

Generally

Unipower HPL500H is a MODbus Remote Terminal Unit made especially for „remote“ control and/or display of Unipower HPL500-MB.

- * Self powered via battery (9V E, 6LF22)
- * MODbus RTU interface (9.6 or 19.2 kbaud)
- * Displays measured values from HPL500-MB
- * Programs and displays parameters in HPL500-MB
- * Auto shut down after 30 sec. without communication
- * Approx. 50 hrs battery lifetime (Alkaline)



Features

Battery powered

The HPL500H is powered by an internal 9V battery. This eliminates the trouble of acquiring and installing an external power supply in the panel. An indicator LED is present to signal when a battery change is due (See paragraph on page 2 about LED indications). To prolongue the battery lifetime an auto shut down functionality is built-in, which turns the unit off after 30 seconds without communication on the MODbus (No reply from HPL500-MB).

On

HPL500H is turned on by pressing the „Mode“-key. This will keep the unit running as long as values are returned from the HPL500-MB with the address entered (See paragraph about address below). Therefore to avoid draining the battery unnecessarily, disconnect the HPL500H when service is no longer needed.

Address

To be able to communicate with an HPL500-MB on a MODbus, the correct address needs to be entered; Select address (See paragraph about programming on page 2) and enter the requested

value. HPL500H may communicate with up to 247 different HPL500-MB - only one at a time though. Shifting between different HPL500-MBs is done without turning any unit off. Simply select a new address and communication with the new unit starts immediately.

Baud rate

Communication may be performed at one of two baud rates: 9,600 or 19,200 baud. This must be selected in agreement with the baud rate on the MODbus connecting the HPL500-MB(s).

Display

The three digit display shows the measured values or the parameters in the HPL500-MB communicated with. If no communication is established or communication is lost, only „- - -“ is shown. As soon as the communication reappears values start being displayed automatically; The HPL500H automatically determines if communication becomes valid again.

Technical Specifications

Mechanical

Housing:	ABS
Mounting:	Hand held
IP class:	Housing IP40
Temp.:	-15 to +50 °C
Weight:	130 g with battery 100 g without battery
Dimens.:	D 26 x W 60 x H 120 mm

Electrical

Supply:	9V battery (Type: E, 6LF22)
Consumption:	12 - 15 mA.
Battery lifetime:	Approx. 50 hrs (Alkaline)
Interface:	MODbus RTU slave
Baud rate:	9.6 or 19.2 kbaud
CE mrk:	EN61326-1

Programming and display

Mode	Function	Parameter			Display	Default
kW[%]/kW	Measurement in %		Min. Peak	Max. Peak	kW[%]	
kW[%]/kW	Measurement in kW		P2	P1Max	kW	
Address	Remote unit	1-247	Decrease	Increase	Address	1
Ts	Start timer	0.0-999 sec.	Decrease	Increase	Ts[Sec]	*
Tr	Response timers	0.0-999 sec.	Decrease	Increase	Tr[Sec]	*
Parameter	Parameter access	P00-P15	Decrease	Increase	Parameter no.	*
Limit 1	Setpoint limit 1	6-99 %	Decrease	Increase	Setpoint [%]	*
Limit 2	Setpoint limit 2	6-99 %	Decrease	Increase	Setpoint [%]	*
Range I	Current range	0.5-600/5A	÷	÷	Current [A]	*
Range U	Voltage range	100-575 Vac	÷	÷	Voltage [V]	*
Relay 1	Relay polarity 1	n.inv / inv	÷	÷	n.in / in	*
Relay 2	Relay polarity 2	n.inv / inv	÷	÷	n.in / in	*

* No default - since value is read from remote unit

÷ Value cannot be changed with HPL500H

Table 1 Directly accessible parameters

The HPL500H is programmed by the use of only three keys located on the front panel. The „Mode“-key is used to select a parameter. Note that all parameters but two (Address and Baud rate) are remote settings of an HPL500-MB and as such not part of the HPL500H settings. When a parameter is selected, the value may be changed using the two arrow keys. To store the new value / send it to the remote HPL500-MB, press the „Mode“-key, and press the „Reset“-key to discard changes and return to showing kW%.

