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Program Guide

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1 Motion Commands

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Point to Point, the target point is Cartesian point

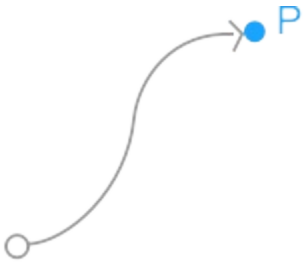
- Function:

```
MovJ(P)
```

Or:

```
local Option={CP=1, SpeedJ=50, AccJ=20}
MovJ(P, Option)
```

- Description: Point to Point, the target point is Cartesian point.
- Required parameter: P，Indicate target point, which is user-defined or obtained from the points list. Only Cartesian point is supported.
- Optional parameter: {CP=1, SpeedJ=50, AccJ=20}. You can double-click to insert the command with optional parameters.
  - CP: Continuous path rate. Value range: 0-100
  - SpeedJ: Velocity rate. Value range: 1 - 100
  - AccJ: Acceleration rate. Value range: 1 -100



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Linear Movement

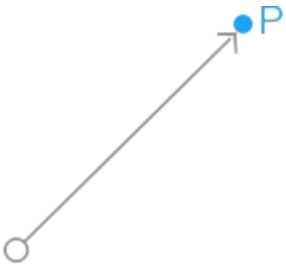
- Function:

```
MovL(P)
```

Or:

```
local Option={CP=1, SpeedL=50, AccL=20}
MovL(P, Option)
```

- Description: Linear Movement, the target point is Cartesian point.
- Required parameter: P, Indicate the target point, which is user-defined or obtained from the points list. Only Cartesian point is supported.
- Optional parameter: {CP=1, SpeedL=50, AccL=20}. You can double-click to insert the command with optional parameters.
  - CP: Continuous path rate. Value range: 0-100
  - SpeedL: Velocity rate. Value range: 1 - 100
  - AccL: Acceleration rate. Value range: 1 -100



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Point to point, the target point is Joint point

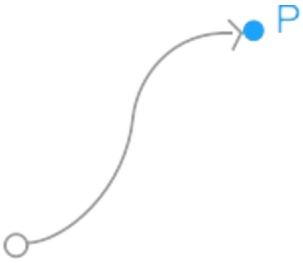
- Function:

```
JointMovJ(P)
```

Or:

```
local Option={CP=1, SpeedJ=50, AccJ=20}
local P={joint={J1,J2,J3,J4}}
JointMovJ(P, Option)
```

- Description: Point to point, the target point is Joint point.
- Required parameter: P,Indicate the target point, which is user-defined or obtained from the points list. Only joint point is supported.
- Optional parameter:{CP=1, SpeedJ=50, AccJ=20}. You can double-click to insert the command with optional parameters.
  - CP: Continuous path rate. Value range: 0-100
  - SpeedJ: Velocity rate. Value range: 1 - 100
  - AccJ: Acceleration rate. Value range: 1 -100



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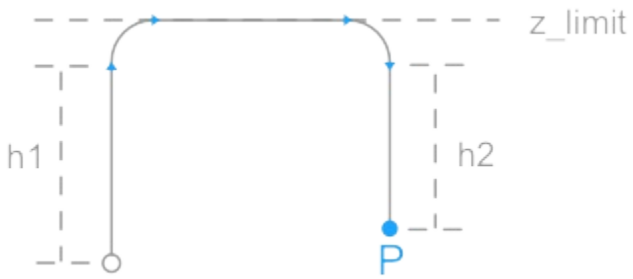
Jump Movement, Jump parameters can be set in this command

- Function:

```
local Option={SpeedL=50, AccL=20, Start=10, ZLimit=100, End=20}
Jump(P, Option)
```

- Description: Jump Movement. The jump parameters can be set in this command.
- Required parameter: P, Indicate the target point, which is user-defined or obtained from the points list. Only Cartesian point is supported.
- Optional parameter: {SpeedL=50, AccL=20, Start=10, ZLimit=100, End=20}
  - SpeedL: Velocity rate. Value range: 1 - 100
  - AccL: Acceleration rate. Value range: 1 -100
  - Start: Lifting height(h1).
  - ZLimit: Maximum lifting height(z_limit).
  - End: Dropping height(h2).



