voltage and frequency stabilisation timer. Generator needs to be stable during AT to allow transfer from Mains.	0 to 60 sec.	5 sec.
1Mt:	Mains Return validation timer. Once main is back 1Mt is started. If Mains disappears before 1Mt ends, the load is not switched back to the Mains.	0 to 30 min.	2 min.
rot:	Run on time timer. Once the load is switched back from the Generator to the Mains, ROT is started and the Generator will stop once ROT is finished (allows generator cool down).	0 to 10 min.	4 min.
dbt:	Dead Band timer. This timer is counted down before transferring the load from the Mains source to the Generator or vice versa. It allows the load residual voltage to decrease under a non critical value before transfer (Necessary in case of rotating loads).	0 to 20 sec.	5 sec.

BASIC PRODUCT USE (continued)

⚠ This menu is only accessible when the option has been purchased and is present in the optional slots. Once plugged into the electronic module, a 3 minutes power off action is required for option identification by software.

Parameter modification

Display the required parameter for modification.
Apply the same procedure as described in the Setup Menu for network voltage modification. Possible settings are described in the previous table.

COMMUNICATION MENU (OPTIONAL)

To reach timer menu from frequency menu press once  .

Parameter Display

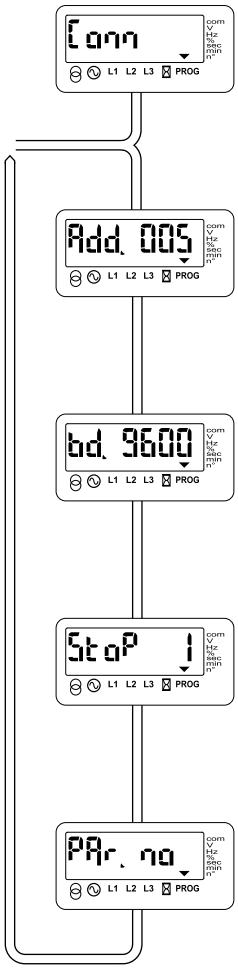
The COMM menu integrates 4 parameters described in the table hereunder.
The table explains parameters' definition, settings possibilities, and default values.

Communication operation is described in paragraph 5.

Press  Down push button to access parameter required.

Press  Up push button to come back to previous value

or  Home push button to come back to  .



Definition	Setting range	Default value
Slave Jbus / Modbus adress	001 to 247	005
Communication Speed (baud)	2400,4800,9600, 14400,19200, 28800, 38400	9600
Stop Bit	0,1,2	1
Parity	No, Eve (Even), Odd	No

ATI 080 A

BASIC PRODUCT USE (continued)

Product metering

General comments

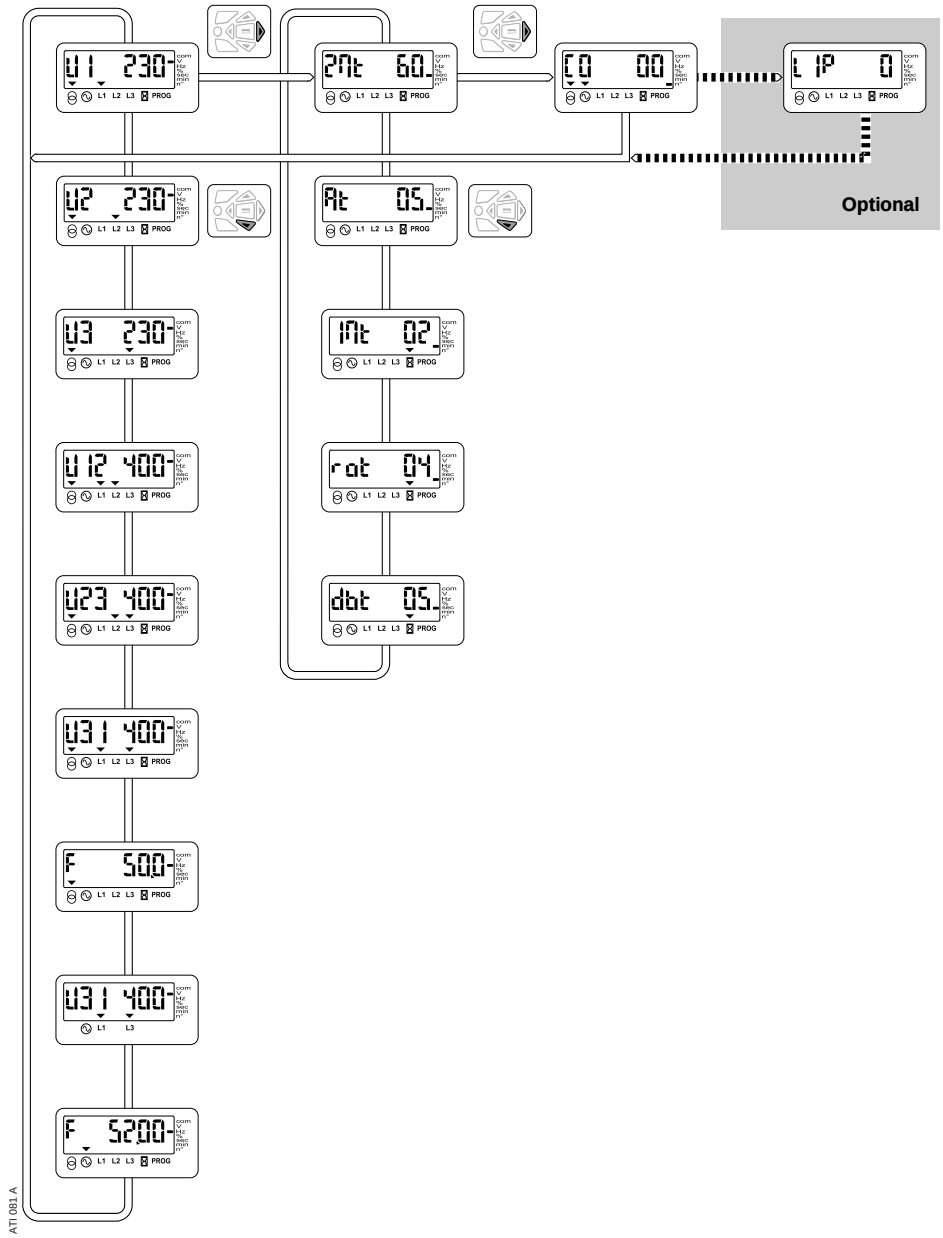
Metering is active as soon as the unit is powered.
Commutation cycles have priority over Visualisation mode and display timers count down as soon as they are active.
Any value available in this mode can be kept on the screen once displayed. excepted during commutation cycle; comes back to timer count down after 5 s.

After commutation cycle, the display comes back to Mains voltage L1N (first variable of the mode).
Visualisation mode architecture is as described hereunder.

General comments

To access requested value press , , , or .

⚠ If lightning protection option is fitted, LIP menu is available. cf option 4.



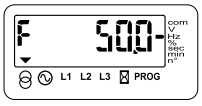
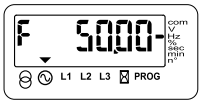
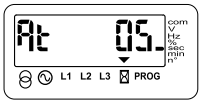
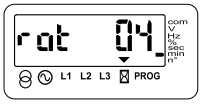
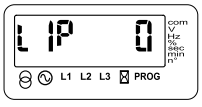
BASIC PRODUCT USE (continued)

All these values are not accessible on all networks :

- **3P4L**
  Main U1, U2, U3
  U12, U23, U31
  Gen U31
- **1P3L**
  Main U12, U23, U31
  Gen U31
- **1P2L**
  Main U31
  Gen U31
- **3P3L**
  Main U12, U23, U31
  Gen U31
- **1PAP**
  Main U1, U2, U3
  Gen U31

Reminder:
Mains sensing is 3 phases.
Generator sensing is single phase.

LIP = option →

Values definition	
	Main Voltage L1-N
	Main Voltage L2-N
	Main Voltage L3-N
	Main Voltage L1-L2
	Main Voltage L2-L3
	Main Voltage L3-L1
	Main frequency
	Generator Voltage L3-L1
	Generator Frequency
	Loss of Mains validation Timer
	Delay on transfer Timer
	Mains return validation timer
	Run on timer (Generator cool down period)
	Dead Band timer
	Main -> Gen commutation Counter
	Lightning protection operation (0 or 1)

BASIC PRODUCT USE (continued)

MANUAL MODE

To access Manual Mode turn the front keyswitch to manual position.

⚠ Do not force the product

Manual operation

Take the handle, attached to the chain, on the right side of the enclosure, to manually operate the switch.
Verify the switch position on the front position label before any manual operation.

- from Position 1 turn clockwise to reach position 0
- from position 0 turn clockwise to reach position 2
- from position 2 turn anti clockwise to reach position 0
- from position 0 turn anti clockwise to reach position 1

⚠ Do not leave the manual handle in automatic mode.

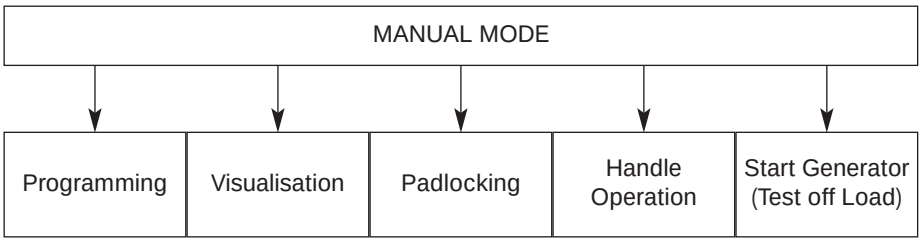
Padlocking

Padlock is only possible in manual position.
- handle must be out of its housing to padlock
- padlock is possible in position 0, 1, 2.

Manually pull the padlock handle to allow padlock insertion in the hole.

Manual mode operation

Once in manual mode it is possible:
- To access programming and visualisation menus
- To padlock the switch
- To operate the switch with the handle
- To start the Gen using test off load pushbutton.



BASIC PRODUCT USE (continued)

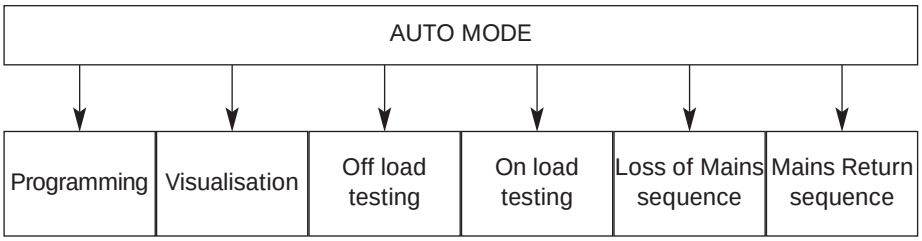
AUTOMATIC MODE

Turn the keyswitch from Manual to Automatic position.
The automatic mode must be activated as soon as automatic starting of the generator and source switching is required after loss of mains condition.

The unit integrates a power capacitor source to provide enough power during black out (loss of mains) to wait for generator starting. (It does not have power to drive the switch to zero position). Further external protection will be required if “phasing” is a concern.

Possible actions

Once in automatic mode it is possible:
- To access programming and visualisation menus
- To start off load or on load testing
- To start a loss of Mains sequence
- To start a Mains return sequence



Manual-automatic mode / power return condition

- As soon as the unit is switched from Manual to Automatic mode, the automatic cycle is started.
- Mains and Generator voltage & frequency are verified to define the new stable position of the switch.
- The same table is considered after a complete power off action (Power Cap must be completely discharged = 3 minutes).

Read timers definition for 1MT or 2MT understanding.

