

BLE V PROFILES

Projekt	Verantwortlich	Datum
BLE V Profiles	Marc Stockburger	22.03.2019

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General

PULSE BLE V Profiles.

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Profile Overview

Port	Short Name	Short Description	Direktion	Send Time
GENERAL				
0x0A1	AckNack	Simple acknowledge	both	response
0x803	queryMyPhysicalNode	Query of physical interface address (e.c. destNode or sourceNode)	Device→ Host	action device
0x076	myPhysicalNode	Answer of "queryMyPhsyicalNode" which contain the physical interface address (inside item "destNode")	Host→ Device	answer
0x781	writeSDFile	Send a file to the SD Card	both	action host
BLE COMMANDS				
0x062	setStatusLEDModuleBLE	Set the common-mode of the module status LED	Host→ Device	action host
0x063	pushButtonModuleBLE	Set the common-mode of the module status LED	Host→ Device	action host
0x80A	queryRotarySwitchModule	Set the common-mode of RGB (show presence Det2 status)	Host→ Device	action host

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0x064	rotarySwitchModule	Set the common-mode of RGB (show presence Det3 status)	Host→ Device	User change or query
0x082	sensorNTCBoardTempBLE	Send a simple NTC value of a NTC Sensor	Device→Host	all 10sec
Start Process				
0x801	PING		Host→Device	Host scan all interfaces for devices, LK info and DP. (registration process)
0x06C	infoNode		Device→Host	Answer of Ping.
Bootloader Process				
0x072	activateBoot		deviceHost	
0x780	writeBootImage		Both	action

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AckNack (0x0A1)

Description:

Simple acknowledge

Offset Byte	Content	Description
0	Ack (8Bit)	0=ACK 1=NACK

queryMyPhysicalNode (0x803)

Description:

Query of physical interface address (e.c. destNode or sourceNode).

Offset Byte	Content	Description
0-3	0xnnnnnnnn (32Bit)	Random Value

myPhysicalNode (0x076)

Description:

Answer of "queryMyPhysicalNode" which contain the physical interface address (inside item "destNode").

Offset Byte	Content	Description
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0-3	0xxxxxxxx (32Bit)	Random Value
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writeSDFile (0x781)

1/3 Header

Description:

General to write files to SD-Card.

This profil is the header part.

The Header contain information about the file and what to do with this.

Send:

- Payload length 64Bytes

Byte	Content	Description
0	1 (8Bit)	1=Header; 2=Data; 3=End; 4=Abort
1-4	Filelength (32Bit)	Flie length (Byte)
5-8	0xtttttttt (32Bit)	Create Time (if 0xFFFFFFFF host take the act time)
9-12	0xtttttttt (32Bit)	Wasttime (if 0xFFFFFFFF no wast time)
13-44	Dest Path (32Bytes)	e.g. WA/GL_INT/luConf0.dat (32Bytes, blank=0x00)
45	SetHashCheck (8Bit)	0=Hash SHA256 active 1= inactive Hash process

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46-63	Nop (18Bytes)	Reserve
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2/3 Payload

Description:

General to write files to SD-Card.

This profil is the payload part. To send the whole file there are multi payload part telegrams necessary.

The payload parts contain a pointer and the file data.

Send:

- Right down to the last, the "FileData" must be a multiple of 16Bytes.

Byte	Content	Description
0	2 (8Bit)	1=Header; 2=Data; 3=End; 4=Abort
1-4	Pointer Position File first Frame Byte (32Bit)	Dest. pointer for FileData
5-N maximal 128	FileData (N Bytes)	File Data

3/3 END

Description:

General to write files to SD-Card.

This Part is the end Part. It indicates the end of file transfer and contain the hash value (if hash calc. is active else fill with 0x00...).

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Send:

- Checksum of following data
 - Header Part Byte 0 – Byte 63 (all)
 - Payload Part Byte 4 – Byte N

Byte	Content	Description
0	3 (8Bit)	1=Header; 2=Data; 3=End; 4=Abort
1-32	SHA256 (32Bytes))	Hash 32Bytes

ABORT

Description:

General abort file write process to SD-Card.

