



Programming document of script

Han's Group

- ❑ Han's Laser was founded in 1996
- ❑ Listed in June,2004,Stock code:002008
- ❑ World's largest laser company
- ❑ Key national high-tech enterprises
- ❑ National Torch Plan,863 Program members
- ❑ Key national scientific and technological achievements demonstration enterprise
- ❑ Guangdong Province equipment manufacturing industry key enterprises
- ❑ Obtain ISO9001 quality management system certification
- ❑ Obtain ISO14001 environmental management system certification
- ❑ The European CE safety certification



HAN'S LASER

LASER INDUSTRY

大族电机
HAN'S MOTOR

HAN'S 3D 大族三维

HAN'S PME

天津大族烁晶激光技术有限公司
HAN'S YQ LASER

HAN'S GS 大族金石凯

大族粤铝激光
HAN'S YUEMING LASER

HAN'S LASER 大族数控

HANS GRONHI
辽宁大族冠华印刷科技股份有限公司
HANS-GRONHI GRAPHIC TECHNOLOGY COMPANY, LIMITED

Mason 大族明信

HAN'S BOHMER
宁波大族德润数码印刷版材科技有限公司

NEW ENERGY

LUXON
路升光电

YAHAM 大族元亨

大族光电 HAN'S LASER

深圳市国冶星光电子有限公司
ShenZhen Guoyexing Optoelectronics Co., Ltd.

大族逆变
Han's INV

OTHER

Investment

Real Estate

Han's Elfin

Programming

Safety

- The components of an Elfin Robot system are shown as below:

Components



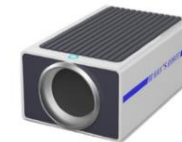
Manipulator



Control Box

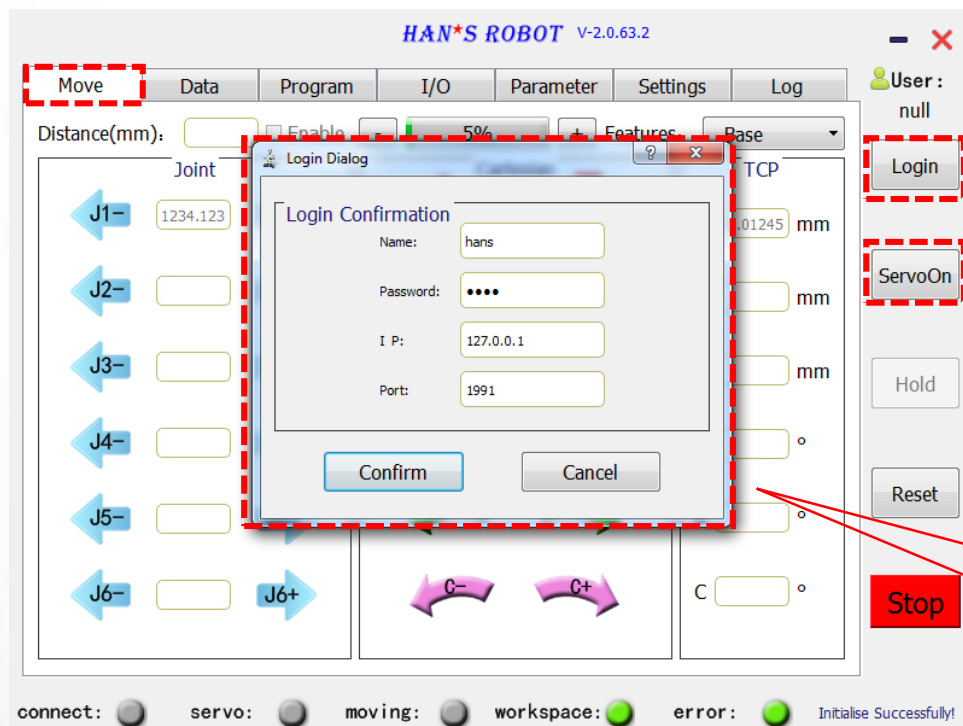


Teach Pendant



Machine Vision (optional)

- There are 3 steps in order to program the robot:
 - Powering on the robot;
 - Assigning the I/Os and teaching the positions;
 - Programming the script;



Login to enable the operation;

ServoOn to Enable the manipulator for the rest;

Login dialog;

- I/O assignment for programming

Identical references for programming

Double click the blank to assign an I/O;

Specifying the I/O used;

HAN'S ROBOT V-2.0.63.2

Move Data Program **I/O** Parameter Settings Log

Digital Out Digital In Analog I/C

Index	Name	AxisID	IOBit	Reversal	State	SetHigh	SetLow
1	Out1						
2	09JG						
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

I/O Setup

Warn: !Press and hold the 'Delete' button to delete all I/Os






Name: Out4

AxisID: 0

IO Bit: 0

Reversal: ☐ Yes ☒ No

Delete Confirm Cancel

connect:  servo:  moving:  workspace:  error:  Login Successfully!

