FY6900 Series Function Waveform Generator

Host Computer Communication Protocol Specification

Rev 1.8

Overview

The overall structure of control command using the command line, the baud rate of fixed value 115200bps, the command issued by PC, the execution machine analysis, each command marks the end to newline (sixteen hexadecimal representations for "0x0a"). The execution machine will reply 0x0a after command executed. The following is a detailed description of the different orders.

Communication Protocol Summary

	Writing Command	Command Line			Return		Reading Command	Command Line		Return	
		Code	Value	End Mark				Code	End Mark	Value	End Mark
Output	Set waveform of main wave	WMW	xxxxxxxx	0x0a	0x0a		Read waveform of main wave	RMW	0x0a	xxxxxxxx	0x0a
	Set frequency of main wave	WMF	xxxxxxxx	0x0a	0x0a		Read frequency of main wave	RMF	0x0a	xxxxxxxx	0x0a
	Set amplitude of main wave	WMA	xxxxxxxx	0x0a	0x0a		Read amplitude of main wave	RMA	0x0a	xxxxxxxx	0x0a
	Set offset of main wave	WMO	xxxxxxxx	0x0a	0x0a		Read offset of main wave	RMO	0x0a	xxxxxxxx	0x0a
	Set duty cycle of main wave	WMD	xxxxxxxx	0x0a	0x0a		Read duty cycle of main wave	RMD	0x0a	xxxxxxxx	0x0a
	Set phase of main wave	WMP	xxxxxxxx	0x0a	0x0a		Read phase of main wave	RMP	0x0a	xxxxxxxx	0x0a
	Set On/Off of main wave output	WMN	xxxxxxxx	0x0a	0x0a		Read On/Off of main wave output	RMN	0x0a	xxxxxxxx	0x0a
	Set waveform of auxiliary wave	WFW	xxxxxxxx	0x0a	0x0a		Read waveform of auxiliary wave	RFW	0x0a	xxxxxxxx	0x0a
	Set frequency of auxiliary wave	WFF	xxxxxxxx	0x0a	0x0a		Read frequency of auxiliary wave	RFF	0x0a	xxxxxxxx	0x0a
	Set amplitude of auxiliary wave	WFA	xxxxxxxx	0x0a	0x0a		Read amplitude of auxiliary wave	RFA	0x0a	xxxxxxxx	0x0a
	Set offset of auxiliary wave	WFO	xxxxxxxx	0x0a	0x0a		Read offset of auxiliary wave	RFO	0x0a	xxxxxxxx	0x0a
	Set duty cycle of auxiliary wave	WFD	xxxxxxxx	0x0a	0x0a		Read duty cycle of auxiliary wave	RFD	0x0a	xxxxxxxx	0x0a
	Set phase of auxiliary wave	WFP	xxxxxxxx	0x0a	0x0a		Read phase of auxiliary wave	RFP	0x0a	xxxxxxxx	0x0a
	Set On/Off of auxiliary wave output	WFN	xxxxxxxx	0x0a	0x0a		Read On/Off of auxiliary wave output	RFN	0x0a	xxxxxxxx	0x0a

