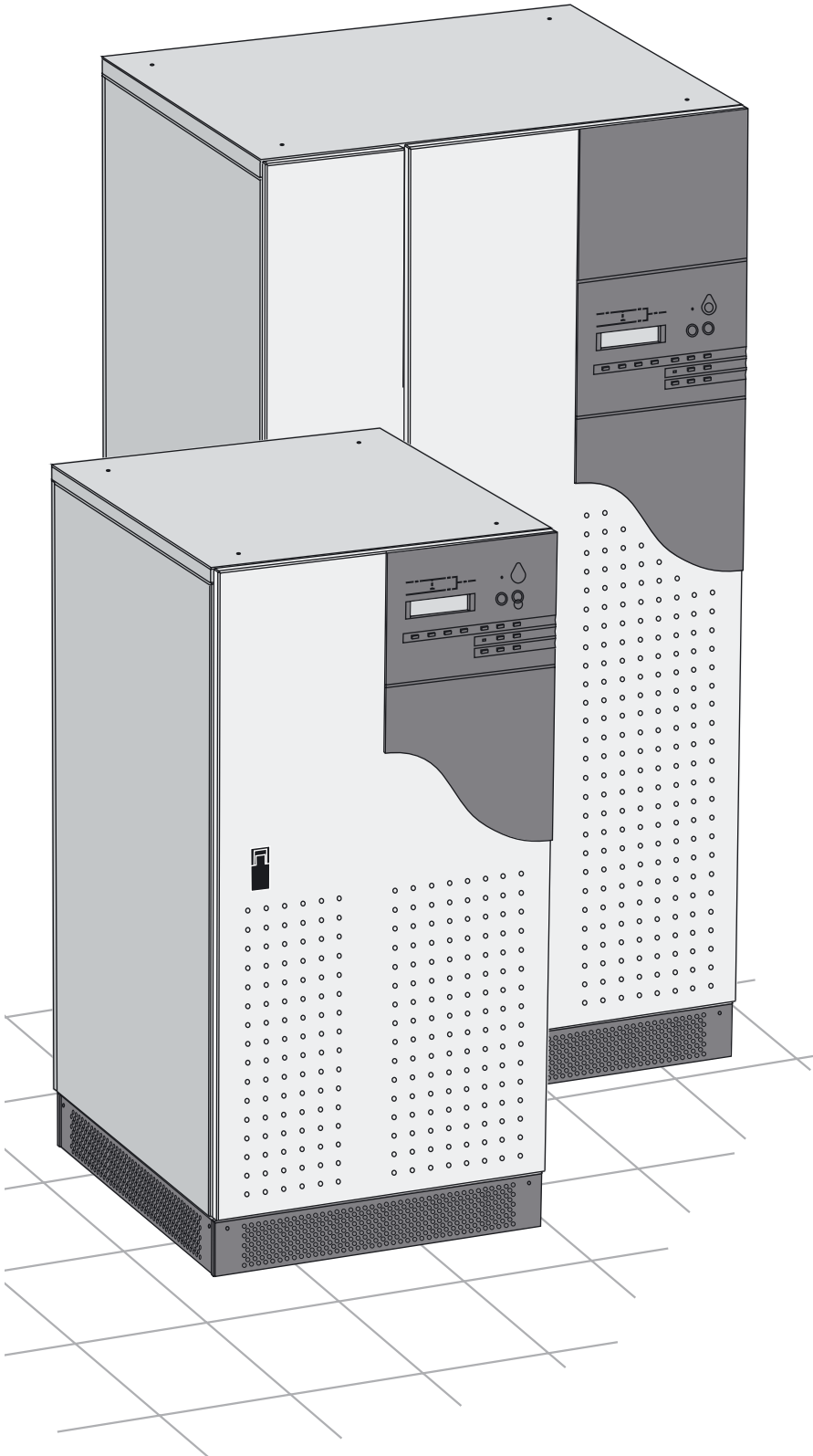


MGE™ Galaxy™ PW

20 - 200 kVA

Installation manual



APC®

by Schneider Electric

Characteristics

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Characteristics

General characteristics of MGE™ Galaxy™ PW UPSs

| UPS power rating in kVA | 20 | 30 | 40 | 50 | 60 | 80 | 100 | 120 | 160 | 200 | |
|--|---|--|------|------|-----|------|---------------|------|------|------|------|
| Normal AC input | | | | | | | | | | | |
| Number of conductors | 3 phases | | | | | | | | | | |
| Rated voltage and tolerances | 380 V or 400 V or 415 V \pm 10% (adjustable to \pm 15%) | | | | | | | | | | |
| Rated frequency and tolerances | 50 Hz or 60 Hz / \pm 10% | | | | | | | | | | |
| THDI with THM filter | < 4% | | | | | | | | | | |
| Power factor with THM filter | up to 0,96 | | | | | | | | | | |
| Bypass AC input | | | | | | | | | | | |
| Number of conductors | 3 phases + neutral | | | | | | | | | | |
| Rated voltage and tolerances | 380 V or 400 V or 415 V / \pm 10% | | | | | | | | | | |
| Rated frequency and tolerances | 50 Hz or 60 Hz / \pm 10% | | | | | | | | | | |
| Load | | | | | | | | | | | |
| Number of conductors | 3 phases + neutral | | | | | | | | | | |
| Ph/Ph voltages | 380 V or 400 V or 415 V (according to setting) | | | | | | | | | | |
| Ph/N voltages | 220 V or 230 V or 240 V (according to setting) | | | | | | | | | | |
| Voltage fluctuations | \pm 1% | | | | | | | | | | |
| Adjustable frequency and tolerances (on battery power) | 50 Hz or 60 Hz \pm 0,05 Hz | | | | | | | | | | |
| Synchronisation with bypass | \pm 0,5 Hz (adjustable from \pm 0,25 Hz to \pm 2 Hz) | | | | | | | | | | |
| Voltage variation for 0 to 100% load step change | \pm 2% ((with battery) | | | | | | | | | | |
| Permissible overloads | 150% for 1 minute, 125% for 10 minutes | | | | | | | | | | |
| Isc Ph/Ph (% of I rated) | 4.2 | 2.8 | 2.1 | 2.5 | 2.1 | 3.1 | 2.5 | 2.1 | 2.6 | 2.1 | |
| Isc Ph/N (% of I rated) | 6.6 | 4.4 | 3.3 | 4 | 3.3 | 5 | 4 | 3.3 | 4 | 3.3 | |
| THDU Ph/Ph and Ph/N for linear load | < 1,5% Ph/Ph, < 2% Ph/N | | | | | | | | | | |
| THDU Ph/Ph and Ph/N for non-linear load (at 80% of Pn) (1) | < 2% Ph/Ph, < 3% Ph/N | | | | | | | | | | |
| Battery | | | | | | | | | | | |
| Standard battery type | gas-recombination sealed lead-acid battery | | | | | | | | | | |
| UPS characteristics | | | | | | | | | | | |
| Active power (kW) | 16 | 24 | 32 | 40 | 48 | 64 | 80 | 96 | 128 | 160 | |
| Efficiency at 50% load (%) (values \pm 1%) | 87.5 | 90.5 | 91.5 | 92.5 | 93 | 91 | 91.5 | 92 | 93 | 93.2 | |
| Efficiency at 100% load (%) (values \pm 1%) | 91.5 | 92 | 91.5 | 93 | 92 | 92.5 | 92 | 91.5 | 92.8 | 92.5 | |
| Heat losses (2) | in KW | 1.5 | 2.1 | 3.4 | 3.6 | 4.7 | 6.2 | 8.1 | 10.1 | 12.2 | 14.8 |
| | in cal./s | 360 | 504 | 816 | 864 | 984 | 1488 | 1950 | 2420 | 2930 | 3550 |
| Storage temperature range | -25 °C to +70 °C | | | | | | | | | | |
| Operating temperature range | 0 °C to 35 °C (40 °C for 8 hours) | | | | | | | | | | |
| Relative humidity | 95% maximum | | | | | | | | | | |
| Maximum operating altitude without derating | < 1000 meters | | | | | | | | | | |
| Noise level (dBA) | 58 | 58 | 58 | 60 | 60 | 62 | 64 | 65 | 67 | 68 | |
| Dimensions (mm) | width | 715 | | | | | 1015 | | | 1215 | |
| | depth | 825 | | | | | | | | | |
| | height | 1400 or 1900 \pm 10 | | | | | 1900 \pm 10 | | | | |
| Weight (kg) (3) | 450 | 450 | 450 | 490 | 490 | 800 | 800 | 800 | 1200 | 1200 | |
| Recommended upstream earth-fault protection 1 A | | | | | | | | | | | |
| Standards | design | IEC 146 | | | | | | | | | |
| | product | ENV 50091 | | | | | | | | | |
| | safety | IEC 950, ENV 50091 | | | | | | | | | |
| | protection | IEC 521 (cubicles 1400 mm high = IP 21, cubicles 1900 mm high = IP 20) | | | | | | | | | |
| | electromagnetic compatibility | IEC 62040, ENV 50091 | | | | | | | | | |

(1): As per standards ENV 50091-3 / IEC 62040-3.

(2): The losses indicated are those produced at full rated load with the battery float charging. They must be taken into account when sizing the ventilation system.

(3): Not including any built-in options, such as harmonic filters or a bypass AC-source isolation transformer.

UPS cubicles

- ▶ the cubicles are cooled by forced ventilation. The air enters via the doors and grids at the bottom and is discharged through the back, or through the roof for the 1900 mm high cubicles (except the 160 and 200 kVA units from which the air is discharged through the roof only, which means the cubicles can be positioned against the back wall).
- ▶ connections are made through the bottom. Connections through the top are available on option for all 1900 mm high cubicles (except the 160 and 200 kVA units).

- ▶ the connection cables may be run in three ways:
 - ▷ in a trench running under the cubicles,
 - ▷ under a false floor,
 - ▷ on the floor under the cubicles, in the free space equal to the height of the feet; in this case the cables should be run side by side to avoid blocking the flow of air for ventilation;

- ▶ the cables for connections between:
 - ▷ the battery and UPS cubicles (power and control cables);
 - ▷ the bypass AC-source transformer in an auxiliary cubicle and the UPS cubicle can be supplied on option. Layout must comply with figures 5, 6 and 7. The other power cables for connections between cubicles are not supplied.
- ▶ only the wires for the intercubicle control connections between parallel-connected UPS units are supplied;
- ▶ the cubicle doors are secured by SOUTHCO locks (key CH751).

Empty battery cubicles

Characteristics of empty battery cubicles

| Cubicle width in mm | Cubicle height in mm | Cubicle depth in mm | Maximum weight (1) in kg |
|---------------------|----------------------|---------------------|--------------------------|
| 715 | 1400 ± 10 | 825 | 145 |
| | 1900 ± 10 | 825 | 180 |
| 1015 | 1400 ± 10 | 825 | 185 |
| | 1900 ± 10 | 825 | 230 |

(1) the indicated weights are for the empty cubicles, without the batteries because the total battery weight may vary widely.

Electrical parameters for selecting protective devices

Normal AC source

The parameters given in the table opposite can be used to determine the required rating of the upstream protective circuit breaker on the normal AC input for one single-UPS or parallel-UPS unit, a unit in economy mode or a frequency converter.

Important:

It is essential to choose the type of circuit breaker according to its breaking capacity and the prospective short-circuit current at its place of installation (see Schneider Electric LV documentation).

Note:

For normal AC source power supply voltages of 380, 400 and 415 V, the normal AC source current is the same because it is a function of the DC voltage.

Electrical parameters for the normal AC source

| Rated UPS output in kVA | Current normal AC source | | | |
|-------------------------|---|---------------------|----------------------|----------------------|
| | Rated current I_n for unit: | | for 25% overload (3) | for 50% overload (3) |
| | with battery at start of charge cycle (1) | without battery (2) | | |
| 20 | 36 | 33 | 41 | 50 |
| 30 | 53 | 49 | 62 | 74 |
| 40 | 71 | 66 | 83 | 100 |
| 50 | 88 | 83 | 103 | 124 |
| 60 | 107 | 100 | 125 | 150 |
| 80 | 142 | 133 | 166 | 200 |
| 100 | 179 | 166 | 208 | 249 |
| 120 | 214 | 199 | 249 | 299 |
| 160 | 282 | 262 | 329 | 397 |
| 200 | 358 | 329 | 414 | 501 |

(1) the rated normal AC source currents (I_n) have been determined for a rated phase-to-phase voltage of 400 V, a battery with a 10 minute backup time at the beginning of its charge with 206 cells at 2 Volts per cell (412 Volts) and full rated load with a power factor of 0.8.

(2) The rated normal AC source currents (I_n) have been determined for a minimum float charging voltage of 423 V and full rated load with a power factor of 0.8.

(3) the normal AC source currents given for an overload of 25% or 50% are maximum values. They have been determined for a battery with minimum float charging voltage and a load power factor of 0.8. When choosing the circuit breaker rating, use the "rated current" column and check that the circuit breaker tripping curves are compatible with the values in the overload columns.

Characteristics (cont.)

Bypass AC source

The parameters given in the table opposite can be used to determine the required rating of the upstream protective circuit breaker on bypass AC input.

Important:

It is essential to choose the type of circuit breaker for bypass AC input according to its breaking capacity and the prospective short-circuit current at its place of installation (see Schneider Electric LV documentation).

This choice must also be made so as to protect the static-switch semiconductors with respect to the maximum permissible currents (see table opposite) and ensure discrimination between the UPS output fuses (see the fuse curves in figures 1 and 2) and the downstream protection devices.

Remark:

If the installation includes a transformer on the bypass AC input, allow for the inrush current caused by magnetisation of the transformer windings.

Electrical parameters for bypass AC source (415 V)

| Rated UPS output in kVA | Current bypass AC source (1) | | |
|-------------------------|------------------------------|------------------|------------------|
| | Rated current I_n | for 25% overload | for 50% overload |
| 20 | 29 | 36 | 43 |
| 30 | 43 | 53 | 64 |
| 40 | 58 | 73 | 87 |
| 50 | 72 | 90 | 108 |
| 60 | 87 | 108 | 130 |
| 80 | 116 | 145 | 174 |
| 100 | 144 | 180 | 216 |
| 120 | 174 | 218 | 261 |
| 160 | 231 | 289 | 347 |
| 200 | 289 | 362 | 434 |

(1) the bypass AC source currents have been determined for a rated phase-to-phase voltage of 400 V, a load power factor of 0.8 and for full rated load as well as overloads of 25% or 50%. When choosing the circuit breaker rating, use the "rated current" column and check that the circuit breaker tripping curves are compatible with the data in the overload columns.

