

Path2 Robotics

KUKA Program Installation Guide

IMPORTANT - Read Before Starting

Always test new programs in T1 mode (slow speed) first. Keep your hand on the deadman switch at all times. Ensure the robot work area is clear of people before running.

Step 1 - Load Files onto the Robot

1. Copy your downloaded .SRC and .DAT files onto a USB stick.
2. Plug the USB stick into the KUKA cabinet.
3. Log on as Expert - Password: kuka
4. In the Navigator window, press your USB drive. Both files will appear in the right panel.
5. For each file, press Edit then Copy.
6. In the left panel select your robot, then open R1 then Program.
7. Press Edit then Paste. Files appear with a red cross until both are pasted.
8. Once both files are in the Program folder the red cross will clear.

Step 2 - Set the Tool

Measure the height of your gripper in mm (Z axis only).

1. Go to Main Menu, Start Up, Calibrate, Tool, Numeric Input.
2. Choose Tool No. 1, enter a name, and press Next.
3. Enter the gripper height in the Z field. Leave X, Y, A, B, C as 0.
4. Press Next, then Save.

Step 3 - Read the Pallet Position (S and T Values)

What are S and T?

S and T define the arm configuration the robot uses to reach a position - which way the elbow points, whether the wrist is flipped, etc. They are unique to your robot and pallet location. Without the correct values the robot will hit a joint limit error on place moves.

Do this before generating your files on the Path2 website:

1. Ensure Tool 1 is selected (T1) and World base is active (B0) - check the top of the pendant.
2. Jog the robot to the centre of the pallet with the gripper touching the pallet surface.
3. Go to Main Menu, Display, Actual Position.
4. You will see X, Y, Z, A, B, C, S and T values. Take a photo of this screen.
5. Note the S value (shown in binary e.g. 10010) and convert to decimal (e.g. 18).
6. Note the T value (shown in binary e.g. 1010) and convert to decimal (e.g. 10).

7. Enter these decimal S and T values into the Path2 generator before downloading.

Common binary to decimal conversions:

Binary (as shown on pendant)	Decimal (enter in generator)
00010010	18
00001010	10
00101010	42
00000010	2
00010000	16

Step 4 - Set the Pallet Base (Base 1)

Using the photo from Step 3, enter the X, Y, Z, A, B, C values as Base 1. This tells the robot where the pallet centre is - all place positions are calculated relative to this point.

1. Go to Main Menu, Start Up, Calibrate, Base, Numeric Input.
2. Choose Base System No. 1 and press Next.
3. Enter the X, Y, Z, A, B, C values exactly as shown in your photo.
4. Press Next, then Save.

Step 5 - Set the Pick Position in the .DAT File

The pick position is where the robot collects each product. You must teach this by reading the robot position display while the robot is at the pick point.

1. Ensure T1 and B0 (World) are active.
2. Jog the robot to your pick position with the gripper touching the product.
3. Go to Main Menu, Display, Actual Position and take a photo.
4. In the Navigator, open the .DAT file in the Program folder.
5. Find the line beginning with DECL E6POS P_PICK.
6. Replace all values (X, Y, Z, A, B, C, S, T) with exactly what is shown in your photo.
7. For S and T - convert from binary to decimal using the table in Step 3.
8. Save the file.

Example P_PICK line in the .DAT file:

```
DECL E6POS P_PICK = {X 301.630, Y -2117.100, Z 445.530, A 90.000, B -0.010, C 179.950, S 18, T 42, E1 0.0, E2 0.0, E3 0.0, E4 0.0, E5 0.0, E6 0.0}
```

Step 6 - Run the Program

1. Select the program in the Navigator and press Open.
2. Ensure the robot is in T1 mode (max 250mm/s).
3. Hold the deadman switch and press the green Play button.
4. Step through one move at a time initially to verify pick and first place position are correct.
5. If axis limit errors appear on place moves, recheck your S and T values in the .DAT file.

6. Once satisfied, run a full cycle before increasing to production speed.

For support visit path2.io or contact us through the website.