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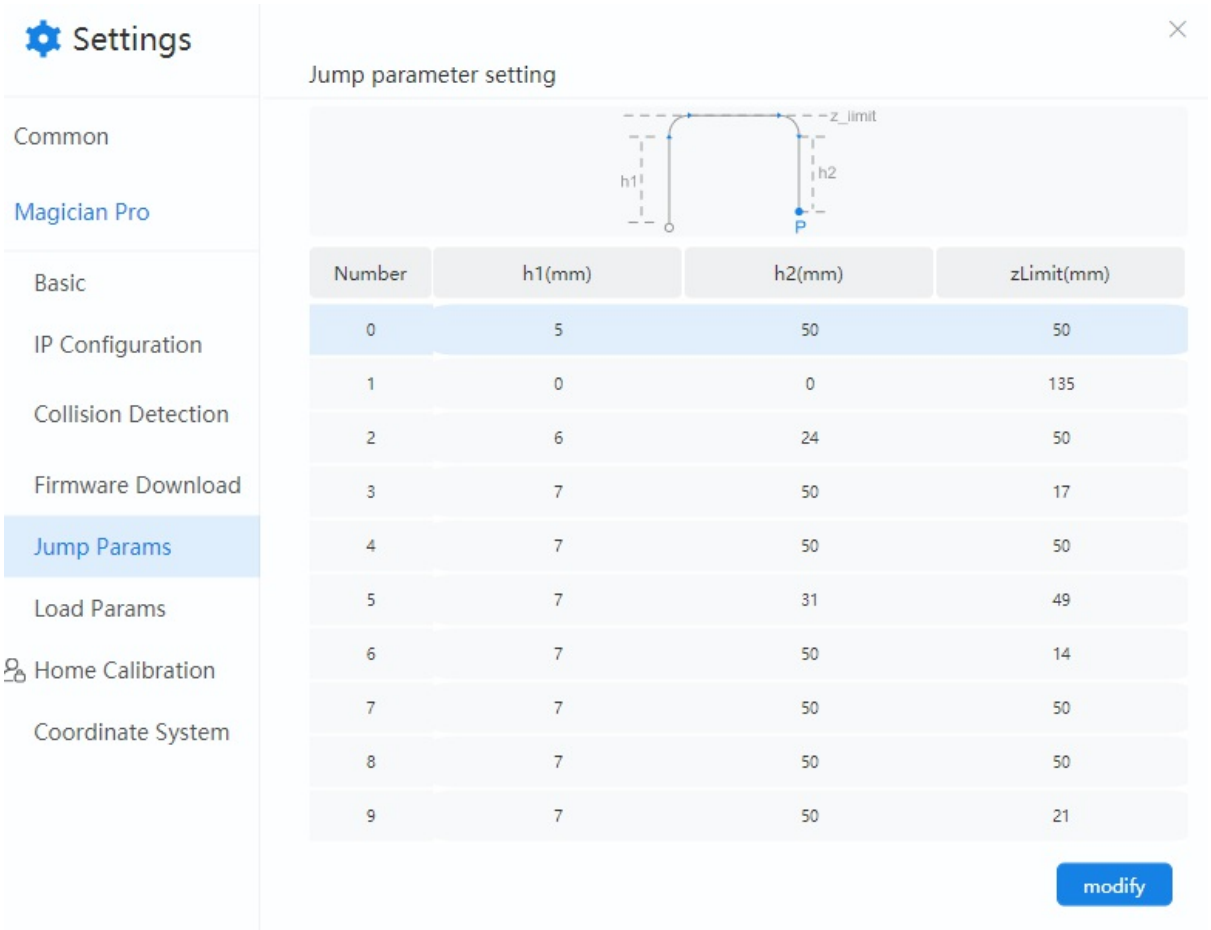
Jump Movement, Jump parameters are called by Arch index

- Function:

```
local Option={SpeedL=50, AccL=20, Arch=1}
Jump(P, Option)
```

- Description: Jump Movement. The jump parameters are called by Arch index.
- Required parameter: P, Indicate the target point, which is user-defined or obtained from the points list. Only Cartesian point is supported.
- Optional parameter: {SpeedL=50, AccL=20, Start=10, Arch=1}
  - SpeedL: Velocity rate. Value range: 1 - 100
  - AccL: Acceleration rate. Value range: 1 -100
  - Arch: Arch index. Value range: 0 - 9. Please set Jump parameters on the **Settings > Jump Params** page.



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Move to the Cartesian offset position in a point to point mode

- Function:

```
local Offset = {OffsetX, OffsetY, OffsetZ, OffsetR}
RelMovJ(Offset)
```

Or:

```
local Offset = {OffsetX, OffsetY, OffsetZ, OffsetR}
local Option={CP=1, SpeedJ=50, AccJ=20}
RelMovJ(Offset, Option)
```

- Description: Move to the Cartesian offset position in a point to point mode.
- Required parameter: {OffsetX, OffsetY, OffsetZ, OffsetR}, X, Y, Z, R axes offset in the Cartesian coordinate system.
- Optional parameter: {CP=1, SpeedJ=50, AccJ=20}. You can double-click to inset the command with optional parameters.
  - CP: Continuous path rate. Value range: 0-100
  - SpeedJ: Velocity rate. Value range: 1 - 100
  - AccJ: Acceleration rate. Value range: 1 -100

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Move to the Cartesian offset position in a straight line

- Function:

```
local Offset = {OffsetX, OffsetY, OffsetZ, OffsetR}
RelMovL(Offset)
```

Or:

```
local Offset = {OffsetX, OffsetY, OffsetZ, OffsetR}
local Option={CP=1, SpeedL=50, AccL=20}
RelMovL(Offset, Option)
```

- Description: Move to the Cartesian offset position in a straight line.
- Required parameter: {OffsetX, OffsetY, OffsetZ, OffsetR} , X, Y, Z ,R axes offset in the Cartesian coordinate system.
- Optional parameter: {CP=1, SpeedL=50, AccL=20}. You can double-click to inset the command with optional parameters.
  - CP: Continuous path rate. Value range: 0-100
  - SpeedL: Velocity rate. Value range: 1 - 100
  - AccL: Acceleration rate. Value range: 1 -100

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Linear movement in parallel with output

- Function:

```
local IO={{Mode, Distance, Index, Status},{Mode, Distance, Index, Status},...}
MovLIO(P, IO)
```

Or:

```
local IO={{Mode, Distance, Index, Status},{Mode, Distance, Index, Status},...}
local Option={CP=1, SpeedL=50, AccL=20}
MovLIO(P, IO, Option)
```

