

## Separations inside an assembly

Standard IEC 61439-2 defines the separations inside an assembly according to 4 types of form, each form being divided into two groups, "a" and "b". These internal separations are created using barriers or screens made of metal or insulating material.


Their purpose is to divide the panel into closed protected areas to provide:

- Protection against direct contact with dangerous parts of neighbouring functional units. The degree of protection must be at least IP XXB.
- Protection against the entry of solid objects. The degree of protection must be at least IP 2X (which covers IP XXB).

The main purpose is to maintain the availability of the power supply in the event of a fault or if work is being carried out on the panel.

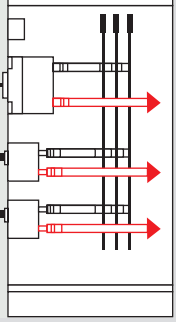
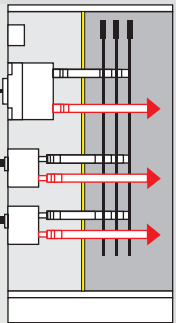
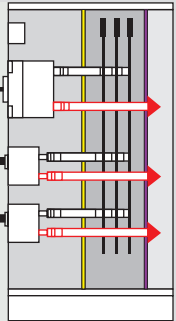
Separations also limit the propagation of an electric arc and the risk of sparkover.

However, they limit the natural ventilation of the panel and can thus cause temperature rises. It is therefore advisable to check the thermal equilibrium. Separations will inevitably increase the size of the panel and its cost, both in terms of labour and components.

 With the XL<sup>3</sup> 4000/6300 system all types of forms can be created using components available in the catalogue.

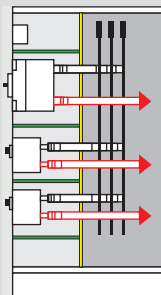
### FORMS

→ See Forms Workshop specifications

SPECIFICATIONS OF THE DIFFERENT TYPES OF FORM	
<b>Form 1</b>	 <p>No separation</p>
<b>Form 2a</b>	 <p>Separation of busbars from functional units. Terminals for external conductors do not need to be separated from busbars.</p>
<b>Form 2b</b>	 <p>Separation of busbars from functional units. Terminals for external conductors are separated from busbars.</p>

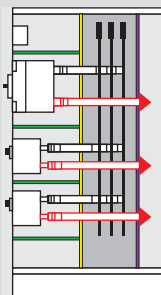
SPECIFICATIONS OF THE DIFFERENT TYPES OF FORM (CONTINUED)

Form 3a



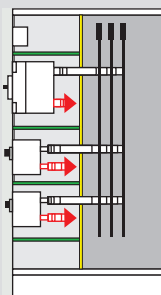
Separation of busbars from functional units and separation of all functional units from each other. Terminals for external conductors do not need to be separated from busbars.

Form 3b



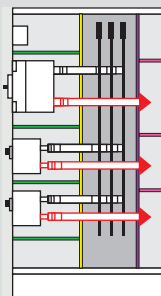
Separation of busbars from functional units and separation of all functional units from each other. Separation of terminals for external conductors from functional units but no separation between terminals.

Form 4a



Separation of busbars from functional units and separation of all functional units from each other, including the terminals for external conductors which are an integral part of the functional unit. Terminals for external conductors are in the same compartment as the functional unit.

Form 4b



Separation of busbars from functional units and separation of all the functional units from each other including terminals for external conductors. Terminals for external conductors are not in the same compartment as the functional unit but in separate individual compartments.

**i** FUNCTIONAL UNIT

This term refers to part of an assembly comprising all the mechanical and electrical components used to perform a single function. In the case of distribution panels, a functional unit almost exclusively comprises the protective device and its auxiliaries, apart from “draw-out unit” systems.

**+** IS (INCREASED SAFETY) DISTRIBUTION

If the ability to carry out maintenance work or upgrades on the panel without switching off all power to the assembly is required, the HX<sup>3</sup>/VX<sup>3</sup> IS distribution system is particularly suitable and can be a good replacement for separation forms.

Draw-out bases  
+  
protection of the bars  
+  
terminal covers  
=  
safety of work

Empty draw-out bases  
=  
safe upgrades

**+** It is not necessary to add partitions between the functional units for forms 3a, 3b, 4a and 4b. The IP 2X degree of protection of DPX<sup>3</sup> devices covers IP XXB. Separation can be obtained by insulating the live parts or by placing the device concerned inside an integrated unit, for example a moulded-case circuit breaker conforming to IEC 61439-2 section 8.101.