

SZGH-CNC-IO-12 IO Relay Board

SZGH-CNC-IO-12 is newest version I/O Relay board with 12pcs of relays, which is used for connecting all inputs & outputs on CN3/CN4/CN10 plugs of CNC controller to external switches & loads easily.

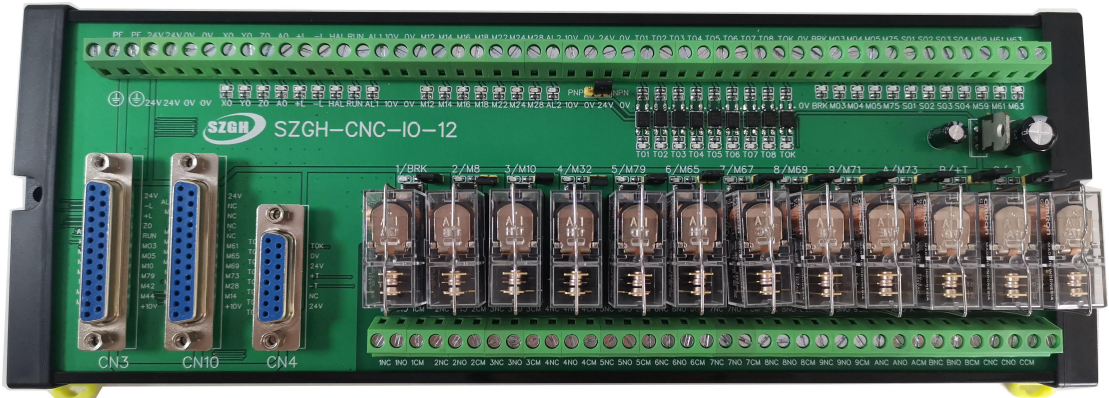


Fig1 Practical Picture of SZGH-CNC-IO-12

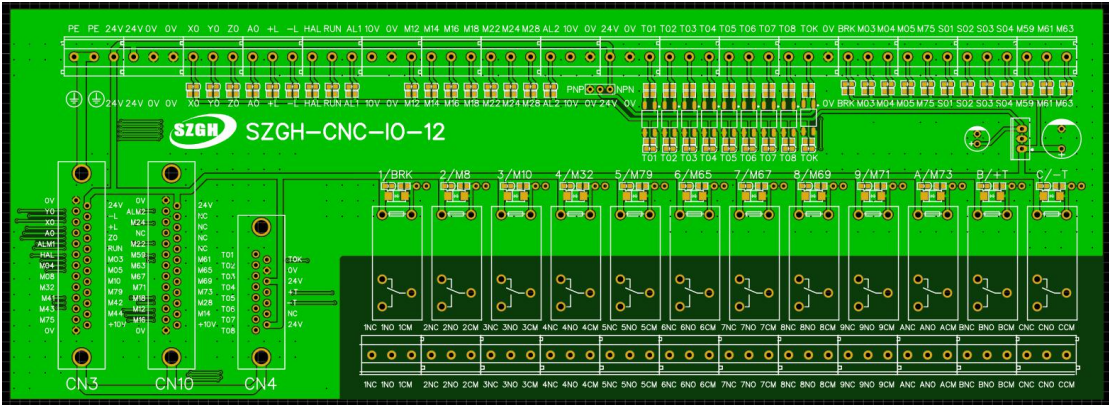
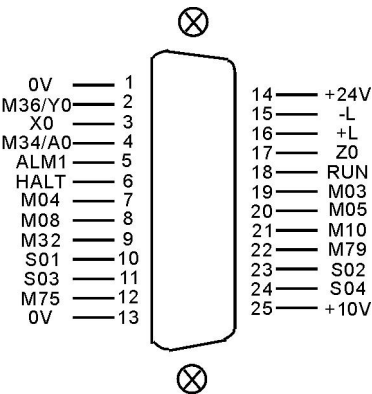


Fig2 Design Sketch of SZGH-CNC-IO-12

CN3 IO1 Control Socket (Female/DB25)

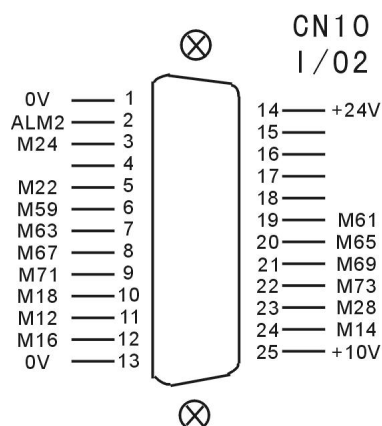
CN3_I/O1 socket is corresponding to CN3 plug of CNC Controller one by one;



CN3 I/O1 signal with Female Socket of DB25				
signal	pin	I/O	function	Valid
0V	1	OUT	0V	0V
+24V	14	OUT	+24V	+24V

