

Network output and protocols



Manual



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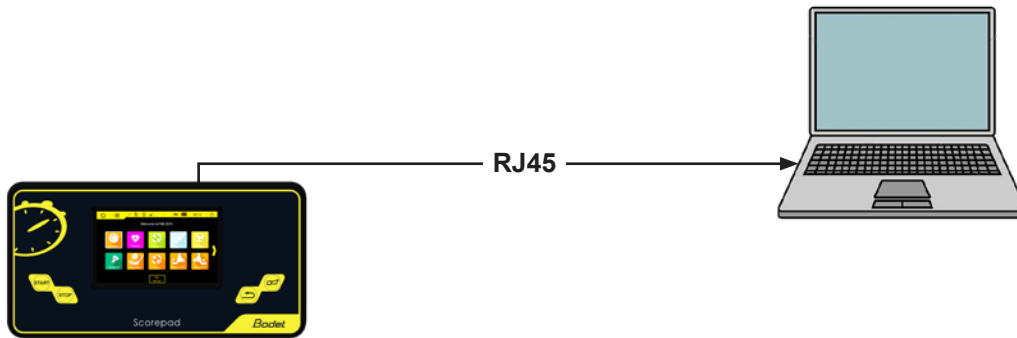
Réf.: 608264B

1. Installation

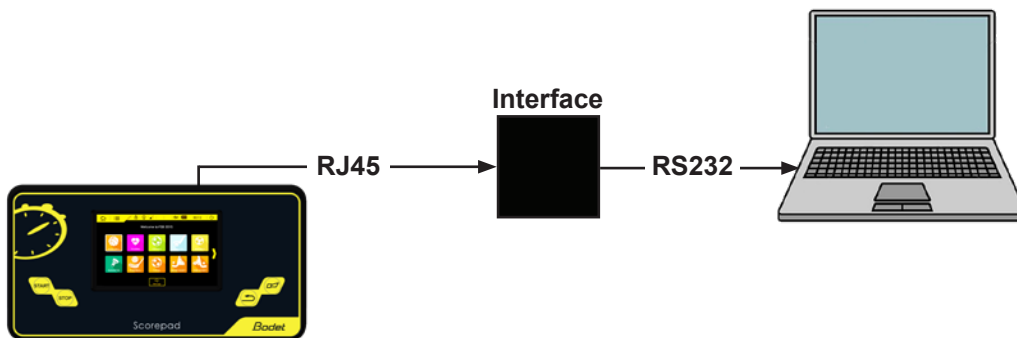
The Scorepad keyboard is equipped with a RJ45 output. This output can also be connected to a RJ45/RS232 interface.

There are two ways for transmitting the match data:

1 : from the RJ45 port of Scorepad keyboard to the IP address of the external PC.



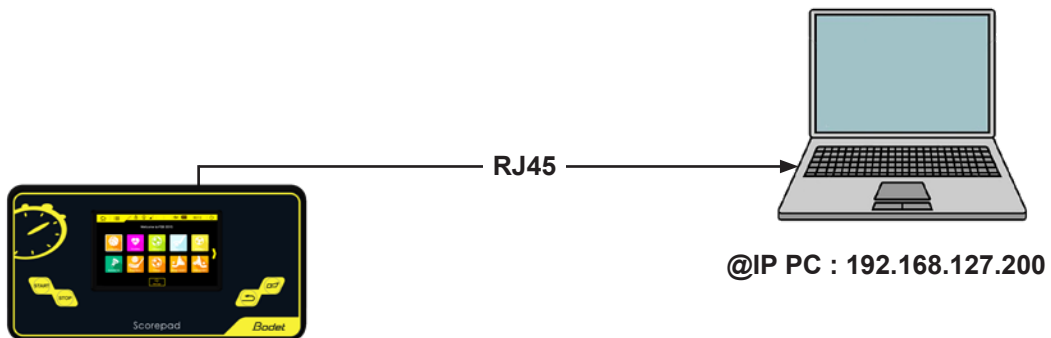
2 : from the RJ45 port of the Scorepad to the RS232 com port of the external PC via an RJ45/RS232 interface.



Note: the protocol output is only available on the Scorepad MAIN keyboard.

2. CAS configuration number 1: Scorepad - PC


Case 1: from the RJ45 port of Scorepad keyboard to the IP address of the external PC.

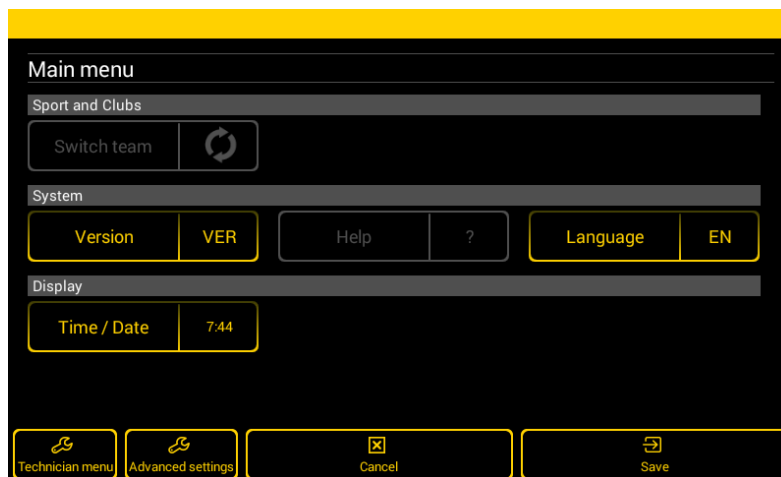



@IP Scorepad : 192.168.127.100

@IP protocole : 192.168.127.200

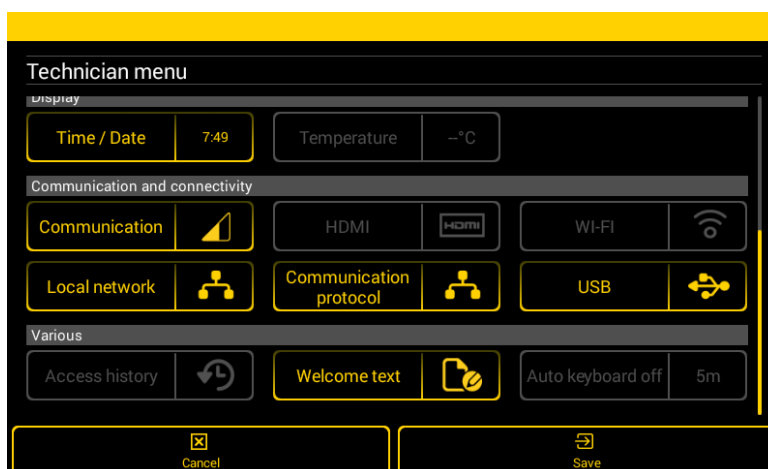
STEP 1: CONFIGURE THE SCOREPAD

1) On the welcome screen press  :



Scroll down to display the **Local Network** 

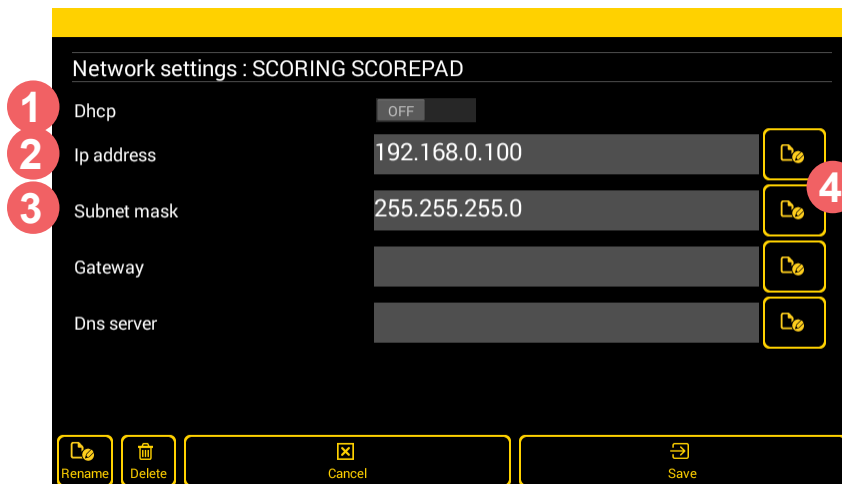
2) Press  **Menu technicien** and enter the technician code (4934).



3) Press **Local Network**  :




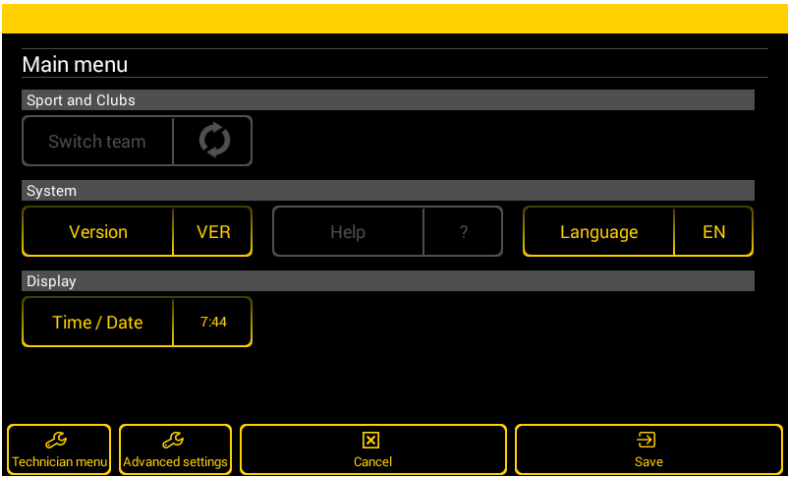
4) Press **+ Create** and enter the name of the protocol (ex. Scoring Scorepad) :



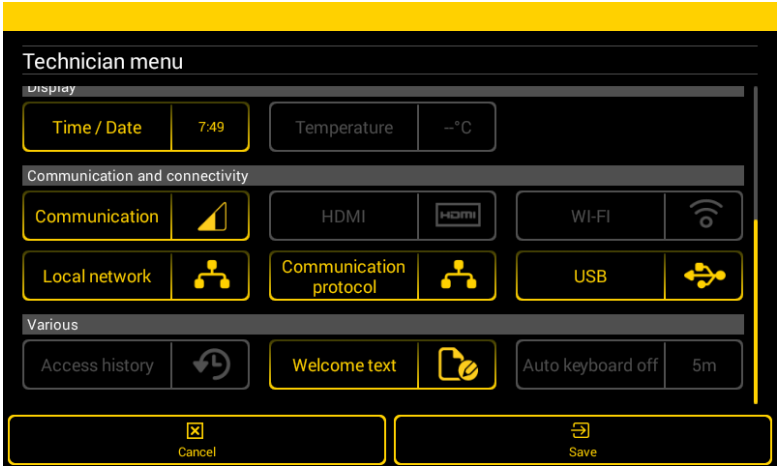
- 1 Server DHCP to OFF.
- 2 Enter the IP address of Scorepad (by default 192.168.127.100)
- 3 Keep the default value of the subnet mask.
- 4 Change the settings.

