

Contents

1 TBOX/DBox wired communication protocols2

1.1 Communication Ports2

1.2 FDS-Timer (TagHeuer compatible).....3

1.2.1 Format3

1.2.2 Messages3

1.3 ALGE5

1.4 SEICO6

1.5 FDS-Display.....6

1.6 FDS-Printer6

1.7 FDS-Binary7

1.7.1 Flow control.....7

1.7.2 Frame definition7

1.7.3 Check Sum7

1.7.4 Messages ID.....8

1.7.5 Parameters ID 12

1.7.6 Frame sample 19

1 TBOX/DBox wired communication protocols

The TBox/DBox implements several protocols to communicate via its USB and RS232 ports to external devices such as PC, printer and display.

- FDS-BINARY
- FDS-TIMER (THCOM08 compatible)
- ALGE
- SEICO
- FDS-DISPLAY (THDIS08 compatible)
- PRINTER

In the Alge and Seico protocols only basic output time events messages are implemented.

The FDS-Timer protocol is a bit more complete and includes commands like “run download”, “time stamps recall” and “synchro”.

The FDS-Binary protocol is the only one allowing a full control of the TBox/DBox parameters.

Protocols 1-4 are dedicated to the communication with a timing application on a computer, or any compatible device.

Protocols 5 is used to drive an external FDS LED display.

Protocol 7 must be selected if the user wants to use our thermal printer.

1.1 Communication Ports

Each TBox/DBox has 2-3 external communication ports:

- USB (cdc : Com port)
- RS232 (2 ports on TBox model 41 or DBox)

Com port settings are 8bits data with 1 stop bit.

When using USB, the **DTR** signal must be set by the application when the port is open.

Some protocols are supported by all Ports and others by some specific Port only (see the list below).

- USB (Com) : FDS-Binary, FDS-Timer, ALGE, SEICO
- RS232 (Jack) : FDS-Binary, FDS Timer, ALGE, SEICO, DISPLAY, Printer

A specific parameter defines which protocol is used to output time events, display or printer data.

1.2 FDS-Timer (TagHeuer compatible)

Available on USB and/or RS232.

1.2.1 Format

RS232/USB: [Data] + TAB + CS16 + CR + LF

Using RS232-Ethernet box: [Data] + CR + LF

Data : See messages description below

TAB : Checksum separator = 0x09

CR : 0x0D

LF : End of frame = 0x0A

CS16 : 16 bits Checksum coded in 4 digits (hexadecimal format).

CS16 is the sum of all byte in the [Data] field (except the char '#' if present).

The result in Hexadecimal is appended to the frame as 4 ASCII digits.

CS16 is optional, so if it is omitted (end of frame = TAB + CR + LF) the frame is accepted without checksum control.

1.2.2 Messages

New Time: TN _NNNN _SSSS _CC _HH:MM:SS.FFFFF _DDDDD <TAB> XXXX <CR> <LF>

Recalled Time: AN _NNNN _SSSS _CC _HH:MM:SS.FFFFF _DDDDD <TAB> XXXX <CR> <LF>

N = Candidate number (0 - 9999)

S = Sequential number (0 - 9999)

C = Channel number (1 - 99) or if manual inputs (M1 - M9)

H = Hours (0 - 23)

M = Minutes (0 - 59)

S = Seconds (0 - 59)

F = Fraction of seconds (0 - 99999)

D = Days starting from 01.01.2000

X = 16 bits checksum not including <TAB>

_ = Space

Download Run (cmd): #DL _RRRR <TAB> XXXX <CR> <LF>

Download Run Start: DS _RRRR <TAB> XXXX <CR> <LF>

Download Run End: DE _RRRR <TAB> XXXX <CR> <LF>

R = Run number (0 = current run)

X = 16 bits checksum not including <TAB>

_ = Space

Start Synchro (cmd): #WC_007_TT_HH:mm_DD/MM/YY<TAB>XXXX<CR><LF>

T = Synchro Type.
0 -> Not valid
1 -> Internal Synchro (take the internal time for synchro)
2 -> Manual Synchro
3 -> Synchro at Zero
4 -> Not valid
5 -> GPS Synchro
If Manual Synchro is chosen:
H = Hour
m = Minute
D = Day
M = Month
Y = Year
X = 16 bits checksum not including <TAB>

Manual In Pulse (cmd): #WC_008_NN<TAB>XXXX<CR><LF>

N = Input number
X = 16 bits checksum not including <TAB>

1.3 ALGE

Available on USB and/or RS232.

