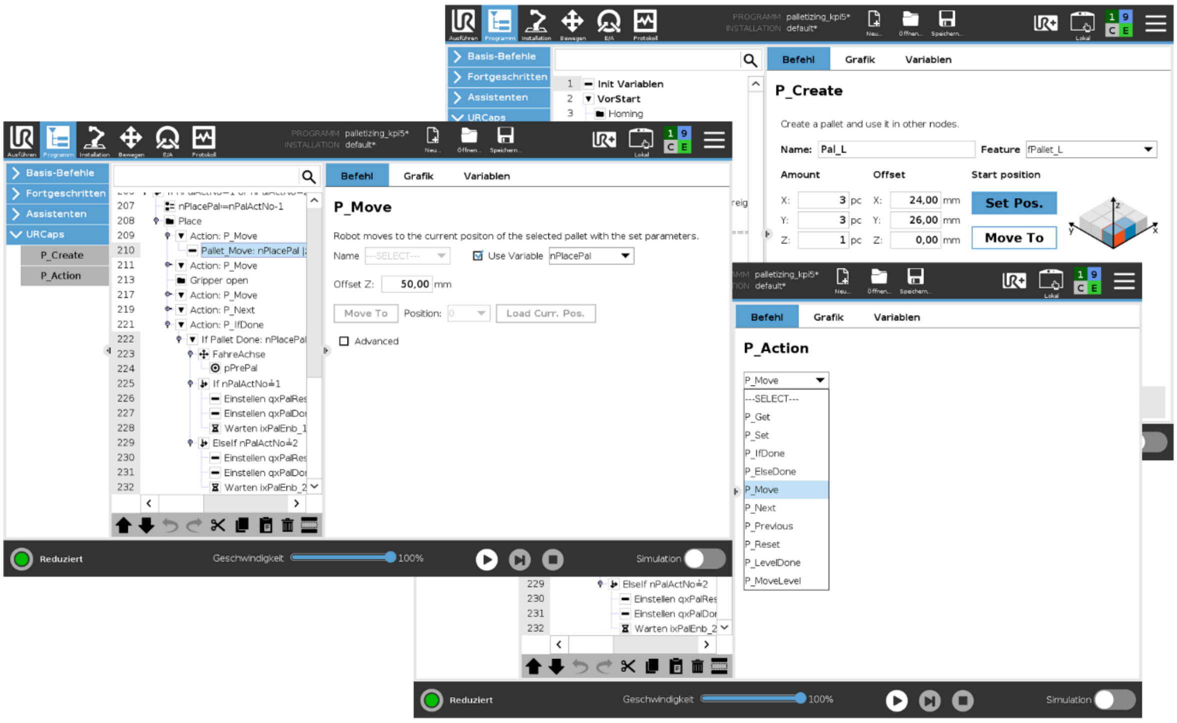
KPI SOFTWARE

Reference Manual

URCap Advanced Palletizing – Version 1.0.5



P_Create

Create a pallet and use it in other nodes.

Name: Pal_L   Feature: fPallet_L

Amount		Offset		Start position
X:	3 pc	X:	24,00 mm	Set Pos.
Y:	3 pc	Y:	26,00 mm	
Z:	1 pc	Z:	0,00 mm	Move To

P_Move

Robot moves to the current positon of the selected pallet with the set parameters.

Name: ---SELECT---   ☑ Use Variable: nPlacePal

Offset Z: 50,00 mm

Move To   Position: 0   Load Curr. Pos.

□ Advanced

```
207  nPlacePal:=nPalActNo-1
208  Place
209    Action: P_Move
210      Pallet_Move: nPlacePal
211    Action: P_Move
213    Gripper open
217    Action: P_Move
219    Action: P_Next
221    Action: P_IfDone
222      If Pallet Done: nPlacePal
223        FahreAchse
224          pPrePal
225        If nPalActNo≟1
226          Einstellen qxPalRes
227          Einstellen qxPalDo
228          Warten ixPalEnb_1
229        ElseIf nPalActNo≟2
230          Einstellen qxPalRes
231          Einstellen qxPalDo
232          Warten ixPalEnb_2
```

P_Action

P_Move
---SELECT---
P_Get
P_Set
P_IfDone
P_ElseDone
P_Move
P_Next
P_Previous
P_Reset
P_LevelDone
P_MoveLevel

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Reference Manual

Version 1.0.5

Table of Contents

1 Introduction

The URCap Advanced Palletizing is a software extension for the UR robot (Universal Robots). It was developed to implement complex palletizing tasks with minimal effort. Due to the flexible program structure, the most varied of palletizing tasks can be solved easily and clearly and the programming effort is significantly reduced. Even with processes with many pallets, no performance losses are to be feared. Subsequent adjustments such as the number of pieces on the pallet or the processing sequence can be changed with just a few clicks.

1.1 About this document

The reference manual contains an overview of all functions of the URCap. It was created for robot programmers, software developers and maintenance technicians.

1.2 Requirements and supported versions

E-Series robots (UR3, UR5, UR10 or UR16) from PolyScope 5.9.

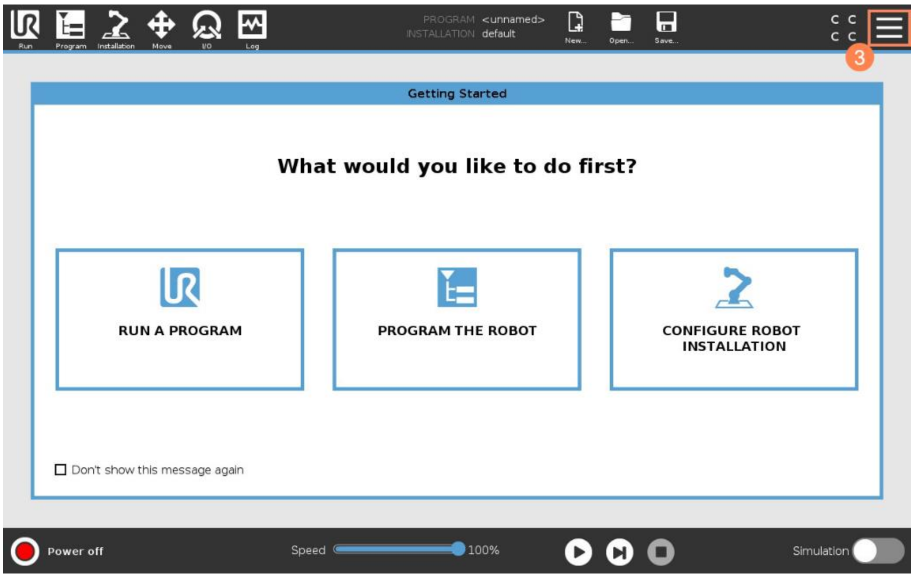
1.3 Update URCap

Attention: Robot programs that were created with a previous version may no longer be used. The robot programs and the robot installation may have to be recreated or adapted. To install the URCap version 1.0.5 on a system where an earlier version is already installed.

- Uninstall the previous version
- Check the PolyScope version, if necessary update to a newer version (version 5.9)
- To avoid configuration conflicts, create a new robot installation
- Install URCap

2 Installation

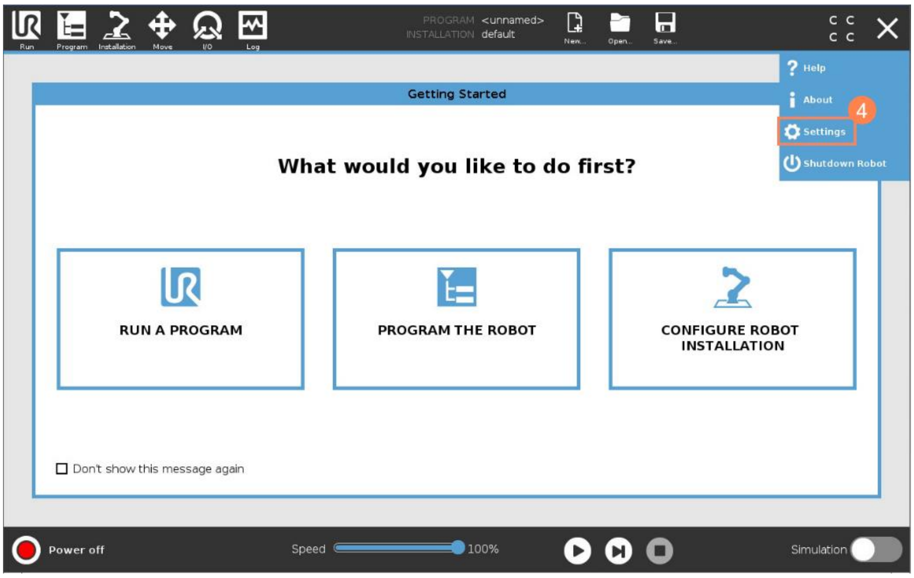
2.1 Installing the URCap


Getting Started

What would you like to do first?

Figure 1: Home screen

1. Start the robot
2. Insert the USB stick with the URCap
3. Click the hamburger menu in the top right corner


Getting Started

What would you like to do first?

Figure 2: Select Settings

4. Click Settings

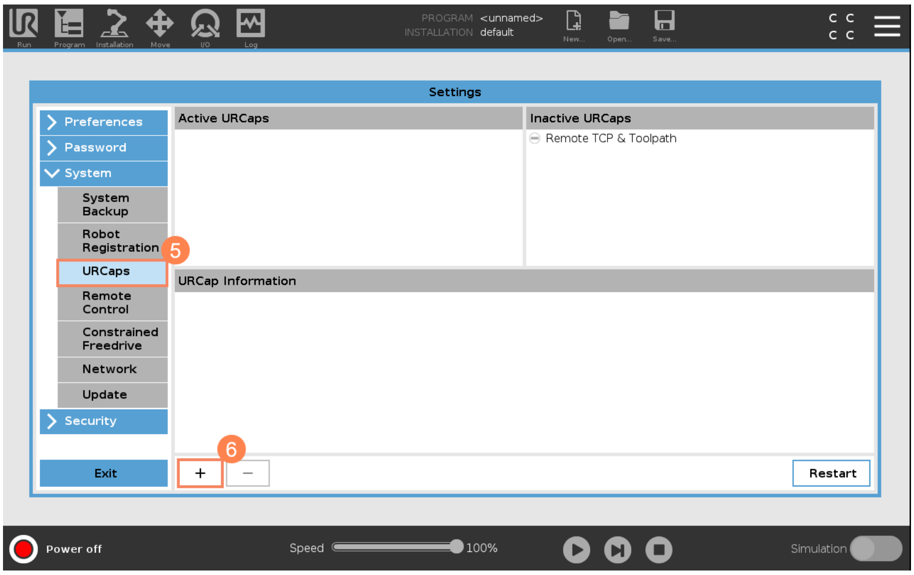
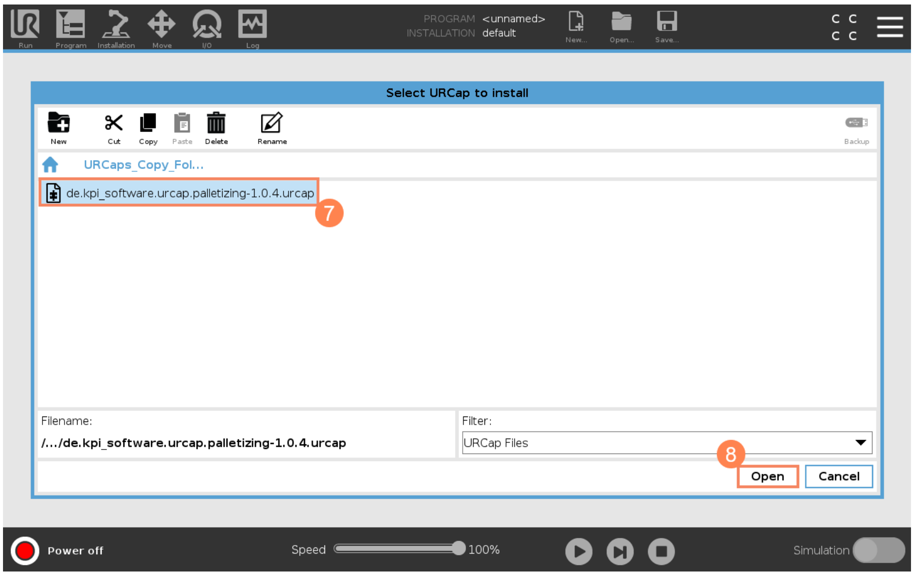


