

**function bref:** store a joint space point id - the index of point, start from 1, be aware that this id is independant from the point id of CARTPoint function double j1-j6 - position of 6 axes, unit is deg

```
int JNTPoint(int id, double j1, double j2, double j3, double j4, double j5, double j6)
```

example:

```
JNTPoint(1,10,11,12,13,14,15)
```

---

**function bref:** store a cartesian space point id - the index of point, start from 1, be aware that this id is independant from the point id of JNTPoint function double x,y,z,rx,ry,rz - cartesian position, unit of distance is mm, angle unit is deg

```
int CARTPoint(int id, double x,y,z,rx,ry,rz)
```

example:

```
CARTPoint(1,100,110,200,0,0,0)
```

---

**function bref:** get the specific id point data of joint space or cartesian space string name - input 'JNT' or 'CART', JNT means joint space point, 'CART' means cartesian space point int id - point id, starts from 1

```
string GET(string name, int id)
```

example:

```
GET(JNT,1)
```

---

**function bref:** free drive mode switch uint8\_t state - 1-open free drive mode,0-close free drvie mode

```
int DragTeachSwitch(uint8_t state)
```

example:

```
DragTeachSwitch(0)
```

---

**function bref:** robot servo on switch uint8\_t state - 1-servo on,0-servo off

```
int RobotEnable(uint8_t state)
```

example:

```
RobotEnable(1)
```

---

**function bref:** robot operation mode switch uint8\_t state - 1-manual mode,0-auto mode

```
int Mode(uint8_t state)
```

example:

```
Mode(1)
```

---

**function bref:** set robot speed on current operation mode float vel - percentage of speed,from 1 to 100

```
int SetSpeed(float vel)
```

example:

```
SetSpeed(10)
```

---

**function bref:** set and load specific index tool coordinate *int id* - the index of tool coordinate, from 1 to 15 float *x,y,z,rx,ry,rz* - transformation of tool coordinate

```
int SetToolCoord(int id, float x,float y, float z,float rx,float ry,float rz)
```

example:

```
SetToolCoord(1,0,0,0,0,0,0)
```

---

**function bref:** set tool coordinate list *int id* - the index of tool coordinate list, from 1 to 15 float *x,y,z,rx,ry,rz* - transformation of tool coordinate

```
int SetToolList(int id, float x,float y, float z,float rx,float ry,float rz );
```

example:

```
SetToolList(1,0,0,0,0,0,0)
```

---

**function bref:** set and load specific index external tool coordinate *int id* - the index of external tool coordinate, from 1 to 15 float *x,y,z,rx,ry,rz* - transformation of external tool coordinate

```
int SetExToolCoord(int id, float x,float y, float z,float rx,float ry,float rz);
```

example:

```
SetExToolCoord(1,0,0,0,0,0,0)
```

---

**function bref:** set external tool coordinate list int id - the index of external tool coordinate, from 1 to 15 float x,y,z,rx,ry,rz - transformation of external tool coordinate

```
int SetExToolList(int id, float x,float y, float z,float rx,float ry,float rz);
```

example:

```
SetExToolList(1,0,0,0,0,0,0)
```

---

**function bref:** set object coordinate int id - the index of object coordinate,from 1 to 15 float x,y,z,rx,ry,rz - transformation of object coordinate

```
int SetWObjCoord(int id, float x,float y, float z,float rx,float ry,float rz);
```

example:

```
SetWObjCoord(1,0,0,0,0,0,0)
```

---

**function bref:** set object coordinate list int id - the index of object coordinate,from 1 to 15 float x,y,z,rx,ry,rz - transformation of object coordinate

```
int SetWObjList(int id, float x,float y, float z,float rx,float ry,float rz);
```

example:

```
SetWObjList(1,0,0,0,0,0,0)
```

---

**function bref:** *set TCP load weight float weight - load weight, unit is kg*

```
int SetLoadWeight(float weight);
```

example:

```
SetLoadWeight(3.5)
```

---

**function bref:** *set gravity center of load weight float x,y,z - location os gravity center,uint is mm*

```
int SetLoadCoord(float x,float y,float z);
```

