

# Telegram listing RFH6xx

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### **Original document**

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## 1 Basic commands

Commands to get access and receive basic information from the device.

### 1.1 Login to device

You have to login to the device for several commands, e.g. to write a variable.  
Any changes start to take effect after logout from the device!

Command: Host → Device	
<code>[STX]sMN SetAccessMode &lt;level&gt; &lt;passwordHashValue&gt;[ETX]</code>	
Parameter	Description
level	Access mode level ( e. g. Authorized Client = 3)
passwordHashValue	Hash value of the required password
Response: Device → Host	
<code>[STX]sAN SetAccessMode &lt;success&gt;[ETX]</code>	
Return value	Description
success	Login was successful = 1, else 0.

Example: Login as Authorized Client
<code>[STX]sMN SetAccessMode 3 7A99FDC6 [ETX]</code>
Exception (Firmware V5.00):
<code>[STX]sMN SetAccessMode 3 F4724744 [ETX]</code>
<code>[STX]sAN SetAccessMode 1[ETX]</code>

### 1.2 Logout from device

Set back the device to run level. After successful execution of this command, changes will take effect.

Command: Host → Device	
<code>[STX]sMN Run [ETX]</code>	
Response: Device → Host	
<code>[STX]sAN Run &lt;success&gt;[ETX]</code>	
Return value	Description
success	Logout was successful = 1, else 0.

Example: Logout/ Set device into run level
<code>[STX]sMN Run [ETX]</code>
<code>[STX]sAN Run 1[ETX]</code>

## 1.3 Save parameters permanent

All parameters will be stored permanently.

<b>Command: Host → Device</b>	
<i>[STX]sMN mEEwriteall[ETX]</i>	
<b>Response: Device → Host</b>	
<i>[STX]sAN mEEwriteall &lt;success&gt;[ETX]</i>	
<b>Return value</b>	<b>Description</b>
success	Saving was successful = 1, else 0.

<b>Example:</b> Save all parameters permanent.
<i>[STX]sMN mEEwriteall[ETX]</i>
<i>[STX]sAN mEEwriteall 1[ETX]</i>

## 1.4 Load factory defaults in device

All parameters, including the communication settings will be set to their default values.

<b>Command: Host → Device</b>	
<i>[STX]sMN mSCloadfacdef[ETX]</i>	
<b>Response: Device → Host</b>	
<i>[STX]sAN mSCloadfacdef[ETX]</i>	

<b>Example:</b> Set all parameters back to their defaults.
<i>[STX]sMN mSCloadfacdef[ETX]</i>
<i>[STX]sAN mSCloadfacdef[ETX]</i>

## 1.5 Load application defaults in device

All parameters, exclusive of the communication settings, will be set to their default values.

<b>Command: Host → Device</b>	
<i>[STX]sMN mSCloadappdef[ETX]</i>	
<b>Response: Device → Host</b>	
<i>[STX]sAN mSCloadappdef[ETX]</i>	

<b>Example:</b> Set all parameters back to their defaults.
<i>[STX]sMN mSCloadappdef[ETX]</i>
<i>[STX]sAN mSCloadappdef[ETX]</i>

## 1.6 Get device ident

Read the device identification information.

<b>Command: Host → Device</b>	
<i>[STX] sRN DeviceIdent [ETX]</i>	
<b>Response: Device → Host</b>	
<i>[STX] sRA DeviceIdent &lt;ln&gt; &lt;name&gt; &lt;lv&gt; &lt;version&gt; [ETX]</i>	
Return value	Description
ln	length of name
name	Name of the device
lv	length of version
version	firmware version of the device

<b>Example:</b> Read device identification.
<i>[STX] sRN DeviceIdent [ETX]</i>
<i>[STX] sRA DeviceIdent 6 RFH620 10 V1.20-03.03.2010 [ETX]</i>

## 1.7 Get device type

Read the type of the device.

