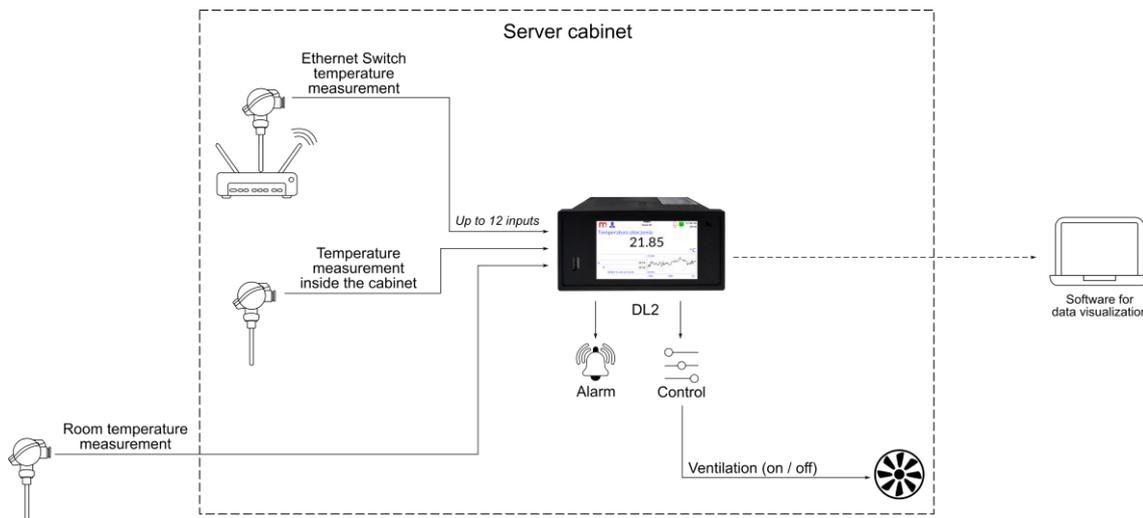


VENTILATION CONTROL AND TEMPERATURE MONITORING IN THE SERVER ROOM

The use of DL2 data logger, temperature sensors and relays enables automatic control of the installed fans status. In small facilities equipped with server cabinets, this application is an economical solution to the problem of ensuring cooling and increases the reliability of equipment operation. The data recorded by the data logger enable analysis of the system operation and are a confirmation of the operating conditions. Below there is a description of using the DL2 data logger to control the status of additional fans and monitor the temperature in the server room.



• Description

Pt100 sensors are installed in the room and inside the server cabinet (switch cabinet temperature and Ethernet switch temperature measurement). The DL2 data logger (with the IN6RTD module installed) calculate the read resistance value of Pt100 sensors to a temperature expressed in °C or in K.

The DL2 data logger has 4 relay outputs and 30 channels to which the read data are assigned. Each channel can have two independent alarms set, which perform one of the available functions: alarm or control. Exceeding the indicated temperature value (exceeding the alarm level) causes a change in the state at the assigned relay output, which activates additional fans and provides more efficient cooling. The data logger screen displays the process value, as well as the maximum and minimum values, which allows a quick assessment of the operating conditions.

For each channel, it is possible to set two alarm levels (one lower and one upper, two upper or two lower) and assign different relay outputs to them. This allows, for example turning on one fan after exceeding 30 °C (exceeding Alarm 1 threshold) and turning on another fan after exceeding 40 °C (exceeding Alarm 2 threshold).