For a bypass AC source voltage of 380 V, multiply the currents indicated in this table by 1.09. For a bypass AC source voltage of 400 V, multiply the currents indicated in this table by 1.04.

| UPS output in kVA | Maximum permissible current |
|-------------------|-----------------------------|
| 20 | 43 I_n for 20 ms |
| 30 | 29 I_n for 20 ms |
| 40 | 21 I_n for 20 ms |
| 50 | 20 I_n for 20 ms |
| 60 | 16 I_n for 20 ms |
| 80 | 27 I_n for 20 ms |
| 100 | 21 I_n for 20 ms |
| 120 | 18 I_n for 20 ms |
| 160 | 23 I_n for 20 ms |
| 200 | 19 I_n for 20 ms |

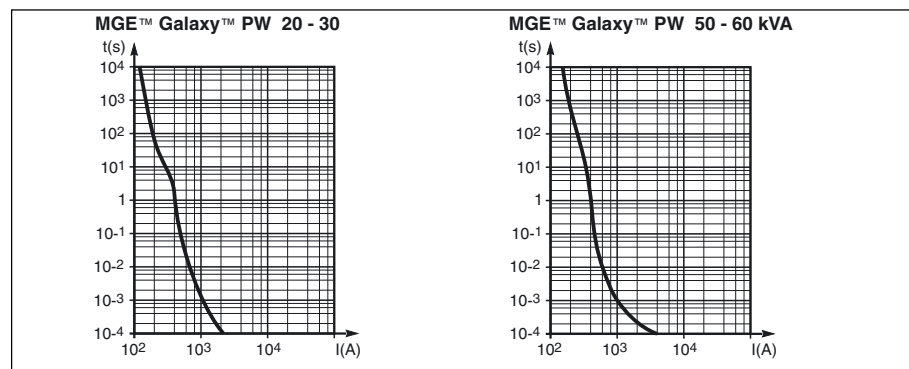


Fig. 1

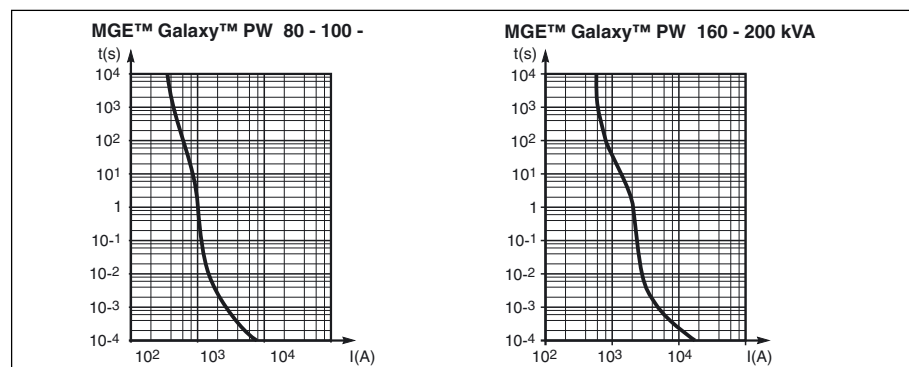


Fig. 2

Recommended protection Ratings of recommended protection devices upstream of a single-UPS unit (Merlin Gerin circuit breakers)

protection upstream of MGE™ Galaxy™ PW

The information provided here is purely indicative, for a single-UPS unit supplied by a 380 to 415 V, 50 to 60 Hz distribution system. Check that all the criteria mentioned in the previous section are taken into account (short-circuit current and protection of the static-switch semiconductors on the bypass AC input).

| Rated UPS output in kVA | Circuit breaker on normal AC input | | Circuit breaker on bypass AC input | |
|-------------------------|------------------------------------|--------------|------------------------------------|--------------|
| | Circuit breaker | Control unit | Circuit breaker | Control unit |
| 20 | NS 100N 3P | TM 63D | NS 100N 4P | TM 63D |
| 30 | NS 100N 3P | TM 63D | NS 100N 4P | TM 63D |
| 40 | NS 100N 3P | TM 80D | NS 100N 4P | TM 80D |
| 50 | NS 100N 3P | TM 100D | NS 100N 4P | TM 100D |
| 60 | NS 125E 3P | TM 125D | NS 125E 4P | TM 125D |
| 80 | NS 160N 3P | TM 160D | NS 160N 4P | TM 160D |
| 100 | NS 250N 3P | TM 200D | NS 250N 4P | TM 200D |
| 120 | NS 250N 3P | TM 250D | NS 250N 4P | TM 250D |
| 160 | NS 400N 3P | STR 23 SE | NS 400N 4P | STR 23 SE |
| 200 | NS 400N 3P | STR 23 SE | NS 400N 4P | STR 23 SE |

Protection downstream of MGE™ Galaxy™ PW

These protection devices ensure discrimination for each of the MGE™ Galaxy™ PW output circuits. If the recommended downstream protection is not installed and a short-circuit occurs, the result may be a break longer than 20 ms on all the other output circuits.

Ratings of recommended protection devices downstream of a single-UPS unit (Merlin Gerin circuit breakers)

| Rated UPS output in kVA | Downstream circuit breaker(s) | |
|-------------------------|-------------------------------|-----------------|
| | Circuit breaker | Control unit |
| 20 to 40 kVA | C60N | C 10A B 20A |
| 50 to 60 kVA | C60N | C 20A B 32A |
| 80 to 120 kVA | C60N NC100 | C 50A B 63A |
| 160 to 200 kVA | NC100 | C 63A B 100A |

Electrical parameters for determining cable cross-sections

► this table has been drawn up for rated phase-to-phase AC source and load voltages of 400 V. For voltages of 380 V or 415 V, multiply the currents for the bypass AC source and the load by 1.05 and 0.96 respectively;

► the current values and cable cross-sections for the normal AC source are given for full rated load with a power factor of 0.8 and a battery consuming its minimum float charging voltage.
 ► the battery current values and cable cross-sections have been determined for a battery at the end of discharging;

► the current values and cable sections for the bypass AC source and load are given for full rated load with a power factor of 0.8.
 For frequency converters, the parameters concerning the bypass AC source are not applicable.

Parameters for cables for a single-UPS unit

| Rated UPS output in kVA | Line currents absorbed in Amps | | | Cross-sectional area of Cu cables in mm ² (2) | | |
|-------------------------|--|---------------------------------|---------|--|---------------------------------|------------|
| | Normal AC source with or without battery (1) | 400 V bypass AC source and load | Battery | Normal AC source with or without battery | 400 V bypass AC source and load | Battery |
| 20 | 33 | 29 | 52 | 16 | 16 | 16 |
| 30 | 49 | 43 | 72 | 25 | 25 | 25 |
| 40 | 66 | 58 | 103 | 35 | 35 | 35 |
| 50 | 83 | 72 | 128 | 50 | 35 | 50 |
| 60 | 100 | 87 | 154 | 50 | 50 | 70 |
| 80 | 133 | 116 | 205 | 95 or 2x50 | 70 | 95 or 2x50 |
| 100 | 166 | 144 | 256 | 95 or 2x50 | 70 | 2x70 |
| 120 | 199 | 174 | 308 | 95 or 2x50 | 70 | 2x70 |
| 160 | 262 | 231 | 410 | 95 | 95 | 2x95 |
| 200 | 329 | 289 | 512 | 120 | 120 | 2x95 |

(1) The rated normal AC source currents (In) have been determined for a minimum float charging voltage of 423 V and full rated load with a power factor of 0.8.

(2) the cable cross-sections are given for copper conductors (increase by 30% for aluminium conductors). They are calculated according to permissible temperature rise and allow for line voltage drops over a maximum length of 100 m (AC circuits) or 25 m (DC circuits if cables not

provided). For greater lengths, the cross-sections should be chosen to limit voltage drops to 3% (AC) or 1% (DC).

Characteristics (cont.)

The table opposite serves as an example for a parallel-connected installation comprising up to four UPS units.

► for installations with redundant units, take into account only the units required to supply the load power (e.g. for an installation made up of 3 parallel-connected UPS units, one being redundant, only 2 UPS units are used to determine bypass AC source and load currents and cable cross-sections);

► this table has been drawn up for rated phase-to-phase bypass AC source and load voltages of 400 V and full rated load with a power factor of 0.8. For voltages of 380 V or 415 V, multiply the indicated currents by 1.05 and 0.96 respectively, then modify the cable cross-sections accordingly, if necessary.

The cable cross-sections in this table concern the parts illustrated in bold in the simplified diagram in figure 3, where:

- 1: normal AC source,
- 2: bypass AC source,
- A**: external bypass.

Parameters for bypass AC source and load cables for a parallel UPS configuration

| Rated unit output in kVA | Number of parallel-connected units | Total UPS rated output in kVA | Bypass AC source or load line current in Amps | Cable cross-section (1) in mm ² |
|--------------------------|------------------------------------|-------------------------------|---|--|
| 20 | 2 | 40 | 58 | 35 |
| | 3 | 60 | 87 | 50 |
| | 4 | 80 | 116 | 50 |
| 30 | 2 | 60 | 86 | 50 |
| | 3 | 90 | 129 | 70 |
| | 4 | 120 | 172 | 70 |
| 40 | 2 | 80 | 116 | 50 |
| | 3 | 120 | 174 | 70 |
| | 4 | 160 | 232 | 120 |
| 50 | 2 | 100 | 144 | 70 |
| | 3 | 150 | 216 | 95 |
| | 4 | 200 | 288 | 150 |
| 60 | 2 | 120 | 174 | 70 |
| | 3 | 180 | 261 | 120 |
| | 4 | 240 | 348 | 185 |
| 80 | 2 | 160 | 232 | 120 |
| | 3 | 240 | 348 | 185 |
| | 4 | 320 | 464 | 2x95 |
| 100 | 2 | 200 | 288 | 150 |
| | 3 | 300 | 432 | 185 |
| | 4 | 400 | 576 | 2x120 |
| 120 | 2 | 240 | 348 | 185 |
| | 3 | 360 | 522 | 2x120 |
| | 4 | 480 | 696 | 2x150 |
| 160 | 2 | 320 | 462 | 2x95 |
| | 3 | 480 | 693 | 2x150 |
| | 4 | 640 | 924 | 3x120 |
| 200 | 2 | 400 | 578 | 2x120 |
| | 3 | 600 | 866 | 2x185 |
| | 4 | 800 | 1155 | 3x185 |

(1) cable cross-sections are given for copper conductors of the U1000 R02V type (increase by 30% for aluminium conductors). They are calculated according to permissible temperature rise and allow for line voltage drops over a

maximum length of 100 m. For greater lengths, the cross-sections should be chosen to limit voltage drops to 3%.

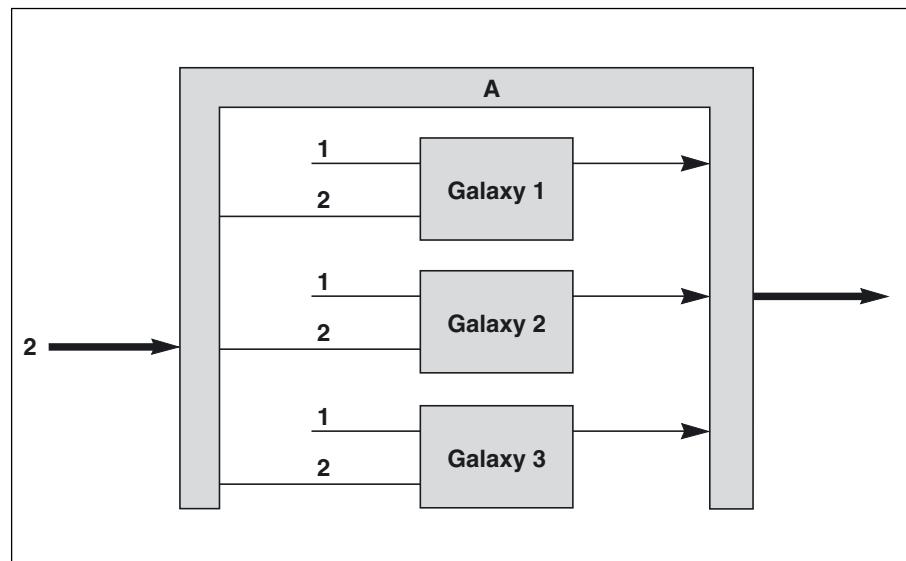


Fig. 3

Installation

(qualified personnel only)

Positioning the cubicles

- ▶ prior to moving the cubicles to their final position, remove the packing material and the base panels which were shipped on top of the cubicle. The panels will be installed at the end of the installation procedure;
- ▶ after moving them to their installation location on their pallets, cubicles can be moved short distances using a forklift or pallet-mover when the front, rear and side base panels are not mounted. The forks can be inserted from all four sides into 100 mm ±10 mm high openings;
- ▶ adjust the front foot pads to make the cubicle vertical and align the subsequent cubicles.

Note:

Dispose of packing materials in compliance with applicable legislation.

Floor loads

See figure 4, where:

- A:** the rear panel of the cubicle,
- B:** the width of the cubicle, minus 139 mm (see page 5),
- C:** the four foot pads (diameter 40 mm),
- D:** the front panel of the cubicle.

- ▶ to determine the stresses applied by the cubicle on the floor, divide the cubicle weight (see the first 3 tables of this manual) by the total area of the 4 footpads (50 cm²).

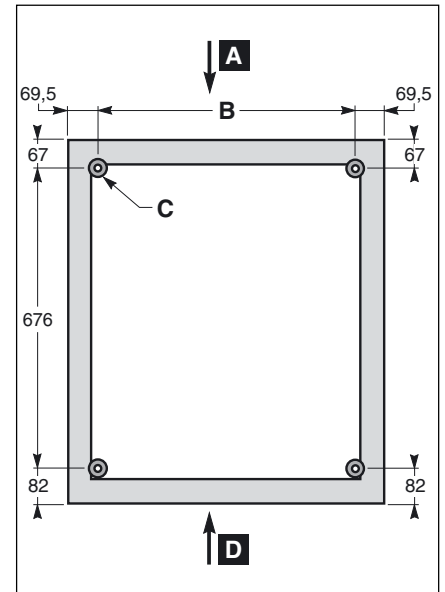


Fig. 4

Cubicle layout on a false floor or a normal floor

- ▶ see figure 5 for a single-UPS **MGE™ Galaxy™ PW** unit with a single battery cubicle;
- ▶ see figure 6 for a single-UPS **MGE™ Galaxy™ PW** unit with several battery cubicles;
- ▶ see figure 7 for two parallel-connected **MGE™ Galaxy™ PW** units with battery and auxiliary cubicles.
- ▶ an overall clearance of 400 mm must be left above the entire surface of the cubicles for ventilation;
- ▶ in rooms with unrestricted access, install a fire-protection system under the UPS cubicle.

Key for figures 5 to 7:

- A:** the width **W** of the cubicle (see the table in the Characteristics section on page 5),
- B:** the openings to be made for cables coming up through a false floor: 65 x 430 mm for 20 to 60 kVA UPS, 200 x (L-160) mm for 80 to 200 kVA UPS,
- C:** the position of a trench under the cubicles, if applicable,
- D:** front of cubicles
- E:** back of cubicles
- 1:** the battery cubicle containing circuit breaker QF1,
- 2:** a second battery cubicle,
- 3:** the UPS cubicle,
- 4:** an auxiliary cubicle, if applicable.

