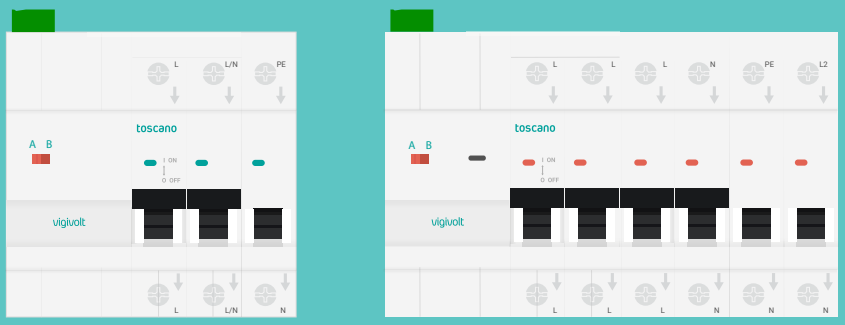
vigivolt

COMBI-PRO-MAX-2.1

Automatic control and protection for photovoltaic applications with backup.



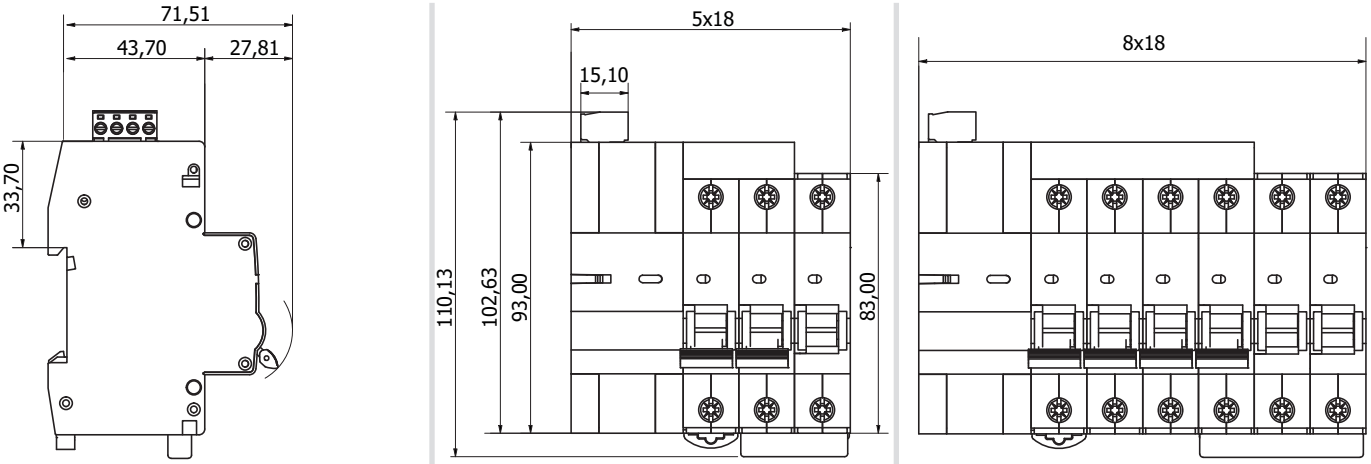
EN

USER MANUAL

Cod. 50023359. Ed. 10.26

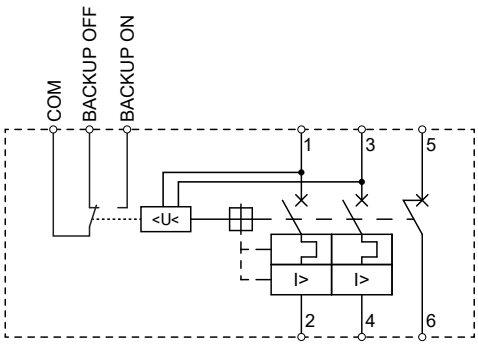
WARNING!	HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH
- The installation, maintenance and eventual replacement of this device must only be carried out by a qualified electrician. - This device must not be repaired. - All applicable local, regional and national regulations must be complied with during the installation, use, maintenance and replacement of this device. - This device should not be installed if, when unpacking it, you observe that it is damaged. - Toscano cannot be held responsible in the event of non-compliance with the instructions in this document and in the documents to which it refers. - For the correct operation of the equipment, the phases must be connected to the "L" terminals, the neutral to the "N" terminal and the earth to the "PE" terminal.	- Turn off all power supplying this device before working on it. - Use a voltage tester on an appropriate scale to verify that all live conductors are not energized. - Failure to comply with these instructions may result in serious injury or death.