- Description: Linear movement in parallel with output . Multiple digital output ports can be set.
- Required parameter:
  - P, Indicate the target point, which is user-defined or obtained from the points list. Only Cartesian point is supported.
  - {Mode, Distance, Index, Status},{Mode, Distance, Index, Status},...: Multiple digital output ports can be set.
    - Mode：Set Distance mode. 0: Distance is a percentage；1: Distance from the starting point, or from the target point.
    - Distance: If the Mode is a percentage, it represents the percentage of the distance between the starting point and the target point. If the Mode is a distance, it represents the distance from the starting point, or from the target point. If the distance is set to positive, it indicates the distance from the starting point; if set to negative, it indicates the distance from the target point.
    - Index: Digital output port. Value range: 1- 18
    - Status：Status of the digital output port.
- Optional parameter: {CP=1, SpeedL=50, AccL=20}. You can double-click to insert the command with optional parameters.
  - CP: Continuous path rate. Value range: 0-100
  - SpeedL: Velocity rate. Value range: 1 - 100
  - AccL: Acceleration rate. Value range: 1 -100

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Point to point movement in parallel with output

- Function:

```
local IO={{Mode, Distance, Index, Status},{Mode, Distance, Index, Status},...}
MovJIO(P, IO)
```

Or:

```
local IO={{Mode, Distance, Index, Status},{Mode, Distance, Index, Status},...}
local Option={CP=1, SpeedL=50, AccL=20}
MovJIO(P, IO, Option)
```

- Description: Point to point movement in parallel with output . Multiple digital output ports can be set.
- Required parameter:
  - P, Indicate the target point, which is user-defined or obtained from the points list. Only Cartesian point is supported.
  - {Mode, Distance, Index, Status},{Mode, Distance, Index, Status},...: Multiple digital output ports can be set.
    - Mode：Set Distance mode. 0: Distance is a percentage；1: Distance from the starting point, or from the target point.
    - Distance: If the Mode is a percentage, it represents the percentage of the distance between the starting point and the target point. If the Mode is a distance, it represents the distance from the starting point, or from the target point. If the distance is set to positive, it indicates the distance from the starting point; if set to negative, it indicates the distance from the target point.
    - Index: Digital output port. Value range: 1- 18
    - Status：Status of the digital output port.
- Optional parameter: {CP=1, SpeedL=50, AccL=20}. You can double-click to insert the command with optional parameters.
  - CP: Continuous path rate. Value range: 0-100
  - SpeedJ: Velocity rate. Value range: 1 - 100
  - AccJ: Acceleration rate. Value range: 1 -100

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Arc Movement

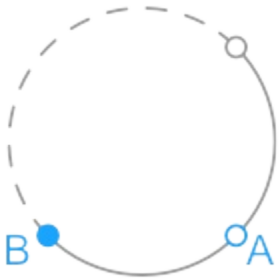
- Function:

```
Arc(P1, P2)
```

Or:

```
local Option={CP=1, SpeedL=50, AccL=20}
Arc(P1, P2, Option)
```

- Description: Arc movement. This command needs to combine with other motion commands, to obtain the starting point of an arc trajectory.
- Required parameter：
  - P1, Middle point, which is user-defined or obtained from the points list. Only Cartesian point is supported.
  - P2, End point, which is user-defined or obtained from the points list. Only Cartesian point is supported.
- Optional parameter：{CP=1, SpeedL=50, AccL=20}. You can double-click to insert the command with optional parameters.
  - CP: Continuous path rate. Value range: 0-100
  - SpeedL: Velocity rate. Value range: 1 - 100
  - AccL: Acceleration rate. Value range: 1 -100



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Circle Movement

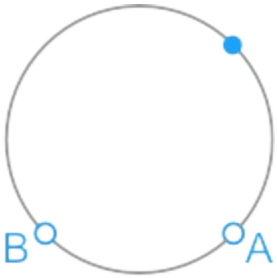
Function:

```
Circle(P1, P2, Count)
```

Or:

```
local Option={CP=1, SpeedL=50, AccL=20}
Circle(P1, P2, Count, Option)
```

- Description: Circle movement. This command needs to combine with other motion commands, to obtain the starting point of a circle trajectory
- Required parameter:
  - P1, Middle point, which is user-defined or obtained from the points list. Only Cartesian point is supported.
  - P2, Middle point, which is user-defined or obtained from the points list. Only Cartesian point is supported.
  - Count, Number of circles.
- Optional parameter: {CP=1, SpeedL=50, AccL=20}. You can double-click to insert the command with optional parameters.
  - CP: Continuous path rate. Value range: 0-100
  - SpeedL: Velocity rate. Value range: 1 - 100
  - AccL: Acceleration rate. Value range: 1 -100



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2 Motion Parameters

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Joint Acceleration

- Function:

```
AccJ(R)
```

- Description: Set the joint acceleration rate . This command is valid only when the motion mode is MovJ, MovJIO, MovJR, or JointMovJ .
- Required parameter: Acceleration rate. Value range: 1 -100

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Cartesian Acceleration

- Function:

```
AccL(R)
```

- Description: Set the Cartesian acceleration rate. This command is valid only when the motion mode is MovL, MovLIO, MovLR, Jump, Arc, Circle.
- Required parameter: Acceleration rate. Value range: 1 -100

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Joint Speed

- Function:

```
SpeedJ(R)
```

- Description: Set the joint velocity rate . This command is valid only when the motion mode is MovJ, MovJIO, MovJR, or JointMovJ .
- Required parameter: Velocity rate. Value range: 1 - 100

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Cartesian Speed

- Function:

```
SpeedL(R)
```

- Description: Set the Cartesian velocity rate. This command is valid only when the motion mode is MovL, MovLIO, MovLR, Jump, Arc, Circle.
- Required parameter: Velocity rate. Value range: 1 -100