STEP 2: CONFIGURE THE PROTOCOL

1) On the welcome screen press  :



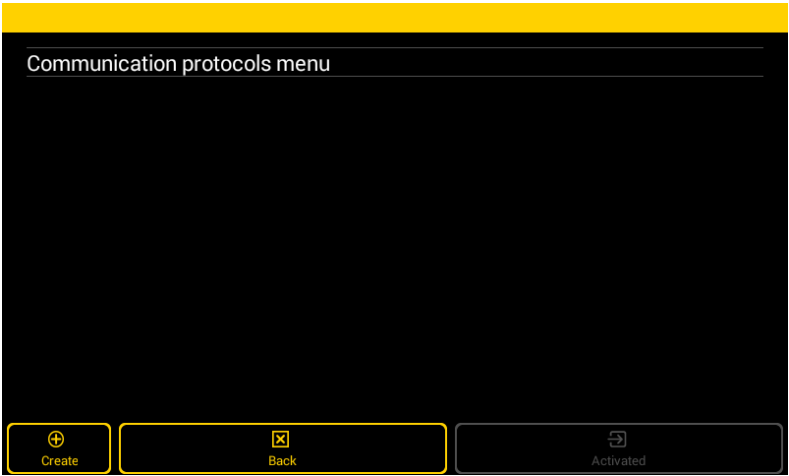
2) Press  **Menu technicien** and enter the technician code (4934).



Scroll down to display the **communication Protocols**



3) Press **communication Protocols**  :



4) Press **+ Create** and enter the name of the protocol (ex. Scoring Scorepad):

Communication Protocol settings : SCORING SCOREPAD

1 Type TV protocol Data Bodet Web services

2 Ip address

3 Port

4 Test communication

Rename Delete Cancel Save

- 1 Choose Protocol TV.
- 2 Enter the IP address of the PC.
- 3 Enter the communication port.
- 4 Configuration Test: A green rectangle is displayed at the bottom of the Scorepad screen.

Communication Protocol settings : SCORING SCOREPAD

Type TV protocol Data Bodet Web services

Ip address 192.168.127.200

Port 4001

Test communication

CONNECTION OK

Example :

Scorepad protocol configuration

Communication Protocol settings : PC

Type TV protocol Data Bodet Web services

Ip address 192.168.127.200

Port 4001

Test communication

Rename Delete Cancel Save

Configuration réseau du PC

Protocole Internet version 4 (TCP/IPv4)

Les paramètres IP peuvent être déterminés automatiquement si votre ordinateur est connecté à Internet. Sinon, vous devez demander les paramètres IP à votre administrateur réseau.

Obtenir une adresse IP automatiquement

Utiliser l'adresse IP suivante :

Adresse IP : 192 . 168 . 127 . 200

Masque de sous-réseau : 255 . 255 . 255 . 0

Adresse par défaut : . . .

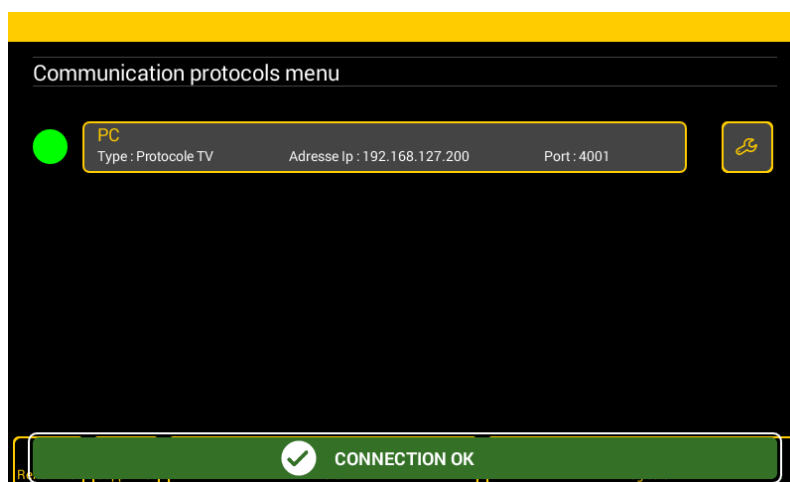
Obtenir les adresses des serveurs DNS automatiquement

Utiliser l'adresse de serveur DNS suivante :

Serveur DNS préféré : . . .

5) Save configuration.

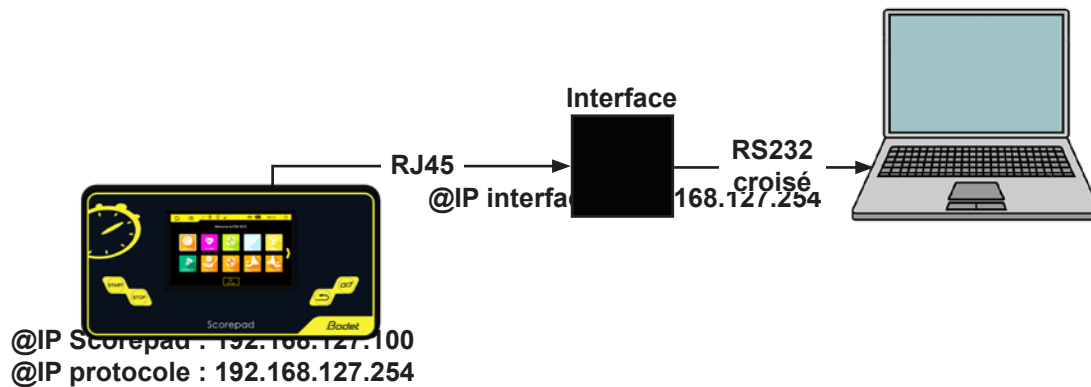
6) Enable protocol:



7) Start the chosen sport and the match. The protocol will be automatically transmitted on the RJ45 output.

3. CAS configuration number 2: Scorepad - interface - PC

Case 2: from a RJ45 via RS232 interface to a PC.



STEP 1: CONFIGURE THE INTERFACE RJ45-RS232

There are 2 way to configure the interface: web interface or NPort Administrator software.

Web interface

- 1- Make sure the the PC is configured to be on the same network than the interface.
- 2- In your Internet browser enter the IP address of the interface. By default the IP address of the in ter- face is indicated on the back of the product.
- 3- Password: moxa
- 4- Left menu: Operating Settings > port 1

MOXA®**Total Solution for Industrial Device Networking**

■ Model	- NPort 5150A	■ IP	- 10.17.30.89
■ Name	- NP5150A_449	■ Serial NO.	- 449

Operation Modes

Port 1

Operation mode TCP Server

TCP alive check time 1 (0 - 99 min)

Inactivity time 0 (0 - 65535 ms)

Max connection 1

Ignore jammed IP ☒ No ☐ Yes

Allow driver control ☒ No ☐ Yes

Local TCP port 4001

Command port 966

Data Packing

Packing length 0 (0 - 1024)

Delimiter 1 00 (Hex) ☐ Enable

Delimiter 2 00 (Hex) ☐ Enable

Delimiter process Do Nothing (Processed only when packing length is 0)

Force transmit 0 (0 - 65535 ms)

Submit

- Main Menu

- Overview
- Quick Setup
- Export/Import
- Basic Settings
- Network Settings
 - Serial Settings
 - Port 1
 - Operating Settings**
 - Port 1
 - Accessible IP Settings
 - Auto Warning Settings
 - Upgrade Firmware
 - Monitor
 - Change Password
 - Load Factory Default
 - Save/Restart

5- Configuration to respect:

Port 1	
Operation mode	TCP Server ▼
TCP alive check time	1 (0 - 99 min)
Inactivity time	0 (0 - 65535 ms)
Max connection	1 ▼
Ignore jammed IP	<input checked="" type="radio"/> No <input type="radio"/> Yes
Allow driver control	<input checked="" type="radio"/> No <input type="radio"/> Yes
Local TCP port	4001
Command port	966

Data Packing	
Packing length	0 (0 - 1024)
Delimiter 1	00 (Hex) <input type="checkbox"/> Enable
Delimiter 2	00 (Hex) <input type="checkbox"/> Enable
Delimiter process	Do Nothing ▼ (Processed only when packing length is 0)
Force transmit	0 (0 - 65535 ms)

Submit

6- Serial Port Configuration. Left menu: Serial Settings > port 1

Serial Settings

Port 1	
Port alias	

Serial Settings	
Baud rate	9600 ▼
Data bits	8 ▼
Stop bits	1 ▼
Parity	None ▼
Flow control	None ▼
FIFO	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Interface	RS-232 ▼

Submit

Software PC: NPort Administrator

- 1- Make sure that the PC is on the same network than the Interface.
- 2- Download NPort Administrator (setup in the Zip file: Npadm_Setup_VerX.XX_Build_xxxxxxx.zip).
- 3- Install the NPort Administrator software and start it.
- 4- Do a search and select the Moxa interface.
- 5- Proceed to the configuration as follow:
 - a. Tab « Operating Mode », view Setting:

Operating Mode

1 Port(s) Selected. 1st port is Port 1

Operating Mode: TCP Server Mode

TCP Server

TCP Server Mode Settings

Local TCP Port: 4001

Command Port: 966

Max Connection: 2

Misc (Optional)

TCP Alive Check Timeout: 2 (0-99 min)

Inactivity Timeout: 0 (0-65535 ms)

☐ Allow Driver Control

☐ Ignore Jammed IP

Data Packing (Optional)

☐ Delimiter 1: 00 (0-H, Hex)

☐ Delimiter 2: 00 (0-H, Hex)

Delimiter Process: Do Nothing

Force Tx Timeout: 0 (0-65535 ms)

Packing Length: 0 (0-1024 bytes)

OK Cancel

- b. Serial tab: view Setting

Serial Settings

1 Port(s) Selected. 1st port is Port 1

☐ Apply port alias to all selected ports

Port Alias:

