

*Tango 98*

*Scanner Controller*

# **User's Manual**

Ver 1.02

CODE Electronic Co., Ltd.



Following the universal DMX512 protocol, CODE Tango 98 scanner controller can control twelve 8-channel scanners or other equipment. Chase program and manual control of scanners can be performed at the same time. Its functions are compact. Its convenient and flexible operation made it be handled very easily. Tango 98 is suitable for different ballroom, taproom and small show.

## Technical specifications

Output signal	DMX512
DMX channels	1-96
Control amount of scanners	12
Maximum control channel amount of a scanner	8
Manual operation of scanner	✓
Amount of chase programs	12
Maximum chase steps in a chase	50
Total chase steps	600
Range of chase speed	0.25-60s/step
Ratio range of cross between steps	0-100%
Display mode	LCD display and LED indicator
Port of DMX output	XLR-D3F
Other functions	Auto save for every data when power off and auto save for chase speed and cross ratio.
Power supply	AC 90-240V, 50-60Hz, 4W
Size	482mm x 178mm x 55mm
Weight	3Kg

## Cautions for safety

- Tango 98 scanner controller must be connected to earth ground to ensure the safety of user.
- When Tango 98 and scanners are working, don't plug in or pull out DMX512 data cable to avoid destroying the electric components of the port in the controller.
- Don't splash any liquid to the controller to avoid destroying the electric components and the functions of the controller.
- The scanner controller is precision electric equipment. Please pay attention to moistureproof protection and dustproof protection. And please clean the controller panel termly.

## Installation of controller

Contents in the package of Tango 98 scanner controller:

- Tango 98 scanner controller 1;
- Power supply line 1;
- Certification of QC 1;
- User's Manual 1.

Installing structure of Tango 98 scanner controller follows international standard 19" 4U. It can be embedded in operation board or directly installed in 19" shelf or cabinet.

The power of Tango 98 scanner controller has steady voltage output in so wide range of power supply voltage that it is adapted to the power supply of many countries. Before the power supply is connected, please check whether the voltage is in normal range of Tango 98 to ensure the safety.

When the fuse needs to be replaced, please use the fuse with the current capacity signed on the rear of Tango 98.

## Connecting to scanner

According to DMX512 protocol, DMX signal cable must be screened twist cable with impedance of 120Ω. In practical engineering installation, if the whole length of the cable is short, the cable may be replaced by high quality screened two-core microphone cable.

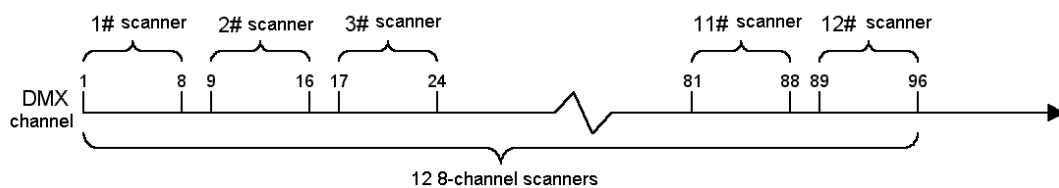
User joins each end of the cable to a XLR plug. Foot 1 of the XLR plug is connected to the screen net of the cable. Twist lines (distinguished by different colors) are connected to foot 2 and 3. Foot 3 is signal + and foot 2 is signal -. Foot 2 and foot 3 of the plug cannot be confused.

To ensure correct DMX signal transmission, an 120 Ω terminal matching resistance must be connected to the last equipment to absorb terminal signal reflection. The operation is as following: connect a 120 Ω resistance to foot 2 and foot 3 of a plug then plug it to the output of the last scanner (or other equipment).