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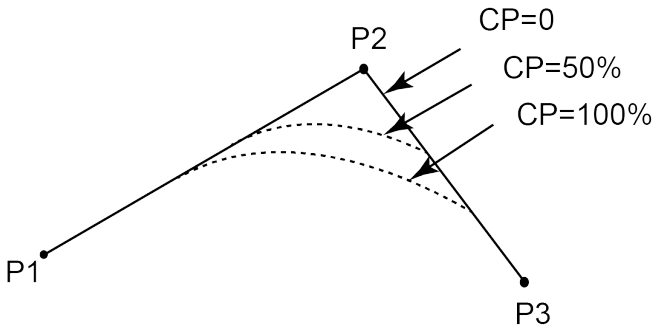
CP

- Function:

```
CP(R)
```

- Description: Set the continuous path rate. This command is invalid when the motion mode is Jump.
- Required parameter: Continuous path rate. Value range: 0-100



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Synchronization

- Function:

```
Sync()
```

- Description: Whether to stop at this point.
- Required parameter: None.

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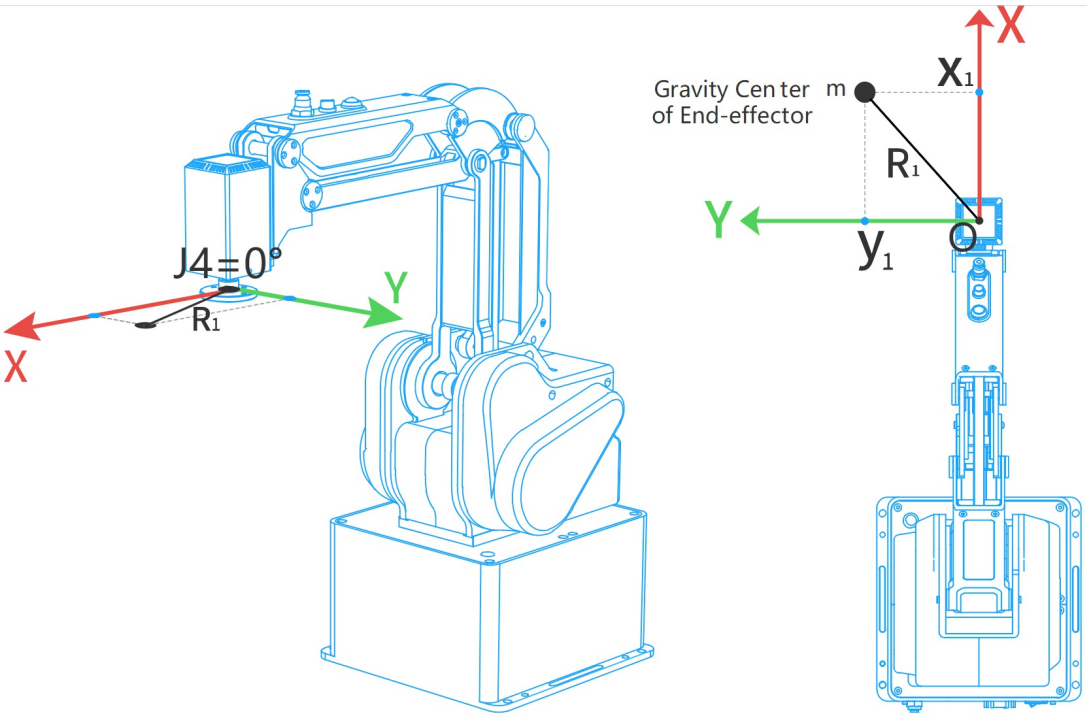
Set Load Parameters

- Function：

```
SetPayload(payload, {x, y}, index)
```

- Description: Set payload, X-axis offset, Y-axis offset and servo index.
- Required parameter:
  - payload: Payload. Value range: 0- 750. Unit: g
  - {x,y}: Offset in X-axis and Y-axis
- Optional parameter: index, servo parameter index。The default value range is 1 - 10.



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3 IO

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DI

- Function:

```
DI(Index)
```

- Description: Get the status of the digital input port.
- Required parameter: Index，Digital input port. Value range: 1-18
- Return:
  - When an port is set in the DI function, **DI(index)** returns the status (ON/OFF) of this specified input port.
  - When there is no port in the DI function, **DI()** returns the status of all the input ports, which are saved in a table. For example, local di=(), the saving format is **{num = 24 value = {0x55, 0xAA, 0x52}}**, you can obtain the status of the specified input port with **di.num** and **di.value[n]**.

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DO

- Function:

```
DO(Index,ON/OFF)
```

- Description: Set the status of digital output port (Queue command).
- Required parameter：
  - Index: Digital output port. Value range: 1 - 18
  - ON/OFF: Status of the digital output port.

Queue command: When the robot system receives a command, this command will be pressed into the internal command queue. The robot system will execute commands in the order in which the commands were pressed into the queue.

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DOInstant

- Function:

```
DOInstant(Index,ON/OFF)
```

- Description: Set the status of digital output port (Immediate command).
- Required parameter：
  - Index: Digital output port. Value range: 1 - 18
  - ON/OFF: Status of the digital output port.

