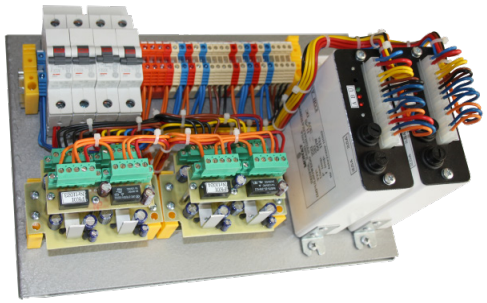
Switched-mode power supply assembly ZZI-11/S/BD/COB-63A

For the upgrade of automatic level crossing signal system COB-63 a with dual-chamber road signals

Level crossing system type SP-COB 63(A) is used to ensure safety at crossings of public roads and railway lines by notifying road users on rail vehicle(s) approaching the crossing by means of visual signals (signal lights) and acoustic signals (bells) with optional simultaneous blocking the traffic with boom barriers.

Adopting the switched-mode power supply assembly type ZZI-11/S/BD/COB-63Ad for retrofitting the automatic level crossing signal system COB-63A with dual-chamber road signals enables upgrading the older types of level crossing equipment to the requirements concerning road signals as specified in Regulation by Minister of Infrastructure of 3 July 2003 on detailed specifications for road signs and signals and road safety equipment and conditions for their installation on roads (JoL 2003, no. 220, item 2181). Pursuant to provisions in (1) item 1.1 Att. 3 to said Regulation, such requirements also apply to signal lights on level crossings tot he extent of „shapes and meanings of signals". Existing design solutions used in the equipment type COB-63, type COB-63A and level crossing equipment type SPM -1 and SPR – 1 enable control of only single chamber signals lights. Designed solution enables control of the dual-chamber signals, with red light flashing alternately. The advantage of this solution is that it does not breach the existing logic of level crossing systems with signal lights only fitted with single chamber signals.



DESIGN

The following are installed on the mounting board:

- Switched-mode power supply assembly for signal chambers - type ZZI 11/S COB – 2 pcs. i.e:
  - for channel A – „ZZI -11/S COB A"
  - for channel B - „ZZI-11/S COB B"
- Interface ID 01 with PK relay boards - 2 pcs.
- Set of circuit breakers – 4 pcs.
- Brackets, mounting strips and terminal strips.

TASKS OF THE SWITCHED-MODE POWER SUPPLY ASSEMBLY TYPE ZZI-11S/BD/COB-63A

Switched-mode power supply assembly enables control of dual-chamber signals, with red light flashing alternately (signal conforming to regulations in force) and the integrity control of „hot and cold" light bulb filament. The task of the switched -mode power supply assembly is generating a pulse signal that controls activation and deactivation of light chambers in road signals, emitting the flashing light at rated frequency 50 - 70 times per minute.

The interface assembly ensures the matching of electric signals transmitted by the assembly ZZI-11/S/BD/COB-63A to the module ERL 400…, installed in the level crossing equipment cabinet type COB-63A.
Automatic cut-outs secure light and interface circuits against any damage due to short circuit or excessive current load in such circuits.

TECHNICAL SPECIFICATIONS

Parametr	Value	Notes
Weight [kg]	3,3	
Operating temperature [˚C]	- 30 ÷ + 40	
Supply voltage	20÷30 VDC	rated 24 VDC
Impulse frequency	~1Hz	50 to 70 flashes per minute

WORKING PRINCIPLE

Assemblies ZZI-11S/BD/COB-63A are triggered by signals from track sensors fed via input 5 W2, resulting in activation of lights in signals S1 to S4. Chambers A an dB are activated from independent circuits. A failure of one ZZI may cause deactivation of only one light chamber of the signal. Individual circuits are secured with cut-outs „BzA" and „BzB".
Light bulb filaments are checked by controlling the current flow in their power supply circuits. Light bulb burnout control [signal] is fed to terminals 2 and 3 W2 (in ZZI assembly) - independently for either channel. Signal from such outputs is fed to the interface adjusting to the low resistance of current control relay in the module ERL 4 (terminals 0105 and 0305 and 0605 and 0805). A cold filament control system was added by connecting relays KSA and KSB to light bulb circuits in signals. Such control (signalling) is achieved at the RTC post by connecting contacts of relays KSA and KSB to terminals VL 27 (in COB cabinet).

APPLICATION

The module of switched-mode power supply assembly type ZZI-11S/BD/COB-63A is designated for control of lights in road signals – max. 4 light bulbs 12 V; 21W.

INSTALLATION

The assembly is suited for installation inside the level crossing equipment cabinet type: SP-COB - 63A by means of four M6 bolts screwed to the rear mounting board of specific level crossing equipment cabinet. Installation of the module and dual-chamber signals as well as start-up of level crossing equipment should be performed by installation personnel familiar with design, maintenance, service and control principles of level crossing equipment, holding special license to works with rail traffic control equipment.

MAINTENANCE GUIDELINES

Following the upgrade with switched-mode power supply system ZZI-11S/BD/COB-63A and with dual-chamber road signals, the maintenance should conform to principles and requirements specified for the equipment of automatic level crossing signals for given equipment (a manual on principles of design, maintenance and control of automatic road signals equipment at level crossings).

ORDERING INFORMATION

When ordering please specify:

When ordering a complete system, please specify the type of level crossing system (COB-63 A) and designation of upgrade module, i.e.

- ZZI-11S /BD/COB-63 A.

When ordering spare parts, please follow the specification below:

- Switched-mode power supply assembly ZZI-11/S COB A.
- Switched-mode power supply assembly ZZI-11/S COB B.
- Interface ID 01 with PK board.
- Circuit breaker - 2A (specify the number of units).
- Circuit breaker - 6A (specify the number of units).