

Explosion protected control unit

Examples of a control unit comprising an 8225/135 EEx d enclosure and two 8124/8476-1 EEx e enclosures are given to illustrate a combination of inspection windows and assembly levels in a flameproof enclosure.



Fig. 1
EEx d enclosure 8225/135 with two
EEx e enclosures 8124/8476-1

Flameproof EEx d enclosure

This is used to install commercially-available electrical equipment such as contactors, switches, measuring instruments and PLCs. Inspection windows can be incorporated into the cover or the side wall to read the indicating devices.

EEx e enclosure with increased safety

The enclosure with an attached flameproof chamber is designed for "increased safety". Flameproof control equipment is fitted into this enclosure.

The connection chamber also conforms to the "increased safety" protection class. All incoming and outgoing cables come through this enclosure, via cable glands. The leads are distributed via terminal blocks.

STAHL

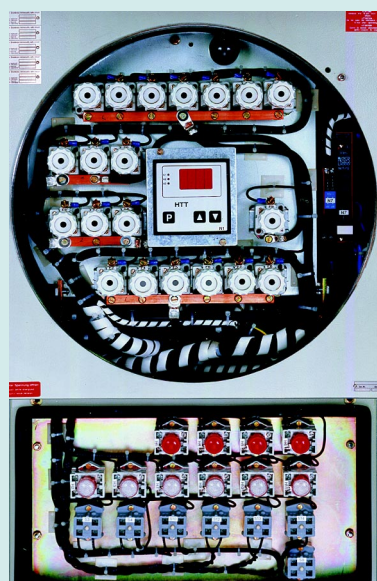


Fig. 3
EEx d enclosure 8225/135
with top mounting panel in position

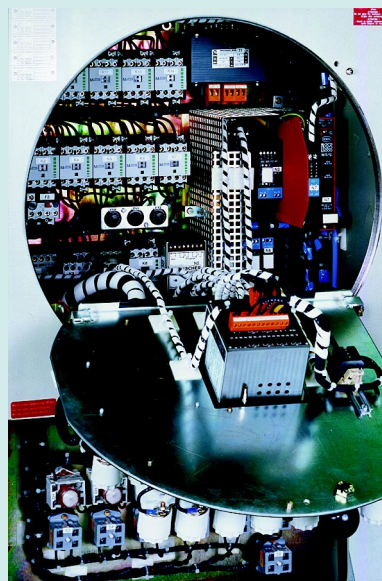


Fig. 2
EEx d enclosure 8225/135
with top mounting panel swung out

EEx d enclosures 8225/135 with fittings on two levels

The equipment fitted in the flameproof chamber are on two panels arranged one over the other. The top panel can be swung out on hinges, the lower one is fixed in the housing (fig. 2.).

E 27 fuses and a temperature regulator are fixed on the movable board (fig. 3). The regulator is arranged so data displayed can be read off through the window in the flameproof enclosure lid.

The lower fixed mounting panel has a starter transformer, contactors, auxiliary contactors, safety barriers and switching amplifiers.

Actuators

The main switch has special significance in explosion protection. As in normal switchgear construction it is used as a main isolator, but it also has the task of switching off the voltage when the housing lid is opened, using a definite-action interlock mechanism, and guarantees this disconnection for as long as the housing is open.

Main switches can be designed as load or motor switches.

The switches have rotary actuators. They are coupled to the actuation levers via spark-proof spindles. These spindles can be taken through the enclosure cover or wall, as required.

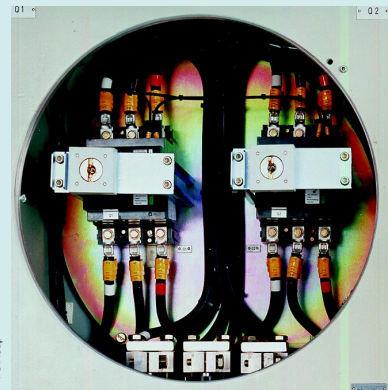
A maximum of 3 switch actuators can be fitted to an enclosure cover. The actual number of switch actuators which can be mounted depends on the size of switches fitted and the actuator levers used.

Actuator levers are available in 2 sizes:

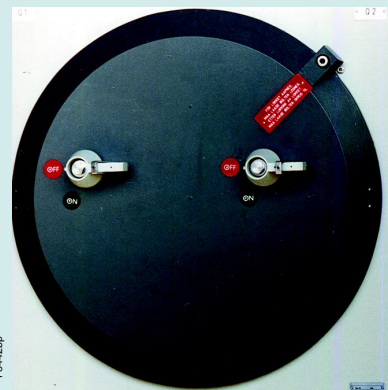
- Small actuator levers for switches with rated currents ≤ 200 A.
- Large actuator levers for switches with rated currents ≥ 250 A.

In addition to actuators for manual operation, the switches can also be fitted with motor drives.

