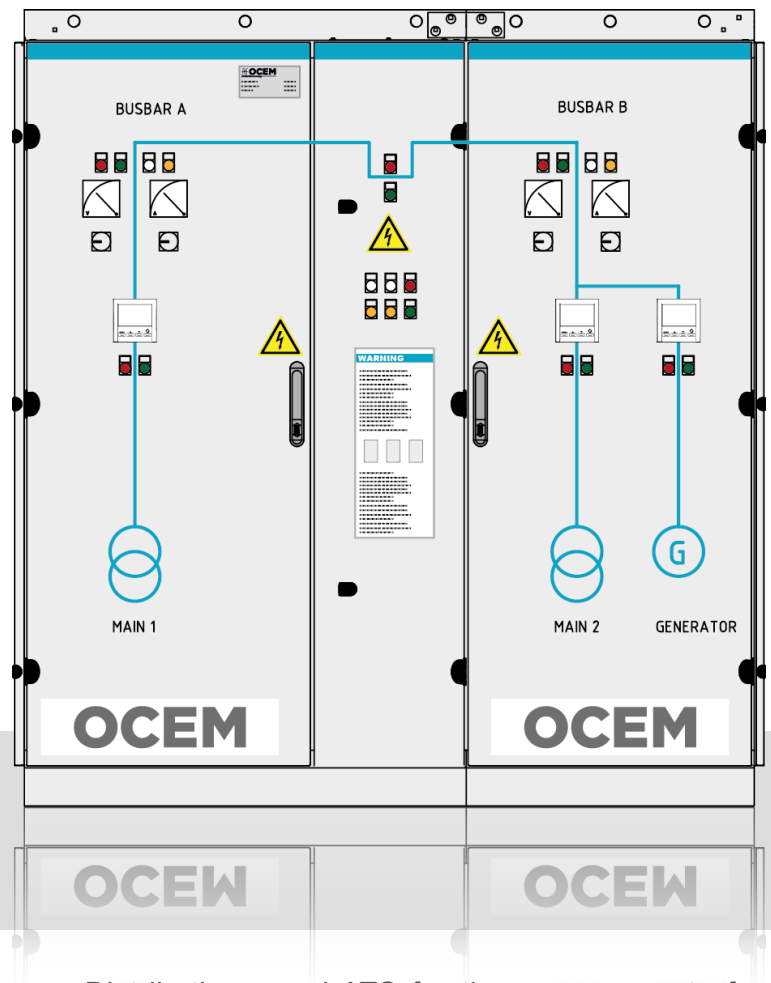


## Low-Voltage Distribution Switchboard



-5°C  
+23°F

+40°C  
+104°F



## MANUAL & AUTOMATIC TRANSFER SWITCH

LINE 1: MAIN1

LINE 2: MAIN2

LINE 3: GENERATOR

LOAD 1: BUSBAR-A

LOAD 2: BUSBAR-B

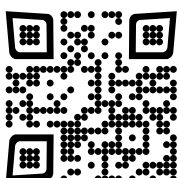
$I_N$ : 250A, 400A, 800A

Distribution panel ATS for the management of a system with 3 independent power sources. It allows the transfer from one supply to the other in manual or automatic mode, with a maximum time of inefficiency of 1 sec (from the fault detection).

It allows the management of priority loads and not priority loads, with the possibility of selection through critical load parameters on the busbars.

UPS interface available (optional) for critical loads.

ocem



### Generality - LDS

The distribution panel LDS by Ocem allows the flexible and economically viable management of the service continuity of an electrical system with 3 independent power sources in the airport services. It allows the early identification of a fault of one of the main supplies and the manual or automatic management (inefficiency < 1 sec) of the switching from network to generator with the possibility to configure the users by distinguishing the bus with critical loads from those with not priority loads (through insertion and exclusion of not priority BUS) during the start-up phase of the external generator.

The MAIN1 and MAIN2 lines are independent, powered by network (TNC or TNCS) while the GENERATOR line must be supplied through a generator.

The busbars systems BUSBAR-A and BUSBAR-B are two sections that in normal operational conditions are independent. The GENERATOR must be dimensioned in order to ensure the supply of the total load of the system.

### Construction detail

The distribution panel is structured in two side elements to contain the power and control components, and of a central element intended for input and output connections.

The cabinet must be installed with the rear side adjacent to the respective technical section. The access to the device is frontal and lateral from both sides.

The front side is composed of blind doors on which is reported the synoptic for an immediate identification of the functions realised by the equipment.

The cable entry is possible both from above and from below.

