



ZBS-140

Interface Control Document

History:

DVers.:	Date	Author	Change	State
1.00	17.08.2010	PI-MH	Born	
1.10	30.08.2010	PI-MH	Orders DARL CONFIRMED, TRIG CONFIRMED and ESD CONFIRMED added.	Release

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Direction from Coordinator	Syntax	Parameter	Description	Example
I	GET	./.	(no single parameter possible) Get information package from ZBS module	see below
		SWITCH1	Switch 1 Input Status	SWITCH1=DOWN
		SWITCH2	Switch 2 Input Status	SWITCH2=UP
		GPIO1	GPIO 1 Status	GPIO1=1
		GPIO2	GPIO 2 Status	GPIO2=0
		GPIO3	GPIO 3 Status	GPIO3=0
		GPIO4	GPIO 4 Status	GPIO4=1
		DARL_IN	Darlington Input Status	DARL_IN=1
		TRIG_IN	Trigger Input Status	TRIG_IN=0
		ESD_IN	ESD Input Status	ESD_IN=1
		BAT	Battery Status (only if battery is present e.g. ZBS-1xx) "LOW" if battery is low "OK" if battery is ok	BAT=OK
UBAT	Battery Voltage in [V] with decimal point	UBAT=3.88V		

I	DEV	./ (no single parameter possible)	Get bulk device information package from ZBS module	see below
		PID	Product Identification	PID=ZBS-140
		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	User Byte value	UB=0
		ST	<p>Inform about the reason of the device information package</p> <p>1 = dev command 2 = function button 4 = device reset 8 = connect to a PAN 16 = heartbeat</p> <p>Several reasons at the same time will added to one value (e.g. reset and PAN connect → ST=12)</p>	ST=16
		EV	Count the send events up to 65535	EV=12
BAT	Power supply status of the device	BAT=OK		

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		UBAT	Power supply voltage of the device	UBAT=3.76V
O	SW1 CONFIRMED		Confirmed the receiving of the "SWITCH1 UP" message and stop them.	SW1 CONFIRMED
O	SW2 CONFIRMED		Confirmed the receiving of the "SWITCH2 UP" message and stop them.	SW2 CONFIRMED
O	GPIO1 CONFIRMED		Confirmed the receiving of the gpio 1 unhand message and stop them.	GPIO1 CONFIRMED
O	GPIO2 CONFIRMED		Confirmed the receiving of the gpio 2 unhand message and stop them.	GPIO2 CONFIRMED
O	GPIO3 CONFIRMED		Confirmed the receiving of the gpio 3 unhand message and stop them.	GPIO3 CONFIRMED
O	GPIO4 CONFIRMED		Confirmed the receiving of the gpio 4 unhand message and stop them.	GPIO4 CONFIRMED
O	DARL CONFIRMED		Confirmed the receiving of the Darlington unhand message and stop them.	DARL CONFIRMED
O	TRIG CONFIRMED		Confirmed the receiving of the Trigger unhand message and stop them.	TRIG CONFIRMED
O	ESD CONFIRMED		Confirmed the receiving of the ESD unhand message and stop them.	ESD CONFIRMED

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O	SET	HBEAT	Heartbeat Interval in [s] (1..65000), 0 means no heartbeat, default 0	SET HBEAT=3600
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 green LED triggers [cycles, duration on * 100ms, duration off * 100ms]	SET LD1=15, 1, 4
O	SET	BIO1	An action of the gpio1 output triggers [cycles, duration on * 100ms, duration off * 100ms]	SET BIO1=3, 2, 1
O	SET	BIO2	An action of the gpio2 output triggers [cycles, duration on * 100ms, duration off * 100ms]	SET BIO2=3, 2, 1
O	SET	BIO3	An action of the gpio3 output triggers [cycles, duration on * 100ms, duration off * 100ms]	SET BIO3=3, 2, 1
O	SET	BIO4	An action of the gpio4 output triggers [cycles, duration on * 100ms, duration off * 100ms]	SET BIO4=3, 2, 1
O	SET	GPIO	Set the 16 Bit hexadecimal value for the gpio settings register, default 0x0000. (see the table below)	SET GPIO=0x0000
O	SET	B1	An action of the Buzzer triggers [cycles, duration on * 100ms, duration off * 100ms, frequency in Hz]	SET B1=5, 4, 6, 2000

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O	RESET	./.	Resets and associates device to the network	RESET
O	DEFAULTS	./.	Loads factory defaults	DEFAULTS
I	./.	SWITCH1	Outgoing message in case of extern switch 1 pressed	SWITCH1 DOWN
I	./.	SWITCH1	Outgoing message in case of extern switch 1 unhand	SWITCH1 UP
I	./.	SWITCH2	Outgoing message in case of extern switch 2 pressed	SWITCH2 DOWN
I	./.	SWITCH2	Outgoing message in case of extern switch 2 unhand	SWITCH2 UP
I	./.	GPIO1	Outgoing message in case of gpio 1 input is changed from PullUp/PullDown default settings	GPIO1=0 or GPIO1=1
I	./.	GPIO1	Outgoing message in case of gpio 1 input is changed back to PullUp/PullDown default settings	GPIO1=1 or GPIO1=0
I	./.	GPIO2	Outgoing message in case of gpio 2 input is changed from PullUp/PullDown default settings	GPIO2=0 or GPIO2=1
I	./.	GPIO2	Outgoing message in case of gpio 2 input is changed back to PullUp/PullDown default settings	GPIO2=1 or GPIO2=0

