ALUSYS

Measuring system for heat flux and temperature survey

ALUSYS is a measuring system for trend-monitoring and mobile survey of heat flux and surface temperature in industrial environments. Sensors and electronics have the robustness necessary for this application. Powered from a low-voltage rechargeable battery, it is easy and safe to use. In its standard configuration the system consists of an MCU Measurement Control Unit in a metal housing and 12 x heat flux and surface temperature sensors of model HF01. Measured data are stored for later analysis.

Figure 1 *the ALUSYS measuring system, for trend - monitoring and comparative surveys of heat flux and surface temperature in industrial environments. Connected to the MCU: one HF01 sensor, as well as the Keyboard Display.*

Introduction

ALUSYS measures heat fluxes and surface temperatures in demanding environments. It is designed for industrial surveys, for example surveys of aluminium smelters / furnaces. The ALUSYS system employs dedicated sensors and electronics. Their high accuracy and sensitivity ensure that ALUSYS will still measure under circumstances where competing systems no longer perform reliable measurements; i.e. down to very low heat fluxes. The measurement and control unit, MCU, has a robust aluminium housing and accepts 12, or optionally 3, sensors. The system generates a measurement file, including a time-stamp, heat flux and temperature for all sensors. The measurement data are stored in the MCU and are later downloaded to a PC. The user is responsible for data analysis. A PC or the Keyboard Display may be used for real time measurement review and control of the data storage.
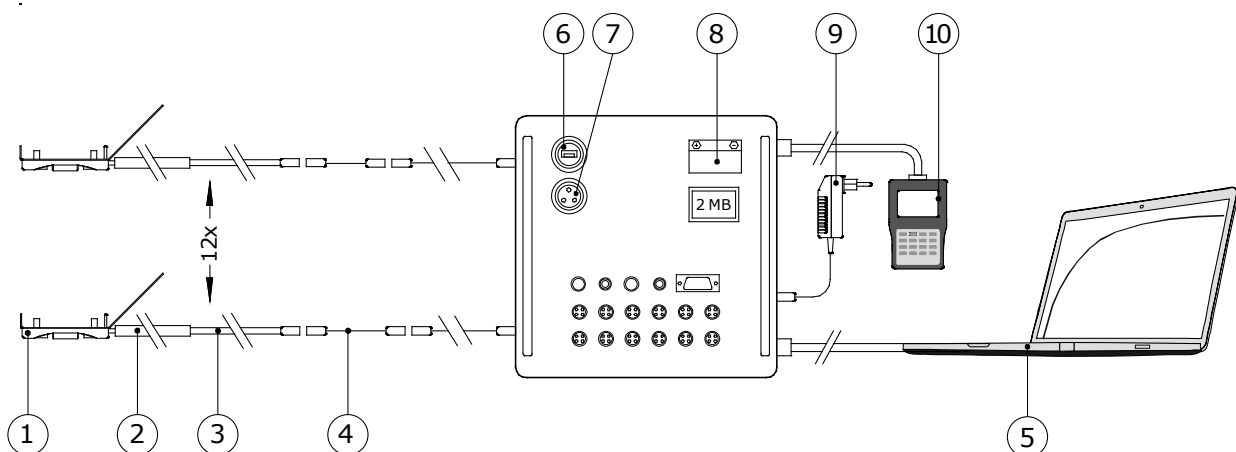

Figure 2 *the ALUSYS measuring system; (1) HF01 heat flux sensor (with magnet frame), (4) low temperature extension cables with 2 connectors, (5) PC or laptop (not part of the system). On or inside the MCU: (6) chassis connector for PC connection via USB,*
(8) rechargeable battery and system memory. Outside the MCU: (9) adapter (100 - 240 VAC) and (10) Keyboard (LCD) Display. Items 6 to 9 are part of the MCU. For more details, please see the user manual.

Powered and charged using a low voltage, ALUSYS is safe to use. The system can operate for a limited time on MCU's internal rechargeable battery. For all information on the HF01 heat flux and surface temperature sensors, see the HF01 manual. Optionally other sensor models may be used.

ALUSYS advantages

- robust
- high accuracy, also measuring at low heat flux levels
- equipped with its own clock
- safe, low voltage power supply

HF01 advantages

- robust, in particular at high temperatures
- fast response time, reduces the time needed for a survey

Suggested use

- surveys of industrial installations

Trend monitoring

ALUSYS and sensor model HF01 are most suitable for relative measurements, i.e. monitoring of trends relative to a certain reference point in time or comparing heat flux at one location to the heat flux at another location. Also when performing relative measurements, we recommend you to perform an on-site comparison to verify sensor performance. A comparison is made by mounting multiple sensors side by side, and comparing under conditions – temperature, mounting surface and local convection – representative of your test environment. One sensor must serve as a comparison reference.

Traceability

HF01 heat flux sensor calibration is traceable to SI units. The factory calibration method follows the recommended practice of ASTM C1130. The recommended calibration interval of heat flux sensors is 2 years.

Figure 3 *HF01 heat flux and surface temperature sensor with frame with magnets*

ALUSYS specifications

Measurand	heat flux (12 x)
Measurand	surface temperature (12 x)
Number of measurement Locations (see options)	12
Heat flux sensor (see options)	model HF01 with connector at cable end
Included extension cable	12 x low temperature extension cable with 2 connectors (length 15 m)
Rated operating temperature ranges:	
Sensor & high temperature cable	-30 to +550 °C
Low temperature extension cable	-30 to +240 °C
Data storage capacity	4 MB
Required data analysis	> 1 day of data to be performed by the user
IP protection class:	
Sensor & high temperature cable	IP68
Low temperature extension cable	IP67
MCU and Keyboard Display	IP63
Data display	on Keyboard Display

MCU specifications

Voltage measurement accuracy	0.5×10^{-6} V
Rated power supply voltage	16 to 40 VDC
Adapter power supply	100 – 240 VAC 50/60 Hz
Connection to PC	via USB
Rated operating temperature range MCU	-15 to +50 °C

Options

- ALUSYS with 3 x heat flux and temperature sensor
- low temperature extension cable with 2 connectors, matching cable connector and chassis connector (typical length 15 m)
- other sensor models than HF01
- sensors and MCU with extended rated operating temperature range

See also

- our complete product range of heat flux sensors
- HF05 industrial heat flux sensor for lower temperatures up to 170 °C
- needle type heat flux sensors NF01 and NF02

Interested in this product?
E-mail us at: info@huksefluxusa.com