Time data : (TOD) `_NNNN_CCC_HH:MM:SS.FFFF_00<CR>`

N = Candidate number (0 - 9999)
C = Channel number (C01 - C99) or if manual inputs (C0M – C9M)
H = Hours (00 - 23)
M = Minutes (00 - 59)
S = Seconds (00 - 59)
F = Fraction of seconds (0000 - 9999)
_ = Space

Time data : (Result) `_NNNN_cc_HH:MM:SS.FFFF_00<CR>`

N = Candidate number (0 - 9999)
c = Channel number (c1 - C9)
H = Hours (00 - 23)
M = Minutes (00 - 59)
S = Seconds (00 - 59)
F = Fraction of seconds (0000 - 9999)
_ = Space

Time Tick out : `HH:MM:SS.F<CR>`

H = Hours (00 - 23)
M = Minutes (00 - 59)
S = Seconds (00 - 59)
F = Fraction of seconds (0 - 9)
_ = Space

1.4 SEICO

Available on USB and/or RS232.

Time data : <STX>**X1**C__CHH:MM:SS.F__<CR><ETX>
 <STX>**X1**GQQQHH:MM:SS.FFF<CR><ETX>

C = Channel number (1 - 9)
S = Sequential number (00000 - 99999)
H = Hours (00 - 23)
M = Minutes (00 - 59)
S = Seconds (00 - 59)
Q = Sequential number (0 - 9999)
F = Fraction of seconds (000 - 999)
_ = Space

Time Tick out : <STX>**X1**____HH:MM:SS.F__<CR><ETX>

H = Hours (00 - 23)
M = Minutes (00 - 59)
S = Seconds (00 - 59)
F = Fraction of seconds (0 - 9)
_ = Space

1.5 FDS-Display

Available on RS232.

1.6 FDS-Printer

Available on RS232.

1.7 FDS-Binary

1.7.1 Flow control

The FDS protocol implement an optional flow control in the transmission, each frame header includes a sequential counter. Its value is incremented every time a new message is send.

If the flag “Request Ack” is set in a transmitted frame, an acknowledge message is expected with the corresponding sequential number. Acknowledge messages can have embedded data in response to a read sequence.

Time and synchro events doesn't need acknowledge.

1.7.2 Frame definition



DLE : 0x10

SOF : 0x02 Start of frame

EOF : 0x03 End of frame

LRC1-LRC2 : Check sum

SEQ_CNT : Frame sequential counter

FLAGS : Bits 1 : Ack requested (If set, a frame has to be send back with corresponding SEQ_CNT)

An ack is always sent when reading parameters

Bits 4 – 5 : 00 = Normal message

01 = This is an ACK (no data)

10 = NA

11 = This is an ACK (with data)

Bits 6 : 1 = Cmd Rejected

PAYLOAD : The payload Start with the Message ID and its data (see 1.7.4 and 1.7.5)

All bytes equal 0x10 in the payload are sent twice (but count only once in checksum). On reception, extra 0x10 bytes have to be removed before applying checksum.

1.7.3 Check Sum

The checksum includes all bytes in the payload and use the following algorithm.

LRC1 = 0; LRC2 = 0

Loop n = 0 ... n {

LRC1 = LRC1 + Data[n]

LRC2 = LRC2 + LRC1

}

1.7.4 Messages ID

Each message (Payload) start with a message ID (byte 0) then with some data.