<b>Command: Host → Device</b>	
<i>[STX] sRN DItype [ETX]</i>	
<b>Response: Device → Host</b>	
<i>[STX] sRA DItype &lt;lt&gt; &lt;type&gt; [ETX]</i>	
Return value	Description
lt	length of type
type	type of the device (see ATAB)

<b>Example:</b> Read device type
<i>[STX] sRN DItype [ETX]</i>
<i>[STX] sRA DItype E RFH620-1001201 [ETX]</i>

## 1.8 Get serial number

Read the serial number from the device.

<b>Command: Host → Device</b>	
<i>[STX]sRN SerialNumber[ETX]</i>	
<b>Response: Device → Host</b>	
<i>[STX]sRA SerialNumber &lt;ls&gt; &lt;serial&gt;[ETX]</i>	
Return value	Description
ls	length of serial
serial	serial number of the device

<b>Example:</b> Read device identification.	
<i>[STX]sRN SerialNumber[ETX]</i>	
<i>[STX]sRA SerialNumber 8 08510010[ETX]</i>	

## 2 Action Commands

### 2.1 Inventory / Get UID

Method to start an inventory to search for transponder. The method returns a Flex Array of transponder information. The following four values are returned for each transponder.

<b>Command: Host → Device</b>	
<code>[STX] sMN CSGtUID [ETX]</code>	
<b>Response: Device → Host</b>	
<code>[STX] sAN CSGtUID &lt;n&gt; {&lt;err&gt; &lt;rssi&gt; &lt;dsfid&gt; &lt;uid&gt;} [ETX]</code>	
<b>Return value</b>	<b>Description</b>
n	number of returned transponder sets (0-32)
err	error code (0x00 → no error; see section 2.18)
rssi	RSSI RX value of this transponder (1byte)
dsfid	DSFID (1 byte)
uid	UID (eight byte, space separated)

<b>Example 1:</b> Start an inventory with one transponder as result	
<code>[STX] sMN CSGtUID [ETX]</code>	
<code>[STX] sAN CSGtUID 1 0 3 0 F3 AB 16 8 0 1 4 E0 [ETX]</code>	
<b>Example 2:</b> Start an inventory with two transponder as result	
<code>[STX] sMN CSGtUID [ETX]</code>	
<code>[STX] sAN CSGtUID 2 0 4 0 F3 AB 16 8 0 1 4 E0 0 4 0 FB AB 16 8 0 1 4 E0 [ETX]</code>	
<b>Example 3:</b> Start an inventory with no transponder as result (0x22 = No response), see section 2.18	
<code>[STX] sMN CSGtUID [ETX]</code>	
<code>[STX] sAN CSGtUID 1 22 0 0 0 0 0 0 0 0 0 0 [ETX]</code>	



## 2.2 Stay quiet

<b>Command: Host → Device</b>	
<code>[STX]sMN CSStayQt &lt;uid&gt;[ETX]</code>	
Parameter	Description
uid	UID of the transponder
<b>Response: Device → Host</b>	
<code>[STX]sAN CSStayQt &lt;err&gt;[ETX]</code>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)

<b>Example:</b> Send Stay Quiet command to transponder E0-04-01-00-08-16-AB-F3
<code>[STX]sMN CSStayQt F3 AB 16 8 0 1 4 E0[ETX]</code>
<code>[STX]sAN CSStayQt 0[ETX]</code>

## 2.3 Read single block

<b>Command: Host → Device</b>	
<code>[STX]sMN CSRdSnglBlck &lt;uid&gt; &lt;bn&gt;[ETX]</code>	
Parameter	Description
uid	UID of the transponder
bn	number of the block that should be read
<b>Response: Device → Host</b>	
<code>[STX]sAN CSRdSnglBlck &lt;err&gt; &lt;lbc&gt; &lt;bc&gt;[ETX]</code>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)
lbc	length of block content (hex) in byte
bc	block content, space separated

<b>Example 1:</b> Read block 10 (decimal) from transponder E0-04-01-00-08-16-AB-F3
<code>[STX]sMN CSRdSnglBlck F3 AB 16 8 0 1 4 E0 +10[ETX]</code>
<code>[STX]sAN CSRdSnglBlck 0 4 11 22 33 44[ETX]</code>
<b>Example 2:</b> Read block 17 (decimal / hex 0x11) non-addressed.
<code>[STX]sMN CSRdSnglBlck 00 00 00 00 00 00 00 00 11[ETX]</code>
<code>[STX]sAN CSRdSnglBlck 0 4 AA BB CC DD[ETX]</code>

