



ZBS-110

Interface Control Document

History:

DVers.:	Date	Author	Change	State
1.00	02.04.2008	PI-MH	./.	born
1.10	01.12.2009	PI-MH	Complete update	
1.20	08.12.2009	PI-MH	Added optional Motion Detection commands	
1.30	10.06.2011	PI-MH	FW Version 0107 TXT command added. Command to read ZBS settings added. Optional RGB-LED command added. Optional temperature sensor commands added. Commands for net quality added.	Release

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Direction from Coordinator	Syntax	Parameter	Description	Example
I	GET	./.	(no single parameter possible) Get bulk information package. If the relay or the meter function deactivated, only relay status work and the optional temperature will be send.	see below
		POW	Relay Status	POW=ON
		FREQ	Actual frequency [Hz]	FREQ=50.0000Hz
		VRMS	Voltage rms-value [v]	VRMS=230V
		IRMS	Current rms-value [mA]	IRMS=10mA
		LOAD	Actual load [W]	LOAD=620W
		WORK	Integrated work / energy since last meter reset [kWh]	WORK=12.600kWh
		TEM1	Temperature in [°C] with decimal point (-10.0..60.0) or (-50.0..150.0) (optional)	TEM1=18.7°C
		TEM2	Temperature in [°C] with decimal point (-10.0..60.0) or (-50.0..150.0) (optional)	TEM2=21.0°C
I	DEV	./.	(no single parameter possible) Get bulk device information package from ZBS module	see below

		PID	Product Identification	PID=ZBS-110
		HW	Hardware Version	HW=0100
		SW	Software Version	SW=0100
		SN	Serial Number, also used as node identifier in XBee module, max. 12 bytes	SN=00012345
		ID	ID for customer's purpose, max. 12 bytes	ID=0815BZ4711
		UB	Inform about the user settable Byte	UB=8
		ST	Inform about the reason of the device information package 1 = dev command 2 = function button 4 = device reset 8 = connect to a PAN 16 = heartbeat Several reasons at the same time will added to one value (e.g. reset and PAN connect → ST=12)	ST=16
		EV	Count the send events up to 65535	EV=12
I	NETQUAL	./ (no single parameter possible)	Get bulk netquality information package. <u>Only available with /NQ option.</u>	see below

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		VMIN	Counter for the quantity and duration of the VMIN threshold drop. (drop for less than 20ms, drop for less than 50ms, drop for less than 100ms, drop for less than 200ms, drop for less than 500ms, drop for more than 500ms, highest duration of an drop in [*5ms])	VMIN=6, 5, 4, 3, 2, 1, 456
		VPEAK	Counter for the quantity of voltage peaks. (quantity of detected voltage peaks, highest voltage peak value in [V])	VPEAK=1, 456V
		IPEAK	Counter for the quantity of current peaks. (quantity of detected current peaks, highest current peak value in [mA])	IPEAK=3, 1234mA
O	SET	VMIN	Threshold for voltage drop detection in [V _{RMS}] (0..335), default: 200	SET VMIN=123
O	SET	VPEAK	Threshold for voltage peak detection in [V] (0..490), default: 490	SET VPEAK=456
O	SET	IPEAK	Threshold for current peak detection in [mA] (0..25000), default: 25000	SET IPEAK=13210

O	SET	POW	Sets or resets the 230V relay [ON/OFF]	SET POW=OFF
O	SET	LD0	An action of the green LED triggers [cycles, duration on * 100ms, duration off * 100ms]	SET LD0=10, 4, 1
O	SET	LD1	An action of the red LED triggers [cycles, duration on * 100ms, duration off * 100ms]	SET LD1=15, 1, 4
O	SET	RGB	Sets the color of the RGB-LED. [Red(On/Off), Green(On/Off), Blue(On/Off)]	SET RGB=on, off, on
O	SET	TXT	TX Time in [s] (1..65000), default: 60	SET TXT=1800
O	SET	HBEAT	Heartbeat Interval in [s] (1..65000), 0 means no heartbeat, default 0	SET HBEAT=3600
O	METER	RESET	Resets the energy meter	METER RESET
O	METER	START	Starts the energy meter	METER START
O	METER	STOP	Stops the energy meter	METER STOP

