



eScan2 protocol

Command protocol

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Command protocol

Evolutions table

VERSION	DATE	NAME	CHAPTER	DESCRIPTION
1.0	21/01/2021	Luc Wathelet		Document creation

Reference documents

	Title	Reference	Version	Date
	sScan2 firmware		V1.02	21/01/2021

Confidentiality

The information disclosed below are confidential.



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Command protocol

1. INTRODUCTION

This document describes the protocol through USB to communicate with eScan2

2. ESCAN2 FRAME FORMAT

The eScan2 frame is sent every 4s:

IESCAN2-HW1-SW1-V1.02 BS M1-1 U21.01.2021 W09:40:14.274 C250 X0
Y0 A30-49-100 R88

Identifier	Designation
I	Product name, hardware and software version
B	Message type. Status message = S
M	Message number aa-bb aa: total message number bb: messages today
U	Date in format dd.mm.yyyy
W	Time in format hh:mm:ss:msec
C	eLine code from 0 to 253
X	Tag protocol format from 0 to 7
Y	eScan2 serial number
A	Aaa-bb-+0-cc aa=battery voltage in 1/10Volt bb=usb voltage in 1/10Volt ccc=battery in percent
R	Checksum



Command protocol

3. DUMP TAG FRAME FORMAT

The frame is sent each tag a tag is passed near the eScan2 with the control code:

240..244

250..253

3.1. Emitag frame format

N3845575 U21.01.2021 W09:44:57.0003845575 L0112 X0 V306-255255
S3845575 DemiTag II P0-240-81:08:34.660 P1-240-81:08:54.038 R76

Identifier	Designation
N	Custom tag number
U	Date in format dd.mm.yyyy
W	Time on unit when message is sent
L	Emitag version
X	Protocol type from 0 to 7
V	Internal power information aaa-bbbccc aaa =voltage level in 10mV Ex: 302= 3.02V bbb= not used ccc= not used
S	Tag number
D	Text following R is a free text which is programmed into the tag
P or Q	Vary with protocol format, see below
R	Checksum



Command protocol

3.1. eCard frame format

N240919 U21.01.2021 W09:48:40.000240919 X0 V000-000-318 S240919
DEmit EPT V5.00 P0-0-00:00:00.000 P1-250-00:01:43.000 P2-250-
00:28:29.000 P3-250-00:04:27.000 R96

Identifier	Designation
N	Custom tag number
U	Date in format dd.mm.yyyy
W	Time on unit when message is sent
X	Protocol type from 0 to 7
V	Internal power information 000-000-aabb aa= Production week bb=Production year
S	Tag number
D	Text following R is a free text which is programmed into the tag
P or Q	Vary with protocol format, see below
R	Checksum

4. PROROCOLS

Protocol 0 is called "Normal".

Protocol 1 is called "Short".

Protocol 2 is called "Ext. Dump".

4.1. Protocol format 0 and 1

P0-250-168:53:19.036



Command protocol

P	Start control in the race in format Pa-bbb-hh:mm:ss:msec a= post number bbb= post code number from 0 to 255
---	---

4.2. Protocol format 2

This protocol shows the time from tag production

Q0-250-37493599036

Q	Start control in the race in format Pa-bbb-x a= post number bbb= post code number from 0 to 255 x= number of msec from tag production at control passing
---	---

4.3. Protocol format 3

This protocol is equivalent to protocol format 2 with the time in control information.

Q0-250-37493599036-0

Q	Start control in the race in format Pa-bbb-x-c a= post number bbb= post code number from 0 to 255 x= number of msec from tag production at control passing c=time in control in msec. Time spent in the loop
---	--



Command protocol

4.4. Protocol format 4

This protocol is equivalent to protocol format 2 with the time from start.

Q0-250-37493599036-168:53:19.036

Q	Start control in the race in format Pa-bbb-x-y a= post number bbb= post code number from 0 to 255 x= number of msec from tag production at control passing y= time from start in msec at control passing
---	--

4.5. Protocol format 5 and 6

This protocol is equivalent to protocol format 5 with the time in control.

Q0-250-37493599036-0-168:53:19.036

Q	Start control in the race in format Pa-bbb-x-y-c a= post number bbb= post code number from 0 to 255 x= number of msec from tag production at control passing y= time from start in msec at control passing c=time in control in msec. Time spent in the loop
---	---

4.6. Protocol format 7

Q0-250-37493599036-168:53:19.036-07:48:43.890-2



Command protocol

Q	<p>Start control in the race in format Pa-bbb-x-y-z-c</p> <p>a= post number</p> <p>bbb= post code number from 0 to 255</p> <p>x= number of msec from tag production at control passing</p> <p>y= time from start in msec</p> <p>z= clock at control at control passing</p> <p>c=date difference. Days since the split. For instance, 194 means 194 days. 0 is today.</p>
---	--

5. EMITAG PASSING

Protocol 0 is called "Normal".

