DL230

CONTROLS SUPPLY CHAIN
VALVES ACTUATORS INSTRUMENTATIONS

Multi-channel data logger with two encoder interfaces, two digital outputs and communication module

APPLICATIONS

- Data logging for gas meters
- Remote data transfer for billing
- Simple system monitoring

BRIEF INFORMATION

The data logger DL230 is used to determine peak loads and load profiles for gas systems for commercial and industrial customers. Up to four meters or the low-frequency pulse outputs of volume conversion devices can be connected to the data logger. This means that the device is also suitable for systems with more than one measurement process. Two of the input channels can alternatively be connected to encoder indexes.

Inputs which do not record any consumption information or original meter readings can be programmed as status inputs. This makes simple monitoring functions possible, such as the registration of station access or alarm signals from a volume conversion device. Such events can be saved in an archive, output as status signals or, if necessary, sent to a data acquisition centre by text message.

Two digital outputs can be used to forward the consumption information or to signal warnings and alarms.

The sturdy plastic housing is designed for wall mounting. Alternatively, the device can be installed on the gas pipe using an attachment bracket. It is powered by lithium batteries. The device can also be equipped with a power supply unit (230 V AC) as an option.

For the data communication in the mobile network plug-in 2G and 4G modem modules are available. The antenna is mounted on the actual housing and can be replaced by an external version if necessary. The modem is generally powered by the internal power supply unit. If there is no power supply at the metering point, the modem can alternatively be powered by batteries.

As an alternative to the modem module, an Ethernet or an interface module (RS232/RS485) is available for wired data communication.

The data transfer is based on the IEC 62056-21 protocol to ensure compatibility with existing retrieval systems. The use of DLMS/COSEM communication ensures secure data transfer using the very latest encryption methods. The automated transfer of data by the device to a retrieval or MDM system (PUSH mode) is another alternative.

MAIN FEATURES

- Multi-channel data logger
- PTB approval as a peak-load display and registration device for the media of gas and water
- ATEX approval as associated apparatus for Ex zone 0/1
- Manufacturer's declaration certifying suitability for use in Ex Zone 2
- 4 digital inputs; 2 of them for connecting to encoder indexes
- Two freely programmable, sealable digital outputs
- Optical interface for parameterization and readout
- Data transfer in PULL or PUSH mode
- Various data protocols (IEC 62056-21, DLMS/COSEM, FTP, SMS)
- Certification data log (PTB-A 50.7)
- Software update based on Welmec 7.2

OPTIONS

- 230 V AC power supply unit may be integrated
- Integrated modem: 2G (GPRS) or 4G (LTE-M, NB-IoT; "5G-ready")
- External antenna with various cable lengths
- RS232/RS485 or Ethernet interface module

DL230: Multi-channel data logger with two encoder interfaces, two digital outputs and communication module

METROLOGICAL APPROVAL

The data logger DL230 has PTB approval as a peak-load display and registration device with reference to PTB requirements 50.7 (for gas and water meters). The peakload values formed by the device and the recorded consumption values or meter readings can therefore be used for billing commercial and industrial customers.

DISPLAY AND OPERATION

All current values, parameters and archive data can be viewed on a graphical display. This display is illuminated even in battery mode and therefore easy to read without an additional light source, even in adverse installation conditions. Its operation is based on Windows Explorer making navigation very straightforward. An additional function key enables the user to return to the main screen, clear the status register or freeze the display with ease. Symbols provide additional information about the remaining capacity of the device batteries and the reception strength of the modem, for example.

CONNECTION TO THE METER

The data logger supports the connection of up to four meters with low-frequency pulse generators. Two inputs can be used to connect Absolute Encoder indexes. Inputs which are not used to record volumes can be used as status inputs.

OUTPUTS

Two digital outputs are available to forward consumption, alarm or status information; galvanic isolation is also provided.

The function of the inputs and outputs can be programmed individually. Naturally, both the inputs and outputs can be given software protection and can be sealed to prevent tampering and changes if the device is used for fiscal purposes.

ARCHIVING

In addition to the monthly and measuring period archives required for billing purposes, the DL230 also provides additional, configurable archives. The content and structure of the invoice-relevant archives is predefined with reference to the PTB approval as a peak-load display and registration device. The content of the flexible archives and the events triggering registration can be freely defined. Four of these flexible archives are preset as daily archives for inputs 1 – 4 in the basic configuration.

POWER SUPPLY

A lithium battery provides sufficient power for the data logger to run for at least 8 years. Two batteries are required if two encoder indexes are connected. As an option, a power supply unit can additionally be used to supply power for both the device and the modem module. At least one device battery always remains in the device to guarantee the power supply even if the external mains power supply fails.
If there is no way to connect the device to the 230 V AC mains power supply at the metering point, the modem module can also be powered by one or two batteries.