New stable switch position:

Original switch position	Status of supply	New position
Mains	Available, genset available or unavailable	Mains
Mains	Mains unavailable for 2MT time period, genset available or unavailable	Genset. If genset unavailable start genset first and wait for AT timer period before transfer
Genset	Genset on load, mains unavailable	Genset
Genset	Genset on load, mains available for 1MT time period	Mains
Zero	Mains available, genset unavailable	Genset to count down 1MT before transfer to Mains
Zero	Mains available, genset available	Mains
Zero	Mains unavailable, genset available	Genset
Zero	Mains unavailable, genset unavailable	No action (because no supply). When supply becomes available change to mains or genset

The switch immediately transfers as soon as the keyswitch is turned from Manual to Automatic mode or as soon as Power comes back.

BASIC PRODUCT USE (continued)

LOSS OF MAINS AUTOMATIC SEQUENCE

This Sequence is started as soon as the switch is in automatic mode and in position 1.

Position 1:

- Mains is available
- Switch is in position 1 (Mains)
- Generator is on or off

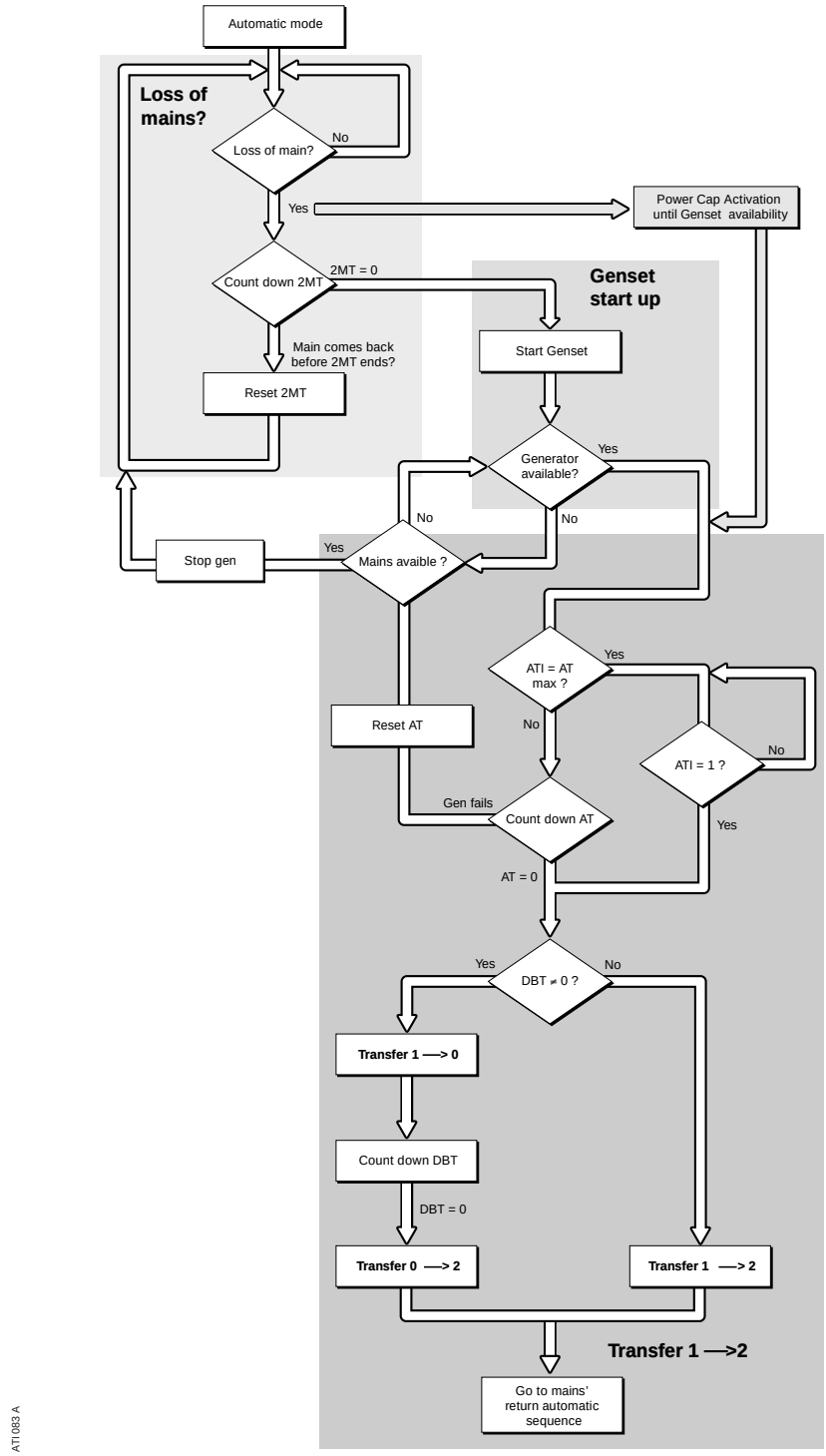
Specific features

Remote AT timer Inhibit

It is possible to bypass the At timer using the ATI input (closing the contact) when At timer setting is at its maximum value = 60s.

- Active when At = At Max = 60 s (cf programming mode).
- When input ATI (terminals 7-8) is high, At is bypassed.

Sequence description



BASIC PRODUCT USE (continued)

MAINS RETURN AUTOMATIC SEQUENCE

This sequence is started as soon as the unit is in automatic mode and in position 2.

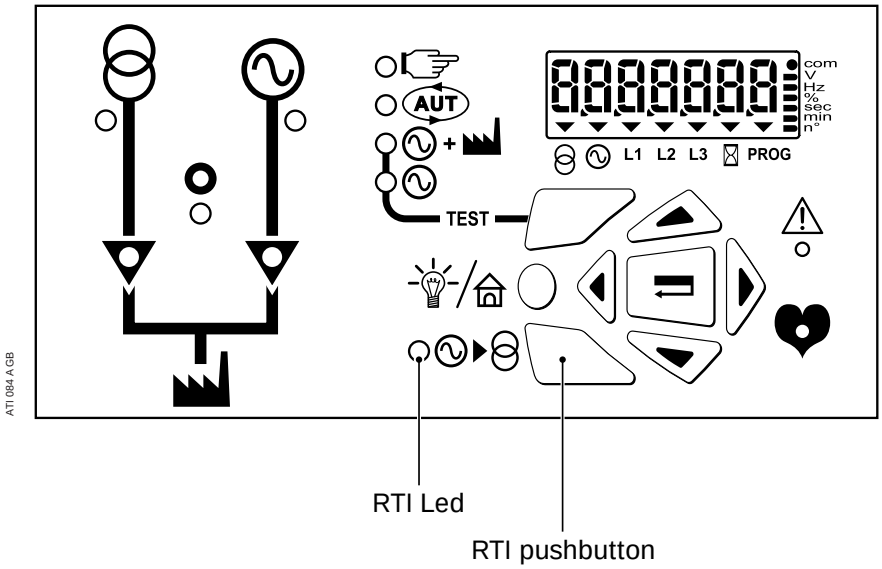
Position 2:

- Mains is not available
- Switch is in position 2 (Generator)
- Generator is off

Specific features

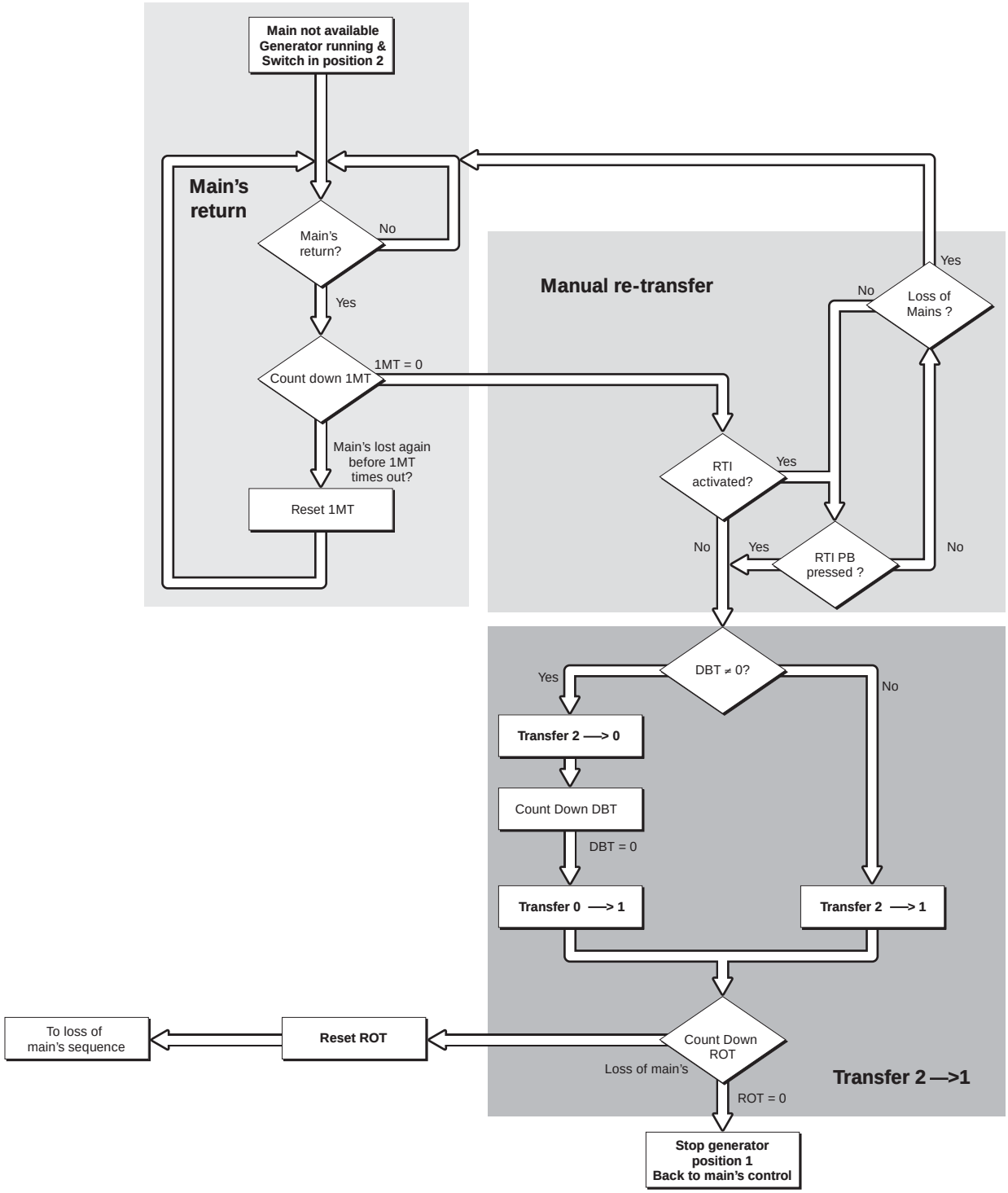
Retransfer Inhibit Feature

- Once the Mains is back, it might be preferable not to immediately transfer the load from the generator to the mains.
- If Retransfer inhibit feature has been enabled in the programming mode, the RTI led is on (default value).
- Once retransfer from the Generator to the Mains is ready, RTI feature blocks the retransfer and the RTI led is blinking.
- A manual press on the RTI push button is necessary to start retransfer.