User: hans

Switch

ServoOn

Hold

Reset

Stop

- Position assignment for programming

Selecting a blank then click to teach a position in ACS/PCS;

Identical references for programming;

Double click the row to edit the position;

HAN'S ROBOT V-2.0.63.2

Move Data Program I/O Parameter Settings Log

ACS Teach PCS Teach Loop Run MoveTo Delete Option

Move	Name	Alias	No.1	No.2	No.3	No.4	No.5	No.6	Type
●	_P0	Home	-136.323	0.960	71.838	-91.386	-2.492	-3.137	ACS
●	_P1	Pick-RFID-1	-107.402	-16.578	71.764	-90.233	-58.833	-7.403	ACS
●	_P2	Pick-Tube...	-111.841	-18.936	69.028	-90.287	-63.268	-6.997	ACS
●	_P3	Pick-Tube...	-131.442	-615.764	548.070	-138.667	-8.942	-89.333	PCS
●	_P4	Place-Tub...	-152.099	-16.578	71.764	-90.232	74.287	-7.403	ACS
●	_P5	Place-Tub...	-569.590	-139.301	555.943	43.533	-5.869	-89.325	PCS
●	_P6								
●	_P7								
●	_P8								
●	_P9								
●	_P10								
●	_P11								
●	_P12								

connect: ● servo: ● moving: ● workspace: ● error: ● Login Successfully!

