LG PI-485 protocol

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Supported device types and versions

The protocol supports reading and writing data with LG's proprietary serial (2-wire RS-485 bus) PI-485 protocol. This protocol is used by LG air conditioners and heat pumps for communication.

The protocol has been deployed to communicate with the LG Therma V heat pump (HU071MR U44).

Communication line configuration

Required line parameters:

- Communication line category: Serial, SerialOverUDP Device Redundant.
- Transfer parameters: baud rate 4800, 8 data bits, 1 stop bit, parity NONE.
- Other parameters see the Communication line - configuration dialog box.

Communication station configuration

- Communication protocol: **G PI-485**
- Station address – a number in the range from 0 to 63 (according to the configuration setting of the LG device) specified either as a decimal number or a hexadecimal number with a hash at the beginning (e.g. #1A).

Station protocol parameters

Configuration dialog box - tab „Parameters".
They influence some optional parameters of the protocol.

Table 2

Full name	Meaning	Unit	Default value
Retry Count	A retry count of the request in case of a communication failure.	-	1
Retry Timeout	The delay between request retry in case of a communication failure.	ms	0 milliseconds
Wait First Timeout	The delay after sending the request before reading the response.	ms	100 milliseconds
Wait Timeout	The delay between response readings till its completing.	ms	100 milliseconds
Max Wait Retry	Retry count of response reading till its completing.	-	4
Passive Mode	Activating the passive mode. In this mode, no requests are sent, only messages read from the bus are processed. The passive mode is used for reading data if there is another master on the bus (e.g. communication converter to Modbus protocol - LG PI485 Gateway).	YES /NO	NO

For further information on protocol parameters, see the topic Communication line - configuration dialog box.

I/O tag configuration

Possible I/O tag types: **Ai, Ao, Ci, Co, Di, Dout, Qi**

The address of the I/O tag is textual. The following table shows a list of existing addresses:

Address	I/O tag type	Description

LOCK_REMOTE	Dout	Set the remote controller functionality: Lock (1) / Unlock (0).
LOCK_REMOTE_RD	Di	Get the remote controller functionality: Lock (1) / Unlock (0).
OPERATE_OUTPUT	Dout	Set the device functionality: the device is stopped (0) / working (1).
OPERATE_OUTPUT_RD	Di	Get the device functionality: the device is stopped (0) / working (1).
OPERATE_DHW	Dout	Set the domestic hot water heating in the built-in boiler: disabled (0) / enabled (1).
OPERATE_DHW_RD	Di	Get the domestic hot water heating in the built-in boiler: disabled (0) / enabled (1).
OPERATE_MODE	Ao	Set the mode of operation: 0=cooling, 1=dehumidification, 2=ventilation, 3=auto, 4=heating. Note: for a heat pump, modes 0, 3, 4 are relevant.
OPERATE_MODE_RD	Ai	Get the mode of operation: 0=cooling, 1=dehumidification, 2=ventilation, 3=auto, 4=heating. Note: for a heat pump, modes 0, 3, 4 are relevant.
TEMP_OUTPUT_SP	Ao	Set the desired outlet water temperature.
TEMP_OUTPUT_RD	Ai	Get the desired outlet water temperature.
TEMP_DHW_SP	Ao	Set the desired temperature of the domestic water in the built-in boiler.
TEMP_DHW_RD	Ai	Get the desired temperature of the domestic water in the built-in boiler.
TEMP_WATER_IN	Ai	Current inlet water temperature.
TEMP_WATER_OUT	Ai	Current outlet water temperature.
TEMP_ROOM	Ai	Current room temperature (external sensor connectable to the indoor heat pump unit).
TEMP_TANK	Ai	The current temperature of the domestic water in the built-in boiler.
TEMP_SOLAR	Ai	The current temperature of an optional external solar system (if connected).
CONNECTED_IDU	Di	The indoor unit is connected (1) or disconnected (0).
TGT_TEMP_SEL	Di	The current setpoint is the temperature of air TEMP_ROOM (0) or water TEMP_OUTPUT_SP (1).

Note: Temperatures are integer numbers (°C).

Note: it takes longer to set the values (approx. 12 seconds).
Example: TEMP_OUTPUT_SP has a value of 40 °C. After writing a value of 42, only after approx. 12 seconds does the value of the I/O tag TEMP_OUTPUT_RD change to 42.

Literature

Changes and modifications

- February 2008 – Option Checksum.
- August 2009 - Support of the value DOUT.

Document revisions

- Ver. 1.0 – September 2021 – Protocol implementation

ⓘ **Related pages:**

[Communication protocols](#)