



S2678002 Tata Steel Standard
Power combination units

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Intended for the location IJmuiden

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1 General

This standard is applicable to all power combination units, also called 'las combinaties', for all business units of the Tata Steel IJmuiden

2 Scope

This standard specifies the minimum design criteria for the power combination units used for normal indoor conditions. For specific circumstances, additional requirements must be considered. For outdoor installation a higher IP degree and / or a cover against rainfall need to be equipped. For harsh environments, additional requirements should be applied to the materials of the applied casing.

3 Normative references

The application of the following standards is required. In the list the publication dates are omitted. The most recent versions are applicable.

- IEC 60529 Degrees of protection provided by enclosures (IP Code)
- NEN EN 50102 Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
- IEC 60695-2-11 Fire hazard testing - Part 2-11: Glowing/hot wire based test methods - Glow-wire flammability test method for end products
- IEC 60947-2 Low-voltage switchgear and controlgear
Part 2: Circuit-breakers
- NEN EN IEC 60309-2 Plugs, socket-outlets and couplers for industrial purposes -
Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories
- NEN EN IEC 61558-2-6 Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers

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4 Minimum specification power combination unit

4.1 Model suited for 400 V en 230 V

4.1.1 Housing

- Degree of protection against water and dust according to IEC 60529: IP44
- Degree of protection against mechanical shocks according to IEC 50102: IK09
- Material insulating and self-extinguishing according to IEC 60695-2-11
- Operating temperature -25 ° C to 60 ° C
- Separate access to the circuit breakers and earth leakage protection. Acces by means of a self-closing cover, with the smallest possible opening for operation, to minimize the risk of pollution

4.1.2 Internal wiring

- Wires to be equipped with insulated wire-end.
- Per terminal only one wire to be connected. For multiple wires per contact use multiple terminals.
- All terminals must have IP2X degree of protection
- Wiring set up conforming a clockwise rotating field.
- Earth terminal or rail for mounting of all earth conductors.

4.1.3 Main switch according to standard switch-disconnector

- Colour black/gray with padlocking facility for 8 mm padlock bracket.
- Base mounted on the backplane and provided with door locking so the cabinet can only be opened in switch off position.
- 4-pole versions: 3P + N, 400 V, 63 A.
- Incoming cable should be directly wired to the switch-disconnector. Terminal connection 25/35 mm².

4.1.4 Protection devices

- Circuit breaker 50 A, 32 A and 16 A with C-curve, short-circuit breaking capacity minimum 10 kA conforming IEC 60947-2 and equipped with switching N pole.
- Earth leakage protection device 4P, 63 A, 30 mA, class A.

4.1.5 Power sockets

- Minimum protection IP44.
- Hour position according to table 104 in EN 60309-2.
- CEE socket
 - 400 V, 16 A, 32 A and 63 A, 5-pole
 - Hour position 6 h
 - Plug-in direction: inclined
 - Colour: red
- Schuko socket
 - 230 V, 16 A, 2P + PE
 - Plug-in direction: straight
 - Colour: blue

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4.1.6 Indications on the socket combination

- Numbering of the outlet sockets and associated-breakers with numbers 1 to 5.
- Maximum load current indication (50 A, 32 A or 16 A) at every socket.

4.2 Model equipped with 42 V circuit

At least equal to the requirements for the power combination unit for 230 V and 400 V, with the following additions

4.2.1 Internal wiring

- The wiring of the 42 V circuit must be routed completely separated from the rest of the combination.

4.2.2 Safety/isolation transformer

- Power: minimum 800 VA
- Primary voltage: 230 V
- Sec. voltage at full load: 42 V
- Idle voltage : < 50 V
- Suitable for SELV -circuits, conforming IEC 61558-2-6

4.2.3 Protection devices

- Primary: 4 A circuit-breaker D-curve
- Secondary: 16 A circuit-breaker C-curve

4.2.4 Power sockets

- CEE socket
 - 42 V, 16 A, 2-pole
 - Plug-in direction: inclined
 - Hour position: 12 h

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5 Configuration

5.1 Configuration for 230 V and 400 V

- 1 main switch 63 A
- 1 earth leakage protection device 63 A 30 mA
- 1 CEE socket 63 A
- 1 CEE socket 32 A
- 1 CEE socket 16 A
- 2 Schuko sockets 16 A
- 1 circuit-breaker 50 A/400 V
- 1 circuit-breaker 32 A/400 V
- 1 circuit-breaker 16 A/400 V
- 2 circuit-breaker 16 A/230 V

Explanation

The maximum allowed number of earth leakage protection devices behind an circuit breakers is, according to NEN 1010, 4 pieces. The intention of this restriction is to ensure availability of power. However in this standard 5 circuit breakers are placed behind a ELPD. This choice is motivated by lack of space for placing an additional leakage protection and the need to have 5 separate outlet sockets available. With this the risk of using unsafe adapter cables and not properly tuned protections to outgoing cables is greatly reduced

5.2 Configuration for 230 V and 400 V, including 42 V supply

Same configuration to 230 V and 400 V plus an additional housing with:

- SELV- safety/isolation transformer
- 2 CEE sockets 16 A / 42 V
- 1 circuit-breaker 4 A / 42 V
- 1 circuit-breaker 16 A / 42 V

6 Preferred configuration

For both configurations, a standard power combination unit is available, which fully meets the requirements.

These standard models are, mostly in stock, available under a separate Tata article number

6.1 Tata Steel configuration for 230 V and 400 V

Article number 2000337
Description: combination 230/400V 3P+PE+N

6.2 Tata Steel configuration for 230 V and 400 V, including 42 V

Article number 2000338
Description: combination 42/230/400V 3P+PE+N

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