

DLM09847 - 3 CHANNELS MULTIFUNCTION DATALOGGER

DLM09847 is a multifunctional portable or desktop datalogger. Three independent channels inputs to plug on different probes connected to each single channel or double combined sensors fit to two input channels, e.g. twin thermocouples, relative humidity+temperature, etc. Self-learning probe calibration data by smart chio module placed in to the probe head or cable plug. Functionality: watch, hold, max, min, average, record, logging with prompt reading or timing scan, difference between two inputs, relative reading, simultaneous display readings of the three input channels plus internal reference temperature. Permanent storage of data calibration in to the sensor probe. Serial RS232C output port. Ability to print out in current time or later from archives.



Review of stored data and erasing of data blocks in the memory. Auto power off after 8 minutes if enabled. Scalable input units referred to the physical, linear variable selectable. Instruments inputs can be connected either by micro smart self-cal modules or on alternative directly by physical sensors as like to temperature (platinum elements), thermocouples, relative humidity+temperature, discomfort index, DC voltage (+/-20V), DC current (4/20mA), pressure, air velocity, light energy, etc.

DESCRIPTION

The kit consists of DLM09847, serial cable 9CPRS232, 4 alkaline batteries, instruction manual and carrying case.

Modules and probes must be ordered separately, in the following choice:

Electronic module, Data acquisition without variable sensor	TP471	- Electronic module for resistance thermometer sensors
	TP471D.	- Electronic module for thermocouple sensors
	VP472	- Electronic module for pyranometers and albedometers
	VP473	- Electronic module for DC voltages
	IP472	- Electronic module for direct currents
	PP471	- Electronic module for pressure sensors
	AP473S.	- Electronic module for Pitot tubes (air speed)
Probe sensor with electronic module, data acquisition	TP47xx	- Probes with Pt100 sensor
	HP47xxxx	- Relative humidity and temperature probes
	PP472	- barometric probe
	PP473xx	- Probes of differential pressures
	AP471xx	- Hot wire probes for measuring air velocity
	AP472xx	- Vane probes for measuring air velocity
	LP471xxxxx	- Photometric and radiometric probes for the measurement of light

TECHNICAL SPECIFICATIONS

Power supply:	4x AA 1.5V alkaline batteries, operating about 60 hours Supply with 9Vdc external, 250mA, 2 pole connector
Operative conditions:	Working temperature -10 ... + 50 ° C - Relative humidity 0 ... 90% RH without condensation
Display:	Graphic LCD 128x64 pixels (56x38 mm)
Keyboard:	18 keys with multiple functions plus 3 function keys
Storing values:	on 16 files divided in pages of 16 samples each 32,000 samples per channel input - Storage interval 1 s ... 1 hour. Calendar clock in real time.
Accuracy:	1 minute / month max drift
Serial interface:	RS232C electrically isolated connector SUB D 9 M - 300 ... 115,200 baud, 8 data bits Parity none Stop bits 1 - Flow control: Xon / Xoff Maximum cable length 15 m RS232C Print Range : 1 s ... 1 hour
Probe connections:	3x 8-pin connectors DIN45326
Dimensions and weight:	245x100x50 mm - 300 gr.
Housing material:	ABS - rubber protection



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TP471 Electronic module for resistance thermometer sensors

TP471 Temperature measurement with sensors Platinum PRT resistance values PRT @ 0 ° C 25, 100, 500 Ohm. Measuring range RTD25, RTD100 -200 ... + 850 ° C, RTD500 -200 ... + 500 ° C - Accuracy Sensor RTD25, RTD100 ± 0.03 ° C up to 350 ° C ± 0.3 ° C up to 850 ° C, with sensor RTD500 ± 0.5 ° C up to 500 ° C - Resolution 0.01 ° C -200 ° C to 350 ° C, 0.1 ° C from 350 ° C to 800 ° C - temperature drift @ 20 ° C 0.002% / ° C - excitation current 400 microA impulsive, duration = 100ms, Period = 1s

TP471D Electronic module for thermocouple sensors

TP471D0 Measurement of the temperature for thermocouple with cold junction in ice @ 0°C