Baud Rate: 9600

Parity: None

Data Bits: 8

Stop Bits: 1


Flow Control: None

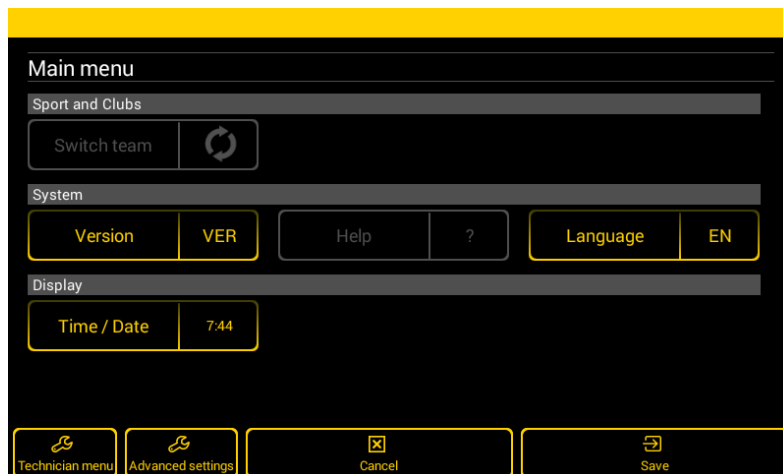
FIFO: Enable


Interface: RS-232

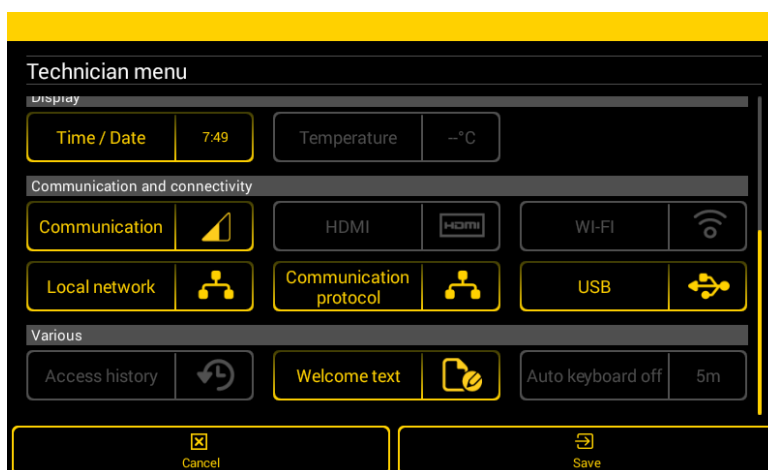
OK Cancel


STEP 2: CONFIGURE THE SCOREPAD

1) On the welcome screen press  :

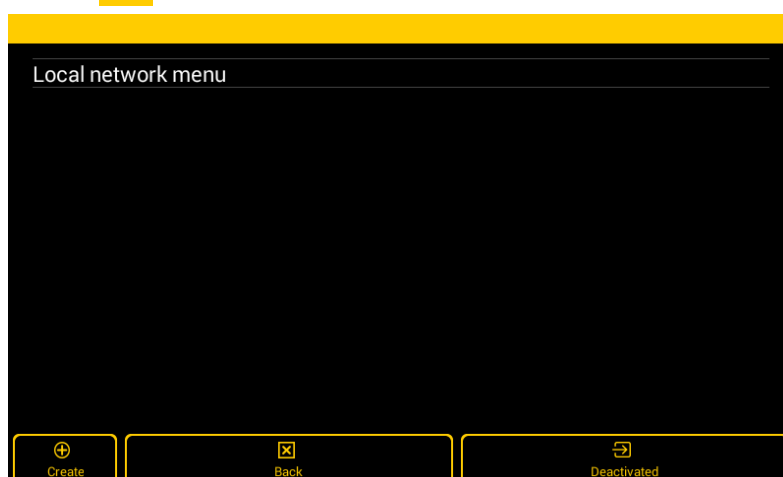


2) Press  **Menu technicien** and enter the technician code (4934)



Scroll down to display the **Local Network** 


3) Press **Local Network**  :

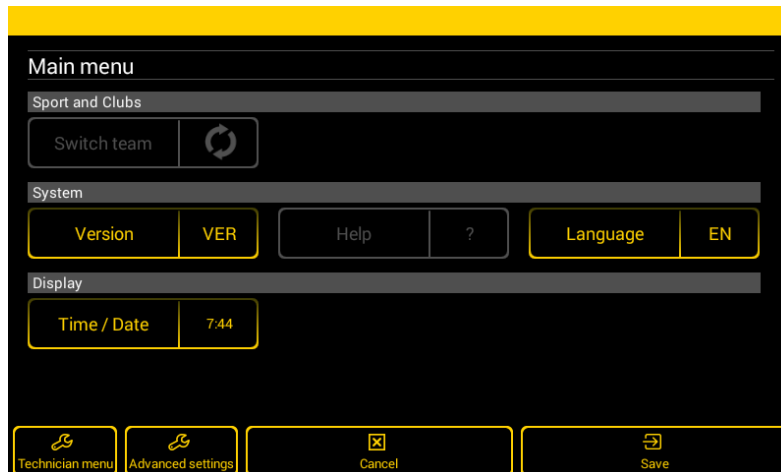



4) Press **+ Create** and enter the name of the protocol (values below by default):

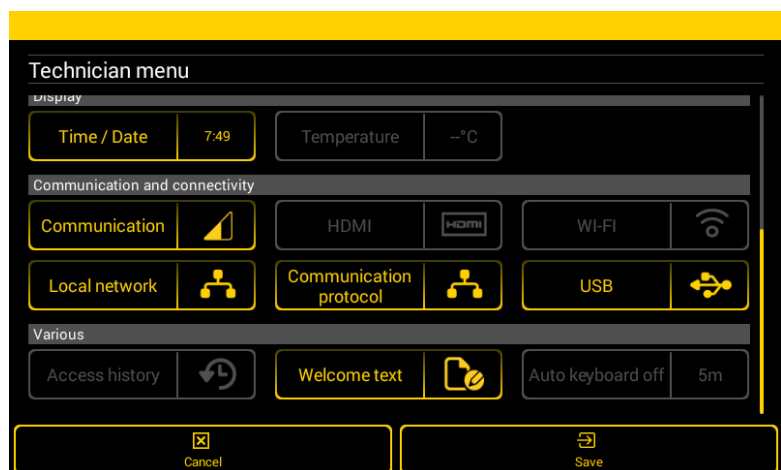
- 1 Server DHCP to OFF.
- 2 Enter the IP address of Scorepad (by default 192.168.127.100)
- 3 Keep the default value of the subnet mask.
- 4 Change the settings.

STEP 3: CONFIGURE THE PROTOCOL

1) On the welcome screen press  :



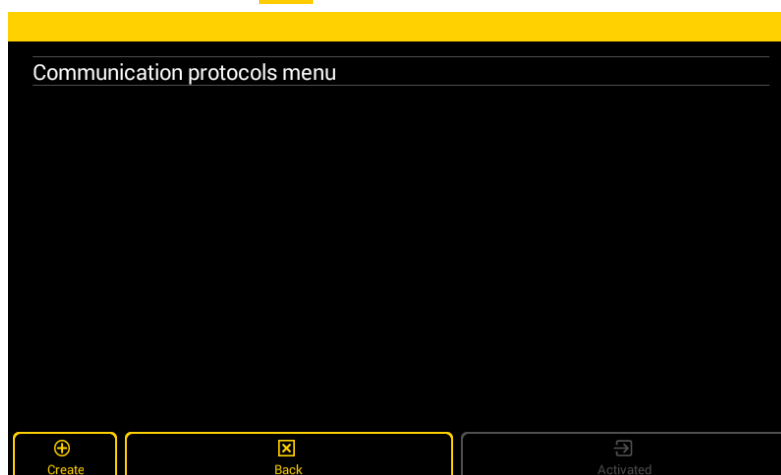
2) Press  **Menu technicien** and enter the technician code (4934).



Scroll down to display the **communication Protocols**



3) Press **communication Protocols**  :



4) Press + **Create** and enter the name of the protocol (values below by default):

Communication Protocol settings : SCORING SCOREPAD

1 Type TV protocol Data Bodet Web services

2 Ip address

3 Port

4 Test communication

Rename Delete Cancel Save

- 1 Choose the type of communication protocol.
- 2 Enter the IP address of the interface.
- 3 Enter the communication port of the interface
- 4 Configuration Test: A green rectangle is displayed at the bottom of the Scorepad screen.

Communication Protocol settings : MOXA

Type TV protocol Data Bodet Web services

Ip address 192.168.127.254

Port 4001

Test communication

CONNECTION OK

Example :

Scorepad protocol configuration

Communication Protocol settings : MOXA

Type TV protocol Data Bodet Web services

Ip address 192.168.127.254

Port 4001

Test communication

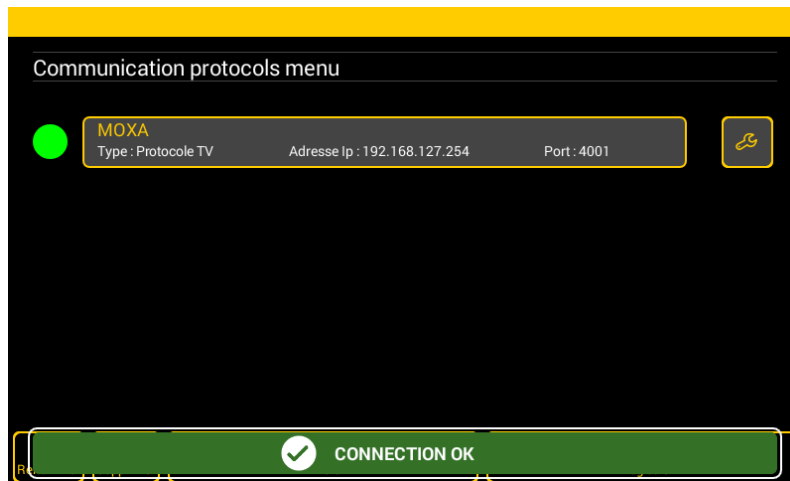
Rename Delete Cancel Save

IP address interface



5) Save the configuration.

6) Activate the protocol:



7) Start the chosen sport and the match. The protocol will be emitted automatically on the serial port of the interface.

4. General information about the protocol output

This protocol transmits ASCII messages (8 bits) only.

The format of the data is: 8 bits + 1 start bit + 1 stop bit + no parity.

Data transmission baud rate: 9600 Bauds.

The keyboard sends a frame of type: « SOH address STX CTRL Message ETX LRC », some of these frames are necessary to retrieve the useful information.

SOH = 01 hexadecimal

Address = 1 byte, ignore (attention : : useful to calculate the LRC).

STX = 02 hexadecimal

CTRL = 1 byte, ignore (attention : : useful to calculate the LRC).