Immediate command: The robot system will process the command once received regardless of whether there is the rest commands processing or not in the current controller;

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4 Program Managing Commands

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Motion command waiting

- Function:

```
Wait(time)
```

- Description: Set the delay time for robot motion commands.
- Required parameter: time, Delay time. Unit: ms

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Blocking instruction issuance

- Function:

```
Sleep(time)
```

- Description: Set the delay time for all commands.
- Required parameter: time, Delay time. Unit: ms

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Pause program operation

- Function:

```
Pause()
```

- Description: Pause the running program. When the program runs to this command, robot pauses running and you need to click **Resume** on the DobotStudio2020 to recover the running.
- Required parameter: None

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Start timing

- Function:

```
ResetElapsedTime()
```

- Description: Start timing after all commands before this command are executed completely. Use in conjunction with ElapsedTime() command.
- Required parameter: None

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Stop timing

- Function:

```
ElapsedTime()
```

- Description: Stop timing and return the time difference. Use in conjunction with ResetElapsedTime() command
- Required parameter: None
- Return: Time difference. Unit: ms

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Get current time

- Function:

```
Systime()
```

- Description: Get the current time
- Required parameter: None

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5 Pose

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Get Cartesian coordinates

- Function:

```
GetPose()
```

- Description: Get the current pose of the robot under the Cartesian coordinate system. If you have set the User or Tool coordinate system, the current pose is under the current User or Tool coordinate system.
- Required parameter: None
- Return: Cartesian coordinate of the current pose.

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Get Joint coordinates

- Function:

```
GetAngle()
```

- Description: Get the current pose of the robot under the Joint coordinate system.
- Required parameter: None
- Return: Joint coordinates of the current pose.

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Cartesian point offset

- Function:

```
local Offset={OffsetX, OffsetY, OffsetZ, OffsetR}
RelPoint(P, Offset)
```

- Description: Set the X, Y, Z.R axes offset under the Cartesian coordinate system to return a new Cartesian coordinate point. he robot can move to this point in all motion commands except JointMovJ.
- Required parameter:
  - P, Indicate the current Cartesian point, which is user-defined or obtained from the points list. Only Cartesian point is supported.
  - {OffsetX, OffsetY, OffsetZ, OffsetR}: X, Y, Z, R axes offset in the Cartesian coordinate system.
- Return: Cartesian point.

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Joint point offset

- Function:

```
local Offset={Offset1, Offset2, Offset3, Offset4}
RelJoint(P, Offset)
```

- Description: Set the joint offset in the Joint coordinate system to return a new joint point. The robot can move to this point only in JointMovJ command .
- Required parameter:
  - P, Indicate the current joint point, which is user-defined or obtained from the points list. Only joint point is supported.
  - {Offset1, Offset2, Offset3, Offset4}: J1 - J4 axes offset.
- Return: Joint point.

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Cartesian point

- Function:

```
local P={coordinate = {x,y,z,r}, tool = 0, user = 0}
```

- Description: User-define a Cartesian point.
- Required parameter:
  - {x,y,z,r}: X, Y, Z, R axes coordinates.
  - tool: Tool coordinate system index. Value range: 0-9
  - user: User coordinate system index. Value range: 0-9

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Joint point

- Function:

```
local P={joint= {j1,j2,j3,j4}}
```

- Description: User-define a joint point.
- Required parameter: {j1,j2,j3,j4}，J1-J4 axes coordinates.

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6 TCP

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Create TCP

- Function:

```
Err, Socket = TCPCreate(IsServer, IP, Port)
```

- Description: Create a TCP network. Only support a single connection.
- Required parameter:
  - IsServer: Whether to create a server. false: Create a client; true: Create a server.
  - IP: IP address of the server, which is in the same network segment of the client without conflict.
  - Port：Server port. When the robot is set as a server, **port** cannot be set to 502 and 8080. Otherwise, it will be in conflict with the Modbus default port or the port used in the conveyor tracking application, causing the creation to fail.
- Return:
  - Err:
    - 0: TCP network is created successfully.
    - 1: TCP network is created failed.
  - Socket: Socket object.

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Establish TCP connection

- Function:

```
TCPStart(Socket, Timeout)
```

- Description: Establish TCP connection.
- Required parameter:
  - Socket: Socket object.
  - Timeout: Wait timeout. Unit: s. If Timeout is 0, the connection is still waiting. If not, after exceeding the timeout, the connection is exited.
- Return:
  - 0: TCP connection is successful.
  - 1: Input parameters are incorrect.
  - 2: Socket object is not found.
  - 3: Timeout setting is incorrect.
  - 4: If the robot is set as a client, it indicates that the connection is wrong. If the robot is set as a server, it indicates that receiving data is wrong.

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Receive TCP data

- Function:

```
Err, RecBuf = TCPRead(Socket, Timeout, Type)
```

- Description: Robot as a client receives data from a server or

  as a server receives data from a client .

- Required parameter:
  - Socket: Socket object.
  - Timeout: Receiving timeout. Unit: s. If Timeout is 0 or is not set, this command is a block reading. Namely, the program will not continue to run until receiving data is complete. If not, after exceeding the timeout, the program will continue to run regardless of whether receiving data is complete.
  - Type: Buffer type. If Type is not set, the buffer format of RecBuf is a table. If Type is set to string, the buffer format is a string.
- Return:
  - Err:
    - 0: Receiving data is successful.
    - 1: Receiving data is failed.
  - Recbuf: Data buffer.

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Send TCP data

- Function:

```
TCPWrite(Socket, Buf, Timeout)
```

- Description: Robot as a client sends data to a server or as a server sends data to a client.
- Required parameter:
  - Socket: Socket object.
  - Buf: Data sent by the robot.
  - Timeout: Timeout. Unit: s. If Timeout is 0 or not set, this command is a block reading. Namely, the program will not continue to run until sending data is complete. If not, after exceeding the timeout, the program will continue to run regardless of whether sending data is complete.
- Return:
  - 0: Sending data is successful.
  - 1: Sending data is failed.