Be sure you have the latest version of TBox / DBox installed

ID (byte 0)		
002	Write Parameter	PC -> TBox/DBox
003	Read Parameter	PC -> TBox/DBox
004	Parameter	TBox/DBox -> PC
010	Start Synchro	PC -> TBox/DBox
011	Download Run	PC -> TBox/DBox
012	Recall Time	PC -> TBox/DBox
013	Print Line	PC -> TBox/DBox
015	Manual input	PC -> TBox/DBox
016	Competitor Number for Input	PC -> TBox/DBox
017	Manual input with time	PC -> TBox/DBox
128	Top Synchro	PC -> TBox/DBox
129	New Time	PC -> TBox/DBox
130	Recalled Time	PC -> TBox/DBox
131	Time Tick	PC -> TBox/DBox
133	Sync Out To Radio Input Time Diff	PC -> TBox/DBox
134	New Result	PC -> TBox/DBox
135	New Speed	PC -> DBox
136	Idented Time	PC -> DBox

002 : Write Parameter

Bytes 0 : 2 (Message Id)
 Bytes 1 : Parameter Id (§[1.7.5](#))
 Bytes 2... : Parameter Data (§[1.7.5](#))

003 : Read Parameter

Bytes 0 : 3 (Message Id)
 Bytes 1 : Parameter Id (§[1.7.5](#))

004 : Parameter

Bytes 0 : 4 (Message Id)
 Bytes 1 : Parameter Id (§[1.7.5](#))
 Bytes 2... : Parameter Data (§[1.7.5](#))

010 : Start Synchro

Bytes 0	: 10 (Message Id)
Bytes 1	: NA
Bytes 2-5	: Synchro Time [sec]
Bytes 6-7	: Synchro Time [msec]
Bytes 8-9	: Synchro days (since 1.1.2001)
Bytes 10-11	: Synchro Time Zone (Time difference for UTC [min])
Bytes 12	: Synchro Type
0 = No source	: No effect on Synchro time (just exit synchro mode)
1 = At zero	: Time and date are set to zero. The synchro is triggered by one of the inputs
2 = Device	: Time is set using Bytes 2-9. The synchro is done immediately
3 = Manual	: Time is set using Bytes 2-9. The synchro is triggered by one of the inputs
4 = GPS	: Time zone is added to GPS time. Synchro is triggered by the GPS
5 = RS232 external	: No implemented
6 = from internal RTC	: Synchro time is set to the internal RTC (only valid on TBOX model 41 and above)

011 : Download Run

Bytes 0	: 11 (Message Id)
Bytes 1	: NA
Bytes 2-3	: Run number (0 = current)

012 : Recall Time

Bytes 0	: 12 (Message Id)
Bytes 1	: NA
Bytes 2-3	: Sequential number
Bytes 4	: Input number

013 : Print line

Bytes 0	: 13 (Message Id)
Bytes 1	: NA
Bytes 2..26	: Text to print (max 24 bytes in ASCII 127). Text end with '0x00'

015 : Manual input

Bytes 0	: 15 (Message Id)
Bytes 1	: NA
Bytes 2	: Input number (0...7 according to the TBox/Dbox model)

016 : Competitor Number (to be idented on next pulse)

Bytes 0	: 16 (Message Id)
Bytes 1	: NA
Bytes 2-3	: Competitor number
Bytes 4	: TBox input nb (TBox-41 : 0 = In1, 1 = In2, 2 = Radio A, ..., 7 = Radio F)

017 : Manual input with time

Bytes 0	: 17 (Message Id)
Bytes 1	: NA
Bytes 2	: Input number (0...7 according to the TBox/Dbox model)
Bytes 3	: NA
Bytes 4-7	: Synchro Time [sec]
Bytes 8-9	: Synchro Time [msec]
Bytes 10-11	: Synchro days (since 1.1.2001)
Bytes 12-13	: Competitor number (Bib)

