

# JDS2600 upper computer communication protocol

## ◆ Overview

The control commands are generally in the command line mode with a communication rate of 115200, where the PC issues the commands, the local machine parses them, and then returns the results to the PC. The different commands are described below.

The format of the data sent is as follows.

Starting position	Operators	Function number	Linker	Data Fields	Terminator
: The	w r a b	0-99	=	See description	Carriage Return Line Feed  <CR><LF

Description:

- (1) The start bit is a colon (:). The ASCII character table.
- (2) The operators are the 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 parameters in the machine, "a" instruction is used to write arbitrary wave data, and "b" instruction is used to read arbitrary wave data.
- (3) The function number is a value in the ASCII character

table, and the different values represent different parameter settings.

(4) Data field: The data field is equivalent to the number of operations of the command, the number is from 1 to 2048, each data is distinguished by "," or "." to distinguish between each data.

For example:w23=25786,0. <CR><LF>This instruction has 2 operands, the first operand is "25786", which sets the output frequency to 257.86, and the second operand is "0 " sets the unit of frequency to Hz, in short, this instruction sets the frequency of channel 1 to 257.86 Hz.

- (5) Ending character: Each command ends with a carriage return + line feed.

<CR> indicates a carriage return in the ASCII character table (0x0d in hexadecimal notation)

<LF> is a line feed in the ASCII character table (0x0a

in hexadecimal notation)The following are both of the

above ways to represent a line feed.

## ◆ W command

### Channel output status setting

For example, the PC sends: w20=1,1.<CR><LF> to indicate the waveform output status of channel 1 and 2 is on, and the machine returns OK to indicate successful setting.

For example, the PC sends: w20=0,0.<CR><LF> to indicate that the waveform output status of channels 1 and 2 is off, and the machine returns OK to indicate successful setting.

### (1) Waveform Settings

For example, the PC sends: w21=0.<CR><LF> to indicate

that the waveform output from channel 1 is sine wave, and the machine returns OK to indicate successful setting.

The PC sends: w21=101.<CR><LF> to set the channel output waveform as arbitrary waveform 01, and the

machine returns OK to indicate successful setting.

The PC sends w22=0.<CR><LF> to indicate that the waveform output from channel 2 is sine wave, and the machine returns OK to indicate successful setting.

The other waveforms are set as follows.

Channel 1	Waveform	Channel 2
:w21=0.<CR><LF>	is a sine wave	:w22=0.<CR><LF>
:w21=1.<CR><LF>	for square wave	:w22=1.<CR><LF>
:w21=2.<CR><LF>	is a pulse wave	:w22=2.<CR><LF>
:w21=3.<CR><LF>	is a triangular wave	The following and so on
:w21=4.<CR><LF>	is partial sine wave	
:w21=5.<CR><LF>	for cmos wave	
:w21=6.<CR><LF>	for DC level	
:w21=7.<CR><LF>	for half wave	The following and so on
:w21=8.<CR><LF>	for full wave	
:w21=9.<CR><LF>	is a positive step wave	
:w21=10.<CR><LF>	is the inverse step	

	wave	
:w21=11.<CR><LF>	for noise wave	
:w21=12.<CR><LF>	For exponential rise	
:w21=13.<CR><LF>	for the index drop	
:w21=14.<CR><LF>	For polyphonic	
:w21=15.<CR><LF>	For Sinek Pulse	
:w21=16.<CR><LF>	for Lorentz pulse	
When :w21=101.<CR><LF> indicates arbitrary wave 01, :w21=102.<CR><LF> indicates arbitrary wave 02, to After that, and so on, until the maximum 160 indicates any wave 60.		

## (2) The frequency settings are as follows

The PC sends :w23=25786,1.<CR><LF> to set the output frequency of channel 1 to 0.2586 in KHz, and the machine returns OK to indicate successful setting.