BASIC PRODUCT USE (continued)

Sequence description



ATI 085 A GB

ENGLISH

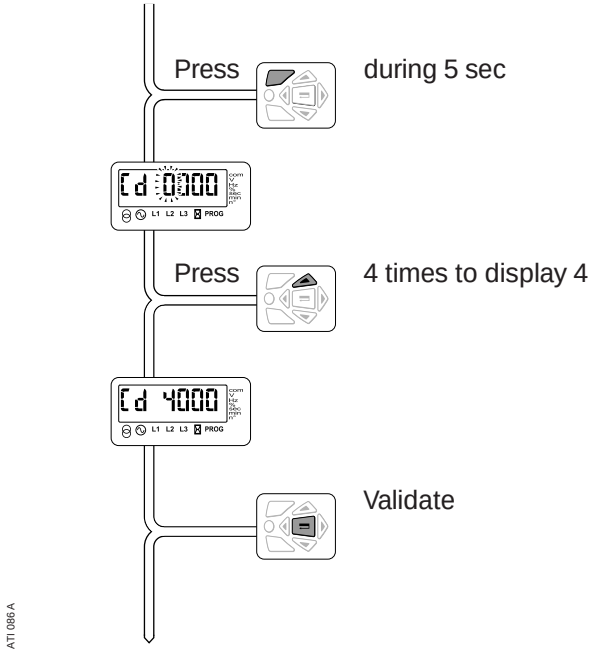
BASIC PRODUCT USE (continued)

Test Mode

TEST MODE ACCES

Press and hold the test pushbutton for 5 seconds to allow test modes access.

Enter code = 4000



TEST MODE EXIT

Press and hold the test pushbutton for 5 seconds to exit test mode and come back to visualisation mode after test achievement.

TEST 

OFF LOAD TESTING

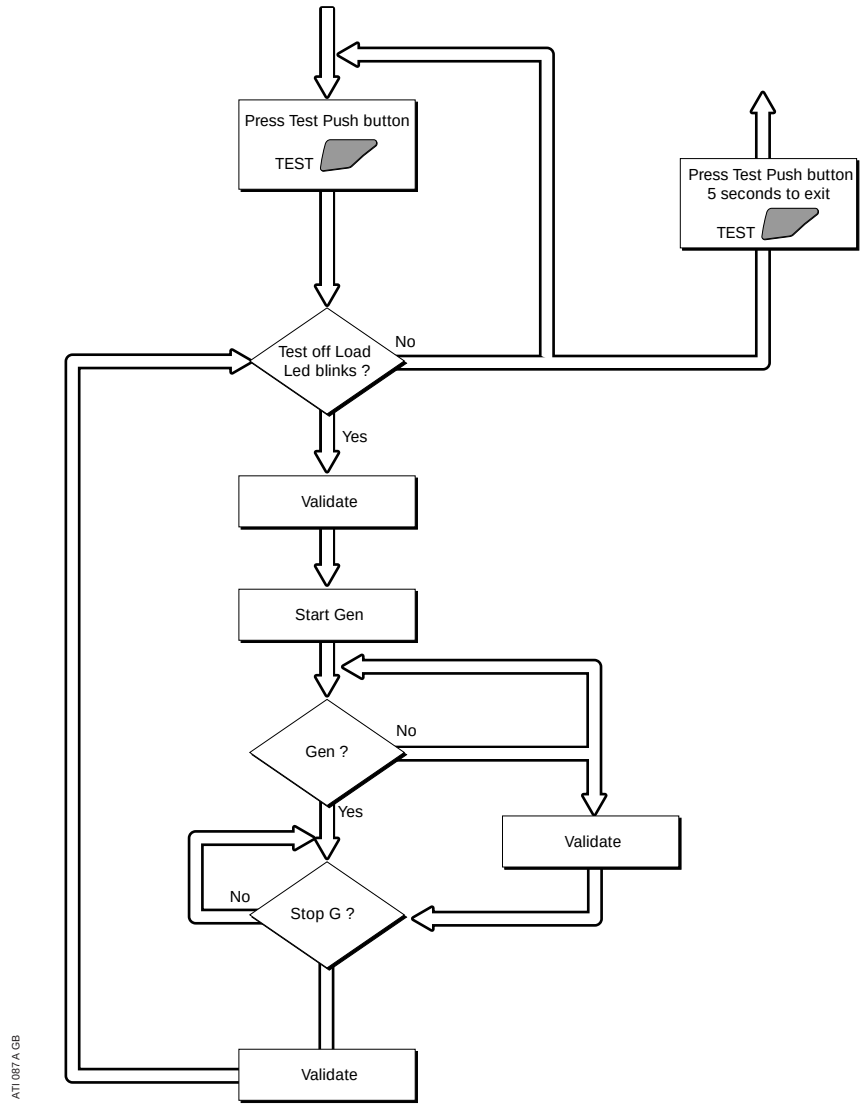
This test is possible in automatic in position 1 when the mains is available or in manual mode. It can be considered as a Generator manual start in manual mode.

Description

- This mode allows generator testing without load transfer from the Mains to the Generator.
- The generator is started and stopped normally
- This test is possible in automatic or manual mode
- This test is not possible when an automatic sequence is running.

Sequence

Press Test pushbutton to make test off load Led blink and press validation pushbutton to start.



ON LOAD TESTING

Keypad activation

This test is only possible in automatic mode in position 1 and Mains available.

Description:

- This test simulates a loss of mains condition. Loss of Mains sequence is started and Mains return sequence automatically activated as soon as generator is available.
- All timers are run following their setting.
- The retransfer inhibit feature is always activated during test on load (from keypad).

Press Test pushbutton to make test on load Led blinking and press validation pushbutton to start the cycle, Following Loss of Mains + Mains return sequences.

Remote activation via remote test on load input

It is possible to remotely start the test on load closing contacts 7 and 9 on the electronic module.
The cycle is started as soon as the input is closed.
The retransfer from generator to mains is blocked, and only allowed once the input is de activated.

METERING PRODUCT USE

⚠ Verify power applied on the electronic module power inputs terminals 101-102 or 201-202 before powering up the unit.

ATI 067 A

GENERAL INTRODUCTION

The product provides sources availability monitoring, Automatic / Manual Retransfer, Manual / Automatic or Test operation monitoring, voltage and frequency metering, and good operation or error information. The product provides sources …error information. Furthermore, the metering module allows current and power metering on a large backlited display.

The product requires at least one type of network configuration and a network nominal voltage configuration to be input via the keypad by the user.
Other default values can be kept or modified according to hereafter programming guidelines.

ELECTRONIC MODULE USAGE

Front Panel Introduction

The electronic module is directly mounted on the motorized block.

It integrates the following features:
- Voltage and frequency metering
- Automatic transfer controls

Following diagram introduces product front panel.

Led indication is only active once the product is powered (power led activated).

LCD
- Larger LCD to display information.

Keypad

Error Led
- **1 red led** to indicate a fault
  - **Led is on** = switch error
  Action from software not confirmed by an auxiliary contact. Reset after power off
  - **Led blinks** in case of lightning protection operation
  No reset required (blinking disappears once input is low)

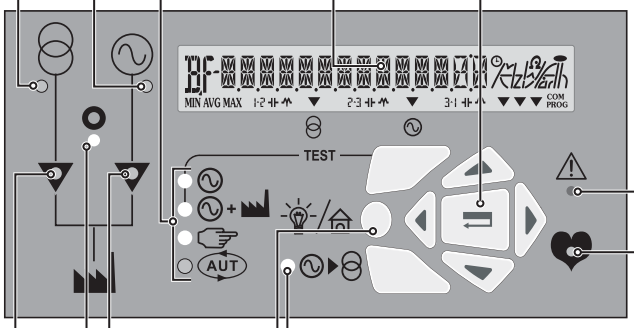
Modes annunciation and Tests
- **1 Top yellow led** for **Manual Mode** position linked to the key position
- **1 green led** for **Automatic Mode** position linked to the key position
- **2 Bottom yellows leds** for **Test On** and **Off Load** position Linked to the **test pushbutton** press

Symbols are represented to make comprehension easier

Source availability
- **2 green Leds** to indicate if Gen and Mains sources are available (voltage and frequency measurement)
- **Led is on** = source available
- **Led is off** = source missing

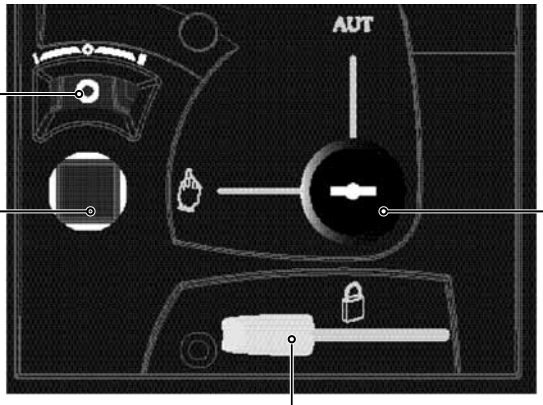
Power Led
- **1 green led**
  - **Blinks** slowly as soon as the product is powered and software runs correctly
  - **Always on** = Power OK and software error
  - **Always off** = Power off or software error if another led is on and LCD is OK

Switch state
- **2 green Leds** to indicate if the switch is opened or closed
  - **Led is on** = switch is closed
  - **Led is off** = switch is opened
- **1 Yellow led** to indicate if both switches are in 0 position
  - **Led is on** = both switches opened
  - **Led is off** = Gen or Mains switch closed



Retransfer Inhibit
- **1 yellow Led**, linked to retransfer inhibit pushbutton
  - **Led is on** = retransfer inhibit feature is active
  - **Led is off** = retransfer inhibit inactive
  - **Led is blinking** = retransfer is blocked, waiting for a push on the retransfer inhibit pushbutton to allow retransfer

Push button
- : Home push button during programming
- : Lamps test button



Switch Position Indications
- 0, 1 or 2 position display

Keyswitch
- **Insert key** to allow switch operational mode modification
- **Turn right** to access automatic mode
- **Turn left** to access manual mode

Manual Operation
- Insert handle to manually operate the switch.
- Manual operation only possible in Manual mode (keyswitch), when not padlocked

Padlock
- Pull the yellow handle to allow padlock insertion
- Padlocking possible in position 0,1 or 2 but only in Manual mode (keyswitch position), handle out of housing.

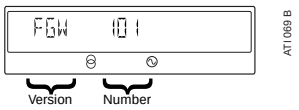
ATI 068 B

ENGLISH

METERING PRODUCT USE (continued)

Software version

Software version is displayed on the unit after reset (powering up action after 3 minutes power off to discharge the unit).



⚠ Before first product use, access programming mode and verify product programming parameters.

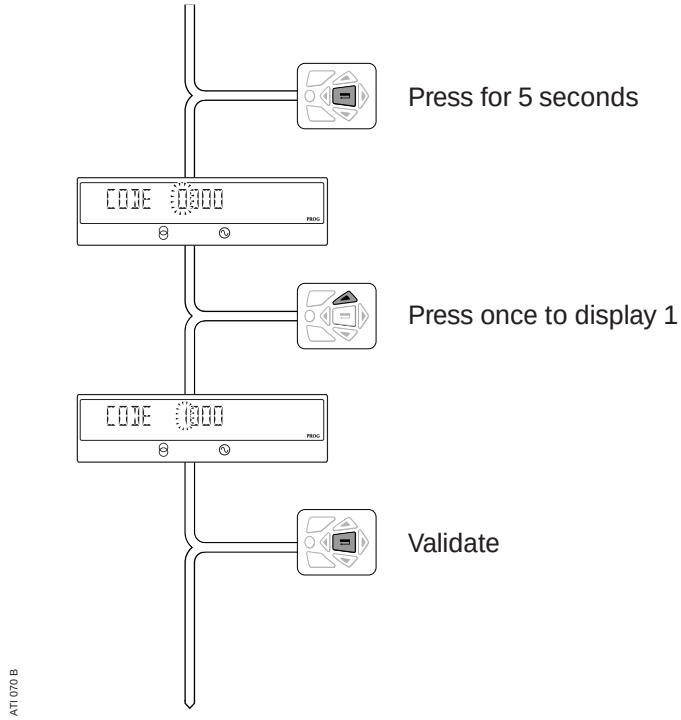
Product Programming

Product Programming is possible in Automatic Mode in position 1 when the Mains Source is available, or in Manual mode.

It is not accessible when a test or an automatic sequence is activated.