Senden:

Abort file transfer process.

Byte	Content	Description
0	0x04 (8Bit)	1=Header; 2=Data; 3=End; 4=Abort

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setStatusLEDModuleBLE (0x062)

Description:

Control RGB LED.

Offset Byte	Content	Description
0	Mode (8Bit)	Bit7-4: 0=off; 1=on; 2=blink
1	reloadValue (8Bit)	At common mode „blink“: LED toggle timespan. Resolution:100ms.

pushButtonModuleBLE (0x063)

Description:

Simple push button.

Offset Byte	Content	Description
0	Value (8Bit)	Bit 7: 1=Press, 0=Release

queryRotarySwitchModule (0x80A)

Description:

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Offset Byte	Content	Description
0	0x00 (8Bit)	Query

rotarySwitchModule (0x064)

Description:

Offset Byte	Content	Description
0	valueRotSwitch1	Rotary Switch1
1	valueRotSwitch2	Rotary Switch2
2	valueRotSwitch3	Rotary Switch3
3	valueRotSwirtch4	Rotary Switch4

sensorNTCBoardTempBLE (0x082)

Description:

Send a simple NTC value of a NTC Sensor.

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Offset Byte	Content	Description
0	Value (8Bit)	Res. 1C°

ping (0x801)

Description:

Ping query.

Offset Byte	Content	Description
0	Art (8Bit)	Art: 0x00=Main Unit 0x01= LK 0x02=Datenpaket 0x05= Device
1-4	ID(32Bit)	Host main unit ID

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infoNode (0x06C)

Description:

Ping query.

Offset Byte	Content	Description
0	Art (8Bit)	Kind: 0x05= Device
1	Kind (8Bit)	Art Device: 0x20 BLE Module1
2-3	FW (16Bit)	FW (only at Art Device)
4-7	ID (32Bit)	ID
8	0x00	-

activateBoot (0x072)

Byte	Content	Description
0-31	dest. Path	e.g. WA/GL_INT/luConf0.dat (32Bytes, blank=0x00)

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writeBootImage (0x780)

Image Files General:

The build of an image files will explain in an own document. Here will explained how the host controller can update other controller

1/5 Set Bootloader Mode

Description:

General to set the dest. Device in the bootloader mode.

Byte	Content	Description
0	5	1=Header; 2=Data; 3=End; 4=Abort; 5=Set; 6=Check

Answer:

- Telegram Recieve Acknowledge (Profil 0x00A1)

Offset Byte	Content	Description
0	Response	0x01 = ACK telegram 0x00 = NACK telegram

2/5 Check Bootloader Mode

Description:

General to check if the dest. device be located in mode bootloader.

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Byte	Content	Description
0	6	1=Header; 2=Data; 3=End; 4=Abort; 5=Set; 6=Check

Answer:

- Telegram Recieve Acknowledge (Profil 0x00A1)

Offset Byte	Content	Description
0	Response	0x01 = ACK telegram 0x00 = Nack telegram

3/5 Header

Description:

General to update other controller than the host.

This Part is the header Part.

Byte	Content	Description
0	1	1=Header; 2=Data; 3=End; 4=Abort; 5=Set; 6=Check

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1-4	Filelength	File length (Byte)
5-8	0xtttttttt	Create Time of File (must be the same as in the file)
9	ART	0x05= Device
10	Type	Art Device: 0x20 BLE Module1
11-12	0xffff	FW
13-44	Reserve	Reserve all 0x00
45	SetHashCheck	0=Hash SHA256 active 1= inactive Hash process
46-63	nop	reserve

Answer:

- Telegram Recieve Acknowledge (Profil 0x00A1)

Offset Byte	Content	Description
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0	Response	0x01 = ACK telegram 0x00 = NACK telegram
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4/5 Data

Description:

General to update other controller than the host.

This profil is the payload part. To send the whole image there are multi payload part telegrams necessary.

The payload parts contain a pointer and the image data.