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Close TCP

- Function:

```
TCPDestroy(Socket)
```

- Description: Release a TCP network.
- Required parameter: Socket, Socket object.
- Return:
  - 0: Releasing TCP is successful.
  - 1: Releasing TCP is failed.

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7 UDP

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Create UDP

- Function:

```
Err, Socket = UDPCreate(IsServer, IP, Port)
```

- Description: Create a UDP network. Only support a single connection.
- Required parameter:
  - IsServer: Whether to create a server. false: Create a client; true: Create a server.
  - IP: IP address of the server, which is in the same network segment of the client without conflict.
  - Port：Server port. When the robot is set as a server, **port** cannot be set to 502 and 8080. Otherwise, it will be in conflict with the Modbus default port or the port used in the conveyor tracking application, causing the creation to fail.
- Return:
  - Err:
    - 0: UDP network is created successfully.
    - 1: UDP network is created failed.
    - Socket: Socket object.

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Receive UDP data

- Function:

```
Err, RecBuf = UDPRead(Socket, Timeout, Type)
```

- Description: Robot as a client receives data from a server or

  as a server receives data from a client .

- Required parameter:
  - Socket: Socket object.
  - Timeout: Receiving timeout. Unit: s. If Timeout is 0 or is not set, this command is a block reading. Namely, the program will not continue to run until receiving data is complete. If not, after exceeding the timeout, the program will continue to run regardless of whether receiving data is complete.
  - Type: Buffer type. If Type is not set, the buffer format of RecBuf is a table. If Type is set to string, the buffer format is a string.
- Return:
  - Err:
    - 0: Receiving data is successful.
    - 1: Receiving data is failed.
  - Recbuf: Data buffer.

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Send UDP data

- Function:

```
UDPWrite(Socket, Buf, Timeout)
```

- Description: Robot as a client sends data to a server or as a server sends data to a client.
- Required parameter:
  - Socket: Socket object.
  - Buf: Data sent by the robot.
  - Timeout: Timeout. Unit: s. If Timeout is 0 or not set, this command is a block reading. Namely, the program will not continue to run until sending data is complete. If not, after exceeding the timeout, the program will continue to run regardless of whether sending data is complete.
- Return:
  - 0: Sending data is successful.
  - 1: Sending data is failed.

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8 Modbus

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Read the value from Modbus slave coil register address

- Function:

```
GetCoils(Addr, Count)
```

- Description: Read the value from Modbus slave coil register address.
- Required parameter:
  - Addr: Starting address of the coils. Value range: 0-4095
  - Count: Number of the coils to read. Value range: 0 to 4096- Addr
- Return: Return a table, each with the value 1 or 0, where the first value in the table corresponds to the coil value at the starting address.

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Set the coil register in the Modbus slave

- Function:

```
SetCoils(Addr, Count, Table)
```

- Description: Set the coil register in the Modbus slave. This command is not supported when the coil register address is from 0 to 5.
- Required parameter:
  - Addr: Starting address of the coils to set. Value range: 6 - 4095
  - Count: Number of the coils to set. Value range: 0 to 4096- Addr

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Read the value from the Modbus slave discrete register address

- Function:

```
GetInBits(Addr, Count)
```

- Description: Read the value from the Modbus slave discrete register address.
- Required parameter:
  - Addr: Starting address of the discrete inputs to read. Value range: 0-4095
  - Count: Number of the discrete inputs to read. Value range: 0 to 4096- Addr
- Return: Return a table, each with the value 1 or 0, where the first value in the table corresponds to the discrete value at the starting address.

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Read the value from the Modbus slave input register address

- Function:

```
GetInRegs(Addr, Count, Type)
```

- Description: Read the input register value with the specified data type from the Modbus slave.
- Required parameter:
  - Addr: Starting address of the input registers. Value range: 0 - 4095
  - Count: Number of the input registers to read. Value range: 0 to 4096- Addr
  - Type: Data type.
    - Empty: Read 16-bit unsigned integer (two bytes, occupy one register) .
    - “U16”: Read 16-bit unsigned integer (two bytes, occupy one register).
    - “U32”: Read 32-bit unsigned integer (four bytes, occupy two registers).
    - “F32”: Read 32-bit single-precision floating-point number (four bytes, occupy two registers).
    - “F64”: Read 64-bit double-precision floating-point number (eight bytes, occupy four registers).
- Return: Return a table, the first value in the table corresponds to the input register value at the starting address.

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Read the value from the Modbus slave holding register address

- Function:

```
GetHoldRegs(Addr, Count, Type)
```

- Description: Read the holding register value from the Modbus slave according to the specified data type
- Required parameter:
  - Addr: Starting address of the holding registers. Value range: 0 - 4095
  - Count: Number of the holding registers to read. Value range: 0 to 4096- Addr
  - Type: Data type.
    - Empty: Read 16-bit unsigned integer (two bytes, occupy one register).
    - “U16”: Read 16-bit unsigned integer (two bytes, occupy one register).
    - “U32”: Read 32-bit unsigned integer (four bytes, occupy two registers).
    - “F32”: Read 32-bit single-precision floating-point number (four bytes, occupy two registers).
    - “F64”: Read 64-bit double-precision floating-point number (eight bytes, occupy four registers).
- Return: Return a table, the first value in the table corresponds to the input register value at the starting address.

