Unipower[®]HPL110 Load Monitor

Overload-Underload Dual Limit Monitor

A member of the HPL100 Series Programmable Digital Load Monitors for machinery monitoring, supervision and control.

HPL110 measures motor power, kW[%], with both over- and underload detection:

- Max. limit overload alarm
- Min. limit underload alarm
- Single universal alarm relay
- Start/nuisance trip delay timers
- Optional Hysteresis function

Plus auxiliary functions:

- Remote reset and alarm blocking
- Power down alarm inhibit
- Program locking

Full digital design

no pots, no dials, no screw-drivers!

Compact DIN or pannel 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!





The HPL110 is designed for applications where both over- and underload supervision are used but only a single alarm relay is required 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.

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: With only a single SPDT relay, it is not possible to differentiate between max. and min. alarms; for more advanced control applications, see the HPL420 monitor.

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	-	$0 \rightarrow 1$
Frequency Range	-	45 →65 Hz
Consumption	-	Supply voltage = measurement voltage, 2 VA
Relay Output	-	250VAC/5Amp
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 Rang	- Ie	$+5 \rightarrow +122^{\circ}F (-15 \rightarrow +50^{\circ}C)$
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
Power = $KW[\%]$	kW% Display	measured
Max. Limit[%]	Max. kW Limit	5-100/OFF %
Min. Limit[%]	Min. kW Limit	OFF/5-100 %
Start Timer[S]	Start Delay	0.1-99.9 Sec.
Reaction Timer[S]	Max. Alarm Delay	0.0-99.9 Sec.
Reaction Timer[S]	Min. Alarm Delay	0.0-99.9 Sec.
Hysteresis[%]	2 point regulation	2-50 %
Current Range[%]	Current Range	1,3,5,8 Amp

Other Unipower® Digital Load Monitors:

HPL110APanel mount version of HPL110.HPL410Single limit, over- or underload.HPL420Dual limit over/underload monitor.HPL430Dual limit overload and shock load monitor.HPL440Conveyor monitor with auto-reverse function.PCU4123APanel mount universal monitor.HPL220Dual limit over-/underload monitor for use with external sensor e.g. strain-gage load-cells.

Catalog No. Description:

HPL110/220	for 3-phase 208 to 240VAC mains
HPL110/380	for 3-phase 380 to 415VAC mains
HPL110/460	for 3-phase 460 to 480VAC mains
HPL110/575	for 3-phase 575 to 600VAC mains.
HPL110/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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