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DUAL-CHANNEL SIGNAL GENERATOR

JT-JDS66XX

1. SUMMARY

To communicate with the JDS66XX, the baud rate needs to be set to 115200 with 8 data bits, 1 stop bit and no parity bits.

The JDS66XX executes the received command sent by the PC and then returns the result to the PC.

2. SIMPLE COMMUNICATION PROTOCOL

The format of the sent data falls into the following set frame:

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)
:	w	0 - 99	=	See explanation	<CR><LF>
	r				
	a				
	b				

Explanation:

1. The starting bit is the "colon" in the ASCII character table (:).
2. The operator is one of four lowercase characters in the ASCII character table.
"w" is the write instruction used to set various parameters.
"r" is the read instruction used to return the parameter values from the JDS66XX.
"a" is the instruction used to write the data of any wave.
"b" is the instruction used to read the data of any wave.
3. The function number is a numerical value in the ASCII character table, and the different numbers represent the different parameters.
4. The connector bit is "equal" in the ASCII character table (=).
5. The data field is equivalent to the operand of the command, with a number between 1 and 2048. Each data set is distinguished by either a "," or a ".".
For example: w23=25786, 0. <CR><LF>
The instruction operand is 23, the first operand is "25786", the set output frequency is 257.86, and the second operand is "0" which indicates to set the frequency unit to "Hz".
So this example instruction sets the frequency of channel 1 to 257.86 Hz.
6. The terminator ends each instruction with a return character and a new line.
<CR> represents the carriage return in the ASCII character table (the sixteen is represented as 0x0D).
<LF> represents the newline in the ASCII character table (the sixteen is represented as 0x0A).

3. REGISTER OVERVIEW

3.1 Hardware information registers

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	0	=	.	<CR><LF>	Model
		1				Serialnumber

3.3 "wave" mode

3.3.1 Channel output settings (channel-enable)

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	20	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	20	=	0, 0.	<CR><LF>	Outputs disabled
				1, 0.		Output 1 enabled
				0, 1.		Output 2 enabled
				1, 1.		All outputs enabled

3.2.2 Waveform

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	21 (Channel 1) 22 (Channel 2)	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	21 (Channel 1) 22 (Channel 2)	=	0.	<CR><LF>	Sine wave
				1.		Square wave
				2.		Pulse wave
				3.		Triangle wave
				4.		Partial sine wave
				5.		CMOS
				6.		DC
				7.		Half wave
				8.		Full wave
				9.		Pos. lader
				10.		Neg. lader
				11.		Noise
				12.		Exp. Rise
				13.		EXP Decay
				14.		Multi Tone
				15.		Sinc
				16.		Lorenz
				101.		Arbitrary01 to Arbitrary60

3.2.3 Frequency (multiplier explanation below table)

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	23 (Channel 1) 24 (Channel 2)	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	23 (Channel 1) 24 (Channel 2)	=	X, Y.	<CR><LF>	X: desired frequency Y: multiplier

Explanation:

- Y = The multiplier to set different frequency magnitudes, as Y can be set from 0 to 4
Y = 0 (Hz), Y = 1 (KHz), Y = 2 (MHz) | only changes the visual appearance of the frequency in the UI.
Y = 3 (mHz), Y = 4 (uHz) | affects both the visual appearance and the frequency, using any of these two multipliers only allows to set the frequency with a precision greater than 0.01 Hz.

Maximum frequencies:

Multipliers 0, 1 and 2: the hardware limit of the signal generator

Multiplier 3: 80 kHz

Multiplier 4: 80 Hz

3.2.4 Amplitude

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	25 (Channel 1) 26 (Channel 2)	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	25 (Channel 1) 26 (Channel 2)	=	X.	<CR><LF>	Unit: mV X: desired value

3.2.5 DC Offset

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	27 (Channel 1) 28 (Channel 2)	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	27 (Channel 1) 28 (Channel 2)	=	X.	<CR><LF>	Unit: 0.01V X: desired value If X < 1000: offset is negative If X > 1000: offset is positive

3.2.6 DutyCycle

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	29 (Channel 1) 30 (Channel 2)	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	29 (Channel 1) 30 (Channel 2)	=	X.	<CR><LF>	Unit: 0.1 % X: desired value

