# DL210

## Electronic data logger with Encoder interface and integrated GSM/GPRS modem


## Applications

Data logging and data transmission at commercial and industrial customers with smaller gas metering stations

## Brief information

In low pressure gas metering stations, where a volume corrector is not necessary, secure and comprehensible data logging and frequently transmission of consumption data are getting more and more important.

These conditions can be met perfectly using the DL210 data logger. The unit can be connected to gas meters with low-frequency pulse generators or meters with Absolute-ENCODER indexes. A status input can additionally be used for monitoring the stations or manipulation.

The integrated radio data modem allows data communication in mains or battery operation using different transmission technologies (GPRS/GSM/SMS). Additional features such as the monitoring of peak-load limits supplement the basic functions of the unit to benefit the energy supplier and the end user.

In addition, the DL210 can also be used for data recording and remote data transfer of the meter readings and water meter consumption data using low-frequency pulse outputs.

## Encoder interface

When using the Absolute-ENCODER index on a gas meter, the individual digit rollers of the mechanical index are scanned opto-electronically to record and digitally transmit the original meter reading. The data logger supports the encoder interface according to the Namur or SCR specification and automatically recognises which of these interfaces is used. The energy required for reading out is provided by the DL210 in battery mode. The Absolute-ENCODER interface to the Namur specification is available as an option for Elster-Instromet turbine and rotary gas meters, and the Absolute-ENCODER interface to SCR specifications as an option for diaphragm gas meters.

## Main features

- Data recording for the supply of gas and water
- Peak-load display
- Encoder interface or alternative pulse interface
- Status input
- Integrated GSM/GPRS modem with antenna integrated into the housing
- Data communication via
  - GSM
  - GPRS
  - SMS
- Station monitoring using spontaneous reporting function via GSM modem
- Event-oriented storage of meter readings
- Different archives

**Options:**

- Plug-in power supply unit
- Second battery for GSM modem
- External antenna for GSM/GPRS modem

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# DL210: Electronic data logger with Encoder interface

## Installation:

The installation of the data logger in the station is limited to connecting the pulse generator and/or the Absolute-ENCODER index and an external voltage supply that may be required. An antenna is already integrated in the unit for the GSM/GPRS modem. Should local reception conditions be insufficient however, an optionally available external antenna can be connected via a socket. The reception field strength can be checked directly on the unit's display. Thus it can be commissioned at the metering point without needing a laptop or any special tools.

## Display and operation

The current values and parameters can be shown on the display and changed if required. The use of arrow keys guarantees simple operation of data arranged in lists. Each value is displayed with a clear description and the relevant unit.
For everyday operation, the most important values are combined in a configurable user list. The display range can be limited to this list, which will guarantee simple operation of the data logger at the metering point. At the touch of a few buttons, the current meter reading, the last peak-load values, the state of the battery and the device status can be checked.

## Archiving

The meter readings are stored in an event-oriented manner. In this, the meter readings are archived with a time stamp at the end of the metering interval and in the case of events (e.g. time synchronisation). The recorded meter readings and associated consumption values can be shown on the display of the data logger if required. Thus the values used for invoicing can be checked on site by the customer at any time and without additional resources. Data are registered in three mutually independent archives:

1. Monthly archive
2. Daily archive
3. Measurement period archive

In the monthly archive, the invoice-relevant values for the daily and metering period maximums are stored with their associated times in addition to the meter readings.
The recording interval for the measurement period archive can be set within the range of 1 to 60 minutes.

## Logbooks

Logbooks record events and/or changes in value and status.
The archiving of this information is carried out using a time stamp so that an event sequence in the past can be understood.

**Event logbook:** In this logbook, the last 250 events that occurred outside regular operation are recorded. These can be both fault messages and status changes, such as failure in the external voltage supply or an opening of communication.

**Change logbook:** The last 200 setting changes are entered in the change logbook (audit trail). The old and new parameters are recorded in addition to the time of the change. In addition, the access rights under which the change was carried out are also recorded (programmer, supplier or customer lock).

