# MONITORING OF ELECTRICITY CONSUMPTION

In industrial facilities, optimization of electricity consumption is strongly recommended. By using the DL7/DL7L/DL2 data logger and impulse energy meters it is possible to record data as well as monitor and analyze energy consumption in the building divided into individual areas or rooms. Below there is a description of using the DL7 data logger in monitoring energy consumption system.
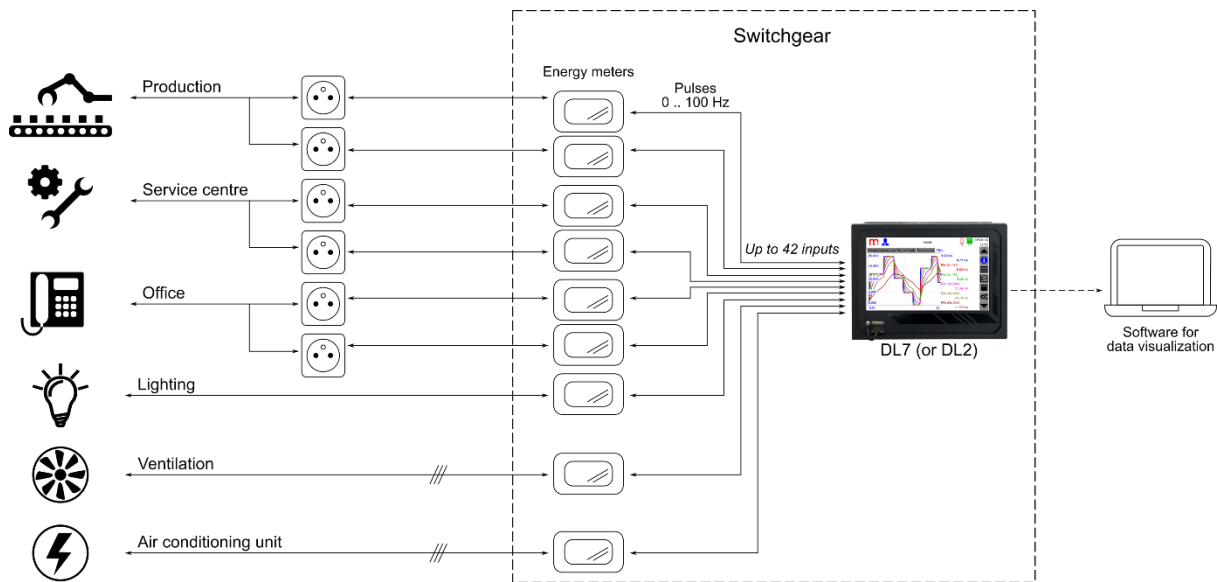

- **Description**

Energy meters generate pulses in proportion to the consumed electricity. The DL7 data logger with installed IN6D module reads pulses generated by meters. Read data are assigned to the measuring channel. Each channel can have two independent totalizers enabled for precise pulse summation. Totalizers can operate in daily, weekly, monthly, resettable or unresettable mode. The measuring input can be assigned to several channels, which enables summation of energy consumption in different modes.

