



ELECTRONIC TRACK CIRCUITS TYPE KOA1

- Centralised indoor equipment of track circuits
- Transmission of automatic train control system (ATC) code
- Failsafe and reliable system meeting SIL4 requirements according to CENELEC
- Stretch of rails integrity detection
- Internal diagnostics integrated into the AŽD diagnostic system
- Application for electrified lines and for lines with independent traction equipped with coach electrical heating
- Minimum maintenance requirements
- Allows upgrade of existing track circuits



General Description

The KOA1 track circuits are double rail track circuits bounded by insulation rail joints.

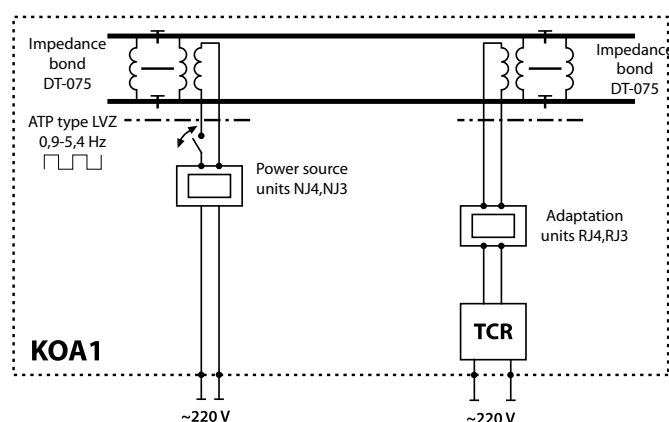
Usage on lines electrified by 25 kV, 50 Hz or 15 kV, 16,7 Hz catenary voltage and by 3 kV or 1,5 kV or 0,75 kV DC catenary voltage and on non-electrified lines.

KOA1 consists of evaluation part, i.e. sets of track receivers (TCR), detecting track voltage including their phase shift against local (referential) voltage and provides relevant digital evaluation.

The TCR track receiver set consists of three AVR3 units. In case that one of the units is failed the system functionality is fully preserved. Checking

of insulated joints is carried out by electronic detection of the phase shift or difference between power supply frequencies of adjacent track circuits.

System allows easy replacement of the existing track circuits by KOA1. One set of TCR track receivers replaces up to (8 eight) track relays.

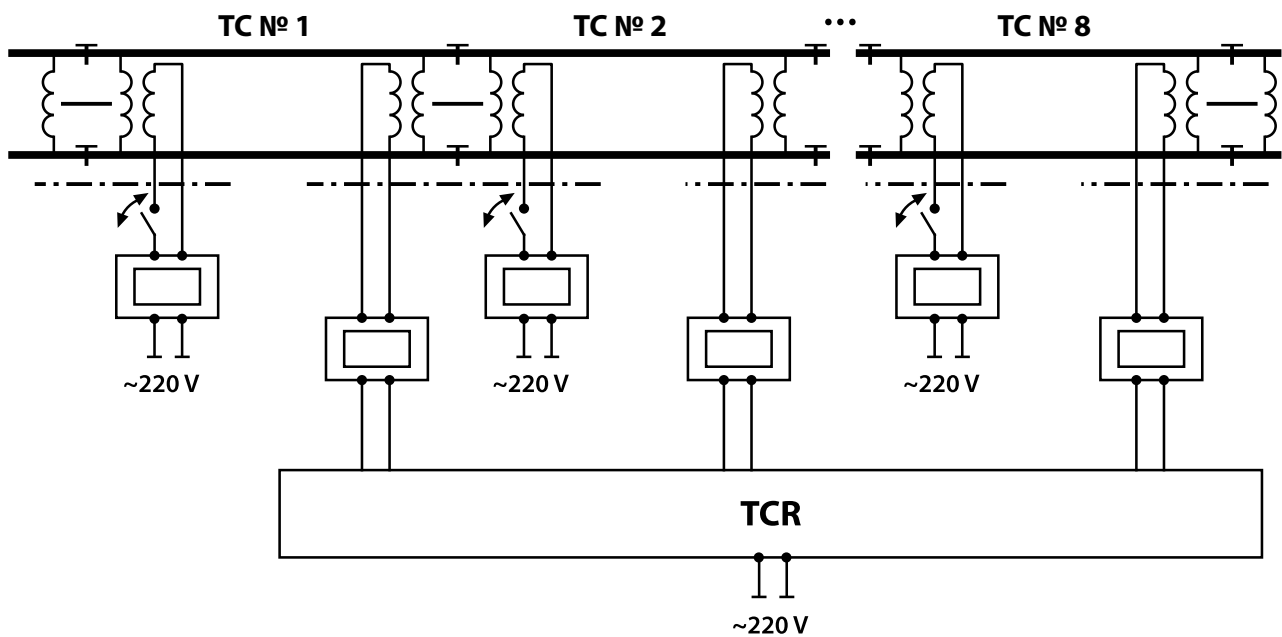


Block diagram of single KOA1



Basic Technical Parameters

Work frequency band f_s	75 Hz and 275 Hz
Frequency shift Δf_s	$\pm 0,6$ Hz
Shunt sensitivity R_s	$> 0,1 \Omega$
Fritting voltage U_f	$> 1,1$ V
Limit of permitted value of dangerous current ITDS	1,2 A
Maximum length of direct circuit 75 Hz	1600 m
Maximum length of direct circuit 275 Hz	1200 m
Maximum length of branched circuit 275 Hz	375 m



Block diagram of KOA1 on line



KOA-1 rack with TCR track receivers and diagnostic PC



AVR3 Unit of the TCR track receiver set