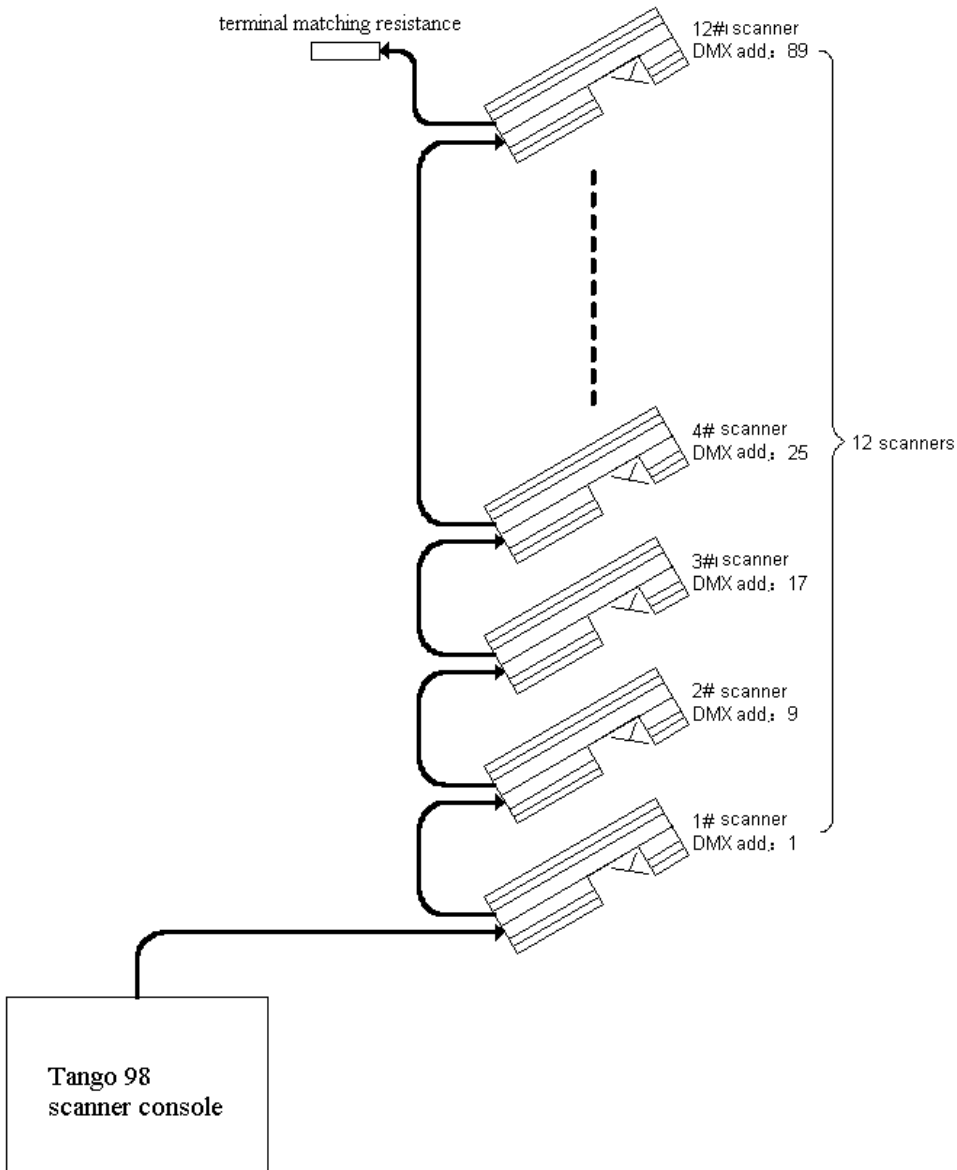
## Address distribution of DMX512

Tango 98 scanner controller utilizes channel 1-96 of DMX512 to transmit the control signals to various scanners. Each scanner is fixed with 8 control channels.

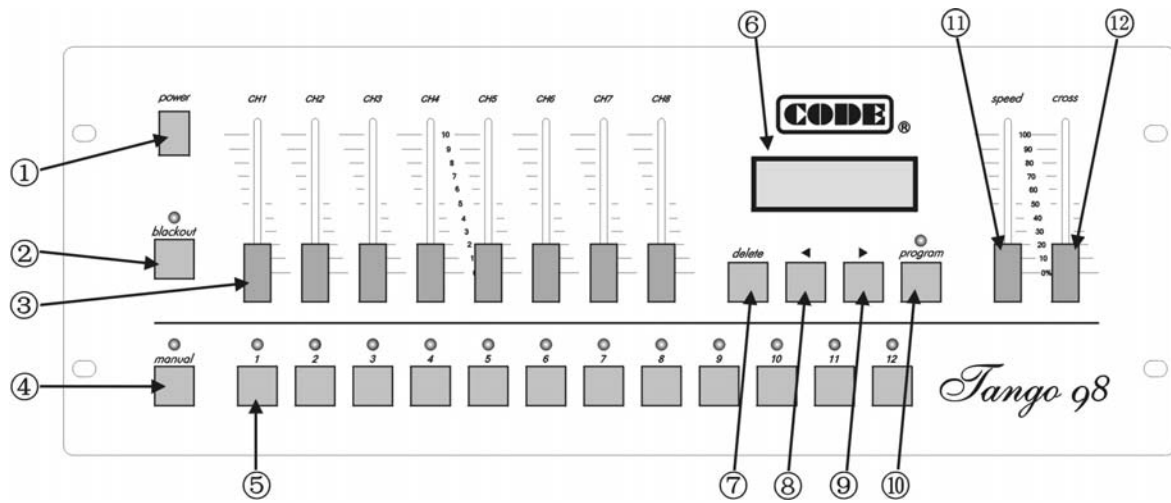
Scanner No.	First DMX address of scanner	
	Decimal Code	Switch bit of scanner address 123456789
1	1	10000000
2	9	10010000
3	17	10001000
4	25	10011000
5	37	10000100
6	41	10010100
7	49	10001100
8	57	10011100
9	65	10000010
10	73	10010010
11	81	10001010
12	89	10000110