example:

```
SetLoadCoord(10,20,30)
```

---

**function bref:** *set robot install direction uint8\_t install - 0-floor,1-wall,2-ceiling*

```
int SetRobotInstallPos(uint8_t install);
```

example:

```
SetRobotInstallPos(0)
```

---

**function bref:** set robot installation dirction in free install case double yangle - dip angle double zangle - rotation angle

```
int SetRobotInstallAngle(double yangle,double zangle);
```

example:

```
SetRobotInstallAngle(90,0)
```

---

**function bref:** set axes collision levels float level1-level6 - collision level of each axis, from 1 to 10

```
int SetAnticollision(float level1, float level2, float level3, float level4, float level5, folat level6);
```

example:

```
SetAnticollision(1,1,1,1,1,1)
```

---

**function bref:** set strategy after collision int strategy - 0-stop motion and throw error,1-keep running

```
int SetCollisionStrategy(int strategy);
```

example:

```
SetCollisionStrategy(1)
```

---

**function bref:** set positive limit of each axis float limit1-limit6 - value of limit of each axis

```
int SetLimitPositive(float limit1, float limit2, float limit3, float limit4, float limit5, float limit6);
```

example:

```
SetLimitPositive(100,90,90,90,90,90)
```

---

**function bref:** set negative limit of each axis float limit1-limit6 - value of limit of each axis

```
int SetLimitNegative(float limit1, float limit2, float limit3, float limit4, float limit5, float limit6);
```

example:

```
SetLimitNegative(-100,-90,-90,-90,-90,-90)
```

---

**function bref:** error state clear

```
int ResetAllError();
```

example:

```
RestAllError()
```

---

**function bref:** joint friction compensation switch uint8\_t state - 0-off, 1-on

```
int FrictionCompensationOnOff(uint8_t state);
```

example:

```
FrictionCompensationOnOff(1)
```

---

**function bref:** set coefficient of each joint in floor installtion case float coeff1-coeff6 - coefficient of each joint, from 0 to 1

```
int SetFrictionValue_level(float coeff1,float coeff1,float coeff3,float  
coeff4,float coeff5,float coeff6);
```

example:

```
SetFrictionValue_level(1,1,1,1,1,1)
```

---

**function bref:** set coefficient of each joint in wall installtion case float coeff1-coeff6 - coefficient of each joint, from 0 to 1

```
int SetFrictionValue_wall(float coeff1,float coeff1,float coeff3,float  
coeff4,float coeff5,float coeff6);
```

example:

```
SetFrictionValue_wall(0.5,0.5,0.5,0.5,0.5,0.5)
```

---

**function bref:** set coefficient of each joint in ceiling installtion case float coeff1-coeff6 - coefficient of each joint, from 0 to 1

```
int SetFrictionValue_ceiling(float coeff1,float coeff1,float coeff3,float  
coeff4,float coeff5,float coeff6);
```



example:

```
SetFrictionValue_ceiling(0.5,0.5,0.5,0.5,0.5,0.5)
```

---

**function bref:** *active gripper int index - index of gripper uint8\_t act - 0-reset, 1-active*

```
int ActGripper(int index,uint8_t act);
```

example:

```
ActGripper(1,1)
```

---

**function bref:** *control motion of gripper int index - index of gripper int pos - persentage of gripper position, from 0 to 100*

```
int MoveGripper(int index,int pos);
```

example:

```
MoveGripper(1,10)
```

---

**function bref:** *set digital output of control box int id - index of IO, from 0 to 15 uint\_t status - 0-off, 1-on*

```
int SetDO(int id,uint8_t status);
```

example:

```
SetDO(1,1)
```

---

**function bref:** set digital output of tool int id - index of IO, from 0 to 1 uint\_t status - 0-off, 1-on

```
int SetToolDO(int id,uint8_t status);
```

example:

```
SetToolDO(0,1)
```

---

**function bref:** set analog output of control box int id - index of IO, from 0 to 1 float vlaue - current of voltage percentage,from 0 to 100

```
int SetAO(int id,float value);
```

example:

```
SetAO(1,100)
```

---

**function bref** set analog output of tool int id - index of IO, from 0 to 0 float vlaue - current of voltage percentage,from 0 to 100

```
int SetToolAO(int id,float value);
```

