Changzhou Xionghua Tongtai Automation Equipment Co., Ltd

User's Guide
Musical Fountain Controller
XHYK-20

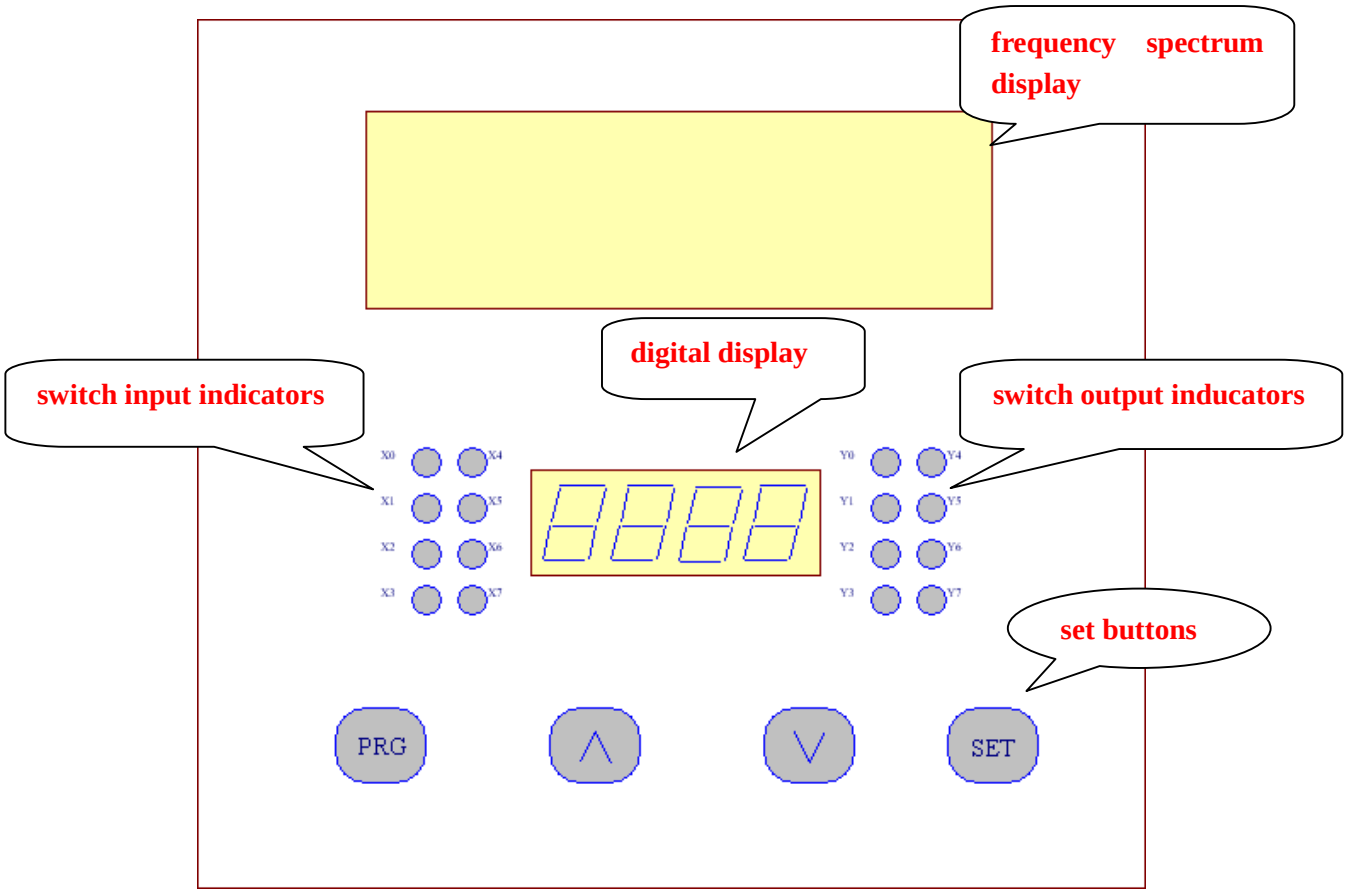
Feature

Music fountain fully use of the controller and the rhythm of the music art of the perfect combination of water features for your fountain to add dynamic art color. It will come from the compact disc CD, VCD, DVD, MP3 music playback devices such as the signal frequency converter automatically converted to the required control signals. Output signal and the size of the input music signal into a linear relationship, so that the spray fountain the size of the high signal changes with the music, music, spray, lantern integration, performance of a symphonic poem of water.

