

Unipower[®] HPL420 Load Monitor

Overload-Underload Dual Limit Monitor

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

HPL420 measures motor power, kW[%], with both over- and underload detection:

- **Max. limit** - overload alarm,
- **Min. limit** - underload alarm,
- **Dual independent alarm relays**,
- Start/nuisance trip **delay timers**, and
- 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!

Compact DIN or panel mount

only 2" of rail space!

Monitor any size motor

(external CT >8A),

Excellent underload sensitivity

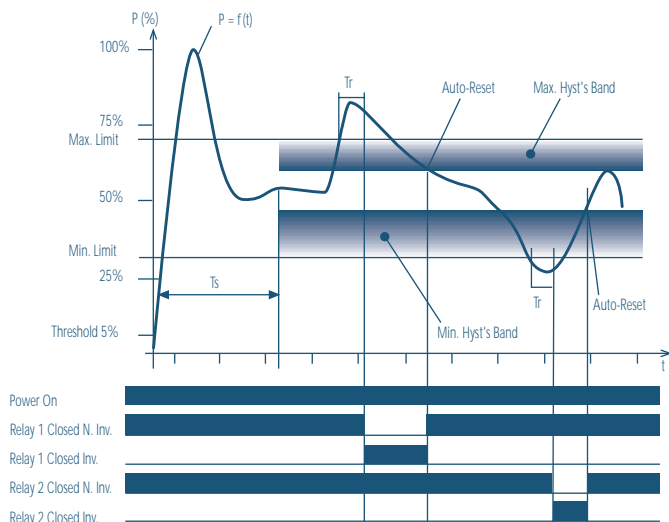
works when amp-meters don't!

Peak/Min. kW capture

for accurate limit setting, no guessing!

Program lock function

no surprises!



The HPL420 is designed for applications where both over- and underload supervision is required and a separate alarm relay is required for each limit including:

Pumps: Dry-running/cavitation protection for centrifugal pumps and, control/prevention of over-pressure and by-pass flow for positive displacement pumps

Fans and Filters: Supervision of blockage and detection of "not-running" condition.

Mixers: Overload/underload supervision/control of viscosity.

Conveyors and Belts: Jam detection and electronic shear-pin function, plus effective broken belt detection.

Function:

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

When power exceeds Max. Limit, Tr1 becomes active and a max. alarm is declared at the end of Tr1—Relay 1 is switched. In this example, hysteresis is used to generate an auto reset once the power returns within the hysteresis band.

A Min. Limit alarm is generated in a similar manner when power falls below the L2 Min. Limit setting.

Note also that the relay polarity may be programmed.

Technical Specifications:

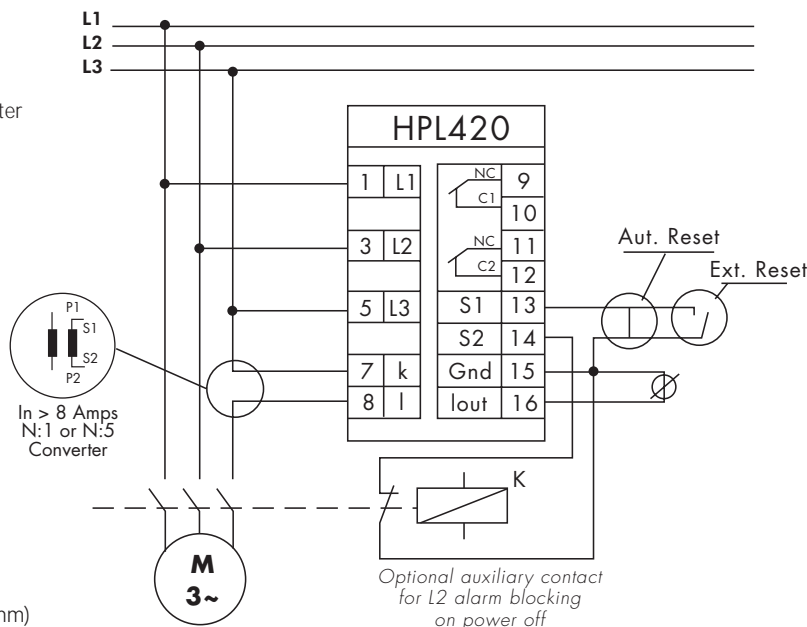
Electrical

Voltage Range	- See unit for ranges Standard ranges 3 x 220, x 380, x 460, x 575 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 - 20mA, 0-500mA, electrically isolated from measurement system

Mechanical

Housing	- Polycarbonate (30%GFR), UL94V-1 (house) Polycarbonate, UP94V-2 (connector + front)
Mounting	- Snap on 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	- ~1lb (0.5 kg)
Dimensions	- D 3.0" x B 2.1" x H 4.3" (D 75 x B 56 x H 110 mm)

Typical Installation:



Functional Ranges:

Mode	Function	Range
KW[%]	Power Display	Measured
Limit[%]	Max. Limit	5-100/OFF %
Limit[%]	Min. Limit	OFF/5-100 %
Ts[S]	Start Delay	0.1-25.0 Sec.
Tr[S]	Max. Lim. Reaction	0.0-25.0 Sec.
Tr[S]	Min. Lim. Reaction	0.0-25.0 Sec.
Hyst's	Max. Hysteresis	2-50 %
Hyst's	Min. Hysteresis	2-50 %
Range	Current Range	1,3,5,8 Amps
Relay 1	Relay 1 Polarity	N. Inv. / Invert.
Relay 2	Relay 2 Polarity	N. Inv. / Invert.

Other Unipower® Digital Load Monitors:

HPL425	Dual max. limits - pre-alarm option.
HPL426	Dual selectable max. limits - for hoists.
HPL410	Single limit, over- or underload.
HPL430	Dual limit overload and shock load monitor.
HPL440	Conveyor monitor with auto-reverse function.
PCU4123A	Panel mount universal monitor.
HPL110	Basic 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.

Catalog No. Description:

HPL420/220	For 3-phase 208 to 240VAC mains
HPL420/380	For 3-phase 380 to 415VAC mains
HPL420/460	For 3-phase 460 to 480VAC mains
HPL420/575	For 3-phase 575 to 600VAC mains.
HPL420/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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