Message = several bytes (cf details)

ETX = 03 hexadecimal

LRC = 1 byte: exclusive OR of the bytes between SOH(excluded) and ETX(included)

The LRC is then calculated as follows:

LRC = LRC and 0x7f

IF (LRC < 32)

THEN LRC = LRC + 32

(32 decimal = 0x20)

5. Badminton

> **Message 41: current set message, Home and Guest set scores, number of sets won Home and Guest and type of extra time**

Byte	Content		
1	«4» (34H)		
2	«1» (31H)		
3	status word *		
4	«3» = Badminton		
5	Number of sets won by Home	«2» 32H	
6	Number of sets won by Guest	«1» 31H	
		<10	>10
7	Score Home *10	« » 20H	«1» 31H 1
8	Score Home *1	«8» 38H 8	«1» 31H 1
9	Score Guest *10	« » 20H	«1» 31H 1
10	Score Guest *1	«2» 32H 2	«0» 30H 0
11	Type of extra time	«0» 30H 0	
12	Current set numbers	«4» 34H 4	

* Detail of the status word for messages 41 :

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
-------	-------	-------	-------	-------	-------	-------	-------

b0: ignore.

b1: game clock status (ON/OFF) :

= 1: game clock OFF.

= 0: game clock ON.

b2: ignore.

b3: ignore.

b4: status of the Service :

= 1: local team serving.

= 0: visiting team serving.

b5: ignore.

b6: ignore.

b7: = 1.

> **Message 42: game clock message**

Byte	Content		
1	«4» (34H)		
2	«2» (32H)		
3	status word *		
4	«3» = Badminton	6:54	
5	Hours * 1 «6» (36H)		
6	Minutes * 10 «5» (35H)		
7	Minutes * 1 «4» (34H)		

* Detail of the status word for messages 42 :

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
-------	-------	-------	-------	-------	-------	-------	-------

b0: ignore.

b1: game clock status (ON/OFF) :

= 1: game clock OFF.

= 0: game clock ON.

b2: ignore.

b3: ignore.

b4: Status of the Service :

= 1: local team serving.

= 0: visiting team serving.

b5: ignore.

b6: ignore.

b7: = 1.

› Message 43: previous sets message

Byte	Content	
1	«4» (34H)	
2	«3» (33H)	
3	«3» = Badminton	
4	Score Home set n°1 * 10 « 1 » (31H)	15 to 10
5	Score Home set n°1 * 1 « 5 » (35H)	
6	Score Guest set n°1 * 10 « 1 » (31H)	
7	Score Guest set n°1 * 1 « 0 » (30H)	
8	Score Home set n°2 * 10 « 1 » (31H)	15 to 12
9	Score Home set n°2 * 1 « 5 » (35H)	
10	Score Guest set n°2 * 10 « 1 » (31H)	
11	Score Guest set n°2 * 1 « 2 » (32H)	
12	Score Home set n°3 * 10 « » (20H)	9 to 15
13	Score Home set n°3 * 1 « 9 » (39H)	
14	Score Guest set n°3 * 10 « 1 » (31H)	
15	Score Guest set n°3 * 1 « 5 » (35H)	
16	Score Home set n°4 * 10 « » (20H)	in progress
17	Score Home set n°4 * 1 « » (20H)	
18	Score Guest set n°4 * 10 « » (20H)	
19	Score Guest set n°4 * 1 « » (20H)	

6. Basketball

› **Message 18: game clock message, period number or extra time message as well as the number of time out (before the last minute of play)**

Example: Game clock = 16Min. 54Sec.

Time out Home team = 1.

Time out Guest team = 3.

Period number = 2.

Byte	Content		
1	«1» (31H)		
2	«8» (38H)		
3	Status word*		see detail
4	«5» = Basketball		
5	Minutes * 10 « 1 » (31H)	Game clock 16:54	
6	Minutes * 1 « 6 » (36H)		
7	Seconds * 10 « 5 » (35H)		
8	Seconds * 1 « 4 » (34H)		
9	Number of time out Home team	« 1 » 31H	
10	Number of time out Guest team	« 3 » 33H	
11			
12			
13	Period number or extra time**	« 2 » 32H	see detail
14			

* Detail of the status word of messages 18:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
-------	-------	-------	-------	-------	-------	-------	-------

b0: ignore.

b1: status of the game clock (ON/OFF):

= 1: game clock OFF.

= 0: game clock ON.

b2: status of the game clock horn (ON/OFF):

= 1: horn ON.

= 0: horn OFF.

b3: ignore.

b4: indicates if the possession time is second or in 1/10th:

= 0: possession time in second.

= 1: possession time in 1/10th of second.

b5: ignore.

b6: match status (new/in progress):

= 1: new match.

= 0: match in progress.

b7: = 1.

** period number or extra time. During extra time the transmitted character is 'E', otherwise it's the period number.

› **Message 18: game clock message, period number or extra time message as well as the number of time out (before the last minute of play)**

Example : Game clock = 56Sec 4.
 Time out Home team = 1.
 Time out Guest team = 3.
 Period number = 2.

Byte	Content		
1	«1» (31H)		
2	«8» (38H)		
3	Status word*		see detail
4	«5» = Basketball		ignore
5	Seconds * 10 « 5 » (35H)	game clock 56.4	
6	Seconds * 1 « 6 » (36H)		
7	D (44H)		
8	Seconds * 0,1 « 4 » (34H)		
9	Number of time out Home team	« 1 » 31H	
10	Number of time out Guest team	« 3 » 33H	
11			
12			
13	Period number or extra time**	« 2 » 32H	see detail
14			

* Detail of the status word of messages 18:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
-------	-------	-------	-------	-------	-------	-------	-------

b0: ignore.

b1: status of the game clock (ON/OFF):

= 1: game clock OFF.

= 0: game clock ON.

b2: status of the game clock horn (ON/OFF) :

= 1: Horn ON.

= 0: Horn OFF.

b3: ignore.

b4: indicates if the possession time is second or in 1/10th:

= 0: possession time in second.

= 1: possession time in 1/10th of second.

b5: ignore.

b6: indicates if the possession time is second or in 1/10th:

= 0: possession time in second.

= 1: possession time in 1/10th of second.

b7: = 1.

** period number or extra time. During extra time the transmitted character is 'E', otherwise it's the period number.

> **Message 36: tenth of second message (during the last minute of the play)**

Byte	Content	
1	« 3 » (33H)	
2	« 6 » (36H)	
3	Seconds * 10 « 5 » (35H)	game clock 56:4
4	Seconds * 1 « 6 » (36H)	
5	Seconds * 0,1 « 4 » (34H)	

> **Message 50: possession timer message**

Bit b4 of the status word = 0

Byte	Content		
1	« 5 » (35H)		
2	« 0 » (30H)		
3	Status word*		see detail
4	Seconds * 10 « 2 » (32H)	28 seconds	
5	Seconds * 1 « 8 » (38H)		

Bit b4 of the status word = 1

Byte	Content		
1	« 5 » (35H)		
2	« 0 » (30H)		
3	Status word *		see detail
4	Seconds * 1 « 4 » (34H)	4 seconds 3 1/10	
5	Seconds * 0,1 « 3 » (33H)		

* Detail of the status word of messages 50:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
-------	-------	-------	-------	-------	-------	-------	-------

b0: ignore.

b1: status of the possession timer (ON/OFF):

= 1: timer OFF.

= 0: timer ON.

b2: status of the possession horn (ON/OFF):

= 1: Horn ON.

= 0: Horn OFF.

b3: status of the shot clock :

= 1: shot clock blanked.

= 0: display of the possession timer.

b4: indicates if the possession time is in seconds or in 1/10th:

= 0: possession time in second.

= 1: possession time in 1/10th.

b5: ignore.

b6: ignore.

b7: = 1.

> **Message 30: home and guest score message**

Byte	Content			
1	« 3 » (33H)			
2	« 0 » (30H)			
3	« 5 » = Basket Ball			
		Score < 10	10 <= Score < 100	score >= 100
4	score Home	« » 20H █	« » 20H █	« 1 »31H 1
5	score Home	« 5 »35H 5	« 1 »31H 1	« 0 »30H 0
6	score Home	« » 20H █	« 2 »32H 2	« 4 »34H 4
		Score < 10	10 <= Score < 100	score >= 100
7	score Guest	« »20H █	« 1 »31H 1	« 1 »31H 1
8	score Guest	« 7 »37H 7	« 8 »38H 8	« 1 »31H 1
9	score Guest	« »20H █	« » 20H █	« 8 »38H 8

> **Message 31: personal fouls and team fouls message**

Byte	Content		
1	« 3 » (33H)		
2	« 1 » (31H)		
3	« 5 » = Basket Ball		
4			ignore
5	Home team fouls	« 3 » 33H	
6			ignore
7	Guest team fouls	« 5 » 35H	
8	player nbr * 10	« 1 » 31H	*
9	player nbr * 1	« 0 » 30H	
10	number of fouls of the player	« 3 » 33H	
11	team of the player = (31H) Home = (32H) Guest	« 1 » 31H	

NB : The total of the team fouls is limited to configured number .

* after about 10 seconds, the number of the player and his number of personal fouls are equal to 20 hex (blanking of the display).

> **Message 19: Time Out chrono and Time Out indicator message**

Byte	Content	
1	« 1 » (31H)	
2	« 9 » (39H)	
3	« 5 » = Basket Ball	
4	Home team Time Out indicator *	
5	Guest team Time Out indicator *	
6	Seconds * 10 « 2 » (32H)	28 seconds
7	Seconds * 1 « 8 » (38H)	

* : description of the Time Out indicators.

Example: 1 Time Out

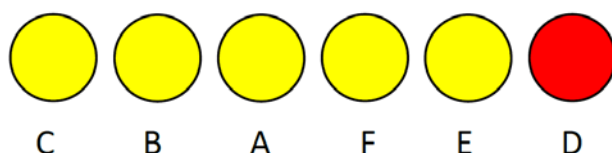
- countdown in progress: the value alternates between 0x30 and 0x31. (0x2F + number of Time Out and 0x30 + number of Time Out).
- Time Out stopped: the value = 0x31 (0x30 + 1 Time Out).

> **Message 32: personal fouls of all the Guest team players message**

Byte	Content	
1	« 3 » (33H)	
2	« 2 » (32H)	
3	« 5 » = Basket Ball	
4	team of the player = (31H) Home = (32H) Guest = (20H) Initialization of faults	
5*	player nbr * 10	« 1 » (31H)
6**	player nbr * 1	« 0 » (30H)
7	Value of indicator	

*: In the event that byte 4 = 20H and bytes 5 and 6 are also = 20H, this means the individual fouls boards need to be reset (wiped).