128 : Top Synchro

Byte 0	: 128 (Message Id)
Byte 1	: NA
Bytes 2-5	: Synchro Time [sec]
Bytes 6-7	: Synchro Time [msec]
Bytes 8-9	: Synchro days (since 1.1.2001)
Bytes 10-11	: Synchro Time Zone (Time difference for UTC [min])
Byte 12	: Synchro Type (0 = No source, 1 = at zero, 2 = Device, 3 = Manual, 4 = GPS, 5 = RS232 external, 6 = RTC)

129 : New Time Stamps**130 : Recalled Time Stamps** (from a recall cmd or run download)**136 : Idented Time Stamps** (Existing time stamp with new Competitor number)

Bytes 0	: 129, 130 or 136 (Message Id)
Bytes 1	: NA
Bytes 2-5	: Time seconds
Bytes 6-7	: Day (since 1.1.2001)
Bytes 8-9	: Time msec + Bits 12-15 Time usec Msb
Bytes 10	: Time usec LSB
Bytes 11	: Chanel number
Bytes 12-13	: Sequential number [16 bits]
Bytes 14-15	: Competitor number
Bytes 16	: Flags - Bits 0-3 0 = From input 1 = Manual time 2 = Soft generated 3 = Copied 4 = Inserted - Bit 4-5 (Radio Rx status) 1 = Time received on the first transmission 2 = Time received after 2-4 attempts 3 = Time received after more than 4 attempts - Bit 6 = Some previous Times have been missed due to timeout - Bit 7 = Time has been relayed (WINP relay)
Bytes 17	: Input number
Bytes 18	: Radio RSSI, negative value in dbi (for TBox 41 Firm V3.1.0 and above)

131 : Time Tick

Bytes 0 : 131 (Message Id)
Bytes 1 : NA
Bytes 2-5 : Time seconds
Bytes 6-7 : Day (since 1.1.2001)
Bytes 8-9 : Time msec

133 : Sync Out to Radio input Time Diff

Bytes 0 : 133 (Message Id)
Bytes 1 : NA
Bytes 2 : Input number
Bytes 3 : Chanel number
Bytes 4-5 : Time msec
Bytes 6-7 : Time usec (0-999)

134 : New Result (TBox in auto timing mode / Dbox)

Bytes 0 : 134 (Message Id)
Bytes 1 : NA
Bytes 2-5 : Time seconds
Bytes 6-7 : Time msec
Bytes 8-9 : NA
Bytes 10-11 : Competitor Nb

134 : New Speed (DBox only)

Bytes 0 : 135 (Message Id)
Bytes 1 : NA
Bytes 2 : Index
Bytes 3 : Units (0 = m/s, 1 = km/h, 2 = mph, 3 = knot)
Bytes 4-5 : Competitor Nb
Bytes 6-9 : Speed (float on 4 bytes)
Bytes 10-13 : Units (Ascii format on 4 bytes)

1.7.5 Parameters ID

The parameter ID is the byte 1 in the payload. Parameters data are in byte 2 ... n.

ID (byte 1)		
000	Reserved	
001	Protocol Version	R
002	Device Info	R
004	Power Status	R
005	Radio Info	R
010	Buzzer Control	R/W
011	Run Counter	R/W
012	BLE Control	R/W
013	BLE Password	W
014	Device Name	R/W
016	Radio Device Info	R
017	Radio Group	R/W
018	Radio Control	R/W
020	GPS Status	R
021	GPS Location	R
030	Synchro Status	R
031	Time zone	R/W
032	Time precision	R/W
033	Device Time	R
034	Synchro Control	R/W
038	Wired Inputs Last Seq number	R
039	Radio Inputs Last Seq number	R
040	Wired Inputs Lock Time	R/W
041	Wired Inputs Mapping	R/W
042	Radio Inputs Lock Time	R/W
043	Radio Inputs Mapping	R/W
044	Radio Inputs SN	R/W
025	Software Inputs Mapping	R/W
046	Wired & Radio Inputs Disable status	R/W
048	Wired & Radio Inputs Blocked status	R
049	Inputs 1/A 2/B Merge	R/W
050	RS232 1 Settings	R/W
051	RS232 1 Time Tick Out	R/W
052	RS232 2 Settings	R/W
053	RS232 2 Time Tick Out	R/W
060	USB Settings	R/W
061	USB Time Tick Out	R/W
065	Display mode	R/W

