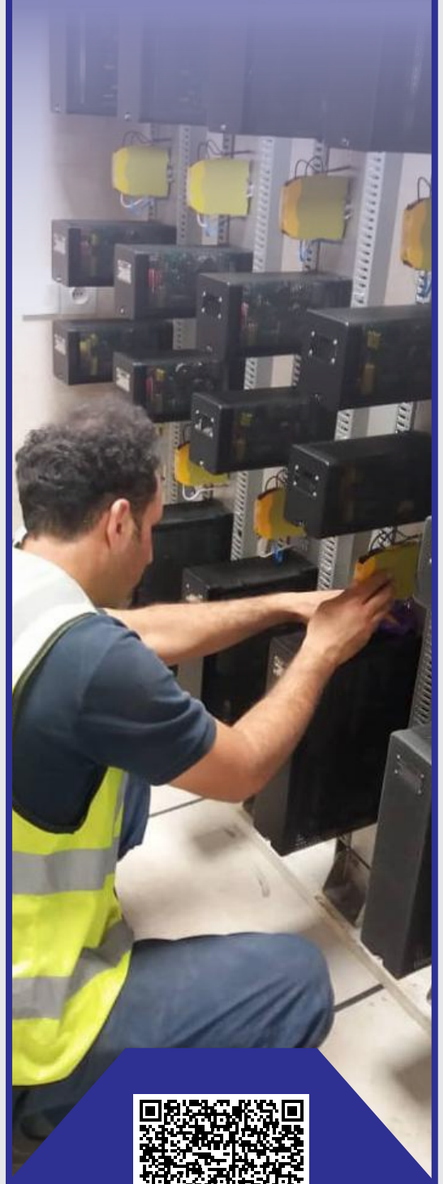


RK-400Compensation capacitors

RK-400 Compensation capacitors can be used to realize longer track circuits. Without the use of compensation capacitors, the characteristic impedance of the track is inductive. The impedance of the track and the transmitter determine the amount of power transmitted in the track. Compensation capacitors are placed between two rails at certain distances and improve the impedance matching between the transmitter and the track by reducing the characteristic impedance of the track. Therefore, the transmission power to the track has increased, which results in having longer tracks.

RK-400 Relay

The RK-400 system uses relays to indicate the clearance or occupation of the track, as well as the displacement of the transmitter end and receiver end track side equipment. Both types of relays are 24V DC relays. Track clearance or occupation relay is safe type, which have been selected to increase the reliability of the system.

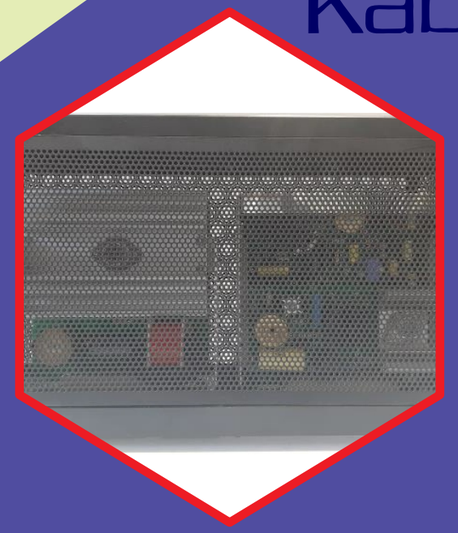
RK-400 TRACK CIRCUIT

Rajman Kabir

The RK-400 is a joint less audio frequency Track circuit that is used to detect the presence or absence of a train and rail fracture. It is used to send information such as the maximum allowed speed of train in a specific track. This system has four operating frequencies. One of the prominent features of this system is that it is Fail-Safe. This system includes indoor and outdoor equipment. The indoor equipment includes a transmitter, receiver, track relay, direction relay, and power supply. The outdoor equipment includes TU, MU, ACI, Impedance Bond, and Compensation Capacitor.

RK-400 TRACK CIRCUIT SPECIFICATION:

Supply Voltage: 24V-DC
Carrier Frequency:
1700Hz,2000Hz,2300Hz,2600Hz
Track circuit Length: 200m-1000m
Relay Output Voltage: 24V-DC
Traction: AC
Transmitter Output Power: 70W
Transmitter end MU Output :35V-110V
Receiver end MU Input :1V-5V
Transmitter end TU Output :1V-5V
Transmitter end TU Output :1V-5V
Receiver end TU Output :0.5V-2V



RK-400 Transmitter

The transmitter generates a signal and sends it to the line. The generated signal is sent to the receiver by line equipment. The dimensions of the transmitter are 9.5 * 38 * 24 cm3. The performance of the transmitter is based on FSK modulation.
The supply voltage is 24 volts DC. The RK-400 transmitter is capable of generating 18 different codes, which determine the speed limit for the train.
The Transmitter backplane has connectors that are used to adjust the output voltage of transmitter as required. Output voltage amplitude is adjustable from 45V-115V.

RK-400 TRACK CIRCUIT

Rajman Kabir

RK-400 ACI600

ACI is installed in the midpoint of ESJ and has two functions:
1- It forms a part of ESJ and improves the filter quality coefficient by stabilizing inductance in the tuned loop.
2- Balances the track current between rails.
ACI is divided into two types, ACI600 and ACI200.
Dimensions of ACI600 are 55 × 45 × 16 cm3.

RK-400 Receiver

The receiver receives the signal sent to the line by the transmitter and thus detects the presence or absence of the train on the line. The dimensions of the receiver are 9.5 × 12 × 24 cm3. Filtering, demodulation, amplification, and excitation of the relay take place in the receiver. The receiver backplane has connectors that are used to adjust the sensitivity, so the sensitivity of the Receiver can be adjusted based on the conditions such as track length, ballast and weather condition.

RK-MU,TU,ACI200

A matching unit (MU) is installed between the TU and either the transmitter or receiver. The MU has several predetermined Configurations. MU is used to limit the variation of the voltage level at the reception of the track circuit, due to the difference in distance of different tracks to the technical room.

Tuning Unit (TU) consists of lumped passive components, is part of ESJ and connects to the receiver or transmitter by MU. There is a different TU for each frequency, at nominal frequency, TU shows high impedance, passes the signal related to the relevant track, and has a very low impedance at the frequency of the adjacent track.
An impedance bond is an electrical component made of an iron core coil of low resistance and relatively high reactance. Traction return shall be provided by Impedance Bond and rail. The bonds are filled with oil or resin to provide moisture and corrosion protection and helping to cool the Bond.