**Schematic of system connection**

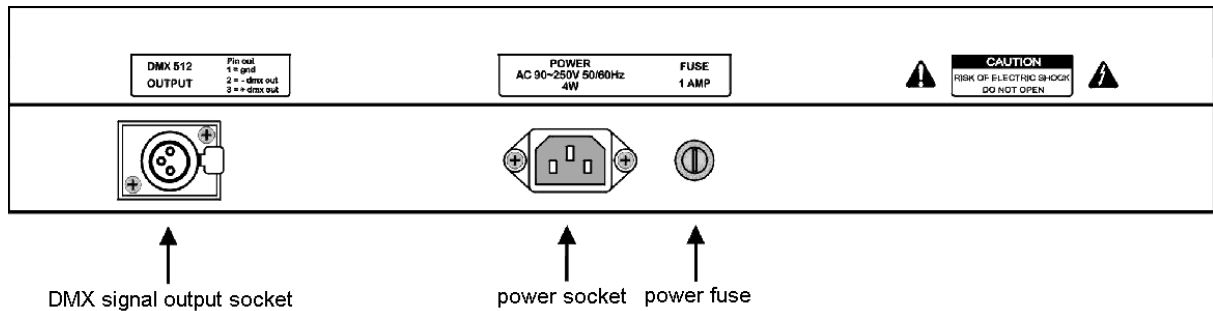


## Panel of Tango 98



No.	Name	Functions and purposes
1	<b>power</b> switch	Switch of AC power of the controller.
2	<b>blackout</b> key	The key state is indicated by LED as following: <ul style="list-style-type: none"> <li>◆ When its LED is on, the controller is in blackout state;</li> <li>◆ When its LED is off, the controller is in running state;</li> </ul>
3	<b>CH1~CH8</b> channel slider	In program edit, move the slider can change the channel control value of a specified scanner.
4	<b>manual</b> operation key	When its LED is on, the controller is in manual state;
5	Number key <b>1~12</b>	These keys are used to choose chase program and scanner.
6	<b>LCD</b> display	Display the current state of the controller and various setting values.
7	<b>delete</b> key	Be used in program edit state: <ul style="list-style-type: none"> <li>◆ Press the key quickly to delete the current chase step.</li> <li>◆ Press the key for more than 1 second to <u>delete chase steps quickly until the chase program is empty.</u></li> </ul>
8	◀ Direction key	In program edit, use it to check chase steps backwards.
9	▶ Direction key	In program edit, use it to check chase steps forwards. If the current step is the last one (with *), press the key to add a step and copy the contents of the current step to the new one.
10	<b>program</b> key	<ul style="list-style-type: none"> <li>◆ Press the key for more than 1 second, its LED is on and the controller is in chase program edit state;</li> <li>◆ Press the key for more than 1 second again, its LED is off and the controller is in running state;</li> </ul>
11	<b>speed</b> slider	Adjust chase speed, 0=slowest, 100%=fastest.
12	<b>cross</b> slider	Adjust cross time between steps, 0=slowest, 100%=fastest.