Dimensions

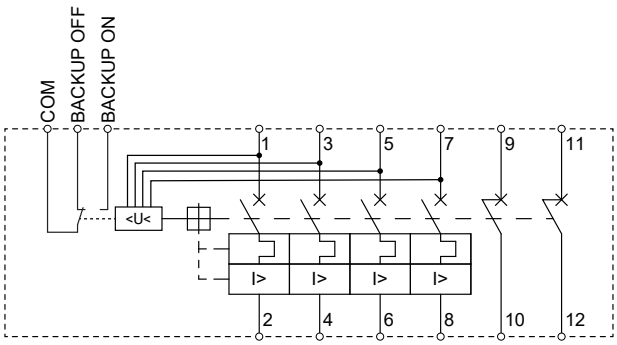


Electrical diagrams

COMBI-PRO-MAX-2.1-2P



COMBI-PRO-MAX-2.1-4P

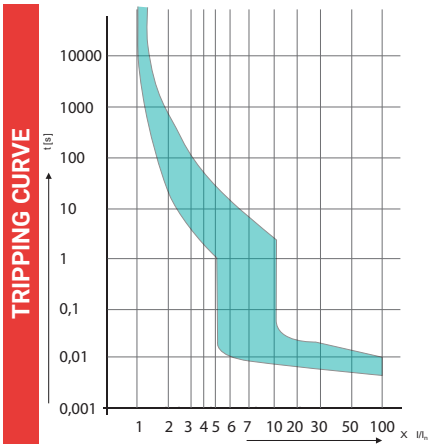


Power wiring

POWER	PZ2	L1/L2/L3/N	PE
	2.5 Nm	 12.5 mm	 12.5 mm
CONTROL	SL2.5	COMMON/BACKUP ON/BACKUP OFF/X	
	0.25 Nm	 6 mm	

Technical specifications

		COMBI-PRO-MAX-2P-2.1	COMBI-PRO-MAX-4P-2.1
GENERAL	Rated Voltage Un	240 VAC (L/N)/(L/L)	
	Supply frequency	50-60 Hz	
	Maximum power consumption	5 W	
	Rated power consumption	1.5 W	
	Maximum terminal cross-section	25 mm^2 (power) / 2.5 mm^2 (control)	
	Environmental limits	-25°C +55°C / 93% R.H.	
	No. of DIN modules	5	8
BACKUP	Response time	2 s	
	Reconnection time	180 s	
	Contact	12 VAC/VDC, 0.1 A	
PERM.	Disconnection voltage	according to standard IEC 63052	
	Disconnection time		
	Reconnection voltage	<255 V ± 2 %	
	Reconnection time	200 s ± 5 %	
UNDERVOLT.	Disconnection voltage	<170 V ± 2 %	
	Disconnection time	10 s ± 5 %	
	Reconnection voltage	>200 V ± 2 %	
	Reconnection time	200 s ± 5 %	
MCB	Rated current In	16, 20, 25, 32, 40, 50, 63 A (according to model)	
	Tripping curve code	C	
	Energy limiting class	3	
	Insulation voltage Ui	500 V	
	Rated impulse withstand voltage Uimp	4 kV	
	Breaking Capacity (I_{cn})	6 kA	
	Rated operating short circuit breaking capacity (Ics)	6 kA	
MECHANICAL	Protection degree	IP20	
	Polution degree	2	
	Tightening torque	2.5 Nm	
	Mounting	Rail DIN 35 mm	
	Approx. average weight	450 g	700 g
	Approx. packed weight	500 g	800 g
	Dimensions (width x height x depth)	90 x 90 x 71 mm	140 x 90 x 71 mm
COMPLIANCE	POP	IEC 63052	
	MCB	IEC 60898	
	ARD	IEC 63024	
	Directives	2014/35/UE (LVD) 2014/30/UE (EMC) 2011/65/UE (RoHS)	



Operation

Backup:
In the event of a mains voltage loss (V < 100 VAC) or permanent overvoltage (V > 275 VAC), COMBI-PRO-MAX isolates the electrical installation from the grid, connects N and PE, and activates the inverter's backup mode. The operating time is 2 seconds, although the inverter may take longer to activate. COMBI-PRO-MAX allows manual reconnection to the grid by deactivating the backup mode.