example:

```
SetToolAO(0,100)
```

---

**function bref:** JOG uint8\_t ref - 0-joint coordinate jog, 2-base coordinate jog, 4-tool coordinate jog, 8-object coordinate jog uint8\_t nb - 1-axis1(x axis),2-axis2(y axis),3-axis3(z axis),4-axis4(rx),5-axis5(ry),6-axis6(rz) uint8\_t dir - 0-negative direction, 1-positive direction float vel - speed persentage, from 0 to 100

```
int StartJOG(uint8_t ref, uin8_t nb, uint8_t dir, float vel);
```

example:

```
StartJOG(1,1,1,10)
```

---

**function bref:** JOG stop uint8\_t ref - 0-joint coordinate jog stop, 2-base coordinate jog stop, 4-tool coordinate jog stop, 8-object coordinate jog stop

```
int StopJOG(uint8_t ref);
```

example:

```
StopJOG(1)
```

---

**function bref:** JOG immediately stop

```
int ImmStopJOG();
```

example:

```
ImmStopJOG()
```

---

**function bref:** point to point motion in joint space string point\_name - name of prestored point,like JNT1 means the first point of joint prestored point,CART means the first point fo cartiean prestored point float vel - speed

*percentage, from 0 to 100*

```
int MoveJ(string point_name, float vel);
```

example:

```
MoveJ(JNT1,10)
```

---

**function bref:** linear motion in cartesian space string point\_name - name of prestored point,like JNT1 means the first point of joint prestored point,CART means the first point fo cartiean prestored point float vel - speed percentage, from 0 to 100

```
int MoveL(string point_name,float vel);
```

example:

```
MoveL(CART1,10)
```

---

**function bref:** arc motion in cartesian space string point1\_name point2\_name - name of prestored point,like JNT1 means the first point of joint prestored point,CART means the first point fo cartiean prestored point, be aware that the two points must be the same type, which means user must input two JNT points or two CART points float vel - speed percentage, from 0 to 100

```
int MoveC(string point1_name,string point2_name, float vel);
```

example:

```
MoveC(JNT1,JNT2,10)
```

---

**function bref:** joint space spline motion start

```
int SplineStart();
```

example:

```
SplineStart()
```

---

**function bref:** Spline motion in joint space, only JNT point supported, an error will be thrown if input a CART point string point\_name - name of prestored point, like JNT1 means the first point of joint prestored point float vel - speed persentage, from 0 to 100

```
int SplinePTP(string point_name, float vel);
```

example:

```
SplinePTP(JNT2,10)
```

---

**function bref:** joint space spline motion end

```
int SplineEnd();
```

example:

```
SplineEnd()
```

---

**function bref:** cartesian space spline motion start uint8\_t ctlpoint - 0-trajectory through the control point, 1-trajectory will no reach the control point

```
int NewSplineStart(uint8_t ctlpoint);
```

example:

```
NewSplineStrart(1)
```

---

**function bref:** *Spline motion in cartesian space, only CART point supported, an error will be thrown if input a JNT point string point\_name - name of prestored point,like CART1 means the first point of cartesian prestored point float vel - speed persentage, from 0 to 100 int lastflag - 0-not last point, 1-last point*

```
int NewSplinePoint(string point_name, float vel, int lastflag);
```

example:

```
NewSplinePoint(JNT2,20,0)
```

---

**function bref:** *cartesian space spline motion end*

```
int NewSplineEnd();
```

example:

```
NewSplineEnd()
```

---

**function bref:** *stop robot motion*

```
int StopMotion();
```

example:

```
StepMotion()
```

---

**function bref:** points shift start int flag - 0-shift on base/object coordinate, 2-shift on tool coordinate double x,y,z,rx,ry,rz - transformation of shift

```
int PointsOffsetEnable(int flag,double x,double y,double z,double rx,double ry,double rz);
```

example:

```
PointsOffsetEnable(1,10,10,10,0,0,0)
```

---

**function bref:** points shift end

```
int PointsOffsetDisable();
```

example:

```
PointOffsetDisable()
```

---