Figure 3: Add URCap

5. Click on URCaps
6. Click +

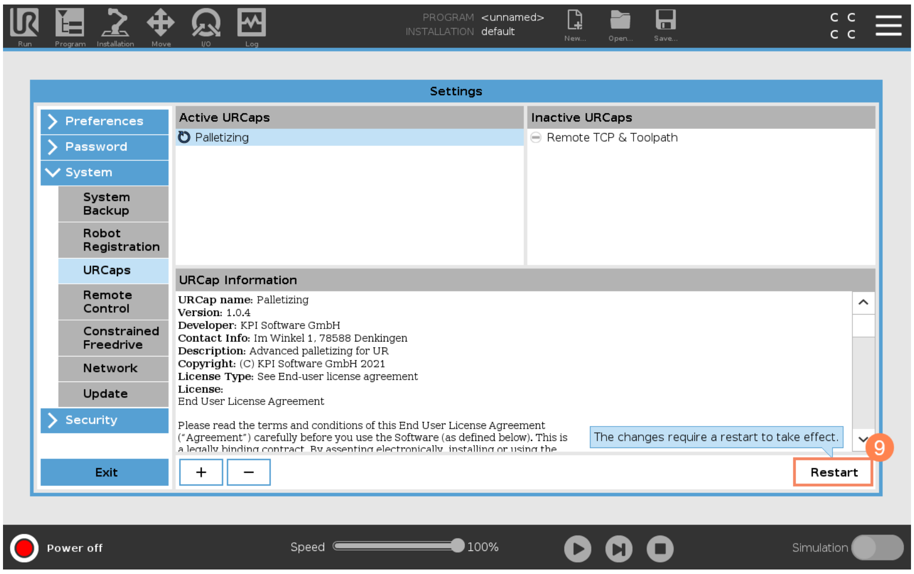


Filename: /.../de.kpi_software.urcap.palletizing-1.0.4.urcap

Filter: URCap Files

Figure 4: Select URCap on USB stick

7. Select the URCap on the USB stick
8. Click Open to install the URCap



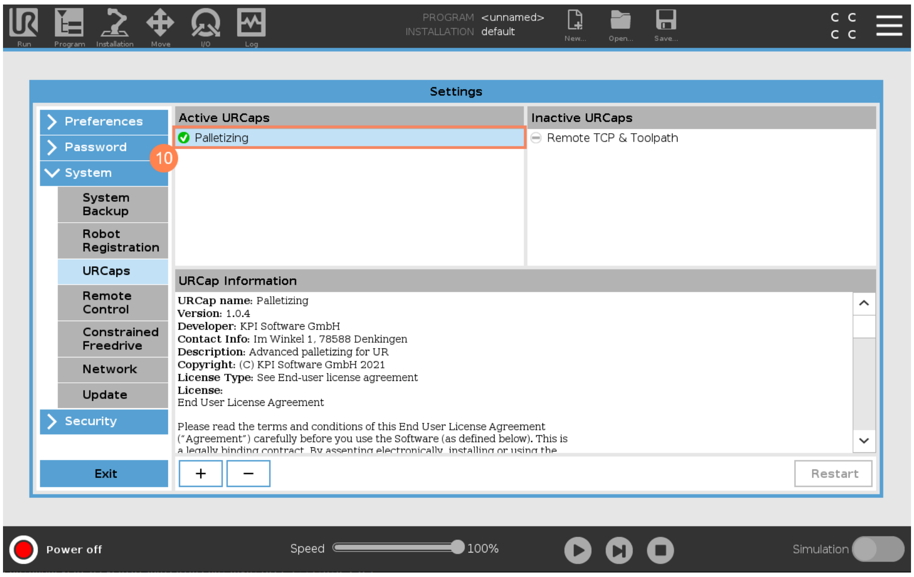
URCap name: Palletizing
Version: 1.0.4
Developer: KPI Software GmbH
Contact Info: Im Winkel 1, 78588 Denkingen
Description: Advanced palletizing for UR
Copyright: (C) KPI Software GmbH 2021
License Type: See End-user license agreement
License:
End User License Agreement

Please read the terms and conditions of this End User License Agreement ("Agreement") carefully before you use the Software (as defined below). This is a legally binding contract. By assenting electronically, installing or using the

The changes require a restart to take effect.

Figure 5: Restart the robot

9. Click Restart to restart the robot



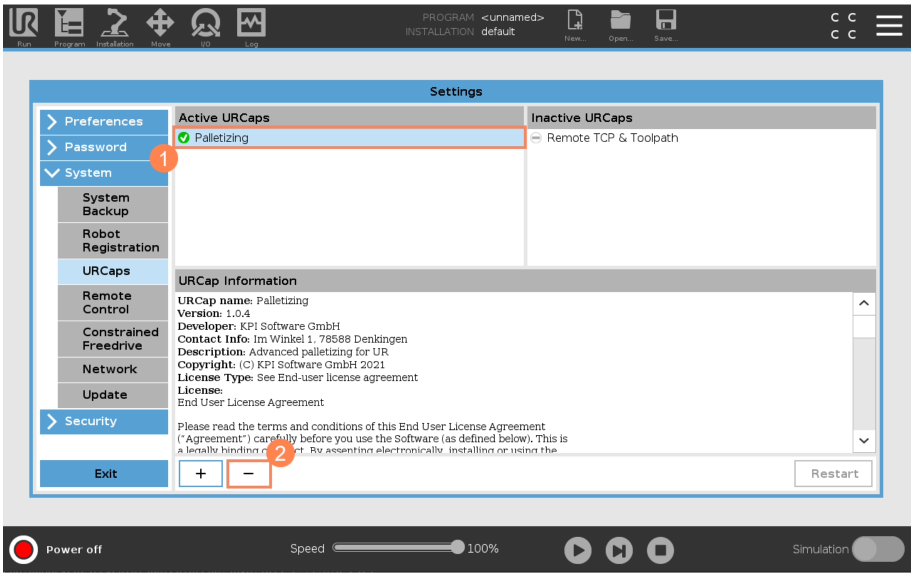
URCap name: Palletizing
Version: 1.0.4
Developer: KPI Software GmbH
Contact Info: Im Winkel 1, 78588 Denkingen
Description: Advanced palletizing for UR
Copyright: (C) KPI Software GmbH 2021
License Type: See End-user license agreement
License:
End User License Agreement

Please read the terms and conditions of this End User License Agreement ("Agreement") carefully before you use the Software (as defined below). This is a legally binding contract. By assenting electronically, installing or using the

Figure 6: URCap is installed

10. A green tick will appear next to the URCap if it has been installed correctly

2.2 Uninstall the URCap



URCap name: Palletizing
Version: 1.0.4
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Contact Info: Im Winkel 1, 78588 Denkingen
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Copyright: (C) KPI Software GmbH 2021
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License:
End User License Agreement

Please read the terms and conditions of this End User License Agreement ("Agreement") carefully before you use the Software (as defined below). This is a legally binding contract. By assenting electronically, installing or using the

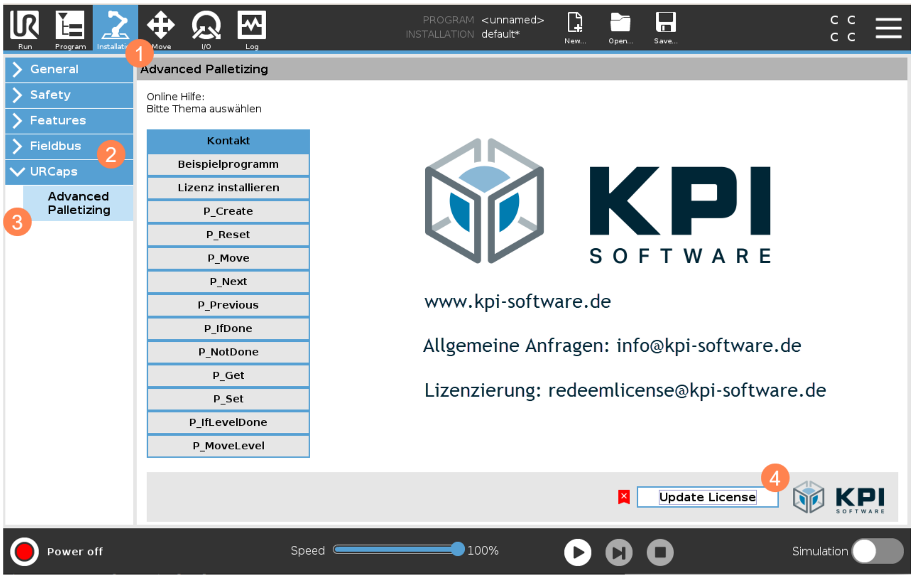
Figure 7: Select URCap

1. Select the URCap to be uninstalled
2. Click on -
3. Restart the robot

3 Installation Node

3.1 Licensing

In order for Advanced Palletizing to be used, a valid license key must be entered in advance. This is generated by the manufacturer with the help of the generator string.