If the mains voltage is restored to normal values (200 VAC ≤ V ≤ 265 VAC), after 3 minutes, COMBI-PRO-MAX deactivates the backup mode of the inverter, disconnects N and PE, and reconnects the installation to the electrical grid.

Backup ON	V<100VAC	→	GRID —o/o— LOAD	→	Backup ON —o/o—	
Backup OFF	V≥200VAC	→	3 minutes	→	Backup ON —o/o—	→ GRID —o/o— LOAD

In the event of a mains fault at the Huawei MAP0 backup ON GRID / OFF GRID, swap two phases with each other at the inverter supply. If the problem persists, contact us at info@toscano.es.

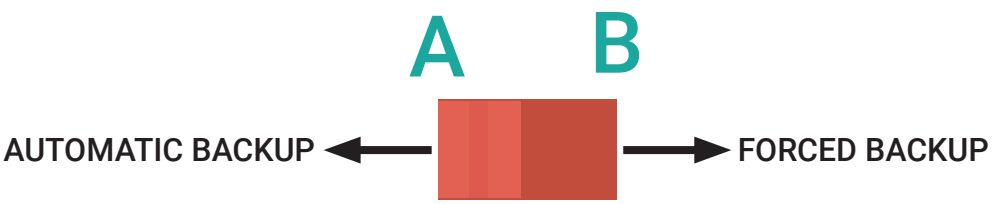
Overvoltage and undervoltage:
When the mains voltage exceeds or drops below the values established in the IEC 63052 standard, COMBI-PRO-MAX protects the electrical installation by isolating it from the grid. The operating time depends on the detected voltage level, in accordance with this standard.

Disconnection time according IEC 63052		
U	Tmin	Tmax
275 VAC	3 s	15 s
300 VAC	1 s	5 s
350 VAC	0.25 s	0.75 s
400 VAC	0.07 s	0.20 s

If the voltage is restored to normal values (200 VAC ≤ V ≤ 265 VAC), COMBI-PRO-MAX will reconnect the installation to the grid.

Test:
COMBI-PRO-MAX is equipped with a switch that allows the installation to be set to forced backup mode. This way, the installation can be tested, maintained, or any other work or inspection can be carried out.

To activate manual backup mode, move the mode switch to position B. This will activate backup mode. In this mode, COMBI-PRO-MAX does not allow manual reset. To deactivate forced backup mode, move the switch to position A. COMBI-PRO-MAX will enter normal operating mode.



Status indicator:
The device is also equipped with an LED light that indicates the status of the input voltage and the island mode:

- Green: Voltage within normal, island mode deactivated.
- Green flashing: Timing for automatic switch-on.
- Red flashing fast: Overvoltage, the MCB trips and island mode is activated.
- Slow flashing red: Undervoltage, the MCB trips and island mode is activated.
- Red: MCB is down due to overcurrent, short circuit or manually. Island mode disabled.
- Off: Loss of power supply. Island mode activated.

Models

COMBI-PRO-MAX-2.1-2P

Code	Reference
10006161	COMBI-PRO-MAX-2.1-2P16
10006162	COMBI-PRO-MAX-2.1-2P20
10006163	COMBI-PRO-MAX-2.1-2P25
10006164	COMBI-PRO-MAX-2.1-2P32
10006165	COMBI-PRO-MAX-2.1-2P40
10006166	COMBI-PRO-MAX-2.1-2P50
10006167	COMBI-PRO-MAX-2.1-2P63