Send:

Byte	Content	Description
0	2	1=Header; 2=Data; 3=End; 4=Abort; 5=Set; 6=Check
1-4	Pointer Position File first Frame Byte	Dest. pointer for BootData
5-N maximal 128	ImageData	Image Data

Answer:

- Telegram Recieve Acknowledge (Profil 0x00A1)

Offset Byte	Content	Description
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0	Response	0x01 = ACK telegram 0x00 = Nack telegram
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5/5 END

Description:

General to update other controller than the host.

This Part is the end Part. It indicates the end of file transfer and contain the hash value (if hash calc. is active else fill with 0x00...).

Send:

- Checksum of following data
 - o Header Part Byte 0 – Byte 63 (all)
 - o Payload Part Byte 4 – Byte N

Byte	Content	Description
0	3	1=Header; 2=Data; 3=End; 4=Abort; 5=Set; 6=Check
1-32	SHA256	Hash 32Bytes

Answer:

- Telegram Recieve Acknowledge (Profil 0x00A1)

Offset Byte	Content	Description
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0	Response	0x01 = ACK telegram 0x00 = NACK telegram
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ABORT

Description:

General abort image write process.

Byte	Content	Description
0	0x04	1=Header; 2=Data; 3=End; 4=Abort; 5=Set; 6=Check

Answer:

- Telegram Recieve Acknowledge (Profil 0x00A1)

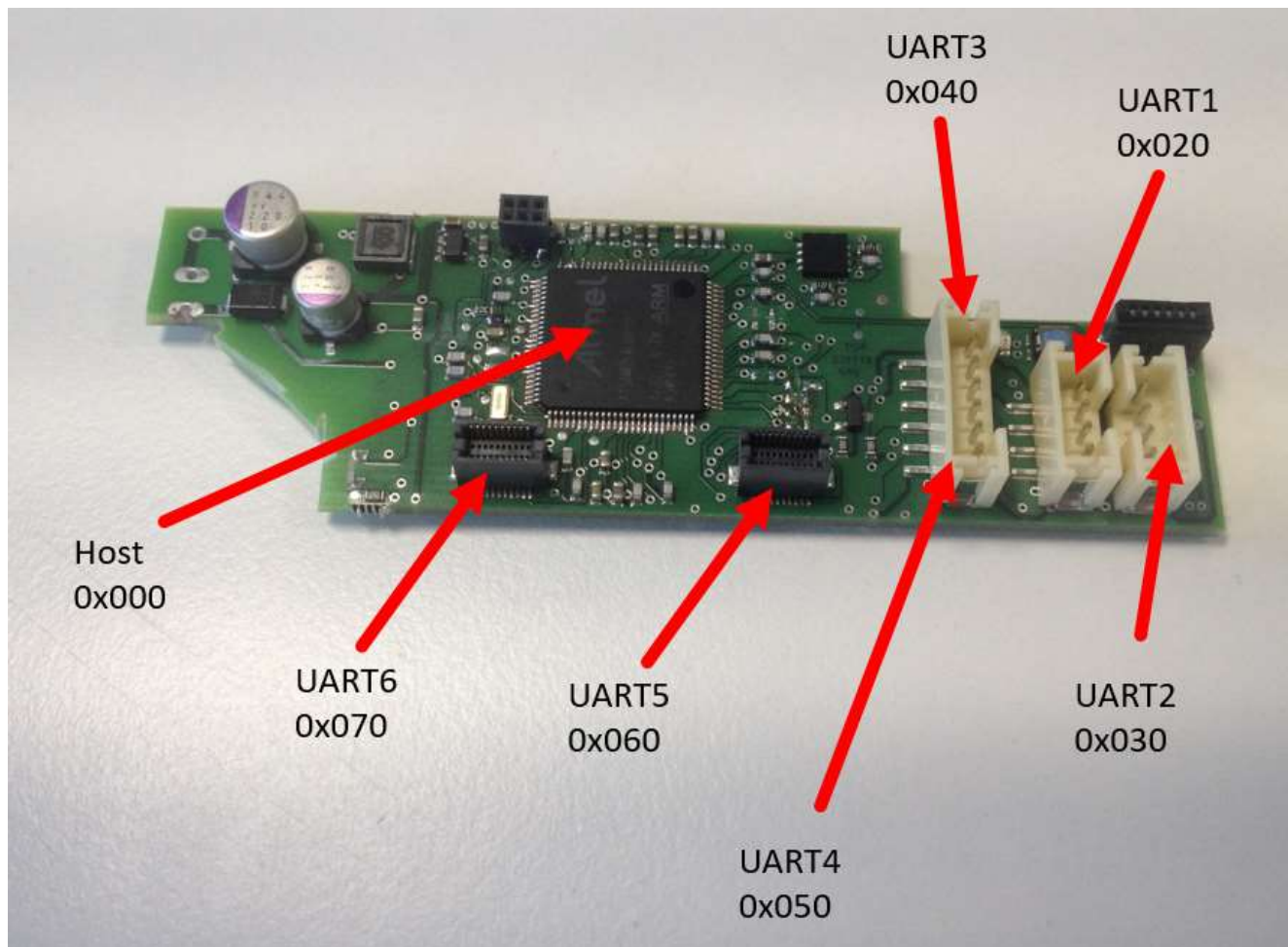
Offset Byte	Content	Description
0	Response	0x01 = ACK telegram 0x00 = Nack telegram