Modulation	Set trigger mode of main wave	WPF	xxxxxxxx	0x0a	0x0a	Read trigger mode of main wave	RPF	0x0a	xxxxxxxx	0x0a
	Set trigger Source of main wave	WPM	xxxxxxxx	0x0a	0x0a	Read trigger Source of main wave	RPM	0x0a	xxxxxxxx	0x0a
	Set FSK secondary frequency of main wave	WFK	xxxxxxxx	0x0a	0x0a	Read FSK secondary frequency of main wave	RFK	0x0a	xxxxxxxx	0x0a
	Set pulse amount triggered by main wave	WPN	xxxxxxxx	0x0a	0x0a	Read pulse amount triggered by main wave	RPN	0x0a	xxxxxxxx	0x0a
	Generating manual trigger source	WPO	xxxxxxxx	0x0a	0x0a					
	Set the Modulation Rate of Main Wave AM	WPR	xxxxxxxx	0x0a	0x0a	Read the Modulation Rate of Main Wave AM	RPR	0x0a	xxxxxxxx	0x0a
	Set FM Modulation Frequency Offset of Main Wave	WFM	xxxxxxxx	0x0a	0x0a	Read FM Modulation Frequency Offset of Main Wave	RFM	0x0a	xxxxxxxx	0x0a
	Set PM Modulation Phase Offset of Main Wave	WPP	xxxxxxxx	0x0a	0x0a	Read PM Modulation Phase Offset of Main Wave	RPP	0x0a	xxxxxxxx	0x0a
Measurement	Set coupling mode	WCC	xxxxxxxx	0x0a	0x0a					
	Reset Counter	WCZ	xxxxxxxx	0x0a	0x0a					
	Pause the measurement	WCP	xxxxxxxx	0x0a	0x0a					
	Set gate time of measurement	WCG	xxxxxxxx	0x0a	0x0a	Read gate time of measurement	RCG	0x0a	xxxxxxxx	0x0a
						Read frequency of external measurement	RCF	0x0a	xxxxxxxx	0x0a
						Read external counting value	RCC	0x0a	xxxxxxxx	0x0a

						Read external counting period	RCT	0x0a	xxxxxxxx	0x0a
						Read positive pulse width of external measurement	RC+	0x0a	xxxxxxxx	0x0a
						Read negative pulse width of external measuremen	RC-	0x0a	xxxxxxxx	0x0a
						Read duty cycle of external measurement	RCD	0x0a	xxxxxxxx	0x0a
Sweep	Set sweep object	SOB	xxxxxxxx	0x0a	0x0a					
	Set start data of sweep	SST	xxxxxxxx	0x0a	0x0a					
	Set end data of sweep	SEN	xxxxxxxx	0x0a	0x0a					
	Set sweep time	STI	xxxxxxxx	0x0a	0x0a					
	Set sweep mode	SMO	xxxxxxxx	0x0a	0x0a					
	Set start-stop of sweep	SBE	xxxxxxxx	0x0a	0x0a					
	Set signal source of sweep	SXY	xxxxxxxx	0x0a	0x0a					
System Setting	Save parameters of current two channels	USN	xxxxxxxx	0x0a	0x0a					
	Load parameters from storage position	ULN	xxxxxxxx	0x0a	0x0a					
	Add synchronization mode	USA	xxxxxxxx	0x0a	0x0a	Read synchronization information	RSA	0x0a	xxxxxxxx	0x0a
	Cancel synchronization mode	USD	xxxxxxxx	0x0a	0x0a					
	Set buzzer	UBZ	xxxxxxxx	0x0a	0x0a	Read buzzer	RBZ	0x0a	xxxxxxxx	0x0a

	on/off				
	Set uplink mode	UMS	xxxxxxxx	0x0a	0x0a
	Set local uplink status	UUL	xxxxxxxx	0x0a	0x0a

status				
Read uplink mode	RMS	0x0a	xxxxxxxx	0x0a
Read local uplink status	RUL	0x0a	xxxxxxxx	0x0a
Read local ID	UID	0x0a	xxxxxxxx	0x0a
Read local Model	UMO	0x0a	xxxxxxxx	0x0a

●Detailed description of each command

1、Main waveform Parameter command

Set Main waveform Parameter：

1) WMW:set up main waveform form

Format:**WMW**xx+0x0a

Which "XX" represents the waveform of the 2 figures ,among:

WMW0 expressed as SINE

WMW1 expressed as Square

WMW2 expressed as Rectangle

WMW3 expressed as Trapezoid

WMW4 expressed as CMOS

WMW5 expressed as Adj-Pulse

WMW6 expressed as DC

WMW7 expressed as TRGL

WMW8 expressed as Ramp

WMW9 expressed as NegRamp

WMW10 expressed as Stair TRGL

WMW11 expressed as Stairstep

WMW12 expressed as NegStair

WMW13 expressed as PosExponen

WMW14 expressed as NegExponen

WMW15 expressed as P-Fall-Exp

WMW16 expressed as N-Fall-Exp

WMW17 expressed as PosLogarit

WMW18 expressed as NegLogarit

WMW19 expressed as P-Fall-Log

WMW20 expressed as N-Fall-Log

WMW21 expressed as P-Full-Wav

WMW22 expressed as N-Full-Wav

WMW23 expressed as P-Half-Wav

WMW24 expressed as N-Half-Wav

WMW25 expressed as Lorentz-Pu

WMW26 expressed as Multitone

WMW27 expressed as Random-Noi

WMW28 expressed as ECG

WMW29 expressed as Trapezoid

WMW30 expressed as Sinc-Pulse

WMW31 expressed as Impulse

WMW32 expressed as AWGN

WMW33 expressed as AM

WMW34 expressed as FM

WMW35 expressed as Chirp

WMW36 expressed as Impulse

WMW37 expressed as Arbitrary1

WMW38 expressed as Arbitrary2

……

WMW99 expressed as Arbitrary64

2) **WMF**: Set main waveform frequency

Format: **WMF**xxxxxxxxxxxxxx+0x0a

Which "xxxxxxxxxxxxxx" represents the frequency value of the 14 digits, the frequency value is fixed to uHz as a unit, for example

- **WMF**1000000000 indicates that the setting frequency is 100Hz
- **WMF**000123456 indicates that the setting frequency is123.456mHz
- **WMF**000000001 indicates that the setting frequency is 1uHz.

3)WMA：To set the Amplitude of main waveform

Form as：WMAxx.xx+ 0x0a

Above "xx.xx" shows the amplitude value needed. For example:

WMA12.35 means the amplitude is set to 12.35V.

WMA0.35 means the amplitude is set to 0.35V.

4)WMO：To set the Offset of main waveform

Form as: WMOxx.xx+ 0x0a

Above "xx.xx" shows the offset value needed. For example:

WMO2.35 means the offset is set to 2.35V

WMO-2.35 means the offset is set to -2.35V

5)WMD：To set the Duty Cycle of main waveform

Form as：WMDxx.x+ 0x0a

Above “xx.x” shows the duty cycle value represented by 3 digits. For example:

WMD50.1 means the duty cycle is set to 50.1%.

6)WMP：To set the Phase of main waveform

Form as: WMPxxx+ 0x0a

Above “xxx” shows the phase value needed. For example:

WMP123.4 means the phase is set to 123.4 .

WMP4.5 means the phase is set to 4.5° .

7)WMN：To set the On/Off status of main wave output.

Form as：WMNx+ 0x0a

Above “x” shows On/Off status. Fox example:

WMN0 means main wave output is set to Off.

WMN1 means main wave output is set to On.

8) WMS：To set pulse period of main wave pulse

Form as：WMS xxxx+ 0x0a

Above “xxxx” shows pulse period. Unit is nS. For example:

WMN10000 means pulse period is 10000 nS.

Read Main Wave information

1)RMW：Read waveform of main wave.

PC sends RMW + 0x0a ，

If the machine returns 0000000001, it means the current waveform is Square.

Details as follows:

0	SINE
1	Square
2	Rectangle
3	Trapezoid
4	CMOS
5	Adj-Pulse
6	DC
7	TRGL
8	Ramp
9	NegRamp
10	Stair TRGL
11	Stairstep
12	NegStair
13	PosExponen
14	NegExponen
15	P-Fall-Exp
16	N-Fall-Exp
17	PosLogarit
18	NegLogarit

19	P-Fall-Log
20	N-Fall-Log
21	P-Full-Wav
22	N-Full-Wav
23	P-Half-Wav
24	N-Half-Wav
25	Lorentz-Pu
26	Multitone
27	Random-Noi
28	ECG
29	Trapezoid
30	Sinc-Pulse
31	Impulse
32	AWGN
33	AM
34	FM
35	Chirp
36	Impulse
37	Arbitrary Waveform 1
38	Arbitrary Waveform 2
……	
99	Arbitrary Waveform 64

2)RMF：Read frequency of main wave

PC sends RMF + 0x0a ，

If the machine returns 00010000.000000, it means the current frequency is 10KHz.

The unit of frequency is Hz.