001 : Protocol version (Read only)

Byte 2 : Com protocol version
Byte 3 : Com protocol revision (major rev = data/10; minor rev = data%10)

002 : Device info (Read only)

Bytes 2 - 5 : Serial Number
Byte 6 : Product Id
Byte 7 : Product Model
Byte 8 : Hardware version (version = data/10; revision = data%10)
Byte 9 : Firmware version
Byte 10 : Firmware revision (major rev = data/10; minor rev = data%10)
Byte 11 : BLE module firmware version
Byte 12 : BLE module firmware revision (major rev = data/10; minor rev = data%10)
Byte 13 : Com protocol version
Byte 14 : Com protocol revision (major rev = data/10; minor rev = data%10)
Byte 15 : GPS version
Bytes 16-21 : NA
Byte 22 : Peripherals list
- Bit 0 = With GPS
- Bit 1 = With Radio
- Bit 2 = Has a 2nd RS232 Port

004 : Power Status (Read only)

Byte 2 : Power Status
- Bit 0-3
0 = Battery not charging
1 = Battery charging at 100mA
2 = Battery charging at 500mA
3 = Battery charging at 1000mA
4 = Battery charge completed
- Bit 4 = USB power flag
- Bit 5 = NA
- Bit 6 = NA
- Bit 7 = NA
Byte 3 : Battery state of charge (0-100%)
Bytes 4 - 5 : Battery current in [mA] (signed)
Byte 6 : Internal temperature in °C (signed)
Byte 7 : Battery voltage (0.1V)

005 : Radio info (Read only)

Byte 2 : Radio band (0 = EU, 1 = US, 2 = India, 3 = Japan)
Byte 3 : Frequency calibration offset

010 : Buzzer control (R/W)

Byte 2 : Buzzer control register
0 = Buzzer Off; 1 = Buzzer On

011 : Run Counter (R/W)

Bytes 2 - 3 : Run counter (value is = to the next Run)

012 : BLE control (R/W)

Byte 2 : BLE control register
- Bit 0 : BLE Activation (0 = Off; 1 = On)
- Bits 1-3 : NA
- Bit 4 : 1 = Bluetooth Password disabled

013 : BLE password (W)

Byte 2-17 : BLE password (padded with 0)

014 : TBox Name (R/W)

Byte 2-17 : TBox name (byte = 0x00 for end of string)

016 : Radio Device Info (R)

Byte 2 : Device number [0-5] (WIRC/WINP....)
Byte 3 : Status
- Bit 0 : Reserved
- Bit 1 : Cell misaligned flag
- Bits 2-7 : Reserved
Byte 4-5 : Device SN
Byte 6 : Bits 0-3 = Product ID
Byte 7 : Model
Byte 8 : Firmware Version
Byte 9 : Firmware Revision
Byte 10 : Battery Status
- Bits 0-3 : Soc (0-10)
- Bit 4 : USB power
- Bit 5 : Batt charging
- Bits 6-7 : Reserved
Byte 11 : Last radio RSSI, negative value in dbi

017 : Radio Group (R/W)

Byte 2 : Radio Group (0 = Off, 1-8 = Group A-H)

018 : Radio Ctrl (R/W)

Byte 2 : Radio Ctrl register
- Bit 0 : Radio switch disabled (0 = Enabled; 1 = Disabled)

020 : GPS Status (Read only)

Byte 2 : Status (0 = Off, 1 = Searching, 2 = ready)
Byte 3 : Satellites used

021 : GPS Location (Read only)