Online Hilfe:
Bitte Thema auswählen

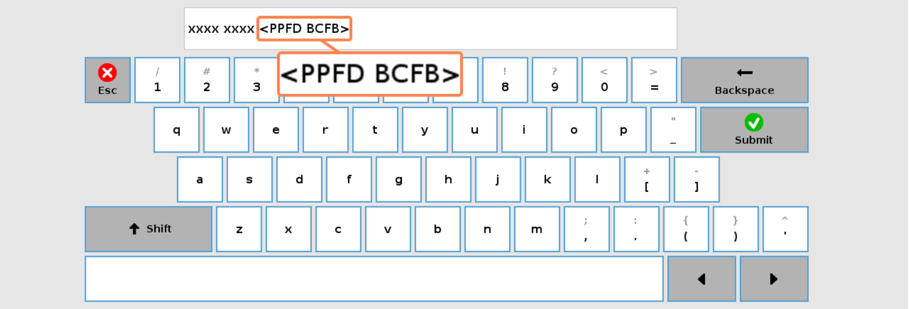
www.kpi-software.de

Allgemeine Anfragen: info@kpi-software.de

Lizenzierung: redeemlicense@kpi-software.de

Figure 8: Installation Node

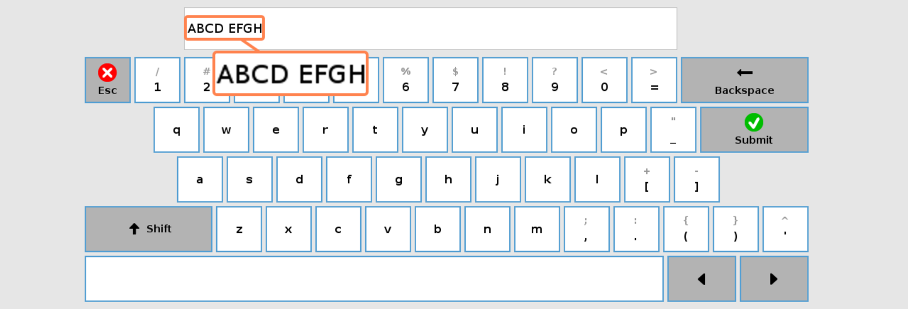
1. Open the installation page
2. Go to URCaps
3. Click on Advanced Palletizing
4. Click Update License



xxxx xxxx <PPFD BCFB>

Figure 9: Generator string

5. Make a note of the 8-digit generator string and send it together with your contact details to redeemlicense@kpi-software.de



ABCD EFGH

Figure 10: Enter license key

6. You will then receive your 8-digit license key, which must be entered instead of the generator string

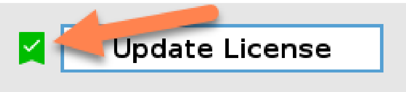
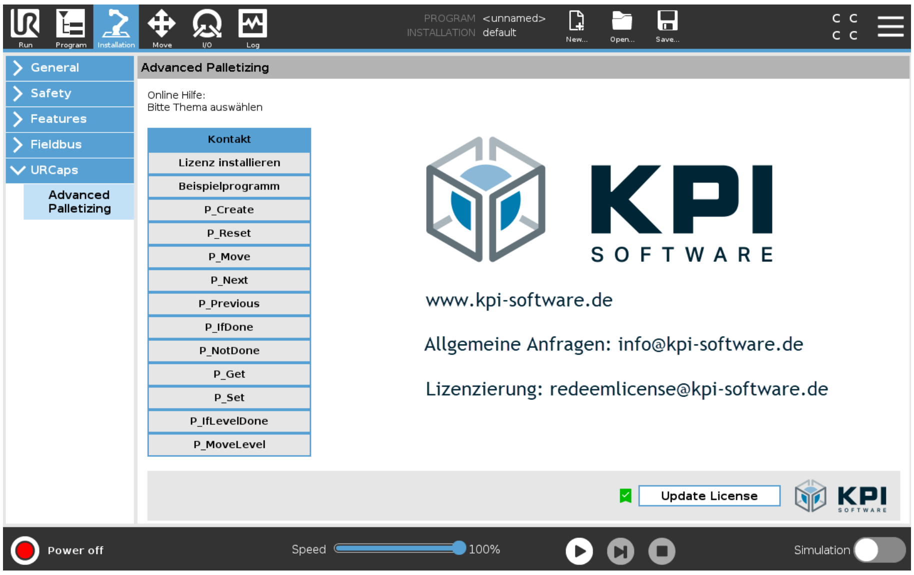


Figure 11: Successful licensing

7. You can recognize successful activation by the green tick

3.2 Online help

Our online help is located in the installation node and contains brief information on the individual program nodes. To do this, simply click on the corresponding menu item on the left.



PROGRAM <unnamed>
INSTALLATION default

Advanced Palletizing

Online Hilfe:
Bitte Thema auswählen

www.kpi-software.de

Allgemeine Anfragen: info@kpi-software.de

Lizenzierung: redeemlicense@kpi-software.de

Speed 100%

Figure 12: Online help

4 Program Node P_Create

The palettes are created and defined in the program node P_Create. It may only be inserted once in the pre-start, as it is not required for the normal program sequence. If you have accidentally inserted P_Create a second time, simply delete the second instance again.

4.1 Insert P_Create

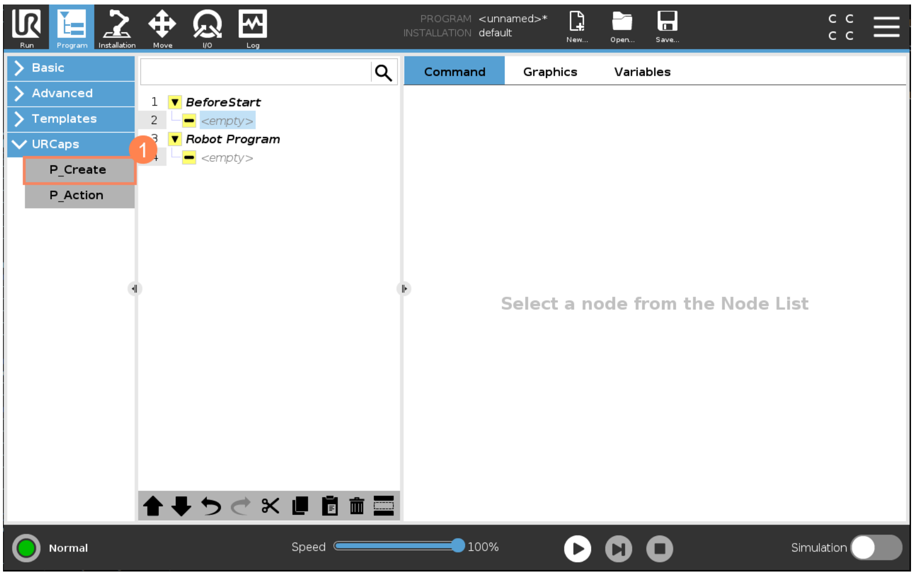
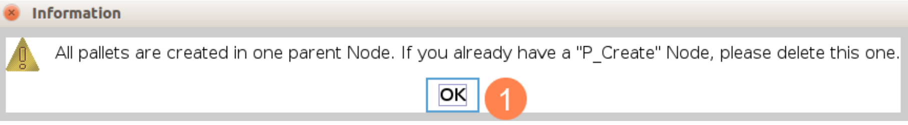


Figure 13: Program Node P_Create

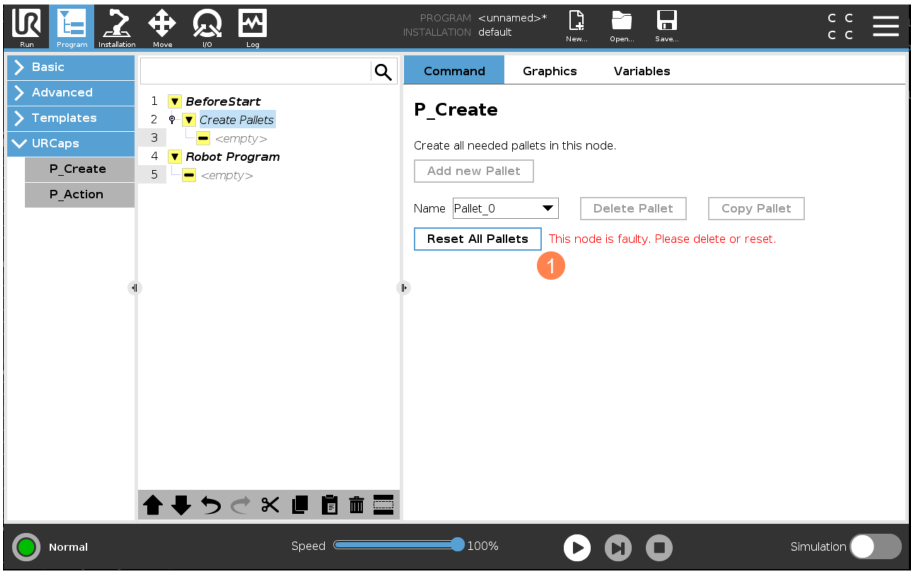
1. Add P_Create to the pre-start



All pallets are created in one parent Node. If you already have a "P_Create" Node, please delete this one.

Figure 14: PopUp P_Create

1. When inserting P_Create, a message appears that you can only insert the program node once.



```
1  BeforeStart
2    Create Pallets
3      <empty>
4  Robot Program
5    <empty>
```

P_Create

Create all needed pallets in this node.

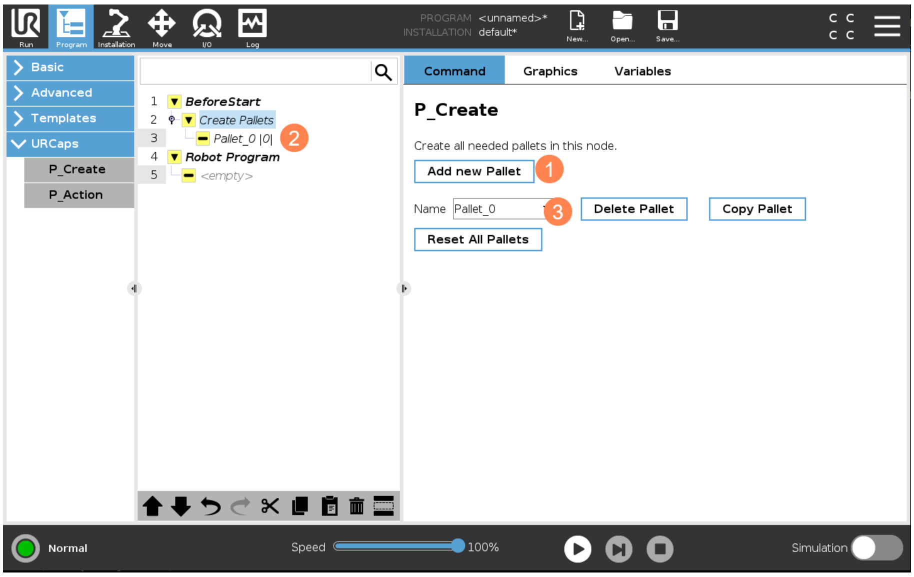
Name: Pallet_0

This node is faulty. Please delete or reset.