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Set the holding register in the Modbus slave

- Function:

```
SetHoldRegs(Addr, Count, Table, Type)
```

- Description: Set the holding register in the Modbus slave
- Required parameter:
  - Addr: Starting address of the holding registers to set. Value range: 0 - 4095
  - Count：Number of the holding registers to set. Value range: 0 to 4096- Addr
  - Type: Data type.
    - Empty: Read 16-bit unsigned integer (two bytes, occupy one register) .
    - “U16”: Set 16-bit unsigned integer (two bytes, occupy one register).
    - “U32”: Set 32-bit unsigned integer (four bytes, occupy two registers).
    - “F32”: Set 32-bit single-precision floating-point number (four bytes, occupy two registers).
    - “F64”: Set 64-bit double-precision floating-point number (eight bytes, occupy four registers).

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9 Conveyor Tracking

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Set conveyor number to create a tracing queue

- Function:

```
CnvVison(CnvID)
```

- Description: Set conveyor number to create a tracing queue.
- Required parameter: CnvID, Conveyor number. Only support single conveyor.
- Return:
  - 0: No error
  - 1: Error

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Obtain status of the object

- Function:

```
GetCnvObject(CnvID, ObjID)
```

- Description: Obtain the information of the part on the conveyor to check whether the part is in the pickup area .
- Required parameter:
  - CnvID: Conveyor index.
  - ObjID: Part index.
- Return:
  - Part status: Whether there is a part. Value range: true or false
  - Part type
  - Part coordinate (x,y,r)

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Set X,Y axes offset under the set User coordinate system

- Function:

```
SetCnvPointOffset(OffsetX,OffsetY)
```

- Description: Set X,Y axes offset under the set User coordinate system.
- Required parameter:
  - OffsetX: X-axis offset.
  - OffsetY: Y-axis offset.
- Return:
  - 0: No error
  - 1: Error

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Set time compensation

- Function:

```
SetCnvTimeCompensation(Time)
```

- Description: Set time compensation. This command is used for compensating the pick-up position offset in the moving direction of the conveyor which is caused by taking photos with a time delay.
- Required parameter: Time, time-offset. Unit: ms
- Return:
  - 0: No error
  - 1: Error

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Synchronize the specified conveyor

- Function:

```
SyncCnv(CnvID)
```

- Description: Synchronize the specified conveyor. The motion commands used between SyncCnv(*CnvID*) and StopSyncCnv(*CnvID*) only support MovL command.
- Required parameter: CnvID, Conveyor index.
- Return:
  - 0: No error
  - 1: Error

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Stop synchronous conveyor

- Function:

```
StopSyncCnv(CnvID)
```

- Descriptioon: Stop synchronizing the conveyor. The other commands following this command will not be executed until this command running is completed.
- Required parameter: CnvID, Conveyor index.
- Return:
  - 0: No error
  - 1: Error

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10 Pallet

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Instantiate matrix pallet

- Function:

```
Pallet = MatrixPallet (Index,ID)
```

  Or:

```
local Option={IsUnstack= true, User= 1}
Pallet = MatrixPallet (Index,ID, Option)
```

- Description: Instantiate matrix pallet.
- Required parameter:
  - Index: Matrix pallet index.
  - ID: Unique identification of pallet
- Optional parameter: {IsUnstack= true, User= 1}. You can double-click to insert the command with optional parameters.
  - IsUnstack: Stack mode. Value range: true or false. true: Dismantling mode . false: Assembly mode. If not set, the default is assembly mode
  - User: User coordinate system index. If not set, the default is User 0 coordinate system.
- Return: Matrix pallet object.

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Instantiate teaching pallet

- Function:

```
Pallet = TeachPallet (Index,ID, Option)
```

  Or:

```
local Option={IsUnstack= true, User= 1}
Pallet = TeachPallet (Index,ID, Option)
```

- Description: Instantiate teaching pallet.
- Required parameter:
  - Index: Teaching pallet index.
  - ID: Unique identification of pallet
- Optional parameter: {IsUnstack= true, User= 1}. You can double-click to insert the command with optional parameters.
  - IsUnstack: Stack mode. Value range: true or false. true: Dismantling mode . false: Assembly mode. If not set, the default is assembly mode
  - User: User coordinate system index. If not set, the default is User 0 coordinate system.
- Return: Teaching pallet object.

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Set the next stack index which is to be operated

- Function:

```
SetPartIndex(Pallet, Index)
```

- Description: Set the next stack index which is to be operated.
- Required parameter:
  - Pallet: Pallet object.
  - Index: The next stack index. Initial value: 0

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Get the current operated stack index

- Function

```
GetPartIndex(Pallet)
```

- Description: Get the current operated stack index.
- Required parameter: Pallet, Pallet object.
- Return: The current operated stack index.

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Set the next pallet layer index which is to be operated

- Function:

```
SetLayerIndex(Pallet, Index)
```

- Description: Set the next pallet layer index which is to be operated.
- Required parameter:
  - Pallet: Pallet object.
  - Index: The next pallet layer index. Initial value: 0

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Get the current pallet layer index

- Function:

```
GetLayerIndex(Pallet)
```

- Description: Get the current pallet layer index.
- Required parameter: Pallet, Pallet object.
- Return: The current pallet layer index.

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Reset pallet

- Function:

```
Restet(Pallet)
```

- Description: Reset pallet.
- Required parameter: Pallet, Pallet object.

