

# JETI BUS protocol

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This document describes communication details over JETI bus.

## HW description:

The Jeti bus is bidirectional, one-line communication between sensor and HLD (higher level device) receiver or expander. Voltage levels are similar to TTL 5 V. Each device connected to the bus has weak pull-up resistor approximately 10 kOhm and ability to sink high current. If sensor uPC allows change between CMOS and Open collector function of the communication pin, the pull-up resistor is unnecessary. It is recommended to use simple parallel RC filter (120 kOhm + 1 nF) connected to ground on bus as close as possible to the sensor uPC pin.

## SW description:

Each device on bus uses serial line communication with 9 databits, even parity bit and two stopbits.

Start	D0	D1	D2	D3	D4	D5	D6	D7	D/C	Parity	Stop1	Stop2
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Start bit: log.0

D0 .. D7: Data, LSB first

D/C bit: This bit determines data type. 0 - system command; 1 - useful data

Parity:  $D0 \text{ xor } D1 \text{ xor } \dots \text{ xor } D7 \text{ xor } D/C \text{ xor } 1 = \text{Parity}$

Stopbit: log.1\*

\*If you try recognizing data from oscilloscope, you can notice, that two stopbits haven't exact length. They might be longer because the transmission runs independently on uPC program.

## Data:

Every 80 ms long period sensor send data and HLD answers. The period length is kept (timed) by sensor, HLD only listens and sends reply if receives valid data.

cycle [n] (80 ms)				cycle [n+1] (80 ms)			
Sensor string	time to change direction	HLD string	log.1 - delay	Sensor string	time to change direction	HLD string	log.1 - delay
~50 ms	~4 ms	~2 ms	~24 ms	~50 ms	~4 ms	~2 ms	~24 ms

## Sensor string:

Beep packet	Data packet
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**Beep packet:**

1B - system command	2B - function identification	1B - char
0x7E	0x92	y

Numbers in gray cells represent D/C bits.

The last one byte represents ASCII char that will be played by receiver in Morse alphabet.

Beep packet is optional part of the sensor string. It is recommended to send the same Beep packet **10 times** in a row.

**Data packet:**

1B - system command	32B - ASCII LCD data	1B - system command
0xFE	x0 ... x31	0xFF

Numbers in gray cells represent D/C bits.

32 bytes of LCD data are ASCII coded characters. Data is displayed from left top corner on first line to right bottom corner on second line.

**HLD string:**

button byte
X

Numbers in gray cells represent D/C bits.

X: When no button is pressed the value is 0xF0.

b7(MSB)	b6	b5	b4	b3	b2	b1	b0(LSB)
1	1	1	1	0	0	0	0

b7: 1 = left button released; 0 = left button pushed

b6: 1 = down button released; 0 = down button pushed

b5: 1 = up button released; 0 = up button pushed

b4: 1 = right button released; 0 = right button pushed

Typical communication logs:

Normal operation:

data p.	change dir.	reply	wait
<b>254</b> ,32,83,69,78,83,79,82,32,77,85,73,32,51,48,32,32,32,3 2,32,32,49,46,48,86,32,32,32,48,46,56,65,32, <b>255</b>	log.1	<b>240</b>	log.1
<b>&lt;254&gt;</b> SENSOR MUI 30 1.0V 0.8A <b>&lt;255&gt;</b>	-	null	-

data p.	change dir.	reply	wait
<b>254</b> ,32,83,69,78,83,79,82,32,77,85,73,32,51,48,32,32,32,3 2,32,32,49,46,48,86,32,32,32,48,46,56,65,32, <b>255</b>	log.1	<b>112</b>	log.1
<b>&lt;254&gt;</b> SENSOR MUI 30 1.0V 0.8A <b>&lt;255&gt;</b>	-	left	-

data p.	change dir.	reply	wait
<b>254</b> ,32,83,69,78,83,79,82,32,77,85,73,32,51,48,32,32,32,3 2,32,32,49,46,48,86,32,32,32,48,46,56,65,32, <b>255</b>	log.1	<b>96</b>	log.1
<b>&lt;254&gt;</b> SENSOR MUI 30 1.0V 0.8A <b>&lt;255&gt;</b>	-	right + left	-

data p.	change dir.	reply	wait
<b>254</b> ,32,83,69,78,83,79,82,32,77,85,73,32,51,48,32,32,32,3 2,32,32,49,46,48,86,32,32,32,48,46,56,65,32, <b>255</b>	log.1	<b>0</b>	log.1
<b>&lt;254&gt;</b> SENSOR MUI 30 1.0V 0.8A <b>&lt;255&gt;</b>	-	all	-

data p.	change dir.	reply	wait
<b>254</b> ,32,83,69,78,83,79,82,32,77,85,73,32,51,48,32,32,32,3 2,32,32,49,46,48,86,32,32,32,48,46,56,65,32, <b>255</b>	log.1	<b>160</b>	log.1
<b>&lt;254&gt;</b> SENSOR MUI 30 1.0V 0.8A <b>&lt;255&gt;</b>	-	down + right	-

Alarm active operation:

beep p.	data p.	ch. dir.	reply	wait
<b>126</b> ,146,35,85	<b>254</b> ,32,83,69,78,83,79,82,32,77,85,73,32,51,48, 32,32,32,32,78,97,112,101, 116,105,32,60,32,32,53,46,48,86, <b>255</b>	log.1	<b>240</b>	log.1
<b>&lt;126&gt;&lt;146&gt;&lt;35&gt;</b> U	<b>&lt;254&gt;</b> SENSOR MUI 30 Napeti < 5.0V <b>&lt;255&gt;</b>	-	null	-

All numbers are in decimal format. **Bold** numbers are system bytes. *Italic* numbers are function identification bytes.

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