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O	METER	WORK	<p>Sets the work threshold and defines activity [Wh, MSG/OFF]</p> <p>“MSG” sends message after work threshold has been reached; energy meter keeps on running</p> <p>“OFF” switches off the 230V relay after work threshold has been reached and deactivates the energy meter</p>	METER WORK=2500, OFF
O	METER	LOAD	<p>Sets the load threshold and defines activity [W, MSG/OFF]</p> <p>“MSG” sends message when power exceeds the defined threshold; energy keeps on running</p> <p>“OFF” switches off the 230V relay when power exceeds the defined threshold and deactivates the energy meter</p>	METER LOAD=500, MSG
I	./.	WORK	Outgoing message in case of exceeded work threshold	WORK
I	./.	LOAD	Outgoing message in case of exceeded load threshold	LOAD

O	SET	MOVE	<p>Quiescence Time in [s] (0..6500)</p> <p>Activates Motion Detection when Time is ≥ 1, device will not send any motion detection Messages for this period after the 1st alarm message</p> <p>Default is 0 (deactivated)</p>	SET MOVE=3600
I	./.	MOVE	<p>Outgoing message in case of Motion Detection Alert</p>	MOVE
O	SET	TEM	<p>Sets the thresholds for the temperature sensor.</p> <p>[temperature sensor(1..2), kind of threshold(Low/High), threshold value with decimal point (-50.0..150.0)]</p>	SET TEM=1, LOW, 12.0
O	SET	TEMCTRL	<p>Sets the behavior of the relay as a function of the temperature, if the XBee disconnected</p> <p>[temperature sensor(1..2), the threshold whose violation should switch the relay on (Off/Low/High)]</p>	SET TEMCTRL=1, HIGH
O	RESET	./.	<p>Resets and associates device to the network</p>	RESET
O	DEFAULTS	./.	<p>Loads factory defaults</p>	DEFAULTS

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O	!#*	ID	Sets ID (operator / user only)	!*#ID=1234567890
O	!#*	B1	Prepares for firmware update	!*#B1
O	!#*	B2	Erases flash and updates firmware	!*#B2
O	!#*	UB	Set the user byte	!*#UB=8
O	!#*	WRITE	Writes XBee register directly	!*#WRITE=SPG (writes '0x67' to 'sp' register)
O	!#*	READ	Reads XBee register directly	!*#READ=NP
I	./.	Register name and value	Separate message for READ result	NP='0x00''0x54'
O	!#*	REG1	Reads the ZBS settings	!*#REG1
I	./.		Separate message for REG1 result [[TEMCTRL1 and TEMCTRL2 are bitfield values (0=Off / 3=Switch on under low threshold and off over high threshold / 5=Switch on over high threshold and off under low threshold)]]	TXT=60 HBEAT=0 MOVE=10 TEMCTRL1=5 TEM1LOW=100°C TEM1HIGH=8°C TEMCTRL2=0 TEM2LOW=-10.0°C TEM2HIGH=60.0°C VMIN=200V VPEAK=456V IPEAK=12345mA

Communication Facts & Features

- Communication Mode Xbee-Module: API
- All incoming messages must be terminated with linefeed character (0x0a)
- All outgoing messages are terminated with double linefeed character
- Maximum incoming message length: 24 bytes including linefeed
- Device acknowledges positive and negative:
 - SET POW=OFF ...will lead to... ack: set pow=off
 - METER STARTT ...will lead to... nack: meter startt

Firmware Update will affect

- Firmware
- SW-Version
- PID (product identification)

Firmware Update will NOT affect

- HW-Version
- ID
- SN