PREDICTIVE MAINTENANCE SYSTEM
VEHICLE UNIT

PREDICTIVE MAINTENANCE SYSTEM – VEHICLE UNIT

VEHICLE'S SUBSYSTEM OF COMPLEX PREDICTIVE MAINTENANCE SYSTEM FOR ALL TYPES OF RAIL VEHICLES

DESCRIPTION

The Predictive Maintenance System vehicle unit primarily provides gathering, recording the data and their transmitting into cloud services of Predictive Maintenance System system during connectivity window of GSM/Wi-Fi technology. For connection into the cloud system is used efficient modern IOT technology. Together with other SW compression is achieved high efficiency of data throughput during the transmission into cloud, so generally it is possible transmit all useful data into cloud with minimal limitation. That property is very important for whole philosophy of system Predictive Maintenance System.

It means take all data to be ready to any situation which happen on the vehicle. Standardly it is the case that it is not definable which all data will be required for diagnose various nonstandard situation/fails/etc., so the best way is collect as much as possible. For some analyses which require on the input really high real-time data it is possible provide this analyse directly in the vehicle unit and generate other virtual signals, which already do not consumes as much data throughput for transfer into cloud.

KEY FEATURES

- Vehicle part of Predictive Maintenance System system, see Predictive Maintenance System catalogue list.
- Based on Škoda's own High Performance Computer vehicle platform.
- Collects data and provides them securely to the cloud services using GSM/Wi-Fi connection.
- Provide data:
  - Operational diagnostics events from TCMS.
  - Elementary signal data from other subsystems for analysis in cloud applications or in vehicle unit itself.
- Applicable for both new vehicles and customer's current fleet as a retrofit package.
- Easily customisable per project based on customer's requirements.
- Supported vehicle buses:
  - Ethernet bus, using TRDP protocols by the IEC 61375, up to 27 ports.
  - Optionally CanBus using CanOpen protocol by the DS301.
  - Optionally can support "old" RS48X busses. 2× internal vibration sensors (digital).
- Optionally supported HW inputs.
- Unit is standardly combined together with Ethernet switch and MCG.

Name	Description	Power supply	
High Performance Computer.NDS.W1L1GNSS512G.A	1× GNSS, 1× WIFI, 1× LTE, SSD 512 GB	24 V	A
High Performance Computer.NDS.F3G9W1L1GNSS512G.B	1× GNSS, 1× WIFI, 1× LTE, SSD 512 GB, Ethernet switch 12 ports	110 V	B
High Performance Computer.NDS.PF8G4W1L1GNSS512G.A	1× GNSS, 1× WIFI, 1× LTE, SSD 512 GB, Ethernet switch 12 ports with PoE	24 V	C
High Performance Computer.NDS.F13G4W1L1GNSS512G.A	1× GNSS, 1× WIFI, 1× LTE, SSD 512 GB, Ethernet switch 17 ports	24 V	B
High Performance Computer.NDS.PF11G6W1L1GNSS512G.A	1× GNSS, 1× WIFI, 1× LTE, SSD 512 GB, Ethernet switch 17 ports with PoE	24 V	C
High Performance Computer.NDS.F11G6W1L1GNSS512G.A	1× GNSS, 1× WIFI, 1× LTE, SSD 512 GB, Ethernet switch 17 ports	24 V	B
High Performance Computer.NDS.F5PF11G6W1L1GNSS512G.A	1× GNSS, 1× WIFI, 1× LTE, SSD 512 GB, Ethernet switch 22 ports with PoE	24 V	E

Additional models with further configurations available. Complete list of models available upon request.

STANDARDS

EN 50155:2018, EN 61373:2011, EN 50121-3-2:2017, EN 50124-1: 2002, IEC 61375-1:2012, IEC 61375-3-4:2017

OPERATING CONDITIONS

Parameter	Value	Note
Temperature range	-40 to +70 °C	Class TX according to EN50155
Power supply voltage	24 V DC, 110 V DC, Class S2	Independent power supply for device and PoE
Power Consumption	< 50 W (device) / 150 W (PoE)	
Galvanic Isolation	1,000 V AC, 50 Hz	
Shock & Vibration	Category 1, Class B	
Altitude	Up to 1400 m	Class A1 according to EN 50125-1
Dimensions BOX.B / BOX.C / BOX.E	206 × 133 × 123 mm / 280 × 133 × 123 mm / 304 × 133 × 123 mm	2× analogue
Weight BOX.B / BOX.C / BOX.E	< 3.5 kg / < 4 kg / < 4.5 kg	
Protection	IP20	
CPU	QorIQ LS1043A, 4× Cortex-A53 64-bit cores at 1.0 GHz	RACK 3U
Memory	1 GB DDR RAM / 256 MB NOR Flash / 2 MB MRAM / SD Card slot	
RTC	RTC with battery backup	
Ethernet ports	Maximum 27 Ethernet ports: 4× 1000BASE-T with bypass relays 2× 1000BASE-T 21× 100BASE-TX / 1000BASE-T Up to 16 ports with PoE support.	Modular design, see different models below.
PoE power output	Max. 15 W per port Max. 120 W total	

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