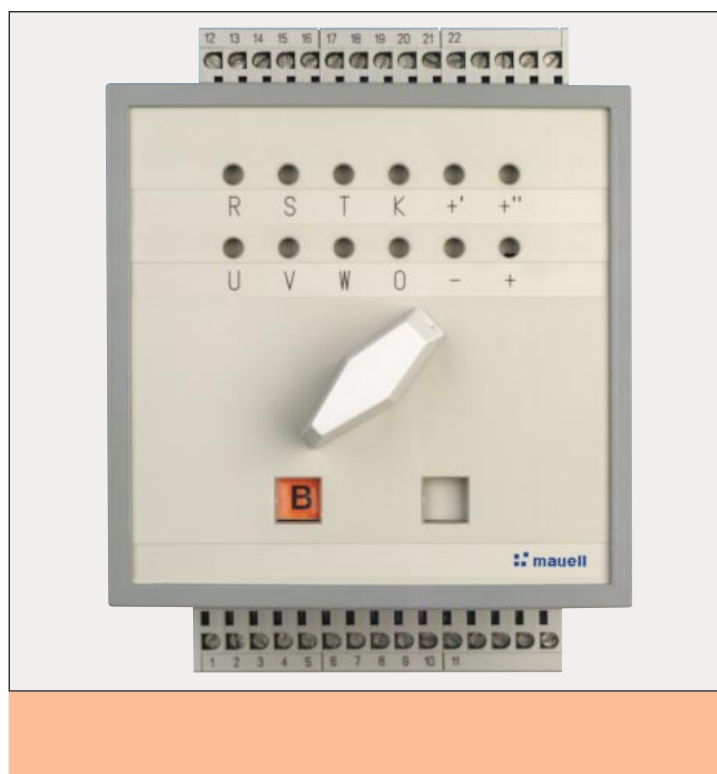


# Test Switch



# P 421



The products described in this brochure are intended for industrial use and meet the requirements laid down by the EU directive 73 / 23 EU (issued by the Council for Coordination of the Regulations of EU Member Countries regarding the electrical equipment for use within certain voltage limits, revised by directive 93 / 68 EU issued by the council).

The contents may be subject to modification for the purpose of technical improvement. The general regulations applicable to installation and commissioning must be observed. No warranty can be accepted.

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## Application

The test switch P 421 is used for the easy testing of network master and differential protection relays during online operation. The required periodic inspections of the relays can thus be carried in a fast and safe manner.

## Design and Principle of Operation

The test switch P 421 comes in an instrument case with the front dimensions 144 mm x 144 mm (DIN 43700). The knob-operated switch on the frontplate is used to set the built-in blade contacts to the test or operating position. Closed contacts are indicated by the letter "B" (Operation) on a red background, open contacts by the letter "P" (Test) on a green background. The acces to the built-in sockets is mechanically enabled when the switch is in test position.

When the contacts are in the operating position, the electric circuits of the current and voltage transformers to **JKL** the protection relay are connected and the tripping line is enabled (see diagrams). Upon changeover from "Operation" to "Test", the current transformers are short-circuited before the contacts open. The protection relay can now be tested using the protective-side-connected **JKL** sockets. For the connection of the measuring leads we recommend our test socket which is available as an accessory part. The test switch can be supplied with a permanent or a removable knob.

The test switch P 421 is available both for surface-mounting and flush-mounting in control panels (see pages 11 and 12 for dimension drawings).

## Connection for Control Panel Surface Mounting

The connection is established by means of 2 x 15 = 30 side-mounted screw terminals (maximum) with M4 thread. Depending on the circuit arrangement, the terminals are numbered from "1" to "11" (lower row) and "12" to "22" (upper row), or "1" to "15" (lower row) and "16" to "30" (upper row). The maximum cross-sectional area of the connecting cables is 6 mm<sup>2</sup>.

Upon request, the surface mounting case is delivered with 2 large terminal covers.

## Connection for Control Panel Flush Mounting

The connection is established by means of 2 x 15 = 30 rear-mounted screw terminals (maximum) with M4 thread. Depending on the circuit arrangement, the terminals are numbered from "1" to "11" (lower row) and "12" to "22" (upper row), or "1" to "15" (lower row) and "16" to "30" (upper row). The maximum cross-sectional area of the connecting cables is 6 mm<sup>2</sup>.

Four "C" type fixing elements are delivered upon request.

## Order References

**Ident No.:** 51-9\_-001 xx xx  
**Mounting type:** Surface-mounting 1  
 Flush-mounting 2  
**Diagram number:** 42-  
**Options and accessories acc. to price list**