The controller can not only transfer the audio signals into frequency signals but also can control the water types by sequence (the water types can be set by user), and these water types can be combined freely.

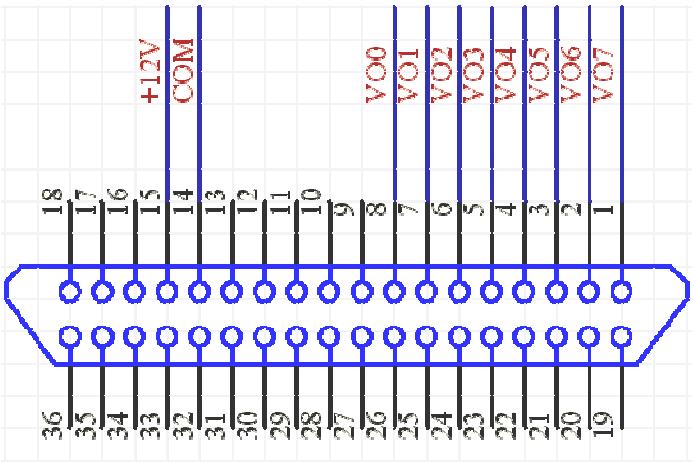
Main function: 8-channel different analog-voltage outputs, 8-channel PWM solid state music-control signal outputs, 8-channel switch inputs, and 3-channel switch outputs.

Panel



Terminal

VR	VL	GND	RIN	LIN	X7	X6	X5	X4	COM	X3	X2	X1	X0	COM	Y2	Y1	Y0	COM0	NC	NC	NC	NC



1. AC2-12V\GND\AC2-12V：two groups of +/-12V AC power input, and they are not common ground.
2. COM\X0~X7：switch signal inputs
   COM: common terminal
   X0: audio signal control mode (Be effective when COM and X0 is connected)
   X1: sequence control mode (Be effective when COM and X1 is connected)
   X2~X7: combination control mode (Be effective when COM and X2~X7 is connected)
3. COM0\Y0\Y1\Y2: switch signals outputs (relay outputs, dry contactors, under AC250V DC30V, Maximum load, resistive load 4A, inductive load 80VA and light load 100W)
4. VL, VR, COM: audio signal inputs, VL is left audio channel and VR is right channel, COM is common point（the audio channel also can choose RIN and LIN）
5. COM\V00~V07: analog outputs (DC0-10V), output to frequency converters
6. NC：no connection

Functions: Three control modes

1. Audio signal control mode

When COM and X0 is connected, the controller will automatically transfer the audio signals from CD, VCD, MP3 into DC 0-10V voltage signals to control the frequency converters and the output signal and the size of the input audio signal is into a linear relationship. (8-channel outputs)

1) The controller can set the Starting Voltage (when the audio signal is weak, the starting voltage can keep the pumps outlet). The user can adjust the Function No.01 to change the starting voltage. When the audio signal input, the switch signal Y0 has output, now the controller automatically adds the starting voltage on the base of the output voltage(that is, the final voltage to frequency converter is the sum total of starting voltage and audio output voltage, and the function is just useful at audio signal control mode)

2) The controller also has a output function at audio start, that is, when the audio signal (music signal) inputs, the Y0 and COM will connect (Dry contactor).

2. Sequence control mode

When COM and X1 is connected, the controller will execute the water types in the order they are defined, from the start position (Function No.03) to the end position (Function No.04). This will be circulating run until the control signal (COM and X1) is off.