**: A plot line is defined as shown below:



Match in 0 personal foul:

Nb of fouls	1	0	F	E	D	C	B	A		code
0	1	0	0	0	0	0	0	0		0x80

Match in 1 personal foul:

Nb of fouls	1	0	F	E	D	C	B	A		code
0	1	0	0	0	0	0	0	0		0x80
1	1	0	0	0	1	0	0	0		0x88

Match in 2 personal fouls:

Nb of fouls	1	0	F	E	D	C	B	A		code
0	1	0	0	0	0	0	0	0		0x80
1	1	0	0	0	1	0	0	0		0x88
2	1	0	0	0	1	1	0	0		0x8c

Match in 3 personal fouls:

Nb of fouls	1	0	F	E	D	C	B	A		code
0	1	0	0	0	0	0	0	0		0x80
1	1	0	0	0	1	0	0	0		0x88
2	1	0	0	0	1	1	0	0		0x8c
3	1	0	0	0	1	1	1	0		0x8e

Match in 4 personal fouls:

Nb of fouls	1	0	F	E	D	C	B	A		code
0	1	0	0	0	0	0	0	0		0x80
1	1	0	0	0	1	0	0	0		0x88
2	1	0	0	0	1	1	0	0		0x8c
3	1	0	0	0	1	1	1	0		0x8e
4	1	0	0	0	1	1	1	1		0x8f

Match in 5 personal fouls:

Nb of fouls	1	0	F	E	D	C	B	A		code
0	1	0	0	0	0	0	0	0		0x80
1	1	0	0	0	1	0	0	0		0x88
2	1	0	0	0	1	1	0	0		0x8c
3	1	0	0	0	1	1	1	0		0x8e
4	1	0	0	0	1	1	1	1		0x8f
5	1	0	1	0	1	1	1	1		0xaf

Match in 6 personal fouls:

Nb of fouls	1	0	F	E	D	C	B	A		code
0	1	0	0	0	0	0	0	0		0x80
1	1	0	0	0	1	0	0	0		0x88
2	1	0	0	0	1	1	0	0		0x8c
3	1	0	0	0	1	1	1	0		0x8e
4	1	0	0	0	1	1	1	1		0x8f
5	1	0	1	0	1	1	1	1		0xaf
6	1	0	1	1	1	1	1	1		0xbf

NB : Value of the indicator = code

› **Message 33: personal fouls of all the Home team players message**

Byte	Content
1	« 3 » (33H)
2	« 3 » (33H)
3	« 5 » = Basket Ball
4	Value of the personal foul indicator for Home player n°4
5	Value of the personal foul indicator for Home player n°5
6	Value of the personal foul indicator for Home player n°6
7	Value of the personal foul indicator for Home player n°7
8	Value of the personal foul indicator for Home player n°8
9	Value of the personal foul indicator for Home player n°9
10	Value of the personal foul indicator for Home player n°10
11	Value of the personal foul indicator for Home player n°11
12	Value of the personal foul indicator for Home player n°12
13	Value of the personal foul indicator for Home player n°13
14	Value of the personal foul indicator for Home player n°14
15	Value of the personal foul indicator for Home player n°15

NB: for the value of the personal foul indicator the principle is the same as the one for frame n°32.

› **Message 34: personal fouls of all the Guest team players message**

Byte	Content
1	« 3 » (33H)
2	« 4 » (34H)
3	« 5 » = Basket Ball
4	Value of the personal foul indicator for Guest player n°4
5	Value of the personal foul indicator for Guest player n°5
6	Value of the personal foul indicator for Guest player n°6
7	Value of the personal foul indicator for Guest player n°7
8	Value of the personal foul indicator for Guest player n°8
9	Value of the personal foul indicator for Guest player n°9
10	Value of the personal foul indicator for Guest player n°10
11	Value of the personal foul indicator for Guest player n°11
12	Value of the personal foul indicator for Guest player n°12
13	Value of the personal foul indicator for Guest player n°13
14	Value of the personal foul indicator for Guest player n°14
15	Value of the personal foul indicator for Guest player n°15

› **Message 56: player individual score message**

Byte	Content	
1	« 5 » (35H)	
2	« 6 » (36H)	
3	« 5 » = Basket Ball	
4	Player's team = (31H) Home = (32H) Guest = (20H) Initialisation	« 1 » 31H
5	PLayer n° * 10	« 1 » 31H
6	PLayer n° * 1	« 0 » 30H
7	Total score * 10	« 2 » 32H
8	Total score * 1	« 3 » 33H

› **Message 37: Home team players' numbers message**

Byte	Content	
1	« 3 » (33H)	
2	« 7 » (37H)	
3	Player's n° * 10 for the Home player n°4	« »
4	Player's n° * 1 for the Home player n°4	« 4 »
5	Player's n° * 10 for the Home player n°5	« »
6	Player's n° * 1 for the Home player n°5	« 5 »
7	Player's n° * 10 for the Home player n°6	« »
8	Player's n° * 1 for the Home player n°6	« 6 »
9	Player's n° * 10 for the Home player n°7	« »
10	Player's n° * 1 for the Home player n°7	« 7 »
11	Player's n° * 10 for the Home player n°8	« »
12	Player's n° * 1 for the Home player n°8	« 8 »
13	Player's n° * 10 for the Home player n°9	« »
14	Player's n° * 1 for the Home player n°9	« 9 »
15	Player's n° * 10 for the Home player n°10	« 1 »
16	Player's n° * 1 for the Home player n°10	« 0 »
17	Player's n° * 10 for the Home player n°11	« 1 »
18	Player's n° * 1 for the Home player n°11	« 1 »
19	Player's n° * 10 for the Home player n°12	« 1 »
20	Player's n° * 1 for the Home player n°12	« 2 »
21	Player's n° * 10 for the Home player n°13	« 1 »
22	Player's n° * 1 for the Home player n°13	« 3 »
23	Player's n° * 10 for the Home player n°14	« 1 »
24	Player's n° * 1 for the Home player n°14	« 4 »
25	Player's n° * 10 for the Home player n°15	« 1 »
26	Player's n° * 1 for the Home player n°15	« 5 »
27	Player's n° * 10 for the Home player n°16	« 1 »
28	Player's n° * 1 for the Home player n°16	« 6 »
29	Player's n° * 10 for the Home player n°17	« 1 »
30	Player's n° * 1 for the Home player n°17	« 7 »
31	Player's n° * 10 for the Home player n°18	« 1 »
32	Player's n° * 1 for the Home player n°18	« 8 »

› **Message 38: Guest team players' numbers message**

Byte	Content	
1	« 3 » (33H)	
2	« 8 » (38H)	
3	Player's n° * 10 for the Guest player n°4	
4	Player's n° * 1 for the Guest player n°4	
5	Player's n° * 10 for the Guest player n°5	
6	Player's n° * 1 for the Guest player n°5	
7	Player's n° * 10 for the Guest player n°6	
8	Player's n° * 1 for the Guest player n°6	
9	Player's n° * 10 for the Guest player n°7	
10	Player's n° * 1 for the Guest player n°7	
11	Player's n° * 10 for the Guest player n°8	
12	Player's n° * 1 for the Guest player n°8	
13	Player's n° * 10 for the Guest player n°9	
14	Player's n° * 1 for the Guest player n°9	
15	Player's n° * 10 for the Guest player n°10	
16	Player's n° * 1 for the Guest player n°10	
17	Player's n° * 10 for the Guest player n°11	
18	Player's n° * 1 for the Guest player n°11	
19	Player's n° * 10 for the Guest player n°12	
20	Player's n° * 1 for the Guest player n°12	
21	Player's n° * 10 for the Guest player n°13	
22	Player's n° * 1 for the Guest player n°13	
23	Player's n° * 10 for the Guest player n°14	
24	Player's n° * 1 for the Guest player n°14	
25	Player's n° * 10 for the Guest player n°15	
26	Player's n° * 1 for the Guest player n°15	
27	Player's n° * 10 for the Guest player n°16	
28	Player's n° * 1 for the Guest player n°16	
29	Player's n° * 10 for the Guest player n°17	
30	Player's n° * 1 for the Guest player n°17	
31	Player's n° * 10 for the Guest player n°18	
32	Player's n° * 1 for the Guest player n°18	

› **Message 98: Home team name message**

Byte	Content
1	« 9 » (39H)
2	« 8 » (38H)
3	1st character
4	2nd character
5	3rd character
6	4th character
7	5th character
8	6th character
9	7th character

10	8th character
11	9th character
12	10th character
13	11th character
14	12th character
15	13th character
16	14th character
17	15th character
18	16th character
19	17th character
20	18th character

> **Message 99: Guest team name message**

Byte	Content
1	« 9 » (39H)
2	« 8 » (39H)
3	1st character
4	2nd character
5	3rd character
6	4th character
7	5th character
8	6th character
9	7th character
10	8th character
11	9th character
12	10th character
13	11th character
14	12th character
15	13th character
16	14th character
17	15th character
18	16th character
19	17th character
20	18th character

> **Message 20: Local time message**

Byte	Content	
1	« 2 » (32H)	
2	« 0 » (30H)	
3	Hours * 10 « 1 » (31H)	Hour 14:38
4	Hours * 1 « 4 » (34H)	
5	Minutes * 10 « 3 » (33H)	
6	Minutes * 1 « 8 » (38H)	

Mode: Reception	Baud rate: 9600	
Visu: hexadecimal	Data bits: 8	
Port: COM1	Stop bits: 1	
End of frame code: 3	Parity: None	

/* frame n°18 timer last minute of play time ON */

01 7F 02 47 31 38 80 35 33 36 44 39 30 30 20 20 31 20 03 6C

/* frame n°36 last minute of play time */

01 7F 02 47 33 36 33 36 39 03 20

01 7F 02 47 33 36 33 36 38 03 21

01 7F 02 47 33 36 33 36 37 03 2E

01 7F 02 47 33 36 33 36 36 03 2F

01 7F 02 47 33 36 33 36 35 03 2C

01 7F 02 47 33 36 33 36 34 03 2D

01 7F 02 47 33 36 33 36 33 03 2A

01 7F 02 47 33 36 33 36 32 03 2B

01 7F 02 47 33 36 33 36 31 03 28

01 7F 02 47 33 36 33 36 30 03 29

/* frame n°18 timer last minute of play time ON */

01 7F 02 47 31 38 80 35 33 35 44 39 30 30 20 20 31 20 03 6F

/* frame n°36 last minute of play time */

01 7F 02 47 33 36 33 35 39 03 23

01 7F 02 47 33 36 33 35 38 03 22

/* frame n°18 timer last minute of play time OFF */

01 7F 02 47 31 38 82 35 33 35 44 38 30 30 20 20 31 20 03 6C

Port: COM1	Stop bits: 1	
End of frame code: 3	Parity: None	

+-----+

+-----+

/* frame n°18 : game clock ON */

01 7F 02 47 31 38 80 35 20 31 35 36 30 30 20 20 31 20 03 26

/* frame n°50 : 24 sec timer ON */

01 7F 02 47 35 30 80 32 34 03 39

01 7F 02 47 31 38 80 35 20 31 35 35 30 30 20 20 31 20 03 25

01 7F 02 47 35 30 80 32 33 03 3E

01 7F 02 47 31 38 80 35 20 31 35 34 30 30 20 20 31 20 03 24

01 7F 02 47 35 30 80 32 32 03 3F

+ Mode: Reception	Baud rate: 9600	
Visu: hexadecimal	Data bits: 8	
Port: COM1	Stop bits: 1	
End of frame: 3	Parity: Nonoe	

