ELECTRONIC INTERLOCKING TYPE ESA® 33

- **Failsafe and reliable system meeting SIL4 requirements according to CENELEC standards**
- **Station interlocking of the 3rd category designed for control of medium and large size railway stations and line sections**
- **Logic functions executed by the computer part with powerful 32bits computers**
- **Connection to the AŽD centralized traffic control system**
- **Modular system, easy operation**
- **Interlocking can be modified for any railway network in the world**
- **Architecture allowing expansion by new types of controlled wayside signalling systems - modularity**
- **Elimination of N class relays according to UIC**
- **High reliability and availability**
- **Low maintenance cost**
- **Space saving**

Commanding post of ESA®33 interlocking

General Description
Station Interlocking ESA® 33 (further as ESA® 33) has been designed to safeguard and control the operation in stations with and/or without track branching. ESA® 33 is fully electronic interlocking with contactless interface to wayside elements and has succeeded station interlocking of the ESA11 type. All control, checking and logical functions of interlocking are executed by computers according to the requirements of traffic operators and a state of the technological system. Electronic contactless interfaces have been used as switches of executive signal to signal lights (bulbs, LED), point machines, track circuits, auxiliary commanding posts, electromagnetic locks and adjacent relay systems.

Executive level of ESA® 33 interlocking

Basic Technical Description
Safety concept in redundant configuration with diversified programming.

Complies with CENELEC standards (primarily EN 50 126, EN 50 128, EN 50 129, EN 50 159).

Data transmission between interlocking components over failsafe ETMNET, PENET+ and EINET communication networks.

The safety concept of executive interface is based on elements with internal safety.

Enable to control max. 300 point units, more interlocking systems can be mutually connected.

Functions of line signalling system are implemented.

Functions for processing and monitoring train numbers are implemented.

AŽD PRAHA

Can be connected to AŽD centralized traffic control system.

Full compatibility with ERTMS/ETCS System (Level 1, Level 2).

Can be upgraded by Graphical & Technological Layer (GTN), designed for computerised processing of traffic documentation.

System and internal diagnostics can be connected to LDS diagnostic system.

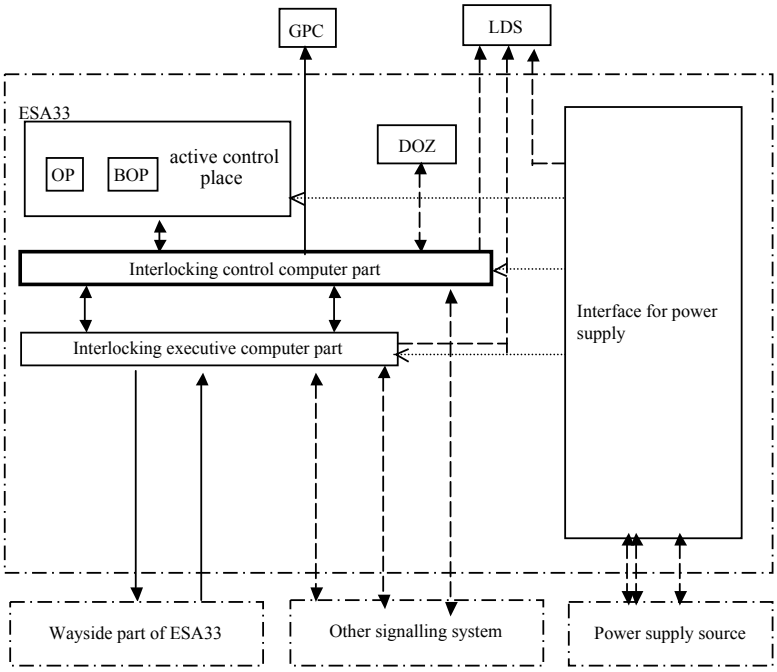
Can be supplied to aggravated climatic conditions.

ESA® 33 can be divided into the following layers:

- Commanding, formed by commanding computers ZPC1, ZPC2,... ZPCn. It is used by traffic employees for commanding, visual check and cancellation of train routes.
- Control, formed by vital computers TPC1, TPC2, TPC3, TPC4. It is used for generation of traffic algorithms
- Executive, formed by EIP executive computers. It is used for generation of partial algorithms, contactless control and checking of wayside elements. It can be detached to remote locations.

Basic Technical Parameters

Input power supply	3 × 400 V/50 Hz
	DC power supply voltage 24 V
Temperature range	+5 to +55 °C (commanding and control level)
	–25 to 70 °C (executive level)
Relative humidity	80 % (commanding and control level)
	100 % (executive level)
Complies with requirements	EMC/EMI
System service life	more than 25 years



Legend:
LDS – external diagnostic system
DOZ – centralized traffic control of signalling system
OP – active control place
BOP – non active control place
GPC – GTN active control place

Block diagram of the ESA33 structure

PRAHA