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Check whether the stack assembly or dismantling is complete

- Function:

```
IsDone(Pallet)
```

- Description: Check whether the stack assembly or dismantling is complete.
- Required parameter: Pallet, Pallet object.
- Return:
  - true: Finished.
  - false: Un-finished.

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Release palletizing instance

- Function:

```
Release(Pallet)
```

- Description: Release palletizing instance.
- Required parameter: Pallet, Pallet object.

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The robot moves from the current position to the first stack position as the configured stack assembly path

- Function:

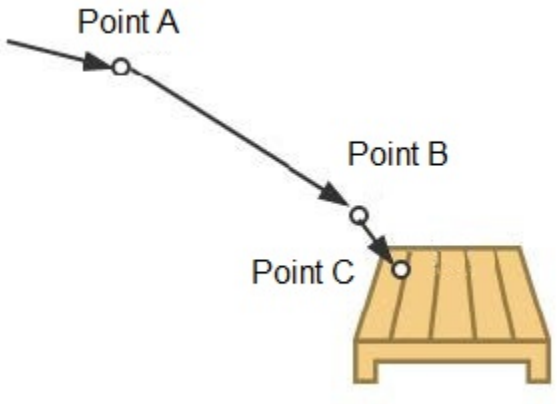
```
PalletMoveIn(Pallet)
```

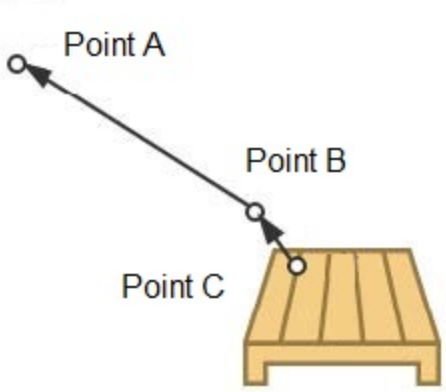
Or:

```
local Option={SpeedAB=20, SpeedBC=30, AccAB=20, AccBC=10, CP=20}
PalletMoveIn(Pallet, Option)
```

- Description: The robot moves from the current position to the first stack position as the configured stack assembly path.
- Required parameter: Pallet, Pallet object.
- Optional parameter: {SpeedAB=20, SpeedBC=30, AccAB=20, AccBC=10, CP=20}. You can double-click to insert the command with optional parameters.
  - SpeedAB: Velocity rate when the robot moves from the transition point to the preparation point. Value range: 1-100
  - SpeedBC: Velocity rate when the robot moves from the preparation point to the first stack point. Value range: 1-100
  - AccAB: Acceleration rate when the robot moves from the transition point to the preparation point. Value range: 1-100
  - AccBC: Acceleration rate when the robot moves from the preparation point to the first stack point. Value range: 1-100
  - CP: Continuous path rate. Value range: 0-100

  The stack assembly path and dismantling path are shown as follows. Point A is the transition point, which is fixed or varies with the pallet layer. Point B is the preparation point which is calculated by the target point and the set offset. Point C is the first stack point.





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The robot moves from the current position to the transition point as the configured stack dismantling path

- Function:

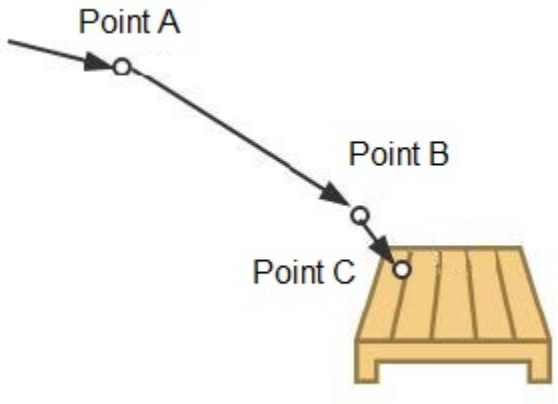
```
PalletMoveOut(Pallet)
```

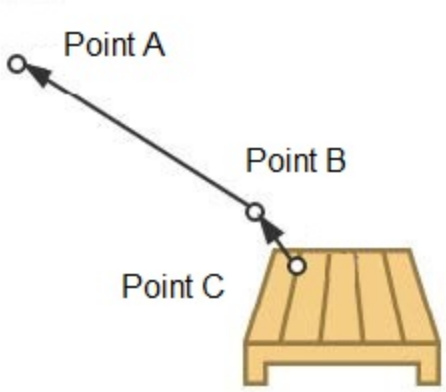
Or:

```
local Option={SpeedAB=20, SpeedBC=30, AccAB=20, AccBC=10, CP=20}
PalletMoveOut(Pallet, Option)
```

- Description: The robot moves from the current position to the transition point as the configured stack dismantling path.
- Required parameter: Pallet, Pallet object.
- Optional parameter: {SpeedAB=20, SpeedBC=30, AccAB=20, AccBC=10, CP=20}. You can double-click to insert the command with optional parameters.
  - SpeedAB: Velocity rate when the robot moves from the preparation point to the transition point. Value range: 1-100
  - SpeedBC: Velocity rate when the robot moves from the first stack point to the preparation point. Value range: 1-100
  - AccAB: Acceleration rate when the robot moves from the preparation point to the transition point. Value range: 1-100
  - AccBC: Acceleration rate when the robot moves from the first stack point to the preparation point. Value range: 1-100
  - CP: Continuous path rate. Value range: 0-100

  The stack assembly path and dismantling path are shown as follows. Point A is the transition point, which is fixed or varies with the pallet layer. Point B is the preparation point which is calculated by the target point and the set offset. Point C is the first stack point.





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