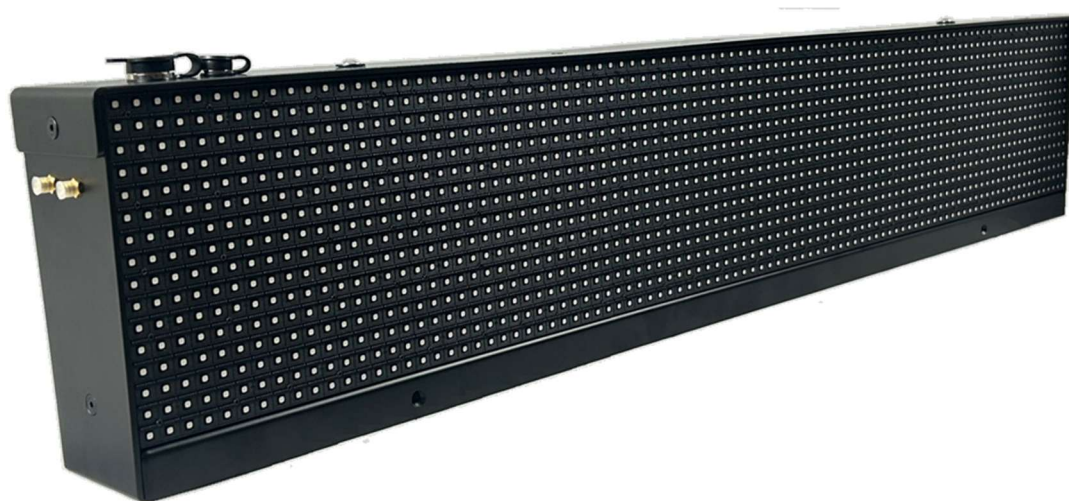


November 2025

FDS Display Protocol



FDS
TIMING SOLUTIONS

FDS-TIMING, SWITZERLAND

1. FDS display protocol

The FDS display protocol is compatible with standard frames from the Tag Heuer DISP08 protocol. To fully leverage the capabilities of our display lines, several FDS proprietary commands have been implemented as extensions to this protocol.

This protocol is implemented in all FDS MLED, DBox and other display lines.

1.1. Frame format

<STX>NLXXXXXXXX<LF>

STX = 0x02

N = Line number <1..9, A..Z>

L = Brightness <1..3>

X = Characters (up to 64, cmd included)

LF = 0x0A

Format: 8bits / no parity / 1 stop bit

Baud Rate: 9600bds

1.2. Characters Set (ISO-8859-1)

	x0	x1	x2	x3	x4	x5	x6	x7	x8	x9	xA	xB	xC	xD	xE	xF
0x																
1x																
2x	SP	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
3x	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4x	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5x	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6x	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7x	p	q	r	s	t	u	v	w	x	y	z	{		}	~	°
8x																
9x																
Ax																
Bx	°															
Cx	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
Dx	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
Ex	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
Fx	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

- Character ^ cannot be displayed as it is used as inline command delimiter.
- Characters 0xC0 to 0xDF are displayed without accent.

1.3. FDS extended commands

Inline commands can be added in a display frame between the ^^ delimiters.

Command	Description
^cs c^	Color overlay
^cp s e c^	Color overlay between two characters position
^tf p c^	Display a Traffic Light at position (Filled)
^tb p c^	Display a Traffic Light at position (Border only)
^ic n c p ^	Display an icon (among proposed icons)
^fi c^	Fill all display
^fs n s c^ ^fe^	Flash part of a text
^fd n s c^	Flash full line
^rt f hh:mm:ss^ ^rt f hh:mm:ss.d^ ^rt f mm:ss^ ^rt f mm:ss.d^ ^rt f sss^ ^rt f sss.d^	Display a running time

Color Overlay:

Command	Description
^cs c^	Color overlay cs = start color overlay cmd c = color code (1 or 2 digits : <0 ... 10>) <i>Example A:</i> <STX>13Welcome ^cs 2^FDS^cs 0^Timing<LF> “Welcome” and “Timing” are in the default line color “FDS” is in Green <i>Example B:</i> <STX>23^cs 3^Colour^cs 4^ Display<LF> “Color” is in Blue “Display” is in Yellow Color overlay is only applied in the current received frame.