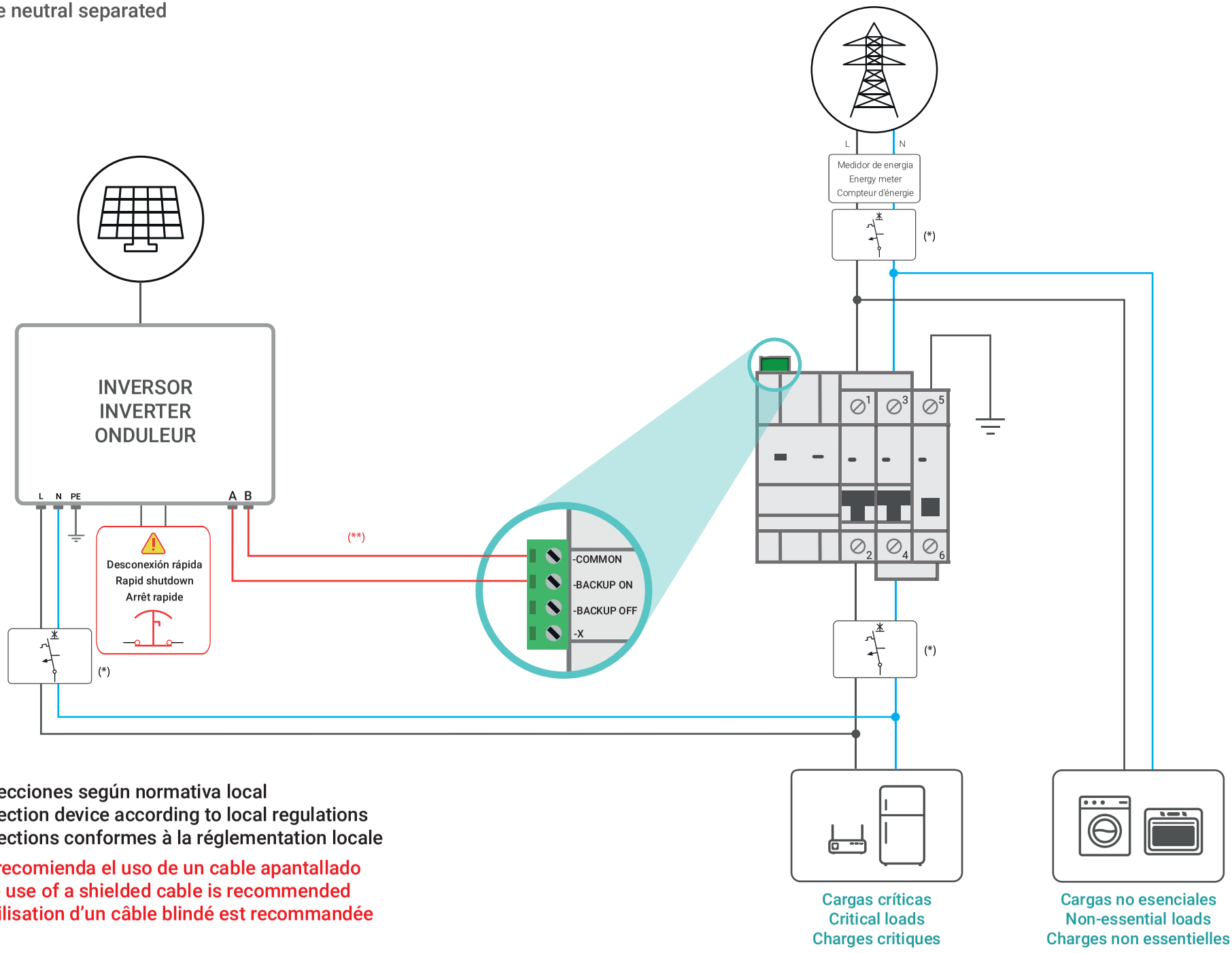
COMBI-PRO-MAX-2.1-4P

Code	Reference
10006168	COMBI-PRO-MAX-2.1-4P16
10006169	COMBI-PRO-MAX-2.1-4P20
10006170	COMBI-PRO-MAX-2.1-4P25
10006171	COMBI-PRO-MAX-2.1-4P32
10006172	COMBI-PRO-MAX-2.1-4P40
10006173	COMBI-PRO-MAX-2.1-4P50
10006174	COMBI-PRO-MAX-2.1-4P63

Compatible inverters

COMBI-PRO-MAX-2P-2.1	COMBI-PRO-MAX-4P-2.1
Huawei SUN2000-(2KTL-6KTL)-L1	Huawei SUN2000-(3KTL-12KTL)-M1
Huawei SUN2000-(8K-10K)-LC0	Huawei SUN2000-(12K-25K)-MB0
Huawei SUN2000-(3K-6K)-LB0	Huawei SUN5000-(17K,25K)-MB0
Kostal Plenticore MP G3	Huawei SUN2000-(5K-12K)-MAP0
GROWATT MIN-(2500-6000)-TL-XH	Huawei SUN5000-(8K,12K)-MAP0
SIGENERGY Sigen Hybrid SP2	Kostal Plenticore G3
SIGENERGY SIGENSTOR SP	SIGENERGY SIGEN Hybrid TP2
	SIGENERGY SIGENSTOR TP