Figure 15: P_Create Reset

When inserting P_Create, you must first reset all pallets. To do this, click on Reset All Pallets. The red notice should then go away.
Do not do this step if you have accidentally inserted P_Create a second time.

4.2 Create a new pallet



```
1  BeforeStart
2    Create Pallets
3      Pallet_0 |0|
4  Robot Program
5    <empty>
```

P_Create

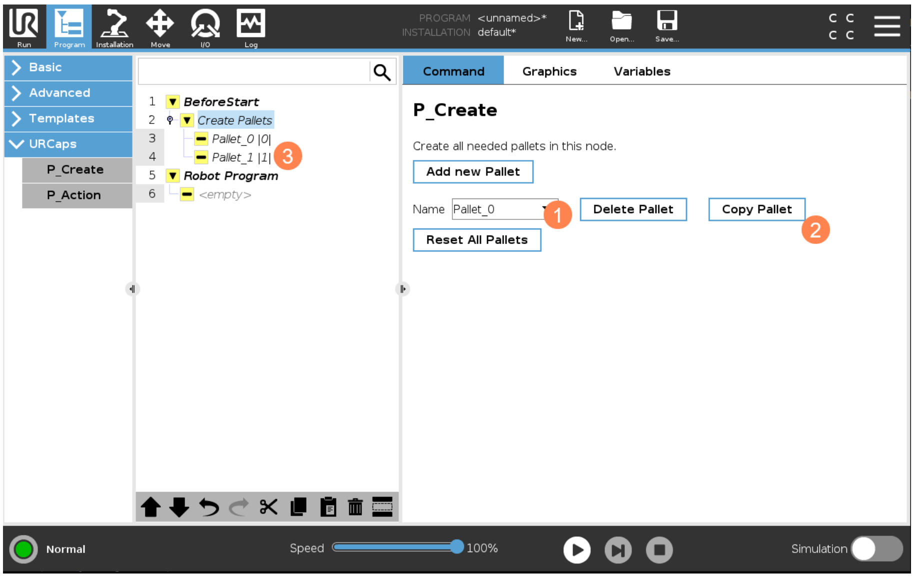
Create all needed pallets in this node.

Name: Pallet_0

Figure 16: Create a new pallet

1. Click on Add new Pallet
2. The new pallet is added as a new node
3. The new pallet will appear in the drop-down menu

4.3 Copy a pallet



1 BeforeStart
2 Create Pallets
3 Pallet_0 |0|
4 Pallet_1 |1|
5 Robot Program
6 <empty>

P_Create

Create all needed pallets in this node.

Add new Pallet

Name Pallet_0

Delete Pallet

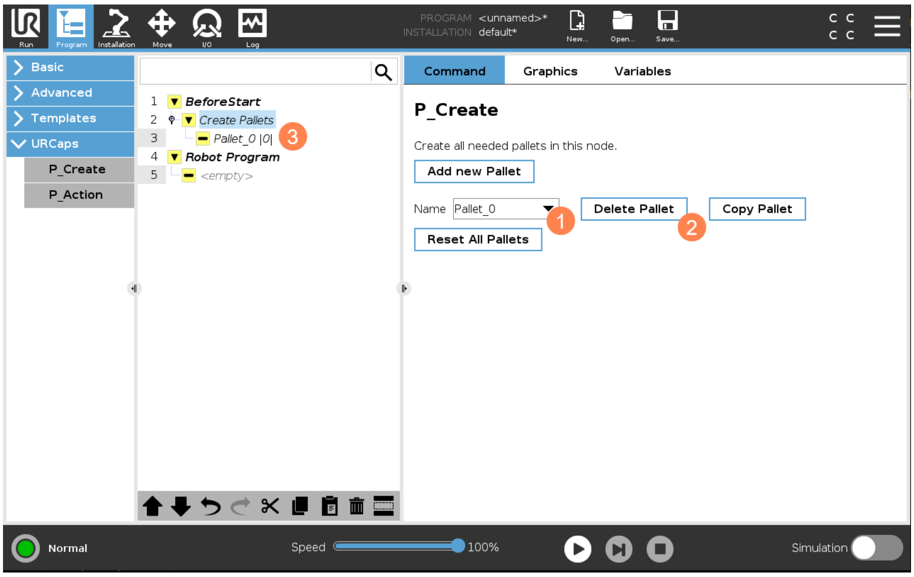
Copy Pallet

Reset All Pallets

Figure 17: Copy a pallet

1. Select the pallet you want to copy
2. Click on Copy Pallet
3. The copied pallet is added as a new node

4.4 Delete a pallet



1 BeforeStart
2 Create Pallets
3 Pallet_0 |0|
4 Robot Program
5 <empty>

P_Create

Create all needed pallets in this node.

Add new Pallet

Name Pallet_0

Delete Pallet

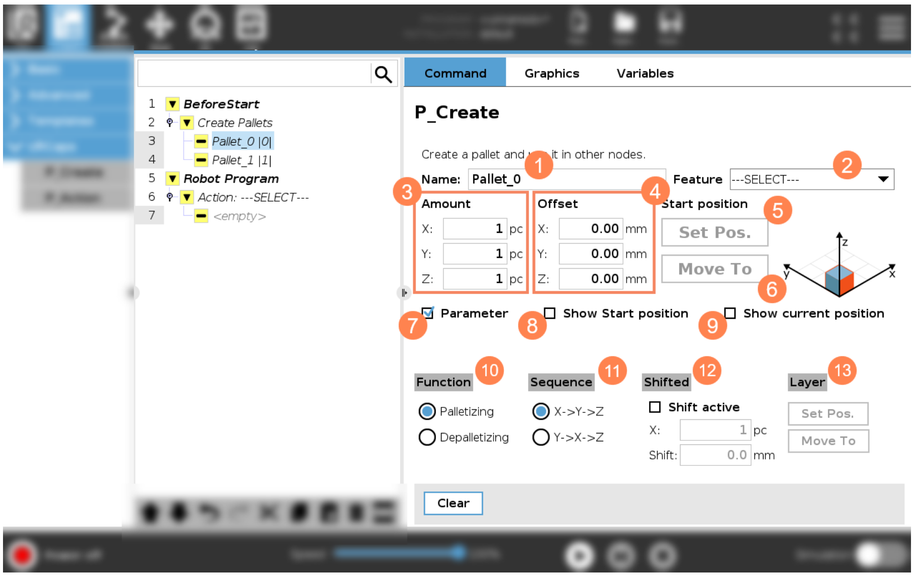
Copy Pallet

Reset All Pallets

Figure 18: Delete a pallet

1. Select the pallet you want to delete
2. Click Delete Pallet
3. The pallet is deleted from the list

4.5 Enter pallet values



1 ▼ BeforeStart
2 ▼ Create Pallets
3 ▬ Pallet_0 |0|
4 ▬ Pallet_1 |1|
5 ▼ Robot Program
6 ▼ Action: ---SELECT---
7 ▬ <empty>

P_Create

Create a pallet and use it in other nodes.

Name: Pallet_0 Feature: ---SELECT---

Amount: X: 1 pc, Y: 1 pc, Z: 1 pc

Offset: X: 0.00 mm, Y: 0.00 mm, Z: 0.00 mm

Start position

☑ Parameter □ Show Start position □ Show current position

Function: ● Palletizing ○ Depalletizing

Sequence: ● X->Y->Z ○ Y->X->Z

Shifted: □ Shift active; X: 1 pc; Shift: 0.0 mm

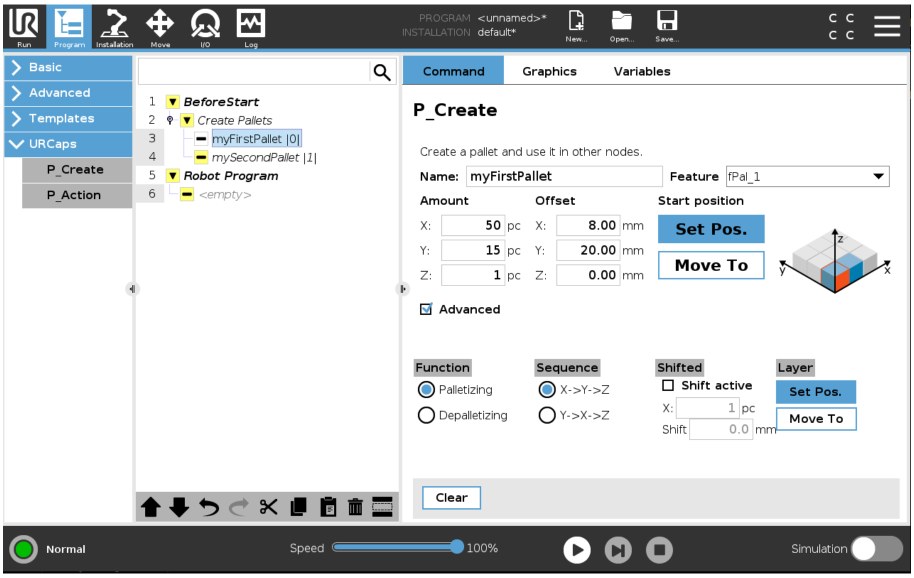
Layer

Figure 19: Pallet values

1. You can assign any name to the pallet under Name. This can be used to call up the palette later.
2. Under Feature you select an already created coordinate system for palletizing. It should be noted here that the X / Y / Z direction corresponds exactly to the position of the pallet. The zero position of the coordinate system does not have to coincide with the first pallet position. Often the locating bolts of the pallet are used to teach the coordinate system.
3. The number of workpieces on the pallet is entered under Amount.
4. The distance between the workpieces is entered under Offset. If the number of pieces is greater than one, the offset must not contain 0.
5. The starting position of the pallet is taught with Set Pos. Specifically, the exact gripping position of the first workpiece is to be taught in here.
6. The taught start position can be approached at any time with Move To.
7. In the case of simple pallets, nothing needs to be set under Parameter. However, if you want to make settings under Parameter, you can tick the checkbox.
8. With Show Start Position the start position is displayed as it was taught under Set Pos. Manual adjustments can also be made here.
9. With Show current position the current pallet counter is displayed.
10. Function is used to set whether workpieces are to be placed on the pallet (palletizing) or whether workpieces are to be taken from the pallet (depalletizing). With depalletizing, palletizing begins automatically with the last workpiece. As with palletizing, the start position is taught in the 1st position.
11. The palletizing sequence can be set under Sequence
12. Under Shifted you can set whether it is an offset pallet. A detailed description can be found in Chapter 4.6.2 Offset pallets.

13. Under Layer you can set whether an intermediate layer (e.g. a piece of cardboard) should be inserted between the layers. The position of the lowest layer is taught with Set Pos.

If all values have been entered correctly, the program node is no longer displayed in yellow.