Text Color at position:

Command	Description
^cp s e c^	Set color overlay between two characters position (permanent) cp = cmd s = first character position (1 or 2 digits : <1 .. 32>) e = last character position (1 or 2 digits : <1 .. 32>) c = color code (1 or 2 digits : <0 ... 10>) <i>Example:</i> <STX>13^cp 1 10 2^^cp 11 16 3^ <LF> Characters position 1 to 10 are defined in Green Characters position 11 to 16 are defined in Blue This setting is saved in non-volatile memory, and is applied to all following received frame.

Display a Traffic lights at position (Filled):

Command	Description
^tf p c^	Display a filled traffic light at a defined position tf = cmd p = position starting from the left (1 .. 9). 1 inc = 1 traffic light width c = color code (1 or 2 digits : <0 ... 10>) <i>Example:</i> <STX>13^tf 1 2^^tf 2 1^ <LF> Display a green and a red traffic Light on the left of the display. This will overlay any other data. The rest of the display is not modified. Do not add text in the same frame

Display a Traffic lights at position (Border only):

Command	Description
^tb p c^	Display a traffic light (border only) at a defined position tb = cmd p = position starting from the left (1 .. 9). 1 inc = 1 traffic light width c = color code (1 or 2 digits : <0 ... 10>) <i>Example:</i> <STX>13^tb 1 2^tb 2 1^ <LF> Display a green and a red traffic Light on the left of the display. This will overlay any other data. The rest of the display is not modified Do not add text in the same frame

Display an Icon:

Command	Description
^ic n c p^	Display an icon inline a text or at a defined position ic = cmd c = color code (1 or 2 digits : <0 ... 10>) p = position starting from the left (*optional) <1...32> 1 inc = ½ icon width <i>Example 1:</i> <STX>13^ic 1 2 2^<LF> Display a small green traffic light at position 2 <i>Example 2:</i> <STX>13^ic 5 7^Finish<LF> Display a white checker flag on the left followed by the text 'Finish' * If this parameter is omitted, the icon is displayed before, after or between a text. Text can be added in the same frame. If this parameter > 0 then the icon will be displayed at the defined position overlaying any other data. Do not add text in the same frame. Icon list: 0 = reserved 1 = small traffic light filled 2 = small traffic light empty 3 = traffic light filled 4 = traffic light empty 5 = Checker flag

Fill all display:

Command	Description
^fi c^	Fill with a defined color the full display area. Only 50% of the LEDs are turned on to reduce current and heating fi = cmd c = color code (1 or 2 digits : <0 ... 10>) <i>Example:</i> <STX>13^fi 1^ <LF> Fill the display line with the red color.

Flash a full line:

Command	Description
^fd n s c^	Flash a full line fd = cmd s = Speed <0 ... 3> n = Number of flash <0 ... 9> (0 = permanent flashing) c = color code *optional (0 - 2 digits : <0 ... 10>) <i>Example:</i> <STX>13^fd 3 1^<LF> Flash the line 3 times at speed 1

Flash a text:

Command	Description
^fs n s c^ ^fe^	Flash a text fs = Start of text to flash cmd fe = End of text to flash cmd s = Speed <0 ... 3> n = Number of flash <0 ... 9> (0 = permanent flashing) c = color code *optional (0 - 2 digits : <0 ... 10>) <i>Example:</i> <STX>13^fs 3 1^FDS^fe^ Timing<LF> Display the text "FDS Timing". The word 'FDS' is flashing 3 times. Color is not present so Black by default.

Display a running time:

Command	Description
<code>^rt f hh:mm:ss^</code> <code>^rt f hh:mm:ss.d^</code> <code>^rt f mm:ss^</code> <code>^rt f mm:ss.d^</code> <code>^rt f sss^</code> <code>^rt f sss.d^</code>	Display a running time rt = cmd f = Flags <0 ... 7> (bit0 = remove leading 0; bit1 =countdown) hh = hours <0 ... 99> mm = minutes <0 ... 59> sss = seconds <0 ... 999> ss = seconds <0 ... 59> d = decimal <i>Example 1:</i> <STX>13^rt 0 10:00:00^<LF> <STX>13^rt 0 10:00:00.5^<LF> Display a clock starring at 10h. A decimal can be added for a better synchronization, however if the display is 8 digits wide, the decimal is not showed. <i>Example 2:</i> <STX>13^rt 1 00:00.0^<LF> Display a running time in mm:ss.d from 0, hiding the leading zero.

Color code:

code	Color
0	Black
1	Red
2	Green
3	Blue
4	Yellow
5	Magenta
6	Cyan
7	White
8	Orange
9	Deep pink
10	Light Blue

2. Copyright and Declaration

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