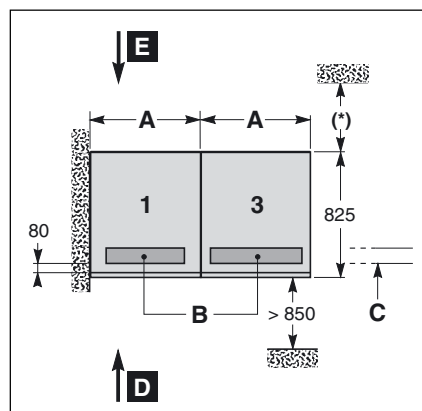


Fig. 5

(*) :



▶ The **MGE™ Galaxy™ PW 20 to 120 kVA** must be installed at a distance of at least 250 mm from a wall;

▶ **MGE™ Galaxy™ PW 160 and 200** may be positioned against a wall;

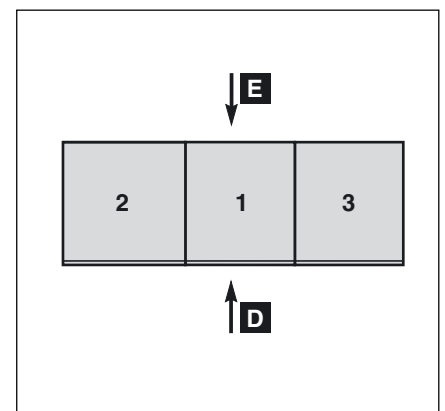


Fig. 6

▶ It is advised that, whenever possible, the units be installed at a distance of 400 mm from a wall, in order to facilitate their inspection during preventive maintenance.

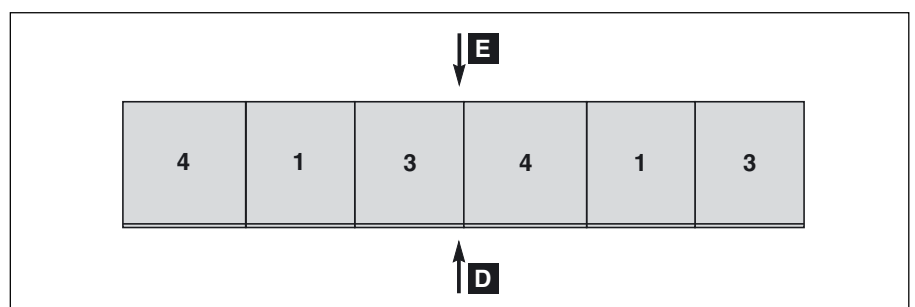


Fig. 7

Installation (cont.)

(qualified personnel only)

Power-circuit wiring diagrams

The single-wire diagrams for typical UPS installations are given in figures 8 to 11. The heavy lines represent the cables that must be connected (see the table in the previous chapter for the required cross-sectional areas of the cables).

► see figure 8 for a single-UPS **MGE™ Galaxy™ PW** unit;

► see figure 9 for a two parallel **MGE™ Galaxy™ PW** units combined for redundancy.

► see figure 10 for a two parallel **MGE™ Galaxy™ PW** units combined for higher output;

► see figure 11 for a **MGE™ Galaxy™ PW** frequency converter without a battery;

Key for figures 8 and 9:

- 1: normal AC source,
- 2: bypass AC source,
- A: the rectifier/charger module,
- B: the inverter module,
- C: the static-bypass module,
- D: the battery cubicle next to the **MGE™ Galaxy™ PW** UPS cubicle,
- E: any additional battery cubicles,
- F: the equipotential-bonding connection between cubicles,
- G: K3N contactor or output static-switch module.

MGE™ Galaxy™ PW single-UPS unit

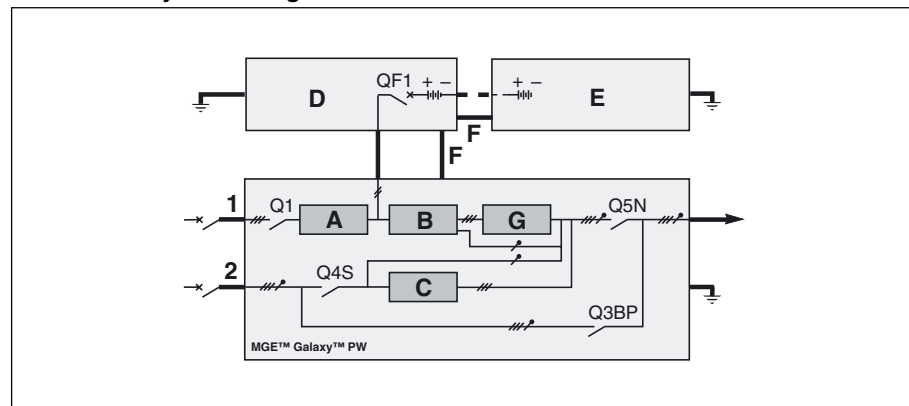


Fig. 8

MGE™ Galaxy™ PW parallel connection for redundancy

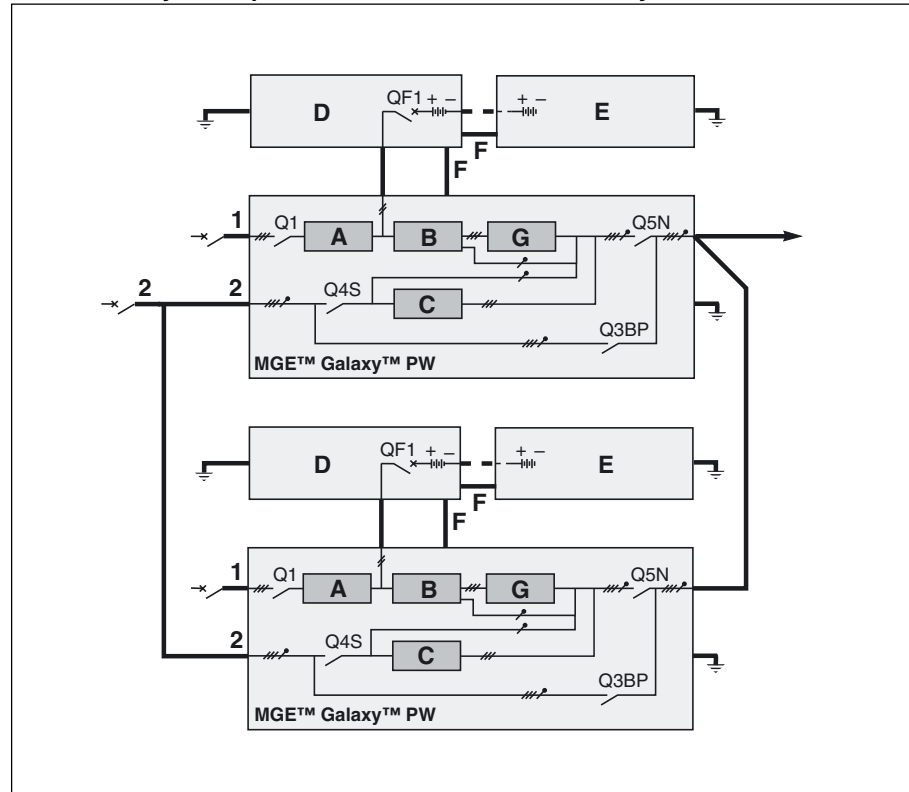


Fig. 9

Installation (cont.) (qualified personnel only)

Key for figures 9 and 10:

- 1: normal AC source,
- 2: bypass AC source,
- A: the rectifier/charger module,
- B: the inverter module,
- C: the static-bypass module,
- D: the battery cubicle next to the MGE™ Galaxy™ PW UPS cubicle,
- E: any additional battery cubicles,
- F: the equipotential-bonding connection between cubicles,
- G: K3N contactor or output static-switch module.

MGE™ Galaxy™ PW parallel connection for greater capacity

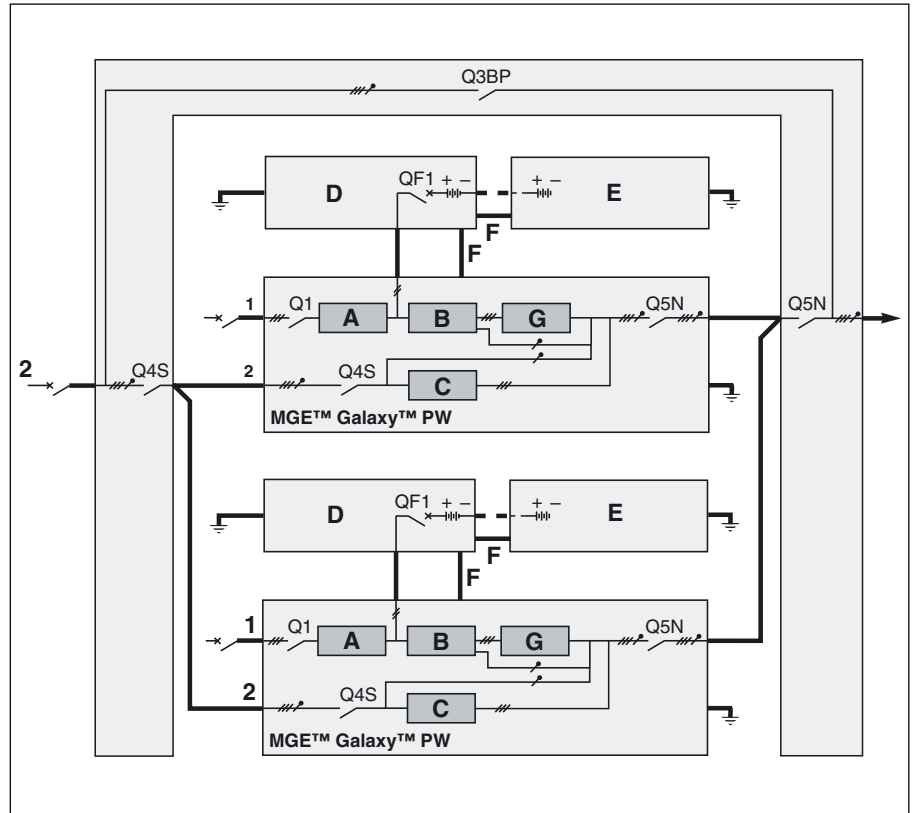


Fig. 10

MGE™ Galaxy™ PW frequency converter without a battery

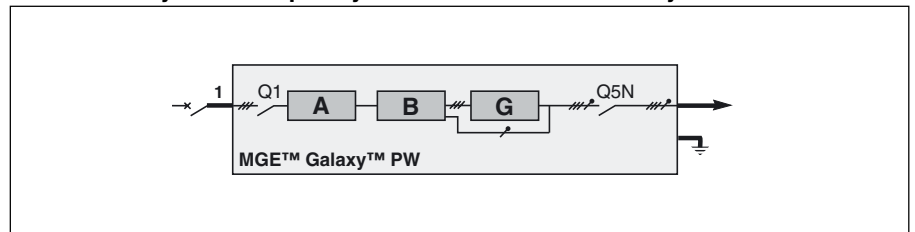


Fig. 11

Installation (cont.)

(qualified personnel only)

Connection of power circuits



Before making connections, check that switches Q1, Q4S, Q3BP, Q5N and QF1 are in the "open" position.

General:

Remark. See page 4 for information on the supplied cables and wires.

- ▶ open the doors and remove the lower terminal shields (secured by screws to the cubicle chassis) of the UPS cubicles;
- ▶ connect the power cables;
- ▶ each cubicle must be earthed;
- ▶ all the cubicles must be interconnected for equipotential bonding, forming a mesh which is itself connected to the building structure and earthing electrode;
- ▶ the connection drawings hereafter show the cubicles with doors open and terminal shields removed.

Important:

For parallel UPSs with an external bypass unit, the power connections between each UPS cubicle and the external bypass unit must imperatively be of the same length.

Outside the cubicles, separate the auxiliary wiring from the power cables.

UPS cubicle

See figure 12 for 20 to 60 kVA units, and figure 13 for 80 to 120 kVA units, and figure 14 for 160 to 200 kVA units.

Battery + and - cables are connected by lugs on 8 mm diameter pins for 20 to 120 kVA units, or by lugs on 12 mm diameter holes for 160 to 200 kVA units.

Normal/Bypass AC input and load cables are connected by tunnel terminals to the 20 to 60 kVA units, or by lugs on 10 mm diameter holes to the 80 to 120 kVA units.

Elevation of connections from ground for 20 to 60 kVA units:

- ▶ normal/bypass AC input and load: 310 mm;
- ▶ battery: 280 mm.

Elevation of connections from ground for 80 to 120 kVA units:

- ▶ normal/bypass AC input and load: 340 mm;
- ▶ battery: 310 mm.

Elevation of connections from ground for 160 to 200 kVA units:

- ▶ normal/bypass AC input and load: 410 mm;
- ▶ battery: 410 mm.

Installation (cont.) (qualified personnel only)

Key to figures 12 and 13:

- AA:** cross-sectional view of the cubicle,
- B:** front view of the cubicle,
- C:** front panel,
- D:** rear panel,
- 1:** normal AC input connection,
- 2:** bypass AC input connection,
- E:** load connection,
- F:** battery connection,
- G:** air inlets,
- H:** air outlets,
- I:** cable exit through the bottom,
- J:** trough, if applicable,
- K:** rectifier/charger module,
- L:** inverter module,
- M:** static-bypass module,
- N:** rack containing electronic boards,
- O:** Media Contacts 11 board,
- P:** slot for communications boards,
- Q:** FUE input fuses,
- R:** FUS output fuses,
- S:** ETOI board (20 to 60 kVA UPS) or RELI board (80 to 200 kVA UPS),
- T:** APOZ board,
- U:** MISI board,
- V:** modem socket switch,
- W:** trough (20 to 60 kVA) or binding bar (80 to 200 kVA) for fine wiring,
- X:** fuses for overvoltage protection RC circuit on bypass,
- Y:** control-wire connection (auxiliary "Media Contacts 11" circuits and communications options).