Front view of flush mounting case



Rear view of flush-mounting case

Diagram 42-001 for network limiting

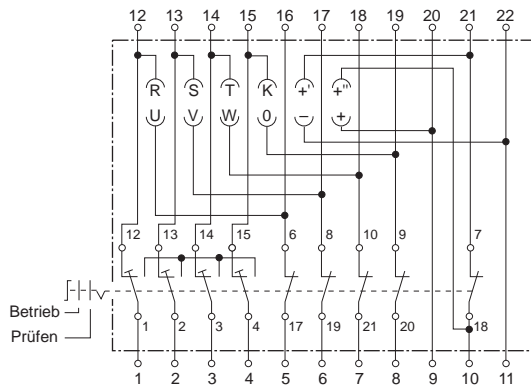


Diagram 42-003 for network limiting

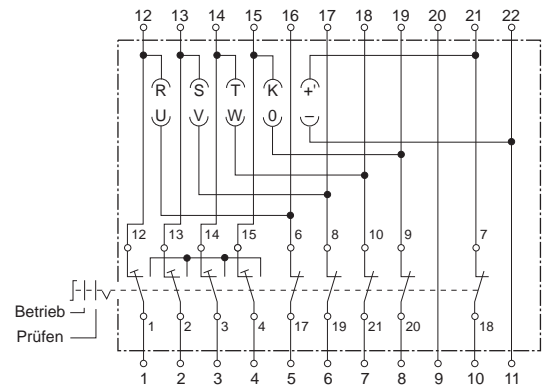


Diagram 42-007 for differential protection

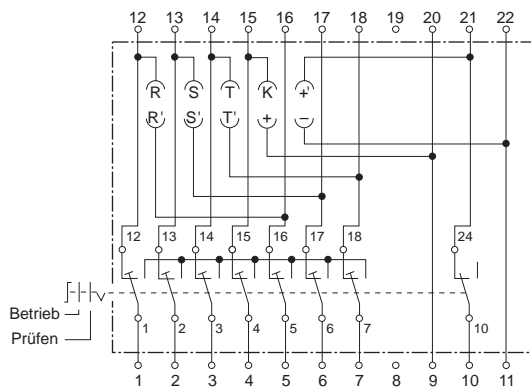


Diagram 42-017 for line protection

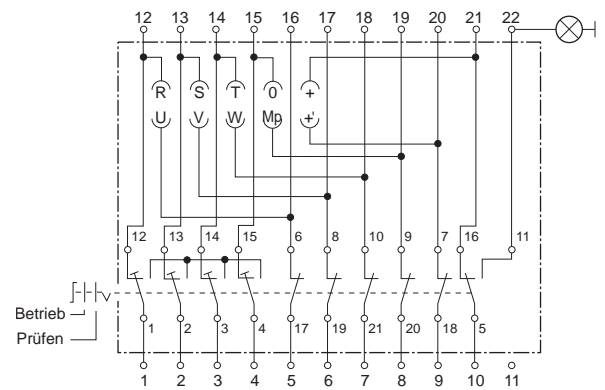


Diagram 42-040 for network limiting

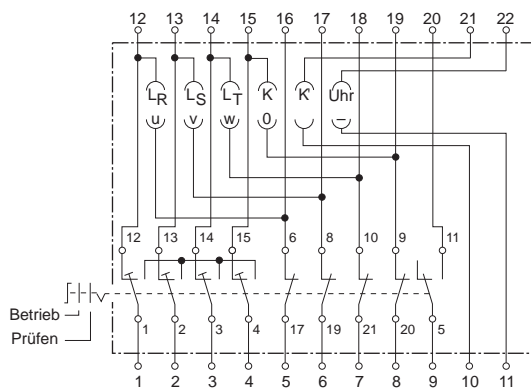


Diagram 42-054 for network limiting

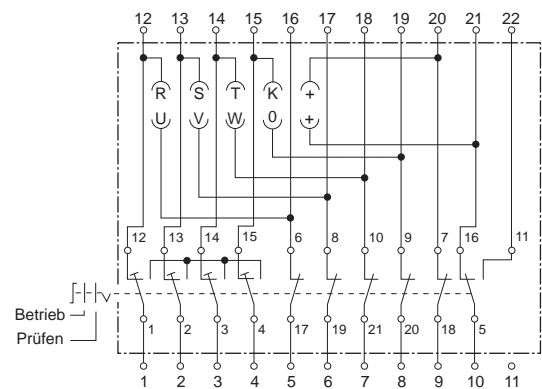


Diagram 42-058 for network limiting

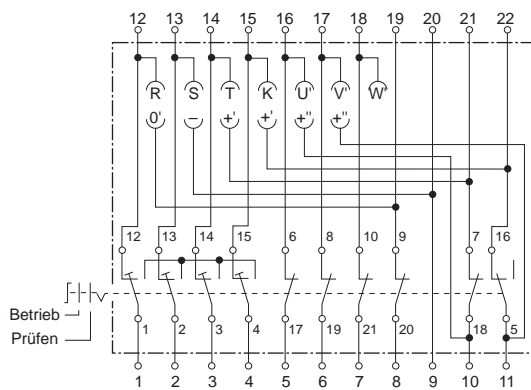
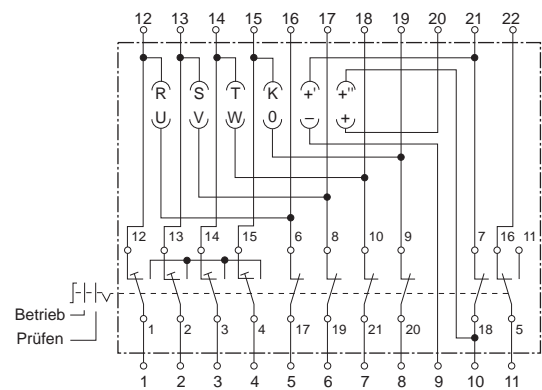