**Certification data log** allows changes to be made to metrological-relevant values or parameters such as the meter reading or the Cp value, without the calibration switch having to be opened. Up to 50 of these changes are registered in this logbook with a time stamp.

## Data communication

Data can be transmitted remotely using the integrated GSM/GPRS modem based on different available technologies. Transmission through the GSM network as a data call-up or by SMS is possible even when operated only using batteries. This is of particular advantage where the provision of an external voltage supply is uneconomical.
In the case of an external voltage supply, which can also be achieved using a solar power supply, short readout cycles, e.g. hourly, can be achieved economically using GPRS technology.

## Power supply

The data logger can be supplied in two variants:
In the design with "external voltage supply", the energy is supplied by connecting a direct voltage source of between 9 and 24 V DC (e.g. using a plug-in mains power supply unit). The unit always contains a lithium battery to ensure data recording and data storage functions for at least 6 months, even if the prime power fails. As an option, data communication can also be assured through additional batteries.
In the "battery operation" design, the DL210 data logger is supplied with 2 batteries. The device battery supplies energy for the data logger (for metering and archiving). Independent of this, the energy requirement of the GSM modem is supplied by the modem battery. The separate energy supply guarantees the basic function of the data logger at all times. The operation of the DL210 is assured for a period of 8 years in standard cases. The standard fitted battery for the GSM radio data modem will have a service life of approx. 4 years when used for one hour per week. An additional modem battery (optional) means that the service life can almost be doubled.

## Absolute-ENCODER technology


Transmitted data
- Meter reading
- Meter type
- Serial number
- Medium
- Production date

## Event-oriented recording of meter readings

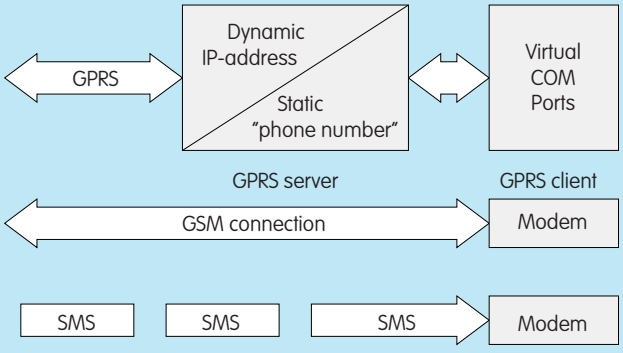
| Order number | Time stamp Date | Time | ENCODER index [m³] | System Status | Event | Checksum |
|---|---|---|---|---|---|---|
| 80662 | 9.3.2007 | 8:00:00 | 1331321.3 | Mains operation | End of interval | ok |
| 80663 | 9.3.2007 | 9:00:00 | 1331358.8 | Mains operation | End of interval | ok |
| 80664 | 9.3.2007 | 10:00:00 | 1331394.3 | Mains operation | End of interval | ok |
| 80665 | 9.3.2007 | 11:00:00 | 1331436.8 | Mains operation | End of interval | ok |
| 80666 | 9.3.2007 | 12:00:00 | 1331485.7 | Mains operation | End of interval | ok |
| 80667 | 9.3.2007 | 12:35:44 | 1331501.5 | Mains operation | Time synchronisation begins | ok |
| 80668 | 9.3.2007 | 12:32:20 | 1331501.5 | Mains operation | Time synchronisation ends | ok |
| 80669 | 9.3.2007 | 13:00:00 | 1331533.3 | Mains operation | End of interval | ok |
| 80670 | 9.3.2007 | 14:00:00 | 1331581.1 | Mains operation | End of interval | ok |
| 80671 | 9.3.2007 | 15:00:00 | 1331627.6 | Mains operation | End of interval | ok |
| 80672 | 9.3.2007 | 15:20:12 | 1331631.6 | Battery operation | Voltage failure begins | ok |
| 80673 | 9.3.2007 | 16:00:00 | 1331674.0 | Battery operation | End of interval | ok |
| 80674 | 9.3.2007 | 16:55:33 | 1331710.4 | Battery operation | Voltage failure ends | ok |
| 80675 | 9.3.2007 | 17:00:00 | 1331720.3 | Mains operation | End of interval | ok |
| 80676 | 9.3.2007 | 18:00:00 | 1331765.4 | Mains operation | End of interval | ok |
| 80677 | 9.3.2007 | 19:00:00 | 1331813.4 | Mains operation | End of interval | ok |
| 80678 | 9.3.2007 | 20:00:00 | 1331861.6 | Mains operation | End of interval | ok |
| 80679 | 9.3.2007 | 21:00:00 | 1331908.4 | Mains operation | End of interval | ok |
| 80680 | 9.3.2007 | 22:00:00 | 1331953.0 | Mains operation | End of interval | ok |