- **Reading and recording results**

The DL7/DL2 data logger enables the acquisition of data concern in consumed energy in one place. The device archives read and summed values in accordance with the entered settings. Archive files can be downloaded from the data logger 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 (DL7-RP/DL7-RPplus, DL2-RP/DL2-RPplus, mLog). The DL7/DL2 data logger enables alarms signaling, control and can be connected to the SCADA master system.
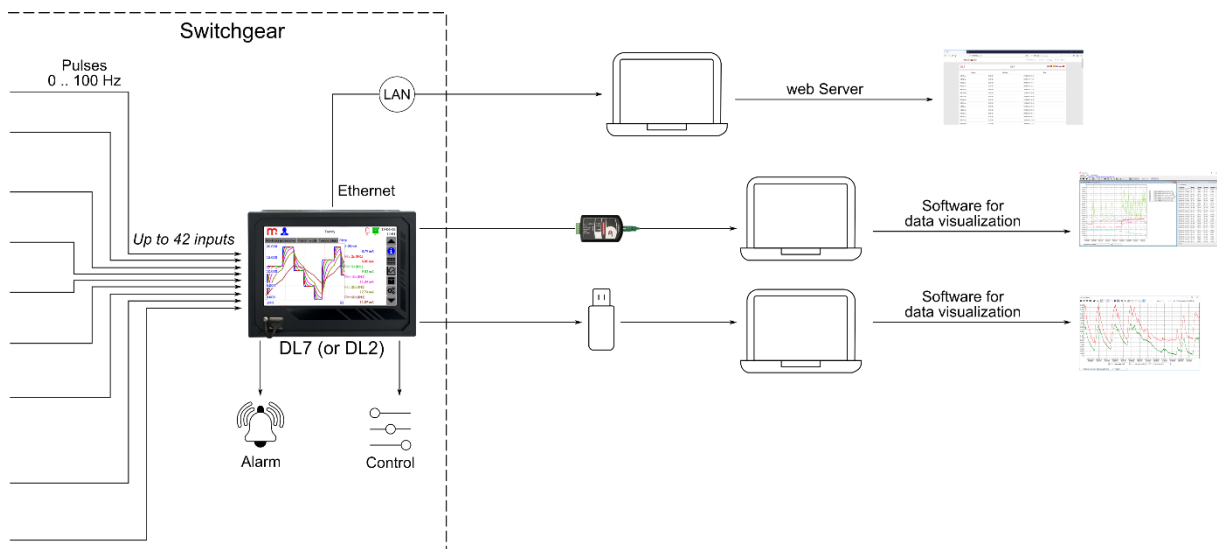
- **Data visualization**

Archive files are saved in CSV format. The software dedicated to the DL7 (DL2) data logger enables data visualization. The software is available in the basic version DL7-RP (DL2-RP) and in the extended version DL7-RPplus (DL2-RPplus). Below there is an example of visualization of archival data on energy consumption in the production hall (DL7-RPplus software). The green trend line represents the energy consumed by devices connected to the sockets, the blue trend line represents the energy consumed to lights the room.
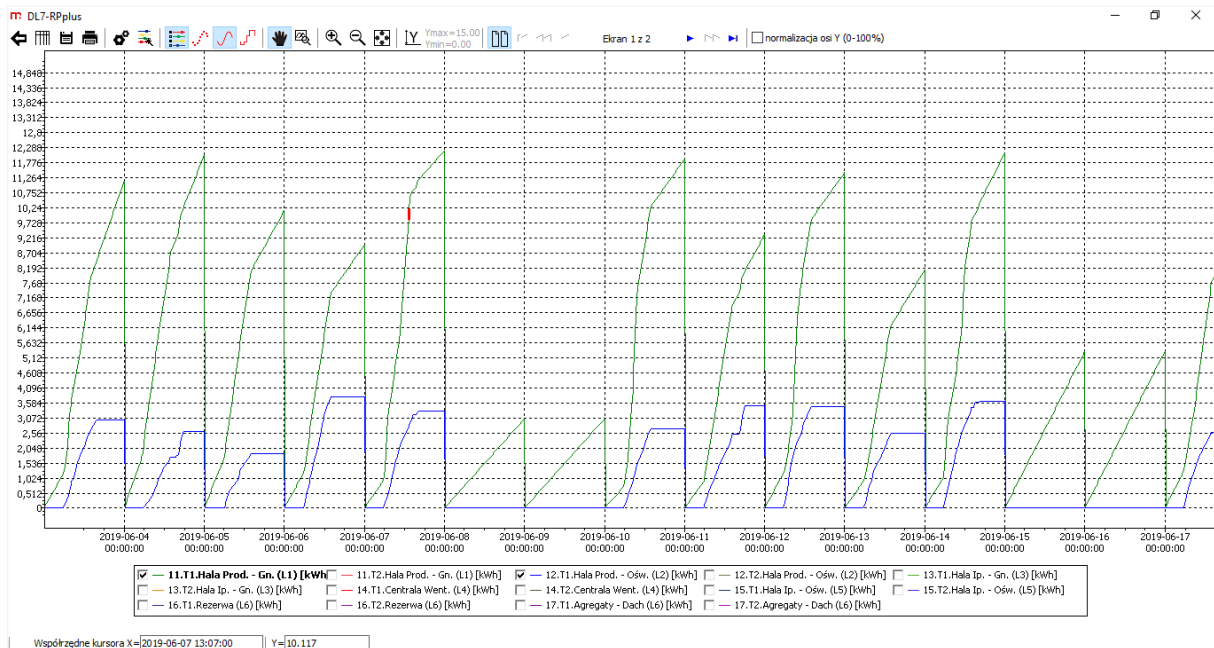
- **Example of device configuration**