PROGRAMMING ACCESS

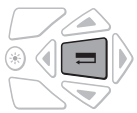
Programming mode is accessible by pressing and holding the validation push-button for 5 seconds and then entering the code 1000:



Access to programming Menus

PROGRAMMING EXIT

To exit the Programming and come back to visualisation mode, hold the validation pushbutton for 5 seconds. Parameters saved permanently once exit.



METERING PRODUCT USE (continued)

PROGRAMMING MENUS

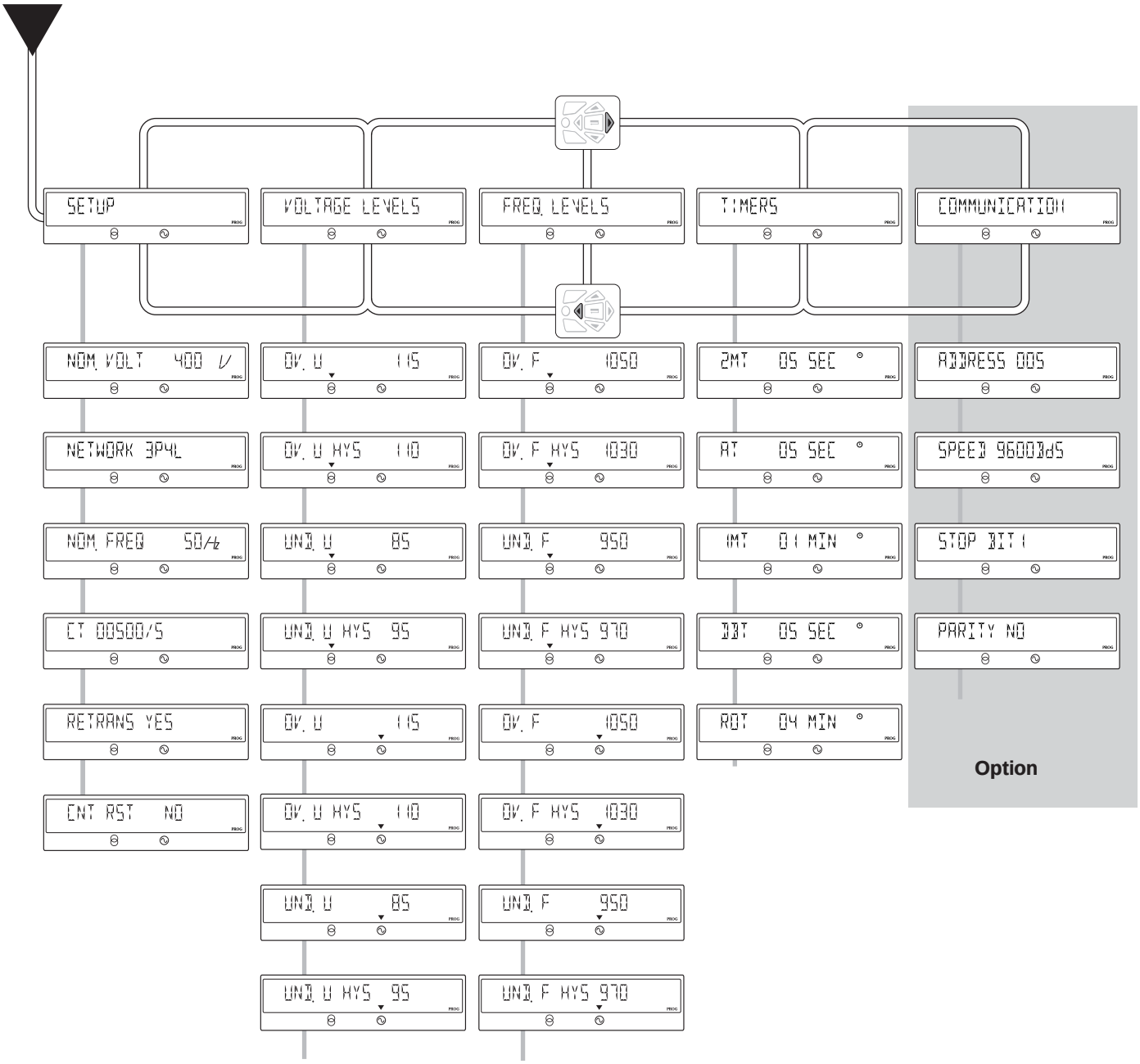
Architecture and navigation

The programming mode integrates 5 Menus

Setup: Network parameters
Voltage levels: Voltage detection levels
Freq. levels: Frequency detection levels
timers: Automatic timer settings
Communication: Communication parameters (Optional), communication module must be plugged.

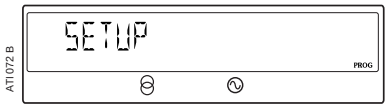
⚠ Default values are loaded as standard.

Setup parameters must always be verified / modified in accordance to the application.



ATI 071 B

The first menu to access is the Setup menu



ATI 072 B

ENGLISH

METERING PRODUCT USE (continued)

SETUP MENU

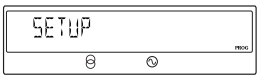
Parameter Display

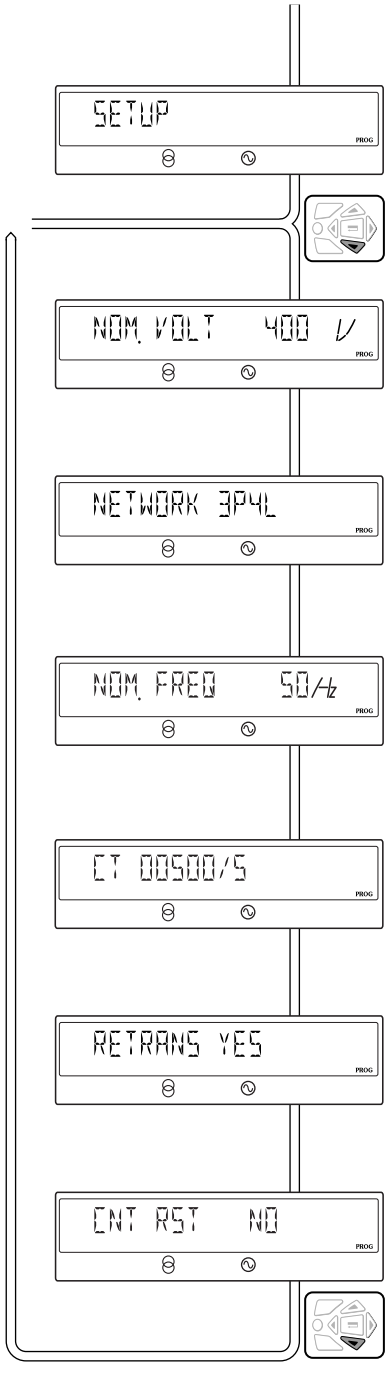
The setup menu integrates 6 parameters described in the table hereunder.

The table explains parameters' definition, settings possibilities, and default values.

Press  Down push button to access parameter required.

Press  Up push button to come back to previous value, or press

or  Home push button to come back to 



Definition	Setting range	Default value
NOM.VOLT: Phase-Phase nominal voltage.	From 200 to 480 V	400 V AC
NETWORK: Network configuration. Type of metering (1P or 3P phases). Number of active wires (2L, 3L or 4L) definition.	1P2L, 1P3L, 3P4L 3P3L, 1PAP	3P4L
NOM.FREQ: Nominal frequency.	50 or 60 Hz	50 Hz
CT: winding ratio of current transformers 50/5 to 1600/5	50/5 to 1600/5	500/5
TRANS IHI: Retransfer inhibit feature: press on RTI button required to allow retransfer from gen to main.	Yes or No	No
CNT RST: Reset number of commutation counter (from Main to Gen). Displays no once reset.	Yes or No	No

ATI 073 C

METERING PRODUCT USE (continued)

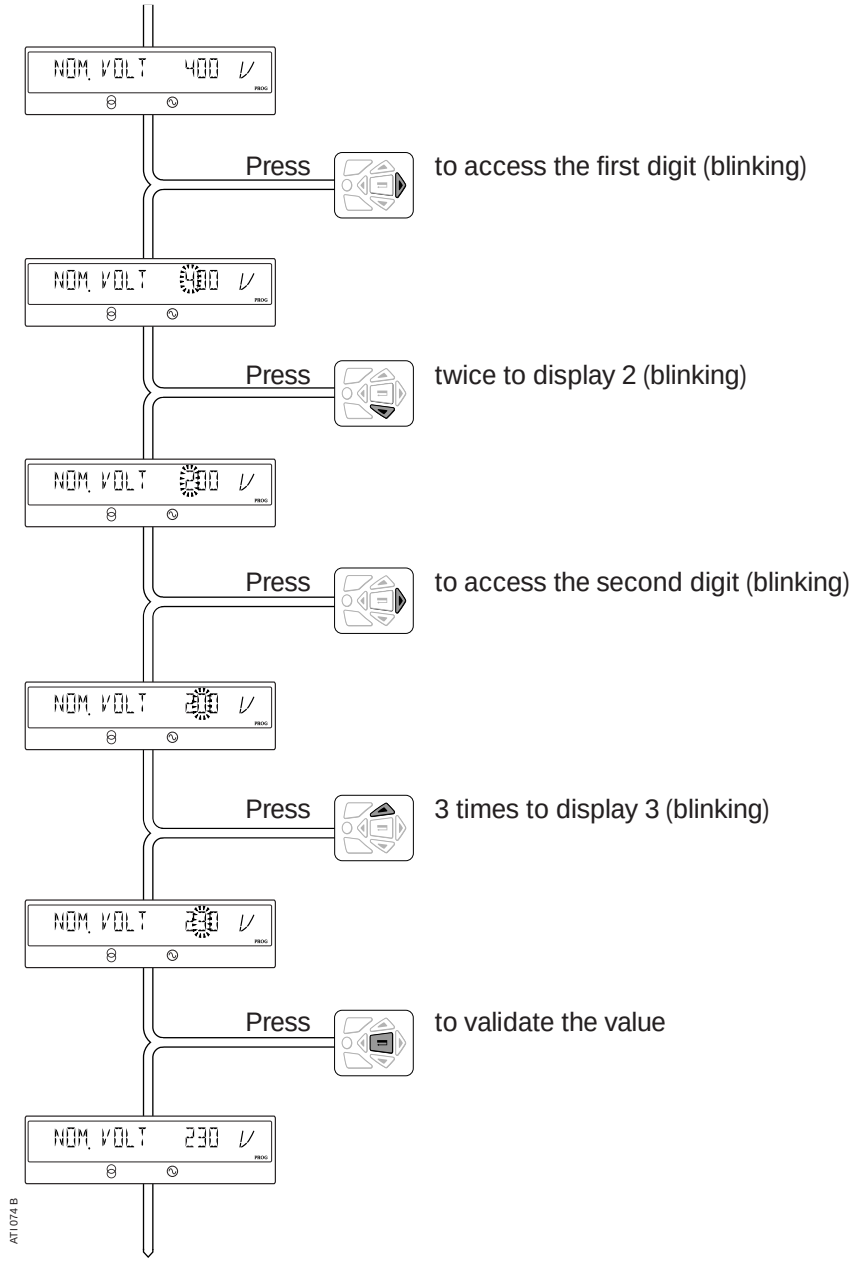
Parameter modification

Display the required parameter for modification.

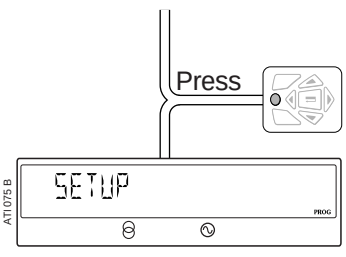
Apply the same procedure described hereunder for network voltage modification, to all other parameters. Possible settings are described in the previous table.

Example:

We want to modify network voltage from 400 V to 230 V.