Diagram 42-068 network limiting



# Diagrams

Diagram 42-085 for network limiting

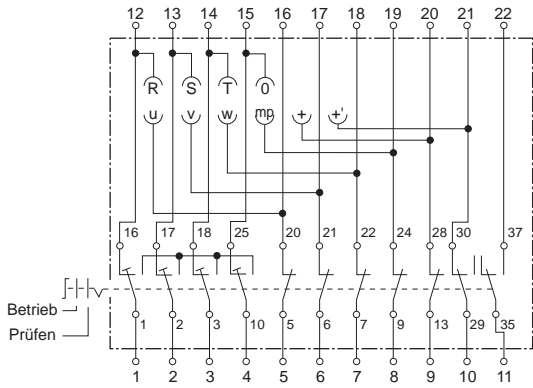


Diagram 42-088 for network limiting

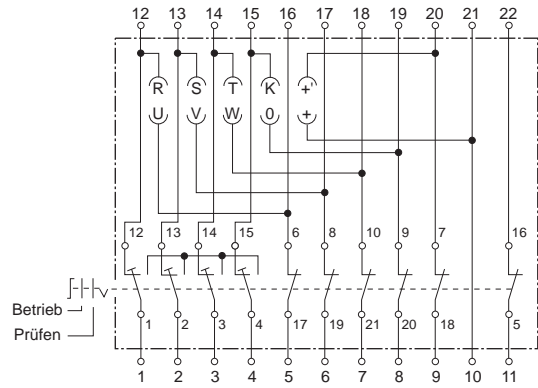


Diagram 42-095 for network limiting

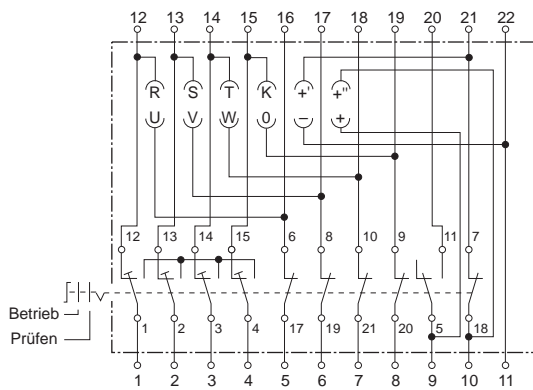


Diagram 42-109S\* for network limiting

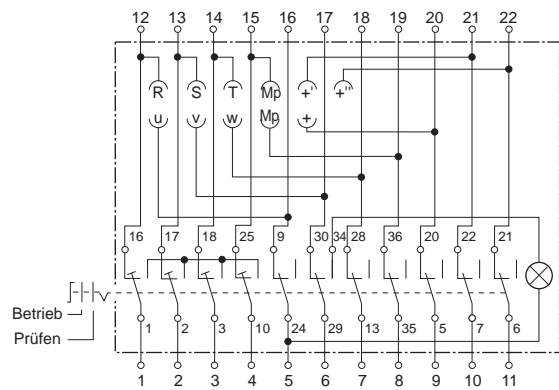


Diagram 42-113 for network limiting

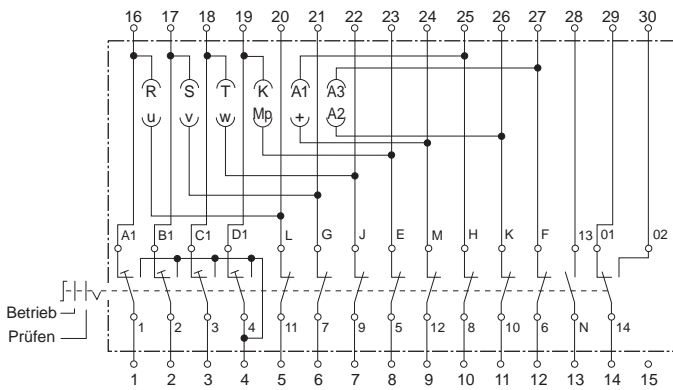


Diagram 42-115 for network limiting

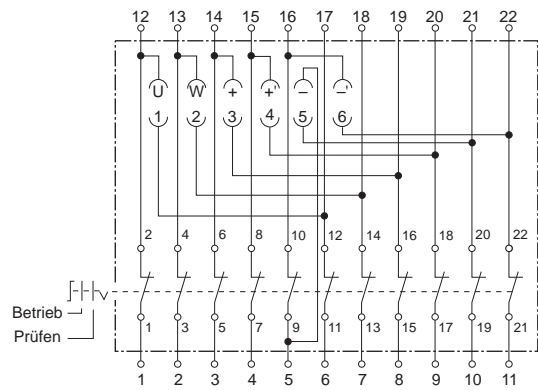


Diagram 42-116S\* for network limiting

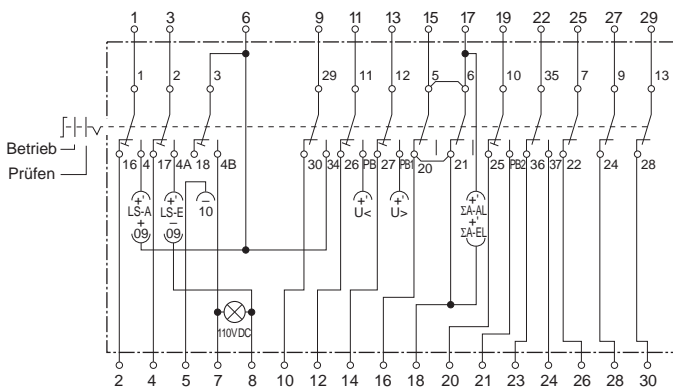
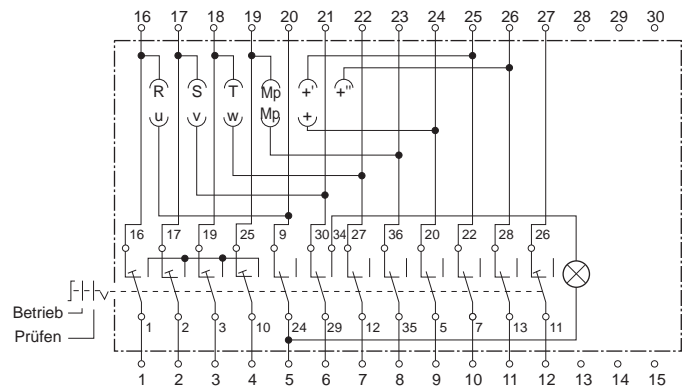


