

LogMessage – A data logger for profes

Extensive functions

LogMessage data loggers are universal. Whatever the application – for slow or for high-speed acquisition – Delphin has a LogMessage version for any user requirements. Delivery includes the ProfiSignal Go software to enable professional evaluation of online and offline data. LogMessage devices function intuitively making it easy to configure inputs, to save data, and to display data as trends.

LogMessage devices are designed for permanent operation and can be depended on to perform reliably over the long term. When data security and reliability are top priorities, users choose the "Made in Germany" logger.

A range of interfaces

- LAN interface
 - Device configuration and online data transfer to PC
 - Link to UMTS-routers
 - Log memory read-out
 - Modbus TCP for data transfer using PLC
- USB interface
 - Log memory read out
- Serial interfaces
 - 4 x RS232/485
 - Customer-specific protocols (ASCII)

Universal sensor connection

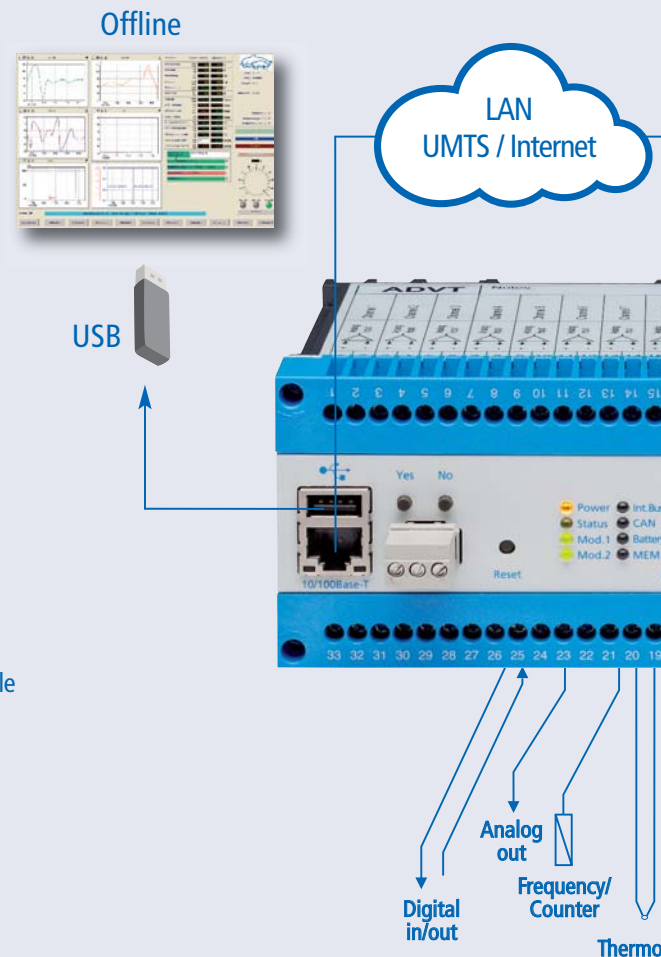
LogMessage devices are precision instruments that can be switched via software to function with any type of sensor.

- Universal use of analog inputs for mA-, mV-signals, RTDs, or any thermocouple
- Signal rate of 0.1 Hz to 10 kHz
- Digital inputs suitable for up to 90 VDC
- Frequency inputs up to 35 kHz

Galvanic isolation included

LogMessage devices are fully protected against earth loops enabling measurements from non-isolated sources.

- All analog inputs can function as differential inputs
- Isolation voltage between analog inputs: 110 VDC to a maximum of 650 VDC
- Galvanic isolation between power supply and each interface
- No earth loop problems

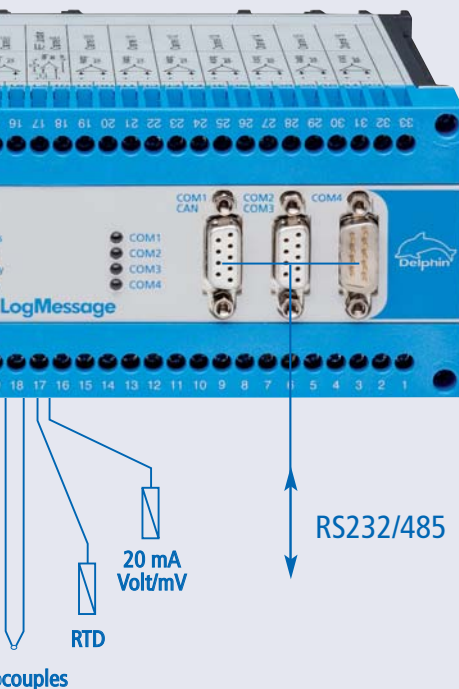
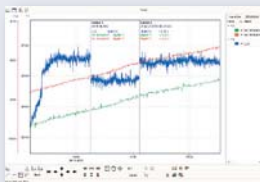


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Applications

- Secure data acquisition with stand alone capability
- PC-independent measurement and testing
- Acquisition via universal inputs
- Product testing, laboratory, R&D
- Mobile data acquisition
- Fault diagnostics at machine/plant
- Status and event logging
- Energy efficiency measurements
- GPS data logging and remote monitoring
- Temperature data acquisition

Online



Secure data storage

The LogMessage's data storage capability enables it to function without PC or network support.