If a parameter is sent to HPL500-MB a receipt is automatically returned. If this value does not correspond to the value send, „E r r“ is displayed. In this case the value needs to be reentered and resend. If the problem occurs again, measures need to be taken to determine the reason for the bad communication.

LED indications

LED	Blinking	Lit
Limit 1	Limit 1 alarm	Setpoint 1 exceeded Tr 1 active (Tr LED lit)
Limit 2	Limit 2 alarm	Setpoint 2 exceeded, Tr 2 active (Tr LED lit)
Low Batt.	Change battery now!	Change battery when possible
Comm.	Comm. active	-
Shaft pwr	-	Displayed power is shaft power
Relay 1	-	Relay 1 on
Relay 2	-	Relay 2 on

Table 3 LED indications

The HPL500H has a number of LEDs, which are used to indicate to the user the condition of the remote HPL500-MB, i.e. above trip points or alarms. Also a low battery function exists, which indicates if a battery change should be performed when convenient or is eminent. Table 3 above shows the meaning of the LED's in both a lit state and a blinking state.

Nr.	Parameter	Range
P01	Type limit 1	*
P02	Type limit 2	*
P03	Auto Shut Down	*
P04	Hysteresis limit 1	*
P05	Hysteresis limit 2	*
P06	Maximum shaft power	*
P07	Motor efficiency	*
P08	-	-
P09	-	-
P10	-	-
P11	-	-
P12	-	-
P13	Damping filter	*
P14	S2 Select	*
P15	Baud rate	9.6, 19.2 kbaud

- Parameter not present

* Parameter is only displayed (no change possible)

Table 2 Parameters accessible through the parameter field

All directly accessible parameters as well as their adjustable range are listed in table 1 above. Note that the function of the keys is repeated if held down continuously. Access to the parameter list is found under the field „Parameter“. The display shows P00, which using the arrow-up key must be changed to the desired number (see table 2 above). Upon pressing the „Mode“ key the value of the selected parameter is shown. Apart from the baud rate (P15) the value of the parameter can only be displayed - not changed. The baud rate may be changed using the arrow keys. To store the new value press the „Mode“ key and the unit returns to the parameter list. Pressing the „Reset“ key instead of the „Mode“ key discards the new value and keeps the old value and the unit returns to showing kW%.

Connection

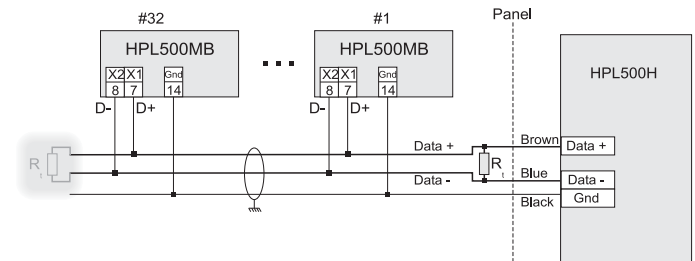


Figure 1 MODbus network

Figure 1 shows how wiring between a number of HPL500-MB and the HPL500H should be done. The colours indicated on the wires leaving the HPL500H correspond to the colours in the 3-wire cable connected to the HPL500H. Note that the supplied cable does not contain a shield, since the length is only approximately 30cm. The shield shown in figure 1 refers to the cable connecting the HPL500-MBs to the plug in the panel.

The value of the terminating resistor(s) depends on the number of HPL500-MBs in the network. Table 4 below shows recommended values when using only one terminating resistor. The shaded terminating resistor to the left in figure 1 doesn't need to be present when dealing with short cable lengths (a few meters). If both resistors are used, the values in the table must be doubled.

# HPL500-MB	Terminating resistor (R ₁) Using only one
1-2	3.3 kΩ
3-5	1.2 kΩ
6-9	560 Ω
10-14	330 Ω
15-32	220 Ω

Table 4 Terminating resistors

For a more detailed description of wiring and considerations please refer to the application note AN485.