TP471D Temperature measurement by thermocouple 1 input

TP471D1 Measurement of the temperature by thermocouple 2 input

type TC	Range °C	Accuracy	Resolution
K	-200...1370	+/-0.1°C up to 600°C; over +/-0.2°C	0.05°C from low range to 350°C; 0.1°C from 350°C to full scale
J	-100...750	+/-0.05°C up to 400°C; over +/-0.1°C	
T	-200...400	+/- 0.1°C	
E	-200...750	+/-0.05°C up to 300°C; over +/-0.08°C	
N	-200...1300	+/-0.1°C up to 600°C; over +/-0.2°C	
R	+200...1480	+/- 0.25°C	0.1°C all over the scale
S	+200...1480	+/- 0.3°C	
B	+200...1800	+/- 0.35°C	

Accuracy refers to the instrument complete with module; not including the error of the probe.

VP472 Electronic module for pyranometers and albedometers

VP472 Module for connecting pyranometers or albedometers. You can capture, verify and store the values generated in time by a pyranometer or a albedometer. The generated signal can be read in mV or in W / mq, the net radiation albedometer is read in W / mq. The sensitivity can be set from 5000 to 30000nV / (WMQ) or between 5 and 30 microV / (Wm -2)

VP473 Electronic module for DC voltages

VP473 Module for reading continuous voltages. Connected to the output of a transmitter with a voltage signal, it can read and acquire the value. Measuring range ± 20 Vdc. Input impedance: 1MOhm.

IP472 Electronic module for direct currents

IP472 Module for reading in mA of continuous current. Connected to the output of a transmitter with a current signal, it can read and acquire the value. Measuring range 0 ... 24 mA. Input impedance 25Ohm.

PP471 Electronic module for pressure sensors

PP471 Module for the measurement of absolute, relative and differential pressures. It works with pressure probes series TP704 and TP705. It provides instantaneous value and peak value of the pressure. The module is complete with cable L = 2m and 8-pin connector DIN 45326 female. Accuracy $\pm 0.05\%$ of full scale. Duration of peak > 5ms. Peak accuracy $\pm 0.5\%$ F.S. Peak dead band > 2% F.S.



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TP47xx Probes with Pt100 sensor

- TP472I** RTD 100 wire immersion sensor. Probe's stem Ø 3 mm, length 300 mm. 4-wire cable, length 2 meters. Application range: -196 ... + 500 ° C. Accuracy: ± 0.2 ° C (-196 ... + 350 ° C) / ± 0.4 ° C (+350 ... + 500 ° C).
- TP473P** RTD 100 wire penetration probe. Probe's stem Ø 4 mm, length 150 mm. 4-wire cable, length 2 meters. Application range: -100 ... + 400 ° C. Accuracy: ± 0.2 ° C (-100 ... + 350 ° C) / ± 0.4 ° C (+350 ... + 400 ° C)
- TP474C** Contact probe, RTD 100 thin film. Stem Ø 4 mm, length 230 mm, silver contact surface Ø 5 mm. 4-wire cable, length 2 meters. Application range: -50 ... + 400 ° C Accuracy: ± 0.2 ° C (-50 ... + 350 ° C) / ± 0.4 ° C (+ 350 ... + 400 ° C)