To return to Setup menu press home pushbutton or press down to continue.



METERING PRODUCT USE (continued)

VOLTAGE MENU

To reach voltage menu from Setup menu press once .

Parameter Display

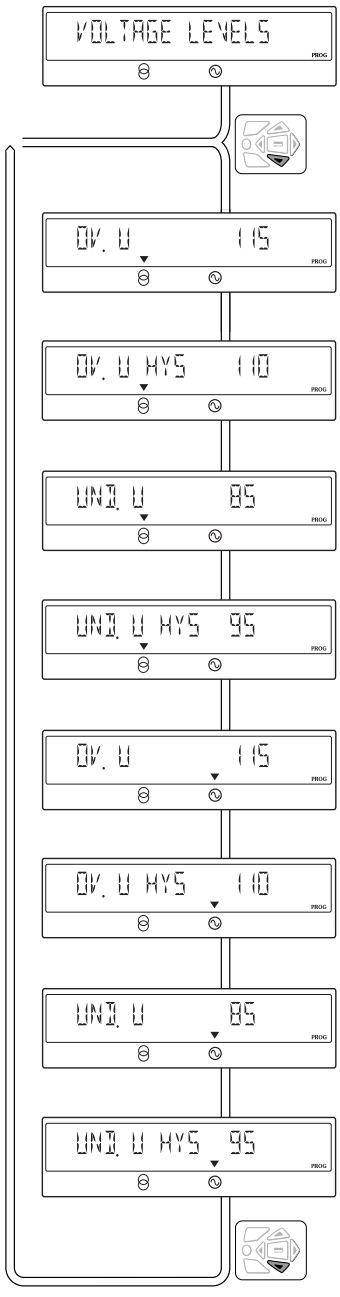
The voltage menu integrates 8 parameters described in the table hereunder.
The table explains parameters' definition, settings possibilities, and default values.
Over and Under voltage conditions are verified on Mains and Generator side to allow operation as per the flow chart.
Mains sensing is 3 phase and Generator sensing single phase.
Over and under voltage detection levels + hysteresis are defined as percentage of nominal voltage.
Hysteresis levels allow under and over voltage conditions reset (voltage needs to pass hysteresis level to reset).

Note:
These values only need to be changed if a value is required other than the default.

Press Down push button to access parameter required.

Press Up push button to come back to previous value

or Home push button to come back to 



Definition	Setting range	Default value
OV U: Main Over voltage detection	102 - 120 %	115 %
OV U HYS: Main Over voltage hysteresis detection	101 - 119 %	110 %
UND.U: Main Under voltage detection	80 - 98 %	85 %
UND.U HYS: Main Under voltage hysteresis detection	81 - 99 %	95 %
OV U: Generator over voltage detection	102 - 120 %	115 %
OV U HYS: Generator over voltage hysteresis detection	101 - 119 %	110 %
UND.U: Generator under voltage detection	80 - 98 %	85 %
UND.U HYS: Generator under voltage hysteresis detection	81 - 99 %	95 %

ATI 077 B

METERING PRODUCT USE (continued)

Parameter modification

Display the required parameter for modification.
Apply the same procedure as described in Setup Menu for network voltage modification. Possible settings are described in the previous table.

FREQUENCY MENU

To reach frequency menu from voltage menu press once .

Parameter Display

The frequency menu integrates 8 parameters described in the table hereunder.

The table explains parameters' definition, settings possibilities, and default values.
Over and Under frequency conditions are verified on Mains and Generator side to allow operation following operational flow chart.

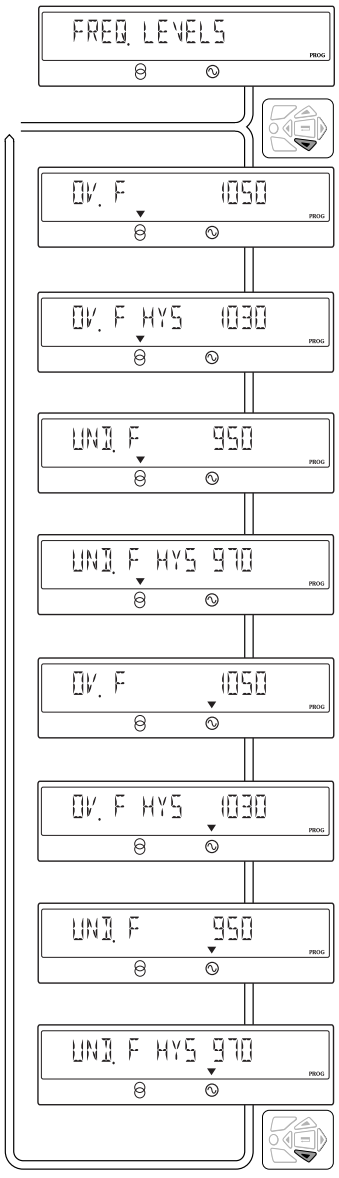
Over and under frequency detection levels + hysterisis are defined as percentage of nominal frequency.
Hysteresis levels allow under and over frequency conditions reset (frequency needs to pass hysteresis level to reset).

Press Down push button to access parameter required.

Press Up push button to come back to previous value

or Home push button to come back to 

.



Definition	Setting range	Default value
OV F: Main over frequency detection	101 - 120 %	105 %
OV F HYS: Main over frequency hysteresis	100.5 - 119.5 %	103 %
UND.F: Main under frequency	80 - 99 %	95 %
UND.F HYS: Main Under frequency hysteresis	80.5 - 99.5 %	97 %
OV F: Generetor over frequency	101 - 120 %	105 %
OV F HYS: Generator over frequency hysteresis	100.5 - 119.5 %	103 %
UND.F: Generator under frequency	80.5 - 99.5 %	95 %
UND.F HYS: Generator under frequency hysteresis	80 - 99 %	97 %

ATI 078 B

METERING PRODUCT USE (continued)

Parameter modification

Display the required parameter for modification.
Apply the same procedure as described in the Setup Menu for network voltage modification. Possible settings are described in the previous table.

TIMERS MENU

To reach timer menu from frequency menu press once  .

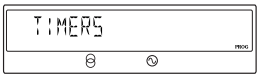
Parameter Display

The timers menu integrates 5 parameters described in the table below.

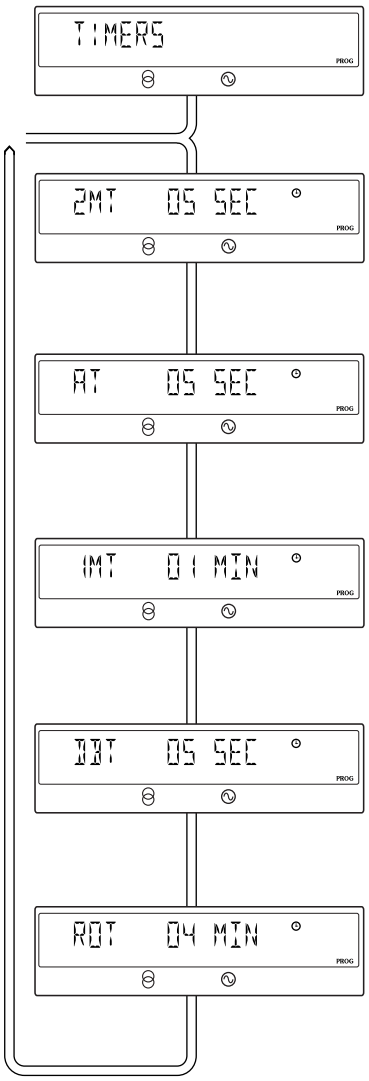
The table explains parameters' definition, settings possibilities, and default values. Timers operation is described in operational flow chart page.

Press  Down push button to access parameter required.

Press  Up push button to come back to previous value

or  Home push button to come back to 

.



Definition		Setting range	Default value
2Mt:	loss of mains validation timer. Once mains has disappeared, 2Mt is started. If Mains comes back before 2Mt ends, the commutation cycle is not started. (Delay on Gen start.)	0 to 60 sec.	5 sec.
At:	Generator voltage and frequency stabilisation timer. Generator needs to be stable during AT to allow transfer from Mains.	0 to 60 sec.	5 sec.
1Mt:	Mains Return validation timer. Once main is back 1Mt is started. If Mains disappears before 1Mt ends, the load is not switched back to the Mains.	0 to 30 min.	2 min.
dbt:	Dead Band timer. This timer is counted down before transferring the load from the Mains source to the Generator or vice versa. It allows the load residual voltage to decrease under a non critical value before transfer (Necessary in case of rotating loads).	0 to 20 sec.	5 sec.
rot:	Run on time timer. Once the load is switched back from the Generator to the Mains, ROT is started and the Generator will stop once ROT is finished (allows generator cool down).	0 to 10 min.	4 min.

ATI 079 B

⚠ This menu is only accessible when the option has been purchased and is present in the optional slots. Once plugged into the electronic module, a 3 minutes power off action is required for option identification by software.

Parameter modification

Display the required parameter for modification.
Apply the same procedure as described in the Setup Menu for network voltage modification. Possible settings are described in the previous table.

COMMUNICATION MENU (OPTIONAL)

To reach timer menu from frequency menu press once  .

Parameter Display

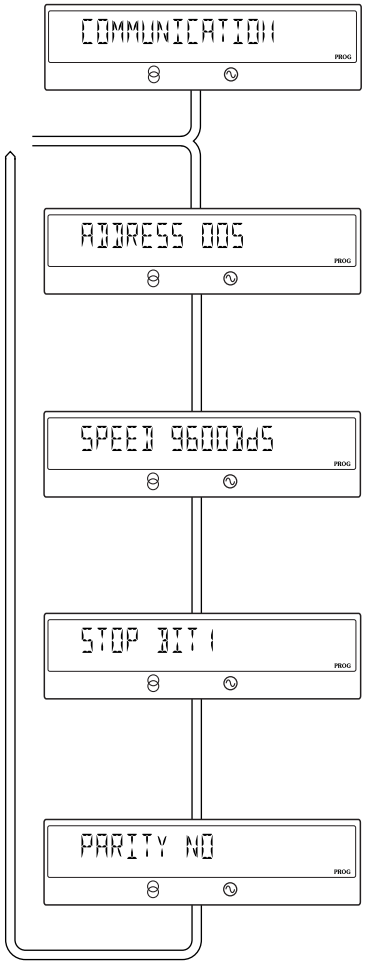
The COMM menu integrates 4 parameters described in the table hereunder.
The table explains parameters' definition, settings possibilities, and default values.
Communication operation is described in paragraph 5.

Press  Down push button to access parameter required.

Press  Up push button to come back to previous value

or  Home push button to come back to 

.