Diagram 42-117S\* for network limiting



\* not available for control panel flush mounting

Diagram 42-122 for network limiting

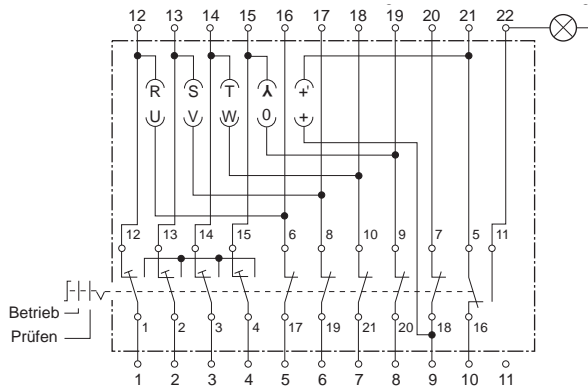


Diagram 42-123 for network limiting

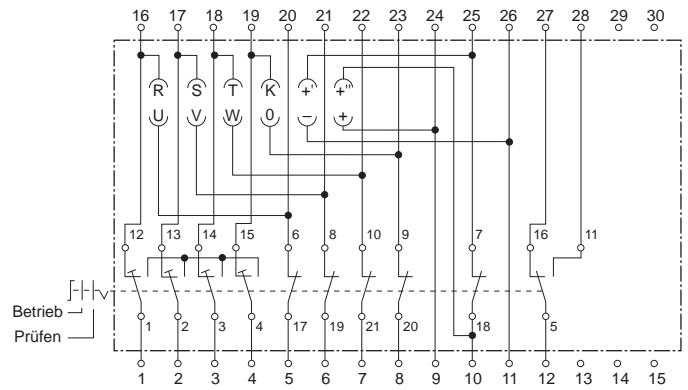


Diagram 42-126 for network limiting

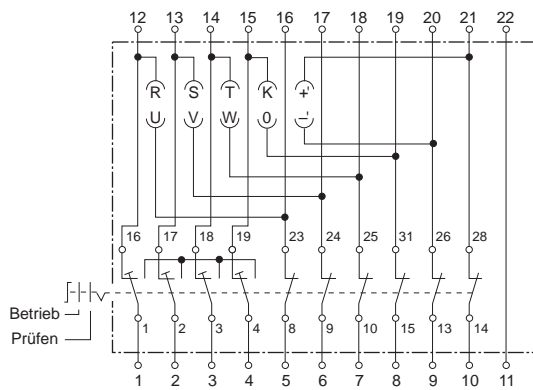


Diagram 42-130 for network limiting

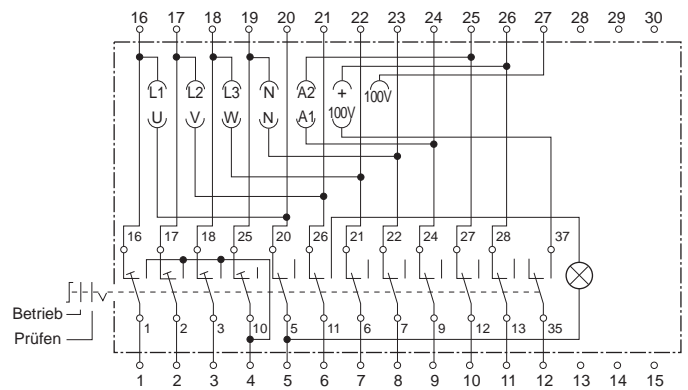


Diagram 42-132 for network limiting

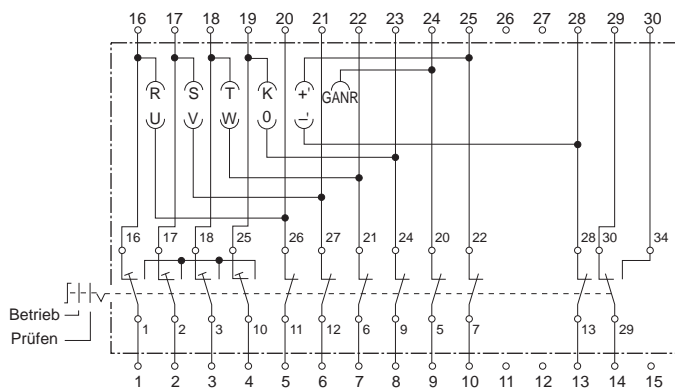


Diagram 42-134\* for network limiting

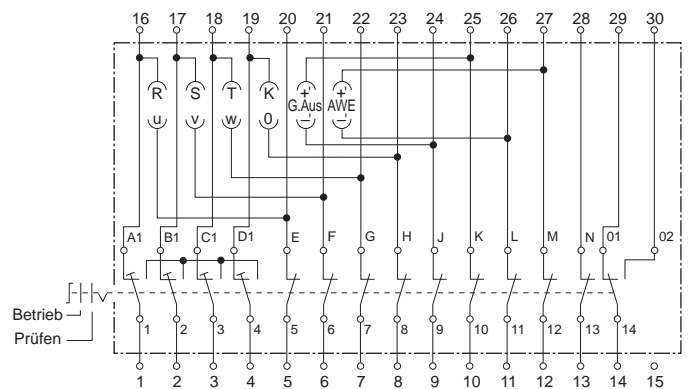


Diagram 42-137\* for differential protection

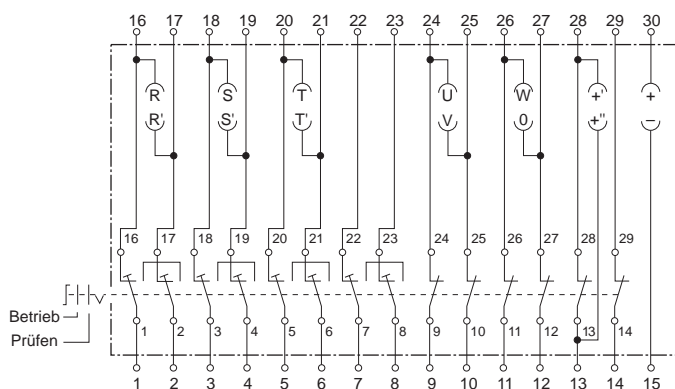
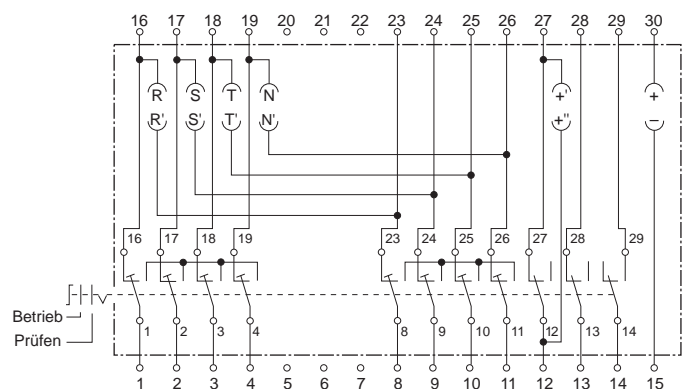