3)RMA：Read the amplitude of main wave

PC sends RMA + 0x0a

If the instrument returns “00000010000”, it means the current amplitude is 10.000V

4)RMO：To read the offset of main waveform.

PC sends RMO + 0x0a ，

If the instrument returns “611”, it means the current offset is -0.389V.

If the instrument returns “16782”, it means the current offset is 6.782V.

(Calculating method instruction: If the return value is smaller than 10000, deduct 10000 from the return value. When the return value is bigger than 10000, deduct 10000 from the return value.)

5)RMD：To read the duty cycle of main waveform.

PC sends RMD + 0x0a ，

If the instrument returns 0000000689, it means the current duty cycle is 68.9%.

6)RMP：To read the phase of main waveform.

PC sends RMP + 0x0a ，

If the instrument returns 2189, it means the current phase is 218.9°.

（7）RMN：To read the output status: enabled or disabled.

PC sends RMN + 0x0a ，

If the instrument returns 0, it means the main waveform output is disabled.

If the instrument returns 255, it means the main waveform output is enabled.

8) RSS：To read the pulse period of main wave pulse.

Format as：RSS + 0x0a

If the machine returns 10000, it means the pulse period is 10000 nS.

2、**Parameter command of subsidiary waveform**

To set parameter of subsidiary waveform

(1)WFW：To set the type of subsidiary waveform

Form as ：WFW xx+ 0x0a

Above “xx” represents the waveform type by 2 digits. i.e.：

WFW0 expressed as SINE

WFW1 expressed as Square

WFW2 expressed as Rectangle

WFW3 expressed as Trapezoid

WFW4 expressed as CMOS

WFW5 expressed as DC

WFW6	expressed as	TRGL
WFW7	expressed as	Ramp
WFW8	expressed as	NegRamp
WFW9	expressed as	Stair TRGL
WFW10	expressed as	Stairstep
WFW11	expressed as	NegStair
WFW12	expressed as	PosExponen
WFW13	expressed as	NegExponen
WFW14	expressed as	P-Fall-Exp
WFW15	expressed as	N-Fall-Exp
WFW16	expressed as	PosLogarit
WFW17	expressed as	NegLogarit
WFW18	expressed as	P-Fall-Log
WFW19	expressed as	N-Fall-Log
WFW20	expressed as	P-Full-Wav
WFW21	expressed as	N-Full-Wav
WFW22	expressed as	P-Half-Wav
WFW23	expressed as	N-Half-Wav
WFW24	expressed as	Lorentz-Pu
WFW25	expressed as	Multitone
WFW26	expressed as	Random-Noi
WFW27	expressed as	ECG
WFW28	expressed as	Trapezoid

WFW29 expressed as Sinc-Pulse

WFW30 expressed as Impulse

WFW31 expressed as AWGN

WFW32 expressed as AM

WFW33 expressed as FM

WFW34 expressed as Chirp

WFW35 expressed as Impulse

WMW36 expressed as Arbitrary1

WMW37 expressed as Arbitrary2

……

WMW98 expressed as Arbitrary64

(2)WFF：To set the Frequency of subsidiary waveform

Form as：WFFxxxxxxxxxxxxx + 0x0a

Above "xxxxxxxxxxxxx" shows the frequency value represented by 14 digits.

The unit of frequency is fixed as uHz. For example:

WFF100000000 Means setting the frequency to 100Hz.

WFF000123456 Means setting the frequency to 0.123456Hz

WFF000000001 Means setting the frequency to 1uHz

(3)WFA：To set the Amplitude of subsidiary waveform

Form as：WFAxx.xx+ 0x0a

Above "xx.xx" shows the amplitude value needed. For example:

WFA12.351 means the amplitude is set to 12.351V.

WFA0.352 means the amplitude is set to 0.352V.

(4)WFO：To set the Offset of subsidiary waveform

Form as：WFO xx.xx+ 0x0a

Above “xx.xx” shows the offset value needed. For example:

WFO 2.351 means the offset is set to 2.351V

WFO -2.352 means the offset is set to -2.352V

(5)WFD：To set the Duty Cycle of subsidiary waveform

Form as：WFD xx.x+ 0x0a

Above “xx.x” shows the duty cycle value represented by 3 digits. For example:

WFD50.1 means the duty cycle is set to 50.1%.