Bytes 2 - 5 : Latitude (signed) [1/100000 of °] [+ = N, - = S]
Bytes 6 - 9 : Longitude (signed) [1/100000 of °] [+ = E, - = W]
Bytes 10 - 11 : Elevation (signed) [m]
Byte 12 : Position indicator

030 : Synchro Status (Read only)

Bytes 2 - 5 : Synchro Time [sec]
Bytes 6 - 7 : Synchro Time [msec]
Bytes 8 - 9 : Synchro Time [days] (since 1.1.2001)
Bytes 10 - 11 : Synchro Time Zone [min]
Byte 12 : Source (0 = No source, 1 = at zero, 2 = Device, 3 = Manual, 4 = GPS, 5 = RS232 external, 6 = RTC)
Byte 13 : Status (0 = No synchro, 1 = Waiting for Top, 2 = Synchronized)
Byte 14 : Flags (Bit_0: PPSI synchro lost)
Byte 15 : Inputs (Bits 0-3 = Input number used in Manual synchro, Bits 4 = Manual switch)

031 : Time Zone (R/W)

Bytes 2 - 3 : Time Zone [min]

032 : Time Precision (R/W)

Byte 2 : Time Precision (0 .. 4)
Byte 3 : Displayed result precision

033 : Device Time (Read only)

Bytes 2 - 5 : Time [sec]
Bytes 6 - 7 : Time [msec]
Bytes 8 - 9 : Time [days] (since 1.1.2001)
Bytes 10 - 11 : Time Zone [min]

034 : Synchro Out ctrl (R/W)

Bytes 2 : 0 = Sync pulse every sec
1 = Sync pulse every min
2 = Sync pulse Triggered by Radio input A (time diff is sent to RS232 Aux)
3 = Sync pulse Triggered by Radio input A&B (time diff is sent to RS232 Aux)

038 : Wired Inputs Last Seq number (R)

Bytes 2-3 : Input 1 Last Sqn
Bytes 4-5 : Input 2 Last Sqn
Bytes 6-7 : Input 3 Last Sqn
Bytes 8-9 : Input 5 Last Sqn
(A value of 65535 = No input)

039 : Radio Inputs Last Seq number (R)

Bytes 2-3 : Input A Last Sqn
Bytes 4-5 : Input B Last Sqn
Bytes 6-7 : Input C Last Sqn
Bytes 8-9 : Input D Last Sqn
Bytes 10-11 : Input E Last Sqn
Bytes 12-13 : Input F Last Sqn
(A value of 65535 = No input)

040 : Wired Inputs Lock time (R/W)

Bytes 2 - 3 : Input 1 lock Time (10ms inc)
Bytes 4 - 5 : Input 2 lock Time (10ms inc)
Bytes 6 - 7 : Input 3 lock Time (10ms inc) (No used in TBox-Radio)
Bytes 8 - 9 : Input 4 lock Time (10ms inc) (No used in TBox-Radio)

041 : Wired Inputs to Chn Mapping (R/W)

Bytes 2 - 5 : Input 1-4 Mapping (Chn value) (2-3 No used in TBox-Radio)

042 : Radio Inputs Lock time (R/W)

Bytes 2 - 3 : Input A lock Time (10ms inc)
Bytes 4 - 5 : Input B lock Time (10ms inc)
Bytes 6 - 7 : Input C lock Time (10ms inc)
Bytes 8 - 9 : Input D lock Time (10ms inc)
Bytes 10 - 11 : Input E lock Time (10ms inc)
Bytes 12 - 13 : Input F lock Time (10ms inc)
Bytes 14 - 17 : No used

043 : Radio Inputs to Chn Mapping (R/W)

Bytes 2 - 9 : Input A-H Mapping (Chn value) (G-H No used)

044 : Radio Inputs SN (R/W)