## Rear of Tango 98



## Information of LCD display

Display contents	illustration
[BLACKOUT]	When <b>blackout</b> key is pressed, its Led is on and the controller is in blackout state.
[On line]	When <b>blackout</b> key is pressed, its Led is off and the controller is in running state.
Select Chase	Please choose chase program wanted to be performed.
Chase: xxx	Number xxx of the current chase program.
Step: [xx]	Number xx of the current chase step.
Speed [xxx%]	Display when <b>speed</b> slider is adjusted. xxx range: 000%-100%, 000%=slowest, 100%=fastest.
Cross [xxx%]	Display when <b>cross</b> slider is adjusted. xxx range: 000%-100%, 000%=slowest, 100%=fastest.
Step is empty!	The current chase program has no content. It is empty.
==PROGRAM==	After pressing <b>program</b> key for more than 1 second, the controller is in program edit state. Please select a chase program number.
Select chase:	
PROG CHASE: XXX	The number xxx of chase program being edited.
Step: [xxx]*	Use * to indicate the chase step is the last one.

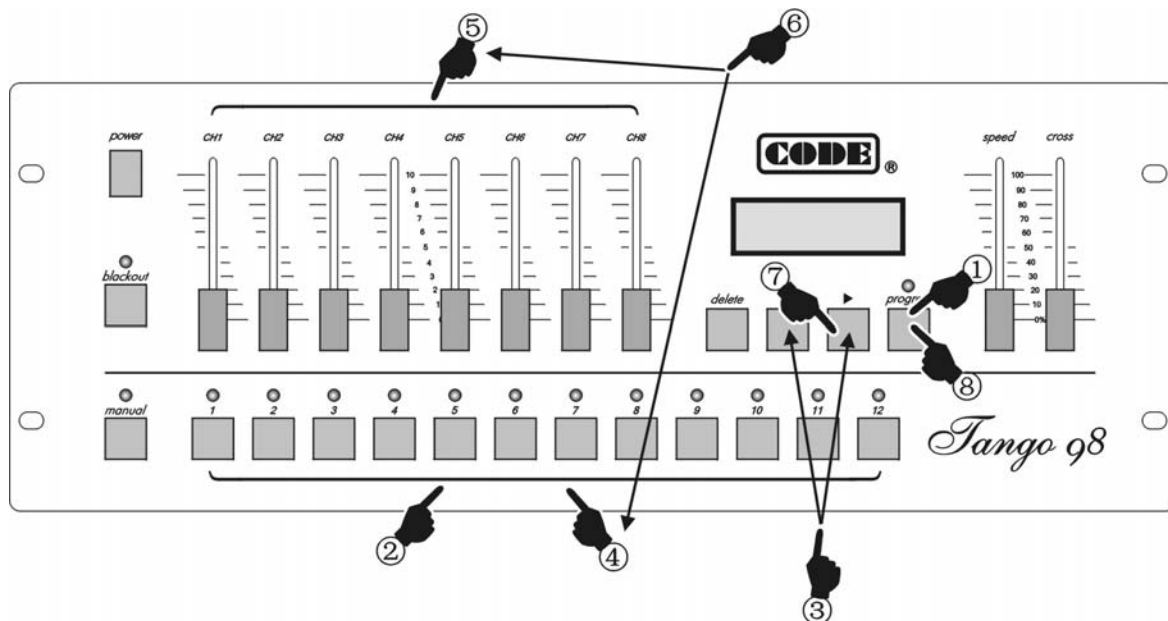
Note: x is a number.

## Running of chase program

1. Press number key 1-12 to perform the chase program corresponding to the number.
2. If the chase program corresponding to the number has not been edited, its green light is not on when the number key is pressed. This indicates the chase program is empty.
3. Use **speed** slider to change the running speed of current chase program. The controller will save the speed values of every chase program automatically. 0%=slowest, 100%=fastest.
4. Use **cross** slider to change the cross time between steps of current chase program. The controller will save the cross time values of every chase program automatically. 0%=slowest, 100%=fastest.
5. **blackout** key has two states as following:
  - ◆ When its LED is on, the controller is in blackout state;
  - ◆ When its LED is off, the controller is in running state.

Tango 98 scanner controller has auto save function when power off. When the controller is turned off or the power supply is broken off, it can save the last running state automatically and run from that state continually next time.