(6)WFP：To set the Phase of subsidiary waveform

Form as：WFPxxx+ 0x0a

Above “xxx” shows the phase value needed. For example:

WFP142.3 means the phase is set to 142.3°.

WFP4.5 means the phase is set to 4.5°.

(8)WFN：To enable/disable subsidiary waveform output.

Form as：WFNx+ 0x0a

Above “x” represents the status of enable/disable. For example:

WFN0 means the subsidiary waveform output is disabled.

WFN1 means the subsidiary waveform output is enabled.

Read the information of subsidiary waveform：

(1)RFW：To read the type of subsidiary waveform.

PC sends RFW + 0x0a ，

If the instrument returns “1”, it means the current waveform is Square Wave.

Details as follows:

0	SINE
1	Square
2	Rectangle
3	Trapezoid
4	CMOS
5	DC
6	TRGL
7	Ramp
8	NegRamp
9	Stair TRGL
10	Stairstep
11	NegStair
12	PosExponen
13	NegExponen
14	P-Fall-Exp

15	N-Fall-Exp
16	PosLogarit
17	NegLogarit
18	P-Fall-Log
19	N-Fall-Log
20	P-Full-Wav
21	N-Full-Wav
22	P-Half-Wav
23	N-Half-Wav
24	Lorentz-Pu
25	Multitone
26	Random-Noi
27	ECG
28	Trapezoid
29	Sinc-Pulse
30	Impulse
31	AWGN
32	AM
33	FM
34	Chirp
35	Impulse
36	Arbitrary Waveform 1
37	Arbitrary Waveform 2

……

98 Arbitrary Waveform 64

(2)RFF：To read the frequency of subsidiary waveform.

PC sends RFF + 0x0a ，

If the instrument returns “00010000.000000” , it means the current frequency is 10KHz.

The unit of frequency value is Hz which is fixed.

(3)RFA：To read the amplitude of subsidiary waveform.

PC sends RFA + 0x0a ，

If the instrument returns “10000”, it means the current amplitude is 10.000V

(4)RFO：To read the offset of subsidiary waveform.

PC sends RFO + 0x0a ，

If the instrument returns “611”, it means the current offset is -0.389V.

If the instrument returns “16782”, it means the current offset is 6.782V.

(Calculating method instruction: If the return value is smaller than 10000, deduct 10000 from the return value. When the return value is bigger than 10000, deduct 10000 from the return value.)

(5)RFD：To read the duty cycle of subsidiary waveform.

PC sends RFD + 0x0a ，

If the instrument returns 689, it means the current duty cycle is 68.9%.

(6)RFP：To read the phase of subsidiary waveform

PC sends RFP + 0x0a ，

If the instrument returns 1289, it means the current phase is 128.9°.

(8)RFN：To read the subsidiary output status: enabled or disabled.

PC sends RFN + 0x0a ，

If the instrument returns 0000000000, it means the subsidiary waveform output is disabled.

If the instrument returns 0000000255, it means the subsidiary waveform output is enabled.

3. Modulation correlation

(1) WPF: Setting up the main wave modulation mode

Format: WPFx + 0x0a

Where "x" is the modulation mode to be set, for example:

WPF0 indicates setting the main wave modulation mode to ASK

WPF1 indicates setting the main wave modulation mode to FSK

WPF2 indicates setting the main wave modulation mode to PSK

WPF3 indicates setting the main wave modulation mode as trigger

WPF4 indicates setting the main wave modulation mode to AM

WPF5 indicates setting the main wave modulation mode to FM

WPF6 indicates setting the main wave modulation mode to PM

(2) RPF: Read Main Wave Modulation Mode

PC sends RPF + 0x0a, signal generator replies

0 denotes setting the main wave modulation mode to ASK

1 indicates setting the main wave modulation mode to FSK

2 indicates setting the main wave modulation mode to PSK

3 indicates setting the main wave modulation mode as trigger

4 indicates setting the main wave modulation mode to AM

5 indicates setting the main wave modulation mode to FM

6 indicates setting the main wave modulation mode to PM

(3) WPM: Setting up the main wave modulation source

Format: WPMx + 0x0a

Where "x" is the modulation source to be set, for example:

WPM0 means setting the modulation source as the second channel (secondary wave)

WPM1 indicates setting the modulation source as an external AC coupling channel

WPM2 indicates that the modulation source is set manually.