- 3.5 GB of memory for 250 million data records
- Each measurement data record is recorded with a time-stamp (date and time – at microsecond precision)
- Measurement data can be assigned to groups and used as triggers
- No data loss in the event of power failure
- Alarm management with pre and post alarm data

Comprehensive signal processing

Software channels, configurable according to requirements, can be used for online calculation, monitoring, and many other functions. This enables data to be generated that is immediately usable.

- Online calculations performed on measurement data (e.g. temperature differentials)
- Integration functions (e.g. flows to volumes)
- Limit value monitoring with alarm functions (switching digital outputs)
- Counter function and operational data acquisition

Resolutions for demanding requirements

LogMessage devices are suitable for both slow- and high-speed measurements. Time resolution for analog measurement data is at 100- μ s precision levels; digital resolution at millisecond precision. The devices are equipped for precision measurement with 24-Bit ADCs.

LogMessage – Versions

Versions

LogMessage devices are available in nine different versions. The versions differ in the number of inputs and outputs. All versions are identical in respect of interface options, internal functions, galvanic isolation and data logger memory.

LogMessage 1000 – the entry-level model with 15 analog inputs

The LogMessage 1000 is equipped with 15 analog inputs and a sampling rate of up to 600 measurements per second. The inputs can be used for the data acquisition of mV, mA signals or any type of thermocouple. All inputs have differential and galvanic isolation.

LogMessage 2000 – measurement data acquisition and automation

The LogMessage 2000 is equipped with 10 universal analog inputs, one analog output, 12 digital inputs (11 counters), and 17 digital outputs. The device has a range of internal monitoring and control functions to enable it to be used as a measurement data acquisition device as well as an independently operating system for control, automation or monitoring tasks.

LogMessage 3000 – fault diagnostics made easy

The LogMessage 3000 is equipped with 15 analog inputs (600 Hz sampling rate) and 24 synchronous digital inputs (with a time resolution of 1 msec). The device is particularly suited to fault analysis as well as to processing digital and analog events.

LogMessage 4000 – the monitoring device

The LogMessage 4000 is ideal for monitoring requirements. Any number of alarm and logic channels can be configured to the 8 analog inputs. Any of the 5 digital outputs can be switched irrespective of the current alarm situation.

LogMessage 5000 – galvanic isolation voltage of up to 650 VDC

The LogMessage 5000 is equipped with 16 universal analog inputs. The inputs are designed to cope with high voltages between the individual channels. The LogMessage 5000 is therefore capable of the problem-free measurement of non-isolated signals

LogMessage 6000 – universal measurement and monitoring

The LogMessage 6000 is equipped with more than 25 analog inputs. The device can be used for direct acquisition, monitoring and recording for any thermocouple or RTD sensor.

LogMessage 7000 – the thermocouple logger

The LogMessage 7000 can acquire measurements from up to 30 thermocouples. Configuration software is available to set channels to specific thermocouple types.

LogMessage 8000 – independent measurement and control

The LogMessage 8000 is equipped with 15 analog inputs and 12 synchronous digital inputs. The device also has 16 digital outputs to control and manage alarms and events.

LogMessage 9000 – the universal logger

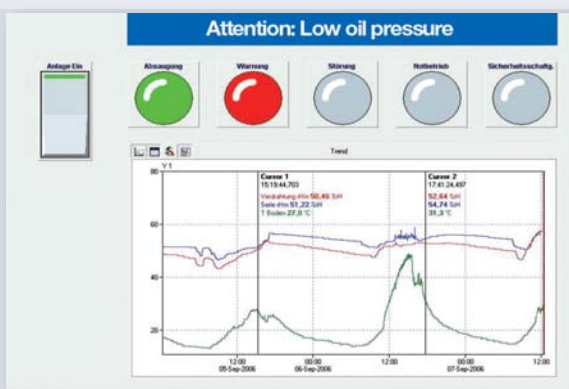
The LogMessage 9000 is equipped with 20 analog inputs, 2 analog outputs and 2 digital outputs. The device has an overall sampling rate of up to 1200 measurements per second and can directly acquire, monitor and record data from any thermocouple or RTD sensor.

Type	LM 1000	LM 2000	LM 3000	LM 4000	LM 5000	LM 6000	LM 7000	LM 8000	LM 9000
Analog input (mV, mA, thermocouple*)	15		15	8		15	30	15	
Analog inputs (mV, mA, thermocouples, RTD)		10			16	10			20
Analog outputs (mV, mA)		1		2		1			2
Digital inputs (frequency measurement)		12 (11)	24	28 (2)				12 (11)	
Digital outputs		17	1	5		1		16	2
Sampling rate in measurements per sec.	600	600	600	8000	80	1200	1200	600	1200
Isolation voltage DC (AI to AI)	110	110	110	100	650	110	110	110	110

(*except LM4000)

LogMessage is available in nine different versions. LogMessage is a genuine high-speed logger with sampling rates of up to 10,000 measurements per second.

