

## LMS-M mobile load-measurement system

Compliant with BGV C1 and SIL 1 to SIL 3 / EN 61508 (depending upon configuration)



The Movecat LMS-M load-measurement system was developed to complement the D8, D8 Plus and C1 chain hoists. Wherever the need exists to measure and supervise the effective load on chain-hoists, suspension points or other drives and load points, the LMS-M comes into its own. Conceived as a flexible accessory, it can be hung anywhere in the load- or power-chain where it will detect – in real-time and fully dynamically – the effective tractive force and transmit the information to the control unit for evaluation and further processing.

The LMS system measures force along the longitudinal axis using a resistance strain gauge

protected from mechanical and chemical damage by an aluminium tube sealed with a highly elastic compound.

The entire system has been designed to comply with the highest safety standards, achieving a safety factor of 6 in the case of BGV D8 applications and of 12 in the case of D8 Plus/igvw SQ P2 and BGV C1 applications. These figures obviate the need for a secondary safety component in the case of D8 Plus and BGV C1 applications.

The application area has been so conceived that the nominal load is always available as a real suspension load but that the system is nonetheless capable of detecting and evaluating overload conditions of up to 150%. A new type of calibration and test system has also been developed and integrated. This ensures that each time the system is launched with a Movecat MPC-I series controller, it is checked for correctness of function, and with the LMS controllers, even that the zero point is recalibrated. In the course of calibration, the length of the control leads as well as any temperature fluctuations are taken into consideration and compensated for. Cables even as long as 100 metres pose no problems. An important additional advantage of the self-checking procedure is the fact that it does not require any unhooking of the load; the load is simply measured by the system without this having any consequences for the test process. An error in the system is immediately detected by the

controller, and leads (depending upon the controller and its settings) to either an error condition being displayed, or the drive or connected load group being shut down. In its current version, the LMS-M even complies with the strict requirements of the SIL3 standard.

In combination with the Movecat MPC-I series controllers, load values can be detected in real time and displayed on screen in either kilograms or as a percentage. Together with the controllers, over- and under-load conditions can be defined and monitored. Overloading of the connected drives, suspension points or load-bearing structures is therefore effectively prevented.

For pure load-measurement tasks, simple rechargeable-battery-driven single channel controllers (LMS LRC1) are also available in the form of manual devices as well as linkable eight-channel devices (LMS LRC8) with a computer interface and control outputs for ancillary functions.

The LMS systems are equipped with rotatable, high-strength ring eyelets (BGV C1 tested). They are available in versions for nominal loads of 250, 500 and 1,500 kg in accordance with D8 Plus and C1 or else 500, 1,500, and 3,000 kg in accordance with D8.

The LMS systems are recommended for use with Movecat controllers, in particular for professional rigging applications in the trade fair, events, theatre, studio and touring businesses.

### FEATURES:

- LMS M-250/500**  
 250 kg nominal load in accordance with D8 Plus and C1, safety factor 12  
 500 kg nominal load in accordance with D8, safety factor 6
  - LMS M-500/1000**  
 500 kg nominal load in accordance with D8 Plus and C1, safety factor 12  
 1,000 kg nominal load in accordance with D8, safety factor 6
  - LMS M-1500/3000**  
 1,500 kg nominal load in accordance with D8 Plus and C1, safety factor 12  
 3,000 kg nominal load in accordance with D8, safety factor 6
  - State-of-the-art resistance strain gauge (RSG) technology: RSG full-bridge
- measurement of tensile force based on length-change and transverse elongation. An integrated amplifier sends the measurement signal to the controller for evaluation and further processing
- axial force transmission
  - integrated calibration and test system
  - self-testing in accordance with SIL3 / EN 61508
  - ready for use with Movecat MPC I-series\* controllers
- \*Functions depending upon the controller in use

### TECHNICAL SPECIFICATIONS:

- Robust aluminium housing with two rotatable ring lugs
- Lateral cable outlet with link protection
- housing anodised aluminium, silver ring lugs; optionally available in matt black

### TECHNICAL DATA:

- Measuring range: 0-100 % of the BGV D8 declared nominal load
- Overload: max. 150 % of the BGV D8 nominal load
- Breaking load (comp.):  
 600 % of the D8 nominal load  
 1,200 % of the C1 nominal load
- Calibration tolerance: < 0.50 % of the final value\*
- Non-linearity: < 0.25 % of the final value\*
- Hysteresis: < 0.15 % of the final value
- Temperature errors:  
 ≤ 0.04 % of the final value/K  
 ≤ 0.04 % of the reference value /K
- Operating conditions: -20° to +50° C
- 1.5 m DC4 data connection cable with DC4-C4M data-cable-connector-XLR 4p
- Dimensions: 220 x 65 x 40 mm (H x W x D without connector cable)
- Weight: 1,0 kg
- Protection class: IP67

- CE, BGV D8, C1 and D8 Plus, igvw SQ P2 and SIL3 / EN 61508 conformity

\* Values dependent upon application and load transmission, achieved under favourable conditions following the user manual guidelines

### OPTIONS / ACCESSORIES:

- LMS LRC1 single-channel manual controller with computer interface
- LMS LRC8 eight-channel controller, 19" with ancillary functions, integrated Movecat D8 link system and outputs for ancillary functions such as warning lights, alarms etc. all functions programmable
- MPC 4ID8 and 4IC1 controllers with LMS input card
- Matt black finish, special colours upon enquiry
- Transport cases for four or eight devices