## 2.4 Write single block

<b>Command: Host → Device</b>	
<code>[STX]sMN CSWrtSnglBlck &lt;uid&gt; &lt;bn&gt; &lt;lbc&gt; &lt;bc&gt;[ETX]</code>	
Parameter	Description
uid	UID of the transponder
bn	number of the block that should be written
lbc	length of block content in byte
bc	block content, space separated as Hex Byte
<b>Response: Device → Host</b>	
<code>[STX]sAN CSWrtSnglBlck &lt;err&gt;[ETX]</code>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)

**Example 1:** Write block 10 (decimal) from transponder E0-04-01-00-08-16-AB-F3 with content 0x31 0x32 0x33 0x34.

```
[STX]sMN CSWrtSnglBlck F3 AB 16 8 0 1 4 E0 +10 4 31 32 33 34[ETX]
```

```
[STX]sAN CSWrtSnglBlck 0[ETX]
```

**Example 2:** Write block 17 (decimal / hex 0x11) non-addressed with content 0x31 0x32 0x33 0x34.

```
[STX]sMN CSWrtSnglBlck 00 00 00 00 00 00 00 00 11 4 31 32 33 34[ETX]
```

```
[STX]sAN CSWrtSnglBlck 0[ETX]
```

## 2.5 Lock block

<b>Command: Host → Device</b>	
<code>[STX]sMN CSLckBlck &lt;uid&gt; &lt;bn&gt;[ETX]</code>	
Parameter	Description
uid	UID of the transponder
bn	Number of block that should be written
<b>Response: Device → Host</b>	
<code>[STX]sAN CSLckBlck &lt;err&gt;[ETX]</code>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)

**Example:** Lock block number 10 (decimal) from transponder E0-04-01-00-08-16-AB-F3.

```
[STX]sMN CSLckBlck F3 AB 16 8 0 1 4 E0 +10[ETX]
```

## 2.6 Read multiple blocks

Command: Host → Device	
<code>[STX]sMN CSRdMltBlck &lt;uid&gt; &lt;bn&gt; &lt;nb&gt;[ETX]</code>	
Parameter	Description
uid	UID of the transponder
bn	number of first block that should be read
nb	number of blocks minus one
Response: Device → Host	
<code>[STX]sAN CSRdMltBlck &lt;err&gt; &lt;lbc&gt; &lt;bc&gt;[ETX]</code>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)
lbc	length of block content (hex) in byte
bc	block content, space separated as Hex Bytes

**Example:** Read blocks 10 and 11(decimal) from transponder E0-04-01-00-08-16-AB-F3.

```
[STX]sMN CSRdMltBlck F3 AB 16 8 0 1 4 E0 +10 1[ETX]
```

```
[STX]sAN CSRdMltBlck 0 8 31 32 33 34 35 36 37 38[ETX]
```

## 2.7 Write multiple blocks

Note: The number of blocks and the length of the block content are used to determine the block size.

Command: Host → Device	
<code>[STX]sMN WrtMltBlck &lt;uid&gt; &lt;bn&gt; &lt;nb&gt; &lt;lbc&gt; &lt;bc&gt;[ETX]</code>	
Parameter	Description
uid	UID of the transponder
bn	number of first block that should be written
nb	number of blocks minus one
lbc	length of block content in byte
bc	block content as Hex Bytes
Response: Device → Host	
<code>[STX]sAN WrtMltBlck &lt;err&gt;[ETX]</code>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)

**Example:** Write blocks 10 and 11(decimal) from transponder E0-04-01-00-08-16-AB-F3. Assume block size of 4 bytes and write the string "RFIDtest"

```
[STX]sMN WrtMltBlck F3 AB 16 8 0 1 4 E0 +10 1 8 52 46 49 44 74 65 73 74[ETX]
```

```
[STX]sAN WrtMltBlck 0[ETX]
```