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Nodes

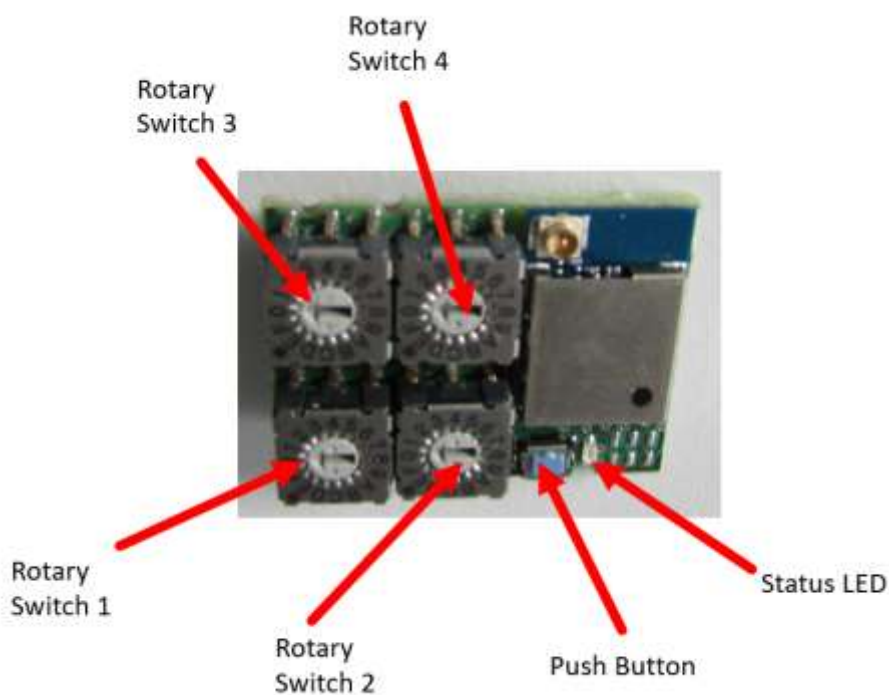
Offset Byte	Content	Description
0x000	Host Unit	
0x001	SD-Card	
0x020	UART 1	
0x030	UART 2	
0x040	UART 3	
0x050	UART 4	

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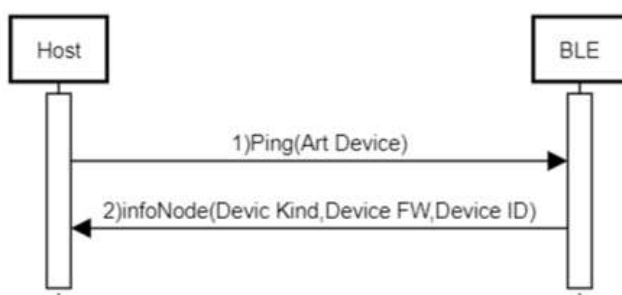


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BLE Module



Start registration process



Start process:

1. Ping to all UART interfaces (include select info „device“)
2. BLE informs about his kind(type),