PC sends:w24=25786,3.<CR><LF> Set the output frequency of channel 2 to

257.86 The unit is mHz, and the machine returns OK to indicate successful setting.

Other cases are as follows. el 1	Channel 2
:w23=25786,0.<CR><LF> set to 257.86Hz	:w24=25786,0.<CR><LF>
:w23=25786,1.<CR><LF> set to 0.25786KHz	:w24=25786,1.<CR><LF>
:w23=25786,2.<CR><LF> set to 0.00025786MHz	The following and so on
:w23=25786,3.<CR><LF> set to 257.86mHz	

### (3) The range is set as follows

PC sends:w25=x.<CR><LF> When x=30, set the amplitude output of channel 1 to 0.03v, the machine returns OK to indicate successful setting.

PC sends:w26=x.<CR><LF> When x=30, set the amplitude output of channel 2 to 0.03v, and the machine returns OK to indicate successful setting.

### (4) The duty cycle is set as follows

PC sends:w29=x.<CR><LF> When x=500 set channel 1 duty cycle output to 50%, machine returns OK to indicate successful setting.

PC sends:w29=x.<CR><LF> When x=500 set channel 2 duty cycle output to 50%, machine returns OK to indicate successful

setting.

**( 5 ) The bias settings are as follows**

PC sends:w27=9999.<CR><LF> Set the bias output of channel 1  
to 9.99v.

The machine returns OK to indicate successful setup.

The PC sends:w27=1000.<CR><LF> to set the bias output of channel 1 to 0v, and the machine returns OK to indicate successful setting.

The PC sends:w27=1.<CR><LF> to set the bias output of channel 1 to -9.99v, and the machine returns OK to indicate successful setting.

When setting the bias output of channel 2, just change

the :w27 to :w28 and the rest is unchanged. For example,

the PC sends :w28=1.<CR><LF> to set the bias output of channel 2 as

-9.99v, the machine returns OK to indicate successful setup.

## **( 6 ) The phase settings are as follows**

The PC sends:w31=100.<CR><LF> to indicate that the phase output is  $10^\circ$  , and the machine returns OK to indicate successful setting.

The PC sends: w31=360.<CR><LF> to indicate that the phase is  $0^\circ$  , and the machine returns OK to indicate successful setting.

## **( 7 ) The tracking settings are as follows**

P C    sends:w54=x, x, x, x, x.<CR><LF> Value of operand in trace setup

(the value of x) is 1 or 0, 1 means synchronous and 0 means asynchronous, and synchronous is done with a pass



Channel 1 is the operation object. The number of operands corresponds to the parameters: w54=frequency, waveform, amplitude, bias, duty cycle.

PC sends:w54=1,0,0,0,0,0.<CR><LF> Set frequency synchronization (waveform amplitude bias duty cycle asynchronous) machine returns OK to indicate successful setting.

PC sends:w54=1,1,0,0,0,0.<CR><LF> Set frequency and waveform synchronization (amplitude bias duty cycle asynchronous) machine returns OK to indicate successful setting.

## ( 8 ) Extended functions (writing of commands)

For example, the PC sends: w32=x, x, x, x. <CR><LF> where the value of the operand (the value of x) can only be 1 or 0)

If the PC sends: w32=0, 0, 0, 0. <CR><LF> to turn off the counting, sweep AM burst and start the measurement, the machine returns OK to indicate successful setting.

If the PC sends: w32=1, 0, 0, 0. <CR><LF> Set the counter to start counting, and the machine returns OK to indicate successful setting.

If the PC sends: w32=0, 0, 0, 0. to stop the counter. The machine returns OK to indicate successful setting.

Other information is as follows

:w32=0, 0, 0, 0. <CR><LF>	Measurement start (counting sweep AM burst stop)
:w32=1, 0, 0, 0. <CR><LF>	Counting starts
:w32=0, 1, 0, 0. <CR><LF>	Start of frequency scanning
:w32=1, 0, 1, 1. <CR><LF>	Pulse start
:w32= 1, 0, 0, 1. <CR><LF>	Sudden onset

## ( 9 ) Switching of function panels

If the PC sends: :w33=0. <CR><LF> the machine panel will switch to the main panel and channel 1 will be the main channel, the machine returns OK to indicate successful setup.

