Digalox® DPM72 XBEE interface
## Instruction manual (Rev-2022-08)

1. Description

The Digalox® DPM72 devices with XBEE interface can communicate with other DPM72 devices via XBEE radio technology (2.4 GHz mesh network). In this way, measured values from remote devices can be integrated into a display as remote values. Using the radio interface the devices can also be configured individually. The mesh network offers a robust connection that ensures continued operation even if a single radio node fails. Each additional node acts as a router, increasing the range of the network.

2. Specification

- 2.4 GHz (IEEE 802.15.4) mesh network

- Radio module: XB3-24Z8UM-J
  (Digi XBee 3 Zigbee 3.0, 2.4GHz, Micro, U.FL Ant, MMT)

- Antenna connector: SMA

- Range between two radio nodes: up to 60 m indoors, up to 1200 m outdoors with a clear line of sight

3. Connections
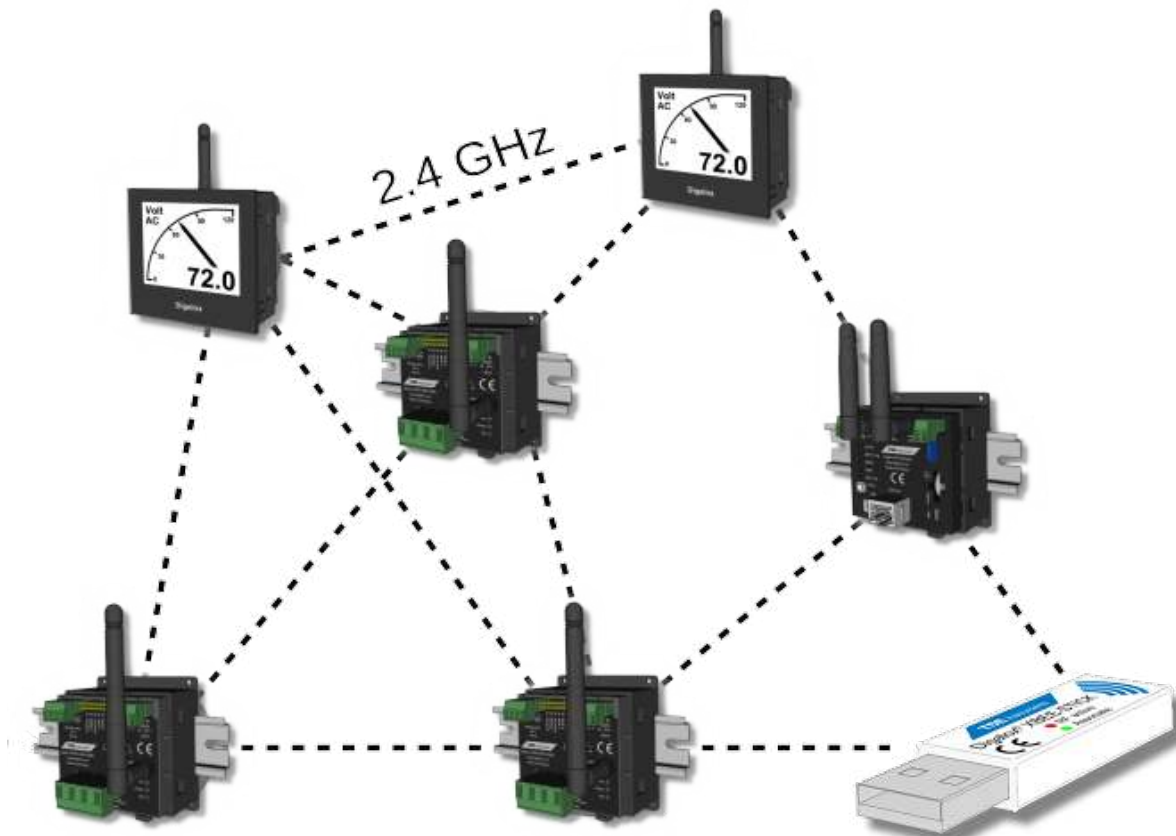
4. Configuration

To configure a device, plug the XBEE stick into the computer. The driver of the stick is installed automatically if the computer is connected to the Internet.

If the XBEE connection settings of the device should be reset, short-circuit connector J8 and open it again. This switches the device to configuration mode. The display (if present) shows "XBEE: Config", the measurement function is deactivated.