• Typical set

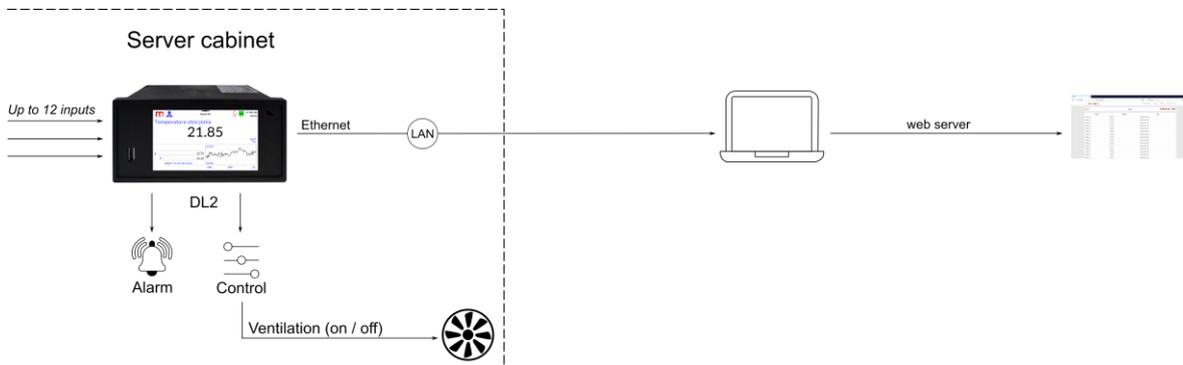
It is possible to order the described set or individual configuration of the set. The rack mount set includes:

- DL2 data logger,
- 1 or 2 module for connecting RTD sensors (IN6RTD),
- temperature sensors (Pt100),
- switching power supply 230 VAC/24 VDC,
- relays,
- fuse,
- TS-35 rail (for mounting a power supply, relays or fuse),
- panel board rack 19", 2U for mounting inside the server cabinet.



• **Reading and recording results**

The DL2 data logger enables the acquisition of data on temperature measured at various points in one place. The device archives the values and records exceeding the alarm levels, according to the entered settings. Archive files can be downloaded from the device using a portable memory (USB key) or using an Ethernet cable and a web server. Additional software on the PC allows visualization of archived data or current values (DL2-RP/DL2-RPplus, mLog). The DL2 data logger can be connected to the SCADA master system.



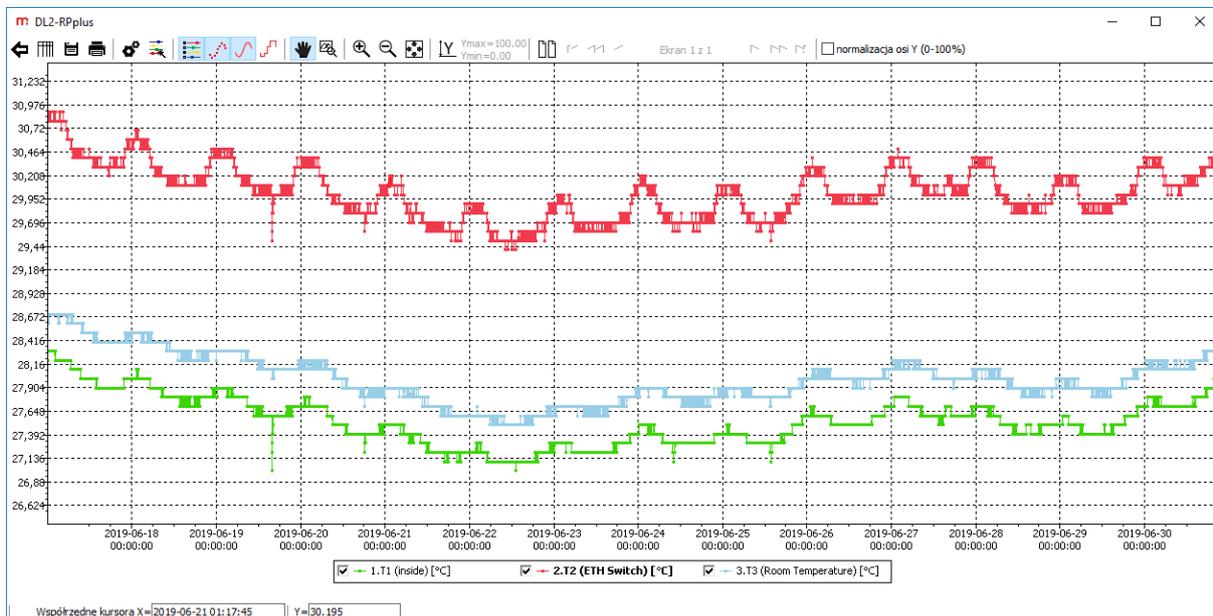
• **Data visualization**

Archive files are saved in CSV format. The software dedicated to the DL2 data logger enables data visualization. The software is available in the basic version DL2-RP and in the extended version DL2-RPplus.