ATI 080 B

Definition	Setting range	Default value
Slave Jbus / Modbus adress	001 to 247	005
Communication Speed (baud)	2400,4800,9600, 14400,19200, 28800, 38400	9600
Stop Bit	0,1,2	1
Parity	No, Eve (Even), Odd	No

METERING PRODUCT USE (continued)

PRODUCT METERING

General comments

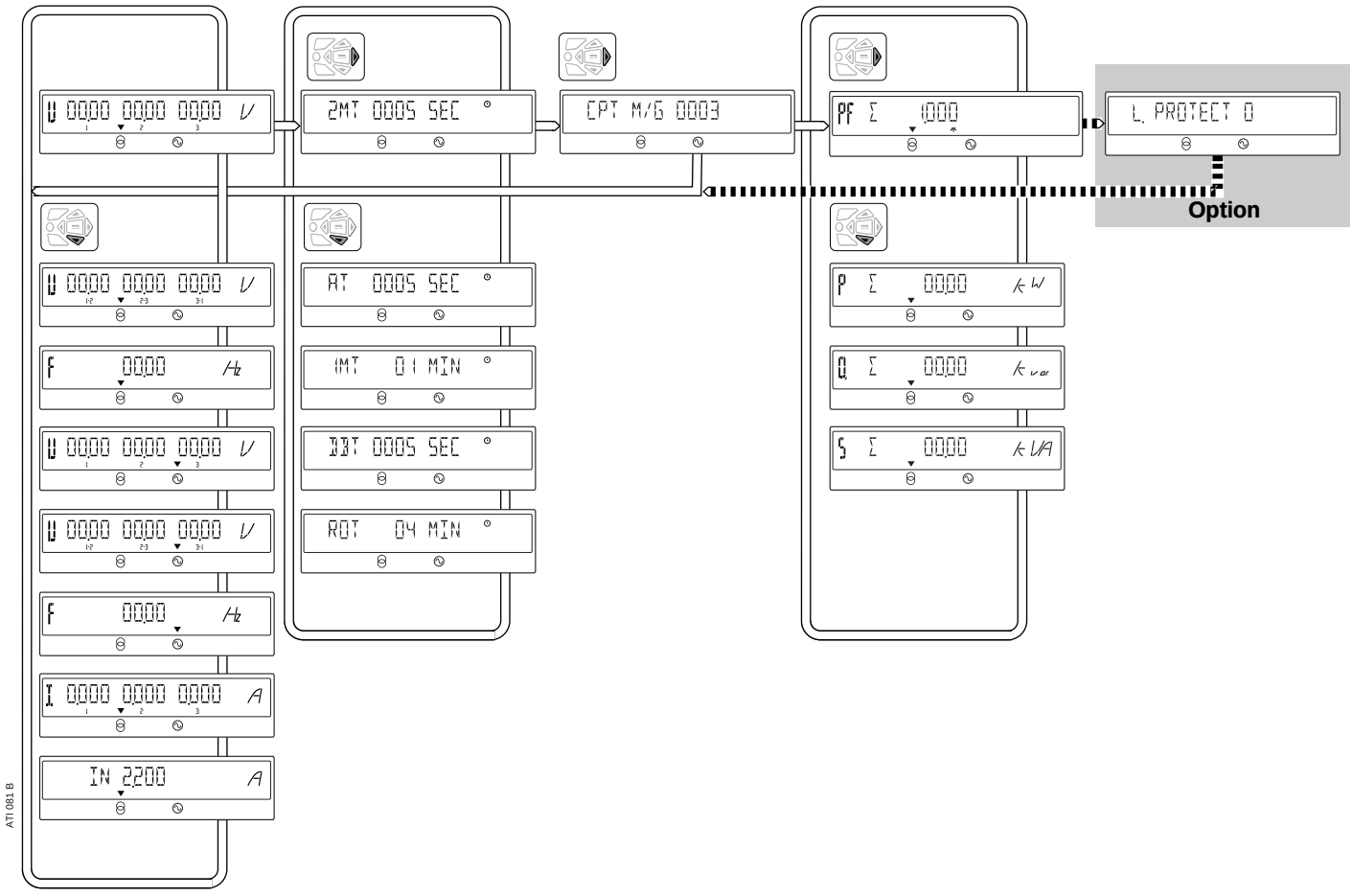
Metering is active as soon as the unit is powered.
Commutation cycles have priority over Visualisation mode and display timers count down as soon as they are active.
Any value available in this mode can be kept on the screen once displayed. excepted during commutation cycle; comes back to timer count down after 5 s.

After commutation cycle, the display comes back to Mains voltage L1N (first variable of the mode).
Visualisation mode architecture is as described hereunder.

⚠ If lightning protection option is fitted, L.PROTECT menu is available. cf option 4.

General comments

To access requested value press , , or .



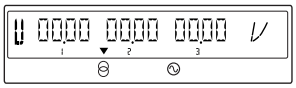
METERING PRODUCT USE (continued)

Values definition

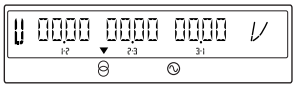
⚠ All these values are not accessible on all networks :

- **3P4L**
  Main U1, U2, U3
  U12, U23, U31
  Gen U1, U2, U3, U12, U23, U31
- **1P3L**
  Main U12, U23, U31
  Gen U12, U23, U31
- **1P2L**
  Main U31
  Gen U31
- **3P3L**
  Main U12, U23, U31
  Gen U12, U23, U31
- **1PAP**
  Main U1, U2, U3
  Gen U1, U2, U3

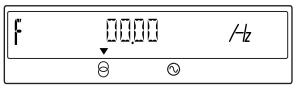
Mains and Generator sensing are 3 phases.



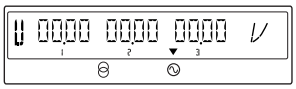
Main Voltage L1-N, L2-N, L3-N



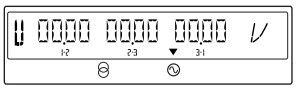
Main Voltage L1-L2, L2-L3, L3-L1



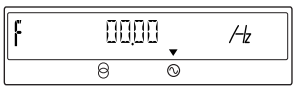
Main frequency



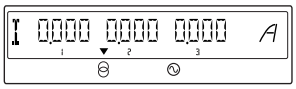
Generator Voltage L1-N, L2-N, L3-N



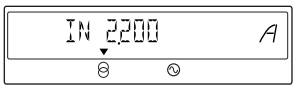
Generator Voltage L1-L2, L2-L3, L3-L1



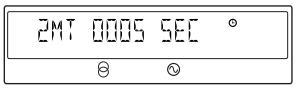
Generator Frequency



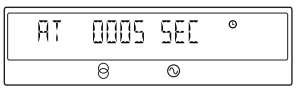
Current I1, I2, I3



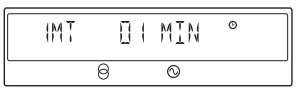
Current in the neutral



Loss of Mains validation Timer

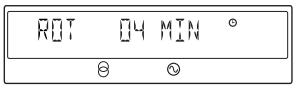


Delay on transfer Timer



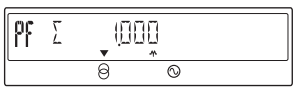
Mains return validation timer

Dead Band timer

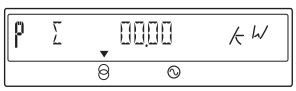


Run on timer (Generator cool down period)

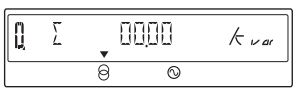
Main -> Gen commutation Counter



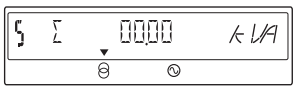
Power factor (over all)



Total active power on 4 quadrants (+/-)

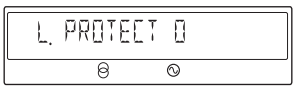


Total reactive power on 4 quadrants (+/-)



Total apparent power

⚠ LIGHTNING PROTECTION = option →



Lightning protection operation (0 or 1)

METERING PRODUCT USE (continued)

MANUAL MODE

The functionality is similar to the basic product (see the “manual mode of the basic product” paragraph).

MAINS RETURN AUTOMATIC SEQUENCE

This sequence is started as soon as the unit is in automatic mode and in position 2.

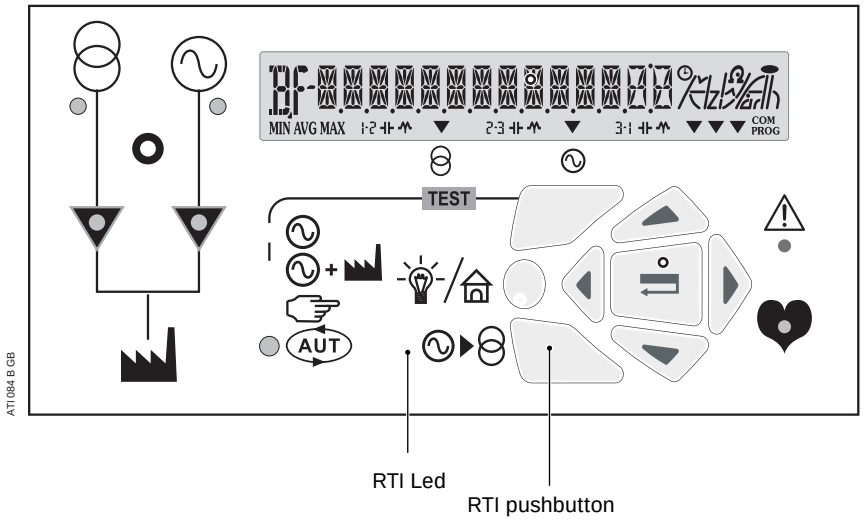
Position 2:

- Mains is not available
- Switch is in position 2 (Generator)
- Generator is off

Specific features

Retransfer Inhibit Feature

- Once the Mains is back, it might be preferable not to immediately transfer the load from the generator to the mains.
- If Retransfer inhibit feature has been enabled in the programming mode, the RTI led is on (default value).
- Once retransfer from the Generator to the Mains is ready, RTI feature blocks the retransfer and the RTI led is blinking.
- A manual press on the RTI push button is necessary to start retransfer.



The sequence is similar to the basic product.

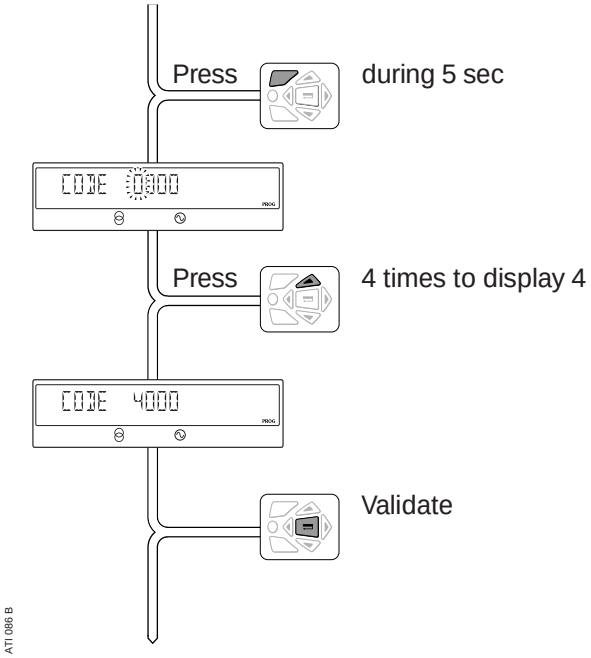
METERING PRODUCT USE (continued)

Test Mode

TEST MODE ACCES

Press and hold the test pushbutton for 5 seconds to allow test modes access.

Enter code = 4000



TEST MODE EXIT

Press and hold the test pushbutton for 5 seconds to exit test mode and come back to visualisation mode after test achievement.

TEST 

Test on load and test off load facilities are similar to the basic product.

COMMUNICATION

The JBUS / MODBUS® used by the ATI involves a dialogue using a master-slave hierarchical structure. There are two possible dialogues:

- the master communicates with a slave (ATI) and waits for its reply
- the master communicates with all the slaves (ATI) without waiting for their reply.

The mode of communication is the RTU (Remote Terminal Unit) using hexadecimal characters of at least 8 bits.

The standard communications frame consists of:

Slave address	Function code	Address	Data	CRC 16

NB:
When selecting slave address 0, a message is sent to all the instruments present on the network (only for functions 6 and 16).

Comment:
The maximum reply time is 250 ms.

According to the JBUS / MODBUS® protocol, transmission time must be less than 3 silences, i.e. the emission time of 3 characters so that the message is processed by the ATI.

To correctly use information, the following functions are important:

3 : to read n words (maximum 128).
6 : to write one word.
8 : to diagnose exchanges between the master and the slave via meters 1, 3, 4, 5 and 6.
16 : to write n words (maximum 128).