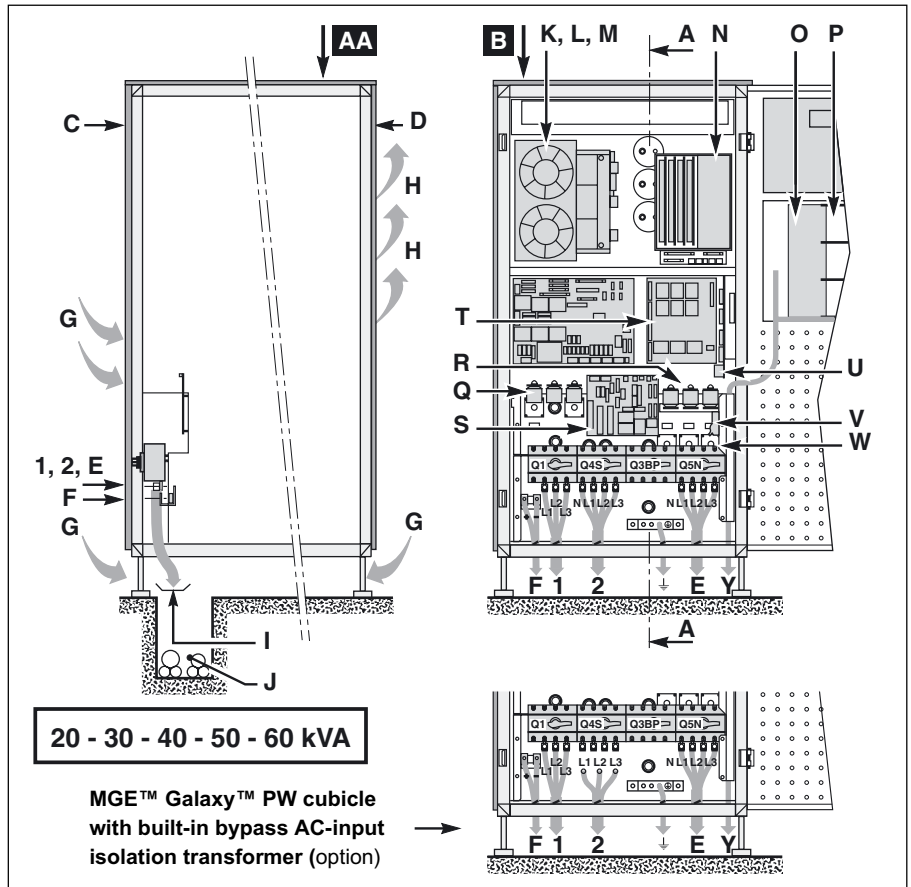


Fig. 12

Notes:

Figure 12. Switch Q3BP does not exist in parallel MGE™ Galaxy™ PW cubicles interconnected for greater capacity.

Figure 13. Switch Q3BP and "X" (protection fuses) do not exist in parallel MGE™ Galaxy™ PW cubicles interconnected for greater capacity. The bypass AC source ("2") connects to switch Q4S.

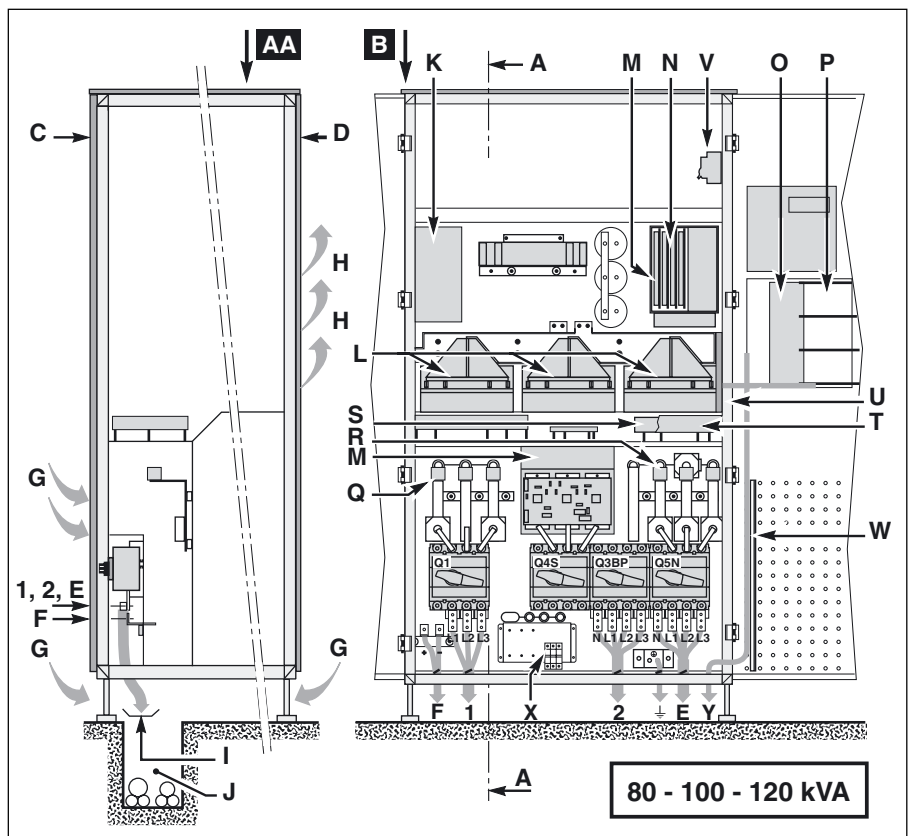


Fig. 13

Installation (cont.)

(qualified personnel only)

Key to figure 14:

- AA:** cross-sectional view of the cubicle,
- B:** front view of the cubicle,
- C:** front panel,
- D:** rear panel,
- 1:** normal AC input connection,
- 2:** bypass AC input connection,
- E:** load connection,
- F:** battery connection,
- G:** air inlets,
- H:** air outlets,
- I:** cable exit through the bottom,
- J:** trough, if applicable,
- K:** rectifier/charger module,
- L:** inverter module,
- M:** static-bypass module,
- N:** rack containing electronic boards,
- O:** Media Contacts 11 board,

- P:** slot for communications boards,
- Q:** FUE input fuses,
- R:** FUS output fuses,
- S:** ETOI board (20 to 60 kVA UPS) or RELI board (80 to 200 kVA UPS),
- T:** APOZ board,
- U:** MISI board,
- V:** modem socket switch,
- W:** trough (20 to 60 kVA) or binding bar (80 to 200 kVA) for fine wiring,
- X:** fuses for overvoltage protection RC circuit on bypass,
- Y:** control-wire connection (auxiliary "Media Contacts 11" circuits and communications options).

Note:

Figure 14. Switch Q3BP does not exist in parallel MGE™ Galaxy™ PW cubicles interconnected for greater capacity. The bypass AC source ("2") connects to switch Q4S.

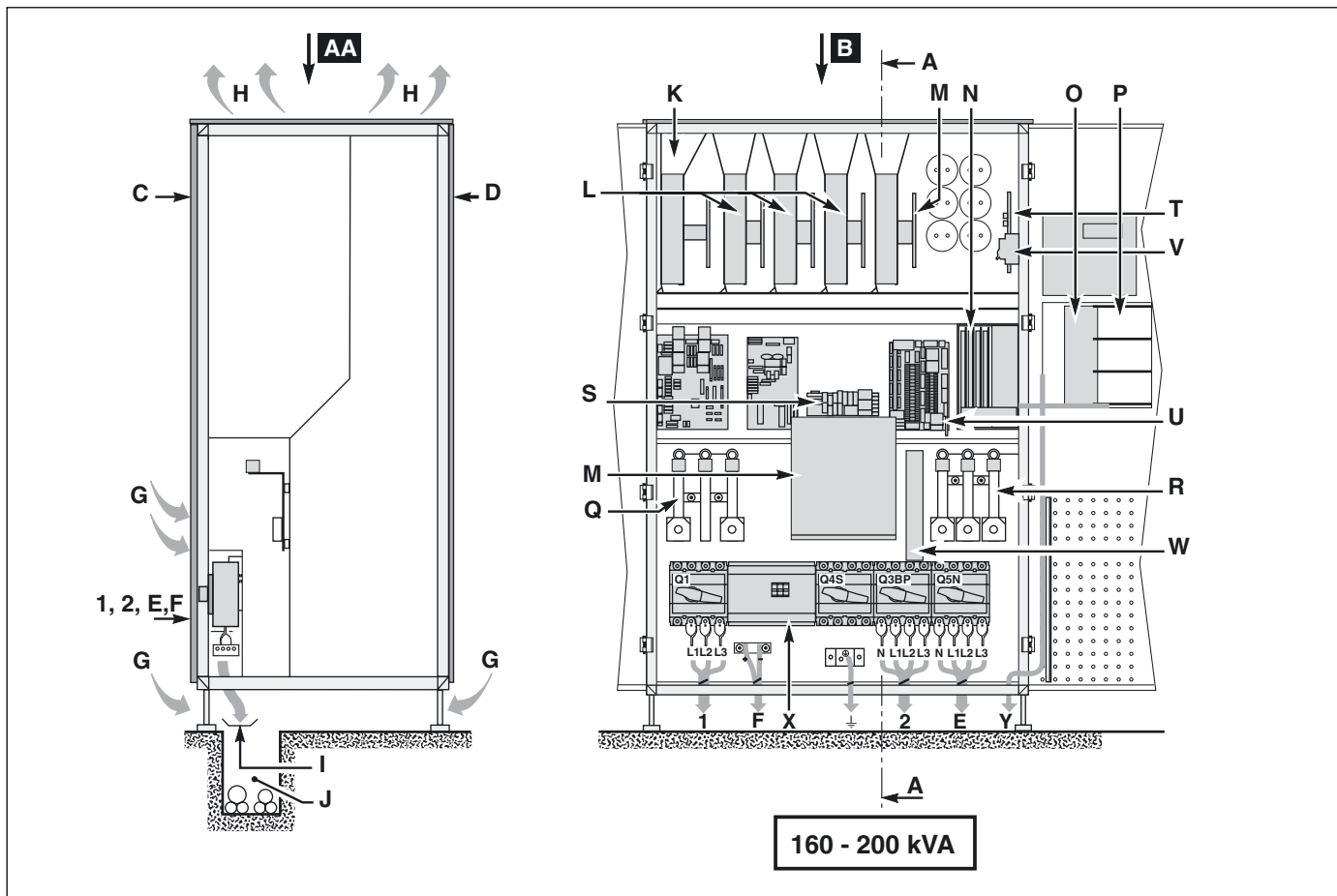


Fig. 14

Installation (cont.) (qualified personnel only)

Battery cubicle

See figure 15.

The battery cubicle shown is an example only, given that characteristics of these cubicles vary greatly from one cubicle to another.

- ▶ remove the cardboard covers and all the hooping (used only for transport);
- ▶ remove the terminal shield from the battery circuit breaker "QF1" to make the connections to this circuit breaker;
- ▶ in the case of installations having several battery cubicles, the connections to be made between cubicles are indicated in the instructions accompanying the cubicles (or in the drawing file for complicated installations);
- ▶ in the case of a UPS with a power rating from 80 to 120 kVA and connection via the top, the battery cubicle containing circuit-breaker QF1 cannot be connected to the UPS cubicle via the bottom. A roof equipped with a cable gland can be installed on this battery cubicle in order to connect it directly via the top to the inverter cubicle. Please contact our after-sales service.

Important:

- ▶ the cubicle is supplied with a fixture locking circuit breaker "QF1" in the open position. **Do not remove this fixture before commissioning.** Accidental closing of "QF1" will power up the downstream circuits which could be hazardous for personnel and permanently damage the battery by deep discharge;
- ▶ connections between battery cubicles should be made in compliance with applicable regulations. Take all protective measures associated with working on **live equipment** and in particular use only qualified personnel equipped with **gloves, protective goggles, insulated tools**, etc.

Cables are connected to copper terminals by lugs.

Note:

The optional "Temperature Monitor" unit is located at the top in one of the battery cubicles. The cubicles not fitted with a battery circuit breaker include an additional shelf for battery cells.

Key to figure 15:

- AA:** cross-sectional view of the cubicle,
- B:** front view of the cubicle,
- C:** front panel,
- D:** rear panel,
- E:** cable ties to duckboard shelf,
- F:** cable exit through the bottom,
- G:** trough, if applicable,
- H:** connection of exposed conductive parts to duckboard shelf,
- I:** cable exit to battery connection point in UPS cubicle,
- J:** cable exit to an additional battery cubicle, if applicable,
- K:** cable ties to duckboard shelf,
- L:** fixture locking circuit breaker "QF1" in the open position.

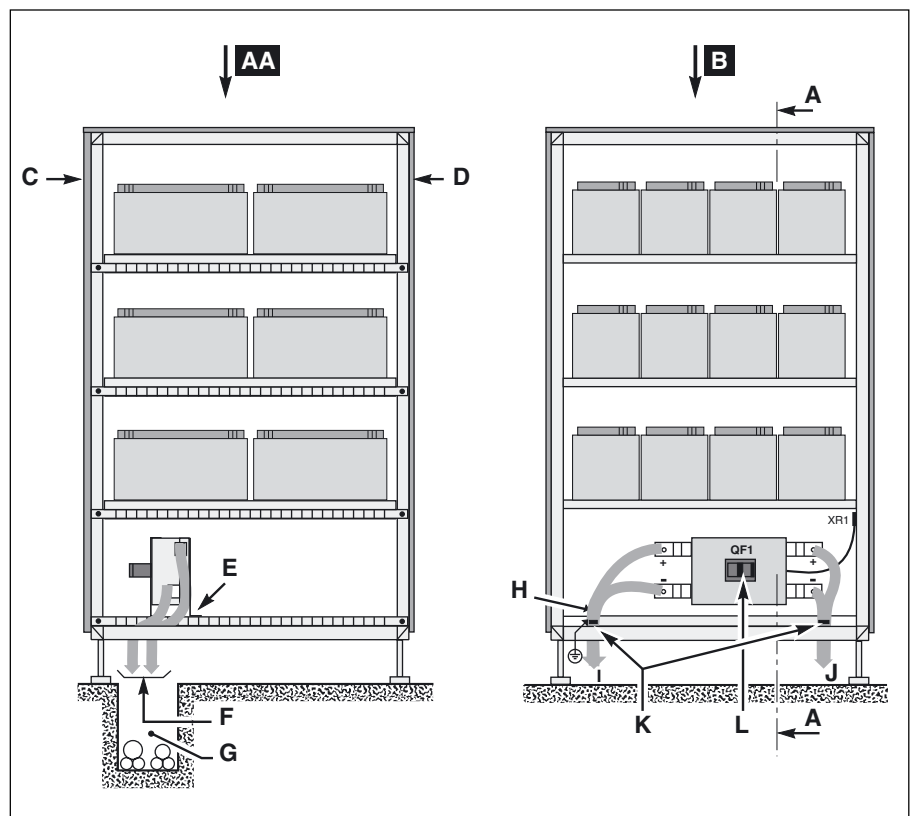


Fig. 15

Installation (cont.) (qualified personnel only)

Connection through the top

(20 to 120 kVA units)

This type of connection is possible on 1900 mm high cubicles. See figure 16.

Key to figure 16:

- AA:** cross-sectional view of the cubicle,
- B:** front view of the cubicle,
- C:** front panel,
- D:** rear panel,
- 1:** normal AC input connection,
- 2:** bypass AC input connection,
- E:** load connection,
- F:** battery connection,
- I:** air outlet grid,
- J:** passageway for cables exiting through the top (opening 460 x 197 mm with cable-gland plate),
- K:** top view of the cubicle.

