

ANALOGUE MEASURING INSTRUMENTS

Instruments with contacts

The contact instruments combine an electronic relay with a measuring instrument. They can be used in a wide range of applications, including all those cases in which it is required to control a quantity within a specified range of values.

There are different types, in order to control:

- Direct current or voltage (type PQC)
- Alternating current or voltage (type EQC)

There are different versions, according to the control type:

- Different type (.../1): They have one control channel for controlling the minimum value, and another one for the maximum value.
- Cascade type (.../2): They have two control channels, for two maximum set points..

Each channel is completely independent, and controls an output relay, with potential-free change-over contacts. The set point is adjusted by means of a potentiometer at the rear side of the instrument, between 0 and 100% of the measuring instrument. With a second potentiometer it is possible to set a time delay from 0 to 30 seconds, since the set point limit is reached till the tripping of the relay. This is optically signalled by a red LED on the dial of the instrument. The delays are not accumulative, so that an oscillation around the set point does not cause the tripping, unless its period be long enough.

Each instrument combines an electromechanical measuring system and an electronic circuit for the control of the output relays. The measuring system are:

- EQC: Moving iron system, with silicone oil damping.
- PQC: Self-shielded moving coil system, with core magnet.

All of them use hairsprings for the creation of the restoring torque, and pivot suspension with spring loaded jewel bearings for vibration and shock resistance.

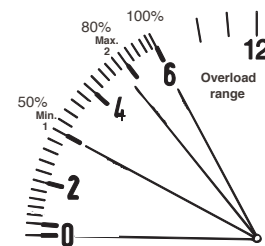
| | | |
|--------|-----------|---|
| EQC: | EQC 96s/1 | 1 max. and 1 min. contact |
| | EQC 96s/2 | 2 max. (or 2 min.) contacts |
| PQC: | PQC 96s/1 | 1 max. and 1 min. contact |
| | PQC 96s/2 | 2 max. (or 2 min.) contacts |
| ISE/2: | | 1 contact, switches at wrong phase sequence |

Versions

Differentiated regulation: (.../1)

(Minimum contact at 50 % and maximum contact at 80 %)

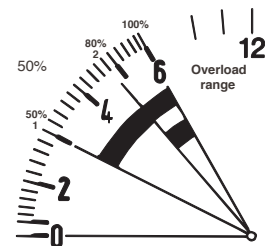
As long as the pointer is in the working range, e.g. the measuring value is higher than 50 % and less than 80 % both channels and both illuminating diodes on the scale are inactivated. If the measuring value sinks under 50 % e.g. the pointer is between 0 and 50 % so the channel I is activated, the minimum contact has switched and the illuminating diode on the scale is lighting. If the measuring value is higher than 80 % and 100 % so the channel II is activated, the maximum contact has switched and the illuminating diode for channel II is lighting while channel I is inactivated again.



Step regulation : (.../2)

(2 maximum contact at 50 % and at 80 %)

The working range is between 0 and 50 % of the scale. If the measuring value is under 50 % both channels and illuminating diodes are inactivated and the first maximum contact was switched on. If the measuring value reaches 80 % or more both channels are activated, e.g. also channel II is switched on and both illuminating diodes are lighting.



Rear view:

