

Unipower[®] HPL410 Load Monitor

Single Limit Overload-Underload Monitor

A member of the HPL400 Series Programmable Digital Load Monitors for machinery monitoring, supervision and control.

HPL410 measures motor power, kW[%], with either over- or underload detection:

- Single **max. or min. limit** alarm
- **Po idle power** subtraction option
- **SPDT alarm relay**
- Start/nuisance trip **delay timers**
- Optional **Hysteresis** function

Plus auxiliary functions:

- Remote **reset and alarm blocking**
- **Analog 4-20mA output** of kW[%]
- **Phase** rotation and **balance** alarms
- **Program locking**

Full digital design

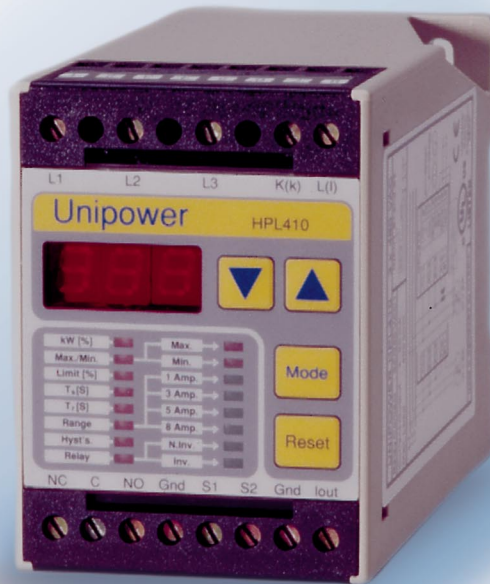
no pots, no dials, no screw-drivers!

Monitor any size motor (external CT >8A)

Compact DIN or pannel mount only 2" of rail space!

Excellent underload sensitivity works when amp-meters don't!

Peak/Min. kW capture for accurate limit setting no guessing!



The HPL410 is designed for applications where only single limit - over- or underload - supervision is required and features an optional Po idle power subtraction function.

A wide range of single limit applications exist including jam detection of conveyors, broken belt and not running conditions plus process control for mixing.

The Po function is extremely useful for accurate monitoring of small process variations in the presence of large or variable idle powers - touch-point detection is a common example.

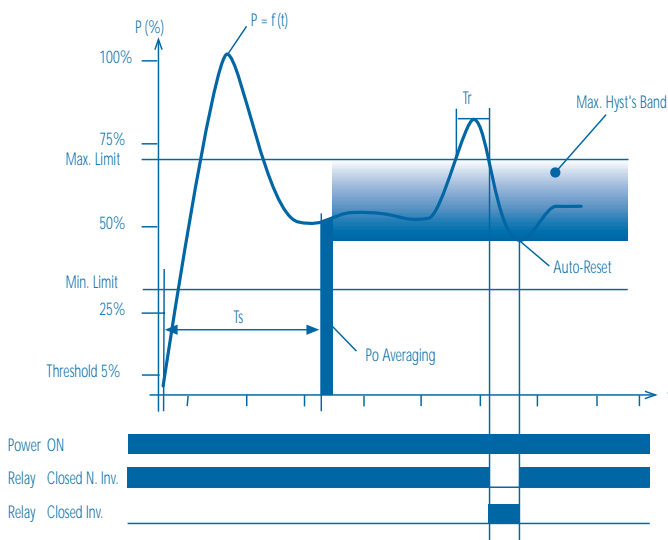
Function:

The drawing shows a typical AC-motor power curve (ex. Conveyor). The start timer (T_s) filters out from regulation the large power surge on start-up; when T_s expires, limits, hysteresis, T_r etc. become active.

In this example, the HPL410 is configured as a max. limit detector and the hysteresis function is used to generate auto-resets. When power exceeds Max. Limit, T_r1 becomes active and a max. alarm is declared at the end of T_r1 - Relay 1 is switched. Once the power returns within the hysteresis band, the unit is automatically reset.

If Po idle power subtraction is used - DIP switch selectable - then Po is calculated and applied automatically on completion of the T_s start delay.

In Min. Limit configuration, operation is similar but associated with the Min. Limit.



Technical Specifications:

Electrical

- Voltage Range** - See unit for range
Standard ranges—3 x 220, x 380, x 460, x 575V
Also avail.—1 x 24V for 110/220V single phase
- Current Range** - Internal - max. 8A. External - N/1 or N/5 converter
- Cos φ Range** - 0 → 1
- Frequency Range** - 45 → 65 Hz
- Consumption** - Supply voltage = measurement voltage, 3 VA
- Relay Output** - 250VAC/5Amp
- Analog Output** - 4-20 mA. 0-400 Ohm. electrically isolated from the measurement system.

