New Product Bulletin



Motor Management and Control Devices, or Overloads protect Motors

.....but what's protecting your machine?

The **HPL500** is used to protect motor driven machines from the damage that can occur when a motor drives against a jam or blockage or continues to run during abnormal operating conditions. It achieves this without any sensors or remote wiring and is therefore totally non-intrusive.

The HPL500 measures;

- **Motor kW and displays actual kW or kW% of scaled range**
- **Motor Input Power or Shaft Output Power**
- **Current up to 40A direct (27.7kW @ 400v) via feed through tube (>40A use n:5 CT)**
- **Motor Voltage of 3 x 100-575Vac *and* 1 x 100-400Vac (Power supply patent pending)**

The HPL500 features;

- **Scalable Analogue o/p proportional to measured kW 0(4)-20mA**
- **Input to select active limit for 2 speed motor applications**
- **Peak detector memories to simplify setting accurate trip points**
- **2 freely configurable output relays (Min/Max, Min/Min, Max/Max)**
- **Individual Trip Delay Timers for both relays, 0 - 999 seconds**
- **Start-up surge masking timer, 0 - 999 seconds**
- **Modbus RTU communications and VSD output measurement options**

Protect **Pumps** from dry running and cavitation, protect **Screens**, **Scraper Bridges**, **Crushers**, **Screw and Belt Conveyors** and **Penstocks** from jams or overloading, Monitor **Fans** for broken belt or shut damper. Use analogue signal for **PLC/SCADA input**, closed loop control and End Point Monitoring

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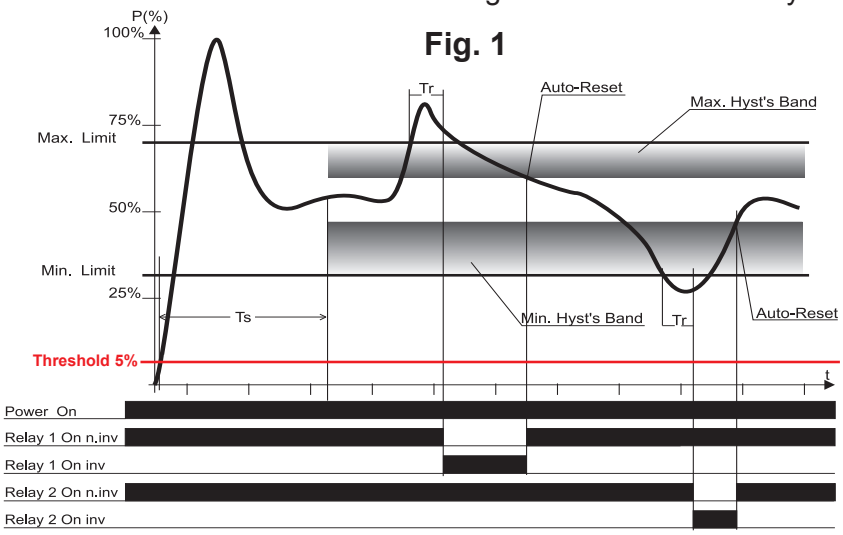
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Unipower HPL Digital Load Monitors have been used in industrial motor driven applications for over 20 years. They are extensively used in Water and Waste, Pharmaceutical, Petro-Chemical, Agro-Chemical and many other industrial applications for the protection of machines from damage caused by the motor when a machine fault or abnormal load situation occurs. It is not possible to use motor current for this purpose as current is not proportional to load and Motor Overloads, either thermal or electronic, are not designed to measure instantaneous increases or decreases in load and damage will occur before they can react.



Fig. 1



The HPL500 represents the latest generation of the Unipower range. Its enhanced features enable it to replace 5 models in the previous range. In addition its can operate on a wide motor voltage range of 100 - 400Vac single phase and 100 - 575Vac three-phase at 50 & 60Hz . The HPL500 also measures current up to 40 amps via its feed through tube, and without limit if a current transformer is used.

Programming the HPL500s' over and under load trip points is simple. Using only three push buttons, it features **Peak Detectors** which capture and store the minimum and maximum power. Reference to these detectors will guide you to set the trip levels quickly and accurately. Either limit can be turned off and the **two output relays** can be independently configured as either Over or Under Load alarms. Therefore you can select an Under and Over Load alarm, two Over Load alarms (pre alarm and Alarm) or two Under Load alarms.

Other features include;
Tr Reaction Timers, for each limit, both independently adjustable from 0-999 seconds.
Ts Start-up surge timer. Triggered by the measured power exceeding the **5% threshold** (see Fig. 1), the start-up surge timer masks the motor start inrush. As it is triggered by the 5% threshold**,** not power on, the HPL500 can be connected either before or after the motor contactor.
Adjustable from 0-999 seconds.

Alarm Reset, either by the reset button on the front plate or a reset contact on the S1 input.
Auto-reset can be programmed if required

S2 input, 2 selectable modes;
1) Alarm inhibit, Prevents an alarm at any time when the power goes outside the limits for normal operational reasons, e.g. speed ramp up/down, pump flush etc.
2) Select active limit for 2 speed motor applications

Auto shut-down inhibits an under-load alarm when the motor is switched off intentionally.

Hysteresis is used to program a differential between a trip point and its reset point. (Auto-reset only) Each limit has independent hysteresis levels.

Analogue output 0-(4)-20mA for SCADA/PLC input which can be scaled (**Zoom function**) so that the measured power range uses the entire analogue output range.

Filtering of the measured power signal by programming a time constant on noisy supplies.

Display can be set to show kW or kW%

Motor input power P1 is the default measurement principle however in some applications it can be advantageous to measure **Shaft Output Power P2**. The HPL500 features a unique motor loss **P0** calculation principle which closely follows motor losses throughout the full power range. This is then subtracted from the input power;

P2 = P1 - P0

Options: In addition to the standard features, options include a version to measure power on the output of a variable speed drive and Modbus RTU option

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