3. Combination control mode

When COM connects with one point or more points of X2~X7, the controller will execute the combinations according to the addresses of combination switch instruction. X2~X7 correspond to 1, 2, 4, 8, 16, and 32 according to binary algorithm, total permutations and combinations are 64 groups. The algorithm of water types store addresses :(one group of water type uses two consecutive function Nos., such as function No.100 and function No.101 is the store address of first group, function No.102 and function No.103 is the store address of second group)

X2	X3	X4	X5	X6	X7
2^0=1	2^1=2	2^2=4	2^3=8	2^4=16	2^5=32

The store address of N combination= N*2+98

For example:

When COM and X2 is connected, the store address is

2^0*2+98=100

When COM connects with X2, X5, the store address is

(2^0+2^3)*2+98=116

Parameter setting

1. PRG
   Press PRG for 3s, enter or exit the programming mode
2. ∧/∨: increase/decrease
   Press them to increase or decrease the parameters
3. Move the cursor/ set button
   Press 《/SET for 1.5s, confirm the parameter or exit the setting mode
   Press once to move the cursor to next digit.

Function No.

Function No.	Name	Range	Unit	Factory set	User set	Remark
01	starting voltage	0-9999	V	1000		analog voltage minimum output
02	frequency magnification	0-9999	%	30		
03	starting position	0-9999		0		address=parameter*2+100
04	end position	0-9999		10		address=parameter*2+100
05	keep time	0-9999	0.1s	100		The keeping time of every group water types at sequence control mode
06	music comparison	0-9999		30		The audio signal must be larger than the parameter of Function No.06, then Y0 has output.
07	stop delay	0-9999	sec	2000		When the music stop, delay time to stop the controller
08	rate of water fall after rise	0-9999		961		The speed of the water column from the highest to the lowest position
10	0 correspond to voltage A	0~4000	V	1000		0~4000 correspond to 0V~10V
11	1correspond to voltage A	0~4000	V	1200		0~4000 correspond to 0V~10V
12	2correspond to voltage A	0~4000	V	1400		0~4000 correspond to 0V~10V
13	3correspond to voltage A	0~4000	V	1600		0~4000 correspond to 0V~10V
14	4correspond to voltage A	0~4000	V	1800		0~4000 correspond to 0V~10V
15	5correspond to voltage A	0~4000	V	2000		0~4000 correspond to 0V~10V

16	6correspond to voltage A	0~4000	V	2200		0~4000 correspond to 0V~10V
17	7correspond to voltage A	0~4000	V	2400		0~4000 correspond to 0V~10V
18	8correspond to voltage A	0~4000	V	2600		0~4000 correspond to 0V~10V
19	9correspond to voltage A	0~4000	V	2800		0~4000 correspond to 0V~10V
20	A correspond to voltage A	0~4000	V	3000		0~4000 correspond to 0V~10V
21	B correspond to voltage A	0~4000	V	3200		0~4000 correspond to 0V~10V
22	C correspond to voltage A	0~4000	V	3400		0~4000 correspond to 0V~10V
23	D correspond to voltage A	0~4000	V	3600		0~4000 correspond to 0V~10V
24	E correspond to voltage A	0~4000	V	3800		0~4000 correspond to 0V~10V
25	F correspond to voltage A	0~4000	**V**	4000		0~4000 correspond to 0V~10V
⋮	⋮	⋮	⋮	⋮		⋮
40	Cycle 1	0~4000		40		
41	minimum output	0~4000		10		
42	solid state minification	0~4000				
⋮	⋮	⋮	⋮	⋮		⋮
100，101 102，103 ``````	the store address of water types	0000~FFFF				One group address contains two consecutive function No,

1. Function No.01 starting voltage

When the audio signal is very weak, the setting can keep the pump outlet.