If the PC sends: :w33=1.<CR><LF> the machine panel will switch to the main panel and channel 2 will be the main channel, the machine returns OK to indicate successful setup. Other information is as follows

:w33=0. <CR><LF>	Channel 1 is the main channel
:w33=1. <CR><LF>	Channel 2 Main Channel
:w33=2. <CR><LF>	SYS (System Setup)
:w33=4. <CR><LF>	Switching of measurement panels
:w33=5. <CR><LF>	Switching of counted panels
:w33=6. <CR><LF>	Channel 1 Sweep Panel
:w33=7. <CR><LF>	Channel 2 Sweep Panel
:w33=8. <CR><LF>	Pulse Panel
:w33=9. <CR><LF>	Burst panel

#### ( 10 ) Extended functions (measurement functions)

If the PC sends:w36=0.<CR><LF> to indicate the coupling switch to AC, the machine returns OK to indicate successful setting.

If the PC sends:w38=0.<CR><LF> to set the measurement mode to frequency counting, the machine returns OK to indicate successful setting.

Other information is as follows

:w36=0. <CR><LF>	Coupling AC
:w36=1. <CR><LF>	Coupling DC
:w37=100. <CR><LF>	Set the gate time for 1 second.
:w38=0. <CR><LF>	Set measurement mode (frequency counting)
:w38=1. <CR><LF>	Set measurement mode (cycle counting)

:w39=0. <CR><LF>	Counting Clear
------------------	----------------

## (11) Extended functions (bursts)

Setting of the number of pulses

If the PC sends: w49=5.<CR><LF> The number of pulses is set to 5, and the machine returns OK to indicate successful setting.

If the PC sends: w49=100.<CR><LF> The number of pulses is set to 100, and the machine returns OK to indicate successful setting.

Burst mode setting

PC send	sudden-onset mode
:w50=0.<CR><LF>	For manual triggering
:w50=1.<CR><LF>	for CH2 burst
:w50=2.<CR><LF>	for external burst (AC)
:w50=3.<CR><LF>	For external burst (DC)

## (12) Setting of the start frequency of the extended function (sweep)

The PC sends: w40=1000.<CR><LF> to set the starting frequency to 10Hz, and the machine returns OK to indicate successful setting.

Setting of termination frequency.

The PC sends:w41=1000.<CR><LF> to set the termination frequency to 10Hz, and the machine returns OK to indicate successful setting.

Frequency sweep time setting.

PC sends:w42=10.<CR><LF> to set the sweep time to 1 second, and the machine returns OK to indicate successful setting.

Sweep direction

PC send	Sweep direction
:w43=0.<CR><LF>	Normal
:w43=1.<CR><LF>	Reverse
:w43=2.<CR><LF>	Round trip

Sweep mode

PC send	Sweep mode
:w44=0.<CR><LF>	Sweep mode is linear
:w44=1.<CR><LF>	Sweep mode is logarithmic

## (12) Extended function

**(pulse function)** pulse width

setting

PC sends:w45=1000,0.<CR><LF> Set the pulse width to 1000 in ns, and the machine returns OK to indicate successful setting.

PC sends:w45=1000,1.<CR><LF> Set the pulse width to 1000 in us, and the machine returns OK to indicate successful setting.

Cycle Setting



PC sends:w46=1000,0.<CR><LF> Set the period to 1000 in ns,  
and the machine returns OK to indicate successful setting.

The PC sends:w46=1000,1.<CR><LF> to set the period to 1000 unit us, and the machine returns OK to indicate successful setting.

Offset setting

PC sends:w47=100.<CR><LF> Set the offset to 100%, the machine returns OK to indicate successful setting.

