

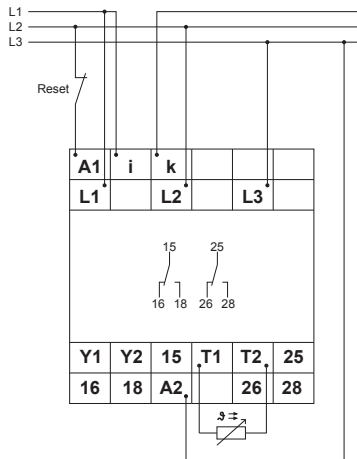
LOAD MONITOR Real Power Watt Type: LMWB

FEATURES

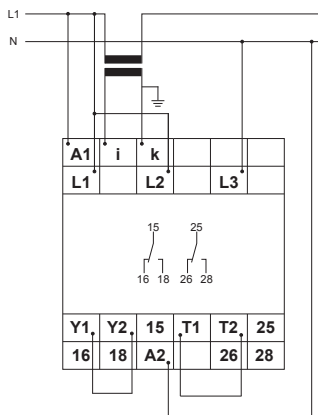
- True power monitor for motors and other loads
- Temperature monitoring of motor windings
- Single and symmetric 3-Phase loads
- 0,75kW, 1,5kW, 3kW and 6kW ranges w/o ext. CT
- Min. and max. monitoring with individual or parallel working relays or 2 max. or 2 min. thresholds with individual relays
- Adjustable start-up delay 1-100s
- Off delay 0,1-50s
- Recognition of disconnected load
- Reset Key
- Fault latch
- Supply voltages selectable via power modules

CONNECTION DIAGRAM

Three-phase connection with temperature monitoring. $I_N < 12A$



Single-phase connection with current transformer and fault latch



DESCRIPTION:

The unit monitors the true power supplied to a single phase or a symmetrical 3-phase load up to 7,2 kW without using external current transformers. For a higher resolution the LMWB has 4 ranges. The overload current can be up to 6 or 12A continuously depending on range.

The LMWB has two adjustable set points that can be used for setting either one maximum and one minimum level or two individual min. or max. levels. The status of the load and each level is signalled by separate LED's and output relays.

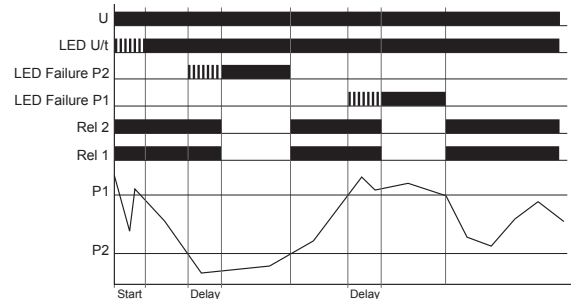
When the load exceeds the set points an adjustable time delay controls the time from the fault is recognised until the relay drops out. During the delay time the LED related to the set point will indicate the condition by flashing until the relay reacts and the LED being permanently on.

The relays can be latched in their fault position by bridging the terminals Y1 and Y2. The LED's will be on during the time where the relays are latched independently of the actual load status. Releasing the latch can be done by interrupting the power supply or pressing the reset key.

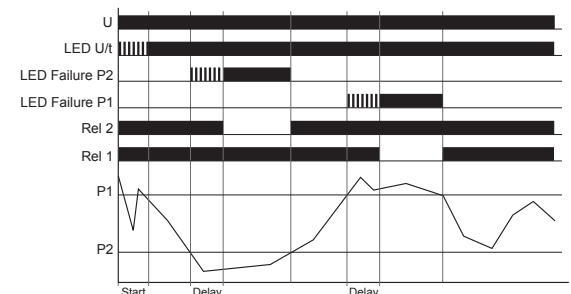
The unit is equipped with a start-up delay in order to suppress error messages during machine start. The delay period starts when supply voltage is applied.

For a complete load protection the LMWB include a temperature monitor that can be used with the standard PTC resistors used in motor windings. The temperature monitor is overriding the load function on relay 2.

FUNCTION DIAGRAM (Further examples in the manual) Window function (WIN)



Minimum and maximum monitoring



SPECIFICATIONS

| | |
|--------------------------------|---|
| INPUT | |
| Waveform | Sinus 10 to 400 Hz / 10 to 100 Hz weighted PWM |
| Measuring voltage | 1-phase 0 to 480VAC 3-phase 0 to 480/277VAC |
| Input resistance, voltage | 1,25MΩ |
| Measuring Input current | 0-12A (cont. w. >5mm airspace between units) |
| Range 0,75kW, 1,5kW | 0,15 - 6A |
| Range 3kW, 6kW | 0,3 - 12A |
| Input resistance, current | <10mΩ |
| Detection of disconnected load | I < |
| Interruption 0,75kW, 1,5kW | <150mA |
| Recognition 0,75kW, 1,5kW | >300mA |
| Interruption 3kW, 6kW | <180mA |
| Recognition 3kW, 6kW | >360mA |
| Temperature monitoring | Terminals T1-T2 |
| Release value (Relay off) | ≥3,6kΩ |
| Response value (Relay on) | ≤1,8kΩ |
| Measuring voltage | <7,5V @ R ≤ 4,0 (IEC 60947-5-1) |
| Overvoltage category | III (IEC 60664-1) |
| Rated surge voltage | 4kV |
| Fault latch | Y1-Y2 bridged. Potential equal to measuring circuit |