Pushbuttons or potentiometer-type actuators can be fitted in EEx d enclosures as well as switch spindles. In addition to the actual command action, these pushbuttons are suitable for reclosing tripped motor relays. Potentiometer-type actuators cannot be brought out through the enclosure cover, they must be mounted in its wall.



F3443ap



F3442bp

A maximum of 3 switch actuators can be installed per enclosure

Barrier bushings

Barrier bushings are fitted to facilitate the passage of current to and from flameproof enclosures, as connecting element between connection chamber and Ex d enclosure.

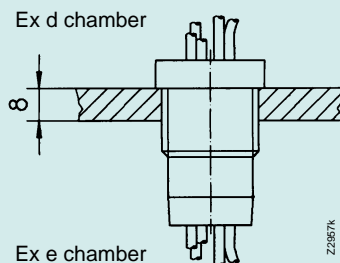
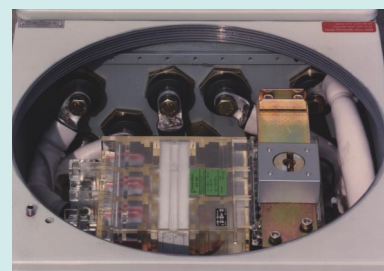


Diagram
Multiple conductor bushing

These bushings are either screwed into the barrier wall or set into machined holes, sealed and secured against loosening.

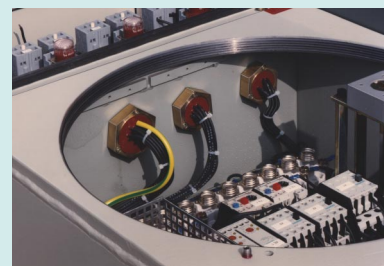
Types of cable entries available:

- Fixed stud-type bushings with terminals in an EEx d or EEx e space.
- Multiple cable entries:
 - Benefits:
 - significant savings in space and cost
 - wiring to terminal blocks



3148

Post type bushings



3154

Conductor bushings

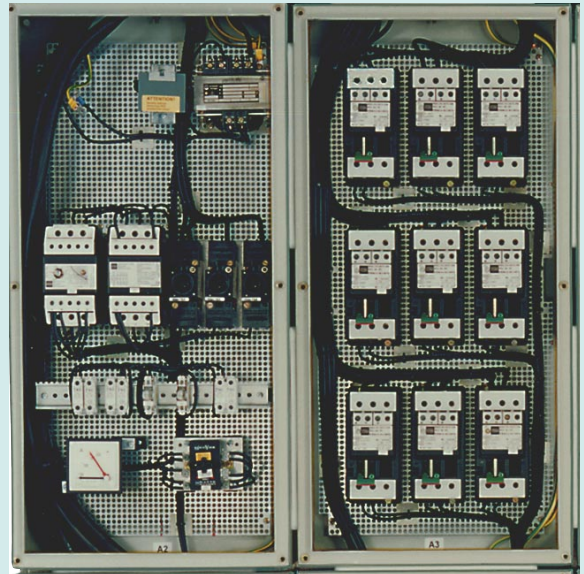
EEx e enclosure

EEx e enclosures are fixed to the lower side of the flame-proof enclosure. Power is brought into the flameproof enclosure through flameproof cable entries.

Control equipment, which are themselves protected to EEx de, can be installed in the connection enclosure.



D4289p



D4770p

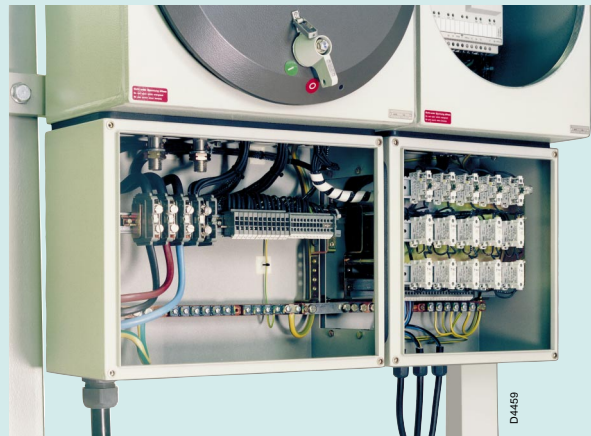
An 8125 terminal chamber with 8562 miniature circuit-breakers and control equipment. The miniature circuit breakers are fitted

under actuation flaps so that they can be monitored and operated without removing the enclosure cover.

STAHL



D4462



D4459

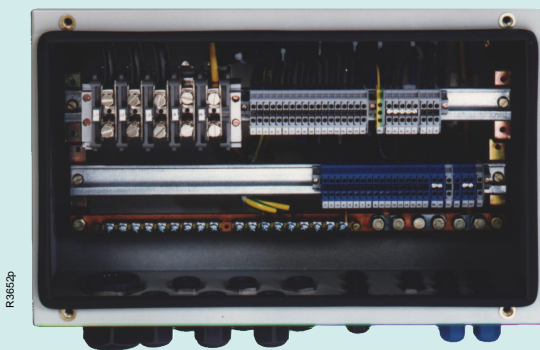
An 8125 terminal enclosure with 8010 indicating lamps, 8082 control devices and terminals fitted.
Left: Enclosure with covers in place.