## 2.8 Read Multiple Blocks String

Command: Host → Device	
<code>[STX]sMN RdMltBlckStr &lt;uid&gt; &lt;bn&gt; &lt;nb&gt;[ETX]</code>	
Parameter	Description
uid	UID of the transponder
bn	number of first block that should be read
nb	number of blocks minus one
Response: Device → Host	
<code>[STX]sAN RdMltBlckStr &lt;err&gt; &lt;lbc&gt; &lt;bc&gt;[ETX]</code>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)
lbc	length of block content (hex) in byte
bc	block content as string

<b>Example:</b> Read blocks 0 to 5 non-addressed.
<code>[STX]sMN RdMltBlckStr 0 0 0 0 0 0 0 0 0 5[ETX]</code>
<code>[STX]sAN RdMltBlckStr 0 18 Lorem ipsum dolor sit am[ETX]</code>

## 2.9 Write Multiple Blocks String

Note: The number of blocks and the length of the block content are used to determine the block size.

Command: Host → Device	
<code>[STX]sMN WrtMltBlckStr &lt;uid&gt; &lt;bn&gt; &lt;nb&gt; &lt;lbc&gt; &lt;bc&gt;[ETX]</code>	
Parameter	Description
uid	UID of the transponder
bn	number of first block that should be written
nb	number of blocks minus one
lbc	length of block content
bc	block content as string
Response: Device → Host	
<code>[STX]sAN WrtMltBlckStr &lt;err&gt;[ETX]</code>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)

<b>Example 1:</b> Write blocks 0 to 5 non-addressed. Assume block size of 4 bytes.
<code>[STX]sMN WrtMltBlckStr 0 0 0 0 0 0 0 0 0 5 18 Lorem ipsum dolor sit am[ETX]</code>
<code>[STX]sAN WrtMltBlckStr 0[ETX]</code>

## 2.10 Select state

<b>Command: Host → Device</b>	
<i>[STX]sMN CSSlct &lt;uid&gt; [ETX]</i>	
Parameter	Description
uid	UID of the transponder
<b>Response: Device → Host</b>	
<i>[STX]sAN CSSlct &lt;err&gt;[ETX]</i>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)

<b>Example:</b> Set transponder E0-04-01-00-08-16-AB-F3 to select-state.
<i>[STX]sMN CSSlct F3 AB 16 8 0 1 4 E0[ETX]</i>
<i>[STX]sAN CSSlct 0[ETX]</i>

## 2.11 Reset to ready

<b>Command: Host → Device</b>	
<i>[STX]sMN CSRstRdy &lt;uid&gt; [ETX]</i>	
Parameter	Description
uid	UID of the transponder
<b>Response: Device → Host</b>	
<i>[STX]sAN CSRstRdy &lt;err&gt;[ETX]</i>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)

<b>Example:</b> Set transponder E0-04-01-00-08-16-AB-F3 to ready state.
<i>[STX]sMN CSRstRdy F3 AB 16 8 0 1 4 E0[ETX]</i>
<i>[STX]sAN CSRstRdy 0[ETX]</i>

## 2.12 Write AFI

<b>Command: Host → Device</b>	
<i>[STX]sMN CSWrtAFI &lt;uid&gt; &lt;afi&gt;[ETX]</i>	
Parameter	Description
uid	UID of the transponder
afi	AFI that should be written to the transponder.
<b>Response: Device → Host</b>	
<i>[STX]sAN CSWrtAFI &lt;err&gt;[ETX]</i>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)

<b>Example:</b> Write AFI 18 (decimal) from transponder E0-04-01-00-08-16-AB-F3.
<i>[STX]sMN CSWrtAFI F3 AB 16 8 0 1 4 E0 +18[ETX]</i>
<i>[STX]sAN CSWrtAFI 0[ETX]</i>

## 2.13 Lock AFI

<b>Command: Host → Device</b>	
<i>[STX]sMN CSLckAFI &lt;uid&gt;[ETX]</i>	
Parameter	Description
uid	UID of the transponder
<b>Response: Device → Host</b>	
<i>[STX]sAN CSLckAFI &lt;err&gt;[ETX]</i>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)