+-----+

frame n°18 : game clock ON

01 7F 02 47 31 38 80 35 20 31 33 36 30 30 20 20 31 20 03 20

frame n°50 : 24sec timer ON

01 7F 02 47 35 30 80 20 31 03 2E

frame n°18: game clock ON

01 7F 02 47 31 38 80 35 20 31 33 35 30 30 20 20 31 20 03 23

frame n°18: game clock OFF (following the 24 sec at Zéro)

01 7F 02 47 31 38 82 35 20 31 33 35 30 30 20 20 31 20 03 21

frame n°50: 24sec timer OFF, horn ON

01 7F 02 47 35 30 86 20 30 03 29

frame n°50: 24sec timer OFF, horn OFF

01 7F 02 47 35 30 82 20 30 03 2D

/* frame n°18: game clock ON */

01 7F 02 47 31 38 80 35 30 30 44 39 30 30 20 20 31 20 03 69

/* frame n°36 last minute of play time */

01 7F 02 47 33 36 30 30 39 03 25

01 7F 02 47 33 36 30 30 38 03 24

01 7F 02 47 33 36 30 30 37 03 2B

01 7F 02 47 33 36 30 30 36 03 2A

01 7F 02 47 33 36 30 30 35 03 29

01 7F 02 47 33 36 30 30 34 03 28

01 7F 02 47 33 36 30 30 33 03 2F

01 7F 02 47 33 36 30 30 32 03 2E

01 7F 02 47 33 36 30 30 31 03 2D

/* frame n°18: game clock OFF , horn ON */

01 7F 02 47 31 38 86 35 30 30 44 30 30 30 20 20 31 20 03 66

01 7F 02 47 31 38 86 35 30 30 44 30 30 30 20 20 31 20 03 66

/* frame n°36: last minute of play time */

01 7F 02 47 33 36 30 30 30 03 2C

/* trame n°18 : game clock OFF, horn OFF */

01 7F 02 47 31 38 82 35 30 30 44 30 30 20 20 31 20 03 62

+Mode: Reception	Baud rate: 9600	
Visu: hexadecimal	Data bits: 8	

7. Floorball

> Message 11: game clock, home and guest score and period number message.

Ex : the Home team is leading 18 to 2 (or 111 to 110), in the second period.

Byte	Content				
1	« 1 » (31H)				
2	« 1 » (31H)				
3	Status word*				
4	« 7 » = Floorball				
5	Minutes * 10	« » (20H)	Game clock 6:54	Seconds *10 « 5 » (35H)	Game clock 56"4
6	Minutes * 1	« 6 » (36H)		Seconds * 1 « 6 » (36H)	
7	Seconds * 10	« 5 » (35H)		« D » (44H)	
8	Seconds * 1	« 4 » (34H)		Seconds *0.1 « 4 » (34H)	
		Score < 100	Score > 100		
9	Score Home * 100	« » 20H	« 1 » 31H 1		
10	Score Home * 10	« 1 » 31H 1	« 1 » 31H 1		
11	Score Home * 1	« 8 » 38H 8	« 1 » 31H 1		
		Score < 100	Score > 100		
12	Score Guest * 100	« » 20H	« 1 » 31H 1		
13	Score Guest * 10	« 0 » 30H 0	« 1 » 31H 1		
14	Score Guest * 1	« 2 » 32H 2	« 0 » 30H 0		
15	Number of the current period	« 2 » (32H) 2			

* Detail of the status word for the messages 10:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
-------	-------	-------	-------	-------	-------	-------	-------

b0: ignore.

b1: game clock status (ON/OFF) :

= 1: Game clock OFF.

= 0: Game clock ON.

b2: game clock horn status (ON/OFF) :

= 1: horn ON.

= 0: horn OFF.

b3: ignore.

b4: ignore.

b5: ignore.

b6: ignore.

b7: = 1.

› **Message 12: Home team players 1 & 2 penalty time message**

Byte	Content	
1	« 1 » (31H)	
2	« 2 » (32H)	
3	« 7 » = Floorball	
4	Home player penalty indicator 1*	
	Penalty time for Home player 1	
5	Minutes * 1 « 1 » (31H)	Game clock 1:34
6	Seconds * 10 « 3 » (33H)	
7	Seconds * 1 « 4 » (34H)	
8	Home player penalty indicator 2 *	
	Penalty time for Home player 2	
9	Minutes * 1 « 1 » (31H)	Game clock 1:56
10	Seconds * 10 « 5 » (35H)	
11	Seconds * 1 « 6 » (36H)	

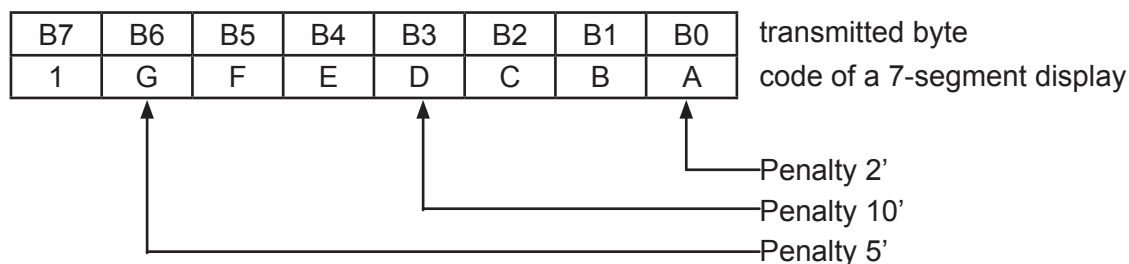
› **Message 12: Guest players 1 & 2 penalty time message**

Byte	Content	
1	« 1 » (31H)	
2	« 3 » (33H)	
3	« 7 » = Floorball	
4	Home player penalty indicator 1*	
	Penalty time for Home player 1	
5	Minutes * 1 « 0 » (30H)	Game clock 0:37
6	Seconds * 10 « 3 » (33H)	
7	Seconds * 1 « 7 » (37H)	
8	Home player penalty indicator 2 *	
	Penalty time for Home player 2	
9	Minutes * 1 « 1 » (31H)	Game clock 1:08
10	Seconds * 10 « 0 » (30H)	
11	Seconds * 1 « 8 » (38H)	

> **Message 14: Home team and Guest team players 3 penalty time message**

Byte	Content	
1	« 1 » (31H)	
2	« 4 » (34H)	
3	« 7 » = Floorball	
4	Home player penalty indicator 3 *	
	Penalty time for Home player 3	
5	Minutes * 1 « 0 » (30H)	Game clock 0:37
6	Seconds * 10 « 3 » (33H)	
7	Seconds * 1 « 7 » (37H)	
8	Home player penalty indicator 3*	
	Penalty time for Guest player 3	
9	Minutes * 1 « 1 » (31H)	Game clock 1:08
10	Seconds * 10 « 0 » (30H)	
11	Seconds * 1 « 8 » (38H)	

***Detail of the penalty indicator:**



Examples:

One 2 minutes penalty is assigned

B7	B6	B5	B4	B3	B2	B1	B0
1	G	F	E	D	C	B	A
1	0	0	0	0	0	0	1

The byte will alternate between the value 0x81 and 0x80

One 2-minute penalty is assigned and is counting down, and during the countdown a 5-minute penalty is assigned.

B7	B6	B5	B4	B3	B2	B1	B0
1	G	F	E	D	C	B	A
1	1	0	0	0	0	0	1

The byte will alternate between the values 0xc1 and 0xc0

› **Message 15: penalty player number message**

Byte	Content
1	« 1 » (31H)
2	« 5 » (35H)
3	« 7 » = Hockey
4	Ten of the number of home player 1
5	Unit of the number of home player 1
6	Ten of the number of home player 2
7	Unit of the number of home player 2
8	Ten of the number of home player 3
9	Unit of the number of home player 3
10	Ten of the number of guest player 1
11	Unit of the number of guest player 1
12	Ten of the number of guest player 2
13	Unit of the number of guest player 2
14	Ten of the number of guest player 3
15	Unit of the number of guest player 3

- No display of the player's number: Ten = 0x20 and Unit = 0x20.
- Player's nber = 3 : Ten = 0x20 and Unit = 0x33.
- Player's nber = 12 : Ten = 0x31 and Unit = 0x32.
- No display of the player's number but assignment of a penalty: Ten =.

› **Message 16: Home and Guest time out message**

Byte	Content	
1	« 1 » (31H)	
2	« 6 » (36H)	
3	« 7 » = Hockey	
4	Home time out indicator *	
5	Guest time out indicator *	
6	Seconds * 10 « 2 » (32H)	28 seconds
7	Seconds * 1 « 8 » (38H)	

*1: description of the time out indicator:

Ex: 1 Time Out:

- countdown in progress: the value alternates between 0x30 and 0x31. (0x2F + number of time out and 0x30 + number of time out).
- time out stopped: the value = 0x31 (0x30 + 1 time out).

8. Football - Rugby - Beach soccer

> **Message 10: main game clock, period number, extra time and Home and Guest scores (before the last minute of play) message**

Byte	Content			
1	« 1 » (31H)			
2	« 0 » (30H)			
3	Status word*1			
4	Minutes * 10 « 1 » (31H)	Game clock		
5	16:54			
6	Minutes * 1 « 6 » (36H)			
7	Seconds * 10 « 5 » (35H)			
	Seconds * 1 « 4 » (34H)			
8		Score < 10	10 <= Score < 100	Score >= 100
9	Score Home	« » 20H █	« » 20H █	« 1 »31H 1
10		« 5 »35H 5	« 1 »31H 1	« 0 »30H 0
		« » 20H █	« 2 »32H 2	« 4 »34H 4
11		Score < 10	10 <= Score < 100	Score >= 100
12	Score Guest	« »20H █	« 1 »31H 1	« 1 »31H 1
13		« 7 »37H 7	« 8 »38H 8	« 1 »31H 1
14		« »20H █	« » 20H █	« 8 »38H 8
15	Period number			
	Extra time number			

* Detail of the status word for messages 10:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
-------	-------	-------	-------	-------	-------	-------	-------

b0: ignore.

b1: game clock status (ON/OFF) :

= 1: chrono OFF.