User: hans

Switch

ServoOn

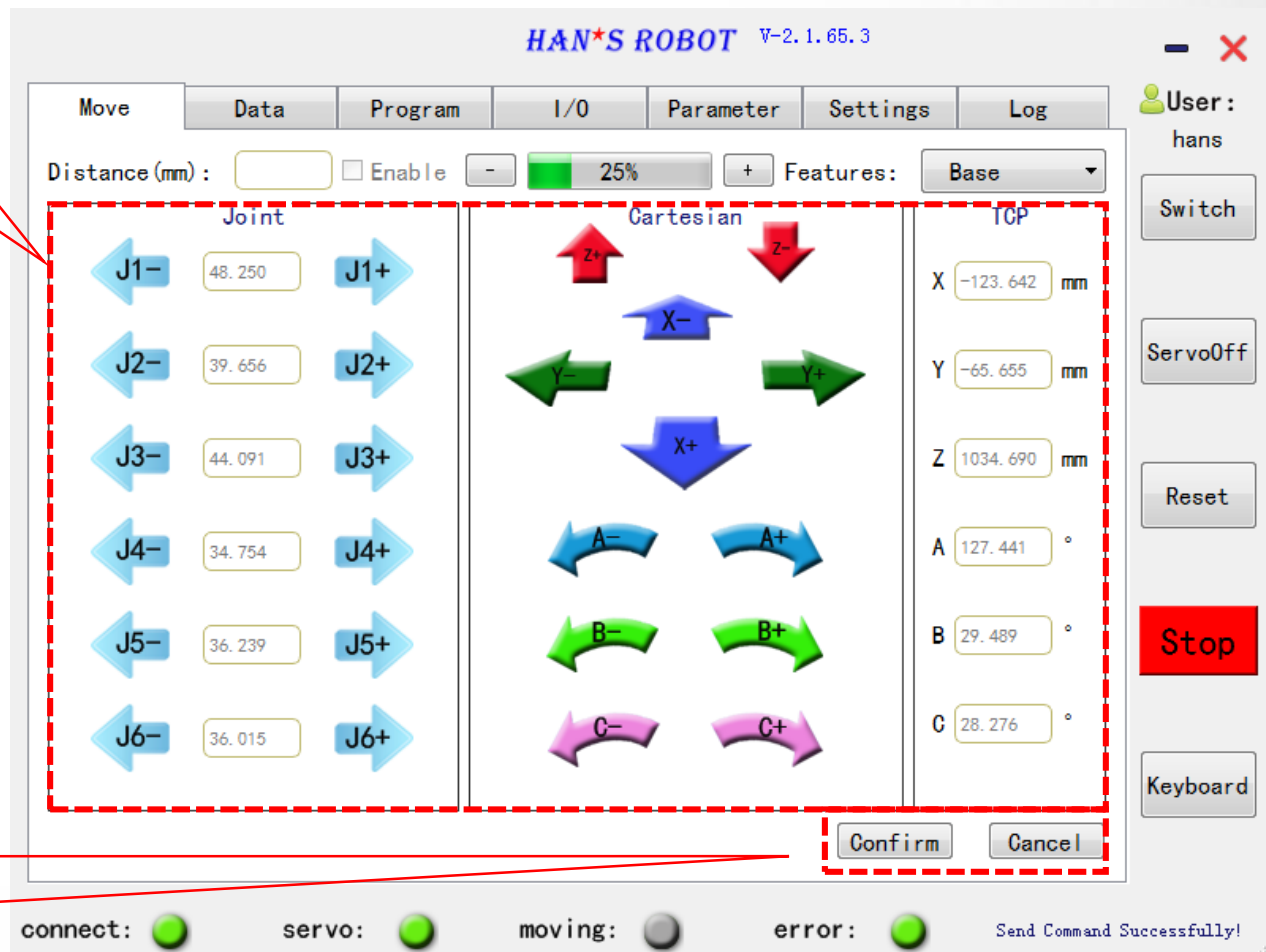
Hold

Reset

Stop

- Position teaching interface by clicking ACS/PCS teach

Using this area for the teaching;

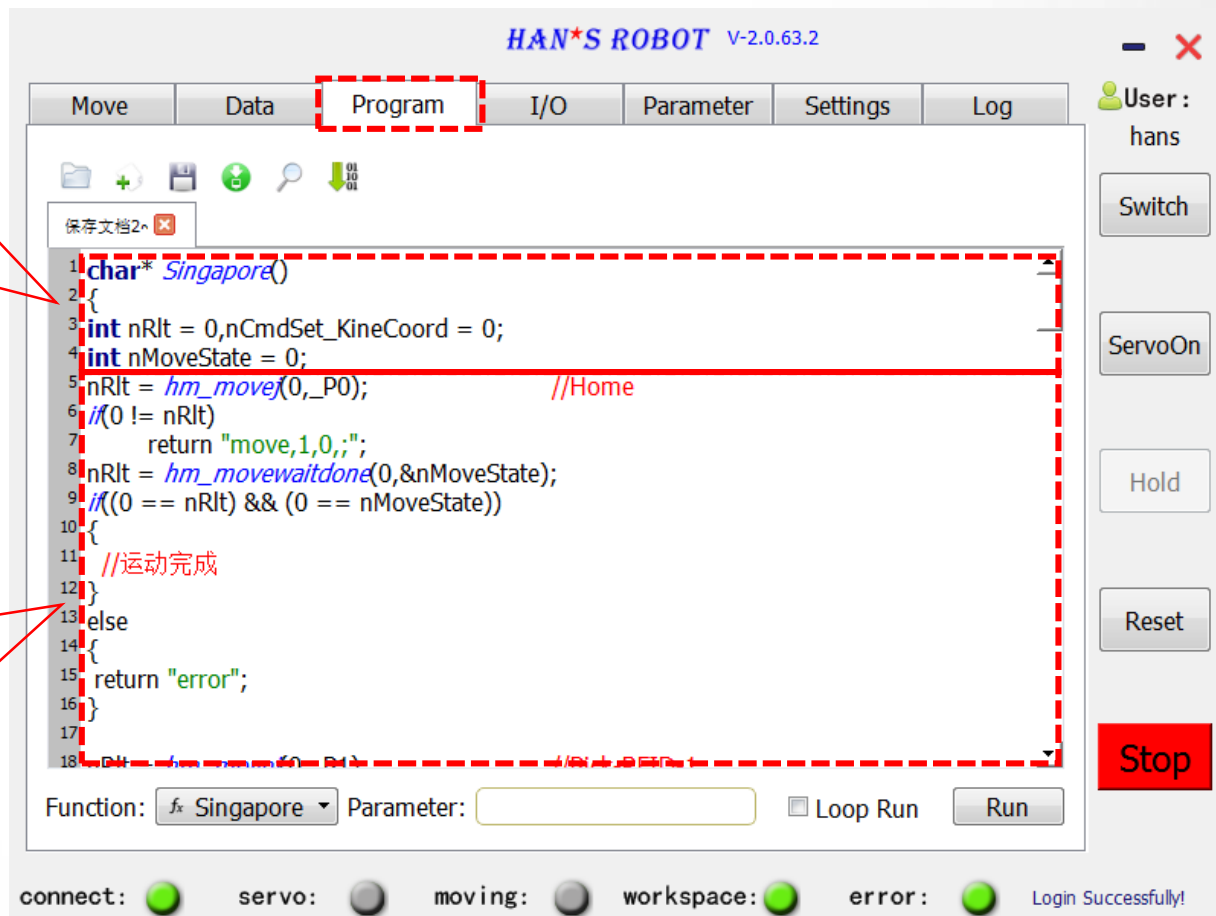


Confirm after teaching;