M36/Y0	2	IN	Zero Point Input of Y-axis	0V
X0	3	IN	Zero Point Input of X-axis	0V
Z0	17	IN	Zero Point Input of Z-axis	0V
-L	15	IN	Positive limit input	0V
+L	16	IN	Negative limit input	0V
M34/A0	4	IN	M34/Zero Point input of A-axis	0V
ALM1	5	IN	Alarm1 of Spindle	0V
HALT	6	IN	Pause	0V
RUN	18	IN	Run	0V
M03	19	OUT	Clockwise Rotation of Spindle	0V
M04	7	OUT	Counter clockwise Rotation of Spindle	0V
M05	20	OUT	Stop of Spindle	0V
M08	8	OUT	Coolant	0V
M10	21	OUT	Chuck	0V
M32	9	OUT	Lubrication	0V
M79	22	OUT	User-defined output8	0V
S01	10	OUT	Spindle first gear	0V
S02	23	OUT	Spindle second gear	0V
S03	11	OUT	Spindle third gear	0V
S04	24	OUT	Spindle fourth gear	0V
M75	12	OUT	User-defined output9	0V
+10V	25	OUT	Analog Output Signal of 1st spindle	0~10V
0V	13	OUT	Ground of frequency conversion	0V

CN10 IO2 Socket (Female/DB25)



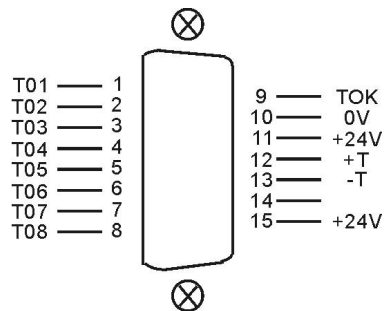
CN10 I/O2 signal with Female Socket of DB25				
Signal	Pin	I/O	Function	Valid
0V	1	OUT	Ground of the power supply	0V
+24V	14	OUT	24V power supply	+24V
ALM2	2	IN	Alarm2 of Machine Tool	0V
M24	3	IN	User-defined input 7	0V
M22	5	IN	M01 Quasi-stop Input	0V
M59	6	OUT	Huff Output	0V

M61	19	OUT	User-defined output1	0V
M63	7	OUT	User-defined output2	0V
M65	20	OUT	User-defined output3	0V
M67	8	OUT	User-defined output4	0V
M69	21	OUT	User-defined output5	0V
M71	9	OUT	User-defined output6	0V
M73	22	OUT	User-defined output7	0V
M18	10	IN	User-defined input1	0V
M28	23	IN	User-defined input2	0V
M12	11	IN	User-defined input3	0V
M14	24	IN	User-defined input4	0V
M16	12	IN	User-defined input5	0V
+10V	25	OUT	Analog Voltage of 2nd Spindle	0~10V
0V	13	OUT	Ground of frequency conversion	0V

Note: Pin4&Pin15-Pin18 are null.

CN4 Turret Socket (Female/DB15)

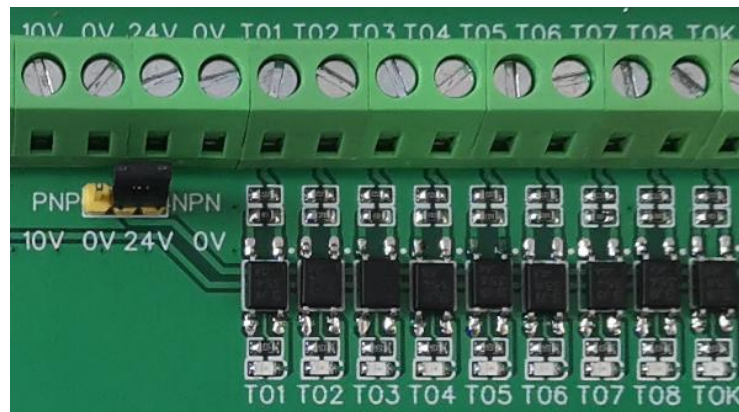
CN4 socket is corresponding to CN4 plug of CNC Controller one by one



CN4 Turret signal with Female socket DB15				
Signal	Pin	I/O	function	Valid
T1	1	IN	X0 Input Signal	0V
T2	2	IN	X1 Input Signal	0V
T3	3	IN	X2 Input Signal	0V
T4	4	IN	X3 Input Signal	0V
T5	5	IN	X4 Input Signal	0V
T6	6	IN	X5 Input Signal	0V
T7	7	IN	X6 Input Signal	0V
T8	8	IN	X7 Input Signal	0V
TOK	9	IN	X21 Input signal	0V
0V	10	OUT	0V from power supply	0V
+24V	11	OUT	+24V from power supply	+24V
+T	12	OUT	Y18 Output	0V
-T	13	OUT	Y19 Output	0V
+24V	15	OUT	+24V from Power supply	

Note:Pin14 on CN4 plug is null.