PROGRAM <unnamed>*
INSTALLATION default*

1 BeforeStart
2 Create Pallets
3 myFirstPallet |0|
4 mySecondPallet |1|
5 Robot Program
6 <empty>

P_Create

Create a pallet and use it in other nodes.

Name: myFirstPallet Feature: fPal_1

Amount: X: 50 pc, Y: 15 pc, Z: 1 pc
Offset: X: 8.00 mm, Y: 20.00 mm, Z: 0.00 mm
Start position

☑ Advanced

Function: ● Palletizing ○ Depalletizing
Sequence: ● X->Y->Z ○ Y->X->Z
Shifted: □ Shift active, X: 1 pc, Shift 0.0 mm
Layer

Figure 20: Example pallet

4.6 Types of pallets

4.6.1 Uniform grid

The simplest type of pallet are pallets with an even grid in X, Y and Z. For such pallets, it is sufficient to specify the number and the spacing of the rows, columns and levels. As soon as the start position has been taught in, you can work with such a pallet.

However, it must always be ensured that the selected coordinate system has exactly the same orientation as the pallet.

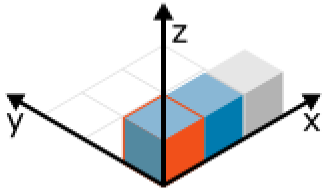


Figure 21: Example pallet 1 has 3 workpieces in X and 1 each in Y and Z.

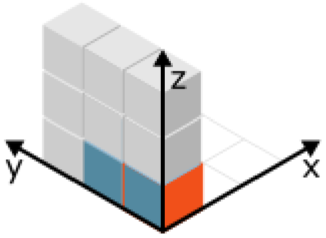


Figure 22: Example pallet 2 has 1 workpiece in X and 3 each in Y and Z.

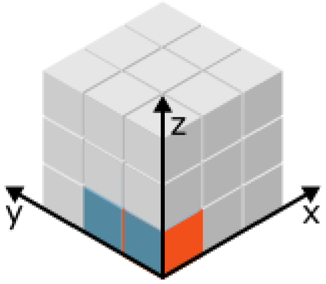


Figure 23: Example pallet 2 has 3 workpieces each in X, Y and Z.

4.6.2 Offset grid

The offset pallets are a special type of pallet, in which every 2nd row is either slightly offset or a different number of workpieces is available. It is also possible to combine both.

In the following you can see such a pallet, which has 12 positions in the 1st row and only 11 positions in the 2nd row. In addition, the workpieces in the 2nd row are offset to the right.

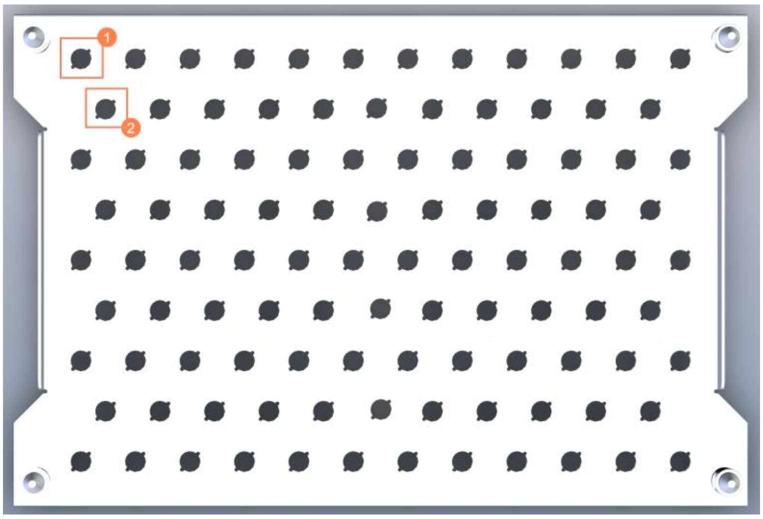
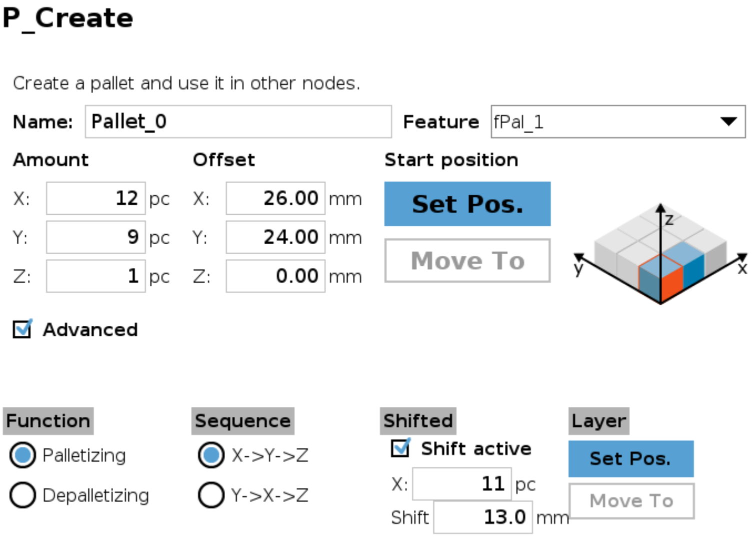


Figure 24: Offset grid

In the case of offset pallets, it must be ensured that the processing direction is always row by row. In the example, processing would have to be done first from left to right and then from top to bottom.

The configuration of the example pallet in P_Create would look like this:



P_Create

Create a pallet and use it in other nodes.

Name: Pallet_0   Feature: fPal_1

Amount		Offset		Start position
X:	12 pc	X:	26.00 mm	Set Pos.
Y:	9 pc	Y:	24.00 mm	Move To
Z:	1 pc	Z:	0.00 mm	

☑ Advanced

Function	Sequence	Shifted	Layer
● Palletizing	● X->Y->Z	☑ Shift active	Set Pos.
○ Depalletizing	○ Y->X->Z	X: 11 pc	Move To
		Shift 13.0 mm	

Figure 25: Offset pallet configuration

5 Program Node P_Action

The various palette operations are called in the program node P_Action. It can be inserted at any point in the program.

5.1 Insert P_Action

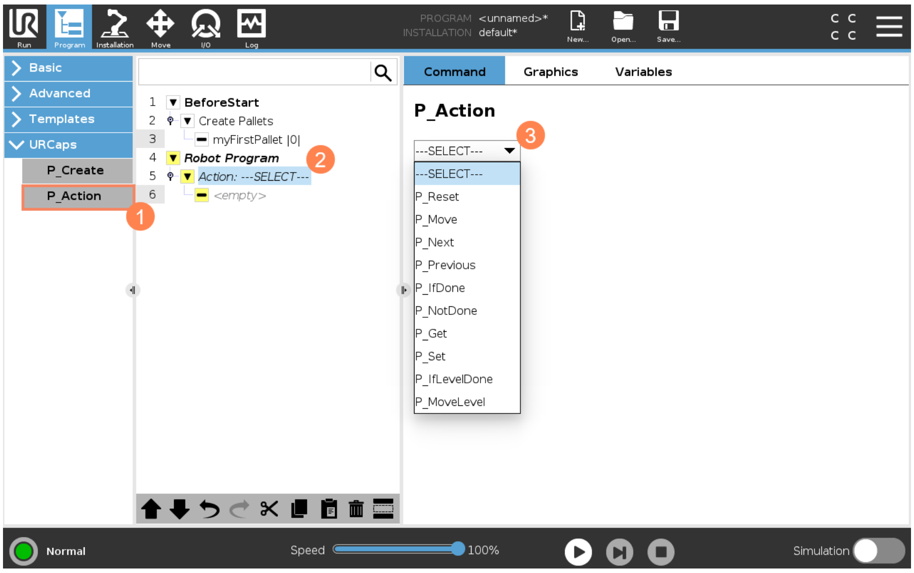
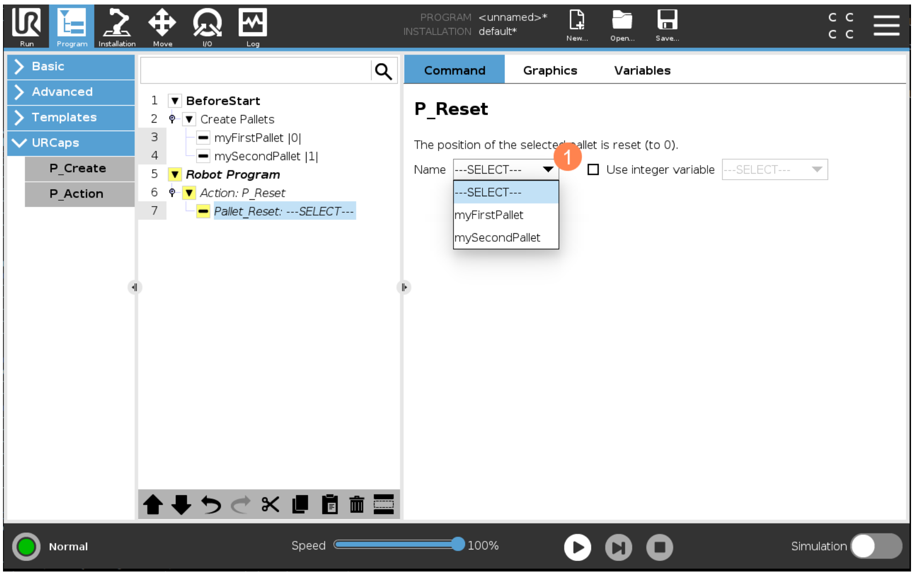


Figure 26: Program Node P_Action

1. Insert P_Action
2. Mark the node
3. Choose an action

5.2 P_Reset: Pallet reset

P_Reset resets a pallet to the starting position. You can either select the pallet by name or address the pallet with an integer variable. It is important that the variable can only contain the values 0 - 19.



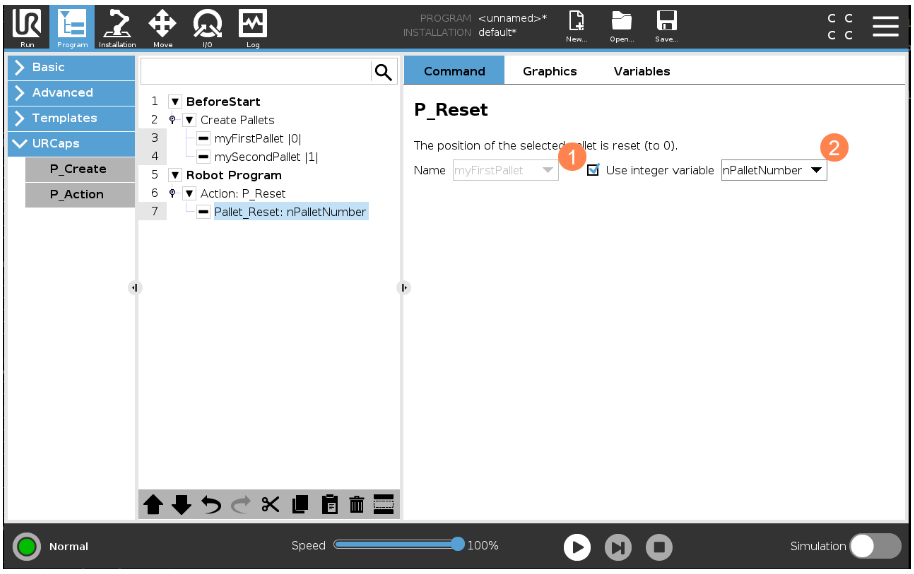
P_Reset

The position of the selected pallet is reset (to 0).