WPM3 indicates that the modulation source is set as an external DC coupling channel.

(4) RPM: Read the main wave modulation source

PC sends RPM + 0x0a, signal generator replies

0 means setting the modulation source as the second channel (secondary wave)

1 indicates that the modulation source is set as an external AC coupling channel

2 indicates that the modulation source is set manually

3 Represents setting the modulation source as an external DC coupling channel

(5) WPN: Setting the number of main trigger pulses

The format is: WPNxxxxxxx + 0x0a

The maximum value of "xxxxxx" is 1048575, for example:

WPN10 indicates that 10 cycles of waveform will be output after triggering.

(6) RPN: Number of trigger pulses read from the main wave

PC sends RPN + 0x0a.

If the machine returns to 0000000068, the number of trigger pulses currently set is 68.

(7) WFK: Set the second frequency of FSK modulation

The format is: WFK xxxxxxx.x+0x0a

Where "xxxxxxx.x" is the second frequency of the FSK that needs to be set, for example:

WFK123.4 indicates that the second frequency of setting FSK modulation is 123.4Hz.

(8) RFK: Read the second frequency of FSK modulation

PC sends RFK + 0x0a, such as signal generator reply

123.4 indicates that the second frequency of the set FSK modulation is 123.4Hz.

(9) WPO: Generating Manual Sources

Format: WPO + 0x0a

Each time the signal generator receives the instruction, it generates a manual source.

(10) WPR: Setting AM modulation rate

Format: WPR x x x.x+0x0a

Where "x x x.x" is the modulation rate that needs to be set, for example:

WFK50.1 indicates that the AM modulation rate set is 50.1%.

(11) RPR: Read AM Modulation Modulation Rate

PC sends RPR + 0x0a, such as signal generator reply

23.4 indicates that the modulation rate of AM modulation is 23.4%.

(12) WFM: Setting FM modulation frequency offset

The format is: WFM x xxxxxxx.x+0x0a

Where "xxxxxxx.x" is the frequency offset of FM that needs to be set, for example:

WFM 123.4 indicates that the frequency offset of setting FM modulation is 123.4Hz.

(13) RFM: Frequency offset for reading FM modulation

PC sends RFM + 0x0a, such as signal generator reply

6623.567 indicates that the frequency offset of the FM modulation set is 6623.567Hz.

(14) WPP: Set PM modulation phase offset

Format: WPPxxx.xx+0x0a

Where "xxx.xx" is the required phase offset, for example:

WPP150.12 indicates that the set PM phase offset is 150.12 degrees.

(15) RPP: Read FM modulation frequency offset

PC sends RPP + 0x0a, such as signal generator reply

66.56 indicates that the set PM phase offset is 66.56 degrees.

4、Measurement command

(1)RCF：Read frequency of external measurement

PC sends RCF + 0x0a ，

If the machine returns 0000000668 ,

When the gate time is 1s, the frequency result is 668Hz.

When the gate time is 10s, the frequency result is 66.8Hz.

When the gate time is 100s, the frequency result is 6.68Hz.

Note: Please read the gate time first before do this command to confirm the magnitude.

(2)RCC：Read external counting value.

PC sends RCC + 0x0a ，

If the machine returns 0000000668 , it means the value counted is 668.

(3)WCZ：Reset the counter.

Form as：WCZx+ 0x0a

Above “x” means the object of reset. For example：

WCZ0 means reset the counter.

(4)WCP：Pause the measurement.

Form as：WCPx+ 0x0a

Above “x” means the object of pause. For example：

WCP0 means pause the counter.

(5)RCT：Read the external counting period.

PC sends RCT + 0x0a ，

If the machine returns 0000060668, it means the counting period is 60668ns.

(6)RC+：Read width of positive pulse of external measurement.