## Edit of chase program



1. Press **program** key for more than 1 second to enter into program edit state.
2. Use number key to choose the number of chase program want to be edited.
3. Use ►, ◀ key to change the current chase step. If the current step is the last one, it has a \* on the screen.
4. Use number key to choose the number of a scanner wanted to be edited.
5. Move **CH1-CH8** slider to set each channel value of the scanner.
6. Repeat steps 4-5 to set channel values of other scanners.
7. Use ► key to next chase step. If the current step is the last one (with \*), it copy the contents of current step to the new one automatically. Repeat steps 4-6 to edit other steps.
8. Press **program** key for more than 1 second to quit from program edit state. Repeat steps 1-8 to edit other chase programs.

## Functions of ►, ◀ keys

They can be used just in program edit state.

1. Use ►, ◀ key to check the lighting effect of edited chase step.
2. Insert and copy functions of ► key (with example):
  - ◆ If current chase program is empty, LCD display will display “Step [001] \*” when the controller goes into program edit state. This indicates that the number of the current chase step is 001 and it is the last one.
  - ◆ After every channel value of every scanner in “Step [001]” are set, press ► key to insert a new chase step 002. “Step [002] \*” is displayed on LCD display. It indicates that step 002 is the last one and the contents of step 001 have been copied to step 002 automatically.