Name ---SELECT--- □ Use integer variable ---SELECT---

Figure 27: P_Reset called by name

1. Select the name of the pallet



P_Reset

The position of the selected pallet is reset (to 0).

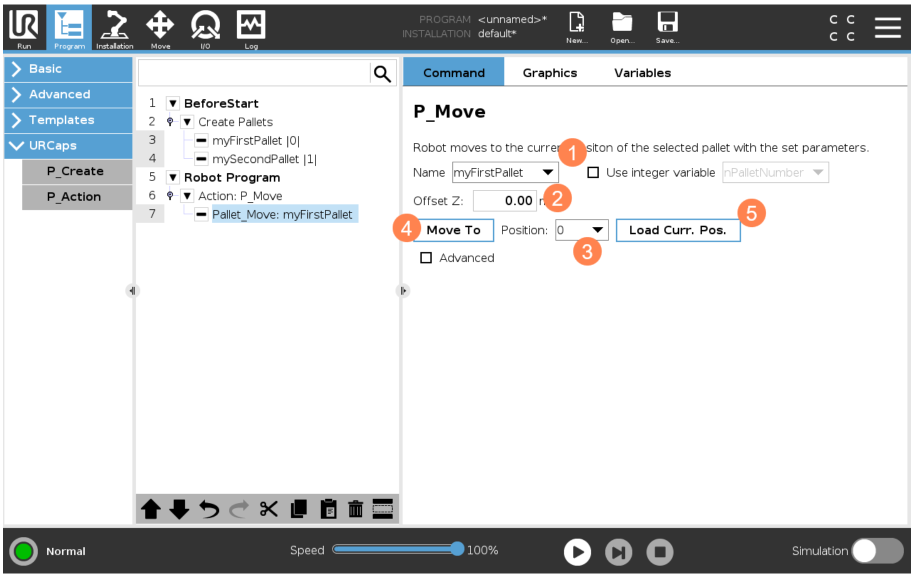
Name myFirstPallet ☑ Use integer variable nPalletNumber

Figure 28: P_Reset call via integer variable

1. Check the box in front of Use Integer Variable
2. Select an integer variable

5.3 P_Move: Approach pallet position

P_Move performs a robot movement. Here, too, you can either select the pallet by name or address the pallet with an integer variable. It is important that the variable can only contain the values 0-19.



PROGRAM <unnamed>*
INSTALLATION default*

1 BeforeStart
2 Create Pallets
3 myFirstPallet |0|
4 mySecondPallet |1|
5 Robot Program
6 Action: P_Move
7 Pallet_Move: myFirstPallet

P_Move

Robot moves to the curren siton of the selected pallet with the set parameters.

Name myFirstPallet ☐ Use integer variable nPalletNumber

Offset Z: 0.00

Position: 0

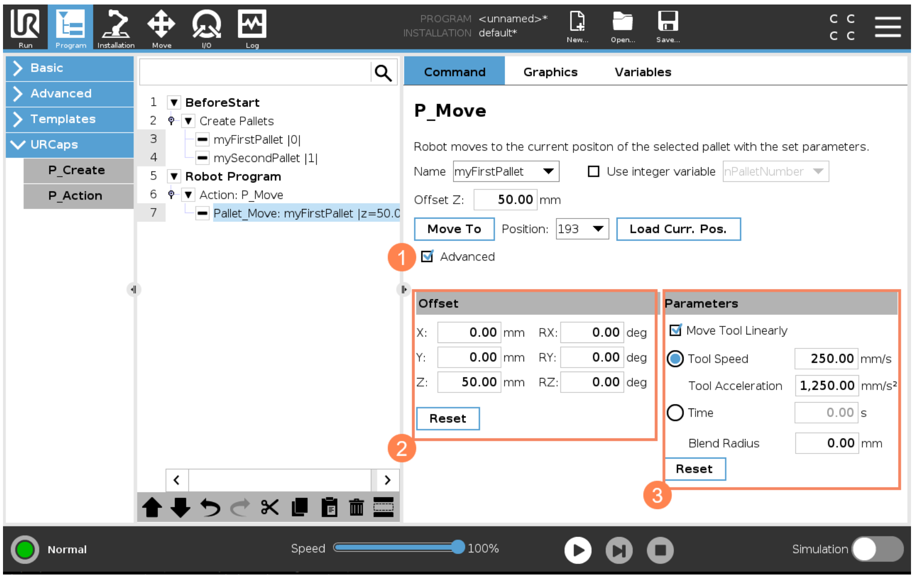
☐ Advanced

Normal Speed 100% Simulation

Figure 29: P_Move standard

1. Select the pallet either by name or by variable
2. If you enter an offset in the Z direction, the robot moves over the current position
3. Here you can select a position on the pallet for manual testing of the pallet and move to it with Move To
4. Here you can approach the selected position
5. Here you can read out the current position of the pallet and display it in the text field

Note: Points 3 - 5 are only intended for manual testing of the pallet and have no effect on the subsequent automatic process. Points 3 - 5 can only be carried out if the pallet has been selected by name.



P_Move

Robot moves to the current positon of the selected pallet with the set parameters.

Name: myFirstPallet ☐ Use integer variable nPalletNumber

Offset Z: 50.00 mm

Move To Position: 193 Load Curr. Pos.

☑ Advanced

Offset

X: 0.00 mm RX: 0.00 deg
Y: 0.00 mm RY: 0.00 deg
Z: 50.00 mm RZ: 0.00 deg

Reset

Parameters

☑ Move Tool Linearly
● Tool Speed 250.00 mm/s
Tool Acceleration 1,250.00 mm/s²
○ Time 0.00 s
Blend Radius 0.00 mm

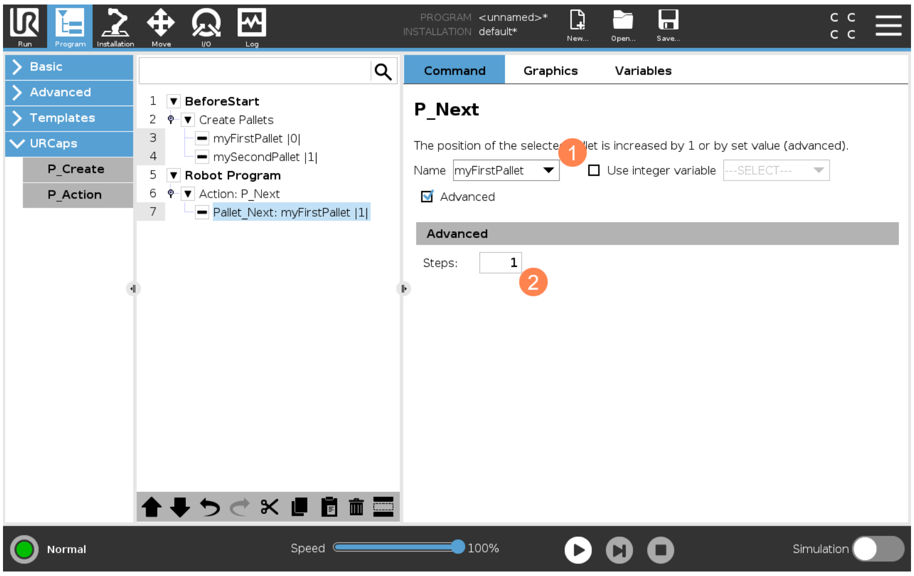
Reset

Figure 30: P_Move advanced

1. The advanced settings can be opened with Advanced
2. The offsets for the current position can be specified under Offset
3. The parameters for the robot movement are specified under Parameters

5.4 P_Next: Increase pallet counter

P_Next increases the pallet counter by one position. Another step size can also be entered under Advanced. Here, too, you can either select the pallet by name or address the pallet with an integer variable. It is important that the variable can only contain the values 0-19.



```
1  ▼ BeforeStart
2    ▼ Create Pallets
3        myFirstPallet |0|
4        mySecondPallet |1|
5  ▼ Robot Program
6    ▼ Action: P_Next
7        Pallet_Next: myFirstPallet |1|
```

P_Next

The position of the selected pallet is increased by 1 or by set value (advanced).

Name myFirstPallet ☐ Use integer variable ---SELECT---

☑ Advanced

Advanced

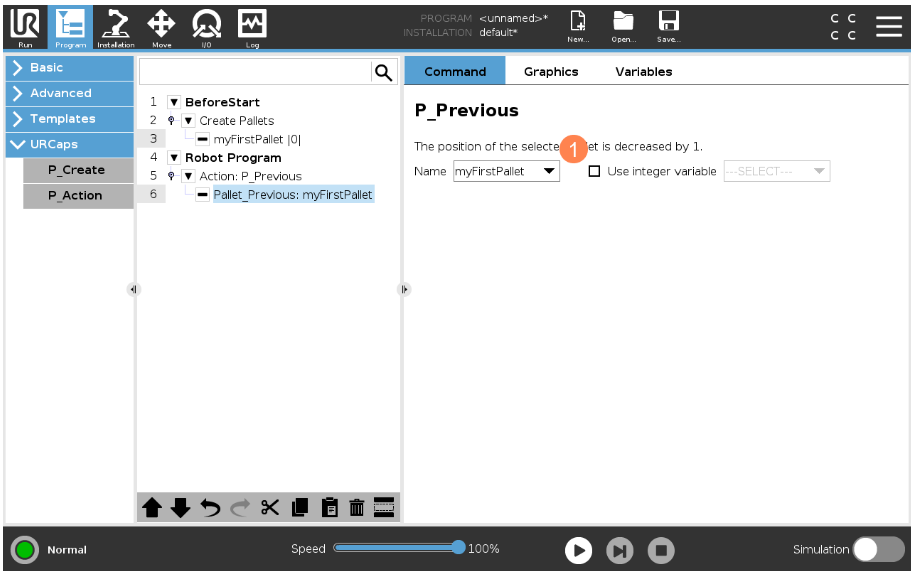
Steps: 1

Figure 31: P_Next

1. Select the pallet either by name or by variable
2. The standard step size is 1 and can be adjusted here

5.5 P_Previous: Decrease pallet counter

P_Previous decreases the pallet counter by one position. Here, too, you can either select the pallet by name or address the pallet with an integer variable. It is important that the variable can only contain the values 0-19.