### Main devices

All the devices are installed on DIN guides except for the main devices (MAIN1, MAIN2, GENERATOR, BUSBAR DISCONNECTOR).

The motorizations installed on the switches assure a switching time < 800 ms. The motor controls are padlockable in order to prevent unauthorized manoeuvres.

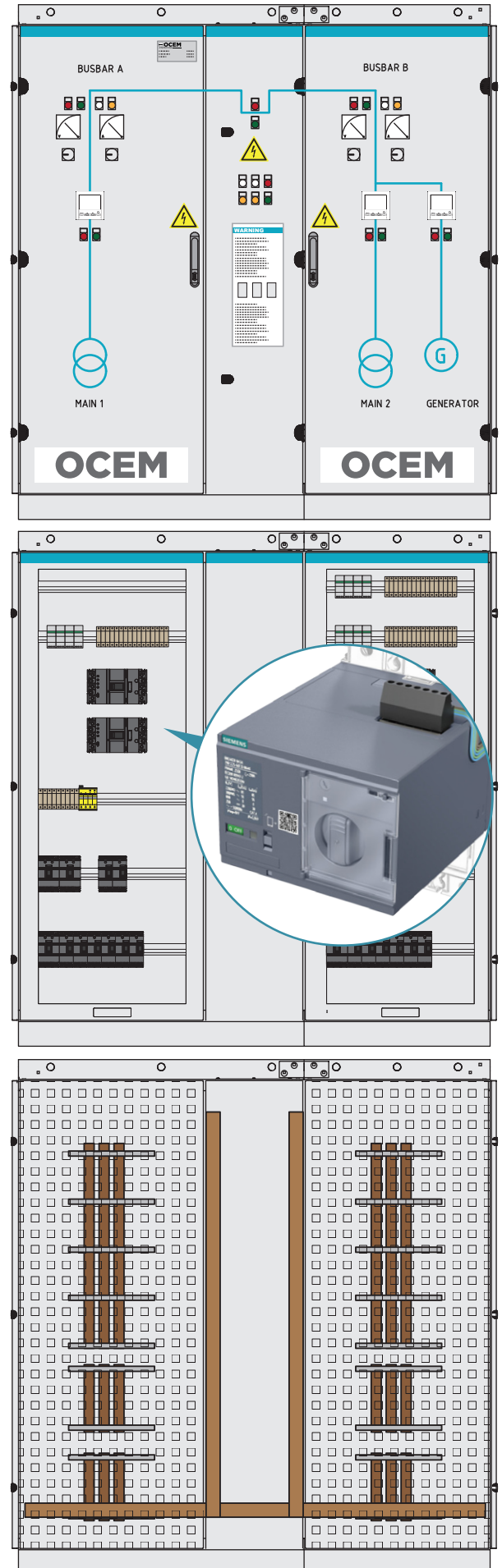
The different models are characterized by different rated current values: 250A, 400A e 800A.

### Busbar system

The Busbar system consists of patented type special aluminium profiles with nickel contact surface (applied with cold spray technology). The Busbar system is designed for a better heat distribution and for an optimized distribution of the electricity. The integrated Busbar system has a rated current of 1250 A with a maximum peak current of 55 kA. Short Circuit Withstand  $I_n=1250$  A and  $I_{cc}=70$  kA (for 1sec).

The isolators are realized in self-extinguishing polyamide PA6 class VO IEC 60695-11-10.

The active parts are installed in a space positioned on the back of the panel, segregated through the use of a panel in perforated polycarbonate. The segregation is also present in correspondence of the central module of the panel.



## Metering instruments



### Interface device

Lovato Electric SpA mod. PMVF20

The device PVMF20 has been designed in compliant with the rule CEI 0-21 (ed. 06/2012), IEC / EN 61010-1, IEC/EN 61000-6-2, IEC/EN 61000-6-4. This IP device is used to check the interface between generating system and network.

In case of problems on the network the system intervenes promptly by opening the interface device and by cutting off the generating system.

- Graphic LCD display 128x80 pixel, backlit, 4 grey levels;
- System equipped with self-diagnosis checks;
- Access control through password;
- Control menu for resetting measures, counters, alarms;
- Alarm signalling through pop-up window;
- Accuracy of phase voltage measurement:  $\pm 0.2\%$ ;
- Accuracy of phase-to-phase voltage measurement:  $\pm 0.2\%$ ;
- Accuracy of current measurement:  $\pm 0.2\%$ ;
- Device predisposed for the communication according to the standard EN 61850 (through optional module).