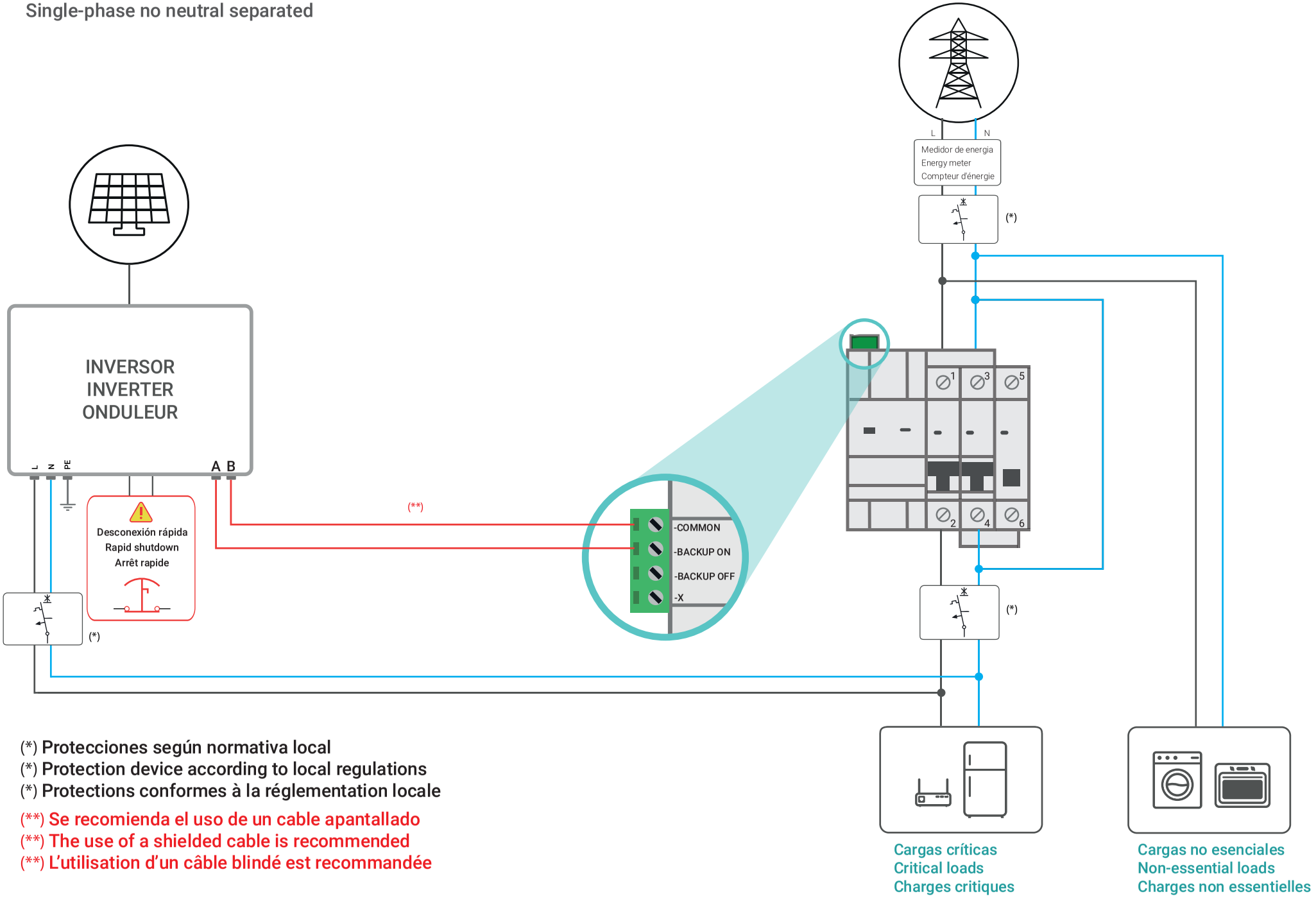
Single-phase neutral separated



(*) Protecciones según normativa local
(*) Protection device according to local regulations
(*) Protections conformes à la réglementation locale

(**) Se recomienda el uso de un cable apantallado
(**) The use of a shielded cable is recommended
(**) L'utilisation d'un câble blindé est recommandée

