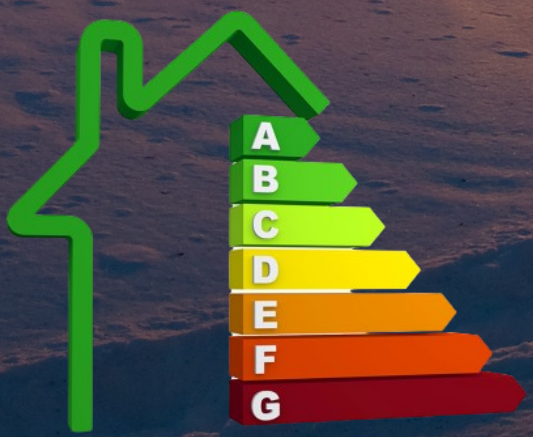
LSI LASTEM

Environmental Monitoring Solutions

# U-VALUE THERMAL TRASMITTANCE Monitoring equipment




System for Thermal Transmittance Monitoring

Thermal transmittance U-value (or global K factor) is defined (ISO7345) as the thermal flow crossing a unit area in presence of a temperature difference (1°K) between indoor and outdoor environments (in stable conditions). The thermal transmittance is the global amount of heat moving from indoor to outdoor through a surface (wall). This value expresses the wall insulation capacity and can be used to define the energetic efficiency of buildings. The value is also required by the European directive 2002/91/CE concerning the energy performance of buildings.

LSI LASTEM designes and supplies a compact and easy to use system for the measurement of the as-built thermal transmittances (U-values) in compliance with ISO 9869-1:2014 "Thermal insulation — Building elements — In-situ measurement of thermal resistance and thermal transmittance — Part 1: Heat flow meter method". Each measurement spot includes one data logger, two outside face temperature sensors, one inside face temperature sensor and one inside face heat flow sensor. Measurements are collected on the data logger memory and downloaded on PC where, using InfoFLUX program, thermal conductance can be obtained using two methods: "average method" (ISO9869:1994 standards) and "black box method".

A temperature difference of at least 10°C between the two faces of the wall is needed throughout the measurement. When this difference remains stable during the time it is possible to obtain a stable thermal flow between the wall. In good conditions the thermal transmittance result can be reached in 5-10 days of measurements. If data downloading is carry out during the meaasurements, using the InfoFLUX program it is possible to understand when the result is completed because the chart shows when conductance value is near to the horizontal asymptote, in this situation the thermal transmittance can be fixed.

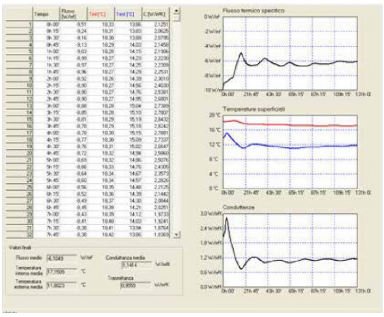

## System for Thermal Transmittance Monitoring

A compact and easy to use system including data logger, three surface temperature sensors and one heat flow sensor. Each sensor is connected by cable to M-Log data logger. Values are stored and can be used by InfoFLUX program for the postprocessing U-value calculation.

# System for Thermal Transmittance Monitoring


- Compact and easy to use system
- Kit including data logger, sensors and PC program for U-Value calculation
- Measurement and storage of three contact temperatures and one heat flow values
- PC program for U-factor calculation in compliance with ISO9869:1994
- Data logger memory permits several months of measurements
- The data logger can be connected to a wide range of indoor thermo-hygrometric sensors

A compact and easy to use system including data logger, three surface temperature sensors and one heat flow sensor. Each sensor is connected by cable to M-Log data logger. Values are stored and can be used by InfoFLUX program for the U-value postprocessing calculation in compliance with ISO9869:1994 “Thermal insulation – Building elements – in situ measurement of thermal resistance and thermal transmittance”. The data logger can be used with other sensors useful in building assessment applications as air temperature and RH%, air speed, indoor air quality, light, thermal comfort. Data logger memory permits several months of measurements.