Update Point 1:



T01-T08 & TOK can support NPN & PNP input.

NPN INPUT	PNP INPUT
	

When short-circuit cap is at side of NPN, also COM is connected to +24V, valid level of T01-T08 & Tok inputs are 0V (also NPN),also input 0V to these inputs,which will activate valid of input points.

When short-circuit cap is at side of PNP, also COM is connected to 0V, valid level of T01-T08 & Tok inputs are +24V (also PNP),also input +24V to input these points,which will activate valid of inputs.

Update Point 2:

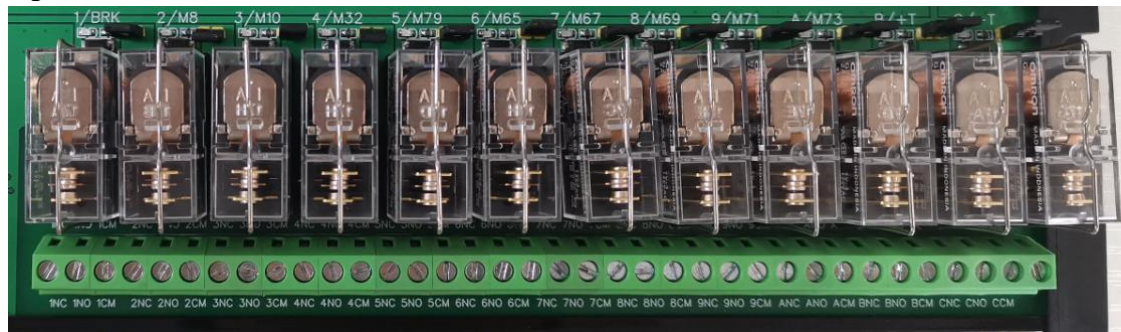
INPUT	
OUTPUT	

There are more reasonable layout, which can let user to make wiring more easily.

① Ports on upper side of SZGH-CNC-IO-12 IO relay board are includes all IOs (includes HALT/RUN/TOK/M05) of CN3 &CN4 &CN10 plugs,except output pins for relays. And there are more common ports, such as +24V, 0V, PE. And also it is more easily to expand connections of external relays.

② Strong and Weak electricity are separated, avoid wrong connections, which will damage CNC controller easily. Weak electricity are at upper side of SZGH IO relay board, Strong electricity are at output ports of relays, which is for ON/OFF loads directly.

Update Point 3:



There are 12 pcs of relays output with Omron brand relays. All outputs of relays are with NC output/NO output & COM port.

Default control signals for 12pcs of relays as following table:

No.	1	2	3	4	5	6	7	8	9	A	B	C
Output	BRK	M8	M10	M32	M79	M65	M67	M69	M71	M73	+T	-T

1/BRK relay is for control brake on servo motor. Brake control input port is at BRK on upper side. If we don't need to control brake, we want to use this relay for M3, connect M3 to BRK, also make short circuit between BRK & M3.

There are short-circuit caps/LED indicator/reverse diode on control side of relays. Short circuit cap: we can renew define function of relays by short-circuit cap.

Example: We don't need to use 3/M10 for spindle chuck, and want to use it for M4 relay control output, remove short-circuit, there are two pins, pin in the left side is control pin of relay, pin in the right side is M10 output of CNC, so we connect M4 to pin in the left side of 3/M10 relay.

We can define M65/M67/M69 outputs for Yellow/Red/Green indicators by P28 & P29 to 1 on Other parameter.

Note: Outputs ports of relays can suffer 10A, 250VAC/30VDC

Note:

1. **HAL, also HALT, Pin6_CN3 plug, AL1, also ALM1, Pin5_CN3 plug, AL2, also ALM2, Pin2_CN10 plug.**
2. **When output points is with relay, user can use them to control loads directly; when output points is output from CNC controller directly without relay, it cannot control external devices directly, otherwise it will damage CNC controller.**
3. **When power of controlling devices is over 250VAC/10A, please add contactors.**
4. **Valid level of all inputs & outputs of SZGH CNC controller is 0V.**
5. **When without Y-axis/C-axis, Y0 is input point of M36 command.**
6. **M79 is for tailstock on Lathe system, user-defined output on Milling system.**
7. **Above output ports(M3/M4/M5/M75/M41/M42/M43/M44/M59/M61/M63) are output from ports of CNC directly, without controls relays, which output drive current of these outputs are about 50mA, cannot control loads directly, otherwise it will damage these output points & CNC controller.**
8. **NC, also Normal Close; NO, also Normal Open; CM, also Common port.**