- After positions and I/O are taught, forwarding to program the script:

It using C-language as the format, thus must declare the variables at top;

Program the script for a task at this area;



- Functions for the main body;
- Motion
 - At below is the example for moving linear (movel);
 - For moving to a ACS point using (movej);
 - For moving to a PCS point using (movep);

```
int nMoveState = 0,nRlt = 0;

nRlt = hm_movel(0,_P0); //(RobotID, _P#);
if(0 != nRlt)
    return "move,1,0,;";
nRlt = hm_movewaitdone(0,&nMoveState);
if((0 != nRlt) || (0 != nMoveState))
{
    return "error"; //Failure handling
}
```

- Functions for the main body;

- Output

- At left is the example for setting an output to high;

```
int nRlt = 0;

nRlt = hm_set_digital_out(0,1,1); //(RobotID, IO#, Output);
if(0 != nRlt)
{
    return "SetDigitalOut,Fail,;"; //Failure handling;
}
```

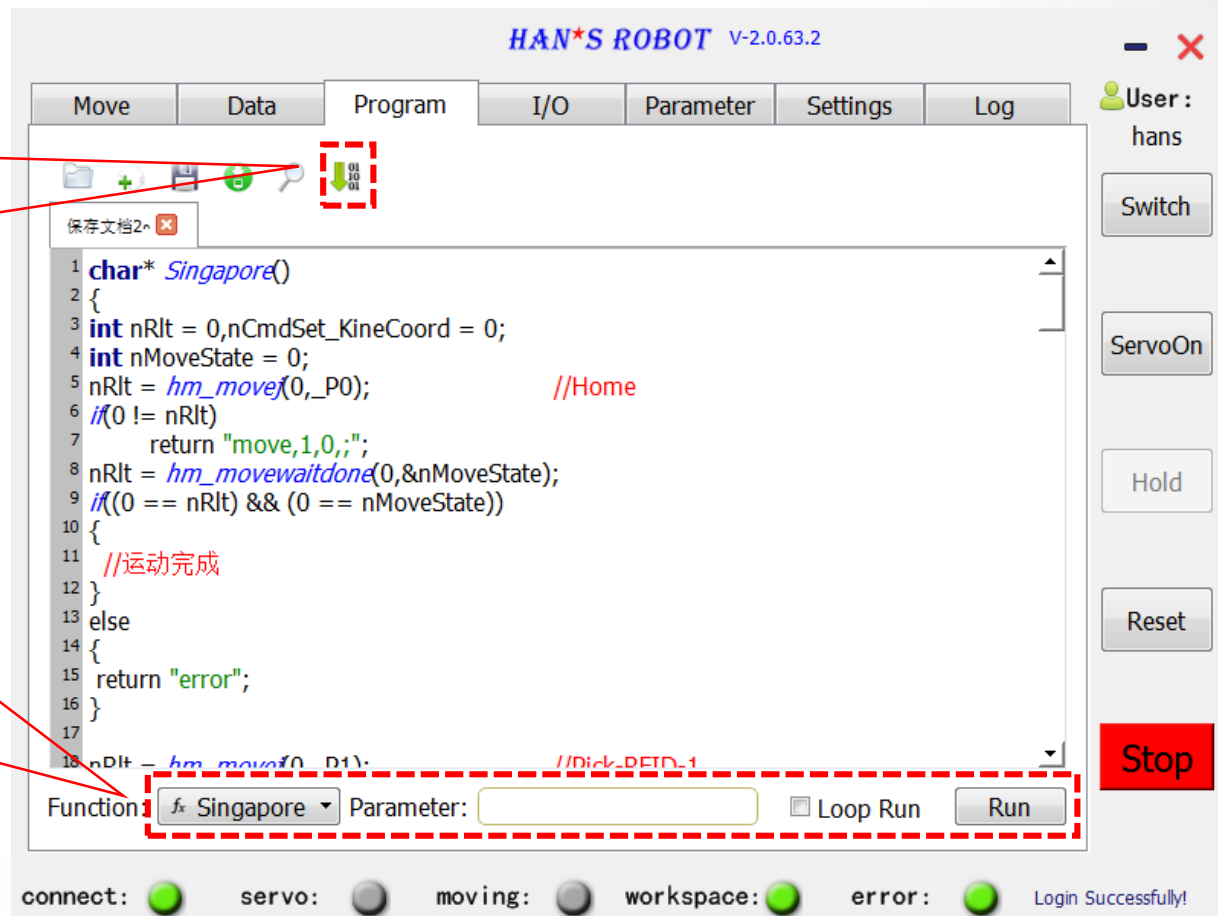
- Input

- At left is the example for getting the value of an input;

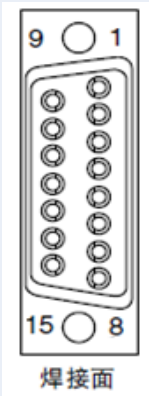
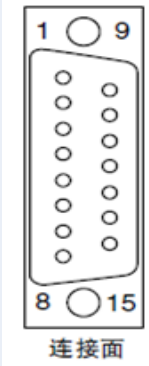
```
int nRlt = 0;
int nState = 0;