2. Function No.02 frequency magnification

Adjust the magnification of the audio signal. (The height of the water column

and the rhythms are adjustable)

3. Function No.03 starting position

At ‘Sequence control mode’, the start address where the water type:

Start address= the set parameter *2+100

For example: in Function No.03, if the parameter is 2, the start address of the water type is 2*2+100=Function No.104

4. Function No.04 end position

At 'Sequence control mode', the end address of the water type:

End address=the set parameter*2+100

For example, in function No.04, if the set parameter is 20, the end address will be 20*2+100=140

5. Function No.05 keep time

At 'Sequence control mode', the interval time between the start of one group water type and the start of next group water type

6. Function No.06 music comparison

The audio signal must be larger than the parameter of Function No.06, then Y0 has output, that is, the controller will work normally.(Note: to avoid the interference signal, the parameter should be larger than 0)

7. Function No.07 stop delay

When the audio signals stop, the controller will delay stop for a while and the delay time can be set in function No.07

8. Function No.08 rate of water fall after rise

The speed of the water column is from the highest to the lowest position. The bigger the parameter is, the faster the speed of the fall after the rise is, conversely, slower.

9. Function No.10~25 corresponding voltage

The parameters in function No.10~25 correspond to 16 groups of voltage (conform to the linear trend of 0~4000 corresponding to 0~10V). And their codes are 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F, that is, in 'sequence control mode' or 'combination control mode', when set the water types(that means set the parameters of the two consecutive function codes of the store address)，just need enter 8 codes（0~F）in the store address, the 8 codes represent 8-channel voltages(if the voltage is too low, the pump will have no water, so the parameters of the function No.10~25 would better be not lower than 1000, this is, 2.5V).

For example:

If function No.12 corresponds to code 3, and the parameter in function No.12 is 2000(that is 5V), then when set the water types, the user want to make one channel output analog 5V, just need enter code 3 into the corresponding function No.(store address)

10. From function No.100 the later function Nos are the store addresses of the water types.

At 'Sequence control mode', the user will program the different water types, and these water types will have store address and every store address contains two consecutive function Nos(start from function No.100)

Note: At 'sequence control mode', the set method of water types is following

1. The store addresses start from function No.100

2. Because there are 8 light columns in the frequency spectrum display but there are just 4 digits in the digital display, one store address contains two consecutive function Nos and the setting should be according to the order 'from left to right, one digit corresponds to one light column'.

For example: Function No.100 and function No.101 compose one store address, the 4 digits in function No.100 correspond to the first 4 light columns and the 4 digits in function No.101 correspond to the later 4 light columns.

3. Before setting the water types, the function No.10~25 must be set first (that is the voltage)

4. After setting the function No.10~25, enter the store address to set the voltages of 8 channels. Write 8 codes (0~F) into the store address, at the same time, the corresponding light columns will also display the effects

For example: If the parameters of function No.10~25 is like the following sheet

Function No.	Parameter	Corresponding voltage	Corresponding code
10	1000	2.5V	1
11	1200	3V	2
12	1400	3.5V	3
13	1600	4V	4
14	1800	4.5V	5
15	2000	5V	6
16	2200	5.5V	7
17	2400	6V	8
18	2600	6.5V	9
19	2800	7V	A
20	3000	7.5V	B
21	3200	8V	C
22	3400	8.5V	D
23	3600	9V	E
24	3800	9.5V	F
25	4000	10V	G

If the parameter of function No.100 is '1234' and the parameter of function No.101 is '5678', then the corresponding voltages of the 8 channel analog output are 2.5V, 3V, 3.5V, 4V, 4.5V, 5V, 5.5V, 6V, at the same time, the 8 light columns will display the effects

5. At 'sequence control mode', the starting position and the end position can be freely set (please refer to the description of function No. 03 and 04)