Range Setting

PC sends:w46=500.<CR><LF> Set the range to 5.00 unit V.  
The machine returns OK to indicate successful setting.

## **Call out and save**

If the PC sends: w70=5. <CR><LF> means the parameter is stored in position 5 and the machine returns OK to indicate successful setting.

If the PC sends: w71=5. <CR><LF> to call out the parameter at position 5, the machine returns OK to indicate successful setting.

If the PC sends:w72=5. <CR><LF> to clear the parameter of position 5, the machine returns OK to indicate successful setting.

## **◆ a,b commands**

The a,b commands are arbitrary wave writes and reads as explained in detail in the following examples.

**(1) Write arbitrary wave command (a command)**

If the PC machine sends: a01=2048, 2048.      2048. <CR><LF>  
machine returns

OK means that the waveform written to arbitrary waveform 1 is DC level, and 2048 in the data field means the longitudinal waveform.

The coordinate value (y-axis) is 0, when the value is 4095, it means that the vertical coordinate value (y-axis) is 1, when the value is 0, it means that the vertical coordinate value (y-axis) is -1, and the number of operations written by any wave is 2048 bits.

If the PC machine sends: a02=2048, 2048.          2048. <CR><LF>  
machine returns

OK means the waveform written to arbitrary waveform 2 is DC level.

If the PC machine sends: a03=2048, 2048.          2048. <CR><LF>  
machine returns

OK means the waveform written to arbitrary waveform 3 is DC level.  
(The maximum number of arbitrary waves is 60)

## **(2) Command to read arbitrary waves (b command)**

If the PC sends: b01=0. <CR><LF> The machine  
returns the data of arbitrary wave 01: b01=2048, 2048,  
2048.                                  2048, 2048. .. <CR><LF> in its data  
segment

The numerical expression of the vertical coordinate (y-axis) is the same as above and will not be repeated here.

## **◆ R command**

The **r** command is a read command, and its command format is basically the same as the write command format, so we will not repeat it here.

Description.

### **(1) The cases in which the read instruction does not correspond to the write instruction are as follows**

If the PC sends: r80=0.<CR><LF> the machine returns:  
r80=125. This means the current count is 125.

When the PC sends :r81=0.<CR><LF> in the frequency  
counting mode, the machine returns :r81=100000.

When in cycle counting mode the PC  
sends :r82=0.<CR><LF> The machine returns:r81=100000.  
indicating that the current measured frequency is 10000Hz.

The other cases are as follows

:r80=0. <CR><LF>	Read the count value
:r81=0. <CR><LF>	Read the measured frequency value (in frequency counting mode)
:r82=0. <CR><LF>	Reading frequency measurement values (in cycle counting mode)
:r83=0. <CR><LF>	Read positive pulse width
:r84=0. <CR><LF>	Read negative pulse width
:r85=0. <CR><LF>	Read cycle
:r86=0. <CR><LF>	Read Duty Cycle
When:r00=0. <CR><LF>	Indicates that the machine model is read.
When:r01=0. <CR><LF>	Indicates that the machine number is read.

## ( 2 ) A quick read is as follows

PC sends:r81=4. <CR><LF>The machine returns data from the count value to the negative pulse width. PC sends:r81=5. <CR><LF>The machine returns data from count value to period. PC sends:r00=1. <CR><LF>The machine also returns the read machine model and number.

The read instruction corresponds to the write instruction as follows.

The PC sends:r21=0. <CR><LF> to read the current waveform of channel 1, if it returns:r21=0.the current waveform is a

sine wave, if it returns:r21=1.the current waveform is a square wave, the others correspond to the write command one by one, so we will not explain them here.

The PC sends when:r21=10.<CR><LF> means read the waveform to phase data of channels 1 and 2.

The PC sends when:r23=8.<CR><LF> to read the frequency-to-phase data for channels 1 and 2.

The other read commands are the same as above, so I won't explain them all here.