Note:
For 160 to 200 kVA units, this option is not available because air is discharged through the top. However, it is possible to run normal/bypass AC input and load cables through an auxiliary cubicle (empty or containing an optional harmonic filter or bypass AC-input isolation transformer). In this case, the cables enter through the standard opening in the top and exit through the bottom of the cubicle.

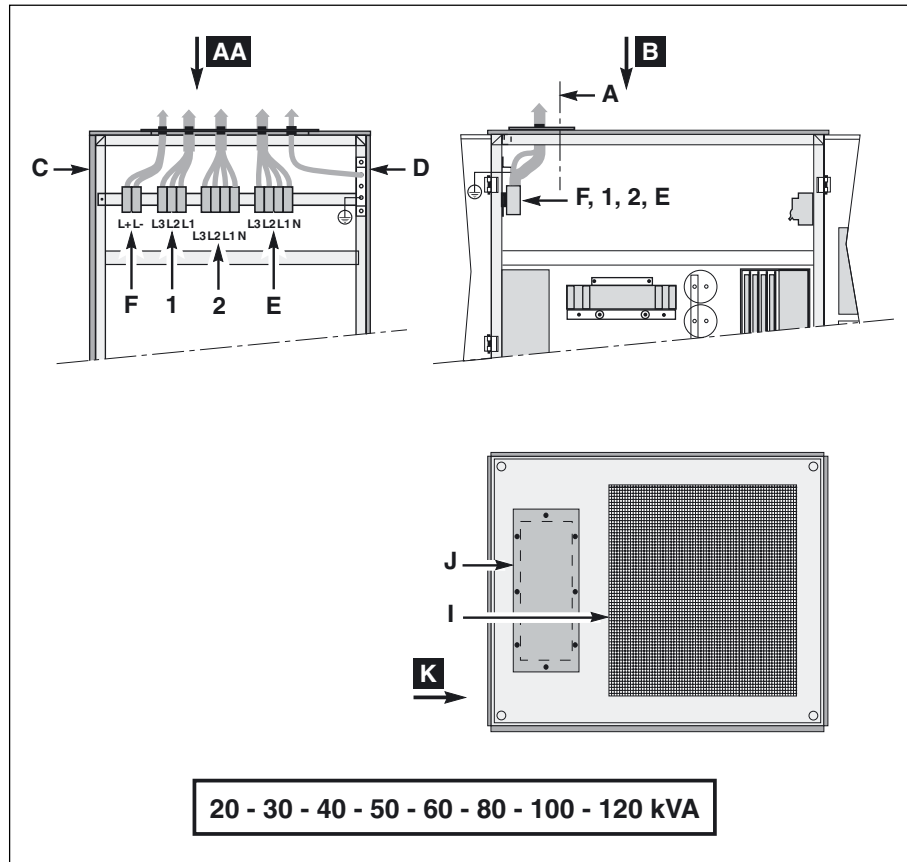


Fig. 16

Installation (cont.) (qualified personnel only)

External bypass cubicle 150 kVA

See figure 17.

Key to figure 17:

- A:** bottom view of the unit,
- B:** front view of the unit,
- C:** passageway for cables (317 x 120 mm),
- D:** bypass AC input connection for the UPS units,
- E:** connections for auxiliary wiring indicating the position of the Q4S and Q3BP switches,
- F:** connection for the UPS-unit outputs,
- G:** bypass AC input connection,
- H:** load connection.

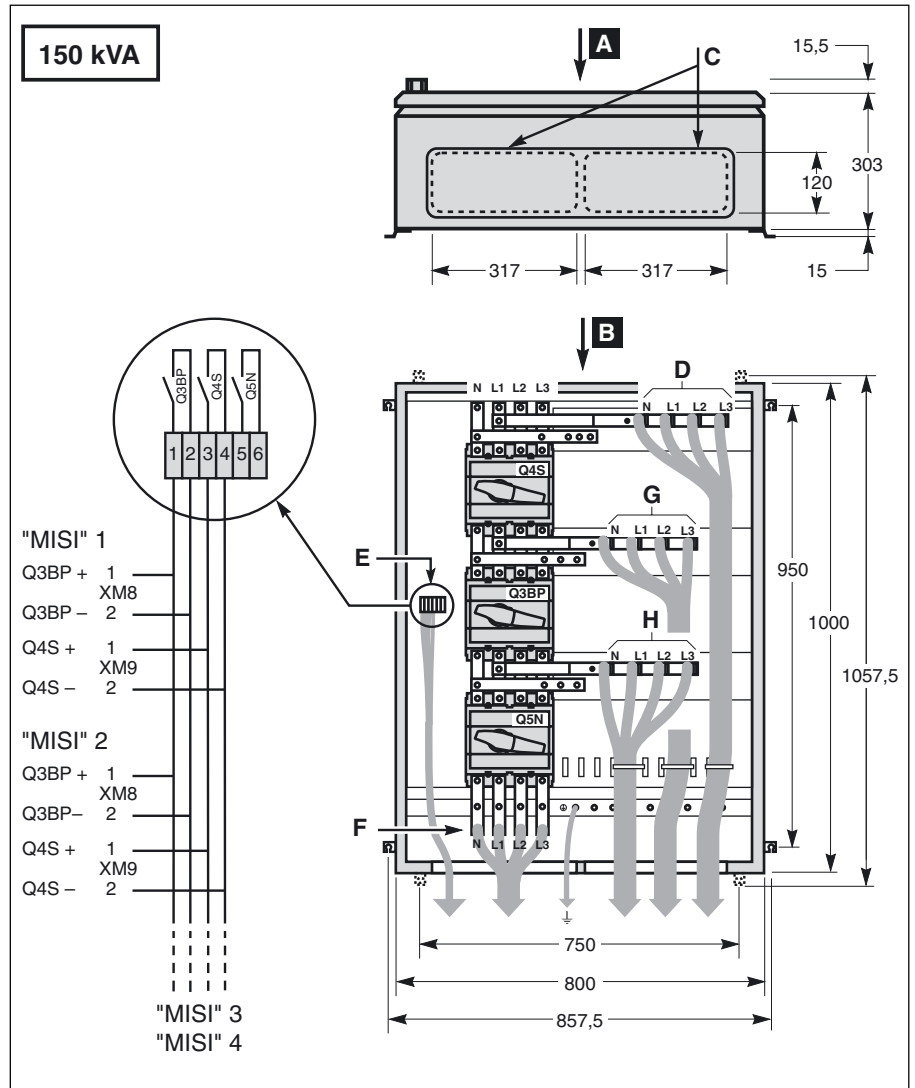


Fig. 17

Installation (cont.)

(qualified personnel only)

External bypass cubicle 360 kVA

See figure 18.

Key to figure 18:

- AA:** cross-section AA of cubicle,
- B:** cubicle front view,
- C:** front panel,
- D:** bypass AC input connection for the UPS units,
- E:** connection of the auxiliary position wires of switches "Q4S" and "Q3BP",
- F:** connection of UPS load outputs,
- G:** bypass AC input connection,
- H:** connection of load,
- I:** air outlet grid,
- J:** opening of 460 x 197 mm for cable insertion,
- K:** fuses for overvoltage protection RC circuit on bypass (to be replaced when the indicator light is on).
- L:** top view of cubicle

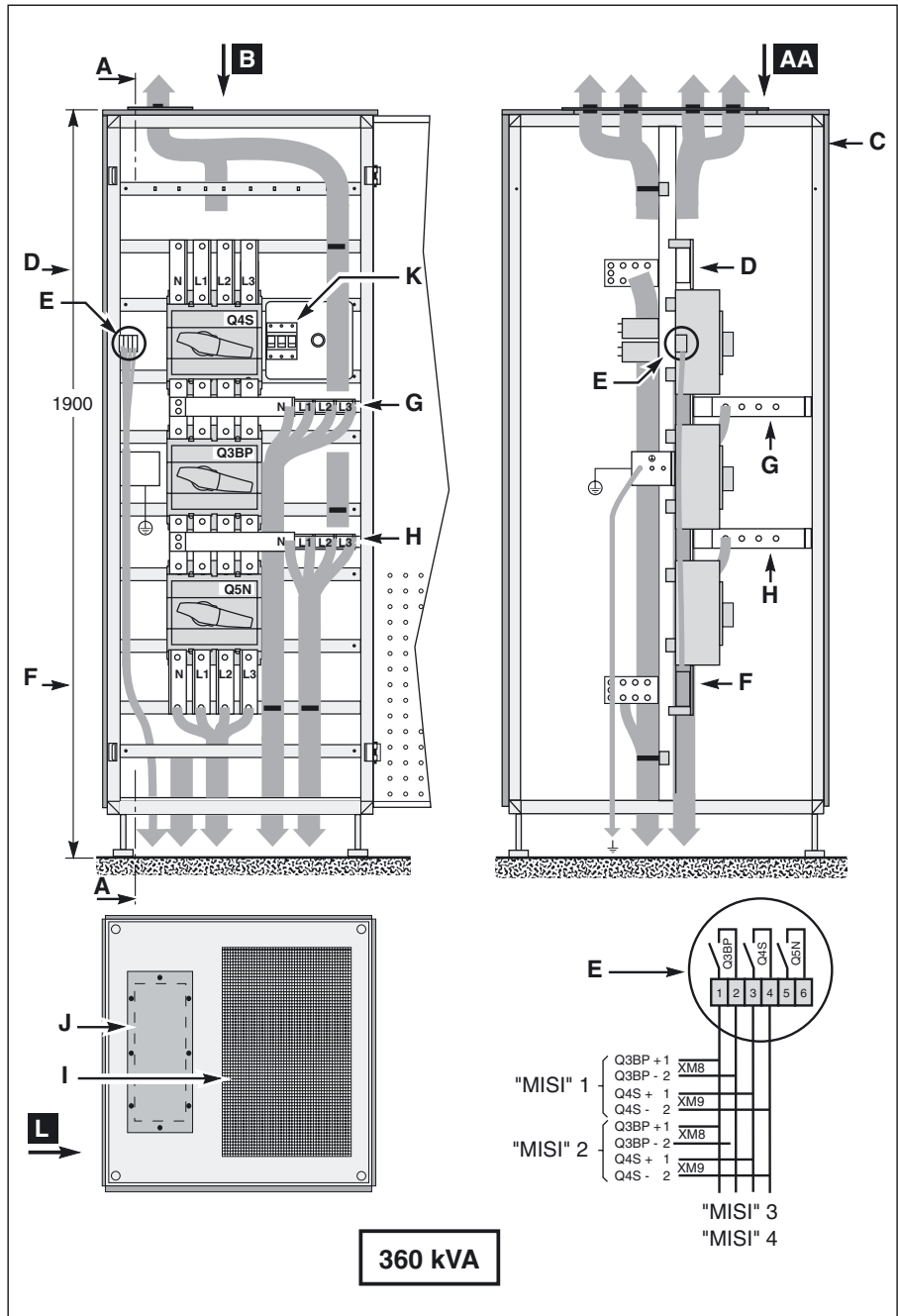


Fig. 18

Installation (cont.) (qualified personnel only)

External bypass cubicle 600 kVA

See figure 19.

Key to figure 19:

- AA: cross-section AA of cubicle,
- B: cubicle front view,
- C: front panel,
- D: bypass AC input connection for the UPS units,
- E: connection of the auxiliary position wires of switches "Q4S" and "Q3BP",

- F: connection of UPS load outputs,
- G: bypass AC input connection,
- H: connection of load,
- I: air outlet grid,
- J: opening of 460 x 197 mm for cable insertion,
- L: top view of cubicle.

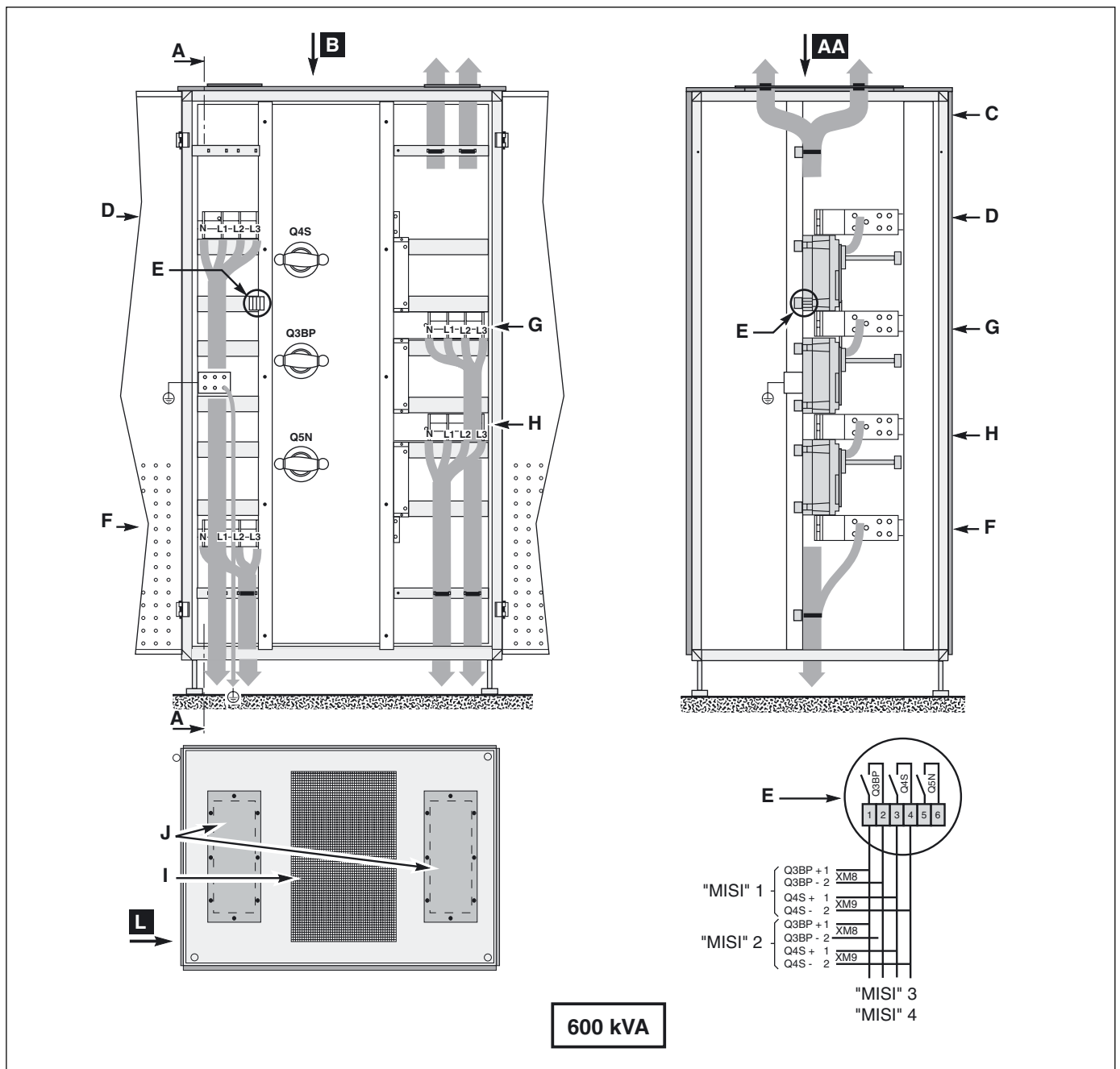


Fig. 19

Installation (cont.)