## Data communication via the mobile GSM/GPRS network

**DL210**
data logger
in the gas station
with integrated
GSM / GPRS modem


Software
**WinPADS**
or
**Read Mobile**

Different opportunities for data transmission
based on GSM/GPRS technology




Data recall
from utility or
service provider

# DL210: Electronic data logger with Encoder interface

| Technical data | |
|---|---|
| Order number | 83480070<br>- Design with plug-in power pack for communication via GPRS/GSM/SMS<br>- Design with two batteries for communication via GSM or SMS |
| Housing | Wall-mounted housing, ABS plastic |
| Dimensions | H 120 mm x B 120 mm x D 90 mm with screwed cable glands |
| Weight | Approx. 0.7 kg |
| Protection class | IP 65 according to EN 60529 |
| Ambient conditions | Temperature: -20 °C to +55 °C<br>Relative humidity: max. 93%, non-condensing |
| Power supply | External power supply DC 9-24V, P≥ 4.5 W to terminal screw<br>Back-up battery for data logger: Li battery 3.6 V, 2.1 Ah<br>Alternative<br>Data logger: battery 3.6 V, 16.5 Ah<br>GSM modem: Li-battery 3.6 V, 13 Ah (optionally 2 batteries) |
| Display | 2-line dot-matrix display with plain-text description of the values displayed.<br>All parameters, settings and archived values can be displayed. |
| Control panel | Keypad with 4 buttons |
| Pulse input | Pulse input for connection to low-frequency floating pulse generator (max. 10 Hz)<br>Alternative<br>Connection to Absolute-ENCODER index (Namur or SCR specification) |
| Status input | Freely programmable status input |
| Archive | Monthly archive<br>- Invoice-relevant meter readings as well as the formed daily and monthly maximum values, with their status<br>- Time when day is to begin can be set as required<br>- Storage capacity 15 months<br>Daily archive<br>- Event-oriented recording of meter readings with time stamp and status<br>- Recording at the respective day limit (e.g. 06:00)<br>- Storage capacity 15 months<br>Measurement period archive<br>- Event-oriented meter reading recording with time stamp and status<br>- Recording interval (metering period) settable as required<br>- Storage capacity 15 months at a recording interval of 60 minutes |
| Logbooks | Event logbook<br>- Recording of non-periodic events (e.g. time changes) with time stamp<br>- Storage capacity 250 records<br>Change logbook (audit trail)<br>- Recording of all parameter and value changes (time stamp, old and new values)<br>- Storage capacity 200 records<br>Certification data log<br>- Recording of changes of certain parameters and values (time stamp, old and new values) which are normally under the access rights of the calibration lock<br>- Storage capacity 50 records |
| Data communication | - GSM/GPRS – connection-oriented communication via the GSM network (also in battery operation)<br>- SMS – messages and data transmission by short message via the GSM network (also in battery operation)<br>- GPRS/TSC – Packet-switched TCP/IP communication via the GPRS network using the TAINY Switching Centre (only possible with external voltage supply |
| Measuring error | No loss of pulse<br>Display of current flow rate 5 % |
| Data interface | Optical interface according to IEC 62056 21 (IEC 1107) for parameterisation and reading out of archives |
| Modem | Integrated GSM/GPRS modem, dual band (900/1800 MHz) |



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