

Safe.t®Technology Safe.t®Seminars Safe.t®Solutions Safe.t®Components Safe.t® Systems

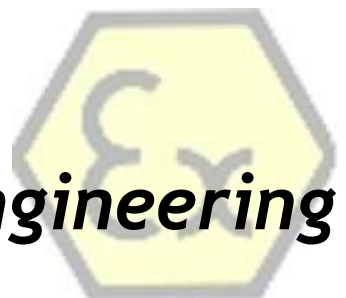
Safe.t®Solutions Safe.t® Components Safe.t®Systems Safe.t® Technology

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Mining electrical engineering





Mining frequency converter type VSD

Properties

- optimised individual arrangement of all components using the newest structural software "3D",
- specified safety integrity level (SIL) for control circuits and safety circuits,
- local or remote control (binary or digital),
- clearly visualisation of operation modes - PSO panel.

Description

Frequency converter is intended for stepless adjustment of rotational speed of one or two asynchronous motors Drive (asynchronous motor is operating in so-called 2-quarters of the system - rotations right or left). Converter can operate in potentially explosive atmospheres where methane and/or coal dust explosion hazard may be present.

Converter can have one or two feeders to the motors. In case of multi-motor drives supplied from different frequency converters the control system ensures equalization of moments between motors supplied from the converters, where one is in control hierarchy so-called Master remaining converters are Slave. Master converter generates adjustment signals for Slave converters, which

adjust moment of the supplied engine so that will be equal to the moment of engine supplied from Master. Types of internal controllers used and their software enable to reverse master - slave hierarchy.

Implemented configurations and components used meet the requirements of the machine directive 2006/42/CE in force. Especially control circuits, separated from safety circuits, meet the requirements of the standards EN ISO 13849-1 and EN 62061. Safety integrity level of emergency tripping circuit SIL2.

External communication is realized through intrinsically safe channels of serial of frequency transmission - wire or fibre optic, binary signals, enabling local switching on or switching off of the converter as well as using emergency shutdown signal for "master" converter with "slave" converters. Emergency shutdown line has specified operational safety integrity level. Parametrization and monitoring of operation of the converter is realized through operator panel PSO.

Explosion-proof protection Marking

Ex I M2 Ex d e [ia/ib] op is I Mb

Ambient temperature

0°C to +40°C

CE Type Examination Certificate

OBAC 10 ATEX 106X

Rated data

Ingress protection

IP65

Supply circuit

Rated voltage

3 x to 1140V AC

Rated current

to 870 A

Rated frequency of supply

50 Hz

Output circuits

Rated voltage

3 x to 1140V AC

Rated current

to 870 A

Rated output frequency of converter

0 to 60 (100) Hz

Auxiliary voltage

Rated voltage

230 V AC lead out to +CA

42 V AC lead out to +CA

24 V DC

Load motors

Number of motors

Up to 4 pcs.

Total power of motors

to 800 kW for 1000 (1140) V

Load current

to 570 A

Number of poles

4 or 6

Max length of supply cable

to 100 m

Selection chart

| Execution type | code |
|------------------------------------|------|
| Single-feeder of power to 800kW | 01 |
| Two-feeder of power 2 x to 400kW | 02 |
| Two-feeder of total power to 630kW | 12 |

➔ Code: VSD - 630-1140 /



Properties

- enclosure in form of four quadrangular chambers with increased ingress protection to IP65,
- local or remote control (binary or digital),
- individual protection for each feeder,
- clearly visualisation of operation modes - PSO panel.
- protection by cutting off voltage supplying converter in case of attempt to open main chamber

Description

Frequency converter series VSD-200/690.*** is supply-distributing device for use in underground industry and for operation in surface parts of mines where methane and/or coal dust explosion hazard is present, intended for remote control of electric drives of mining machines and equipment with controlled rotational speed, supplied from three-phase AC network with isolated star point of the transformer. All instruments in the converter can be adapted for working voltage from 500V to 690V. Cover of main chamber is equipped with quadrangular control panel with sight glass allowing monitoring of all operation parameters of the converter on the external screen. Switch (NOTAUS), intended for cutting off voltage supplying converter and all consumers supplied by the frequency converter, is installed in the wall of main chamber.

Each frequency converter is equipped with integrated external heat exchanger water-air with closed cycle of cooling liquid.

Frequency converter type VSD-200/690.*** allows supplying of maximum two electric motors connected in parallel. Converter is equipped with separate overload-shorting protections, cab-type conductor or cable supplying motor's continuity control systems, windings and bearings temperature control and signals separator from motor's encoder in case of motor (motors) supply with voltage vector of alternating frequency.

Explosion-proof protection

Marking

Ex I M2 (M1) Ex d [ia Ma][ib Mb] I Mb
Ex I M2 (M1) Ex d e [ia Ma][ib Mb] I Mb

Ambient temperature

-10°C to +40°C

CE Type Examination Certificate

TEST 13 ATEX 0033X

Rated data

Ingress protection

IP 65

Supply circuit

Rated voltage

3 x to 690V AC or 3x500V AC

Rated current

to 220 A

Rated frequency of supply

50 Hz

Output circuits

Rated voltage

3 x to 690V AC

Rated current

to 200 A

Maximum value of rated power of connected motor

to 200 kW

Rated output frequency of converter

0 to 200 Hz

Selection chart

| Number of feeders | code | Maximum value of current / rated power of motor | code |
|---|------|---|------|
| One | 01 | 43A/37kW | 1 |
| Two (maximum power on each feeder does not exceed 0.5 rated power of converter) | 02 | 54A/45kW | 2 |
| Two (total power of feeders does not exceed rated power of converter) | 12 | 62A/55kW | 3 |
| | | 84A/75kW | 4 |
| | | 104A/90kW | 5 |
| | | 125A/110kW | 6 |
| | | 150A/132kW | 7 |
| | | 180A/160kW | 8 |
| | | 220A/200kW | 9 |

➔ Code: VSD-200/690.***