<b>Example:</b> Lock AFI forever from transponder E0-04-01-00-08-16-AB-F3.
<i>[STX]sMN CSLckAFI F3 AB 16 8 0 1 4 E0[ETX]</i>
<i>[STX]sAN CSLckAFI 0[ETX]</i>

## 2.14 Write DSFID

<b>Command: Host → Device</b>	
<code>[STX]sMN CSWrtDSFID &lt;uid&gt; &lt;dsfid&gt;[ETX]</code>	
Parameter	Description
uid	UID of the transponder
dsfid	DSFID that should be written to the transponder.
<b>Response: Device → Host</b>	
<code>[STX]sAN CSWrtDSFID &lt;err&gt;[ETX]</code>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)

<b>Example:</b> Write DSFID 18 (decimal) from transponder E0-04-01-00-08-16-AB-F3.
<code>[STX]sMN CSWrtDSFID F3 AB 16 8 0 1 4 E0 +18[ETX]</code>
<code>[STX]sAN CSWrtDSFID 0[ETX]</code>

## 2.15 Lock DSFID

<b>Command: Host → Device</b>	
<code>[STX]sMN CSLckDSFID &lt;uid&gt;[ETX]</code>	
Parameter	Description
uid	UID of the transponder
<b>Response: Device → Host</b>	
<code>[STX]sAN CSLckDSFID &lt;err&gt;[ETX]</code>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)

<b>Example:</b> Lock DSFID forever from transponder E0-04-01-00-08-16-AB-F3.
<code>[STX]sMN CSLckDSFID F3 AB 16 8 0 1 4 E0[ETX]</code>
<code>[STX]sAN CSLckDSFID 0[ETX]</code>

## 2.16 Get transponder information

This command is also called „GetSystemInformation“.

Command: Host → Device	
<i>[STX]sMN CSGtTAGInf &lt;uid&gt;[ETX]</i>	
Parameter	Description
uid	UID of the transponder
Response: Device → Host	
<i>[STX]sAN CSGtTAGInf &lt;err&gt; &lt;uid&gt; &lt;f-dsfid&gt; &lt;dsfid&gt; &lt;f-afi&gt; &lt;afi&gt; &lt;f-bn&gt; &lt;bn&gt; &lt;f-bs&gt; &lt;bs&gt; &lt;f-icr&gt; &lt;icr&gt;[ETX]</i>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)
uid	UID of the transponder
f-dsfid	Flag indicates if corresponding value exists. (1 = existing; 0 = not existing)
dsfid	DSFID of the transponder.
f-afi	Flag indicates if corresponding value exists. (1 = existing; 0 = not existing)
afi	AFI of the transponder.
f-bn	Flag indicates if corresponding value exists. (1 = existing; 0 = not existing)
bn	Number of blocks minus one on this transponder.
f-bs	Flag indicates if corresponding value exists. (1 = existing; 0 = not existing)
bs	Size of a data block minus one on this transponder.
f-icr	Flag indicates if corresponding value exists. (1 = existing; 0 = not existing)
icr	IC type of this transponder.

<b>Example:</b> Get system information from transponder E0-04-01-00-08-16-AB-F3.
<i>[STX]sMN CSGtTAGInf F3 AB 16 8 0 1 4 E0[ETX]</i>
<i>[STX]sAN CSGtTAGInf 0 F3 AB 16 8 0 1 4 E0 1 12 1 12 1 1B 1 3 1 1[ETX]</i>



## 2.17 Get multiple blocks security information

Command: Host → Device	
<i>[STX]sMN CSGtBlokSecSt &lt;uid&gt; &lt;bn&gt; &lt;nob&gt;[ETX]</i>	
Parameter	Description
uid	UID of the transponder
bn	Number of start block (starts at zero!)
nob	Number of blocks minus one.
Response: Device → Host	
<i>[STX]sAN CSGtBlokSecSt &lt;err&gt; &lt;length&gt; &lt;info&gt;[ETX]</i>	
Return value	Description
err	error code (0x00 → no error; see section 2.18)
length	number of following bytes
info	Security information for the required blocks.