HP47xx Relative humidity and temperature probes

General characteristics of relative humidity and temperature probes module

- Relative humidity**
- Capacitive sensor Mk-33
 - Capacity @30%RH 300pF ± 40 pF typical
 - Probe operative temperature -40...+150°C
 - Range 0...100%R.H.
 - Accuracy $\pm 1\%$ RH range 20 ...90%RH; $\pm 2\%$ RH range 10...99%RH
 - Resolution 0.1%RH
 - Temperature drift @ 20°C 0.02% RH /°C
 - Response Time %RH @ 10sec (10 ... 80%RH; air speed = 2m / s) constant temperature
- Temperature**
- RTD 100 temperature sensor (100 Ohm @0 °C)
 - Range -50...+200°C.
 - Accuracy ± 0.03 °C
 - Resolution 0.01°C
 - Temperature drift @20°C 0.003%/°C
 - Temperature sensore (HP572AC)Termocouple K type
 - Range -50...+200 °C
 - Accuracy ± 0.5 °C
 - Resolution 0.05°C
 - Temperature drift @20°C 0.02%/°C
- HP472AC** %RH and temperature combined probe, dimensions Ø 26x170 mm. Cable Connection: 2 m. Range: -20 ... + 80°C, 5 ... 98% RH. Accuracy: $\pm 2\%$ RH, ± 0.25 °C.
- HP572AC** % RH and temperature, thermocouple K sensor combined probe. Dimensions Ø 26x170 mm. Cable Connection: 2 m. Range: -20 ... + 80°C, 5 ... 98%RH. Accuracy: $\pm 2\%$ RH, ± 0.5 °C.
- HP473AC** % RH and temperature combined probe. Handle Ø 26x130 mm, probe Ø 14x110 mm. Cable Connection: 2 m. Working range -20 ... 80 ° C, 5 ... 98% RH. Accuracy: $\pm 2\%$ RH, ± 0.25 ° C.
- HP474AC** %RH and temperature combined probe. Handle Ø 26x130 mm, probe Ø 14x210 mm. Cable Connection: 2 m. Range: -40 ... + 150°C, 5 ... 98% RH. Accuracy: $\pm 2\%$, ± 0.25 °C
- HP475AC** %RH and temperature combined probe. Handle Ø 26x110 mm. Ø12x560 mm stainless steel probe. Punta Ø 13,5x75 mm. Cable Connection: 2 m. Application range -40 ... + 150 ° C, 5 ... 98% RH. Accuracy: $\pm 2\%$ RH, °C ± 0.30
- HP477DC** Combined sword probe %RH and temperature, handle Ø 26x110 mm. Probe 18x4 mm, length: 520 mm. Cable Connection: 2 m Size range -40 ... + 150 ° C, 5 ... 98% RH. Accuracy: $\pm 2\%$, ± 0.30 °C



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PP472 Barometric probe

PP472 Probe for measuring barometric pressure. Measuring range: 600 ... 1100mbar. Resolution: 0.1mbar Accuracy at 20 ° C: $\pm$ 0.3mbar. Temperature range: -10 ... + 60 ° C

TP704-705 Pressure probe

TP704-705 To be combined with PP471 module for measuring absolute, relative or differential pressure.

Full scale Pressure	Max Overpressure	Differential Pressure	Relative Pressure	Absolute Pressure	Accuracy from 20 to 25°C	Working temperature	Connection
		Membrane NOT isolated	Membrane isolated	Membrane isolated			
10.0 mbar	20.0 mbar	TP705-10MBD			0.50% FSO	0...60°C	Hose D 5mm
20.0 mbar	40.0 mbar	TP705-20MBD			0.50% FSO	0...60°C	Hose D 5mm
50.0 mbar	100 mbar	TP705-50MBD			0.50% FSO	0...60°C	Hose D 5mm
100 mbar	200 mbar	TP705-100MBD			0.25% FSO	0...60°C	Hose D 5mm
200 mbar	400 mbar	TP705-200MBD			0.12% FSO	0...60°C	Hose D 5mm
			TP704-200MBGI		0.20% FSO	0...80°C	1/4 BSP
500 mbar	1000 mbar	TP705-500MBD			0.12% FSO	0...60°C	Hose D 5mm
			TP704-500MBGI		0.20% FSO	0...80°C	1/4 BSP
1.00 bar	2.00 bar	TP705-1BD			0.12% FSO	0...60°C	Hose D 5mm
			TP705-1BGI		0.20% FSO	0...80°C	1/4 BSP
2.00 bar	4.00 bar	TP705-2BD			0.12% FSO	0...60°C	Hose D 5mm
			TP704-2BGI	TP704-2BAI	0.40% FSO	0...80°C	1/4 BSP
5.00 bar	10.00 bar		TP704-5BGI	TP704-5BAI	0.40% FSO	0...80°C	1/4 BSP
10.00 bar	20.00 bar		TP704-10BGI	TP704-10BAI	0.40% FSO	0...80°C	1/4 BSP
20.00 bar	40.00 bar		TP704-20BGI	TP704-20BAI	0.40% FSO	0...80°C	1/4 BSP
50 bar	100 bar		TP704-50BGI	TP704-50BAI	0.40% FSO	0...80°C	1/4 BSP
100 bar	200 bar			TP704-100BAI	0.40% FSO	0...80°C	1/4 BSP
200 bar	400 bar			TP704-520BAI	0.40% FSO	0...80°C	1/4 BSP
500 bar	750 bar			TP704-500BAI	0.40% FSO	0...80°C	1/4 BSP