BeforeStart
Create Pallets
myFirstPallet |0|
Robot Program
Action: P_Previous
Pallet_Previous: myFirstPallet

P_Previous

The position of the selecte et is decreased by 1.

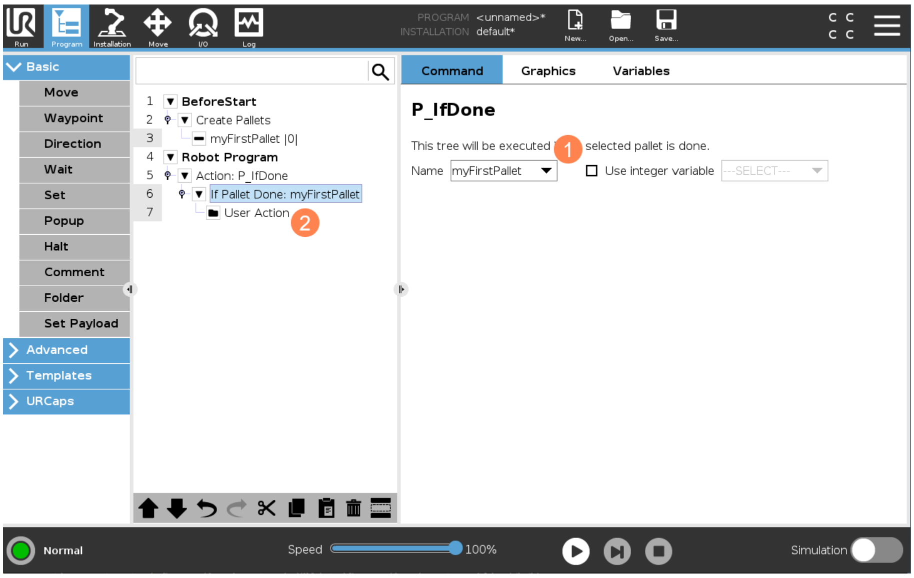
Name myFirstPallet ☐ Use integer variable ---SELECT---

Figure 32: P_Previous

1. Select the pallet either by name or by variable

5.6 P_IfDone: Query whether the pallet has been processed

P_IfDone checks whether the current pallet has been processed. If this is the case, the sub-node is called and the instructions programmed in it are executed. Here, too, you can either select the pallet by name or address the pallet with an integer variable. It is important that the variable can only contain the values 0-19.



1 BeforeStart
2 Create Pallets
3 myFirstPallet |0|
4 Robot Program
5 Action: P_IfDone
6 If Pallet Done: myFirstPallet
7 User Action

P_IfDone

This tree will be executed i selected pallet is done.

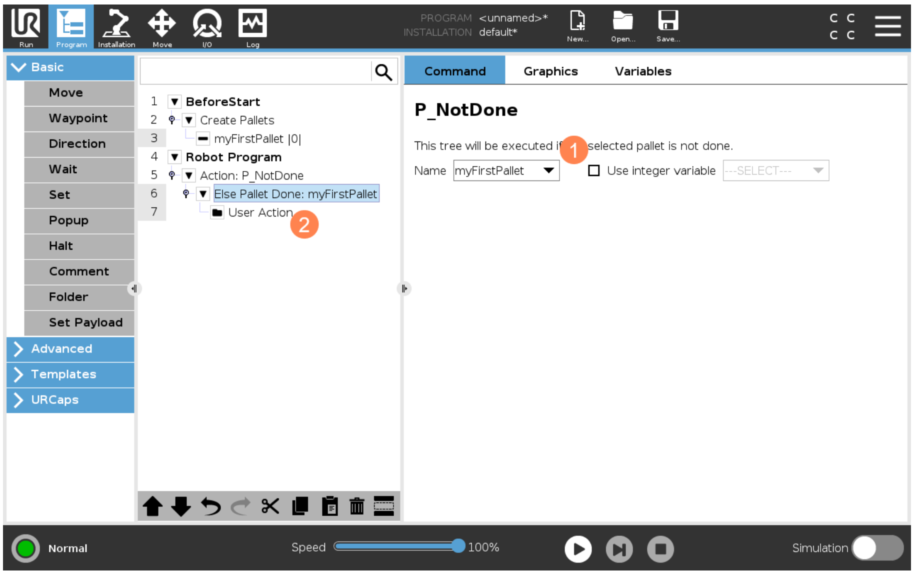
Name myFirstPallet ☐ Use integer variable ---SELECT---

Figure 33: P_IfDone

1. Select the pallet either by name or by variable
2. Insert the desired program code in the child node

5.7 P_NotDone: Query whether the pallet is still being processed

P_NotDone is the counterpart to P_IfDone and checks whether the current pallet has not yet been processed. If this is the case, the child node is called and the instructions programmed in it are executed. Here, too, you can either select the pallet by name or address the pallet with an integer variable. It is important that the variable can only contain the values 0-19.



```
1  ▼ BeforeStart
2    ▼ Create Pallets
3        myFirstPallet |0|
4  ▼ Robot Program
5    ▼ Action: P_NotDone
6      ▼ Else Pallet Done: myFirstPallet
7          User Action
```

P_NotDone

This tree will be executed if the selected pallet is not done.

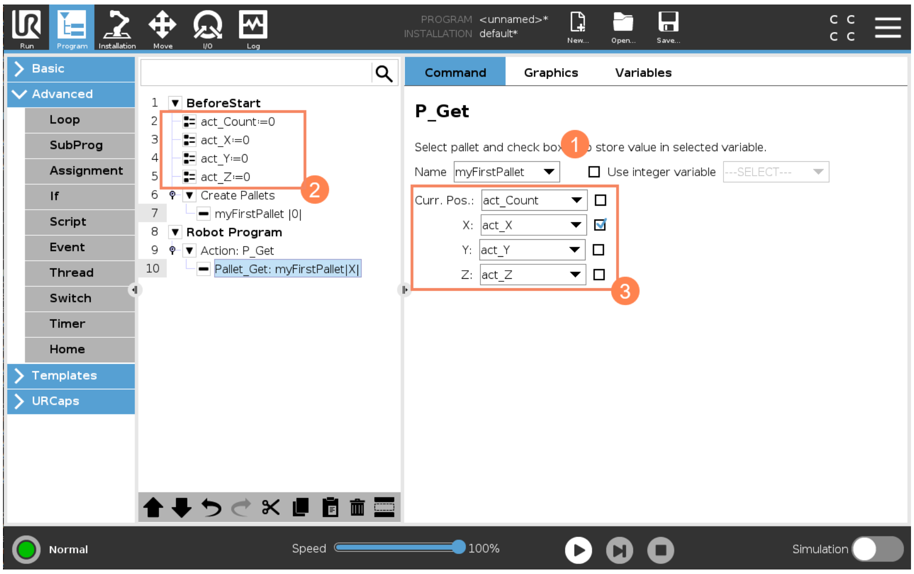
Name: myFirstPallet ▼ ☐ Use integer variable ---SELECT---

Figure 34: P_NotDone

1. Select the pallet either by name or by variable
2. Insert the desired program code in the child node

5.8 P_Get: Read out current pallet position

P_Get can output the current total counter or the current X, Y or Z position. Here, too, you can either select the pallet by name or address the pallet with an integer variable. It is important that the variable can only contain the values 0-19.



BeforeStart
act_Count:=0
act_X:=0
act_Y:=0
act_Z:=0
Create Pallets
myFirstPallet |0|
Robot Program
Action: P_Get
Pallet_Get: myFirstPallet|X|

P_Get

Select pallet and check box o store value in selected variable.

Name myFirstPallet ▼ □ Use integer variable ---SELECT---

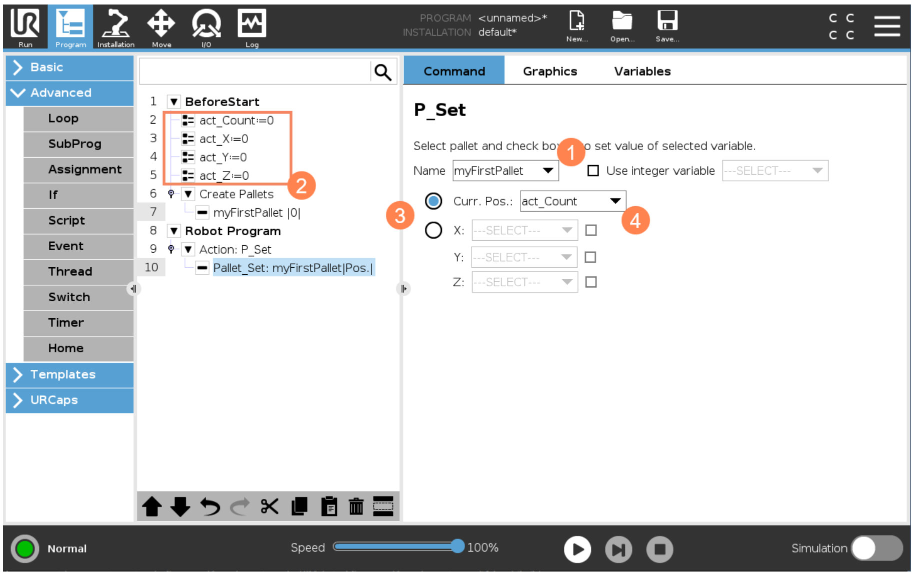
Curr. Pos.: act_Count □
X: act_X ☑
Y: act_Y □
Z: act_Z □

Figure 35: P_Get

1. Select the pallet either by name or by variable
2. Create a local or global integer variable
3. In the drop-down field you can select an integer variable to be written with the current pallet value. The action is only carried out in the automatic sequence if the checkbox is ticked

5.9 P_Set: Write pallet position

P_Set can reset either the total counter or the X, Y or Z position of a pallet. Here, too, you can either select the pallet by name or address the pallet with an integer variable. It is important that the variable can only contain the values 0-19.



PROGRAM <unnamed>*
INSTALLATION default*

```
▼ BeforeStart
    act_Count:=0
    act_X:=0
    act_Y:=0
    act_Z:=0
  ▼ Create Pallets
      myFirstPallet |0|
▼ Robot Program
  ▼ Action: P_Set
      Pallet_Set: myFirstPallet|Pos.|
```

P_Set

Select pallet and check box to set value of selected variable.