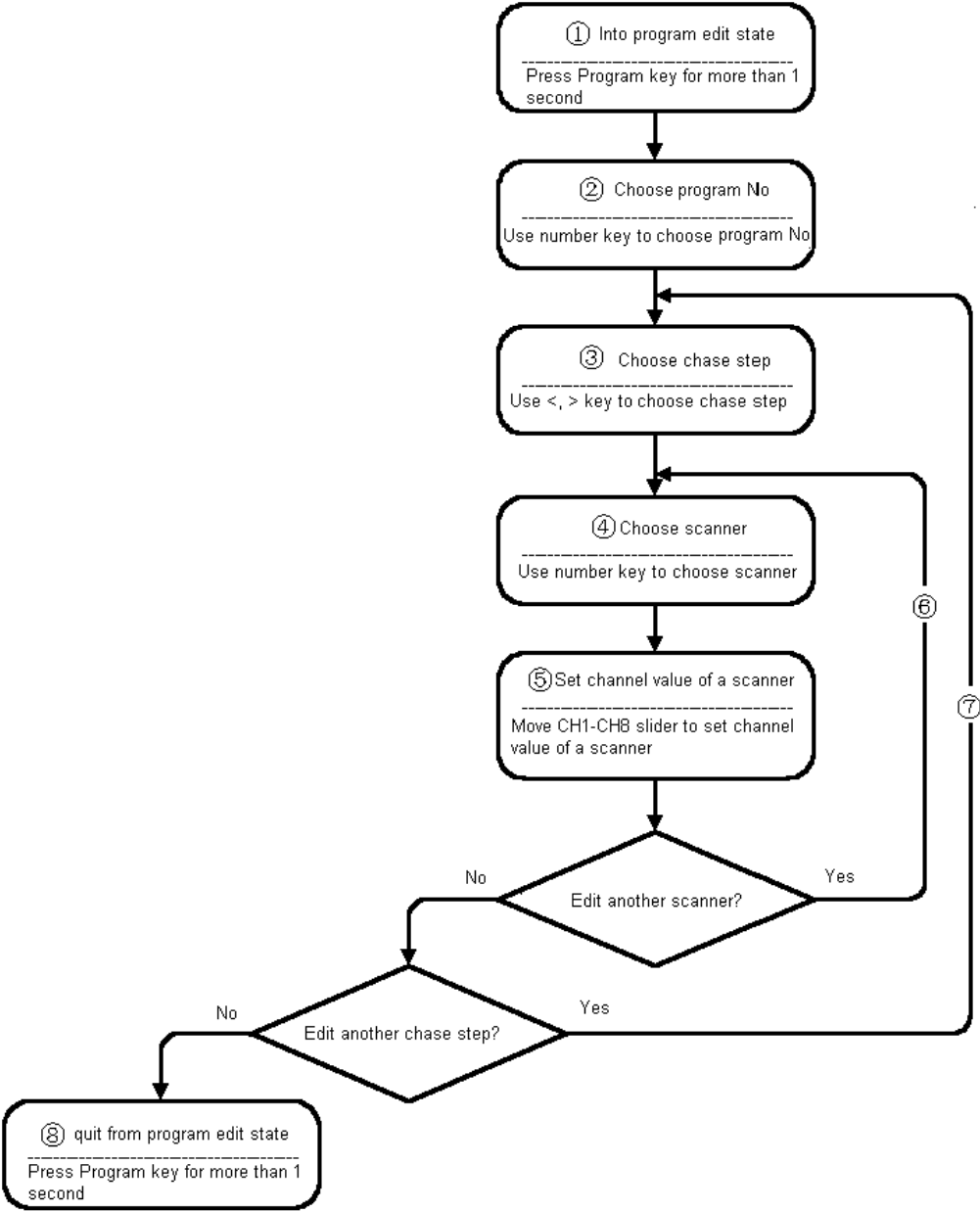
## Functions of Delete key

- ◆ Press the key quickly to delete the current chase step.
- ◆ Press the key for more than 1 second to delete chase steps quickly until the chase program is empty. When all chase steps are deleted, a chase program is an empty chase program.
- ◆ In manual operation state of a scanner, press the key to clear the record of manual operation.

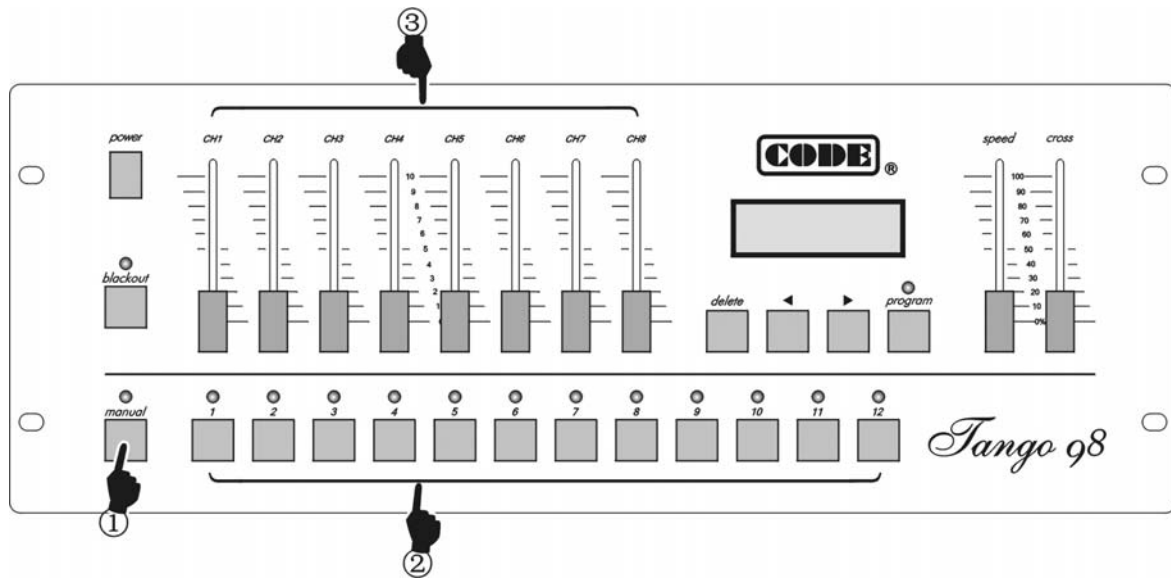
## Tips of program edit

- ◆ When the edit of current chase program is finished, quit from program edit state first, then enter into this state again to edit another chase program.
- ◆ Pay attention and comprehend sufficiently to the usage of ► key. Otherwise unwanted, useless or blackout chase step is inserted.
- ◆ A chase program just with one step can be edited as a fixed scanner scene.
- ◆ In program edit, **speed** and **cross** are not set. They are set directly in program running state and saved automatically.

Schematic of program edit



## Manual operation of scanner



1. Press **manual** key;
2. Use number key to choose scanner wanted to be controlled manually. Multi scanner can be chosen.
3. Move **CH1-CH8** slider to set each channel value of a scanner. Last channel value is displayed on LCD display. After moving slider to make channel value of the scanner larger than the current channel value, the scanner can be controlled by the slider.
4. Press **manual** key again to cancel manual operation of a scanner. The controller can remember the last channel values displayed on LCD display. When the controller enters into manual operation again, the last channel values are resumed.
5. In manual operation state of a scanner, press **delete** key to clear the record of manual operation.

### Tips

- ◆ If multi scanners are chosen, moving channel slider can act on all chosen scanners simultaneously.
- ◆ When a chase program is running, manual operation can be performed.



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