I	./.	GPIO3	Outgoing message in case of gpio 3 input is changed from PullUp/PullDown default settings	GPIO3=0 or GPIO3=1
I	./.	GPIO3	Outgoing message in case of gpio 3 input is changed back to PullUp/PullDown default settings	GPIO3=1 or GPIO3=0
I	./.	GPIO4	Outgoing message in case of gpio 4 input is changed from PullUp/PullDown default settings	GPIO4=0 or GPIO4=1
I	./.	GPIO4	Outgoing message in case of gpio 4 input is changed back to PullUp/PullDown default settings	GPIO4=1 or GPIO4=0
O	!s*	ID	Sets ID (default is the serial number)	!s#ID=1234567890
O	!s*	B1	Prepares for firmware update	!s*B1
O	!s*	B2	Erases flash and updates firmware	!s*B2
O	!s*	UB	Set the user byte	!s*UB=8
O	!s*	WRITE	Writes XBee register directly	!s*WRITE=SPG (writes '0x67' to 'sp' register)
O	!s*	READ	Reads XBee register directly	!s*READ=NP

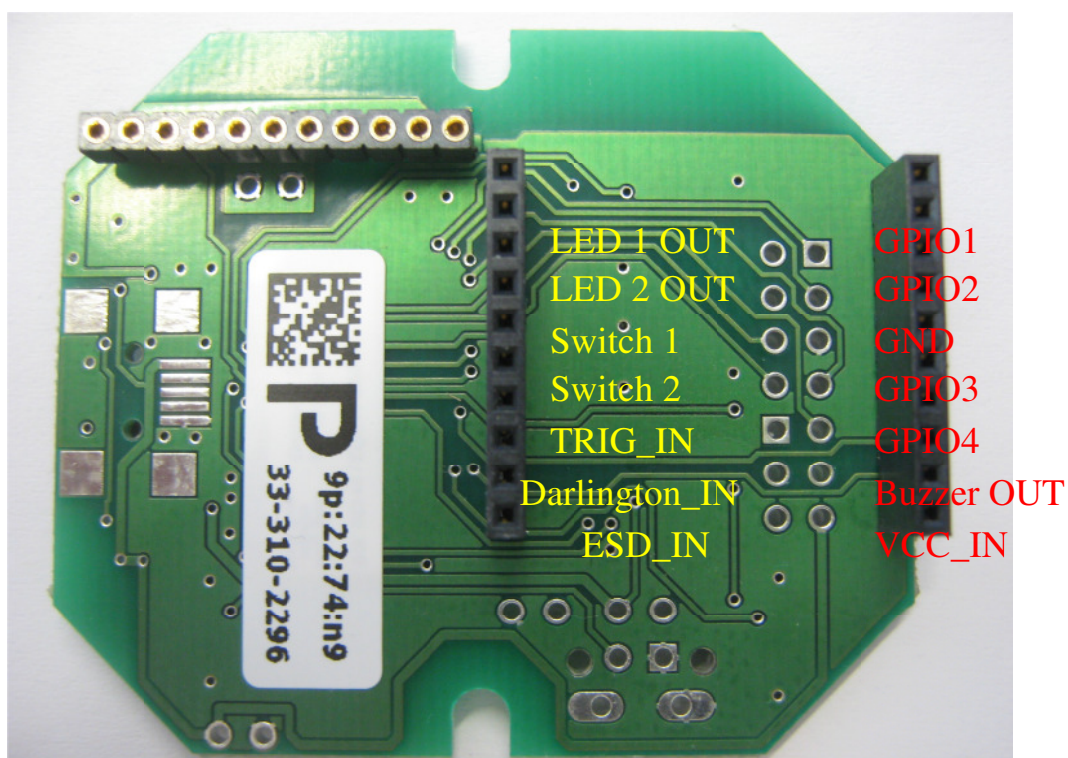
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I	./.	Register name and value	Separate message for READ result	NP='0x00''0x54'
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GPIO settings register:

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Interrupt Enable GPIO2	In/Out Direction GPIO2	High/Low Output (PullUp/Pul IDown) GPIO2	PullUp Enable GPIO2	Interrupt Enable GPIO1	In/Out Direction GPIO1	High/Low Output (PullUp/Pul IDown) GPIO1	PullUp Enable GPIO1

Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
Interrupt Enable GPIO4	In/Out Direction GPIO4	High/Low Output (PullUp/Pul IDown) GPIO4	PullUp Enable GPIO4	Interrupt Enable GPIO3	In/Out Direction GPIO3	High/Low Output (PullUp/Pul IDown) GPIO3	PullUp Enable GPIO3



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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 TBMAX=480 ...will lead to... ack: set tbmax=480
 - SET TBMAK=480 ...will lead to... nack: set tbmak=480

Firmware Update will affect

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

Firmware Update will NOT affect

- HW-Version
- ID
- SN