**Example:** Get security information from transponder E0-04-01-00-08-16-AB-F3 of blocks 8 to 13. (Block 10 and 13 are locked)

```
[STX]sMN CSGtBlokSecSt F3 AB 16 8 0 1 4 E0 8 5[ETX]
```

```
[STX]sAN CSGtBlokSecSt 0 6 0 0 1 0 0 1[ETX]
```

## 2.18 Error code definition

Codes with VICC prefix are generated by the transponder, commands with VCD and MPC prefixes are generated by the device.

No decimal	No hex.	Name
0	0x00	NO_ERROR
1	0x01	VICC_CMD_NOT_SUPPORTED
2	0x02	VICC_CMD_NOT_RECOGNIZED
3	0x03	VICC_OPTION_NOT_SUPPORTED
15	0x0F	VICC_UNKNOWN_ERROR
16	0x10	VICC_BLK_NOT_AVAILABLE
17	0x11	VICC_BLK_ALRDY_LOCKED
19	0x13	VICC_BLK_WRITE_ERROR
20	0x14	VICC_BLK_LOCK_ERROR
30	0x1E	VCD_UNKNOWN_ERROR
31	0x1F	VCD_CRC_ERROR
32	0x20	VCD_PARITY_ERROR
33	0x21	VCD_TIMEOUT_ERROR
34	0x22	VCD_NO_RESP_ERROR
35	0x23	VCD_COLLISION_ERROR
36	0x24	VCD_CONTENT_CHECK_ERROR
37	0x25	VCD_FRAMING_ERROR
38	0x26	VCD_VERIFY_ERROR
39	0x27	VCD_TRANSMIT_ERROR
40	0x28	VCD_RECEIVE_ERROR
41	0x29	VCD_NON_ADDRESSED_ERROR
42	0x2A	VCD_TAGTYPE_SELECTION_ERROR
43	0x2B	MPC_MAX_BLOCK_COUNT_ERROR
44	0x2C	MPC_BLOCK_LENGTH_MISMATCH_ERROR
70	0x46	VCD_SLOT_DETECT_WARNING

## 3 HF Settings

### 3.1 Transmission modulation

<b>Read TX modulation: Host → Device</b>		
<i>[STX] sRN CSTxMod [ETX]</i>		
<b>Response: Device → Host</b>		
<i>[STX] sRA CSTxMod &lt;val&gt;[ETX]</i>		
<b>Return value</b>	<b>Description</b>	
val	setting of the TX modulation:	
	3	10%ASK
	5	20%ASK (Default)
	7	100%ASK
<b>Write TX modulation: Host → Device</b>		
<i>[STX] sWN CSTxMod &lt;val&gt;[ETX]</i>		
<b>Parameter</b>	<b>Description</b>	
val	value that should be set	
<b>Response: Device → Host</b>		
<i>[STX] sWA CSTxMod [ETX]</i>		

<b>Example 1:</b> Read the TX modulation setting.		
<i>[STX] sRN CSTxMod [ETX]</i>		
<i>[STX] sRA CSTxMod 5[ETX]</i>		
<b>Example 2:</b> Write the TX modulation setting.		
<i>[STX] sWN CSTxMod 7[ETX]</i>		
<i>[STX] sWA CSTxMod [ETX]</i>		

## 3.2 Anti-collision

<b>Read anti-collision-mode: Host → Device</b>		
<i>[STX] sRN CSS1Slot [ETX]</i>		
<b>Response: Device → Host</b>		
<i>[STX] sRA CSS1Slot &lt;val&gt; [ETX]</i>		
<b>Return value</b>	<b>Description</b>	
val	setting of the anti-collision-mode:	
	0	Automatic (Default; first try single slot, on fault multi-slot)
	1	multi-slot mode
	2	single-slot-mode
<b>Write anti-collision-mode: Host → Device</b>		
<i>[STX] sWN CSS1Slot &lt;val&gt; [ETX]</i>		
<b>Parameter</b>	<b>Description</b>	
val	value that should be set	
<b>Response: Device → Host</b>		
<i>[STX] sWA CSS1Slot [ETX]</i>		

