



COLOSSEO Universal Protocol

Protocol Description (20190319)

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1 What is COLOSSEO Universal Protocol?

COLOSSEO Universal Protocol is time and game information transport protocol over serial line (preferably RS485).

2 Hardware specification

Protocol	RS485
Baud rate	19 200
Parity	none
Data bits	8
Stop bits	1

Note: Specification may differ according to different conditions.

3 Communication protocol

3.1 Message format

Offset	Length	Value (hex)	Description
0	1	0x01	SOH – indicates start of message
1	1		Payload length (N)
2	1		Message type
3	N		Payload
N+3	1		XOR checksum
N+4	1	0x03	ETX – indicates end of message

3.2 Messages

Payload is guaranteed to not contain SOH, STX or ETX characters, so that consumer can be sure that start of the message is being read whenever SOH character on the serial link was read.

Values are ASCII encoded (if not specified otherwise).

3.2.1 Time message (0x01)

Offset	Length	Value	Description
0	1	'R', 'P'	Time is running R-running, P-paused
1	1		Period number
2	1	'P', 'I', 'O', 'S'	Period type: P-period, I-intermission, O-overtime, S-shootout
3	5	e.g. '09.9', '12:00'	Time – format 'mm:ss' or 'ss.t' (last minute if counting down)

3.2.2 Game message (0x02)

Offset	Length	Value	Description
0	3	e.g. ' 1'	Score home
3	3		Score visitors
6	3		Shots on goal home
9	3		Shots on goal visitors
12	1		Timeouts left home
13	1		Timeouts left visitors
14	1		Team violations home
15	1		Team violations visitors
16	1		Serving team: 1-home, 2-visitors

3.2.3 Team name message (0x03)

Offset	Length	Value	Description
0	1	'1', '2'	Team: 1-home, 2-visitors
1	N-1		Team name (UTF8 encoded)

3.2.4 Player name message (0x04)

Offset	Length	Value	Description
0	1	'1', '2'	Team: 1-home, 2-visitors
1	2		Index of player in this list
3	3		Player jersey number
6	N-6		Player name (UTF8 encoded)

3.2.5 Player statistics message (0x05)

Offset	Length	Value	Description
0	1	'1', '2'	Team: 1-home, 2-visitors
1	2		Index of player in this list
3	3		Player jersey number
6	2		Player faults
8	3		Player points
11	3		Player assists

3.2.6 Penalties message (0x06)

Offset	Length	Value	Description
0	1	'1', '2'	Team: 1-home, 2-visitors
1	3		Player jersey number
4	1	'P'	Penalty type: P-personal (otherwise space)
5	5		Penalty remaining time 'mm:ss'

Note: Multiple penalties can be concatenated in this message. If there are no penalties, this message is empty.

3.2.7 Timeout message (0x07)

Offset	Length	Value	Description
0	1	'1', '2'	Team: 1-home, 2-visitors
1	4		Time – format 's.t'

3.2.8 Basketball specific message (0x11)

Offset	Length	Value	Description
0	3	'1', '2'	Shot clock – format 's' or 's.t'

3.2.9 Tennis specific message (0x12)

Offset	Length	Value	Description
0	2	'1', '2'	Game score home
2	2		Game score visitor
4	2		1 st set score home
6	2		1 st set score visitor
8	2		2 nd set score home
10	2		2 nd set score visitor
12	2		3 rd set score home
14	2		3 rd set score visitor

Offset	Length	Value	Description
16	2		4 th set score home
18	2		4 th set score visitor
20	2		5 th set score home
22	2		5 th set score visitor

3.2.10 Volleyball specific message (0x13)

Offset	Length	Value	Description
0	2		1 st set score home
2	2		1 st set score visitor
4	2		2 nd set score home
6	2		2 nd set score visitor
8	2		3 rd set score home
10	2		3 rd set score visitor
12	2		4 th set score home
14	2		4 th set score visitor
16	2		5 th set score home
18	2		5 th set score visitor

3.3 Checksum calculation

Checksum is calculated from all header and payload bytes.

```

cs = 0
cs = cs XOR byte[0]
cs = cs XOR byte[1]
...
cs = cs OR 0x80

```

3.4 Examples

Example: Time message (paused in 1st period 00:06)

			P	1	P	0	0	:	0	6		
01	08	01	50	31	50	30	30	3a	30	36	85	03

Example: Score message (1:0)

01	10	02	20	20	31	20	20	30	20	20	30	20	20	30	31	32	30	30	91	03
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Example: Team name 'Göteborg'

01	0a	02	31	47	c3	b6	74	65	62	6f	72	67	83	03
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----