



# TrainSwing SOP-2P

Automatic train protection (ATP)

- Subsystem for failsafe operation of metro trains
- Operable within TrainSwing LZA (ATC)
- Automatic train speed limitation
- High reliability
- Compatible with different types of line signalling and station interlocking systems
- Suitable for cooperation with automatic train operation (ATO) subsystem – DriveSwing ACBM3



## GENERAL DESCRIPTION

Automatic train protection subsystem (ATP) TrainSwing SOP-2P (further SOP-2P) is designed for failsafe operation of metro trains. Its basic task is an automatic limitation of train speed based on traffic situation and reactions of driver.

Automatic speed limitation is carried out upon data regarding train positions on line, state of signals, position of points, pressure valves, permanent speed limitations at individual line sections and state of emergency stopping pushbuttons.

Function of unmanned turn of train is implemented in cooperation with TrainSwing LZA. This function enables to apply turn of train set in safety way without presence of train driver.

SOP-2P consists of stationary and mobile part.

## BASIC TECHNICAL DESCRIPTION

Stationary part of SOP-2P subsystem:

- station computer system located in interlocking room and transmission system (transmitting loops installed between rails or radio transmission system) transmitting data to mobile part of system
- system of station computers working in 2oo3 architecture
- in case of failure or malfunctioning of one of station computers system guarantees that operation of stationary equipment is not interrupted and failsafe traffic control continues
- equipment of stationary part also provides testing procedures for automatic check and predictive system diagnostics

Mobile part of SOP-2P subsystem:

- installed on train sets and providing data reception, evaluation and

generation of signals for drive, brakes and other train equipment

- single train set has two sets of equipment (for each cab)
- can work in one of five operation modes selected by driver
- complies with stipulations of appropriate standards valid in EU





## BASIC TECHNICAL PARAMETERS

Temperature range of mobile part	-25 °C to +70 °C
Temperature range of stationary part	-5 °C to +35 °C
Temperature range stationary part (outdoor)	-40 °C to +40 °C
Temperature range of stationary part (in protection cabinets)	-25 °C to +70 °C
Safe speed limit	30 kmph

### Stationary SOP-2P

Supply voltage – transmitter	230 V, 50 Hz
Input – transmitter	24 W
Dimensions of station computer cabinet	600 × 600 × 2000 mm
Current in transmitting loop	80–150 mA
Length of transmitting loop including cable	1200 m (max. 2300 m)
Length of telegram	47 bits

### Mobile SOP-2P

Supply voltage – battery in train	24 V DC
Input – receiver	60 W
Dimensions	560 × 330 × 650 mm

