Wieland-Werke AG
Corporate Function Global Engineering
Graf-Arco-Strasse 36
89079 Ulm
Germany
Phone +49 731 944-0
www.wieland.com

Section B – Electrical engineering

Part 2: Light and power installation

The following delivery specifications of Wieland-Werke AG form part of the contract.
Any deviating specifications are to be agreed upon between the supplier/contractor and Wieland, and documented.

Created by: **Mr. Stadler**
Phone: +49 731 944-2707
Email: lv.elektrotechnik@wieland.com

1 General

1.1 Applicable delivery specifications LvE

For the design and construction of distribution panels, in principle the “Delivery specifications for electrical engineering (LvE)” apply
- Part 1.2 - Design of switch cabinets, consoles and control panels
- Part 1.3 - Machinery and equipment installation

1.2 VDE regulations, standards

All electrical equipment, luminaires, cables and wiring used must comply with the applicable VDE regulations and relevant standards.

1.3 Feeding distribution board, labelling

On installation switches, pushbuttons and power sockets, the feeding distribution board with circuit designation must be marked in a legible, permanent and abrasion-resistant manner.
If no clear assignment is possible, switches must be labelled according to their function in plain text and with the function designation (e.g. lighting, heating, ventilation, etc.) Switches (e.g. for lighting circuits, heaters, fans, etc.) must be labelled with the functional designation in plain text by means of a label plate in plain text, unless the assignment can be identified without difficulty.

1.4 Safety lighting

Luminaires for safety lighting as well as associated junction boxes are to be marked in red; the supplying distribution board and the power circuit number must be marked in a clearly legible manner.

1.5 Light strips and luminaires

Light strips are to be equipped with electronic control gear (ECG) and, if there are more than 6 luminaires, must be connected as a 3-phase system (3AC).
Luminaires shall be supplied fully wired and compensated with ECG.
Lighting circuits that are switched via light switches are to be protected with B10 circuit breakers.

1.6 400 V three-phase sockets on the lighting network

400 V three-phase sockets up to max. 32 A (for repair purposes) are preferably to be executed as power socket combinations with 2x 230 V AC power socket and residual current operated circuit breaker. A maximum of 3 combinations can be connected to one circuit.
Sockets with higher rated currents must be fused individually.

2 Selection of electrical equipment

2.1 Protection class

The protection class of the electrical equipment must be adequate for the site of operation and the expected mechanical and environmental stresses.

2.2 Surface mounting

Switch fittings for surface mounting shall be supplied in rectangular, light grey, damp proof design. For flush-mounted fittings, rectangular white versions shall be used.

2.3 Light pushbuttons

must have an indicator lamp as an orientation aid in the dark.

2.4 Installation height

Unless specified otherwise, fittings shall be installed at a height of 1.05 m above finished floor level.

2.5 500/400 V three-phase sockets

500/400 V three-phase sockets > 32 A shall be provided with a built-in switch, with which the plug/socket combination is interlocked. The sockets must be connected with a clockwise rotating field.

2.6 Luminaire types

Planned luminaire types must be submitted to our planning electrical department for approval. If requested, for extensive lighting installations, samples must be provided.

3 Electrical distribution boards

3.1 Distribution boards with plastic enclosure

Distribution boards with plastic enclosure may only be used following consultation with our planning electrical department.

3.2 Cable entries

Metal cable glands are to be used for cable entry, unless plastic cable glands are prescribed due to protection class 2. At least 25% reserve entries shall be provided; unused entries shall be sealed.

3.3 Measuring instruments in main distribution boards

In main distribution boards (400/230 V and 500 V), in the supply panel, a multimeter must be installed and parameterised for recording and displaying the electrical values, including active energy. The current and voltage connections shall be implemented in accordance with our measurement instrumentation design examples. The type and specification of the device shall be discussed and agreed with the project manager.
The power terminals should generally be equipped with test jacks.

3.4 NH fuses

For the use of NH fuses, preferably fuse strips with switch (250 A) shall be used.

3.5 Circuits for safety devices

shall be specially marked in the circuit diagrams. The corresponding fuses or circuit breakers shall be marked in red.

3.6 Designation of fuses

All fuse elements shall be labelled in such a way that the associated circuit can be easily identified.

4 Routing of wiring

4.1 Wiring for lighting/power circuits

For 500 V power circuits, only H07VV (NYY) or NYCWY cables may be installed.
Lighting and power installations in plant buildings with steel structure may only be executed in H07VV (NYY) or NYCWY.
In plant buildings with simple ceiling structures and a height of less than 4 m and in offices, H05VV (NYM) may also be used for lighting and power installations (except 500 V).

4.2 Conduit installations

Cables and wiring can be installed in open conduits.
The conduit diameter must be at least 1.5 times the cable diameter.

Armoured plastic conduits must be made of flame-retardant, impact-resistant rigid PVC, VDE tested, and be approved for an operating range of -20 ... +80 °C.

The use of protective hoses is not permitted. In exceptional cases, flexible steel tube (Staroflex) may be used.

A pull wire must be inserted in empty conduits.

4.3 Fastening of conduits

The following maximum intervals apply to the placement of fasteners for conduits:
- Steel conduit max. 1.5 m
- Plastic conduit up to M23 ... 0.6 m, larger than M23 ... 0.8 m.

4.4 Edge protection

Wiring must be protected from damage by sharp edges, this also applies when running cables through openings in cable troughs or cable trays. When fastening with clamps, counter-troughs (shells) must be placed under the clamp.

4.5 Cable routes for extra low voltage installation

Cables must be laid in separate installation conduits, in cable racks or on cable ladders with dividers.
The corresponding cable routes shall be marked; cables other than communication or data cables may not be laid on them.
In cable raceways high voltage and extra low voltage installations must be separated with dividers. This also applies to the installation of equipment in the cover plates.

4.6 Protective measures and equipotential bonding

Metal terminal boxes and connection boxes as well as cable racks must be included in the protective measures.

4.7 Power cables

(e.g. supply lines) in cable tunnels shall be designated after consultation.