(qualified personnel only)

Connection of the Hot Swap option

The external bypass may be used to construct a bypass outside the UPS, thus making it possible to shutdown the UPS for maintenance purposes. The option may be used for single-UPS units and redundant parallel UPSs.

- ▶ control-wire connections are not required between the bypass unit and the UPS unit(s);
- ▶ see figure 20 for the power-circuit connections of a single-UPS unit and figure 21 for the power-circuit connections of redundant parallel UPSs. Power cables for UPS-to-bypass connections are not supplied.

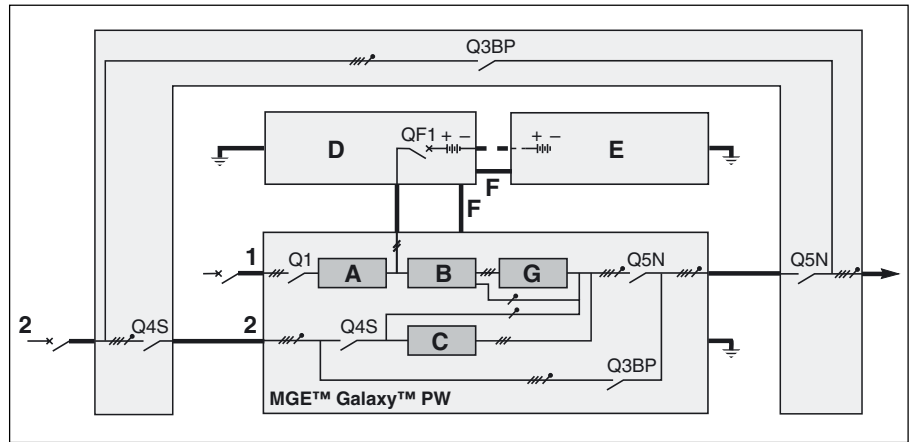


Fig. 20

MGE™ Galaxy™ PW cubicle with built-in bypass AC-input isolation transformer

(20 to 60 kVA UPSs)

For this option, the cubicle is 1900 mm high. This isolation transformer is installed in the top part of the cubicle. Power connections are not modified by this option (see figure 22).

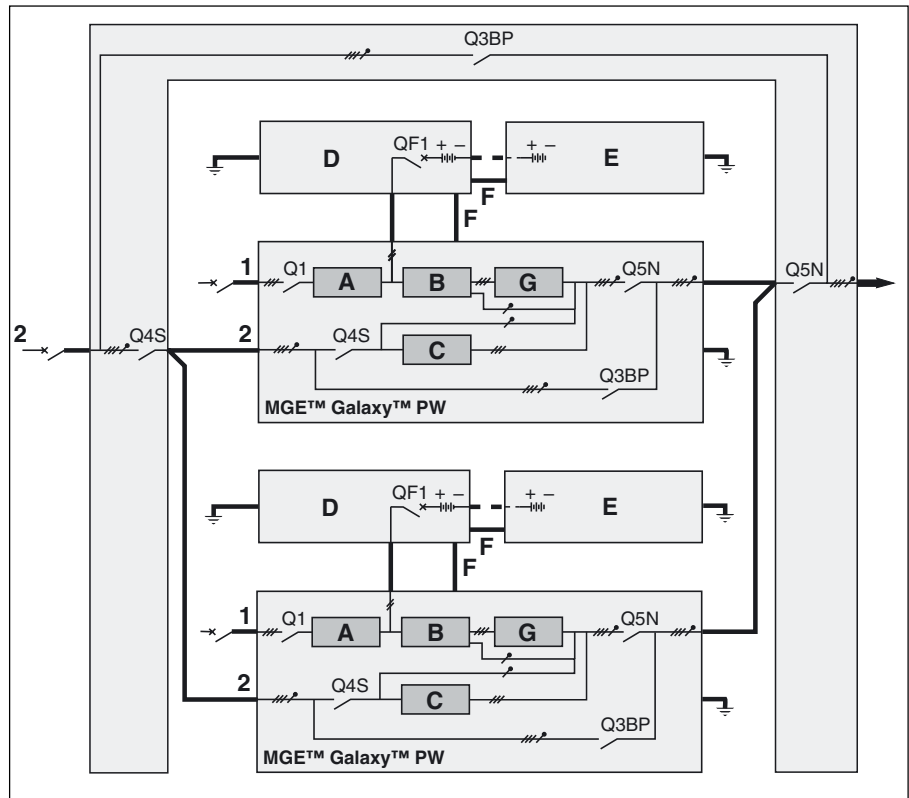


Fig. 21

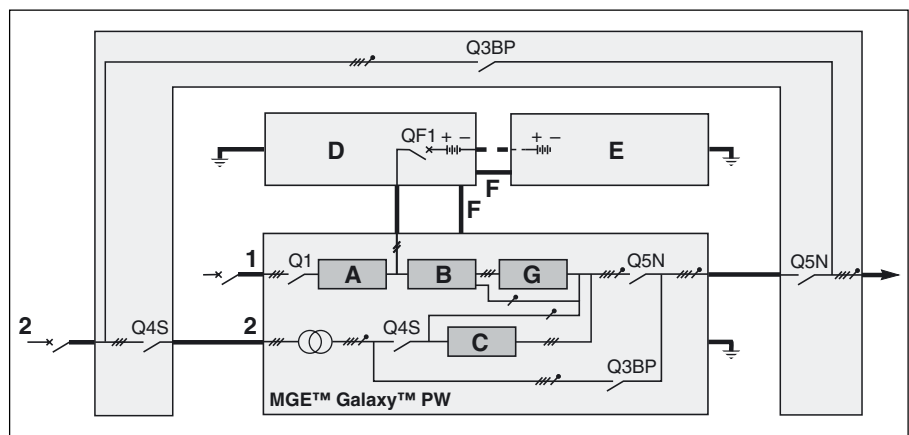


Fig. 22

Installation (cont.) (qualified personnel only)

Mains 2 isolation transformer in an auxiliary cubicle

The cubicle is 1900 mm high.
See figure 23 (20 to 120 kVA units) and figure 24 (160 to 200 kVA units).

Key to figures 23 and 24:

- AA:** cross-sectional view of the cubicle,
- B:** front view of the cubicle,
- C:** front panel,
- D:** rear panel,
- E:** bypass AC input connection (terminals A, B, C or A1, B1, C1 (+ 5%),
- F:** bypass AC input connection to UPS(s) - terminals n, a, b, c,
- G:** air inlets,
- H:** air outlets,
- I:** cable exit through the bottom,
- J:** trough, if applicable,
- K:** bypass AC input isolation transformer,
- L:** passage of cables through the top,
- M:** passageway for cables exiting through the top (opening 460 x 197 mm with cable-gland plate),
- N:** air outlet grid,
- O:** top view of the cubicle.

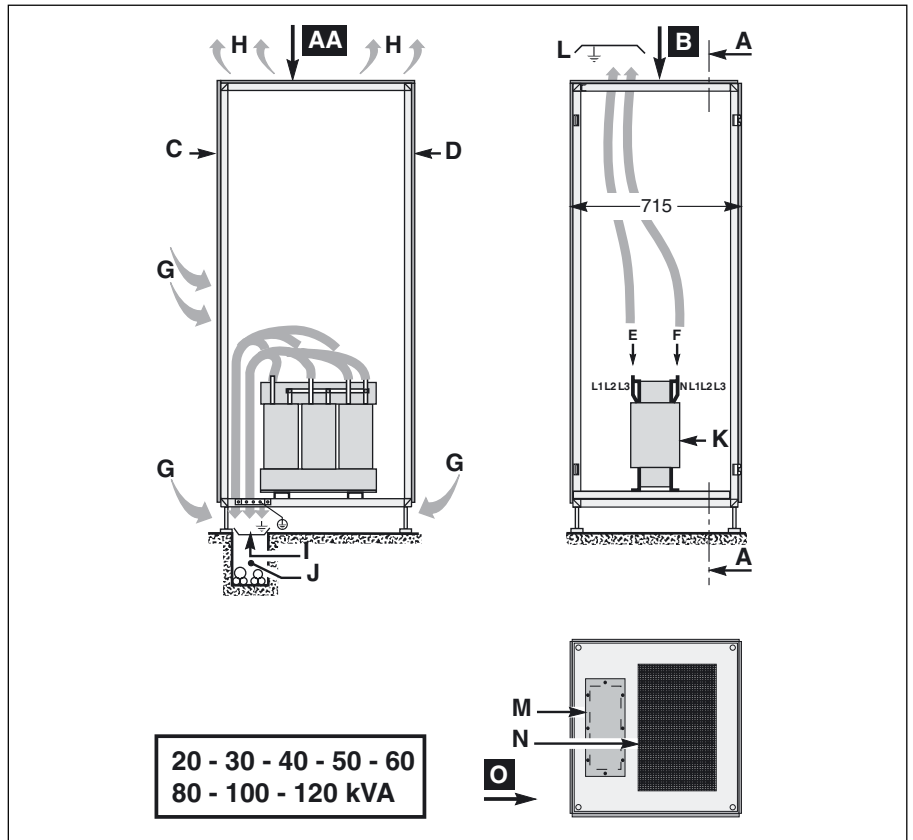


Fig. 23

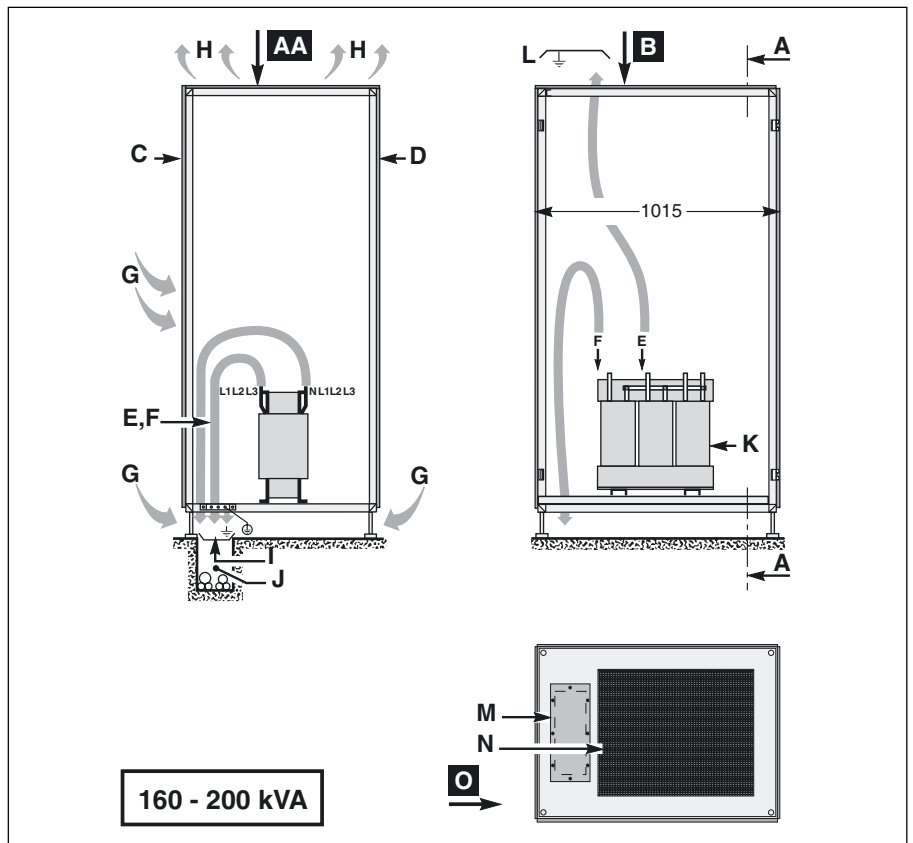


Fig. 24

Installation (cont.) (qualified personnel only)

THM filter

This option is installed on the normal AC input upstream of the **MGE™ Galaxy™ PW UPS** cubicle.

The cubicle is 1900 mm high.

► 20 to 120 kVA units, width of auxiliary cubicle = 715 mm

► 160 to 200 kVA units, width of auxiliary cubicle = 1015 mm

For THM-filter installation and connections, see manual No. 51024338.

Key to figure 25:

1: normal AC input

2: bypass AC input

A: **MGE™ Galaxy™ PW UPS** cubicle

B: THM filter.

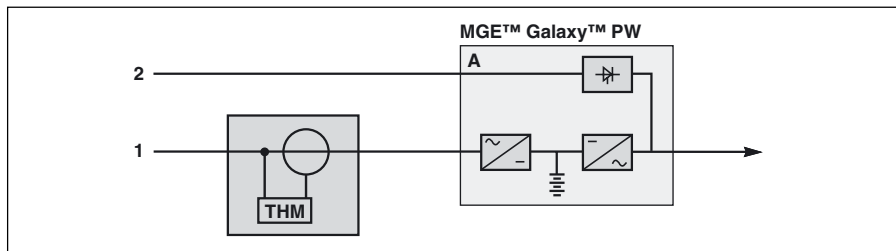


Fig. 25

Connection of "Media Contacts 11" standard auxiliary circuits

See figure 26 below for information on connecting the auxiliary circuits to the three connectors on the "Media Contacts 11" board in the **MGE™ Galaxy™ PW** UPS cubicle. See the position of this board, marked "O" in figures 12 to 14.

- ▶ recommended cable cross-section: 1 mm²;
- ▶ the male connectors that fit the female connectors on the board (XR2 to XR5) are supplied;
- ▶ the contacts are volt-free and are shown in the diagram under the following conditions: UPS on, contact at rest;
- ▶ contact breaking capacity: 250 V, 5 A.

Connection to battery circuit breaker "QF1"

Connect the cable from connector XR3 (pins 2 to 8) on the "Media Contacts 11" board in the UPS cubicle to connector XR1 in the battery cubicle containing battery circuit breaker QF1 (use a shielded cable).

Emergency power off

The UPS emergency shutdown function is generally wired to a "mushroom-head" type emergency-off button.

Important:

In the case of a complex installation with a number of units, there should be only one emergency shutdown pushbutton and this pushbutton must interrupt all the active conductors of all the units.

For the same reason, it is essential for the pushbutton to open the upstream protective circuit breakers on the normal and bypass inputs.

Each type of unit (single UPS, parallel UPS, frequency converter) must have an independent, volt-free contact connected to the emergency shutdown pushbutton. This pushbutton must therefore have as many contacts as there are units in the installation, as well as the contact or contacts required to open the upstream protective circuit breakers on the normal and bypass inputs. The emergency shutdown pushbutton turns off the rectifier/chargers and inverters, opens the battery circuit breakers and activates a contact on the "Media Contacts 11" board (terminals 1 to 3 on connector XR4). The emergency shutdown signal will be cleared when the emergency shutdown pushbutton contact has been reset.