This device is provided already configured in compliance with the Italian regulations CEI 0-21 (see table). It is possible to change or add controlled thresholds. The device allows the activation of the protection through password and the insertion of external seals.



### Direct connection voltmeter

Frer Srl mod. F...EVX...XSD

The device is designed in compliant with the rule CEI, DIN, VDE, IEC.

This device is used to measure in real time the voltage value on the selected circuit.

- Accuracy of voltage measurement:  $\pm 1.5\%$ ;
- Permanent overload coefficient: 1,2 In;
- Instantaneous overload coefficient: 10 In;
- Overload category: CAT III 600 V P.D. 2.



### Ammeter to connection on CT

Frer Srl mod. F...EAX

The device is designed in compliant with the rule CEI, DIN, VDE, IEC.

This device is used to measure in real time the current value supplied on the selected line.

- Accuracy of voltage measurement:  $\pm 1.5\%$ ;
- Permanent overload coefficient: 1.2 In;
- Instantaneous overload coefficient: 10 In;
- Overload category: CAT III 600 V P.D. 2;
- CT designed in compliant with the rules IEC / EN 61869-1 and IEC / EN 61869-2.

### Commutator

Frer Srl mod. L48E

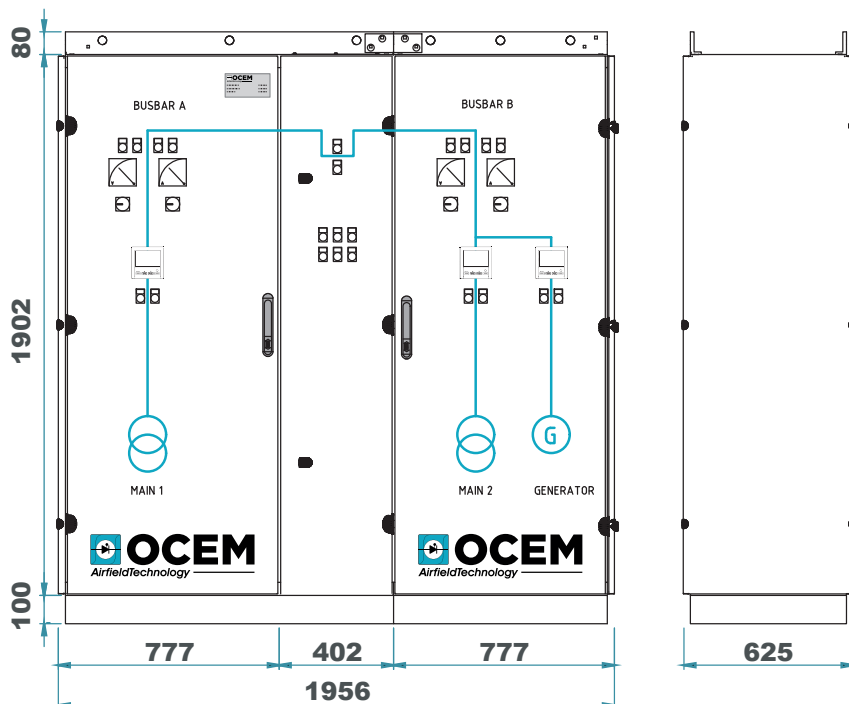
The device is designed in compliant with the rule IEC, DIN, UL.

This device is used to switch over the circuit or the line analysed.

- Impulse voltage: 4.0 kV;
- Insulation voltage: 690 V..



| Voltage measurement type | Voltage threshold         | Default                  | Type | Trip | Trip Delay | Default |
|--------------------------|---------------------------|--------------------------|------|------|------------|---------|
| INSTANTANEOUS            | $V > 59.S2$               | $V > 115\%$              | MAX  | YES  | 59.S2 DEL  | 0.20 s  |
| AVERAGE 10 min           | $V_{med} > 59.S1$         | $V_{med} > 110\%$        | MAX  | YES  | 59.S1 DEL  | 3.00 s  |
| INSTANTANEOUS            | $27.S1 \leq V \leq 59.S1$ | $85\% \leq V \leq 110\%$ | OK   | NO   | --         | --      |
| INSTANTANEOUS            | $27.S2 \leq V \leq 27.S1$ | $40\% \leq V \leq 85\%$  | MIN  | YES  | 27.S1 DEL  | 0.40 s  |
| INSTANTANEOUS            | $V < 27.S2$               | $V < 40\%$               | MIN  | YES  | 27.S2 DEL  | 0.20 s  |
| INSTANTANEOUS            | $81 > S2$                 | 47.5 Hz                  | MAX  | YES  | LF_MAX DEL | 1.00 s  |
| INSTANTANEOUS            | $81 < S2$                 | 51,5 Hz                  | MIN  | YES  | LF_MIN DEL | 4.20 s  |