Protocol 1 is called "Short".

Protocol 2 is called "Ext. Dump".

5.1. Protocol format 1

This is applied for protocol format 1

BM N3845575 C65 E10:00:10.277 RA9

B	<p>S: Status message</p> <p>M: Passing</p> <p>A: Reading (Not supported on eScan2)</p> <p>R: RAC (Not supported on eScan2)</p> <p>P: Startgrind/photocell</p>
---	---



Command protocol

	E: ePOST status
N	Custom tag number
C	Control code from 0 to 255
E	Time when passing Emitag on control. Format hh:mm:ss:msec
W	Time when receiving Emitag time after passing on control. Format hh:mm:ss:msec

5.2. Other protocol format

This is applied for protocol format 0 ,2, 3, 4, 5, 6,7

The Emitag passing frame is sent with the control code

BM N3845575 Y0 M108 C65 E09:59:27.965 T04:23:00.069 O0 R77

B	S: Status message M: Passing A: Reading (Not supported on eScan2) R: RAC(Not supported on eScan2) P: Startgrind/photocell E: ePOST status
N	Custom tag number
Y	Serial number
M	Tag passing number
C	Control code from 0 to 255
E	Time when passing Emitag on control.



Command protocol

	Format hh:mm:ss:msec
T	Elapsed time since emitag last saw zero-post/start. Format hh:mm:ss:msec Wraps at 4:39:37:215(!) (3 bytes of milliseconds)
O	Number of radio transmissions before complete package
R	Checksum

6. COMMANDS

To change settings in the timing unit, or to spool messages etc., eScan2 can receive commands over USB.

These commands are somewhat different than the packages we receive from the unit. For a start, commands is not enclosed by the <STX>...<ETX> pair. It ALWAYS starts with a / (Ascii 0x2F) and ends with <CR><LF> (Ascii 0x0D and 0x0A).

If the command is correctly received, the eScan2 will vibrate briefly and emit a short beep.

If the command is incorrect or the data format is invalid, the eScan2 will vibrate and emit long beep.

Type	Speed (baud)	Data Bits	Stop Bits	Parity	Flow Control
USB	115200	8	1	None	None

6.1. Commands list

Press “?” to show the supported commands list.

Command	Designation
/ACK	Activate acknowledgement to radio message
/NACK	Deactivate acknowledgement to radio message
/SD	Set data DD/MM/YYYY
/SC	Set clock HH:MM:SS
/ID	Send status message
/ST	Send status message
/PP	Change protocole (0-7)
/CD	Set code (0-249)
/QM	Spool today dumps



Command protocol

/QD	Spool all dumps
/QC	Spool a specific dump (1-M)
/QF	Spool from a specific dump (1-M)
/QS	Stop spooling dumps
/QT	Spool a specific tag (1-M)
/FCLEAR	New race
/CL	New race
/DELETE	Delete competitors and dump
/BLEON	Switch on/off BLE (1/0)
/PRINTERON	Select printer (0=no printer, 1=serial, 2=wireless)
/BTPRINTER	Set wireless printer address (12 hex digit)
/KEY	Simulate a keypad press (1-14)
/EOFF	Switch off character echo (0/1)
/KD	Spool all competitors
/KS	Stop spooling competitors
/FACTORY	Default factory settings

6.2. Activate acknowledgement

Activate acknowledgement on received Emitag radio frame. If the acknowledgement is activated the radio message is not repeated.

Command	/ACK
Data	
Default	Not activated
Example	/ACK

6.3. Deactivate acknowledgement

Deactivate acknowledgement on received Emitag radio frame. If the acknowledgement is not activated the radio message is repeated five times.

Command	/NACK
Data	
Default	Not activated
Example	/NACK



Command protocol

6.4. Set date

Set the current date in the eScan2

Command	/SD
Data	dd.mm.yyyy or dd.mm.yy
Default	Production date
Example	/SD21.01.2021

6.5. Set clock

Set the current time in the eScan2

Command	/SC
Data	hh:mm:ss
Default	Production time
Example	/SC14:30:52

6.6. Force status message

This will force the unit to send a status message.

Command	/ID or /ST
Data	-
Example	/ID or /ST

6.7. PC output protocol format

Change protocol format sent to serial link to PC

Command	/PP
Data	Protocole number from 0 to 7
Default	0
Example	/PP0



Command protocol

6.8. Set CODE

Set the code of the control. This is important is several eScan2 are used at the same time. 4 different eScan2 can dump tags independently.