Wiring schematic diagram

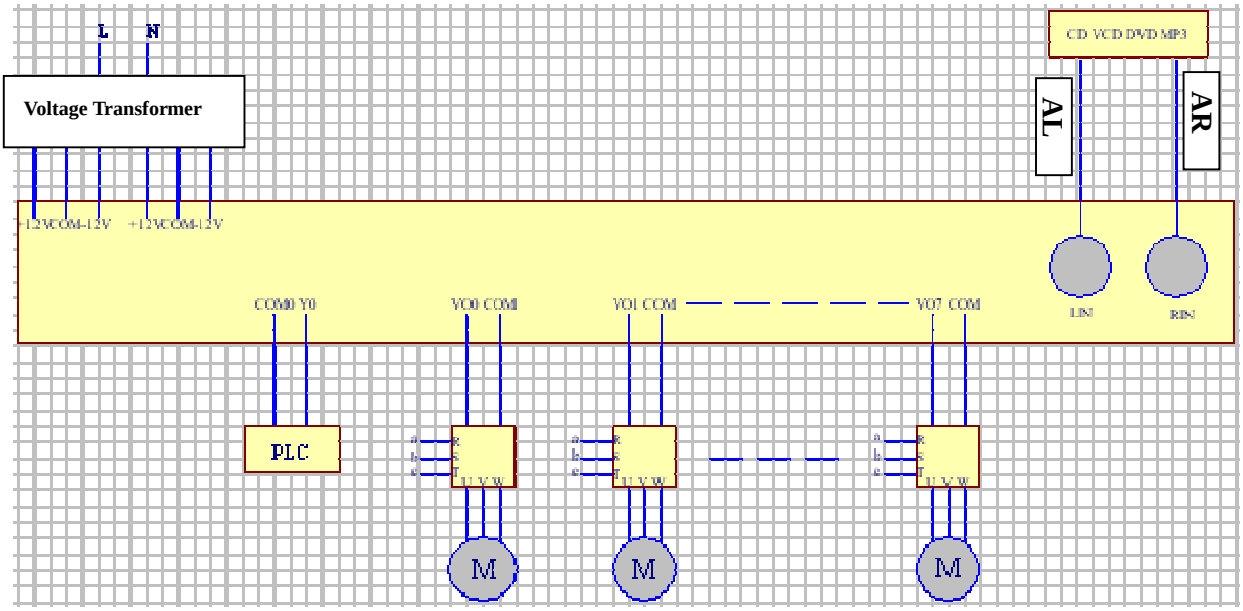
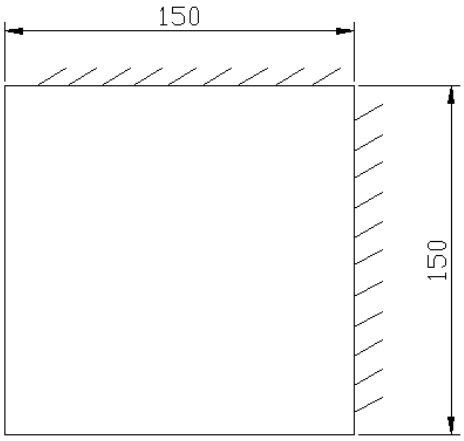
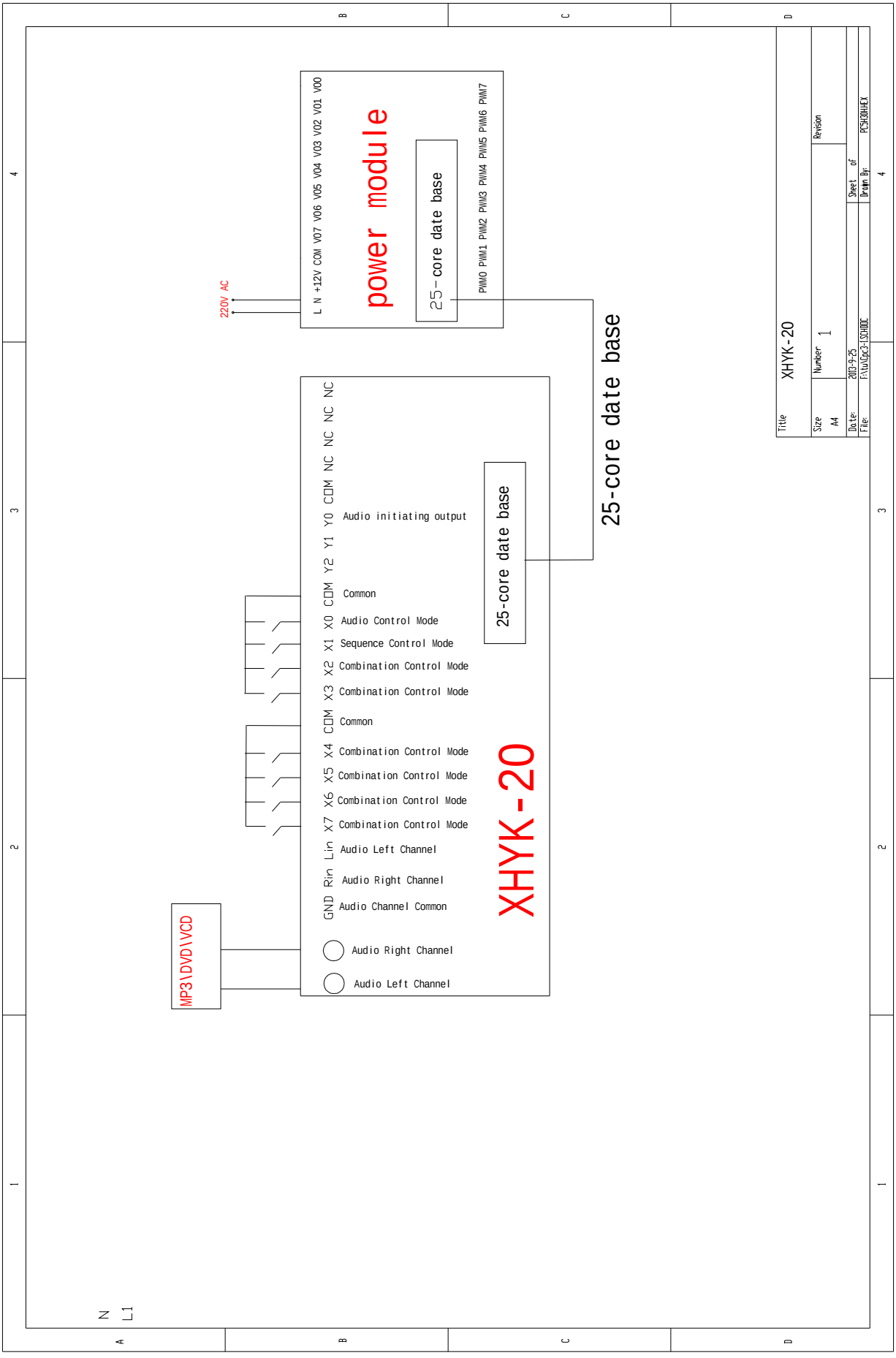