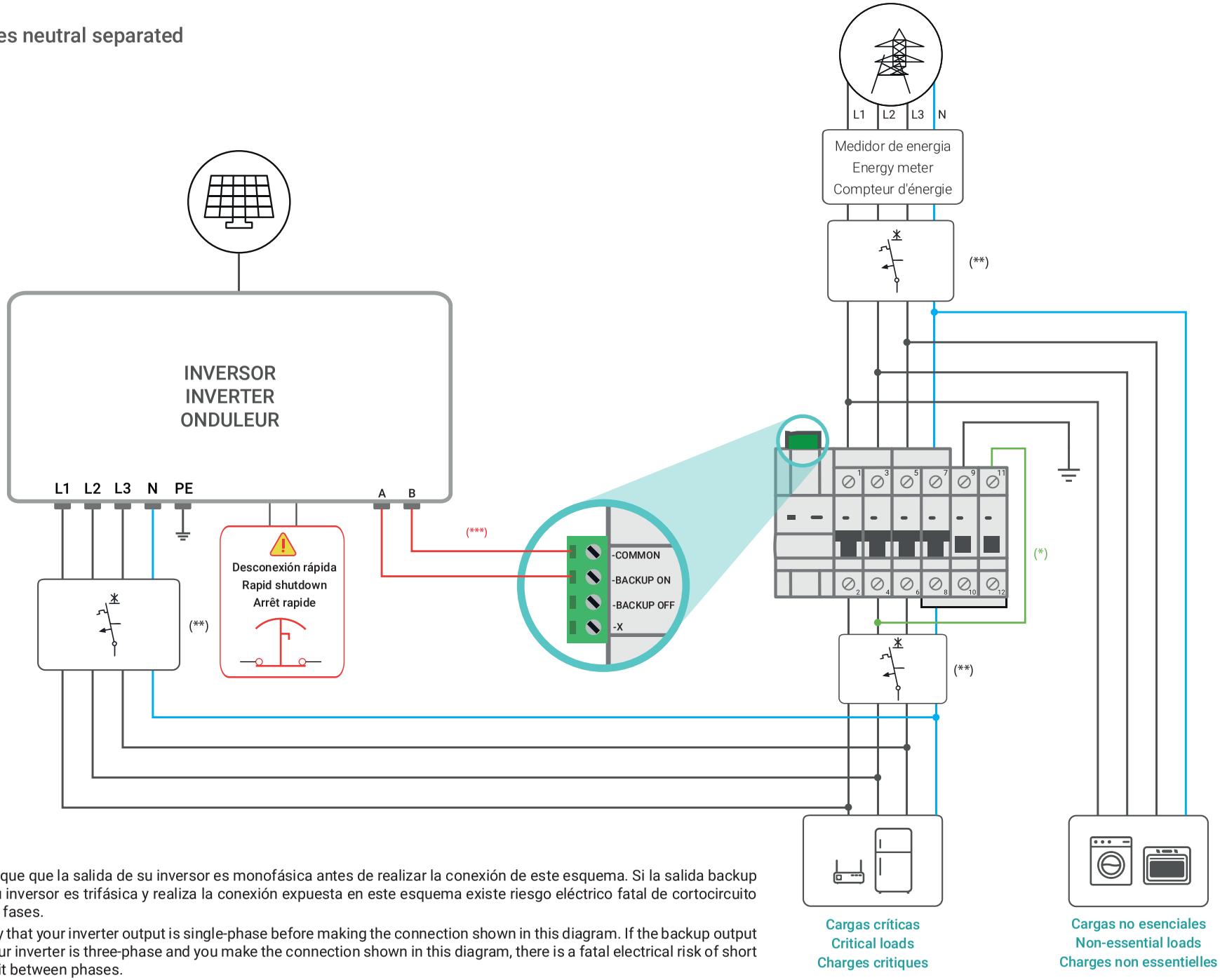
Single-phase no neutral separated



(*) Protecciones según normativa local
(*) Protection device according to local regulations
(*) Protections conformes à la réglementation locale

(**) Se recomienda el uso de un cable apantallado
(**) The use of a shielded cable is recommended
(**) L'utilisation d'un câble blindé est recommandée

Three phases neutral separated



(*) IMPORTANTE. Este puente solo se debe realizar en los modelos "M1" y "MB0" de Huawei.
NO HACER EN "MAP0" O INVERSORES CON SALIDAS BACKUP TRIFÁSICAS.
(*) IMPORTANT. This jumper should only be made on Huawei models "M1" and "MB0".
DO NOT MAKE ON "MAP0" OR INVERTERS WITH THREE-PHASE BACKUP OUTPUTS.
(*) IMPORTANTE. Ce pont ne doit être réalisé que sur les modèles Huawei "M1" et "MB0".
NE PAS FAIRE SUR « MAP0 » NI SUR LES ONDULEURS AVEC SORTIES BACKUP TRIPHASÉES.