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3)

Table of values on 2 words

Decimal Address	Hexa Address	Number of words	Variable	Units
768	300	2	I1	A / 100
770	302	2	I2	A / 100
772	304	2	I3	A / 100
774	306	2	In	A / 100
776	308	2	U12Main	V / 100
778	30A	2	U23Main	V / 100
780	30C	2	U31Main	V / 100
782	30E	2	V1Main	V / 100
784	310	2	V2Main	V / 100
786	312	2	V3Main	V / 100
788	314	2	Freq.Main	Hz / 100
790	316	2	Active power (total)	kW / 100
792	318	2	Reactive power (total)	kVar / 100
794	31A	2	Apparent power (total)	kVA / 100
796	31C	2	Power factor	0,001
880	370	2	U12 Gen	V / 100
882	372	2	U23 Gen	V / 100
884	374	2	U31Gen	V / 100
886	376	2	V1Gen	V / 100
888	378	2	V2Gen	V / 100
890	37A	2	V3Gen	V / 100
892	37C	2	FreqGen	Hz / 100
894	37E	1	1MT	V / 100
895	37F	1	2MT	V / 100
896	380	1	AT	s
897	381	1	DBT	s
898	382	1	ROT	s

Example :
To read U31 gen = 228,89, the following message should be sent:

COMMUNICATION (continued)

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3) (continued)

Slave	Function	High-order address	Low-order address	High-order word n°	Low-order word n°	CRC 16
05	03	03	74	00	02	85D1

ATI reply:

	Slave	Function	Number of bytes	Value high-order	Value low-order	CRC 16
Hex	05	03	04	59	69	458D
Dec				89	105	

Decimal value = 89 x 256 + 105
= 22889 (/100)

Table of values on 1 word

Decimal Address	Hexa Address	Number of words	Variable	Units
1792	700	1	U12 Main	V/100
1793	701	1	U23 Main	V/100
1794	702	1	U31 Main	V/100
1795	703	1	V1 Main	V/100
1796	704	1	V2 Main	V/100
1797	705	1	V3 Main	V/100
1798	706	1	Freq. Main	Hz/100
1799	707	1	U12 Gen	V/100
1800	708	1	U23. Gen	V/100
1801	709	1	U31 Gen	V/100
1802	70A	1	V1. Gen	V/100
1803	70B	1	V2. Gen	V/100
1804	70C	1	V3. Gen	V/100
1805	70D	1	Freq. Gen	Hz/100
1806	70E	1	1MT Timer	s
1807	70F	1	2MT Timer	s
1808	710	1	AT Timer	s
1809	711	1	DBT Timer	s
1810	712	1	ROT Timer	s
1813	715	1	I1	A/100
1814	716	1	I2	A/100
1815	717	1	I3	A/100
1816	718	1	In	A/100
1817	719	1	Active power (total)	kW
1818	71A	1	Reactive power (total)	kVar
1819	71B	1	Apparent power (total)	kVA
1820	71C	1	Power factor	0,001

COMMUNICATION (continued)

LIST OF PARAMETERS TO BE DISPLAYED (FUNCTION 3) (continued)

Table of values of the programming zone

Decimal Address	Hexa Address	Number of words	Variable	Units	Standard Product
512	200	1	Type of network - 0 = 3P4L - 1 = 1P3L 2 = 1P2L - 3 = 3P3L 4 = 1PAP		x
513	201	1	CT primary	A	x
518	206	1	VNominal	V	x
519	207	1	FNominal - 50 or 60	Hz	x
				0 = No, 1 = Yes	
521	209	1	Transfer Inhibit Feature		x
522	20A	1	VOver	% (0-100)	x
523	20B	1	VHystOver	% (0-100)	x
524	20C	1	VUnder	% (0-100)	x
525	20D	1	VHystUnder	% (0-100)	x
526	20E	1	VGenOver	% (0-100)	x
527	20F	1	VHystGenOver	% (0-100)	x
528	210	1	VGenUnder	% (0-100)	x
529	211	1	VHystGenUnder	% (0-100)	x
530	212	1	FOver	% (0-100)	x
531	213	1	FHystOver	% (0-100)	x
532	214	1	FUnder	% (0-100)	x
533	215	1	FHystUnder	% (0-100)	x
534	216	1	FGenOver	% (0-100)	x
535	217	1	FHystGenOver	% (0-100)	x
536	218	1	FGenUnder	% (0-100)	x
537	219	1	FHystGenUnder	% (0-100)	x
538	21A	1	1MT Timer	min	x
539	21B	1	2 MT Timer	s	x
540	21C	1	AT Timer	s	x
541	21D	1	DBT Timer	s	x
542	21E	1	ROT Timer	min	x

Example:
Configuration of 233 V nominal voltage for ATI n° 5.

	Slave	Function	High-order address	Low-order address	N° word		N° octet	High-order word n°	Low-order word n°	CRC 16
Hex	05	10	02	06	00	01	02	00	E9	76B8
Dec		16							233	

ATI reply:

Slave	Function	High-order address	Low-order address	N° word		CRC 16
05	10	02	06	00	01	E1F4
			89	105		

COMMUNICATION (continued)

SAVED COMMAND (RESET)

The following command should be done to save programming parameters changes for ATI number 5.

NB:
ATI will not reply to this command.

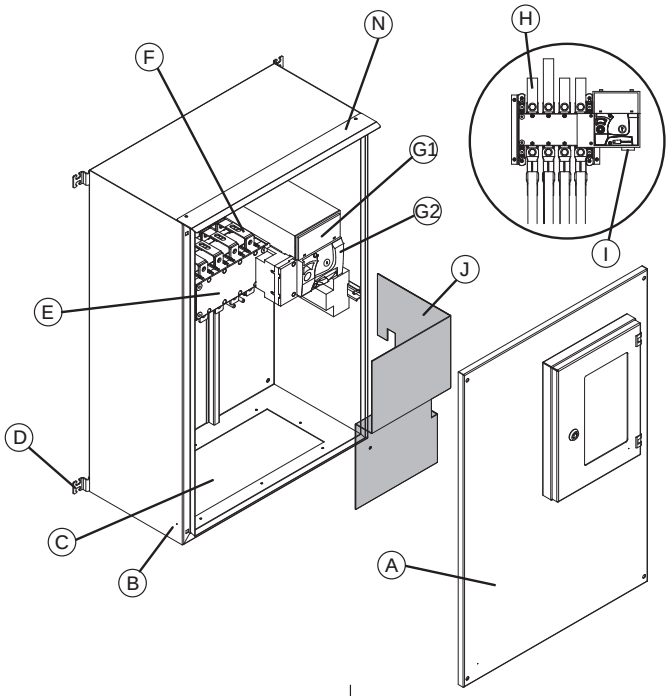
Slave	Function	High-order address	Low-order address	Values	CRC 16
05	06	06	00	0000	88C6

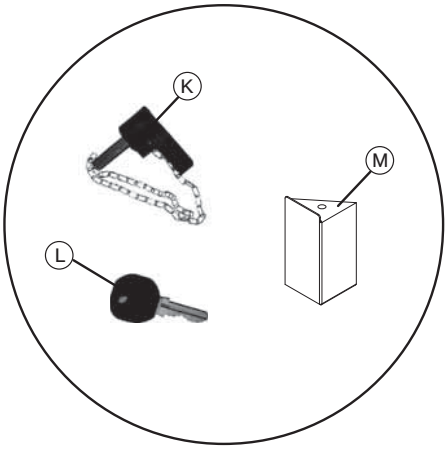
Diagnostic zone

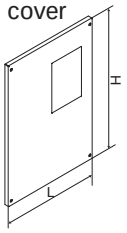
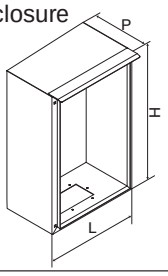
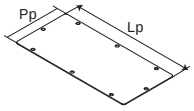
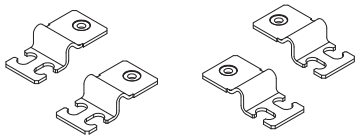
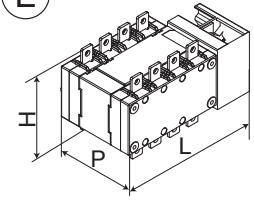
Decimal Address	Hexa Address	Number of words	Variable	
257	101	1	Product Identification	Standard version 1239 Metering version 1241
258	102	1	Slot Ident Option 1	available option 0 communication option Option of slot 1 0xFF no option 0x20 Main/Gen
259	103	1	Slot Ident Option 2	available option 0 communication option Option of slot 2 0xFF no option 0x20 Main/Gen
260	104	2	Reserved	
262	106	1	Version	soft version of product
263	107	2	Serial number	serial number
265	109	17	Reserved	
278	116	1	Motor Mode	3 stable states Bit3 Bit2 Bit1 Bit0 1 0 1 0 Auto 1 0 0 1 Padlock 0 1 1 0 Manu
282	11A	1	Switch State	3 stable states Bit2 Bit1 Bit0 0 0 1 Position 1 0 1 0 Position 0 1 0 0 Position 2
283	11B	2	Reserved	
285	11D	1	CounterMainGen	Counter number of transfer
286	11E	1	Gen relay state	2 stable states Bit1 Bit0 1 0 relay stopped 0 1 relay started

ENGLISH

MAINTENANCE

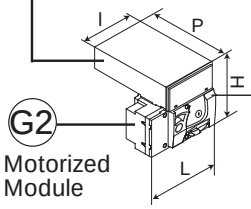
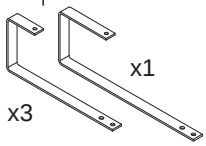
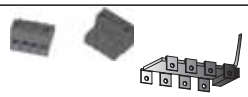
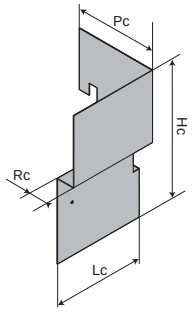




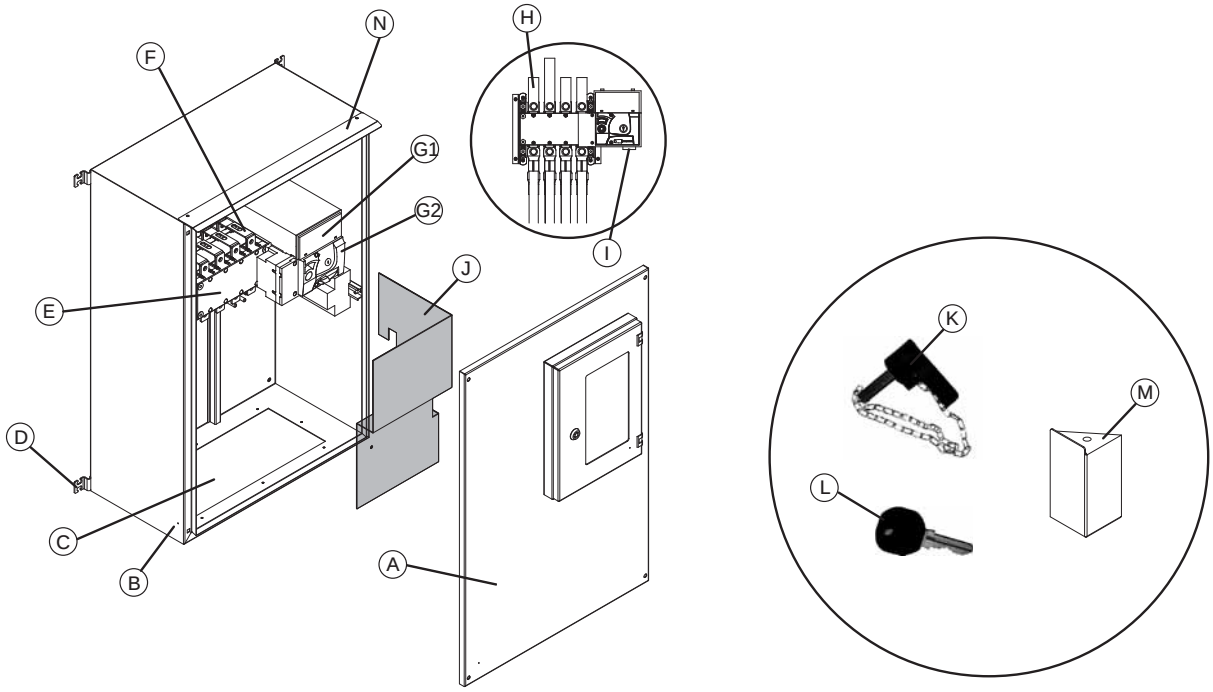
	250/400A	630A	
		BB	TT
A Front cover 	H = 876 L = 596 Ref : 610-832 (BB) Ref : 610-833 (TT)	H = 876 L = 596 Ref : 610-832	H = 576 L = 396 Ref : 610-834
		BB	TT
B Enclosure 	H = 900 L = 600 P = 305 Ref : 610-826 (BB) Ref : 610-829 (TT)	H = 900 L = 600 P = 380 Ref : 610-827	H = 1400 L = 600 P = 380 Ref : 610-830
C Cable gland Plate 	Lp = 495 Pp = 245 Ref : 590-951	Lp = 495 Pp = 328 Ref : 590-953	
D Wall Mounting Brackets 	Ref : 530-956		
E Manual changeover 	H = 160 L = 292 P = 148 Ref : 604-673 (250A) Ref : 604-674 (400A)	H = 260 L = 359 P = 225 Ref : 604-675 (630A)	