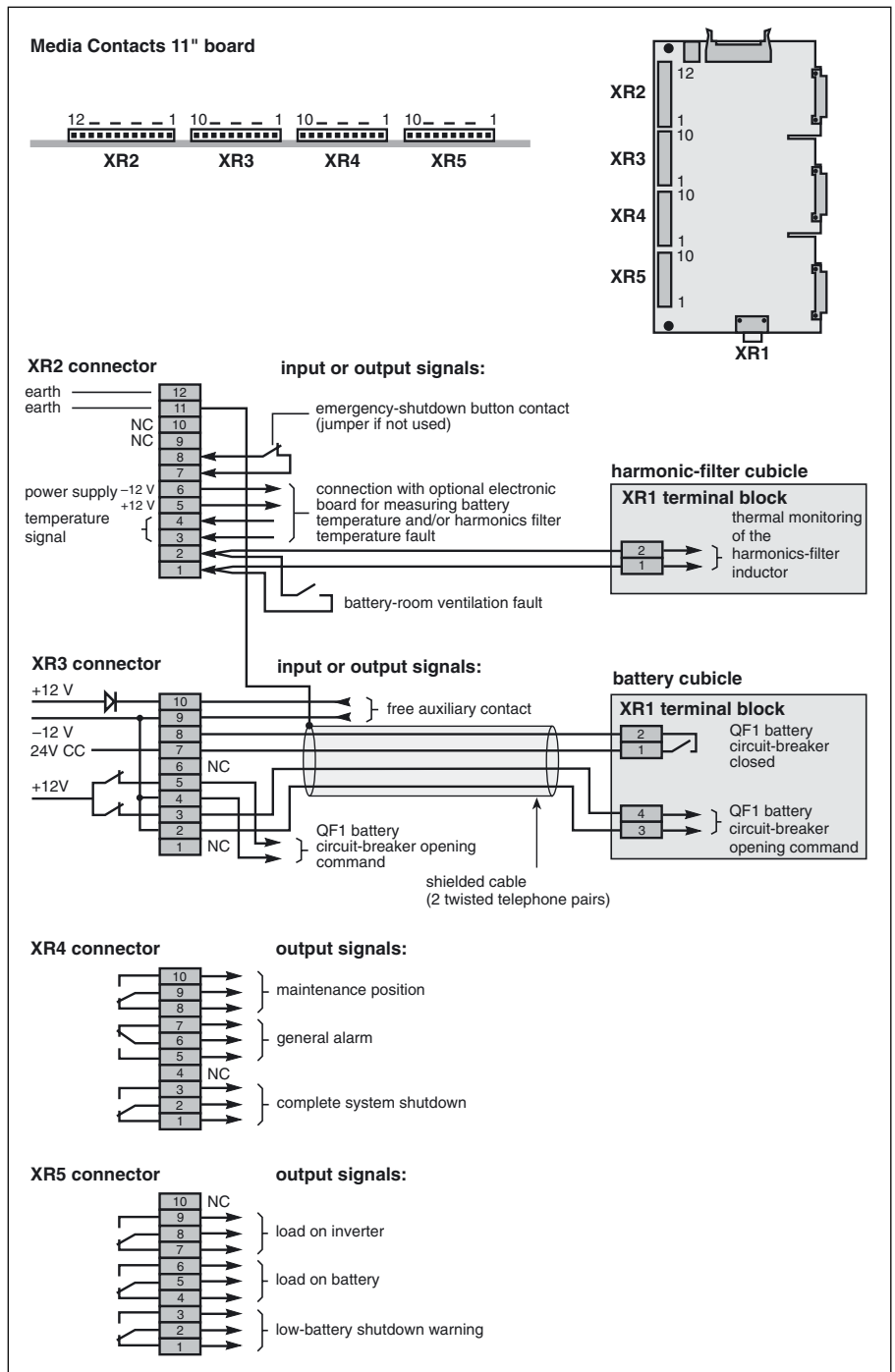


Fig. 26

Installation (cont.)

(qualified personnel only)

Connections between cubicles (parallel-connected configurations)

These connections are made on the APOZ board (marked T in figures 12 to 14) and MISI board (marked U).

Important:

Outside the cubicles, **group the** "APOZ" inter-board and "MISI" inter-board connections with the inter-cubicle auxiliary connections, and **separate this assembly using power cables**.

Connections between APOZ boards

See figure 27.

- ▶ these connections are made using the cables (A) supplied;
- ▶ the purpose of the connection is to make a loop. Connector XM137 on the APOZ board of one UPS unit must be connected to connector XM136 on the APOZ board of the next UPS unit and so on until the first board is returned to.

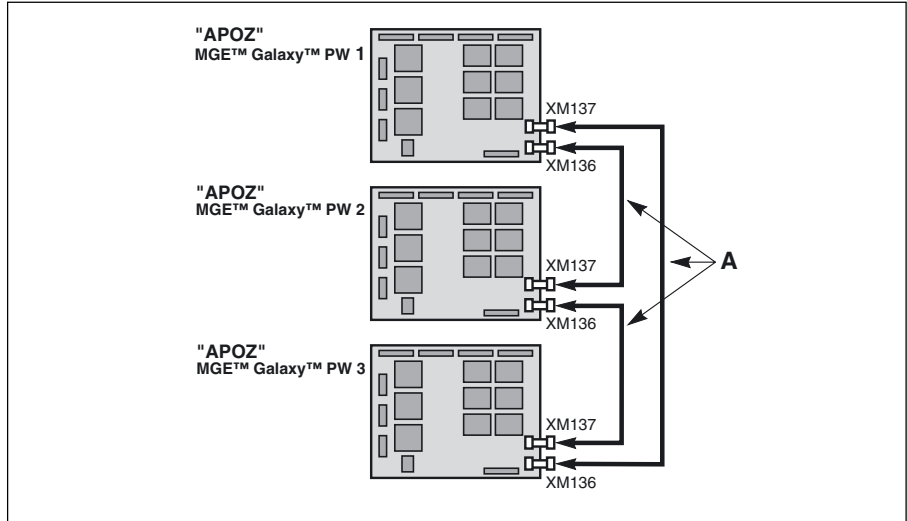


Fig. 27

Connections between MISI boards

See figures 28, 29 and 30.

- ▶ these connections are made using the special cables (A) supplied;
- ▶ connectors XM5, XM6 and XM7 on the MISI board are used to transmit signals;
- ▶ connectors XM10, XM11 and XM12 on the MISI board are used to receive signals;

- ▶ connector XM5 is associated with connector XM10 for communication with one UPS unit; similarly, XM6 is associated with connector XM11 for communication with a second UPS unit and XM7 is associated with connector XM12 for communication with a third UPS unit;

- ▶ situation with two parallel UPS units: see figure 28;
- ▶ situation with three parallel UPS units: see figure 29;
- ▶ situation with four parallel UPS units: see figure 30.

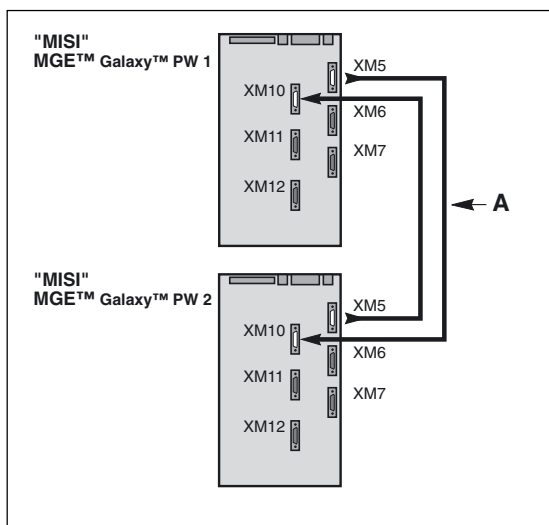


Fig. 28

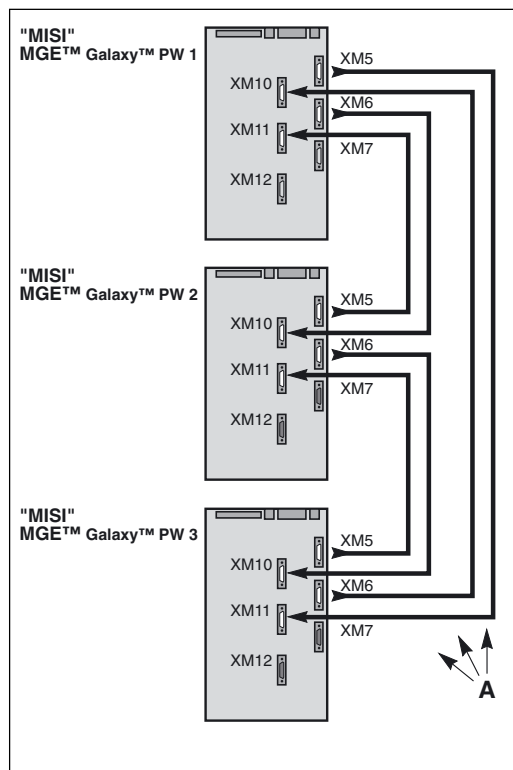


Fig. 29

Installation (cont.) (qualified personnel only)

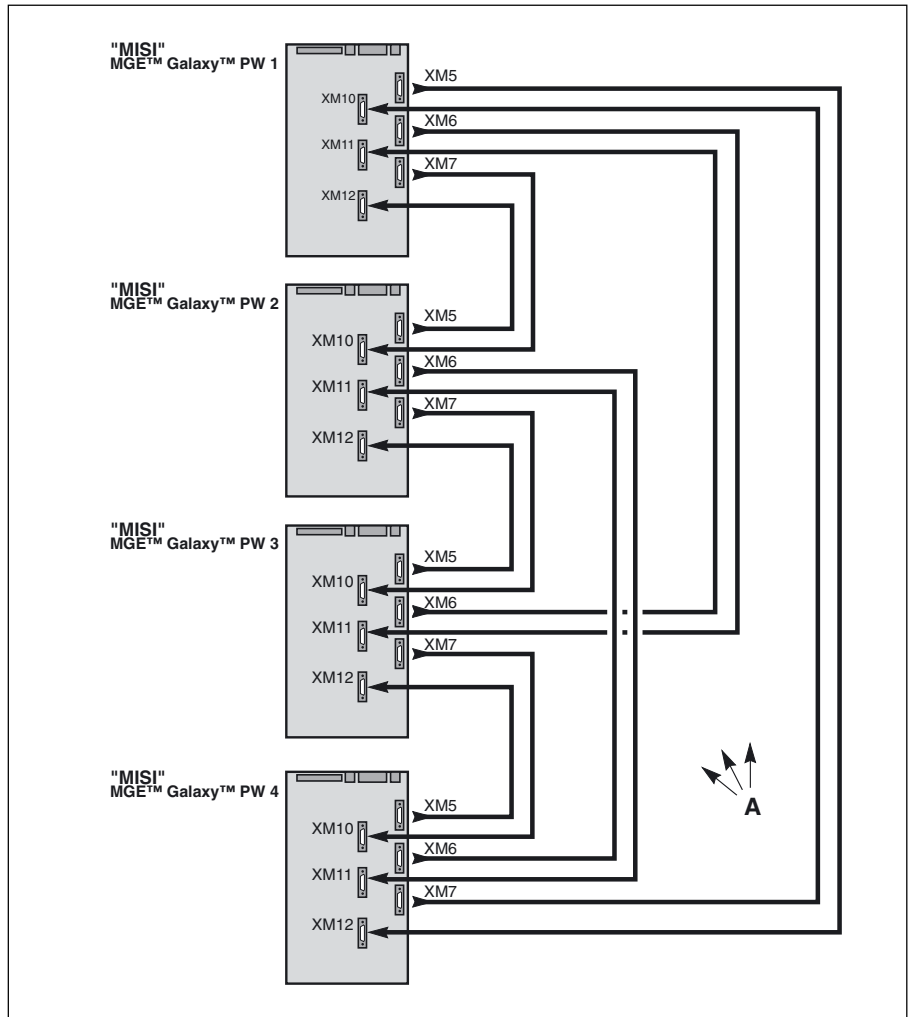


Fig. 30

Connections between UPS cubicles and the external bypass

- ▶ the recommended cross-sectional area of control wires is 1 mm². Wires are not supplied;
- ▶ in non-redundant parallel UPS systems (increased output), the UPS units must be connected to the external bypass unit (see figures 17, 18 and 19):

- ▷ terminals 1 and 2 on connector XM8 of the MISI board of the UPS to terminals 1 and 2 on the external bypass for indications on the position of switch Q3BP,

- ▷ terminals 1 and 2 on connector XM9 of the UPS to terminals 3 and 4 on the external bypass for indications on the position of switch Q4S.

Installation of communications options

Three slots are available on the "Media Contacts 11" board for communications options. See the position of these slots marked "P" in figures 12 to 14.

Installation of boards

- ▶ boards may be installed with the UPS on, without removing the protective covers;
- ▶ boards must be pushed to the end of the slots to ensure correct installation;
- ▶ board front plates must be screwed to the protective "Media Contacts 11" board cover.

Passage of wires

- ▶ holes are provided in the support for the "Media Contacts 11" board for tying down the wires;
- ▶ the control wires must then be routed through the cableway marked "W" in figures 12 to 14.

Installation (cont.)

(qualified personnel only)

Connection of the battery "Temperature Monitor"

Connections

This unit must be connected to the XR2 connector on the remote indications "Media Contacts 11" board of the UPS cubicles. See the location of the "Media Contacts 11" board, marked "O" in figures 12 to 14 in the Appendix.

► use a shielded cable made up of 2 twisted telephone pairs with a conductor cross-section of at least 0.1 mm², not longer than 100 m in length;

► do not forget to connect the cable shield to ground pin 12 on connector XR2;

► in the case of a parallel UPS configuration, the connections between cubicles may be made by means of a shielded cable made up of 1 or 2 twisted telephone pairs. In this case, the total length of all the connecting cables must not exceed 100 m;

► a "Temperature Monitor" unit can be connected to several UPS cubicles only when the batteries of these cubicles are located in the same room at the same ambient temperature.