Diagram 42-138 for differential protection



\*not available for control panel flush mounting



Diagram 42-158 for network limiting

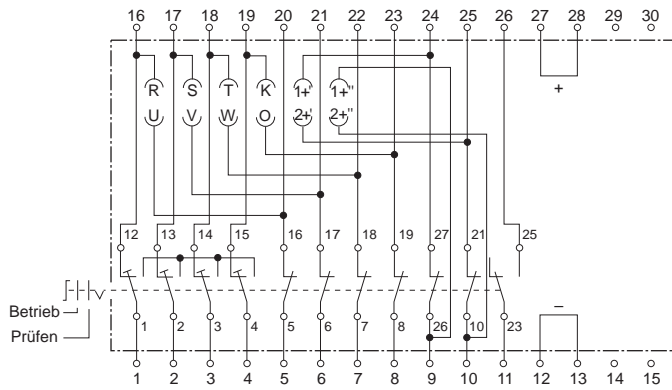


Diagram 42-161 for network limiting

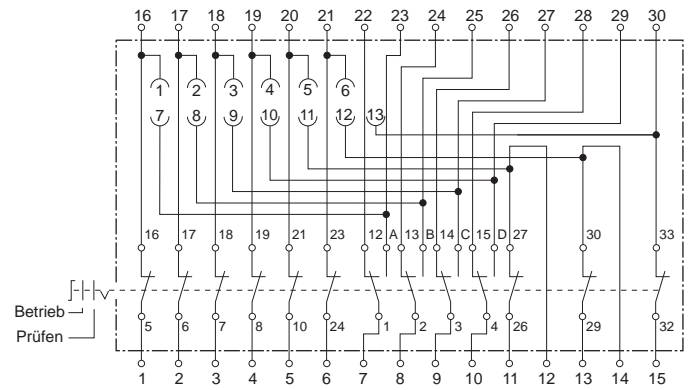


Diagram 42-163 for network limiting

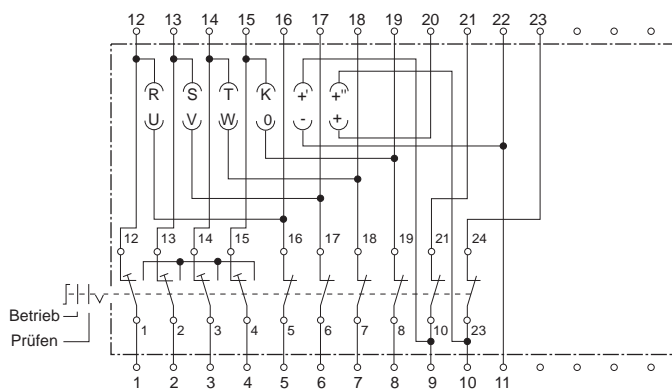


Diagram 42-166 for network limiting

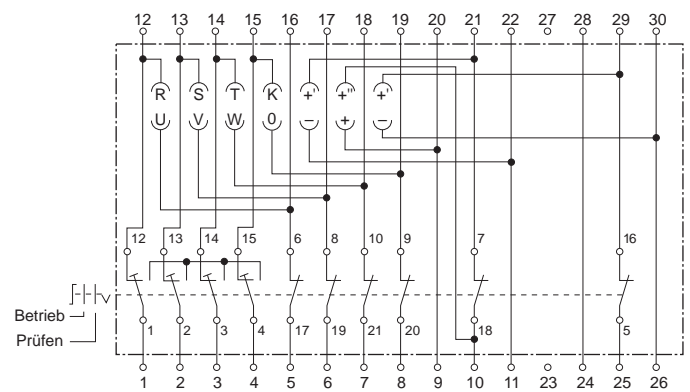


Diagram 42-167 for network limiting

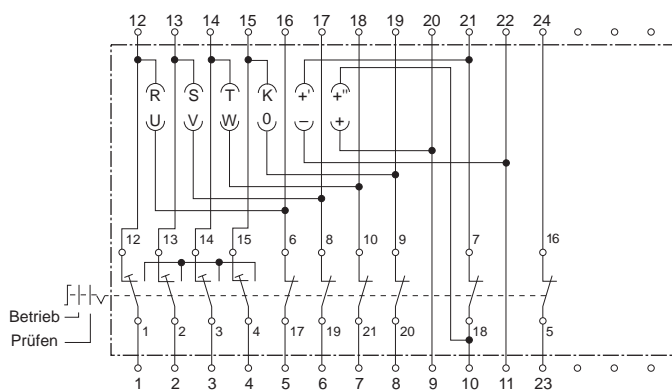


Diagram 42-168 for network limiting

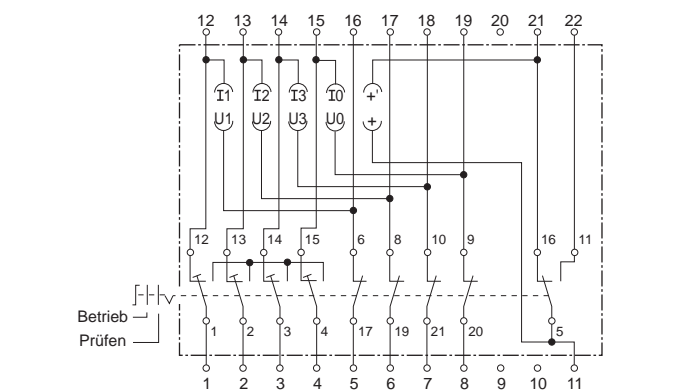


Diagram 42-169 for differential protection

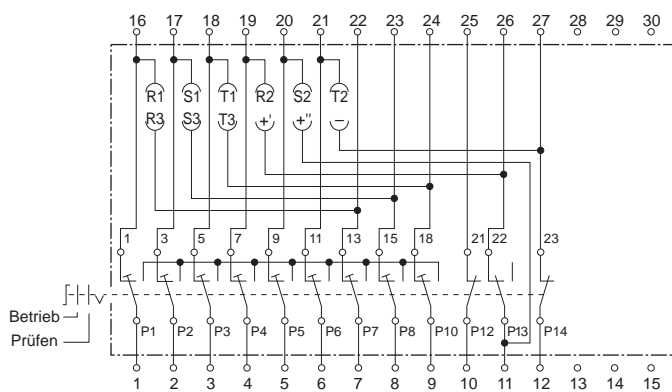
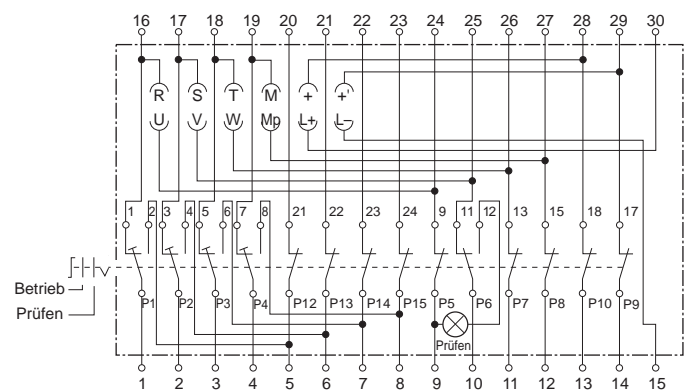