If an Ethernet interface is used for data communication, the power supply can also be provided via PoE (Power over Ethernet) as an alternative to a power supply unit.

INSTALLATION

The plastic housing is designed for mounting on a wall. As an option, an attachment bracket can be supplied so that the device can be installed on a pipeline. Sturdy hinges secure the housing cover when connecting the inputs and outputs, changing the batteries or retrofitting the power supply unit. The standard antenna on the modem is mounted on the exterior of

the housing and is also protected from damage by the housing cover. If the reception field strength at the metering point is inadequate, an external antenna can be connected as an alternative. Antennas with various cable lengths are available for this purpose. Additional sealing facilities make it possible to prevent tampering and the unauthorized opening of the housing.

ATEX APPROVAL

The device version with 2G and 4G modem module has ATEX approval as associated apparatus for Ex Zone 0/1. This means that the inputs can also be connected to gas meters or volume conversion devices in potentially explosive atmospheres without additional Ex barrier modules having to be used. In the version for use in Ex Zone 2 (manufacturer declaration), other communication modules can also be used as an alternative.

DATA COMMUNICATION

The modem modules or the ethernet interface support data communication in both PULL and PUSH mode. The data can be read using the “TCPServ” (PULL) application at a data acquisition centre using TCP/IP. Alternatively, the “FTP” (PUSH) application can be used to transfer archive and process data from the DL230 to a FTP server. Both modes of operation ensure that the recorded data is made available securely, promptly and at low cost to follow-up systems.

Not simultaneously but in addition, the data can also be read in both modes by a telephone call via the GSM network (CSD) service, provided this service is still supported by the provider.

For transfers using the PULL principle, either the IEC 62056-21 data protocol or DLMS/COSEM communication may be used. The DLMS/COSEM protocol allows the data transfer to be signed and encrypted.

In addition, the DL230 allows text messages to be sent in both operating modes. The event that triggers the message, its content and the recipients can be freely defined. This can be done for up to 10 independent events. This function can also be used to monitor freely definable states and events in small gas measurement systems, such as failure of the external voltage supply, reaching the peak load prematurely or access to the station using a simple door contact. The text-messaging function also provides a simple way to transfer meter readings, for example, to the end customer's mobile devices.

COMMUNICATIONS MODULE

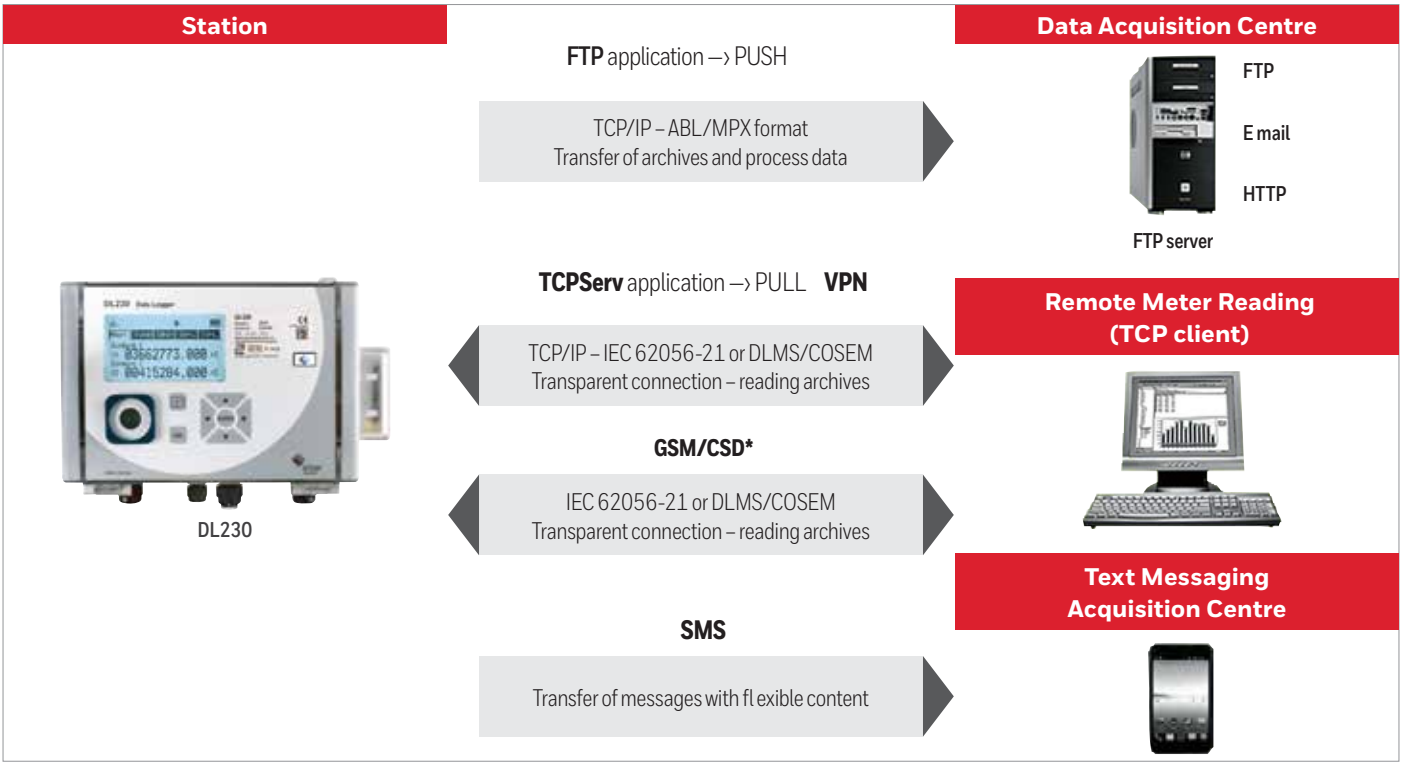
As an alternative to the modem modules, either an Ethernet or RS232/RS485 interface can be used for wired communication.