(**) Protecciones según normativa local
(**) Protection device according to local regulations
(**) Protections conformes à la réglementation locale

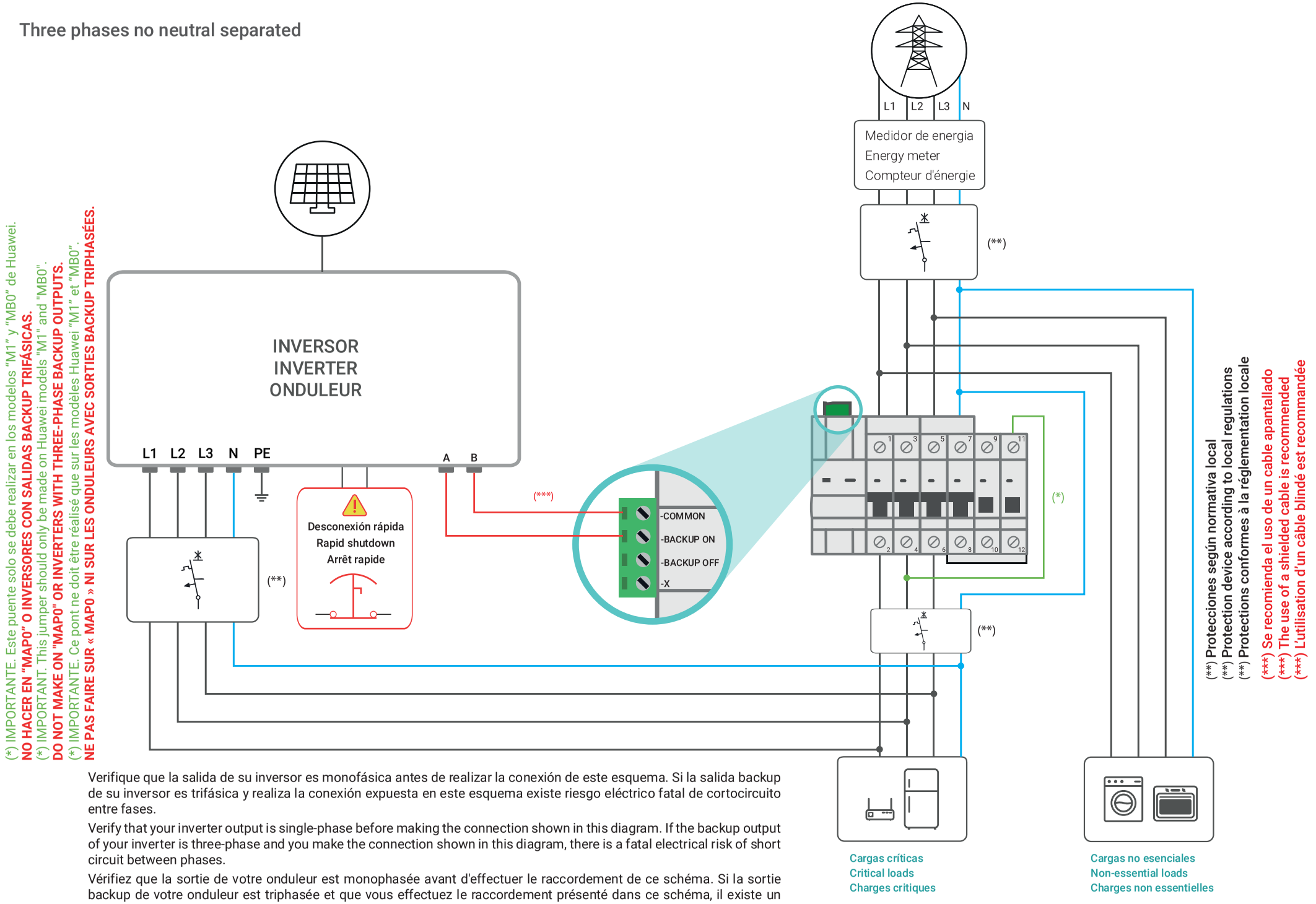
(***) Se recomienda el uso de un cable apantallado
(***) The use of a shielded cable is recommended
(***) L'utilisation d'un câble blindé est recommandée

Verifique que la salida de su inversor es monofásica antes de realizar la conexión de este esquema. Si la salida backup de su inversor es trifásica y realiza la conexión expuesta en este esquema existe riesgo eléctrico fatal de cortocircuito entre fases.