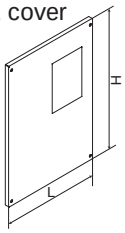
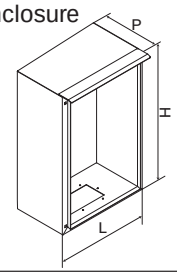
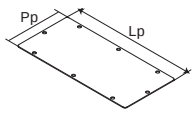
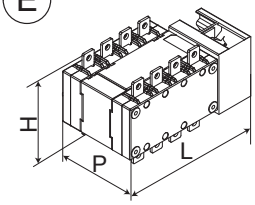
ATI 088 B GB

MAINTENANCE (continued)

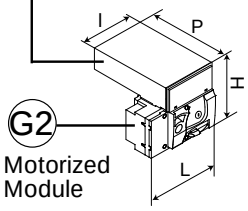
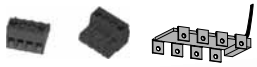
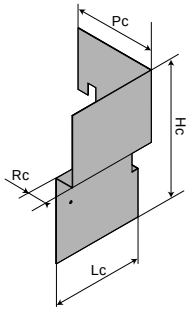
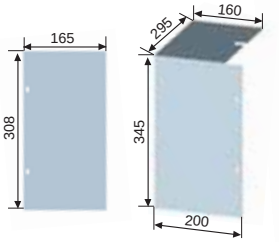
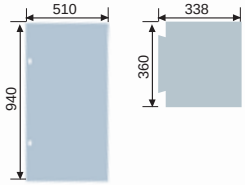
		250/400A	630A
F Bridging Bar Kit		Ref : 603-413 (250A) Ref : 603-414 (400A) 	Ref : 603-415
G1 ATI Electronic Module  Motorized Module	230V Version	G1 : Ref : 650-881 (basic product) Ref : 650-883 (metering product) G2 : Ref : 601-703 (250A) Ref : 601-704 (400A)	G1 : Ref : 650-881 (basic product) Ref : 650-883 (metering product) G2 : Ref : 601-705
	277V Version	G1 : Ref : 650-882 (basic product) Ref : 650-884 (metering product) G2 : Ref : 601-739 (250A) Ref : 601-740 (400A)	G1 : Ref : 650-882 (basic product) Ref : 650-884 (metering product) G2 : Ref : 601-741
		H = 180 L = 200	P = 250 I = 145
H Load Bar Kit		Ref : 330-168  	Ref : 330-169
I ATI Connectors Kit / ATI Voltage Sensing Kit		 Ref : 656-931  Ref : 656-933 (250A) Ref : 656-934 (400A)	Ref : 656-935
J Terminal Shroud  		Hc = 460 Lc = 277 Pc = 247 Rc = 57 Ref : 603-409 (BB) Ref : 603-418 (TT)	Hc = 640 Lc = 307 Pc = 315 Rc = 57 Ref : 603-411 (BB) Ref : 603-419 (TT)
K Handle with Chain		 Ref : 604-669	
L Manual/auto Key		 x2 Ref : 531-273	
M Leg Kit 630A			 x4 Ref : 509-310
N Weather proof strip (for IP 41)		 Ref : 530-196	
O Current transformer		Ref : 641-387 (250A) 641-388 (400A)	Ref : 641-389 (630A)

MAINTENANCE (continued)

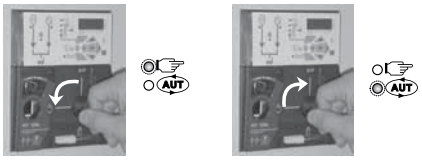


	800/1000A	1250 / 1600A
A Front cover 	H = 1150 L = 771 Ref : 610-846 (BB / TT)	H = 1580 L = 990 Ref : 610-847(BB / TT)
B Enclosure 	H = 1175 L = 775 P = 596 Ref : 610-844 (BB / TT)	H = 1600 L = 1000 P = 775 Ref : 610-845 (BB / TT)
C Cable gland Plate 	Lp = 536 Pp = 480 Ref : 590-957	Top Plate: Lp = 1000, Pp = 800, Ref : 590-958 Bottom Plate: Lp = 916, Pp = 717, Ref : 590-961
D Wall Mounting Brackets		
E Manual changeover 	800A: H = 321, L = 466, P = 327 1000A: H = 330, L = 466, P = 327 Ref : 604-683 (800A) Ref : 604-684 (1000A)	H = 1000 L = 716 P = 392 Ref : 604-685 (1250A) Ref : 604-686 (1600A)

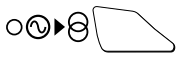
MAINTENANCE (continued)

	800/1000A	1250 / 1600A
F Bridging Bar Kit	On request	
G1 ATI Electronic Module  G2 Motorized Module	230V Version G1 : Ref : 650-881 (basic product) Ref : 650-883 (metering product) G2 : Ref : 601-732 (800A) Ref : 601-733 (1000A)	G1 : Ref : 650-881 (basic product) Ref : 650-883 (metering product) G2 : Ref : 601-734 (1250A) Ref : 601-735 (1600A)
	277V Version G1 : Ref : 650-882 (basic product) Ref : 650-884 (metering product) G2 : Ref : 601-742 (800A) Ref : 601-743 (1000A) H = 270 P = 250 L = 260 I = 145	G1 : Ref : 650-882 (basic product) Ref : 650-884 (metering product) G2 : Ref : 601-744 (1250A) Ref : 601-745 (1600A) H = 270 P = 250 L = 260 I = 145
H Load Bar Kit	On request	
I ATI Connectors Kit / ATI Voltage Sensing Kit	 Ref : 656-931	
	 Ref : 656-943	 Ref : 656-944
J Terminal Shroud 	 Ref : 603-430 (TT / BB)	 Ref : 603-431 (TT / BB)
K Handle with Chain	 Ref : 604-682	
L Manual/auto Key	 x2 Ref : 531-273	
M Leg Kit 630A	 x4 Ref : 509-310	 x2 Ref : 509-314
N Weather proof strip (for IP 41)	Ref : 530-197 	
O Current transformer	Ref : 641-390 (800A) 641-391 (1000A)	Ref : 641-392 (1250A) 641-393 (1600A)

FAULT FINDING GUIDE

Symptom	Step	Result
01 Automatic operations availability.	01 AUTO Led is on.	> NEGATIVE • Check that the switch has not been padlocked. • Check that the manual operating handle has been removed from housing. • Check that the key selector has been put in AUT position. • Check that the correct key is used. • Then consult your local dealer.
		> POSITIVE • Go to the next step.
	02 Fault synthesis Led is off.	> NEGATIVE • Led is blinking Check the lightning protection option and replace the fuse if damaged. Replace the fuses or the lightning protection module if damaged. Then consult your local dealer. • Led is on Try to reset the product (see the instructions below). Then consult your local dealer. • Reset Level 1  Level 2 Switch off the power supply during 3 minutes by removing the power supply. Open site mains breaker and generating set breaker (position 0).
		> POSITIVE • Go to the next step.
	03 Power supply Led is blinking.	> NEGATIVE • Led is on: Try to reset the product (see the instructions above). Then consult your local dealer.
		> POSITIVE • Go to the next symptoms.
02 The mains availability.	01 Mains availability Led is on.	> NEGATIVE • Check lamp test. • Check that the mains return timer (1MT) is still not counting down. • Check that the mains protection system (breaker) is on (Position 1). • Then consult your local dealer.
		> POSITIVE • Go to the next steps or symptoms.
03 The genset availability (genset supposed started).	01 Genset availability Led is on.	
		> POSITIVE • Go to the next steps or symptoms.

FAULT FINDING GUIDE

Symptom	Step	Result
04 The product doesn't transfer to the genset in case of mains failure or test on load.	01 AUT Led is on & Fault synthesis Led is off & Power supply Led is blinking.	> NEGATIVE • Go to symptom 01.
		> POSITIVE • Go to the next step.
	02 Genset is started.	> NEGATIVE • Check that the mains failure timer (2MT) is still not counting down. • Check the genset control panel is set to the auto position. • Then consult your local dealer.
		> POSITIVE • Go to the next step.
	03 Genset availability Led is on.	> NEGATIVE • Go to symptom 03.
		> POSITIVE • Consult your local dealer.
05 The product doesn't transfer to the mains in case of mains return or test on load end.	01 AUT Led is on & Fault synthesis Led is off & Power supply Led is blinking.	> NEGATIVE • Go to symptom 01.
		> POSITIVE • Go to the next step.
	02 Mains availability Led is on.	> NEGATIVE • Go to symptom 02.
		> POSITIVE • Go to the next step.
	03 Retransfer inhibit (RTI) function is off.	> NEGATIVE • Push the RTI push button: 
		> POSITIVE • Consult your local dealer.
06 Genset keeps on running after mains restores and switch retransfers to the mains position.	01 AUT Led is on & Fault synthesis Led is off & Power supply Led is blinking.	> NEGATIVE • Go to symptom 01.
		> POSITIVE • Go to the next step.
	02 The run on time timer (ROT) is still counting down (visible on the display).	> NEGATIVE • Check the genset control panel is set to the auto position. • Then consult your local dealer.
		> POSITIVE • Wait for the ROT end.

FAULT FINDING GUIDE

Symptom	Step	Result
07 Switch manual operations are not possible.	01 Manual Led is on.	> NEGATIVE • Turn the key selector to the manual position.
		> POSITIVE • Go to the next step.
	02 The manual handle introduction is possible.	> NEGATIVE • Check that the switch has not been padlocked.
		> POSITIVE • Go to the next step.
	03 The manual operation is possible.	> NEGATIVE • Check the required rotation of the switch. • Check that the sufficient torque has been applied. • Then consult your local dealer.
		> POSITIVE • Goal reached.
08 Switch padlocking operations are not possible.	01 Manual Led is on.	> NEGATIVE • Turn the key selector to the manual position.
		> POSITIVE • Go to the next step.
	02 Possible to pull the padlocking mechanism.	> NEGATIVE • Check that the product is in the 0 position for standard product. • Check that the manual operating handle has been removed from housing. • Then consult your local dealer.
		> POSITIVE • Goal reached.

SOCOMEC - Ref. : 678 623 G GB - 05/09

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