NOVA INDUSTRIAL SA

NOVA OHLM *(Overhead Line Monitoring)*

NOVA OHLM is an intelligent system designed for online monitoring and diagnosis of overhead power lines. The system is composed of modules able to operate as a whole or individually, integrated into a SMART GRID system for monitoring high-voltage power lines, namely:

- OHLM-HV module, mounted on the power line conductor, which measures the operating parameters and status of the power line;
- OHLM-RTU/concentrator module for remote data acquisition / processing / storage and transmission;
- OHLM-E module, independent photovoltaic source of electricity supply for OHLM modules mounted on the power line tower;
- OHLM-M module for measuring environmental parameters;
- OHLM-H module for measuring the inclination of the overhead line tower;
- LIDAR module (optional).

The **NOVA OHLM** system comes in several constructive variants depending on the types of sensors included in the hardware architecture of the monitoring system (table 1).

Table 1. Construction variants of the Nova OHLM monitoring system

No. crt.	Measurement sensors included in the Nova OHLM monitoring system	OHLM construction types				
		V01	V02	V03	V04	V05
1	Current in the electrical power line (current sensor)	X	X	X	X	X
2	Temperature of the line conductor (temperature sensors)	X	X	X	X	X
3	Sag/Gauge of the line conductor (tilt sensors)	X	X	X	X	X
4	Oscillations of the line conductor (acceleration sensor)	X	X	X	X	X
5	Inclination of the tower (tilt sensor)	X	X	X	X	X
6	Sag/Gauge of the line conductor (LIDAR sensor, optional)				X	X
7	Additional tensile force in the line conductor due to frost/ice and/or strong wind (extensometer sensor)		X		X	
8	Total tensile force/tension in the line conductor/areas (tensile force sensor)			X		X

The status and operating parameters of overhead power lines are measured and monitored online by sensors whose main technical specifications are listed in Table 2.

Table 2

OHLM modules	Power line operating parameters measured by the sensors implemented in the NOVA OHLM	Measurement field	Accuracy
OHLM-HV module	Line current	0 ÷ 3600 [A]	± 1 [%]
	Conductor temperature	-50÷250 [°C]	± 1 [°C]
	Line conductor tilt angle	± 10 [°]	± 0,003 [°]
		± 90 [°]	± 0,01 [°]
	Line conductor oscillations	± 2 [g]	±2 [%FS]
	Additional tensile force on the overhead conductor due to hoar frost / ice and / or strong wind	0 ÷ 50 [kN]	±2 [%FS]
OHLM-M module	Air temperature	-50 ÷ +60 [°C]	± 0.3 [°C]
	Relative humidity	0 ÷ 100 [%RH]	± 3 [%RH] at 0 ÷ 90 [%RH]
			± 5 [%RH] at 90 ÷ 100 [%RH]
	Wind speed	0 ÷ 60 [m/s]	± 3 [%]
	Wind direction	0 ÷ 360 [°]	± 3 [°]
	Solar radiation	0 ÷1400 [W / m^2]	<4 [%]

The system has hardware protection measures against electromagnetic interference.

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ISO 9001, ISO 14001, ISO 45001

QUALITAS CERTIFICAT SMC NR. QC/1105 SR EN ISO 9001 : 2015

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QUALITAS CERTIFICAT SMSSM NR. QSM 38 SR EN ISO 45001 : 2023

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The **Nova OHLM** software application allows:

- setting the threshold limit values and/or conditions for parameters monitored online:
  - maximum current through the line conductor;
  - maximum conductor temperature;
  - maximum conductor sag;
  - maximum tensile force in the line conductor, etc.;
- online acquisition and processing of measured data;
- generating warnings/alarms in real time, when the permissible limits of operating and/or status parameters are exceeded;
- storing data in a local database (for a limited period of time) and on a PC server within a Private Cloud or from the active management / monitoring center (monitoring parameters, alarms/triggers, limit values and/or conditions, etc.);
- displaying measured parameters online (remotely monitored), through a web interface, using an internet browser.

The **Nova OHLM** client software provides access and view to:

- online monitoring data for overhead power lines and towers (line and tower selection is done from drop-down lists, and the information is updated accordingly in distinct visual modules);
- report of current monitored data, a report with information about the monitored values;
- historical data - information regarding monitored parameters, presented in the form of tables and graphs;
- data aggregation;
- database, etc.



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