Diagram 42-170 for network limiting



# Diagrams

Diagram 42-171 for network limiting

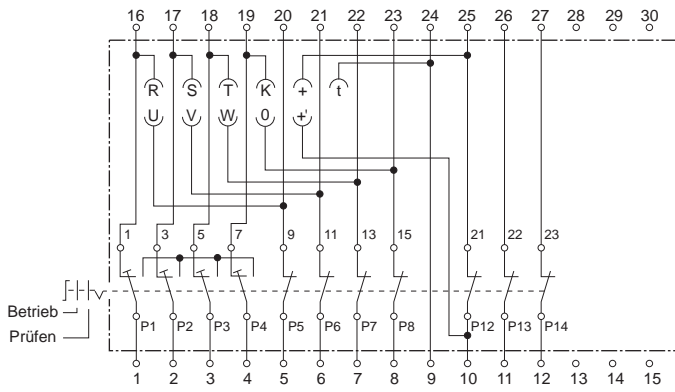


Diagram 42-173 for network limiting

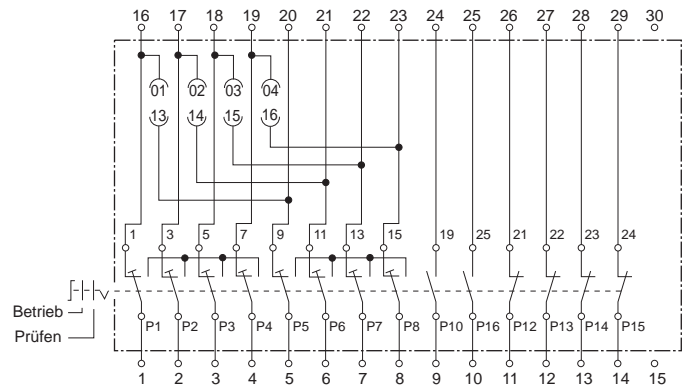


Diagram 42-175 for network limiting

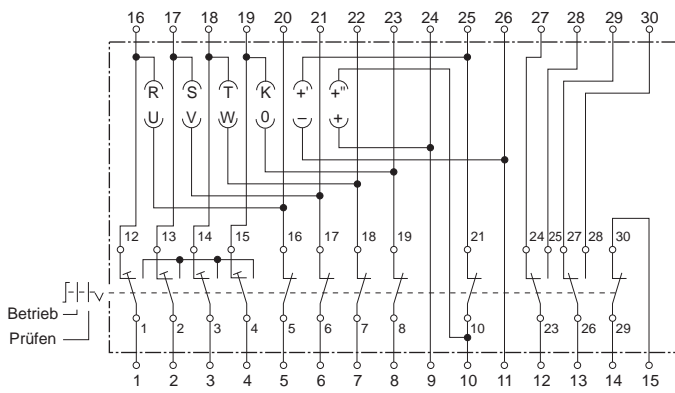


Diagram 42-176 for network limiting

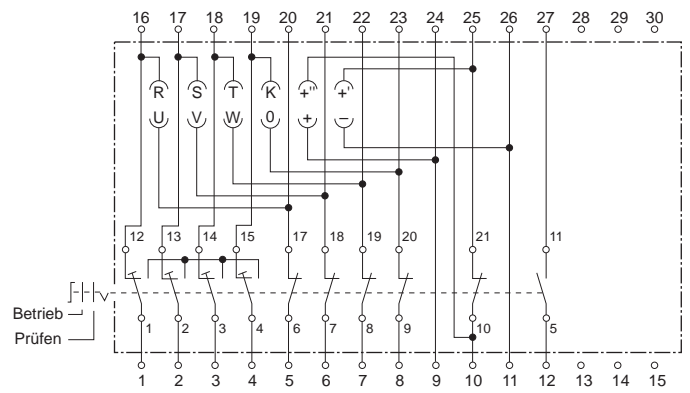