### Surface Temperature sensors

Two outside wall face and one inside wall face temperature sensors are required by U-Value measurement method. EST124 is designed to have a good measurement surface on the wall, it can be paste using thermoconductive paste and sticking band to the wall. The cable is 10 m long and it is flat, in order to pass through the windows using a limited access area.

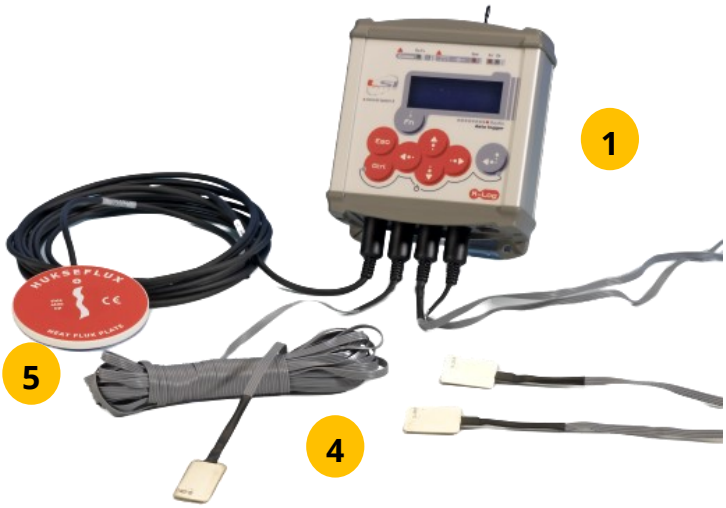
### Heat Flow sensor

The Heat Flow sensor ESR240 is fixed on the inside wall face using thermoconductive paste and sticking band. The total thermal resistance is kept small by using a ceramics-plastic composite body. This sensor is connected by cable to M-Log data logger. It has a very good sensitivity in order to detect even small heat flow values. Cable length is 5 m.

### InfoFlux software

InfoFLUX allows the calculation of the thermal conductance of the walls, from which the thermal transmittance value U is obtained. It calculates and displays the thermal flux, temperatures and conductance values at every instant (table and chart) by using every value of the data file. It creates reports (in Excel, DOC or HTML format) with user’s information, tables and charts.

## Thermal Transmittance Kit






| NOTES | |
|---|---|
| A | Used when electric grid is not available |
| B | 2 sensors on the outside and 1 sensor on the inside wall surfaces |

| Drw. Ref. | PN | Description | Kit1 | Ref. Notes |
|---|---|---|---|---|
| | | **M-Log data Logger (see catalogue MW9005-ENG-03)** | | |
| 1 | **ELO009** | M-Log/N.5 inputs/8MB/Batt/MiniDIN | 1 | |
| | | **Software (see catalogue MW9006-ENG-10)** | | |
| | **BSZ310** | SW InfoFLUX/Wall transmittance | 1 | |
| | | **Accessories (see catalogue MW9005-ENG-07)** | | |
| | **BSC015** | Power charger 230Vac->9Vdc/M-RLog/IP54 | 1 | |
| 2 | **BWA314** | Carrying case 52x43x21cm/antishock/IP65 | 1 | |
| 3 | **ELF432** | Case IP66/230V->13.8V/solar panel regulator/batt.15Ah | Altern. To BSC015 and BWA314 | A |
| | | **Surface Temperature (see catalogue MW9001-ENG-02)** | | |
| 4 | **EST124** | Sensor/Surface Temp./Pt100/Cable L=10m flat+MiniDIN | 3 | B |
| | | **Thermal Flow (see catalogue MW9001-ENG-11)** | | |
| 5 | **ESR240** | Sensor/Thermal flowmeter/µV/Cable+MiniDin | 1 | |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