PC sends RC+ + 0x0a ，

If the machine returns 0000060668, it means the width of positive pulse is 60668ns.

(7)RC-：Read width of positive pulse of external measurement.

PC sends RC- + 0x0a ，

If the machine returns 0000060668, it means the width of negative pulse is 60668ns.

(8)RCD：Read the duty cycle of external measurement.

PC sends RCD + 0x0a ，

If the machine returns 0000000668, it means the duty cycle of external measurement is 66.8%.

(9)WCG：Set the gate time of measurement.

Form as：WCG x+ 0x0a

Above “x” means the gate time needed. For example:

WCG0 Means gate time is set to 1s

WCG1 Means gate time is set to 10s

WCG2 Means gate time is set to 100s

(10)RCG：Red the gate time of measurement.

PC sends RCT + 0x0a ，

If the machine returns 0000000000, It means the gate time is 1s.

Details as:

0 Means the gate time current is 1s.

1 Means the gate time current is 10s.

2 Means the gate time current is 100s.

(11)WCC：Set the coupling mode of measurement.

Form as：WCC x+ 0x0a

Above “x” is the coupling mode needed. For example:

WCC0 means set the coupling mode is set to DC coupling.

WCC1 means set the coupling mode is set to AC coupling.

5、Sweep command

(1)SOB：Set the object of sweep.

Form as：SOBx+ 0x0a

Above “x” is the object needed of sweep. For example：

SOB0 means set the frequency to be object.

SOB1 means set the amplitude to be object.

SOB2 means set the offset to be object.

SOB3 means set the duty cycle to be object.

(2)SST：Set the start position of sweep.

1、When the sweep object is frequency, the unit is Hz.

Form as：SSTxxxxxxx.x+ 0x0a

For example:

SST1000.0 means the start frequency is 1000.0Hz

2、When the sweep object is amplitude, the unit is V.

Form as：SSTxx.xxx+ 0x0a

For example:

SST10.001 means the start amplitude is 10.001V

3、When the sweep object is offset, the unit is V.

Form as：SSTxx.xxx+ 0x0a

For example:

SST-6.000 means the start offset is -6.000V.

4、When the sweep object is duty cycle, the unit is %.

Form as：SSTxx.x+ 0x0a

For example:

SST68.9 means the start duty cycle is 68.9%.

When the value input is higher than max value, the machine will keep the max value.

(3)SEN：Set the sweep end position.

1、When the sweep object is frequency, the unit is Hz.

Form as：SENxxxxxxx.x+ 0x0a

For example:

SEN1000.0 means the end frequency is 1000.0Hz.

2、When the sweep object is amplitude, the unit is V.

Form as：SENxx.xxx+ 0x0a

For example:

SSN10.000 means the end amplitude is 10.000V.

3、When the sweep object is offset, the unit is V.

Form as：SENxx.xxx+ 0x0a

For example

SEN-6.000 means the end offset is -6.000V

4、When the sweep object is duty cycle, the unit is %.

Form as：SENxx.x+ 0x0a

For example:

SSN68.9 means the end duty cycle is 68.9%

Note: When the value input is higher than max value, the machine will keep the max value.

(4)STI：Set the sweep time

Form as：STIxxx.xx+ 0x0a

Above “xxx.xx” means the sweep time needed. For example:

STI68.9 means the sweep time is set to 68.9s

(6)SMO：Set the sweep mode

Form as：SMO x+ 0x0a

Above “x” is the sweep mode needed. For example:

SMO0 means the sweep mode is linear sweep.

SMO1 means the sweep mode is log sweep.

(7)SBE：Set the sweep on/off.

Form as：SBEx+ 0x0a

Above “x” means the on/off status of sweep. For example:

SBE0 Set the sweep turned off.

SBE1 Set the sweep turned on.

(8) SXY：Set the control source of sweep.

Form as：SXY x+ 0x0a

Above “x” means the control source of sweep. For example：

SXY0 means the control source is time.

SXY1 means the control source is analog signal input from VCO IN terminal.

5、System Setting command

(1)USN: Save the parameters of current two channels (Frequency, amplitude, offset, duty cycle, waveform and so on) to a certain position.