An external communication device can be connected to the RS232/RS485 interface (e.g., RTU).

SOFTWARE UPDATE

The DL230 supports a software update in accordance with the WELMEC 7.2 Software Guide. This can be carried out both via the optical interface and by remote data transfer using DLMS/COSEM communication and in compliance with security standards (using encryption). This means that the device can be kept up to date even after it has been installed.

FLEXIBLE IN DATA COMMUNICATION – PULL AND PUSH



* only possible if the CSD service is still supported by the network provider

DL230: Multi-channel data logger with two ENCODER interfaces, two digital outputs and communication module -Technical Specifications

TECHNICAL DATA	
Order number	83480080
Housing	Plastic with cable glands
Dimensions	W 175 mm × H 85 mm × L 250 mm (incl. cable glands)
Weight	1.3 kg (weight incl. 1 device battery and power supply unit)
Protection class	IP 65 to EN 60529
Ambient conditions	Temperature: -25 °C to +60 °C Max. humidity: 93%, non-condensing
ATEX approval	Associated apparatus for Ex Zone 0/1 and manufacturer's declaration certifying suitability for use in Ex Zone 2 II (1) G [Ex ia Ga] IIC and II 3 (3) G Ex nA [ic] IIC T6 Gc markings Only wireless communication modules may be used in the version as associated apparatus for Ex zone 0/1 (2G and 4G modem modules).
PTB approval	Type examination Certificate DE-17-M-PTB-0025 to PTB-A 50.7 as peak-load display and registration device
Inputs	4 inputs (intrinsically safe), max. input frequency: 10 Hz - Pulse or status inputs - Alternatively, 2 inputs can also be connected to an encoder index (Namur, SCR/SCR+)
Outputs	- 2 digital transistor outputs (Umax = 30 V DC, Imax = 100 mA); can be used freely as - Pulse output (max. output frequency: 4 Hz) - Status output - Time synchronization output The outputs can be galvanically isolated using a switch (not an approved galvanic isolation to ATEX).
Display	Dot matrix display, 200 × 80 pixels, backlit All parameters, settings and archived values can be displayed.
Control panel	7-key plastic-coated keypad
Device power supply	1 or 2 lithium batteries, 3.6 V, 13 Ah
Communication module power supply	Usually via the power supply unit. The modem module can alternatively be powered by up to 2 lithium batteries 3.6 V 8 Ah. Battery life depends on the application (see application manual).
Power supply unit (optional)	Primary: 230 V AC, power consumption 5 W Secondary: 2 × 3.6 V to supply the device and modem
Data interfaces	Optical interface to IEC 62056-21 for parameterization and reading of archives Serial interface RS232/RS485 or Ethernet interface as a plug-in module (optional) (information on how to use the interface can be found in the application manual)
Modem module	2G modem (GSM/GPRS), 4G modem (LTE-M/ NB-IoT) Antenna on the housing in a protected position Alternatively, an external antenna can be connected.
Data communication (applications)	FTP: automated data transfer to an FTP server (PUSH) TCPServ: addressing using fixed IP addresses in a VPN (PULL) GSM/CSD: readout using conventional modem technology (PULL), provided this service is still supported by the provider. SMS: transfer of data and messages via text messaging (PUSH)
Data protocols*	IEC 62056-21 DLMS/COSEM (data encryption based on standards AES-128 and Galois/Counter Mode) FTP SMS

*Details of implemented function range of the listed protocols can be provided on request.