= 0: chrono ON.

b2: ignore.

b3: ignore.

b4: ignore.

b5: ignore.

b6: ignore.

b7: = 1.

9. Futsal

> Message 45: game clock, period number, extra time and Home and Guest scores message

Byte	Content			
1	« 4 » (34H)			
2	« 5 » (35H)			
3	Status word*1			
4	Minutes * 10 « 1 » (31H)	Game clock 16:54.2		
5	Minutes * 1 « 6 » (36H)			
6	Seconds * 10 « 5 » (35H)			
7	Seconds * 1 « 4 » (34H)			
8	1/10 ^{ème} « 2 » (32H)			
		Score < 10	10 <= Score < 100	Score >= 100
9	Score Home	« » 20H ■	« » 20H ■	« 1 » 31H 1
10		« 5 » 35H 5	« 1 » 31H 1	« 0 » 30H 0
11		« » 20H ■	« 2 » 32H 2	« 4 » 34H 4
		Score < 10	10 <= Score < 100	Score >= 100
12	Score Guest	« » 20H ■	« 1 » 31H 1	« 1 » 31H 1
13		« 7 » 37H 7	« 8 » 38H 8	« 1 » 31H 1
14		« » 20H ■	« » 20H ■	« 8 » 38H 8
15	Period number			
16	Extra time number			

*Detail of the status word for messages 45 :

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
-------	-------	-------	-------	-------	-------	-------	-------

b0: ignore.

b1: game clock status (ON/OFF) :

= 1: game clock OFF.

= 0: game clock ON.

b2: game clock horn status (ON/OFF) :

= 1: game clock ON.

= 0: game clock OFF.

b3: ignore.

b4: ignore.

b5: ignore.

b6: ignore.

b7: = 1.

10. Handball

> Message 01: game clock, period number and time out number message

Byte	Content	
1	« 0 » (30H)	
2	« 1 » (31H)	
3	Status word*	
4	« 4 » = Hand Ball	
5	Minutes * 10 « 1 » (31H)	game clock 16:54
6	Minutes * 1 « 6 » (36H)	
7	Seconds * 10 « 5 » (35H)	
8	Seconds * 1 « 4 » (34H)	
9	Number of time out Home team	« 1 » 31H
10	Number of time out Guest team	« 3 » 33H
11	Period number	

* Details of status word of the messages 01:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
-------	-------	-------	-------	-------	-------	-------	-------

b0: ignore.

b1: game clock status (ON/OFF) :

= 1: game clock OFF.

= 0: game clock ON.

b2: game clock horn status (ON/OFF) :

= 1: horn ON.

= 0: horn OFF.

b3: ignore.

b4: ignore.

b5: ignore.

b6: ignore.

b7: = 1.

› **Message 02: Home and Guest scores message**

Byte	Content			
1	« 0 » (30H)			
2	« 2 » (32H)			
3	« 4 » = Hand Ball			
		Score < 10	10 <= Score < 100	Score >= 100
4	Score Home.	« » 20H █	« » 20H █	« 1 »31H 1
5		« 5 »35H 5	« 1 »31H 1	« 0 »30H 0
6		« » 20H █	« 2 »32H 2	« 4 »34H 4
		Score < 10	10 <= Score < 100	Score >= 100
7	Score Guest.	« »20H █	« 1 »31H 1	« 1 »31H 1
8		« 7 »37H 7	« 8 »38H 8	« 1 »31H 1
9		« »20H █	« » 20H █	« 8 »38H 8

› **Message 03: Home and Guest penalty time message**

Byte	Content		
1	« 0 » (30H)		
2	« 3 » (33H)		
3	« 4 » = Hand Ball		
4	Minutes * 1 « 0 » (30H)	0:50	1st penalty Home
5	Seconds * 10 « 5 » (35H)		
6	Seconds * 1 « 0 » (30H)		
7	Minutes * 1 « 1 » (31H)	1:45	2nd penalty Home
8	Seconds * 10 « 4 » (34H)		
9	Seconds * 1 « 5 » (35H)		
10	Minutes * 1 « 1 » (31H)	1:54	3rd penalty Home
11	Seconds * 10 « 5 » (35H)		
12	Seconds * 1 « 4 » (34H)		
13	Minutes * 1 « 1 » (31H)	1:38	1st penalty Guest
14	Seconds * 10 « 3 » (33H)		
15	Seconds * 1 « 8 » (38H)		
16	Minutes * 1 « 1 » (31H)	1:44	2nd penalty Guest
17	Seconds * 10 « 4 » (34H)		
18	Seconds * 1 « 4 » (34H)		
19	Minutes * 1 « 0 » (30H)	0:00	3rd penalty Guest
20	Seconds * 10 « 0 » (30H)		
21	Seconds * 1 « 0 » (30H)		

> **Message 04: time out timers and time out indicators message**

Byrte	Content	
1	« 0 » (30H)	
2	« 4 » (34H)	
3	« 4 » = Hand Ball	
4	Home Time Out indicator *	
5	Guest Time Out indicator *	
6	Seconds * 10 « 2 » (32H)	28 seconds
7	Seconds * 1 « 8 » (38H)	

* : description of the Time Out indicators:

Example : 1 Time Out:

- countdown in progress: the value alternates between 0x30 and 0x31. (0x2F + number of Time Out and 0x30 + number of Time Out).
- Time Out stopped: the value = 0x31 (0x30 + 1 Time Out).

11. Ice Hockey

> Message 11: game clock, home and guest score and period number message

Example : the Home team is leading 18 to 2 (or 111 to 110), in the second period.

Byte	Content			
1	« 1 » (31H)			
2	« 1 » (31H)			
3	Status word*1			
4	« 7 » = Ice Hockey			
5	Minutes * 10 « » (20H)	Game clock 6:54	Seconds * 10 « 5 » (35H)	Game clock 59"4
6	Minutes * 1 « 6 » (36H)		Seconds * 1 « 6 » (36H)	
7	Seconds* 10 « 5 » (35H)		« D » (44H)	
8	Seconds* 1 « 4 » (34H)		Seconds * 0.1 « 4 » (34H)	
		Score < 100	Score > 100	
9	Score Home* 100	« » 20H	« 1 » 31H 1	
10	Score Home* 10	« 1 » 31H 1	« 1 » 31H 1	
11	Score Home* 1	« 8 » 38H 8	« 1 » 31H 1	
		score < 100	Score > 100	
12	Score Guest* 100	« » 20H	« 1 » 31H 1	
13	Score Guest* 10	« 0 » 30H 0	« 1 » 31H 1	
14	Score Guest* 1	« 2 » 32H 2	« 0 » 30H 0	
15	Number of the current period	« 2 » (32H) 2		

* Detail of the status word for the messages 11:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
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b0: ignore.

b1: game clock status (ON/OFF) :

= 1 : game clock OFF.

= 0 : game clock ON.

b2: game clock horn status (ON/OFF) :

= 1 : horn OFF.

= 0 : horn ON.

b3: ignore.

b4: ignore.

b5: ignore.

b6: ignore.

b7: = 1.

› **Message 12: Home team players 1 & 2 penalty time message**

Byte	Content	
1	« 1 » (31H)	
2	« 2 » (32H)	
3	« 7 » = Ice Hockey	
4	Home player penalty indicator 1 *2	
	Penalty time for Home player 1	
5	Minutes * 1 « 1 » (31H)	Game clock 1:34
6	Seconds * 10 « 3 » (33H)	
7	Seconds * 1 « 4 » (34H)	
8	Home player penalty indicator 2*	
	Penalty time for Home player 2	
9	Minutes * 1 « 1 » (31H)	Game clock 1:56
10	Seconds * 10 « 5 » (35H)	
11	Seconds * 1 « 6 » (36H)	

› **Message 13: Guest players 1 & 2 penalty time message**

Byte	Content	
1	« 1 » (31H)	
2	« 3 » (33H)	
3	« 7 » = Ice Hockey	
4	Guest player penalty indicator 1 *2	
	Penalty time for Guest player 1	
5	Minutes * 1 « 0 » (30H)	Game clock 0:37
6	Seconds * 10 « 3 » (33H)	
7	Seconds * 1 « 7 » (37H)	
8	Guest player penalty indicator 2*	
	Penalty time for Guest player 2	
9	Minutes * 1 « 1 » (31H)	Game clock 1:08
10	Seconds * 10 « 0 » (30H)	
11	Seconds * 1 « 8 » (38H)	

› **Message 14: Home team and Guest team players 3 penalty time message**

Byte	Content	
1	« 1 » (31H)	
2	« 4 » (34H)	
3	« 7 » = Ice Hockey	
4	Home player penalty indicator 3*	see detail
	Penalty time for Home player 3	
5	Minutes * 1 « 0 » (30H)	Game clock 0:37
6	Seconds * 10 « 3 » (33H)	
7	Seconds * 1 « 7 » (37H)	
8	Penalty indicator for Guest player 3 *	
	Penalty time for Guest player 3	
9	Minutes * 1 « 1 » (31H)	Game clock 1:08
10	Seconds * 10 « 0 » (30H)	
11	Seconds * 1 « 8 » (38H)	

* Detail of the penalty indicator

B7	B6	B5	B4	B3	B2	B1	B0	
1	G	F	E	D	C	B	A	transmitted byte code of a 7-segment display
Penalty 5'			Penalty 10'			Penalty 2'		

Example 1:

One 2 minutes penalty is assigned

B7	B6	B5	B4	B3	B2	B1	B0
1	G	F	E	D	C	B	A
1	0	0	0	0	0	0	1

The byte will alternate between the value 0x81 and 0x80

Example 2:

One 2-minute penalty is assigned and is counting down, and during the countdown a 5-minute penalty is assigned.

B7	B6	B5	B4	B3	B2	B1	B0
1	G	F	E	D	C	B	A
1	1	0	0	0	0	0	1

The byte will alternate between the values 0xc1 and 0xc0

› **Message 15: penalty player number message**

Byte	Content
1	« 1 » (31H)
2	« 5 » (35H)
3	« 7 » = Ice Hockey
4	Ten of the number of home player 1
5	Unit of the number of home player 1
6	Ten of the number of home player 2
7	Unit of the number of home player 2
8	Ten of the number of home player 3
9	Unit of the number of home player 3
10	Ten of the number of guest player 1
11	Unit of the number of guest player 1
12	Ten of the number of guest player 2
13	Unit of the number of guest player 2
14	Ten of the number of guest player 3
15	Unit of the number of guest player 3

- No display of the player's number: Ten = 0x20 and Unit = 0x20.
- Player's nber = 3 : Ten = 0x20 and Unit = 0x33.
- Player's nber = 12 : Ten = 0x31 and Unit = 0x32.
- No display of the player's number but assignment of a penalty: Ten = .