3.2.7 Phase

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	31	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	31	=	X.	<CR><LF>	Unit: 0.1 degrees X: desired value

3.3 Mode/Action

3.3.1 Action

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	32	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	32	=	1,0,0,0,	<CR><LF>	Count on
				0,0,0,0,		Count off
				0,1,0,0,		Sweep on
				0,0,0,0,		Sweep off
				1,0,1,1,		Pulse on
				0,0,1,1,		Pulse off
				1,0,1,1,		Burst on
				0,0,1,1,		Burst off

3.3.2 Mode (4 USB-bits, write 4 LSB-bits)

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	33	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	33	=	0.	<CR><LF>	Wave menu, channel 1 on top
				1.		Wave menu, channel 2 on top
				2.		System menu
				3.		Not used
				4.		Measure menu
				5.		Counter menu
				6.		Sweep/ Channel 1 menu
				7.		Sweep/ Channel 2 menu
				8.		Pulse menu
				9.		Burst menu

3.4 Control UI menu

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	34	=	-	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	34	=	0.	<CR><LF>	Main screen
				1.		WAVE
				2.		FREQ
				3.		AMPL
				4.		OFFS
				5.		DUTY
				6.		PHAS
				7.		CH1
				8.		CH2
				9.		WAVE
				10.		FREQ
				11.		AMPL
				12.		OFFS
				13.		DUTY
				14.		PHAS
				15.		CH1 on top
				16.		CH2 on top

3.5 Mode (similar to 3.9.2, read only)

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	35	=	.	<CR><LF>	Wave menu, channel 1 on top

3.6 "measure" mode (control registers)

3.6.1 Measure coupling

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	36	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	36	=	X.	<CR><LF>	If X is 0: AC If X is 1: DC

3.6.2 Measure gate time

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	37	=	.	<CR><LF>	Unit: 0.01 seconds

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	37	=	X.	<CR><LF>	Unit: 0.01 seconds X: desired value

3.6.3 Measure mode

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	38	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	38	=	X.	<CR><LF>	If X is 0: M.FREQ If X is 1: M.PERIOD

3.7 Reset counter

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	39	=	0.	<CR><LF>	Reset counter Burst reset counter Burst manual trigger

3.8 "sweep" mode

3.8.1 Start freq

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	40	=	.	<CR><LF>	Unit: 0.01 Hz

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	40	=	X.	<CR><LF>	Unit: 0.01 Hz X: 0 to 60MHz

3.8.2 End freq

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	41	=	.	<CR><LF>	Unit: 0.01 Hz

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	41	=	X.	<CR><LF>	Unit: 0.01 Hz X: 0 to 60MHz

3.8.3 Sweep time

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	42	=	.	<CR><LF>	Unit: 0.1 seconds

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	42	=	X.	<CR><LF>	Unit: 0.1 seconds X: 0 to 999.9 seconds

3.8.4 Direction

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	43	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	43	=	X.	<CR><LF>	If X is 0: RISE If X is 1: FALL If X is 2: RISE&FALL

3.8.5 Sweep-mode (lin/log)

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	44	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	44	=	X.	<CR><LF>	If X is 0: LINEAR If X is 1: LOGARITHM

3.9 "pulse" mode

3.9.1 Pulse Width

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	45	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	45	=	X,Y.	<CR><LF>	X: desired pulsewidth based on Y If Y is 0: 1 to 400000000 If Y is 1: 1 to 400000000

3.9.2 Pulse Time

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	46	=	.	<CR><LF>	-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	46	=	X,Y	<CR><LF>	X: desired period based on Y If Y is 0: 1 to 400000000 If Y is 1: 1 to 400000000

3.9.3 Offset

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	47	=	.	<CR><LF>	Unit: 1

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	47	=	X.	<CR><LF>	Unit: 1 X: 0 to 120

3.9.4 Amplitude

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	48	=	.	<CR><LF>	Unit: 0.01 V

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	48	=	X.	<CR><LF>	Unit: 0.01 V X: 0 to 10

3.10 "burst" mode

3.10.1 Number of bursts

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	49	=	.	<CR><LF>	Unit: 1

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	49	=	X.	<CR><LF>	Unit: 1 X: 1 to 1048575