Code 250 is called Code A

Code 251 is called Code B

Code 252 is called Code C

Code 253 is called Code D

Command	/CD
Data	Code from 0 to 253 (See supported code below)
Default	250
Example	/PP65

Typical codes used in eScan2:

250	Dump last race
251	Dump last race
252	Dump last race
253	Dump last race
0	Start code
65	Normal passage code

Other supported codes:

240-243	Dump last 5 days
244	Dump last 500 passages

6.9. Spool today dumps or passages

Spool today dumps or passages.

Command	/QM
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Command protocol

Data	-
Example	/QM

6.10. Spool all dumps

Spool all dumps or passages.

Command	/QD
Data	-
Example	/QD

6.11. Spool specific passage

Spool a specific passage.

Command	/QC
Data	1-M where M is the total number of messages. This command is not supported for dumps
Example	/QC5

6.12. Spool from a specific passage

Spool all passages from a specific passage.

Command	/QF
Data	1-M where M is the total number of passages. This command is not supported for dumps
Example	/QF5 => show passage 5

6.13. Spool stop

Stop the spool process. eScan2 can contain a large number of messages. The spool process can be interrupted at any time with the spool stop command.

Command	/QS
Data	-
Example	/QS



Command protocol

6.14. Spool specific tag

Spool a specific tag from the tag number. Output all dumps and passages from a specific tag number.

Command	/QT
Data	Tag number
Example	/QT3845575

6.15. New race

Launch a new race: reset message counter to 1 and erase the display. The previous dumps and passages are kept in the memory.

Caution! Never use this during a race!

Command	/FCLEAR or /CL
Data	
Example	/CL

6.16. Delete competitors and dumps/passages

Delete all competitors and dumps (or passages) from memory. Dump or passage number is set to 0.

Command	/DELETE
Data	
Example	/DELETE

6.17. Switch BLE to ON/OFF

Switch the BLE ON or OFF. If no mobile is paired with the eScan2, the BLE is automatically set to OFF after 3 minutes.

Command	/BLEON
Data	0 or 1 0= BLE is set to OFF 1= BLE is set to ON



Command protocol

Default	0= BLE is set to OFF
Example	/BLEON1

6.18. Define printer

Define the printer to use

Command	/PRINTERON
Data	0, 1 or 2 0= No printer 1= Serial printer (connected to RJ11 connector) 2= Wireless printer
Default	2= Wireless printer
Example	/PRINTERON2 => wireless printer

6.19. Set wireless printer serial number

Set the wireless printer serial number to pair the eScan2 with a wireless printer.

Command	/BTPRINTER
Data	12 hexadecimal digits of the printer
Default	No wireless printer defined
Example	/BTPRINTER662266606FE6

6.20. Keypad simulation

Simulate a physical press on any key

Command	/KEY
Data	1 = 0 or space 2 = key 1



Command protocol

	3= key 2 or down arrow 4= key 3 5= key 4 or left arrow 6= key 5 7= key 6 or right arrow 8= key 7 9= key 8 or up arrow 10= key 9 11= return key 12= scan key 13= on or clear key 14= menu key
Example	/KEY14 enter in menu

6.21. Set echo off

Turn off local echo of typed characters.

Command	/EOFF
Data	0 or 1 0= characters are echoed 1= characters are not echoed
Default	1= characters are not echoed
Example	/EOFF0 => characters are echoed

6.22. Show all competitors

Show all competitors registered in memory

Command	/KD
----------------	-----



Command protocol

Data	-
Example	/QD Column 1: competitor name Column 2: start number Column 3: Tag 1 Column 4: Tag 2 L.Wathel 1 3855996 3977238 S.Løkken 2 3654290 4040903 A.Smides 3 3841293

6.23. Stop showing competitors

The memory can contain a large number of competitors.

The process can be interrupted at any time with the stop command.

Command	/KS
Data	-
Example	/KS

6.24. Factory command

The factory reinitialises the eScan2 to its factory defaults:

- User parameters as such as languages...
- Delete all dumps and/or passages.
- Delete all competitors.

Command	/FACTORY	
Data	-	
Example	/FACTORY	



Command protocol

7. DEFAULT SETTINGS

Parameter	Default value
Code	250 (Code A)
Acknowledgement	Off
Dump or passage number	1
Protocol	Normal protocol (0)
Display mode	Display RSSI, displays the received radio level in tag number/info on the LCD display
Store all	Off: memorize tag with a specific code defined in the eScan2 (Command /CD)
Language	English
Font size	Large
Vibrator	On
Sound	On
BLE	Off
Barcode	On
Printer	Wireless printer
Keypad lock	On
eCard sound	Beep
Emitag sound	Beep
Sleep timeout	1 hour
Character echo	Off
Pulse width	5ms on input 1 10mS on input 2



Command protocol