<b>Example 1:</b> Read the anti-collision-mode setting.		
<i>[STX] sRN CSS1Slot [ETX]</i>		
<i>[STX] sRA CSS1Slot 2 [ETX]</i>		
<b>Example 2:</b> Write the anti-collision-mode setting.		
<i>[STX] sWN CSS1Slot 1 [ETX]</i>		
<i>[STX] sWA CSS1Slot [ETX]</i>		

### 3.3 HF field

<b>Read HF-field-mode: Host → Device</b>		
<i>[STX] sRN CSHF [ETX]</i>		
<b>Response: Device → Host</b>		
<i>[STX] sRA CSHF &lt;val&gt; [ETX]</i>		
<b>Return value</b>	<b>Description</b>	
val	setting of the HF-field-mode:	
	0	Field is only during request active. (Default)
	1	Always active.
<b>Write HF-field-mode: Host → Device</b>		
<i>[STX] sWN CSHF &lt;val&gt; [ETX]</i>		
<b>Parameter</b>	<b>Description</b>	
val	value that should be set	
<b>Response: Device → Host</b>		
<i>[STX] sWA CSHF [ETX]</i>		

<b>Example 1:</b> Read the HF-field-mode setting.		
<i>[STX] sRN CSHF [ETX]</i>		
<i>[STX] sRA CSHF 0 [ETX]</i>		
<b>Example 2:</b> Write the HF-field-mode setting.		
<i>[STX] sWN CSHF 1 [ETX]</i>		
<i>[STX] sWA CSHF [ETX]</i>		

## 4 Trigger commands

### 4.1 External trigger command

<b>Command: Gate ON Host → Device</b>	
<code>[STX]sMN mTCgateon[ETX]</code>	
<b>Response: Device → Host</b>	
<code>[STX]sAN mTCgateon &lt;success&gt;[ETX]</code>	
<b>Return value</b>	<b>Description</b>
success	indicates if command was successful (1 = success; 0 else)
<b>Command: Gate OFF Host → Device</b>	
<code>[STX]sMN mTCgateoff[ETX]</code>	
<b>Response: Device → Host</b>	
<code>[STX]sAN mTCgateoff &lt;success&gt;[ETX]</code>	
<b>Return value</b>	<b>Description</b>
success	indicates if command was successful (1 = success; 0 else)

<b>Example: One reading gate</b>	
<code>[STX]sMN mTCgateon[ETX]</code>	Command: Gate ON Host → Device
<code>[STX]sAN mTCgateon 1[ETX]</code>	Response: Device → Host
<code>[STX]sMN mTCgateoff[ETX]</code>	Command: Gate OFF Host → Device
<code>[STX]sAN mTCgateoff 1[ETX]</code>	Response: Device → Host
<code>[STX]0[962ms];E00401000816ABF3[ETX]</code>	Result output, user defined.

## 4.2 Automatic self-trigger / freewheel mode

<b>Read freewheel-mode: Host → Device</b>		
<i>[STX] sRN UCfrwhlActv [ETX]</i>		
<b>Response: Device → Host</b>		
<i>[STX] sRA UCfrwhlActv &lt;val&gt;[ETX]</i>		
<b>Return value</b>	<b>Description</b>	
val	setting of the freewheel-mode:	
	0	not active (Default)
	1	active
<b>Write freewheel-mode: Host → Device</b>		
<i>[STX] sWN UCfrwhlActv &lt;val&gt;[ETX]</i>		
<b>Parameter</b>	<b>Description</b>	
val	value that should be set	
<b>Response: Device → Host</b>		
<i>[STX] sWA UCfrwhlActv [ETX]</i>		

<b>Example 1:</b> Read the freewheel-mode setting.		
<i>[STX] sRN UCfrwhlActv [ETX]</i>		
<i>[STX] sRA UCfrwhlActv 0 [ETX]</i>		
<b>Example 2:</b> Write the freewheel-mode setting.		
<i>[STX] sWN UCfrwhlActv 1 [ETX]</i>		
<i>[STX] sWA UCfrwhlActv [ETX]</i>		

## 5 I/O Handling

### 5.1 Set result / output states

Beware of other possible signal sources for the outputs, e.g. Good Read or Device Ready.