PERFORMANCE PARAMETERS

| | |
|---------------------------|---------------------------------|
| Switching threshold P1 | Adjustable 10% to 120% of P_N |
| Switching threshold P2 | Adjustable 5% to 110% of P_N |
| Hysteresis | 1% of max. measuring range |
| Basic accuracy | ±2% of max. scale value |
| Adjustment accuracy | ±5% of max. scale value |
| Repetition accuracy | ±2% |
| Frequency dependence | ≤0,025% / Hz |
| Temperature dependence | ≤0,02% / °C |
| TIMING | |
| Start up suppression time | 1...100 s |
| Tripping delay | 0,1s...50s |
| Reset time | 500ms |

OUTPUT

| | |
|---------------------|---|
| Relay | 2 x potential free change over contacts |
| Switching capacity | 5A/250VAC (w. >5mm airspace betw. units) |
| Fusing | 5 A, Fast |
| Mechanical life | > 20 x 10 ⁶ operations |
| Electrical life | > 2 x 10 ⁵ operations at 1000VA resistive load max. 60/min at 100VA resistive load max. 6/min at 1000VA resistive load |
| Switching capacity | IEC 60947-5-1 |
| Rated surge voltage | 4kV |

SUPPLY

| | |
|----------------------|--|
| AC supply range | 12-500VAC (specification on power module) Selectable via power module TR3 Terminals A1-A2 are galvanically separated |
| AC frequency range | 50 to 60Hz (specification on power module) |
| Reset time | >500ms |
| Power consumption | 3,5 VA (3W) |
| Duty cycle | 100% |
| Overvoltage category | III (IEC 60664-1) |
| Rated surge voltage | 4kV |

AMBIENT CONDITIONS

| | |
|----------------------|---|
| Temperature range | - 25°C to + 55°C ambient (IEC 60068-1) - 25°C to + 40°C ambient (UL 508) |
| Humidity | 15% - 85% RH (IEC 60721-3-3 class 3k3) |
| Pollution degree | 3 (IEC 60664-1) |
| Vibration resistance | 10 to 55Hz 0.35 (IEC 60069-2-6) |
| Shock resistance | 15g 11ms (IEC 60068-2-27) |

MECHANICAL

| | |
|-----------|---|
| Housing | Self-extinguishing plastic. IP40 |
| Terminals | Tightening torque max. 1Nm (PZ1) IP20. 1 x 4 or 1 x 0,5 to 2,5mm ² with end sleeve 2 x 2,5 or 2 x 0,5 to 1,5mm ² with end sleeve DIN rail TS 35 (EN 60715). Any position |
| Mounting | |
| Weight | 0.230 kg in 45 mm. housing |



EN 60715
EN 60947-8
IEC 60068-1
IEC 60068-2-27
IEC 60068-2-6
IEC 60664-1
IEC 60721-3-3 Class 3k3
IEC 60947-5-1

ORDERING INFORMATION

EXAMPLE:

TYPE
Load monitoring relay

SUPPLY
AC with transformer

SUPPLY VOLTAGE
From 99 to 140 VAC
From 198 to 264 VAC
From 341 to 440 VAC

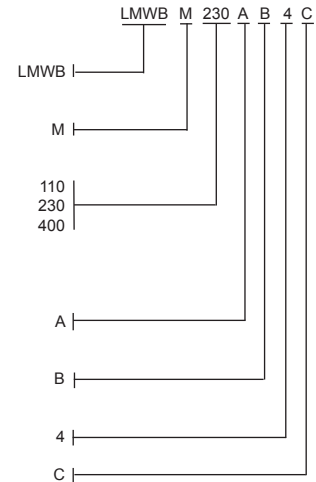
Other Voltages on request

ADJUSTMENT
Switch and trimpot adjustable

HOUSING
Rail mounting.(internal transformer)

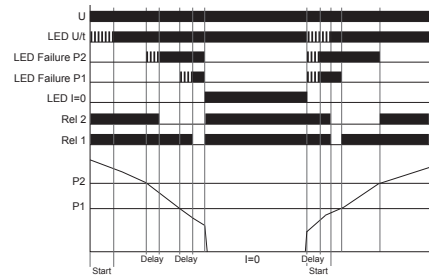
SIZE
45 mm. 2 C/O

CODE END

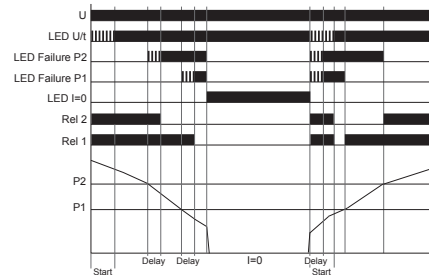


Further examples

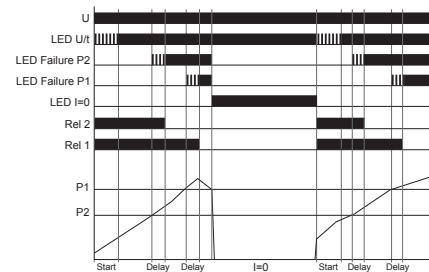
I=0 ON with minimum monitoring (2MIN + I=0 ON)



I=0 Inv. with minimum monitoring (2MIN + I Inv.)



I=0 ON with maximum monitoring (2MAX + I=0 ON)



I=0 with maximum monitoring (2MAX + I=0 Inv.)

