



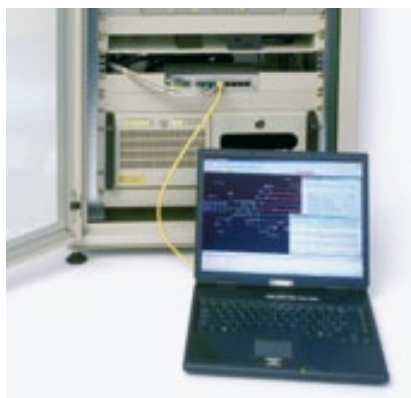
LOCAL DIAGNOSTIC SYSTEM LDS

- State and measuring centralized diagnostics of signalling systems and other technology
- Used for preventive maintenance and also maintenance after a failure
- Server-client architecture ready for upgrade by other diagnostic units and transmission to the dispatcher's site
- Emphasis on reliability, continuity and data visualisation
- Net design support – sharing DOZ-1 communication lines or the railway intranet

General Description

Local diagnostic system LDS-3 is a modular diagnostic system designed for gathering, archiving, classification, checking and monitoring of operational data of locally accessible diagnosed equipment – their states, events and measurable values. Portfolio of diagnosed equipment includes the following signalling systems supplied by AŽD Praha s.r.o. (if not stated otherwise):

- Station interlocking system of the ESA 11, ESA 33 types
- Track circuit system KOA1



Visualization for archived data

- Electronic automatic block system ABE-1
- Level crossing systems PZZ-RE, PZZ-AC, PZZ-EA, PZZ-EPA, PZZ-JLC
- Universal power supply source UNZ-1, UNZ-2, UNZ-3 and related converters

Required measured values are received from:

- Measuring stations DISTA, DISTA2
- Distributed Measuring System DMS
- Intelligent sensors

Portfolio of diagnosed equipment can be further expanded by other equipment meeting requirements for mutual communication interface.

Basic Technical Description

LDS-3 consists of diagnostic local server (DLS) operating under operating system Linux the main task of which is data gathering, their long-term archiving, generation of diagnostic reports based on their analyses and accessing data to the local diagnostic computer (DLA). In the upgraded version DLS allows sending service SMS to the



maintenance employees through the GSM module.

The DLA function, operating on the Microsoft Windows XP platform, is visualisation of current diagnostic data and processing of archived data for customer's needs. DLA allows the user to define extreme limits of values monitored and to classify a failures occurred.

Communication and measuring interface for individual diagnosed signalling equipment must ensure that LDS-3 cannot negatively influence their operation. One-way separation from the diagnostic local server on a side of individual signalling equipment allows building a general information system in the user layer



increasing the utility value by transmitting diagnostic data into remote dispatcher's centre.

- In co-operation with DISTA measuring station or with DMS distributed measuring units LDS-3 can replace some regular measuring

carried out manually by maintenance employees in terms of railway guidelines. The measured values are as follows:

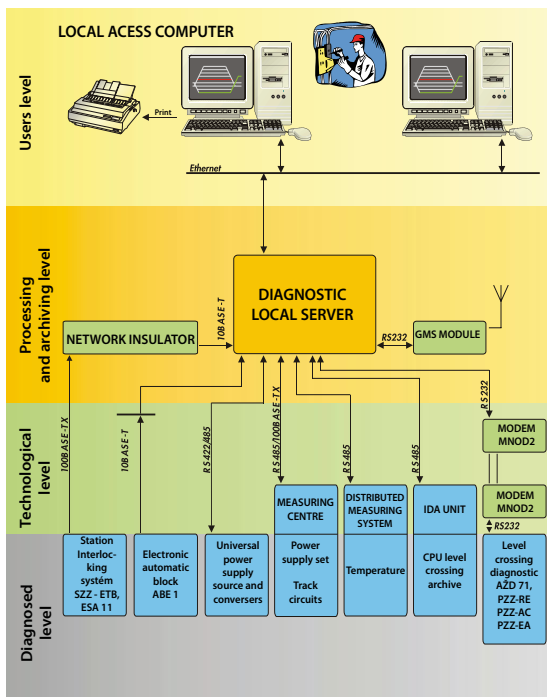
- Temperature of technological rooms, cabinets and computers
- AC and DC voltage of the power

supply sets and track circuits

- Insulation resistance of power supply sets and track circuits
- Power input of 3 phase asynchronous motors of point machines
- Frequency of track circuit coding.

Basic Technical Parameters

Power supply	AC part	AC 230 V ± 10 %, 50 Hz
	DC part	DC 24 V ± 20 %
Insulation resistance	against ground and each other	min. 20 MΩ
	of DC circuits against ground	min. 4 kV, 50 Hz
Electrical strength	of DC and AC circuits against each other	min. 2 kV, 50 Hz
	of DC and AC circuits against each other	min. 4 kV, 50 Hz
Location	LDS components are to be installed in interlocking rooms and either bricked or concrete houses	
Working temperature	-5 to +55 °C	
Relative humidity	10 to 80 %	
Electromagnetic compatibility	LDS-3 components do not require use of special constructions or EMC cabinets and comply with EN 50121-4	



LDS block diagram