Mechanical

- Housing** - Makrolan 8020 (30% GV), UL94V-1 (house).
Makrolon 2800, UL94V-2 (connector + front).
- Mounting** - Snap-on construction for 35mm DIN rail mounting or panel mounting.
- Protection Class** - IP40 (house), IP20 (connector)
- Terminals** - 12 AWG max., 20A
- Operating Temperature Range** - +5 → +122°F (-15 → +50°C)
- Weight** - Approximately 116 (500g.)
- Dimensions** - D 3.0" x B 2.1" x H 4.3" (D 75 x B 56 x H 110 mm)

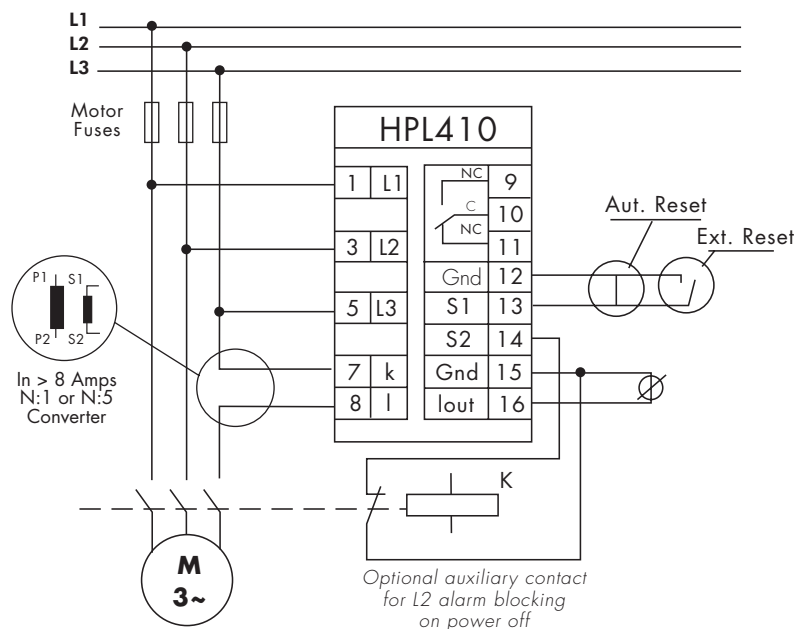
Functional Ranges:

Mode	Function	Range
KW [%]	kW% Display	measured
Max./Min.	Max./Min. Mode	Max. or Min.
Limit [%]	kW% Limit	5-100 %
Ts [S]	Start Delay	0.1-25.0 Sec.
Tr [S]	Alarm Delay	0.0-25.0 Sec.
Range	Current Range	1,3,5,8 Amp
Hyst's	Hysteresis	2-50 %
Relay	Relay Polarity	N. Inv. / Inv.

Other Unipower® Digital Load Monitors:

- HPL412** 410 with remote Po control.
- HPL420** Dual limit over/underload monitor.
- HPL430** Dual limit overload & shock load monitor.
- HPL440** Conveyor monitor with auto-reverse function.
- PCU4123A** Panel mount universal monitor.
- HPL110** Dual limit over/underload monitor.
- HPL110A** Panel mount version of HPL110.
- HPL220** Dual limit over-/underload monitor for use with external sensor e.g. strain-gage load-cells.

Typical Installation:



Catalog No. Description:

- HPL410/220** For 3-phase 208 to 240VAC mains
- HPL410/380** For 3-phase 380 to 415VAC mains
- HPL410/460** For 3-phase 460 to 480VAC mains
- HPL410/575** For 3-phase 575 to 600VAC mains.
- HPL410/S24** For single phase applications.
- HF3A,XXX/5** Optional current transformer, specify 050 for 8-50A, 075 for 50-75A, 100 for 75-100A, 150 for 100-150A, other sizes on request.
- UPR.14K50** DIN-rail mounting kit for up to 50A..
- UPE.14Mini** NEMA4X enclosure for HPL unit only.
- UPE.14CH50** NEMA4X enclosure kit, 50A max.

Unipower® Load Sensors:

- HPL100** Basic load sensor with display of kW or kW[%]
- HPL400** Load sensor for kW[%], V, I & Power Factor
- HPL405A** Advanced meter for kW, I, V, P.F. & kWh.
- HPL405A3P** Variant of 405A for unbalanced loads.
- PWM325** Load sensor for variable frequency drives.

Special Functions: Custom programming is possible—please do not hesitate to ask if a standard Unipower® does not cover your application.

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