Application of the DL7 (or DL2) data logger with pulse electricity meters requires installation and configuration of the IN6D module/modules. The data logger can be configured on a computer using a dedicated software or from the device level.

Below there is an example configuration of the DL7 data logger for operating with pulse energy meters. Described configuration is performed from the device level.

1. Configuration is possible from the Administrator level (⚙ → 👥 → *Login* → **Login**),
2. The measuring inputs of the IN6D module should be set in *Impulse* mode (⚙ → ▦ → *select a module from the list* → **IO 1 / .. / IO 6** → **Mode** → *Impulse* → ✓),
3. Assign read results to channels. The DL7 data logger has 100 freely configurable channels:
   a. Select the *Measurement* channel type and the measurement input to which the energy meter is connected (⚙ → ▦ → **Inputs** → *Channel Type* → *Measurement* → **Input** → *select the measuring input*),
   b. The device automatically selects the characteristics for the channel as Impulse - enter the value assigned to a single pulse,
   c. Provide the time base (selection from the drop-down list: /s, /min, /h), this setting is necessary to configure the totalizers (⚙ → ▦ → **General** → ***Time base*** → */s*),
   d. Energy consumption counting can be executed in a daily, weekly, monthly, resettable or unresettable mode. Each channel can have assigned two totalizers (Σ1 and Σ2) operating independently, it is possible to archive one or both totalizers. The totalizers execute precise pulse summation (⚙ → ▦ → **Σ1/Σ2** → ***Mode*** → *select mode from the drop-down list* → ***Unit*** → *entered Unit performs only the information function* → ***Multiplier*** → *1* → ***Resolution*** → *0.000* → ***Archiving*** → ☑ → ✓),
4. Enabled measurement channels are displayed as single result windows (switching by using arrows). The results can be displayed in the form of a result table (possibility to display e.g. totalizers values) or trend graphs (only channel value): ⚙ → 🖼 → **Results Tables** → *configuration* → **Trends** → *configuration* → ✓ ,
5. 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* → ✓),
6. 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**

Energy meters
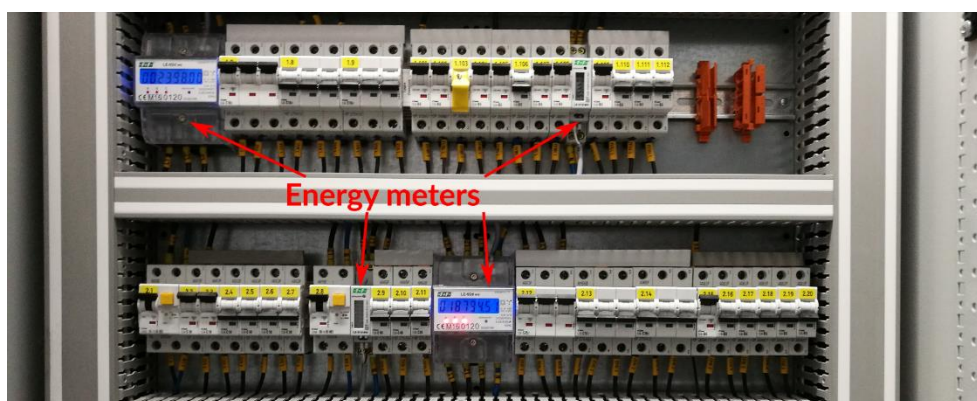
- **Information from the Manufacturer**

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

Manufacturer: METRONIC AKP Sp. J.
PL 31-426 Kraków, Żmujdzka 3
T: (+48) 12 312 16 80
www.metronic.pl