Verify that your inverter output is single-phase before making the connection shown in this diagram. If the backup output of your inverter is three-phase and you make the connection shown in this diagram, there is a fatal electrical risk of short circuit between phases.

Vérifiez que la sortie de votre onduleur est monophasée avant d'effectuer le raccordement de ce schéma. Si la sortie backup de votre onduleur est triphasée et que vous effectuez le raccordement présenté dans ce schéma, il existe un risque électrique fatal de court-circuit entre phases.

Three phases no neutral separated



(*) IMPORTANTE. Este puente solo se debe realizar en los modelos "M1" y "MB0" de Huawei.
NO HACER EN "MAP0" O INVERSORES CON SALIDAS BACKUP TRIFÁSICAS.
(*) IMPORTANT. This jumper should only be made on Huawei models "M1" and "MB0".
DO NOT MAKE ON "MAP0" OR INVERTERS WITH THREE-PHASE BACKUP OUTPUTS.
(*) IMPORTANTE. Ce pont ne doit être réalisé que sur les modèles Huawei "M1" et "MB0".
NE PAS FAIRE SUR « MAP0 » NI SUR LES ONDULEURS AVEC SORTIES BACKUP TRIPHASÉES.

(**) Protecciones según normativa local
(**) Protection device according to local regulations
(**) Protections conformes à la réglementation locale

(***) Se recomienda el uso de un cable apantallado
(***) The use of a shielded cable is recommended
(***) L'utilisation d'un câble blindé est recommandée

Verifique que la salida de su inversor es monofásica antes de realizar la conexión de este esquema. Si la salida backup de su inversor es trifásica y realiza la conexión expuesta en este esquema existe riesgo eléctrico fatal de cortocircuito entre fases.

Verify that your inverter output is single-phase before making the connection shown in this diagram. If the backup output of your inverter is three-phase and you make the connection shown in this diagram, there is a fatal electrical risk of short circuit between phases.

Vérifiez que la sortie de votre onduleur est monophasée avant d'effectuer le raccordement de ce schéma. Si la sortie backup de votre onduleur est triphasée et que vous effectuez le raccordement présenté dans ce schéma, il existe un risque électrique fatal de court-circuit entre phases.

Single-phase inverters

	Terminales Backup del inversor Backup inverter terminals Terminaux backup de l'onduleur	
INVERSOR INVERTER ONDULEUR	**A**	**B**
HUAWEI SUN2000-(2KTL...6KTL)-L1 SUN2000-(8K...10K)-LC0 SUN2000-(3K...6K)-LB0	5 GND	8 DI2
KOSTAL PLENTICORE MP G3 (Necesita resistencia de 6,8 kΩ) (Requires a 6.8 kΩ resistor) (Nécessite une résistance de 6,8 kΩ)	GND	In1
GROWATT MIN-(2500...6000)-TL-XH	8	3
SIGENERGY SIGENSTOR SP SIGEN HYBRID SP2	DI1	GND

Three-phase inverters

	Terminales Backup del inversor Backup inverter terminals Terminaux backup de l'onduleur	
INVERSOR INVERTER ONDULEUR	**A**	**B**
HUAWEI SUN2000-(3KTL...10KTL)-M1 SUN2000-(12K...25K)-MC0 SUN5000-(17K, 25K)-MB0	16	8
HUAWEI SUN2000-(5K-12K)-MAP0 SUN5000-(8K,12K)-MAP0	9	7
KOSTAL PLENTICORE G3 (Necesita resistencia de 6,8 kΩ) (Requires a 6.8 kΩ resistor) (Nécessite une résistance de 6,8 kΩ)	GND	In1
SIGENERGY SIGENSTOR TP SIGEN HYBRID TP2	DI1	GND

Scan for more information:

Cod. 50023359. Ed. 10.26

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