nRlt = hm_get_digital_in(0,1,&nState); //(RobotID, IO#, input);
if(0 != nRlt)
{
    return "GetDigitalIn,Fail,;"; //Failure handling;
}
```

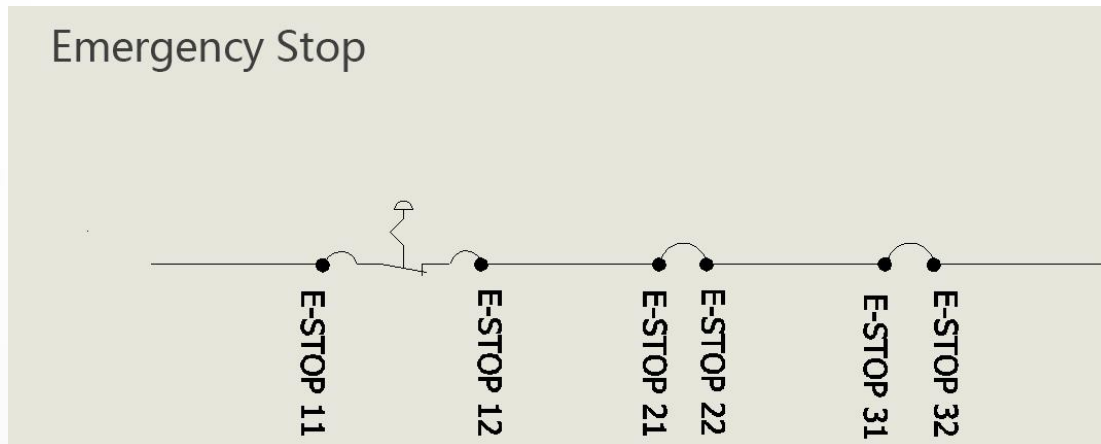
- After programming finished, the script is ready to be compiled and run;



- Two levels of the safety contact was applied:
 - Safe I/O and Emergency Stop;

 <p>焊接面</p>	PIN	Name	Definition	Comments
	1	E-STOP 11	Emergency Stop 1	Could be extend, with cable less than 5 meters
	2	E-STOP 12		
	3	E-STOP 21	Emergency Stop 2	
	4	E-STOP 22		
	5	E-STOP 31	Emergency Stop 3	
	6	E-STOP 32		
 <p>连接面</p>	7	STOP 11	Safety Stop 1	Could be extend, with cable less than 5 meters
	8	STOP 12		
	9	STOP 21	Safety Stop 2	
	10	STOP 22		
	11	STOP 31	Safety Stop 3	
	12	STOP 32		
	13	24 V	24V Power	Up to 300mA for each pin
	14	24 V		
	15	0 V	GND	

- Introduction:
- Safe I/O:
 - Normally opened: close to trigger a pause to robot;
- Emergency Stop:
 - Normally closed: open to trigger category 0 stop;



Thanks !



深圳市大族电机科技有限公司

Shenzhen Han's Motor S&T Co., Ltd

- Add: 深圳市南山区高新园北环大道9018号大族创新大厦5层
- Tel: 0755-26983668 Fax: 0755-26982786
- <http://www.hansmotor.com>