ELECTRONIC INTERLOCKING FOR METRO TYPE ESA® 11M, ESA® 11M+

- Failsafe and reliable system meeting SIL4 according to CENELEC
- Station interlocking of the 3rd category for metro and its depots
- Logic functions executed by powerful 16 and 32bit computers
- Can be connected into the centralized traffic control system
- Modular system, easy operation
- Adaptability for any metro system worldwide
- High reliability and availability
- Low maintenance cost

Metro depot railyard - ESA 11M+

General Description
Station interlocking system ESA®11M and ESA®11M+ (jointly as ESA®11M only) developed in co-operation with STARMON s.r.o. has been designed for safeguarding and control of operation in metro stations with track branching.
System includes circuits providing control of signals in line sections and adjacent stations. ESA®11M is an electronic interlocking with analogue interface to wayside elements. Practically all interlocking logic functions are carried out by the computer part with 100% hot standby of vital computer circuits. ¨

Electronic and/or relay object controllers are used as switches of power signal to signal bulbs, point machines, track circuits, auxiliary commanding posts, electromagnetic locks, axle counters and coherent relay systems. JOP-M commanding post can be adjusted according to customer's individual requirements.

Basic Technical Description
The safety concept is based on redundant configuration using diversified programming.

It complies with CENELEC standards (primarily EN 50 126, EN 50 128, EN 50 129, EN 50 159).
Data are transmitted between interlocking components through failsafe ETHERNET, RS-485 and CAN communication networks. Data transmission between interlocking and superior metro dispatcher control system is carried out by failsafe closed communication network ETHERNET.

The concept of transmission and power interface safety is based on elements with internal safety.

ESA® 11M enables to control 20 points, ESA® 11M + enables control of maximum 50 points.

Function of line signalling is included.

Possible coupling to an automatic traffic control system (ASDŘ-D).

Interlocking room with ESA 11M vital computer cabinets

AŽD PRAHA

ESA®11M enables to interface with any type of continuous automatic train protection system.

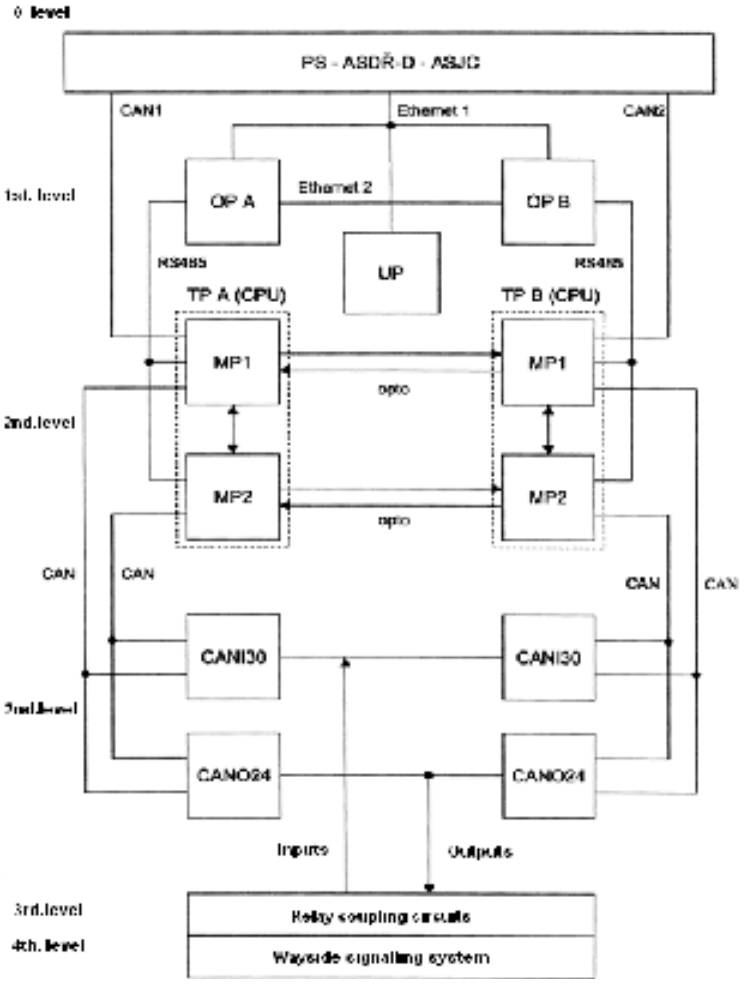
The ESA®11M system has been designed to control traffic in metro depots and it can also be equipped with the stationary part of the continuous automatic train protection system (if metro station is located within the depot area or its vicinity).

ESA®11M can be supplemented by graphic-technological overlay (GTN) designed to automatic guidance of traffic documentation.

Electronic interlocking ESA®11M includes two levels of diagnostics. The first diagnostic level is used to inform attendance staff about the state of the system. For this purpose indication elements on VDU and respective messages recorded in the failure list are used. The second diagnostic level is used for information of maintenance employees.

ESA®11M enables train movement with headway 90 seconds.

Basic Technical Parameters	
Input power supply voltage	3 × 400 V/50 Hz ±10% from two independent connections 24 V, DC -15 % +20 %
Temperature range	–5 to +35 °C
Relative humidity	up to 80 %
Complies to	EMC/EMI (EN 50 121-4)
Mean technical life	20 years



Block diagram ESA® 11M

Legend:

PS	– Process station
ASDŘ-D	– Automatic traffic control system
ASJC	– Automatic route setting
OP A, OP B	– Control computers A, B
UP	– Maintenance computer
TP A, TP B	– Vital computers A, B
MP1, 2	– Individual microcomputers TP
CANI, CANO	– Subracks of input and output interface

ESA 11M Control place

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