The device can be configured using the "Digalox® Manager" software. In particular, the XBEE connection settings "Network ID" and "Link key" should be changed on the General tab so that they differ from the default settings. Afterwards, the measuring function is active. "Network ID" and "Link key" must be the same for all devices of a network.

The XBEE role "Coordinator" must be assigned to one device. The coordinator starts and manages the network. There can only be one coordinator and it must be active at all times. The other devices should receive the XBEE role "Router". They can connect to a started network and integrate other devices.

Using the XBEE remote values tab, 4 remote values can be read from other devices. In order to display these remote values, they must be selected as value types of display values on the display values tab.

For devices with a display, all values that are to be transmitted must also be visible on the display. Devices without a display provide the first four display values. By setting jumpers J4-J6, other display values are provided accordingly.

5. Source value addresses

Address	Data type	Description
0x0000	int8	Chosen display value index
0x0001	int8	(0) DC or (1) AC measurement active
0x8000-0x8003	int64	Display value 1-4 as int64
0xC000-0xC003	float32	Display value 1-4 as float32

6. Status LEDs
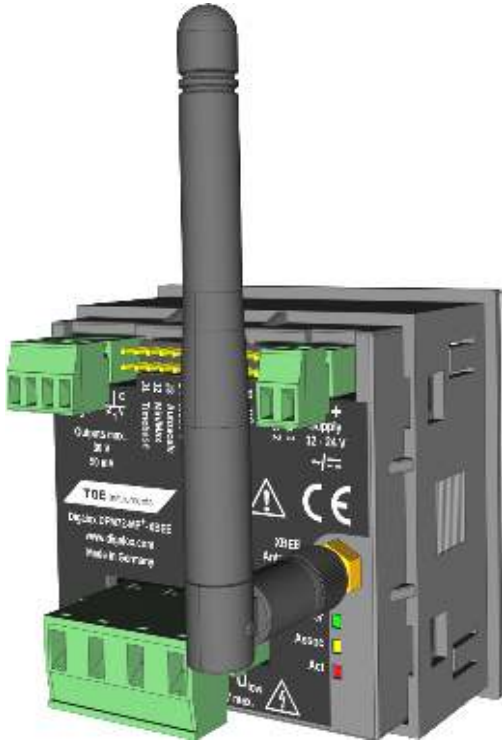
There are three LEDs on the back of the device that indicate the device status.

Description	Status
Power (green) shines	Device on
Assoc (orange) shines	Device not connected
Assoc (orange) flashes	Device connected
Act (rot) shines	Device sends data

7. Communication status display

The state of the communication is shown on the display.

Display	Description	Status
⬫	Symbol flashes	Network is being configured
⬫	Symbol shines	Network connected
⬫	Crossed out symbol shines	Network disconnected
C	C (Coordinator) shines	XBEE Role: Coordinator
R	R (Router) shines	XBEE Role: Router
M	M (Master) flashes	Device communicates in master mode, requesting values from others
S	S (Slave) flashes	Device communicates in slave mode, others request values from the device

8. Messages on the display

Display	Meaning	Solution
XB timeout S...x	Slave ...x does not respond	Check slave configuration
XB tx err S...x	Data transfer problem when sending to slave ...x	Check configuration

XB tx err <ref> <status>	Data transfer problem
	reference <ref>:
	    255 = None
	    254 = Telemetry
	    253 = Command
	    252 = Slave transfer
	status <status>:
	    0x00 = Success
	    0x01 = No ACK received
	    0x22 = Not connected to network
	    0x35 = Encryption error
	    0x7A = Invalid host address
	    ...
		If necessary, read the transmit status number in the XBEE3 documentation

XB response <slavecom_stat> S...x	Slave ...x responds with error message
	<slavecom_stat>:
	    0 = OK
	    1 = Uninitialized
	    2 = Invalid command
	    3 = Invalid status
	    4 = Invalid CRC
	    5 = Invalid slave
	    6 = Invalid interface
	    7 = Communication failed
	    8 = Buffer overflow
	    9 = Invalid address
	    10 = Device failure
	    11 = Device busy
	    12 = Gateway path unavailable
	    13 = Gateway target device failed to respond
		Check configuration

9. Contact details

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