3.10.2 Trigger

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	50	=	.	<CR><LF>	Unit: 1

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	50	=	0.	<CR><LF>	MANUAL TRIG
				1.		CH2 TRIG
				2.		EXT.TRIG (AC)
				3.		EXT.TRIG (DC)

3.11 System settings

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	51	=	.	<CR><LF>	-
		52.				Sound (Data: 0 or 1)
		53.				Brightness (Data: 1 to 12)
		54.				Language (Data: 0 or 1)
		55.				Sync (list of 5 fields: frequency, wave, amplitude, duty cycle and offset)
		56.				ArbMaxNum

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	51	=	X.	<CR><LF>	Sound If X is 0: Off If X is 1: On
		52.				Brightness X: 1 to 12
		53.				Language If X is 0: EN If X is 1: CH
		54.				Sync X: FREQ, WAVE, AMPL, DUTY, OFFS.
		55.				AbMaxNum X: 1 to 60
		56.				-



We do not recommend changing the language setting through the communication protocol. Changing the language setting through the communication protocol will only change between English and Chinese and not between German, English, and French.

3.12 Profile actions (part of system menu)

3.12.1 Save profile

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	w	70	=	X.	<CR><LF>	X: 0 to 99

3.12.2 Load profile

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	71	=	.	<CR><LF>	0 to 99

3.12.3 Clear profile

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	72	=	.	<CR><LF>	0 to 99

3.13 "counter" mode (data)

3.13.1 Get counter

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	80	=	.	<CR><LF>	-

3.14 "measure" mode (data)

3.14.1 Frequency (lowres)

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	81	=	.	<CR><LF>	Unit: 0.1 Hz

3.14.2 Frequency (highres)

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	82	=	.	<CR><LF>	Unit: 0.001 Hz

3.14.3 PW+

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	83	=	.	<CR><LF>	Unit: 0.01 Microseconds

3.14.4 PW-

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	84	=	.	<CR><LF>	Unit: 0.01 Microseconds

3.14.5 Period

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	85	=	.	<CR><LF>	Unit: 0.01 Microseconds

3.14.6 Dutycycle

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	86	=	.	<CR><LF>	Unit: 0.1 %

3.14.6 Measure unknown 1 (related to frequency and gatetime)

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	87	=	.	<CR><LF>	-

3.14.7 Measure unknown 2 (inverse-related to frequency)

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	88	=	.	<CR><LF>	-

3.14.8 Measure unknown 3 (inverse-related to frequency)

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	89	=	.	<CR><LF>	-

3.15 All Zero

Start bit	Instruction character	Function code	Connector	Data field	Tailed (Terminator)	Explanation
:	r	90	=	.	<CR><LF>	-
		91				
		92				
		93				
		94				
		95				

4. ADDITIONAL INFORMATION

Our information and take-back obligations according to the Electrical and Electronic Equipment Act (ElektroG)

Symbol on electrical and electronic equipment:



This crossed-out dustbin means that electrical and electronic appliances do not belong in the household waste. You must return the old appliances to a collection point.

Before handing over waste batteries and accumulators that are not enclosed by waste equipment must be separated from it.

Return options:

As an end user, you can return your old device (which essentially fulfills the same function as the new device purchased from us) free of charge for disposal when you purchase a new device.

Small appliances with no external dimensions greater than 25 cm can be disposed of in normal household quantities independently of the purchase of a new appliance.

Possibility of return at our company location during opening hours:

SIMAC Electronics GmbH, Pascalstr. 8, D-47506 Neukirchen-Vluyn, Germany

Possibility of return in your area:

We will send you a parcel stamp with which you can return the device to us free of charge. Please contact us by email at Service@joy-it.net or by telephone.

Information on packaging:

If you do not have suitable packaging material or do not wish to use your own, please contact us and we will send you suitable packaging.

5. SUPPORT

If there are still any issues pending or problems arising after your purchase, we will support you by e-mail, telephone and with our ticket support system.

Email: service@joy-it.net

Ticket system: <http://support.joy-it.net>

Telephone: +49 (0)2845 9360-50 (Mon - Thur: 09:00 - 17:00 o'clock,
Fri: 09:00 - 14:30 o'clock)

For further information please visit our website:

www.joy-it.net