Right: Enclosure with covers removed.

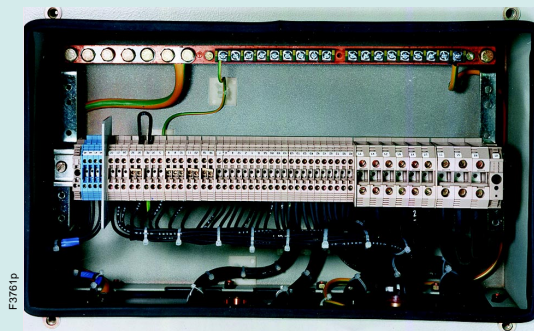
Connection elements

- Terminal blocks up to 120 mm²
- Single terminals up to 240 mm²
- Busbars up to 630 A, with connection size 240 mm²

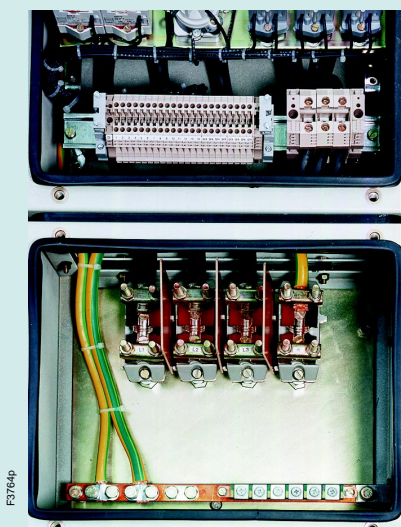
All terminations comply with the regulations for „increased safety“ equipment and are approved as such.



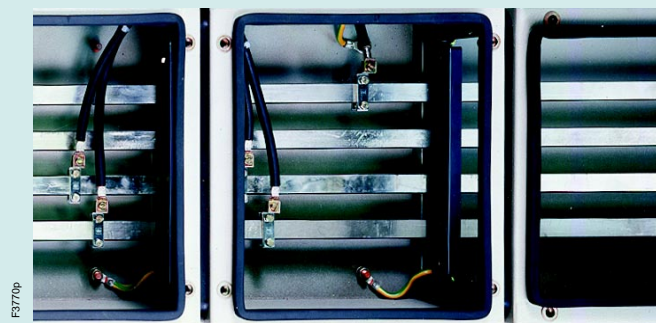
Terminal blocks of various sizes mounted on standard rail with earth and neutral rails.



Terminal blocks, with blue terminals for intrinsic safety circuits, all mounted on standard rail.



Single terminals for conductors of up to 240 mm²



Busbar system, 4 or 5 pole, up to 630 A

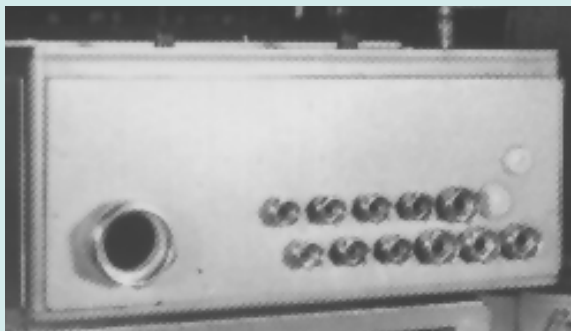


Cable dividing box and clamp, in die cast alloy, for one or two cables, max. cable diameter 72 mm.

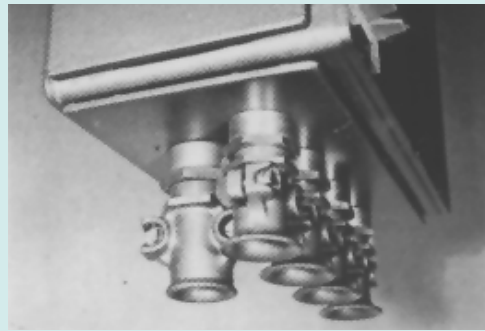
Cable connections

Flange plates are fitted to order, with cable glands, bell-mouthed glands and cable dividing boxes to facilitate the entry and securing of cables.

Special, flanged socket outlets can also be provided. When connecting cables to 'increased safety' enclosures, the minimum degree of protection IP 54 must be maintained. Bell-mouthed glands are essential for cable connections which are subject to movement. Unused entries must be closed off with special Ex stopping plugs.



Plain compression glands in brass, available in sizes Pg 7 to Pg 48. For armoured cables, cone type glands are also available.



Bell-mouthed glands, in plastic or metal, for cables subject to movement.



Cable glands 8161 of moulded plastic, available in sizes Pg7 to Pg48 and M16 to M63.