› **Message 16: Home and Guest time out message**

Byte	Content	
1	« 1 » (31H)	
2	« 6 » (36H)	
3	« 7 » = Ice Hockey	
4	Home time out indicator *	
5	Guest time out indicator *	
6	Seconds * 10 « 2 » (32H)	28 seconds
7	Seconds * 1 « 8 » (38H)	



* : description of the time out indicator:

Example: 1 Time Out:

- countdown in progress: the value alternates between 0x30 and 0x31. (0x2F + number of time out and 0x30 + number of time out).
- time out stopped: the value = 0x31 (0x30 + 1 time out).

12. Table Tennis protocol description

› **Message 21: message for the number of Home and Guest games, the scores in the current game in play, the number of the current game in play.**

Byte	Content		
1	« 2 » (32H)		
2	« 1 » (31H)		
3	Status word*1		
4	« 2 » = table tennis		
5	No. of Home games	« 2 » 32H	
6	No. of Guest games	« 1 » 31H	
		<10	>10
7	Score Home *10	« » 20H 	« 1 » 31H 1
8	Score Home *1	« 2 » 32H 2	« 3 » 33H 3
9	Score Guest *10	« » 20H 	« 1 » 31H 1
10	Score Guest *1	« 1 » 31H 1	« 1 » 31H 1
11	Number of the current round	« 4 » 34H 4	

* Details of status word of the messages 21:

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
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b0: ignore.

b1: game clock status (ON/OFF) :

= 1: chrono OFF.

= 0: chrono ON.

b2: ignore.

b3: ignore.

b4: status of the service:

= 1: local team serving.

= 0 : visiting team serving.

b5: ignore.

b6: ignore.

b7: = 1.

> **Message 22: game clock message**

Byte	Content	
1	« 2 » (32H)	
2	« 2 » (32H)	
3	Status word*1	
4	« 2 » = table tennis	
5	Hours * 1 « 0 » (30H)	Game clock 0 heures et 54 min.
6	Minutes * 10 « 5 » (35H)	
7	Minutes * 1 « 4 » (34H)	

* Details of status word of the messages 22 :

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
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b0: ignore.

b1: game clock status (ON/OFF):

= 1: chrono OFF.

= 0: chrono ON.

b2: ignore.

b3: ignore.

b4: status of the service:

= 1: local team serving.

= 0 : visiting team serving.

b5: ignore.

b6: ignore.

b7: = 1.





> **Message 23: message for the previous games**

We do not send the current game in play, only the games completed (this is already sent in message 21).
The current game in play must be concealed.

Byte	Content	
1	« 2 » (32H)	
2	« 3 » (37H)	
3	« 2 » = Table Tennis	
4	Points Home game n°1 * 10 « 2 » (32H)	21 to 15
5	Points Home game n°1 * 1 « 1 » (31H)	
6	Points Guest game n°1 * 10 « 1 » (31H)	
7	Points Guest game n°1 * 1 « 5 » (35H)	
8	Points Home game n°2 * 10 « 2 » (32H)	21 to 17
9	Points Home game n°2 * 1 « 1 » (31H)	
10	Points Guest game n°2 * 10 « 1 » (31H)	
11	Points Guest game n°2 * 1 « 7 » (37H)	
12	Points Home game n°3 * 10 « 1 » (31H)	18 to 21
13	Points Home game n°3 * 1 « 8 » (38H)	
14	Points Guest game n°3 * 10 « 2 » (32H)	
15	Points Guest game n°3 * 1 « 1 » (31H)	
16	Points Home game n°4 * 10 « 1 » (31H)	14 to 21
17	Points Home game n°4 * 1 « 4 » (34H)	
18	Points Guest game n°4 * 10 « 2 » (32H)	
19	Points Guest game n°4 * 1 « 1 » (31H)	
20	Points Home game n°5 * 10 « 2 » (32H)	21 to 11
21	Points Home game n°5 * 1 « 1 » (31H)	
22	Points Guest game n°5 * 10 « 1 » (31H)	
23	Points Guest game n°5 * 1 « 1 » (31H)	
24	Points Home game n°6 * 10 « » (20H)	In progress
25	Points Home game n°6 * 1 « 0 » (30H)	
26	Points Guest game n°6 * 10 « » (20H)	
27	Points Guest game n°6 * 1 « 0 » (30H)	

13. Tennis protocol description

> **Message 26: current set, games of Home and Guest sets, scores of Home and Guest sets and sets won Home and Guest message.**

Byte	Content		
1	« 2 » (32H)		
2	« 6 » (36H)		
3	status word*		
4	« 1 » = Tennis		
5	Number of sets won by Home	« 2 » 32H	
6	Number of sets won by Guest	« 1 » 31H	
		<10	>10
7	Games in the current set Home *10	« » 20H 	« 1 » 31H 1
8	Games in the current set Home *1	« 2 » 32H 2	« 3 » 33H 3
9	Games in the current set Guest *10	« » 20H 	« 1 » 31H 1
10	Games in the current set Guest *1	« 1 » 31H 1	« 1 » 31H 1
11**	Points Home *10	« » 20H 	« 4 » 34H 4
12**	Points Home *1	« 0 » 30H 0	« 0 » 30H 0
13**	Points Guest *10	« » 20H 	« 3 » 33H 3
14**	Points Guest *1	« 0 » 30H 0	« 0 » 30H 0
15**	Current set number	« 4 » 34H 4	

* Detail of the status word for messages 26 :

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
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b0: ignore.

b1: ignore.

b2: ignore.

b3: ignore.

b4: status of the service :

= 1: local team serving.

= 0: visiting team serving.

b5: ignore.

b6: ignore.

b7: = 1.

** During a Home advantage: the byte 11 = 20H and the byte 12 = 41H ('A')

During a Guest advantage: the byte 13 = 20H and the byte 14 = 41H ('A')

> Message 27: previous sets message

Byte	Content	
1	« 2 » (32H)	
2	« 7 » (37H)	
3	« 1 » = Tennis	
4	Games Home set n°1 * 10 « » (32H)	6 to 1
5	Games Home set n°1 * 1 « 6 » (35H)	
6	Games Guest set n°1 * 10 « » (31H)	
7	Games Guest set n°1 * 1 « 1 » (30H)	
8	Games Home set n°2 * 10 « » (32H)	6 to 4
9	Games Home set n°2 * 1 « 6 » (35H)	
10	Games Guest set n°2 * 10 « » (32H)	
11	Games Guest set n°2 * 1 « 4 » (32H)	
12	Games Home set n°3 * 10 « » (32H)	3 to 6
13	Games Home set n°3 * 1 « 3 » (30H)	
14	Games Guest set n°3 * 10 « » (32H)	
15	Games Guest set n°3 * 1 « 6 » (35H)	
16	Games Home set n°4 * 10 « » (20H)	In progress
17	Games Home set n°4 * 1 « 0 » (30H)	
18	Games Guest set n°4 * 10 « » (20H)	
19	Games Guest set n°4 * 1 « 0 » (30H)	

14. Volleyball protocol description

- > **Message 06: current set, games of Home and Guest sets, scores of Home and Guest sets and sets won Home and Guest, Home and Guest times out and duration of the time out in progress out message**

Byte	Content	
1	« 0 » (30H)	
2	« 6 » (36H)	
3	status word*	
4	« 0 » = Volleyball	
5	Current set number	« 4 » 34H
6	Nbr of sets won by Home	« 2 » 32H
7	Nbr of sets won by Guest	« 1 » 31H
8	Score Home *10	« 1 » 31H
9	Score Home *1	« 2 » 32H
10	Score Guest *10	« » 20H
11	Score Guest *1	« 8 » 38H
12	Number of time out Home	« 1 » 31H
13	Number of time out Guest	« 3 » 33H
14	Seconds of time out in progress *10	« 2 » 32H
15	Seconds of time out in progress *1	« 8 » 38H

b0: ignore.

b1: game clock status (ON / OFF) :

= 1: game clock OFF.

= 0: game clock ON.

b2: game clock horn status (ON / OFF) :

= 1: horn ON.

= 0: horn OFF.

b3: team at service (Home or Guest).

= 1: local team serving.

= 0: visiting team serving.

b4: ignore.

b5: ignore.

b6: ignore.

b7: = 1.

> **Message 07: game clock message**

Byte	Content	
1	« 0 » (30H)	
2	« 7 » (37H)	
3	status word*	
4	« 0 » = Volleyball	
5	Minutes * 10 « » (20H)	game clock 6:54
6	Minutes * 1 « 6 » (36H)	
7	Seconds * 10 « 5 » (35H)	
8	Seconds * 1 « 4 » (34H)	

* Detail of the status word for messages 07 :

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
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b0: ignore.

b1: game clock status (ON / OFF) :

= 1: game clock OFF.

= 0: game clock ON.

b2: game clock horn status (ON / OFF) :

= 1: horn ON.

= 0: horn OFF.

b3: team at service (Home or Guest).

= 1: local team serving.

= 0: visiting team serving.

b4: ignore.

b5: ignore.

b6: ignore.

b7: = 1.

> **Message 08: previous sets scores message**

The current set is not sent (sent in the message 06), only the ended sets are sent.

The current set is blanked.

Byte	Content	
1	« 0 » (30H)	
2	« 8 » (36H)	
3	Status word	
4	« 0 » = Volleyball	
5	Games Home set n°1 * 10 « » (32H)	6 to 1
6	Games Home set n°1 * 1 « 6 » (35H)	
7	Games Guest set n°1 * 10 « » (31H)	
8	Games Guest set n°1 * 1 « 1 » (30H)	
9	Games Home set n°2 * 10 « » (32H)	6 to 4
10	Games Home set n°2 * 1 « 6 » (35H)	
11	Games Guest set n°2 * 10 « » (32H)	
12	Games Guest set n°2 * 1 « 4 » (32H)	
13	Games Home set n°3 * 10 « » (32H)	3 to 6
14	Games Home set n°3 * 1 « 3 » (30H)	
15	Games Guest set n°3 * 10 « » (32H)	
16	Games Guest set n°3 * 1 « 6 » (35H)	
17	Games Home set n°4 * 10 « » (20H)	In progress
18	Games Home set n°4 * 1 « 0 » (30H)	
19	Games Guest set n°4 * 10 « » (20H)	
20	Games Guest set n°4 * 1 « 0 » (30H)	