The LM 5000 version has an increased isolation voltage of up to 650 VDC between inputs.



Web server included

LogMessage devices are equipped with internal web servers. The standard version displays current measurement data in a channel list as well as extensive configuration and maintenance information.

Software channels

Software channels are capable of performing computations on online measurement data, and used for visualisation, storage or monitoring purposes. The processing of signals takes place independently within the LogMessage device and requires no PC support. There is virtually no limit on the number of software channels that can be used. Software channel computations run parallel to data acquisition and logging. Software channels are included in delivery.

Online analysis	Description
Calculation channel	Any number of channels can undergo computation procedures. Functions include: basic arithmetic functions; trigonometry; binary and boolean operations
Channel averaging	Computation of moving and triggered averages
Edge counter	Counter for impulses (high, low, and reset functions)
Differentiator	Computes changes over time
Integrator	Numerical integration over time
Linearization	Corrective calculations on non-linear sensors
Operating hours counter	Accumulates the time (in hours) of a digital signal's high-level
Statistic channel	Computes moving and triggered statistical values (min, max, variant, standard deviation)
Stopwatch	Time measurement between two events
Monitoring	Description
Limit value	Generates events for threshold violations (over- / under-runs, inertia, hysteresis, process monitoring)
Batch alarms	Generates a single alarm from multiple input channels
Wake function	Generates pulses at a chronological point in time (once a day, week, month...)
Status monitoring	Evaluates status information for measurement data and generates an alarm



Technical specifications are available on page 46.

LogMessage – Technical specifications

LogMessage

Analog inputs	
Voltage/current measurement ranges	$\pm 156 \text{ mV} \dots \pm 10 \text{ V} / 0/4 \dots 20 \text{ mA}$
Sensors	Thermocouples of any type; integrated temperature compensation; resistance thermometer RTD, NTC and linear resistances to $10 \text{ k}\Omega$
Potential isolation	750 VDC to the system and power supply; 650 VDC between channels for LogMessage 5000; 100 VDC between channels for LogMessage 4000; 110 VDC between channels for other versions
Resolution	24-Bit precision V, mA 0.01 % from accumulated value; 14-Bit measurement precision: V, mA 0.1 % from accumulated value for LogMessage 4000; Pt100: 0.1 K; Pt1000: 0.05 K; thermocouple 0.1% from accumulated value
Analog outputs	
Resolution / potential isolation	16-Bit / 750 V; 12-Bit for LogMessage 4000
Output signal	0/4 ... 20 mA at a maximal max. load 650Ω ; 0 ... 10 V min. $2.5 \text{ k}\Omega$ for LogMessage 4000
Digital inputs	
Potential isolation	2,5 kV
Input measurement range	low: 0 ... 1.5 VDC@0 ... 1.5 mA / high: 3.5 ... 90 VDC@2 mA
Frequency / counter inputs	
Potential isolation / measuring range	2.5 kV / low: 0 ... 1.5 VDC@0 ... 1.5 mA / high: 3.5 ... 90 VDC@2 mA
Measurement frequency	up to 30 kHz at TTL-level
Digital outputs	
Potential isolation	2,5 kV
Switching voltage	max. 50 VDC@2.5 A
Data storage	
Standard size / measurement data	Partitionable storage, standard: 3.5 GB; max. 250 million measurement records
Max. size / measurement data	15.5 GB; up to 1 billion measurement records; 15.5 GB; up to 7 billion measurement records for LogMessage 4000
Interfaces	
Mechanical design COM 1 / COM 2	RS485, 9-pole Sub-D-connector, DIN EN ISO 19245-1
Mechanical design COM 3 / COM 4	RS232, 9-pole Sub-D-plug
Protocols COM 1 ... COM 4	Modbus RTU Master / Slave, customer-specific protocols
Ethernet	RJ45 (8-pole STP-connector), 100 BaseT protocol: TCP/IP, HTTP, SMTP, NTP, Modbus TCP Client / Server
USB	USB 1.1 for memory read out
CAN	9-pole Sub-D-connector, protocols: CAN Raw; baud rates: 50 k ... 1 MBaud
General technical information	
Dimensions	200 x 73 x 118 mm
Weight	1 kg
Rail mounting	DIN EN 60715 or screw fixings
Signal connections	Detachable screw terminals, 33 terminals in 2 rows, lead protection, connecting cabling max. 2.5 mm^2
Temperature range	-20 ... 60 °C
Power supply	12 ... 36 VDC / 12 ... 28 VAC eff. / $\pm 10\%$; at AMDT/ADFT min. 18 VAC/DC; power input: < 10 Watt