ELMS1
Overload protection

Certified safety
PL d acc. to DIN EN ISO 13849

ONE NAME. ALL SOLUTIONS.
Certified system solution for overload protection

Reliable overload prevention for protecting people and materials: The machinery directive clearly stipulates the requirements that must be met by the control technology for providing overload protection in a crane. tecsis offers the first certified system solution for providing overload protection in crane systems.

Technology for the highest of safety requirements

The new ELMS1 overload protection can be incorporated in existing systems for cranes that are not at risk of tipping over. tecsis takes care of the engineering and the safety examination of the overload recording. The system, which consists of sensors, a safety controller and software, has been certified in collaboration with the BGHM (trade association wood and metal). The advantages are obvious: No additional software development and separate safety examination of the measuring chain is required, you get a complete system from a single source (no compatibility problem).

ELMS1 overload system – certified safety for crane systems

The complete solution consisting of a central unit, software and force transducers is certified in accordance with DIN EN ISO 13849 and DIN EN 62061 with PL d/SIL 2. Expensive individual certifications after the initial installation of a crane system are therefore no longer needed. The intelligence of the system is in the ELMS1 central module. The signals of the force transducers are read in via the integrated analogue inputs and provide comprehensive monitoring of the load situation. During the commissioning of the crane system, the system makes it possible for the force transducers to be calibrated automatically.

Certification of the ELMS1 overload protection system in accordance with EN ISO 13849-1 with PLd / Cat.3 and DIN EN 62061 with SIL2

- Compliant with the EC machinery directive
- Overall certification of hardware and software
- Automatic calibration of total load of up to four redundantly designed force transducers
- Slack rope detection
- Recording and output of system, device and application errors via (CANopen® or Profibus module)
Tension/compression load cells F23S1
- Measuring ranges 1 kN to 500 kN
- Typical non-linearity of ±0.2% of F.S.
- Use at rope points and torque supports

Shear beams F33S1
- Measuring ranges 1 kN to 500 kN
- Typical non-linearity of ±0.2% of F.S.
- Use on rope pulleys and torque supports

Load pins F53S8
- Measuring ranges 5 kN to 200 kN
- Typical non-linearity of ±1% of F.S.
- Use on rope pulleys, ideal for retrofitting

Tension links F73S1
- Measuring ranges 5 kN to 10,000 kN
- Typical non-linearity of ±0.5% of F.S.
- Use at rope fixing points and torque supports

ELMS1 safety electronics with performance level e
- Modular, extendable, configurable safety system
- Communications and IO modules, mountable side by side
- LED matrix for indicating the status of the inputs and outputs
Intelligent software

**Shut-off in the event of overload**
- Recording of measuring signal of up to 4 redundant force transducers
- Calculation of total load and safety shut-off if limit exceeded

**Warning if switching threshold exceeded**
- Customer-specific definition of switching thresholds
- Up to 8 records per switching point
- Use for underutilisation detection or exceeding of individual loads

**Load curve linearisation**
- Automatic calibration of the total load of up to 4 redundantly designed force transducers
- Input and monitoring of parameters via an online tool

**Visualisation of relevant data**
- Display of actual values and target values
- Data logging of measurements
- Alarm list with historical and current alarms

**Field bus system connection**
- Simple connection to customer field bus system via modules that can be installed side by side
- Forwarding of measurements and limit values to a high-order controller
Reliably preventing overloads

ELMS1 overload system

Overloads can occur in many different applications. The examples show a selection of different usage positions and force introductions. Different force transducers that are constructed in specific versions depending on customer requirements can be used.

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<thead>
<tr>
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<th>Rope pulley</th>
<th>Torque support</th>
<th>Rope fixing point</th>
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<tbody>
<tr>
<td>Tension/compression load cells F23S1</td>
<td><img src="image1.png" alt="Image" /></td>
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<td>Tension links F73S1</td>
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ELMS1 in use

**Application: Indoor and gantry crane**

Simply integrate force measuring axes including overload protection electronics ELMS 1 into existing structures: tecsis measuring technology makes it possible to carry out precise measurements of cable pulls without the influence of friction and lateral force.

**Application: Ship-to-shore cranes**

In view of the large number of containers being used in ports, fast handling times are important: In the ship-to-shore cranes, robust force transducers with associated overload protection technology are therefore used.

**Application: Gantry crane**

Due to their design, gantry cranes can lift extremely heavy loads. When goods are being moved in goods storage locations, in installation buildings or with tracklaying trains, the loads are extremely heavy. Here too, robust force transducers with overload protection are used.
Put your trust in tecsis

As a globally active company, tecsis has been a byword for engineering competence and a technological edge in measurement technology for more than 90 years. With our specially customised range of products that include force, pressure and temperature measurement technologies and switches, tecsis provides exactly the right components. To aid our clients, we have a policy of constant product optimisation, a “zero-error” philosophy and top-quality partner organisations. Europe, USA, Asia, and Australia: tecsis is there for you all around the world. You can rely on our on-site servicing and flexible logistics. Our employees know your applications and speak your language.

tecsis stands for:

- **Customised solutions:** Our experienced engineers and technicians have a profound understanding of procedures and processes. Our development skills mean we will always find the optimum solution for your applications.

- **Reliable quality:** All important technologies, production and testing are located under one roof. Comprehensive quality control and stress tests are performed prior to practical implementation.

- **High cost security:** Thanks to a comprehensive selection of tried-and-tested standard products from our own manufacturing facilities. Cost-efficient prototype construction in large batch quality on highly flexible production lines.

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