|                                       |                                                                   | LDS250                                                                                                         | LDS400           | LDS800           |
|---------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------|------------------|
| Ambient conditions                    | Ambient temperature                                               | MIN: -5 [°C]<br>MAX: +40 [°C]                                                                                  |                  |                  |
|                                       | Relative humidity (at 20°C)                                       | 90 [%]                                                                                                         |                  |                  |
|                                       | Altitude asl                                                      | 2000 [m]                                                                                                       |                  |                  |
|                                       |                                                                   |                                                                                                                |                  |                  |
| Electrical specifications             | $V_N$ – Rated voltage                                             | 380/400 $\pm 10\%$ [V]                                                                                         |                  |                  |
|                                       | $I_N$ – Rated current                                             | 250 [A]                                                                                                        | 400 [A]          | 800 [A]          |
|                                       | $F_N$ – Rated frequency                                           | 50/60 $\pm 5\%$ [Hz]                                                                                           |                  |                  |
|                                       | $I_{CS}$ – Switching capacity                                     | 55 [kA]                                                                                                        |                  |                  |
|                                       | Auxiliary power supply (EXT)                                      | $I_{N,EXT}$ - Nominal Voltage: 230 [V <sub>AC</sub> ]<br>$F_{N,EXT}$ - Frequency: 50 [Hz]                      |                  |                  |
|                                       | $V_{aux}$ – Auxiliary voltage                                     | COMMANDS: 24 [V <sub>DC</sub> ]<br>SIGNALS: 24 [V <sub>DC</sub> ]                                              |                  |                  |
|                                       | $U_i$ – Insulation voltage                                        | 690 [V]                                                                                                        |                  |                  |
|                                       | $U_{imp}$ - Impulse withstand voltage                             | 6                                                                                                              |                  |                  |
|                                       | Distribution system (neutral/earth)                               | TNC or TNCS                                                                                                    |                  |                  |
| Electrical specifications of the load | $V_N$ – Rated voltage                                             | 380/400 $\pm 10\%$ [V]                                                                                         |                  |                  |
|                                       | Type of load                                                      | CCR [1ph+N/2ph] / Misc. [1ph/3ph+N]                                                                            |                  |                  |
|                                       | $F_N$ – Rated frequency                                           | 50 [Hz]                                                                                                        |                  |                  |
|                                       | $I_{CS}$ – Switching capacity                                     | 55 [kA]                                                                                                        |                  |                  |
|                                       | Auxiliary power supply [V]                                        | N/A                                                                                                            | N/A              | N/A              |
| Mechanical specifications             | Degree of protection (EN 60529)                                   | INTERNAL: IP2x<br>EXTERNAL: IP55                                                                               |                  |                  |
|                                       | Strength degree/shock-resistance (EN 62262)                       | IK10                                                                                                           |                  |                  |
|                                       | Access                                                            | Frontal/Lateral                                                                                                |                  |                  |
|                                       | Segregation (EN 61439.1)                                          | Shape 2                                                                                                        |                  |                  |
|                                       | Materials                                                         | STRUCTURE: pickled sheet (sh. 15/10, 20/10 [mm])<br>ACCESSORIES: metallic sheet (sh. 15/10, 20/10, 25/10 [mm]) |                  |                  |
|                                       | Painting                                                          | standard: RAL 7035<br>optionals: RAL (colour on request) or stainless steel (AISI 304)                         |                  |                  |
|                                       | Plastic components                                                | Halogen-free, CFC-free                                                                                         |                  |                  |
|                                       | Dimensions WxLxH                                                  | 625x1956x2080 [mm]                                                                                             |                  |                  |
| Installation                          | Characteristics of the line: Transformer 1                        | 3x1x120+PE/1x95                                                                                                | 3x1x185+PE/1x120 | 3x2x185+PE/2x120 |
|                                       | Characteristics of the line: Transformer 2                        | 3x1x120+PE/1x95                                                                                                | 3x1x185+PE/1x120 | 3x2x185+PE/2x120 |
|                                       | Characteristics of the line: Generator                            | 3x1x120+PE/1x95                                                                                                | 3x1x185+PE/1x120 | 3x2x185+PE/2x120 |
|                                       | Characteristics of the line: Service line (preferred) 230Vac/50Hz | 3G2,5                                                                                                          | 3G2,5            | 3G2,5            |