Connection of the battery "Temperature Monitor" (single-UPS unit)

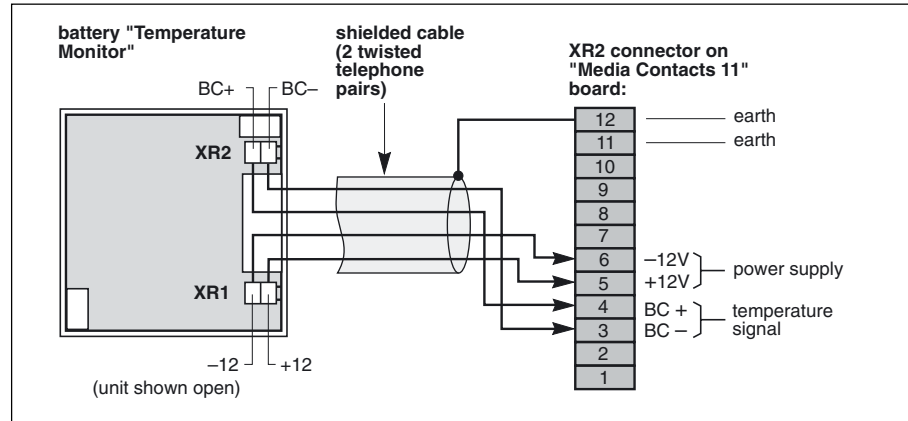


Fig. 31

Connection of the battery "Temperature Monitor" (n parallel UPS units with batteries in same room)

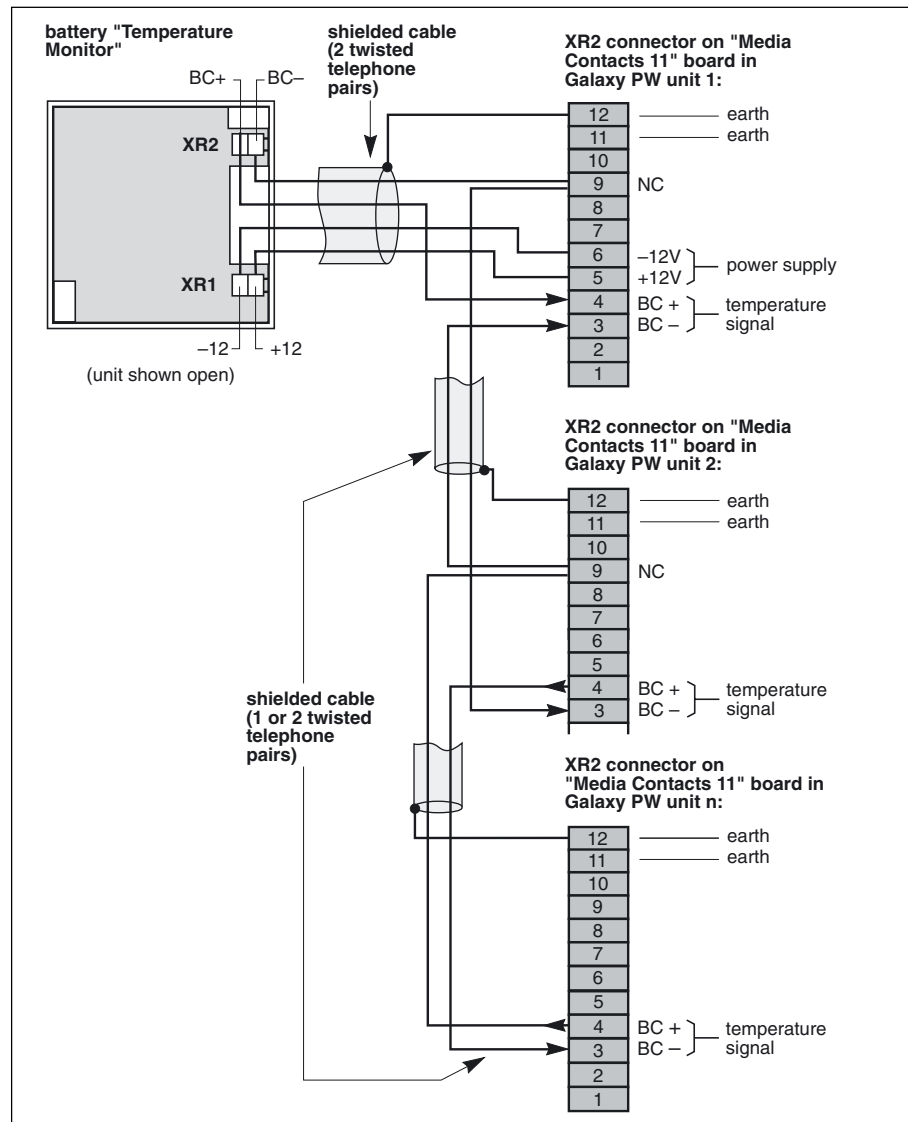


Fig. 32

Installation (cont.) (qualified personnel only)

Installation of the "Temperature Monitor" in an APC by Schneider Electric empty battery cubicle

The "Temperature Monitor" unit is placed inside the battery cubicle housing circuit-breaker QF1 (see figure 33):

- ▶ open the unit cover;
- ▶ before fixing, break the self-cleavable seal on the base of the unit for insertion of the connecting cable;
- ▶ fix the unit on the plate using the self-adhesive sticker and a screw (nut and washer combination, diameter 4 mm, length 16 mm, not supplied);
- ▶ connect and put back the cover;
- ▶ the temperature sensor **MUST** be placed at the top of the cubicle to work properly;
- ▶ tie the connecting cable to the cubicle upright so that it does not pull on the unit.

Installing the "Temperature Monitor" in a battery cubicle

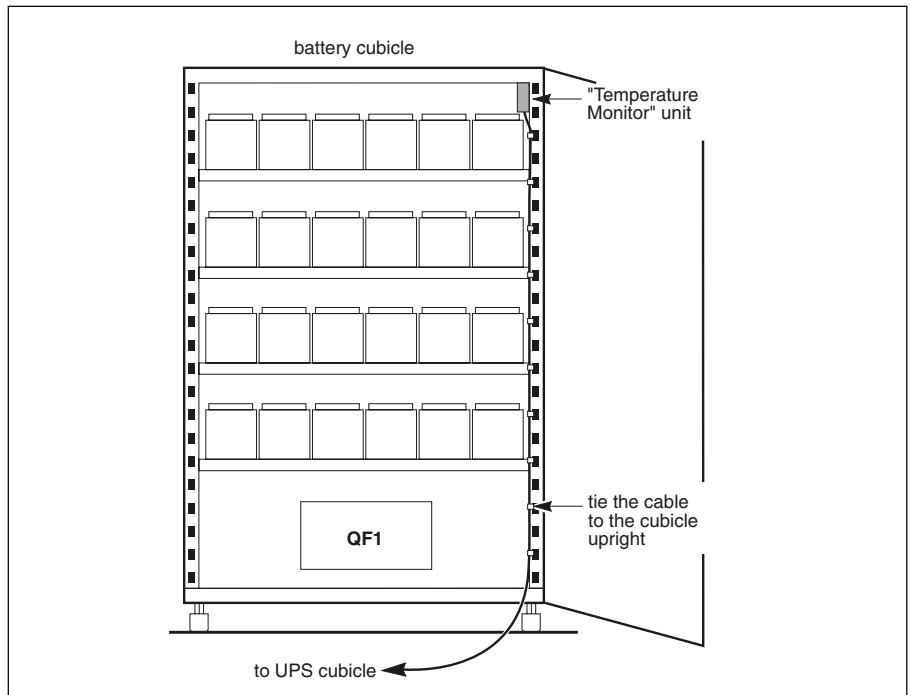


Fig. 33

"Temperature Monitor" installation in a battery room

The "Temperature Monitor" should be secured against a wall or any vertical support.

- ▶ choose a location near the batteries and away from draughts which adversely affect the accuracy of temperature measurements;
- ▶ use the holes provided in the base plate to screw the unit to the vertical support (see figure 34);
- ▶ unless the connecting cable runs on the surface, break the knock-out in the unit base plate provided for cable entry;
- ▶ secure the cable by suitable means so that it does not pull on the unit.

"Temperature Monitor" base

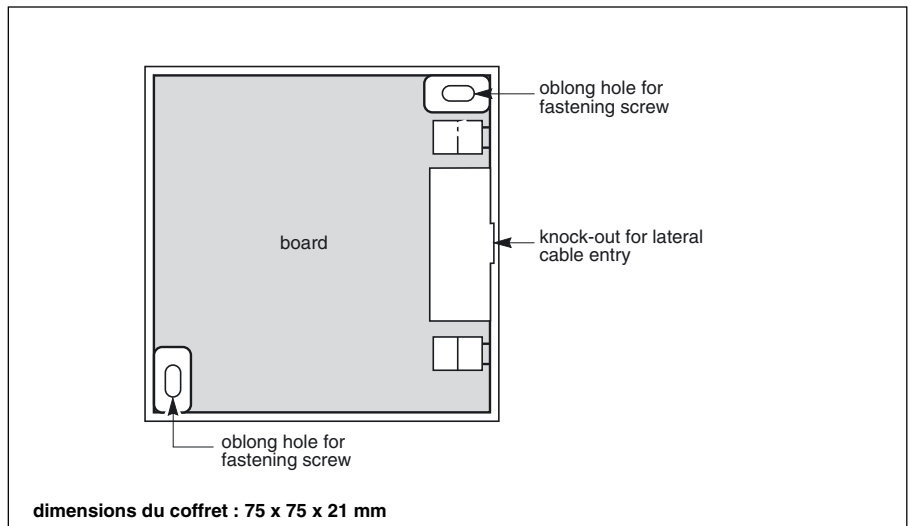


Fig. 34

Installation (cont.)

(qualified personnel only)

Link to an IBM AS/400® computer

The MGE™ Galaxy™ PW can dialogue with an IBM AS/400® computer via this link in compliance with IBM communications recommendations, thus enhancing the protection provided by your Galaxy PW.

The IBM AS/400® computer must be configured for the link. This document presents the physical connections required as well as the system values that must be modified on the AS/400®. For further information, consult the following IBM documents:

- ▶ "Planning Guide, Appendix E" concerning physical connections;
- ▶ "Back-up and Recovery Guide", chapter 7 "Power Loss Recovery" concerning configuration of the AS 400®.

Connections

- ▶ connections are made to the female client connector XR5 on the "Media Contacts 11" board;
- ▶ the corresponding male connector is supplied;
- ▶ see figure 35 below for the wiring diagram. A five-wire cable (not supplied) is required;
- ▶ on the AS/400® side, use a 9 or 15-pin SUB-D connector, depending on the type of AS/400®.

Configuration of the AS 400®

Certain values on the AS/400® must be configured to enable operation of the MGE™ Galaxy™ PW - AS/400® link. The values requiring modification and the corresponding procedures are presented in chapter 7 "Power Loss Recovery" of the "Back-up and Recovery Guide" for the AS/400®.

The values are the following:

- ▶ QUPSMGQ: UPS message queue;
- ▶ QUPSDLYTIM: Uninterruptible power supply delay time;
- ▶ QPWRRSTIPL: Power restore IPL.

Connection to the "Media Contacts 11" board

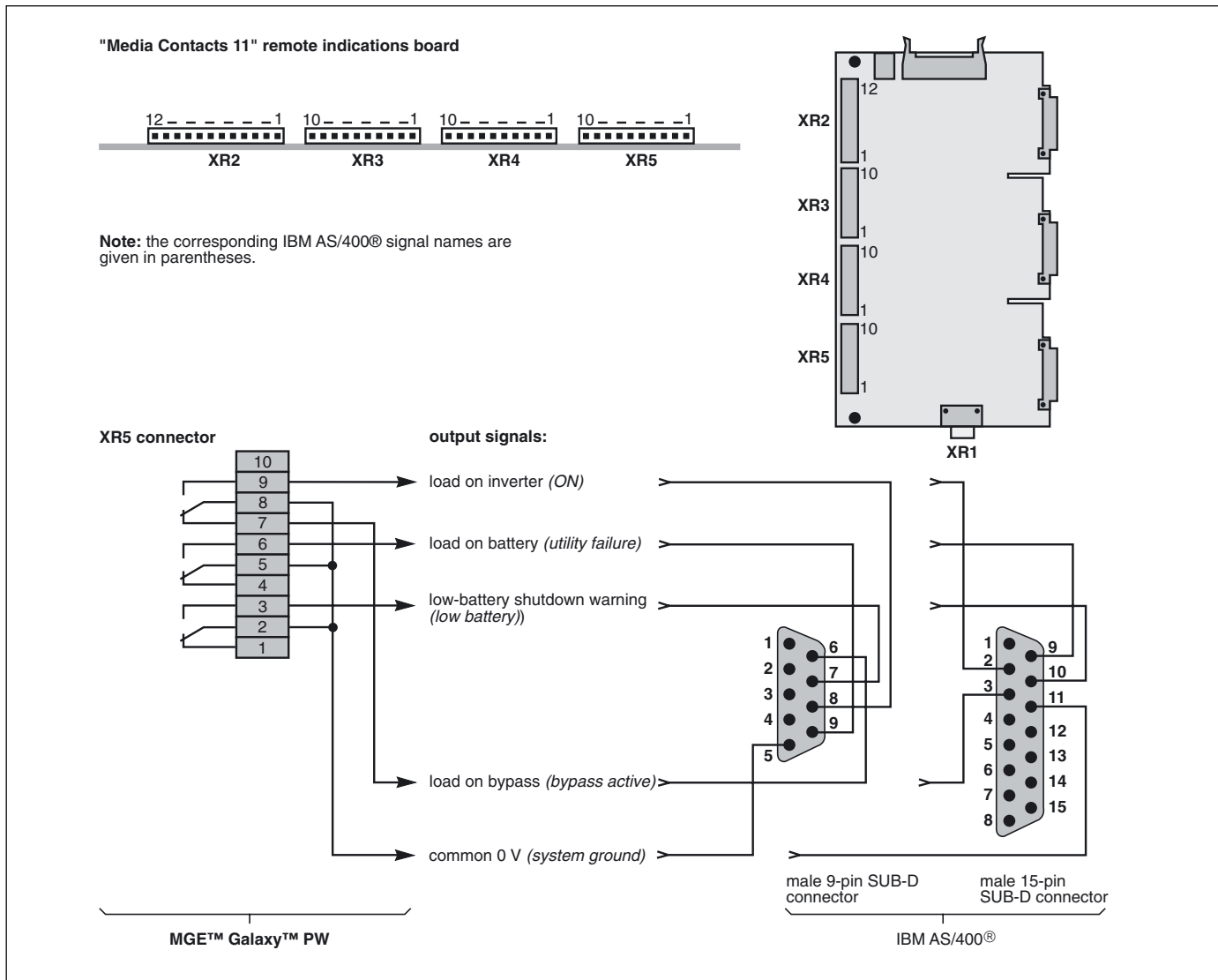


Fig. 35

Installation (cont.) (qualified personnel only)

Connection of the LED indications unit (optional)

This unit connects to the XR4 and XR5 connectors (see the position of the board in the figures in the "connection of "Media Contacts 11" standard auxiliary circuits" section).
For information on unit installation and

details on connections to the unit, see the manual included with the LED indications unit, document No. 5102990400.
▶ the recommended cable cross-section is 1 mm².

Final installation steps

After making the connections:

- ▶ install the front and rear base plates of the cubicles, clipping them to the feet of the cubicles (unless the connecting cables are fed through these openings);
- ▶ refit the terminal shields of the terminal blocks, switches and circuit breakers.