Bytes 2 - 3 : Input A WIRC SN
 Bytes 4 - 5 : Input B WIRC SN
 Bytes 6 - 7 : Input C WIRC SN
 Bytes 8 - 9 : Input D WIRC SN
 Bytes 10 - 11 : Input E WIRC SN
 Bytes 12 - 13 : Input F WIRC SN
 Bytes 14 - 17 : No used

025 : Software Inputs to Chn Mapping (R/W)

Bytes 2 : Soft Input 1 (CountDown end)

046 : Wired & Radio Inputs Disable Status (R/W)

Bytes 2 : Wired Input 1-4 disable status (bit_0 = Input 1 ...) (2-3 No used in TBox-Radio)
 Bytes 3 : Radio Input A-H disable status (bit_0 = Input 1 ...) (G-H No used)

048 : Wired & Radio Inputs Blocked Status (R)

Bytes 2 : Wired Input 1-4 blocked status (bit_0 = Input 1 ...) (bits 2-3 No used in TBox-Radio)
 Bytes 3 : Radio Input A-F blocked status (bit_0 = Input 1 ...)

050 : RS232 1 Settings (R/W)

Byte 2 : NA
 Byte 3 : Event Protocol
 0 = None
 1 = FDS Binary
 2 = FDS Text (TagHeuer)
 3 = ALGE
 4 = SEIKO
 5 = DISPLAY TAG
 6 = DISPLAY ALGE
 7 = PRINTER
 Byte 4 : Baud Rate
 0 = 4800Bds
 1 = 9600Bds
 2 = 19200Bds
 3 = 38400Bds
 4 = 57600Bds

051 : RS232 1 Time Tick Out (R/W)

Byte 2 : Time tick out value
 0 = disabled
 1 = every 0.1 sec
 2 = every 1 sec
 3 = every 1 min

052 : RS232 2 Settings (R/W)

Byte 2 : NA
Byte 3 : Event Protocol
0 = None
1 = FDS Binary
2 = FDS Text (TagHeuer)
3 = ALGE
4 = SEIKO
5 = DISPLAY TAG
6 = DISPLAY ALGE
7 = PRINTER
Byte 4 : Baud Rate
0 = 4800Bds
1 = 9600Bds
2 = 19200Bds
3 = 38400Bds
4 = 57600Bds

053 : RS232 2 Time Tick Out (R/W)

Byte 2 : Time tick out value
0 = disabled
1 = Time frame every 0.1 sec
2 = Time frame every 1 sec
3 = Time frame every 1 min
4 = Radio Input A to Sync Out Time Diff
5 = Radio Input A & B to Sync Out Time Diff
6 = Master Sync Time frame

060 : USB CDC Settings (R/W)

Byte 2 : NA
Byte 3 : Event Protocol
0 = None
1 = FDS
2 = THCOM08
3 = ALGE
4 = SEIKO

061 : USB Time Tick Out (R/W)

Byte 2 : Time tick out value
0 = disabled
1 = every 0.1 sec
2 = every 1 sec
3 = every 1 min

1.7.6 Frame sample

Below are 2 samples of data exchange between a PC and a TBox.

All values are in Hex format.

Data are in little Endian order (LSB first).

Read Protocol Version:

PC->TBOX

SOF	Seq '0'	ACK requested	Msg Id	Param id	EOF	LRC
10 02	00	01	03	01	10 03	0A 05

TBOX->PC

SOF	Seq '0'	ACK with data	Msg id	Param id	Data	EOF	LRC
10 02	00	30	04	01	04 00 00 00	10 03	0D 39

Start Synchro (time is included)

PC->TBOX

SOF	Seq '26'	ACK not requested	Msg Id	Data	EOF	LRC
10 02	1a	00	0A	00 B6 DE 00 00 EF 00 8B 1D 78 00 02	10 03	A4 C9

Data details

00-00-de-b6 = Time [sec]

00-ef = Time [msec]

1d-8b = Time [days]

00-78 = Time zone [min]

02 = Type (Device)