Diagram 42-177 for network limiting

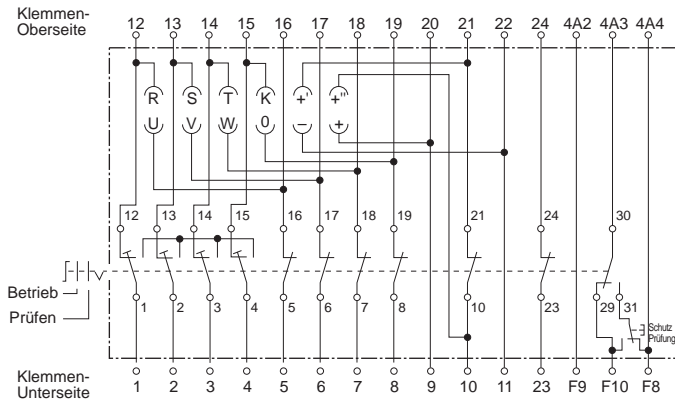


Diagram 42-178 for differential protection

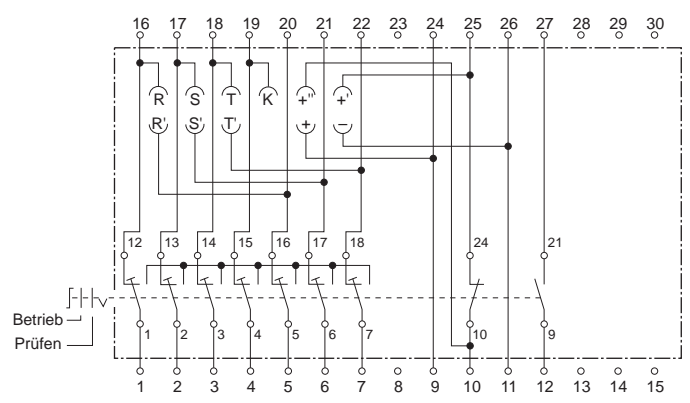
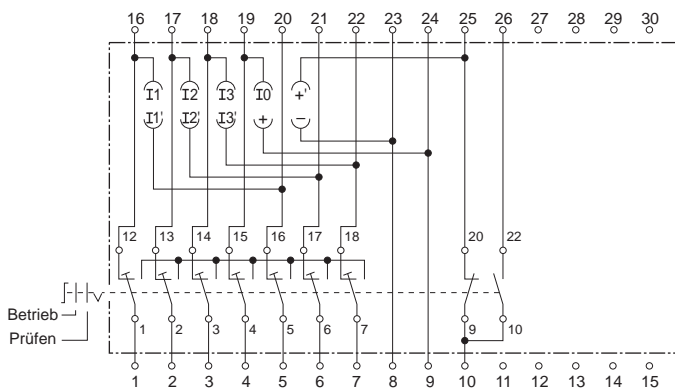
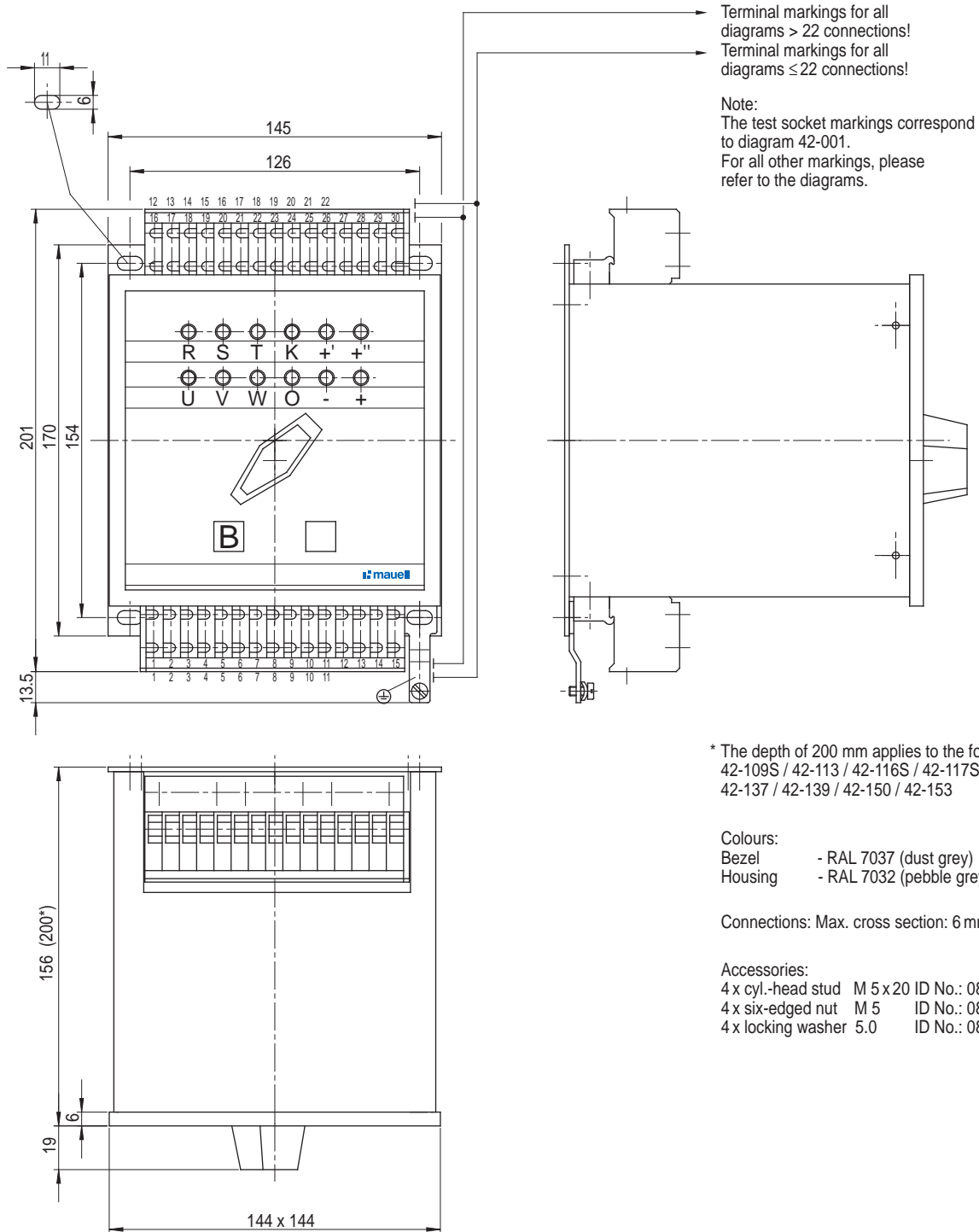
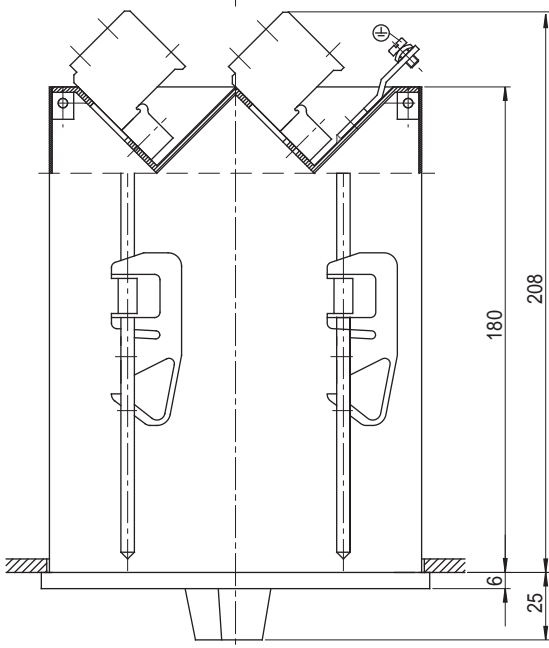
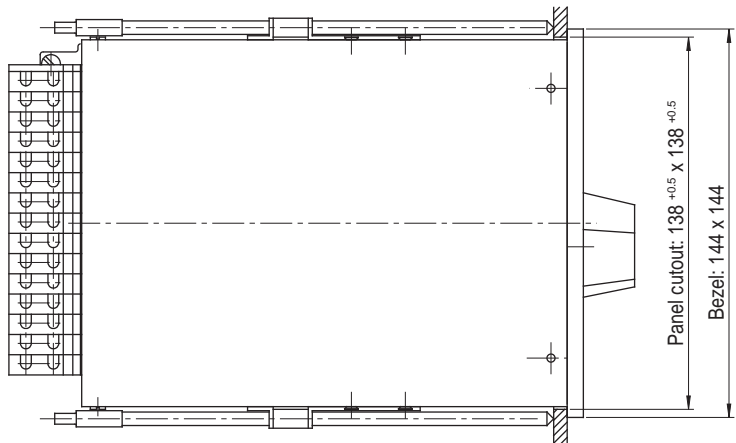
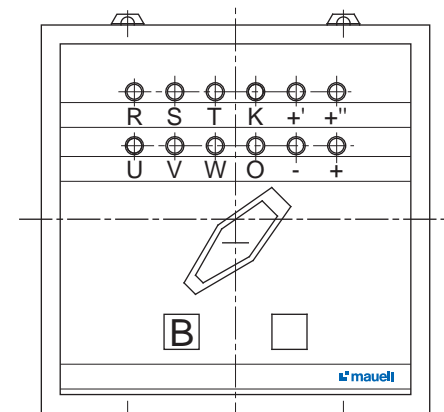