Below there is an example of visualization of archival data (DL2-RPplus software). The chart consists of three trend lines:

- Green - change of temperature inside the server cabinet,
- Blue - change of the room temperature,
- Red - change of Ethernet switch temperature.

Exceeding the alarm level specified for the Ethernet Switch temperature (30 °C) caused the activation of additional fans and as a result the temperature decreased.



• **Example of device configuration**

Application of the DL2 data logger with Pt100 temperature sensors requires installation and configuration of the IN6RTD module/modules. The data logger can be configured on a computer using a dedicated program or from the device level.

An example configuration of the DL2 data logger in the ventilation control system is presented below. Described configuration is performed from the device level.

1. Configuration is possible from the Administrator level (⚙️ → 👤 → Login → Login),
2. The IN6RTD module inputs should be set in a mode compatible with the way of connecting the sensor, for example 2-wires (🔌 → 📡 → Select the input → IO 1 / .. / IO 6 → Mode → 2-wires → Adjustment → value → ✓),

3. Turn on the used relay outputs and select normally open or normally closed mode (⚙️ → 📄 → M → RL 1 / .. / RL 4 → Mode → Normally open →)
4. The read results should be assigned to the channels. The DL2 data logger has 30 freely configurable channels:
 - a. Select the Measurement channel type and indicate the measurement input to which the temperature sensor is connected (⚙️ → 📄 → Inputs → Channel Type → Measurement → Input → Select the input),
 - b. The device automatically selects the Characteristic as Linear - select the type of sensor connected to the input from the list, for example Pt100(°C),
 - c. Temperature measurement is associated with the inertia of the sensors, it is recommended to add a filter (⚙️ → 📄 → General → Filter → 5 s),
 - d. In the General tab it is possible to enable archiving of the process value (⚙️ → 📄 → General → Archiving → →)
 - e. In the Alarm 1 or Alarm 2 tab, select the high or low alarm mode, enter the alarm level and hysteresis value, select the control option and indicate activated in point 3. relay output (⚙️ → 📄 → Alarm 1/Alarm 2 → Mode → high/low → Type → Control → Level → value → Hysteresis → value → Colour → selection from the drop-down list → Output → M1 .. M4),
 - f. The data logger enables setting of two alarms from exceedances for each channel, it is possible to archive one or both events (⚙️ → 📄 → Alarm 1/Alarm 2 → Log event → →)
 - g. The read value can be assigned to several channels, which enables setting several alarm thresholds for one measured value, e.g. two upper alarm thresholds on the first channel and two lower alarm thresholds on the second channel for the measurement read from one measuring input.
5. Enabled channels are displayed as single result windows (switching by using arrows). The results can be displayed in the form of a result table (the ability to display e.g. totalizers values) or trend graphs (only channel value) (⚙️ → 📄 → Result Tables → configuration → Trends → configuration →)
6. Define the archiving settings. Archive files are created in a daily, weekly or monthly mode. In the bottom part of the Archive settings window, an information regarding the current archiving status of channels and totalizers is displayed, the archived value is marked in green colour (⚙️ → 📄 → configuration →)
7. Exit the menu and confirm the willingness of making changes. The device will reboot with the new settings.

Note: To start the archiving process, press the **START** button in the Archive window (📄 icon on the menu bar).

- **Application example**



- **Information from the Manufacturer**

All functions of the recorder are subject to modifications for the benefit of technical progress.

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