PP473S1...8 Differential pressure probe

Model	Range fs	Max overpressure	+/- accuracy @ 25°C	Temperature range °C	Fluids in contact with the membrane	Connection
PP473S1	10 mbar	200 mbar	0.5% f.s.	-10...60	air or gas and non-corrosive fluids	Hose D. 5 mm.
PP473S2	20 mbar	200 mbar	0.5% f.s.			
PP473S3	50 mbar	200 mbar	0.5% f.s.			
PP473S4	100 mbar	300 mbar	0.25% f.s.			
PP473S5	200 mbar	1 bar	0.12% f.s.			
PP473S6	500 mbar	1 bar	0.12% f.s.			
PP473S7	1 bar	3 bar	0.12% f.s.			
PP473S8	2 bar	6 bar	0.12% f.s.			



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AP471S Hot wire probes for measuring air velocity

	AP471S1	AP471S3	AP471S2
Type of measure	speed, calculated flow rate, air temperature		
Velocity Range	0...40 m/s		0...5 m/s
Temperature Range	-30...+110°C		-30...+110 °C
Velocity resolution	0.01 m/s (0...40 m/s) 0.1 km/h 1 ft/min 0.1 0.1 mph 0.1 knots		0.01 m/s (0...5 m/s) 0.1 km/h 1 ft/min 0.1 mph 0.1 knots
Temperature resolution	0.1°C (-30...+110°C)		0.1°C (-30...+110°C)
Velocity accuracy	+/- 0.05 m/s (0...0.99 m/s) +/- 0.2 m/s (1.00...9.99 m/s) +/- 0.6 m/s (10.00...40.00 m/s)		+/- 0.02 m/s 0-0.99 m/s +/- 0.1 m/s 1,00-5.00m/s
Temperature accuracy	+/- 0.4°C (-30...+110°C)		+/- 0.4°C (-30...+110°C)
Temperature compensation	0...80°C		
Velocity units	m/s - km/h - ft/min - mph - knots		
Flowrate units	l/s - mc/s - mc/min - ftc/s - ftc/min		
Conduct section calculating capacity	100...100,000 cm2 - 0.01...10 m2		
Cable length	about 2 m		

AP472S Vane probes for measuring air velocity

	AP472S1	AP471S2	AP471S3
Type of measure	velocity, calculated flow rate, air temperature	velocity, calculated flow rate	velocity, calculated flow rate, air temperature
Diameter mm.	100	60	16
Measure	propeller/ TC K	propeller	propeller/ TC K
Velocity Range	0.4...30 m/s	0.25...20 m/s	0.4...60 m/s
Temperature Range	-25...+80°C	-25...+80°C	-30...+140 °C
Velocity resolution	0.01 m/s - 0.1 km/h - 1 ft/min - 0.1 mph - 0.1 knots		
Temperature resolution	0.1°C		0.1°C
Velocity accuracy	+/- 0.1 m/s +1.5%f.s.		+/- 0.2 m/s + 1.0%f.s.
Temperature accuracy	+/- 0.1°C		+/- 0.1°C
Velocity units	m/s - km/h - ft/min - mph - knots		
Flowrate units	l/s - mc/s - mc/min - ftc/s - ftc/min		
Conduct section calculating capacity	100...100,000 cm2 - 0.01...10 m2		
Conduct section calculation (for flow measurement)	The section area can be assigned directly (cm2 or inch2) by setting the radius (cm or inch) to sections circular setting sides (cm or inch) of rectangular sections		



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