diagram of frequency converters connection

1.The audio left channel (AL) and audio right channel (AR) of CD, VCD, DVD and MP3 directly connect with controller and the terminals LIN, RIN and COM can be optional.
2.V00~V07, COM connect with the analog-voltage input terminals of frequency converters (diagram of frequency converter connection).
3.Y0 and COM0 can connect with PLC or other controllers to realize the initiating audio output. The connection is optional.
4.A+12V/COM/A-12V and B*12V/GND/B-12V connect with two groups of AC power

Installation Size




power module
25-core date base
L N +12V COM V07 V06 V05 V04 V03 V02 V01 V00
PWM0 PWM1 PWM2 PWM3 PWM4 PWM5 PWM6 PWM7
220V AC
25-core date base
XHYK-20
Y0 COM NC NC NC NC
Y1 Y2 COM X0 X1 X2 X3 COM X4 X5 X6 X7 Lin Rin GND
Audio initiating output
Common
Audio Control Mode
Sequence Control Mode
Combination Control Mode
Combination Control Mode
Common
Combination Control Mode
Combination Control Mode
Combination Control Mode
Combination Control Mode
Audio Left Channel
Audio Right Channel
Audio Channel Common
MP3\DVD\VCD
Audio Right Channel
Audio Left Channel
Title XHYK-20
Size A4
Number 1
Revision
Date: 2013-9-25
File: F:\tu\QDCJ-1SCHADOC
Sheet of
Drawn By:
PCSCBHLFX
N L1