Diagram 42-179 for differential protection

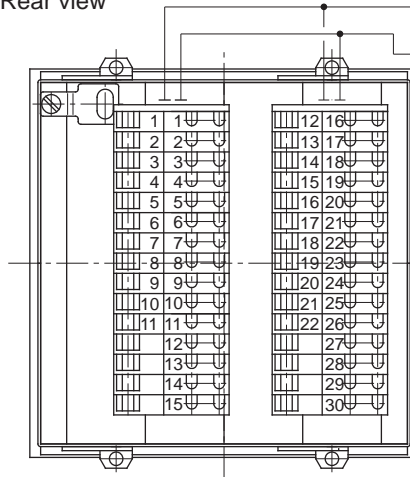




## Dimension Drawings: Flush-mounting Case and Test Plug



Rear view



Terminal markings for all diagrams ≤ 22 connections!

Terminal markings for all diagrams > 22 connections!

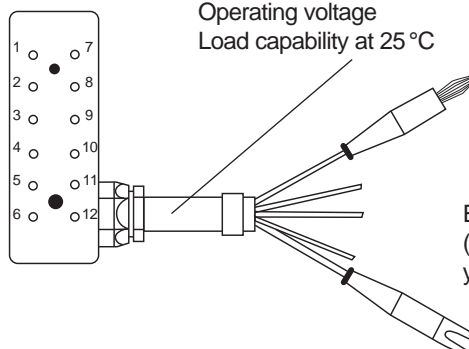
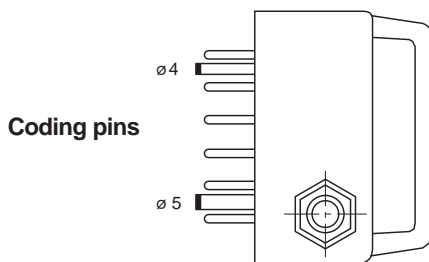
Note:  
The test socket markings correspond to diagram 42-001.  
For all other markings, please refer to the diagrams.

Colours:  
Bezel - RAL 7037 (dust grey)  
Housing - RAL 7032 (pebble grey)

Connections:  
Max. cross-section: 6mm<sup>2</sup>

Accessories:  
2 x mounting element  
ID No.: 08-40-080

## Test plug



Number cable 12x1.5  
PVC, grey 2 m long  
Test voltage 2 kV  
Operating voltage 500 V max  
Load capability at 25 °C 20 A

Either plug- or fork-type  
(please state when placing your order)





## Technical Brochures Available

### Power Station Control and Process Control

Automation system	ME 400
Process control system	ME 4012
Data sheets	ME 4012
Fail-safe control system	ME 4002S
Intermittent devices, electr. power controllers	
Electronic control system	ME 4002
Data sheets: Electronic control system	ME 4002
Data sheets: Electronic control system	ME 4022
Electronic measuring and monitoring system	ME 7002

### Application Reports

- Digital turbine control
- Optimal control of industrial steam generators
- Sample documentation ME 4012  
(Flue gas desulfurization, absorber circulation)
- Computer-aided design with the  
process control system ME 4012
- Reference list of completed process control installations

### Power Distribution Control / Remote Control

Remote control system	ME 800
Microprocessor remote control system	ME 8008
Terminal control system	ME 8010
Terminal control system	ME 8012
Remote control system	ME 8012
Microprocessor remote control system	ME 8018
Power distribution control system	ME 6005

### Alarm and Event Recording Systems

Event data acquisition system	ME 300
System description	ME-NET
Relay and alarm module system	ME 2015
Criterion computer	ME 2015K
Alarm and event recording system	ME 2025
Electronic alarm system	ME 3008

### Mosaic Systems / Control Room Technology

Mosaic system, M series
Mosaic system, K series
Mosaic system, T series
Mosaic system, MK series
Control room technology
Mosaic accessory parts
Display elements

### Electronic Standard Devices

Display units	ANZ
DC voltage monitoring unit	GEÜ 02 / GESÜ 02
Alarm and event recording system	ME 2025/96
Compact alarm system	ME 3009
Illuminated annunciator system	ME 3012
Distributed alarm system	ME 3014
Alarm system	ME 3010
Intelligent alarm system	ME 30
Illuminated indicator board, Type L	
Cables with connectors, terminal blocks	
Annunciator relays	
Illuminated annunciator relays	
Mosaic indicator boards	
Crosspoint relays	
Auxiliary relays	
Time-delay relays	
Illuminated pushbuttons / switches	
Annunciator modules	
Flasher units / flasher amplifiers	
Electronic flasher unit	
Test switch	
Switches and pushbuttons for auxiliary circuits	
Standard rack system	
Illuminated pushbuttons / switches, eyeball indicators	
Reversing thyristor controllers	
Intermittent devices	
Start-up and braking control devices	
Emergency stop switch units	
Two-hand safety relays	
Protective door guards	
Electronic controllers	

# Representatives

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