Name: myFirstPallet ☐ Use integer variable ---SELECT---

● Curr. Pos.: act_Count

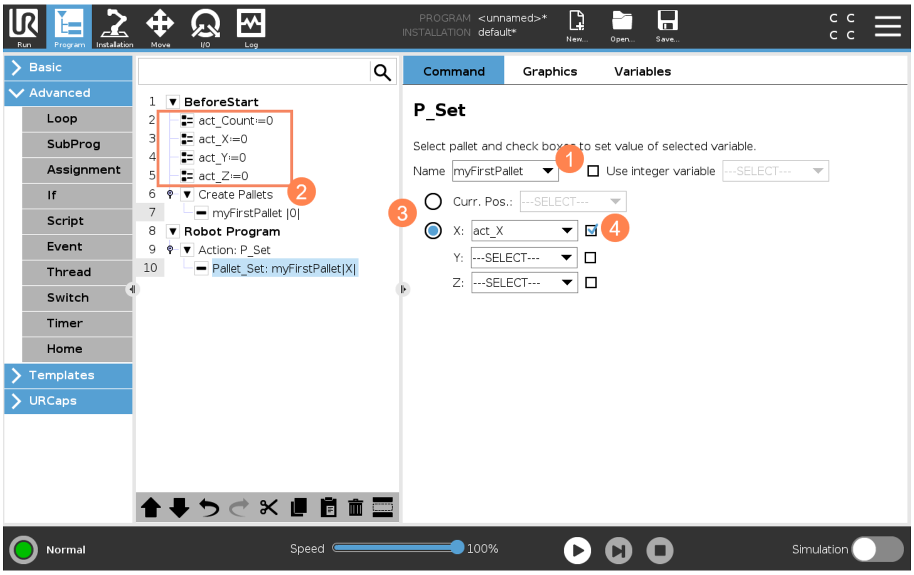
○ X: ---SELECT--- ☐

Y: ---SELECT--- ☐

Z: ---SELECT--- ☐

Figure 36: P_Set total counter

1. Select the pallet either by name or by variable
2. Create a local or global integer variable
3. Choose between Curr. Pos. (Total counter) or XYZ
4. You can select an integer variable in the drop-down field. The value of this variable is now set as the current pallet position. The variable must not be negative or greater than the maximum number of workpieces. If, however, a value that is too small or too large is entered, the pallet position is set to 0.



```
BeforeStart
  act_Count:=0
  act_X:=0
  act_Y:=0
  act_Z:=0
  Create Pallets
    myFirstPallet |0|
Robot Program
  Action: P_Set
    Pallet_Set: myFirstPallet|X|
```

P_Set

Select pallet and check box to set value of selected variable.

Name: myFirstPallet □ Use integer variable ---SELECT---

○ Curr. Pos.: ---SELECT---

● X: act_X ☑

Y: ---SELECT--- □

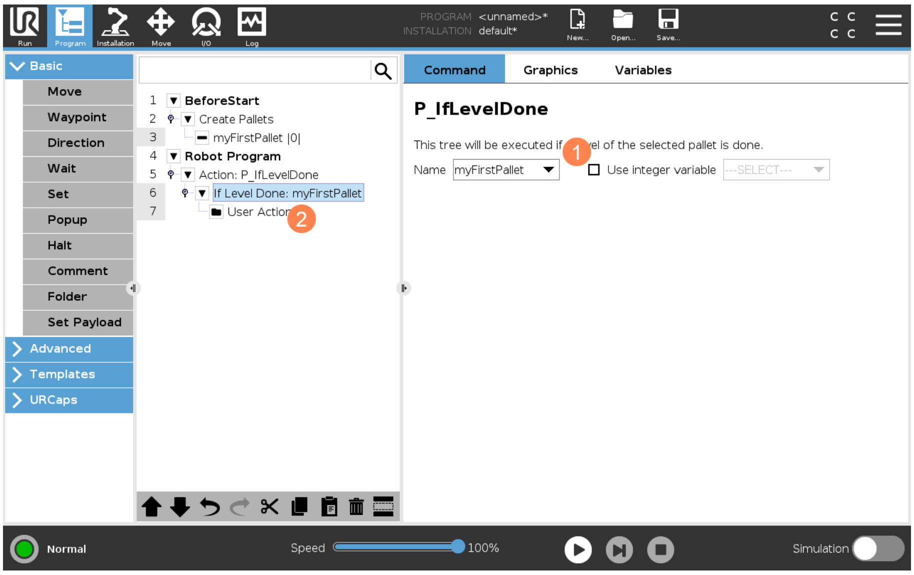
Z: ---SELECT--- □

Figure 37: P_Set XYZ

1. Select the pallet either by name or by variable
2. Create a local or global integer variable
3. Choose between Curr. Pos. (Total counter) or XYZ
4. In the dropdown field you can select an integer variable and tick the checkbox. The value of this variable is now set as the current X, Y or Z position. The variable must not be negative or greater than the maximum number of workpieces in this direction. If, however, a value that is too small or too large is entered, the position is not changed and the old value is retained

5.10 P_IfLevelDone: Query whether the current level has been processed

P_IfLevelDone checks whether the current level of the pallet has been processed. If this is the case, the child node is called and the instructions programmed in it are executed. Here, too, you can either select the pallet by name or address the pallet with an integer variable. It is important that the variable can only contain the values 0-19.



```
BeforeStart
  Create Pallets
    myFirstPallet |0|
Robot Program
  Action: P_IfLevelDone
    If Level Done: myFirstPallet
      User Action
```

P_IfLevelDone

This tree will be executed if level of the selected pallet is done.

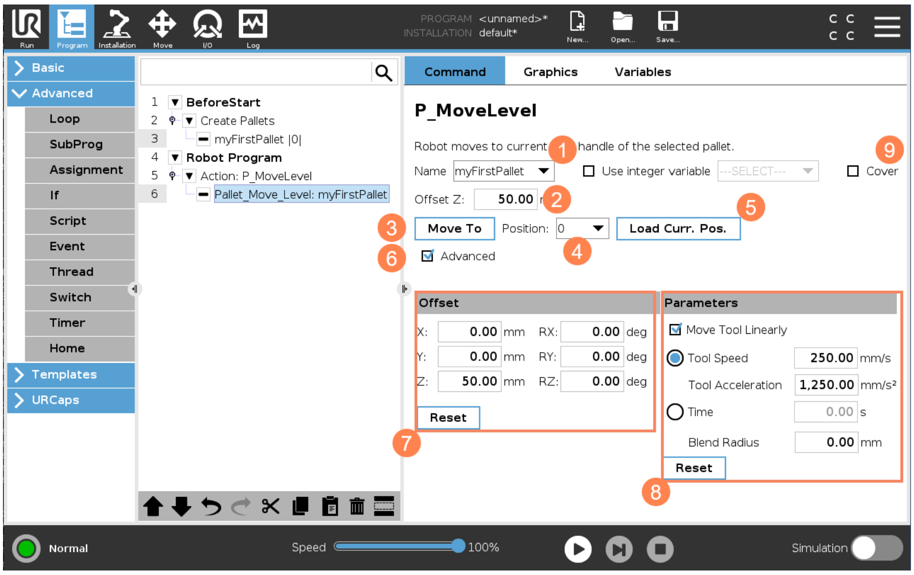
Name myFirstPallet ☐ Use integer variable ---SELECT---

Figure 38: P_IfLevelDone

1. Select the pallet either by name or by variable
2. Insert the desired program code in the child node

5.11 P_MoveLevel: Approach the intermediate layer

P_MoveLevel performs a robot movement. Here, too, you can either select the pallet by name or address the pallet with an integer variable. It is important that the variable can only contain the values 0-19.



```
1  ▼ BeforeStart
2  ▼ Create Pallets
3      myFirstPallet |0|
4  ▼ Robot Program
5  ▼ Action: P_MoveLevel
6      Pallet_Move_Level: myFirstPallet
```

P_MoveLevel

Robot moves to current handle of the selected pallet.

Name: myFirstPallet   ☐ Use integer variable ---SELECT---   ☐ Cover

Offset Z: 50.00

Position: 0

☑ Advanced

Offset

X:	0.00	mm	RX:	0.00	deg
Y:	0.00	mm	RY:	0.00	deg
Z:	50.00	mm	RZ:	0.00	deg

Parameters

☑ Move Tool Linearly

● Tool Speed	250.00	mm/s
Tool Acceleration	1,250.00	mm/s²
○ Time	0.00	s
Blend Radius	0.00	mm

Normal   Speed 100%   Simulation

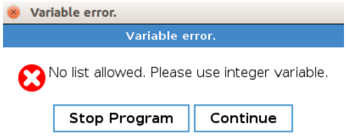
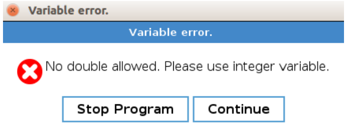
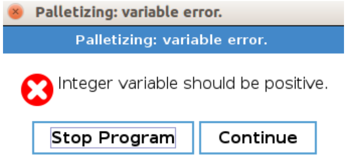
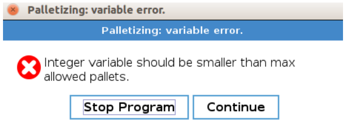
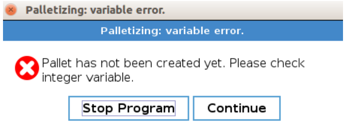
Figure 39: P_MoveLevel

1. Select the pallet either by name or by variable
2. If you enter an offset in the Z direction, the robot moves over the current position
3. Here you can select a position on the pallet for manual testing of the pallet and move to it with Move To. The robot then automatically calculates the current level and approaches it
4. Here you can approach the selected position
5. Here you can read out the current position of the pallet and display it in the text field

Note: Points 3 - 5 are only intended for manual testing of the pallet and have no effect on the subsequent automatic process. Points 3 - 5 can only be carried out if the pallet has been selected by name.

6. The advanced settings can be opened with Advanced
7. The offsets for the current position can be specified under Offset
8. The parameters for the robot movement are specified here
9. If Cover is selected, the robot always moves to the top level, regardless of where the pallet counter is currently. This selection is only required if, for example, the robot only has one Z-plane, but has to put down the pallet and a cover pallet.

6 Troubleshooting

Problem	Possible Cause	Solution
Variable error.  Variable error. Variable error. Stop Program Continue No list allowed. Please use integer variable.	In the program node P_Action, a list was transferred with "use integer variable"	Check the variable and replace it with an integer variable
Variable error.  Variable error. Variable error. Stop Program Continue No double allowed. Please use integer variable.	In the program Node P_Action, a double variable was transferred for "use integer variable".	Check the variable and replace it with an integer variable
Variable error  Palletizing: variable error. Palletizing: variable error. Stop Program Continue Integer variable should be positive.	In the program Node P_Action, an integer variable was transferred with "use integer variable", which is negative.	The valid range of values for the pallet numbers is from 0-19
Variable error  Palletizing: variable error. Palletizing: variable error. Stop Program Continue Integer variable should be smaller than max allowed pallets.	In the program Node P_Action, an integer variable greater than 19 was transferred for "use integer variable".	The valid range of values for the pallet numbers is from 0-19
Variable error  Palletizing: variable error. Palletizing: variable error. Stop Program Continue Pallet has not been created yet. Please check integer variable.	In the program Node P_Action, an integer variable was transferred for "use integer variable" where the pallet has not yet been created.	Adjust the value of the variable. Or create a new pallet under P_Create

7 Directories

7.1 List of figures

8 Notes