<b>Command: Activate output: Host → Device</b>	
<code>[STX]sMN mDOSetOutput &lt;output&gt; &lt;val&gt;[ETX]</code>	
Parameter	Description
output	output that should be set (1= Result 1; 2= Result 2)
val	value that should be set
<b>Response: Device → Host</b>	
<code>[STX]sAN mDOSetOutput &lt;success&gt;[ETX]</code>	
Return value	Description
success	indicates if command was successful success (1 = success; 0 else)

<b>Example: Activate Output 2</b>
<code>[STX]sMN mDOSetOutput 2 1[ETX]</code>
<code>[STX]sAN mDOSetOutput 1[ETX]</code>

### 5.2 Read sensor / input states

<b>Command: Get input state: Host → Device</b>	
<code>[STX]sMN mDIReadInput &lt;output&gt;[ETX]</code>	
Parameter	Description
output	output that should be set (1= Result 1; 2= Result 2)
<b>Response: Device → Host</b>	
<code>[STX]sAN mDIReadInput &lt;state&gt;[ETX]</code>	
Return value	Description
state	indicates if input is active or not (1 = active)

<b>Example: Read State Of Sensor1 input. Answer is „Active“</b>
<code>[STX]sMN mDIReadInput 1[ETX]</code>
<code>[STX]sAN mDIReadInput 1[ETX]</code>



## 6 Transponder processing

The transponder processing is a definition of actions that is executed on each transponder, detected by the interrogator. The set of actions is stored in one variable called *UCRWConf*.

The following actions / commands can be used:

Command ID	Description
0	Read block
1	Write block
2	Activate „stay quiet“
3	Read transponder information
4	Read multiple blocks
5	Write multiple blocks
6	Get UID

The variable can hold up to 50 commands. They are organized as an array of commands with dynamic length.

## 6.1 Read/Write Transponder Processing

<b>Command: Host → Device</b>	
<i>[STX] sRN UCRWCfg [ETX]</i>	
<b>Response: Device → Host</b>	
<i>[STX] sRA UCRWCfg noc c1-id c1-fix-byte c1-len c1-dyn-content c2-id ... [ETX]</i>	
Return value	Description
noc	Number of following commands.
c1-id	id of the command
c1-fix-byte	first parameter, always on this position
c1-len	length byte of following optional part of command
c1-dyn-content	optional part of command with dynamic length
c2-id	Next command, if exists.

### Example: Write configuration:

Recently there are two (2) commands defined:

4 → ReadMultiBlock StartBlock and NumberOfBlocks (minus one).

6 → GetUID w/o any parameters.

nob → number of bytes that follows in this command

```
[STX] sWN UCRWCfg 2 4 A 1 1 6 0 0 [ETX]
```

```
[STX] sWA UCRWCfg [ETX]
```

### Example: Read config:

Recently there are two (2) commands defined:

5 → WriteMultiBlock StartBlock and NumberOfBlocks (minus one) and the content (11 ... 88).

6 → GetUID w/o any parameters.

nob → number of bytes that follows in this command

```
[STX] sRN UCRWCfg [ETX]
```

```
[STX] sRA UCRWCfg 2 5 A 9 1 11 22 33 44 55 66 77 88 6 0 0 [ETX]
```

## 6.2 Communications information in SOPAS ET

Please use for first experiences the SOPAS ET tool and check the definitions of your configuration with the “Communication info” in the context menu (use right click on your command).

Transponder processing

To configure the transponder-processing manually, the CrossLink has to be deactivated.

1. Action

Read blocks

Start block

10

Number of blocks

2

Copy parameter value to device group

Parameter info

Add to data recorder

Communication info

Set to Default

Help

Communication info

Communication info	
Write command	sWN UCRWCfg 2 4 A 1 1 6 0 0
Communication name	UCRWCfg
Type	Struct
Communication index	711

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