Form as：USNxx+ 0x0a

Above “xx” means the saving position. For example:

USN06 means save current parameters to position 6.

USN01 means save current parameters to position 1.

Note: If the position 1 has data saved, the machine will load these data when start-up.

(2)ULN: Load the parameters of current two channels (Frequency, amplitude, offset, duty cycle, waveform and so on) from a certain position.

Form as：ULNxx+ 0x0a

Above “xx” means the position needed to load. For example:

ULN06 means load parameters from position 6.

ULN01 means load parameters from position 1.

Note: If the position 1 has data saved, the machine will load these data when start-up. If the position needed to load doesn’t have data saved, the machine will not load. It will maintain current parameters.

(3)USA: Add synchronization mode.

Form as：USAx+ 0x0a

Above “x” means the synchronization object. For example：

USA0 means set the waveform of second channel synchronized with first channel.

USA1 means set the frequency of second channel synchronized with first channel.

USA2 means set the Amplitude of second channel synchronized with first channel.

USA3 means set the offset of second channel synchronized with first channel.

USA4 means set the duty cycle of second channel synchronized with first channel.

Note: Synchronization function is not available in sweep status.

(4)USD: Cancel synchronization mode

Form as：USDx+ 0x0a

Above “x” means the synchronization object. For example：

USD0 means cancel the waveform of second channel synchronized with first channel.

USD1 means cancel the frequency of second channel synchronized with first channel.

USD2 means cancel the amplitude of second channel synchronized with first channel.

USD3 means cancel the offset of second channel synchronized with first channel.

USD4 means cancel the duty cycle of second channel synchronized with first

channel.

(5)RSA: Read synchronization information.

Form as：RSAx+ 0x0a

Above “x” means the synchronization object needs to read.

RSA0 means read the waveform synchronization information.

RSA1 means read the frequency synchronization information.

RSA2 means read the amplitude synchronization information.

RSA3 means read the offset synchronization information.

RSA4 means read the duty synchronization information.

If the machine returns 0, it means the object synchronization is disabled.

If the machine returns 255, it means the object synchronization is enabled.

For example：PC sends RSA2+ 0x0a ，

If the machine returns 0, it means the amplitude synchronization is disabled.

If the machine returns 255, it means the amplitude synchronization is disabled.

(5)UBZ：Set the buzzer on/off

Form as：UBZx+ 0x0a

Above “x” means the on/off status of buzzer. For example:

UBZ0 means turn off the buzzer.

UBZ1 means turn on the buzzer.

(5)RBZ：Read the buzzer on/off status.

Form as：RBZ+ 0x0a

For example：PC sends RBZ+ 0x0a ，

If the machine returns 0, it means the buzzer is disabled.

If the machine returns 255, it means the buzzer is enabled.

(6) UMS：To set the uplink mode.

Form as：UMSx+ 0x0a

Above “x” represents the uplink mode. For example:

UMS0 means setting the instrument as master machine.

UMS1 means setting the instrument as slave machine.

(6 RMS：To read the uplink mode.

Form as：RMS+ 0x0a

For example：PC sends RMS+ 0x0a ，

If the instrument returns 0, it means it is master machine in uplink.

If the instrument returns 255, it means it is slave machine in uplink.

(7) UUL：To turn on/off unlink function.

Form as：UMLx+ 0x0a

Above “x” represents the on/off status of uplink. For example:

UML0 means turning off the uplink function.

UML1 means turning on the uplink function.

(7) RUL：To read the uplink on/off status.

Form as：RUL+ 0x0a

For example：PC sends RUL+ 0x0a ，

If the instrument returns 0, it means the uplink function is in off status.

If the instrument returns 255, it means the uplink function is in on status.

(8) UID：To read the ID number of the instrument.

PC sends UID + 0x0a ，

The instrument returns its ID number.

(9) UMO：To read the model of the instrument.

PC sends UMO + 0x0a ，

The instrument returns its model.

NOTE: Feeltech reserves the right to modify all protocol without notice

Please download latest communication protocol from our website:

http://www.feeltech.net/