Orange Apps

SmartInputBox 1.0

KUKA KRC4

User documentation

As of 25/04/2013

Document Version 1.1

Orange Apps GmbH
Arnikaweg 1
87471 Durach
Germany
www.orangeapps.de

History of document versions

Version	Date	Author	Change Reason / Comment
1.0	06.02.2013	Christian Mayer	First position

Content

1 Introduction

1.1 Target group

This documentation is intended for users with the following skills:

- Knowledge of robot programming
- Knowledge in the robot programming language KRL

1.2 Representation of information

These notes indicate that death or severe personal injury will be safe or very likely to occur if precautions are not taken.

These notes indicate that death or serious bodily injury could occur if precautions are not taken.

These notes indicate that minor personal injury can result if precautions are not taken.

These notes indicate that damage may occur if precautions are not taken.

This manual contains useful tips or special information for the current topic.

1.3 Terminology used

Notion	Description
KRL	KUKA Robot Language
KXR	KUKA XML resource

Table 1-1 terms used

2 Product Description

The software tool SmartInputBox provides an input box for numeric values (INT, REAL) directly the SmartPad via KRL commands. After the operator's entry via on-screen keypad, the value can be used by the robot program. Using various function parameters, the input box meets specific user requirements.

Features

- Call from the KRL program
- Input of integer or real values
- Specifying and verifying a range of values
- Specifying a text for the user
- Specify a window title
- Using translation files for language-dependent display of the window text

3 Installation

The installation is done via the *additional software* option. These can be found in the main menu under *start-up*.

3.1 System requirements for running

Minimum Hardware Requirements

- KUKA System Software 8.2

3.2 Install SmartInputbox or upgrade to new version

Requirement

- User group Expert

For installation on the three systems, real Robot, Office Lite and Office PC follow these steps:

Method

1. Extract the .Zip file
2. Copy the installation folder ***OrangeApps.SmartInputBox*** containing the setup files to a USB stick or directly to a drive on the target system (for example, d: \).
3. If you are already in possession of a valid license file, copy it to the files in the installation folder. The license file is automatically detected and installed during setup. Alternatively, you can manually install the license file after installation.
4. When installing from a USB stick, connect this to the controlling PC or the SmartPad.
5. Choose ***Start-up → Additional software*** from the main menu.
6. Click the button ***New software***.
7. You'll get a list of available software for installation. If there's no entry ***OrangeApps.SmartInputBox*** in the list, click ***Refresh***. If now the entry appears, go to step 10
8. If the entry does not appear, the drive from where to install must be configured first. To do this, choose ***Configuration***. In the new window you now have the option to select the path where to find the folder ***OrangeApps.SmartInputBox.***
9. Select an empty cell in the ***installation paths for options*** and click ***path selection***. The available drives are displayed. Select the drive on which the folder ***OrangeApps.SmartInputBox*** is located and save your selection with ***Save***. The window closes. ***OrangeApps.SmartInputBox*** should now appear as an entry in the list. If this is not the case, press ***Refresh*** and/or repeat steps 7 to 8
10. Highlight the entry ***OrangeApps.SmartInputBox*** and press ***Install***. Confirm the security prompt with ***Yes***.
11. Read the license agreement carefully. Explain your agreement to the license terms by clicking ***I Accept*** and continue the installation by clicking ***Continue***. If you do not agree with the license terms, please cancel the installation by clicking ***Cancel***.
12. The installation will be prepared now. To perform the final installation the control PC has to be restarted. This can immediately be executed by clicking ***Reboot Control PC now*** or later by clicking ***later***.
13. If you select ***later***, the window is closed. In order finalize the installation proceed with step 14. If you select ***Reboot Control PC now***, a restart of the control PC will be performed. Step 15 is then executed.
14. Perform a shutdown of the control PC by clicking ***shutdown*** in the main menu.

15. During reboot of the control PC SmartInputbox will be installed on the computer.
16. Remove the USB stick from the PC.

3.3 Uninstall SmartInputbox

Requirement

- User group Expert

Method

1. Choose ***commissioning→ Additional software*** from the main menu.
2. Highlight the ***OrangeApps.SmartInputBox*** and click ***Uninstall***. Answer the security prompt with ***Yes***. The uninstallation is prepared. After completion of the preparatory work, a message box appears. To perform the final installation the control PC has to be restarted. To perform the final installation the control PC has to be restarted. This can immediately be executed by clicking ***Reboot Control PC now*** or later by clicking ***later.***
3. If you select ***later***, the window is closed. In order finalize the uninstallation proceed with step 4. If you select ***Reboot Control PC now***, a restart of the control PC will be performed. Step 5 is then executed.
4. Perform a shutdown of the control PC by clicking ***shutdown*** in the main menu.
5. During reboot of the control PC SmartInputbox will be uninstalled from the computer.

4 Licensing

SmartInputbox is subject to licensing. Licensing is done by a license file or a USB dongle. Visit our website www.orangeapps.de for more information on licensing.

Reference

- A license for each robot, office computer or Office Lite is required.
- Trial licenses can be obtained once for each evaluation system.
- Trial licenses are free of charge and limited in time.
- Date manipulations of the system are detected, SmartInputbox automatically disables the License

4.1 Generate license number

Trial licenses can be obtained directly at www.orangeapps.de. Runtime licenses are given after receipt of the license fee.

4.1.1 Robot License

To obtain a valid license, you will need the serial number of the robot. These can be found on the rating plate of the robot or in the control software in the Help menu → ***Info*** → ***Robot*** → ***Serial number.***

4.1.2 License for KUKA OfficePC/OfficeLite

After installing and starting the software, a product ID is displayed. These ID you will need to obtain a valid license.

4.2 Installing a License

4.2.1 SmartInputbox is not installed yet

Copy before the installation of ***SmartInputBox*** the license file into the installation folder as below 3.2 described.

4.2.2 SmartInputbox is already installed

Method 1

- Plug in a USB stick containing the license file to a USB port of the controller or SmartPad.
- Alternatively, copy the license file to the d: drive control
- At startup of the software the license will be copied automatically into the license folder and then be enabled. Note: A run-time license in the license folder will not be overwritten by a trial license
- Remove the USB stick

Method 2

- Copy the obtained license in the folder c:\KRC\TP\SmartInputBox\Lic

5 Programming

5.1 Characters and fonts

In the descriptions of KRL instructions and functions following print types are used:

Element	Representation	Example
KRL code	▪ Courier New font, gray ▪ Upper / lower case	`InputInt`
Elements that will be replaced by program-specific content	▪ Courier New font ▪ Italic ▪ Angle brackets	<value>

Table 5-1: Letters and Fonts

5.2 Generate input for integers

Function call in the KRL program

```
InputInt (<Text[]>, <Mod[]>, <Value>, <Min>, <Max>, <Step>)
```

Return Value

INT

Example

```
DECL INT i
i = InputInt ()
```

Optional function parameters

Optionally, you can pass parameters to the function call. These affect the appearance and behavior of the input box.

Parameters	Description	Type	Default value
<Text[ ]>	Description text that appears in the window. If you specify a translation file the specified text can be translated according to the selected language	Char	-
<Mod[ ]>	Text that is displayed in the window title or specify a translation file (*. Kxr)	Char	"SmartInputBox"
<value>	Default value of the return value	INT	0
<Min>	Lower limit of range	INT	-
<Max>	Upper limit of range	INT	-
<Step>	Step size for the UP / DOWN keys	INT	1

Table 5-2: Optional transfer parameter in the function call InputInt

The program pointer of the KRL program remains at the code line of the function call unless the entry box is closed by clicking the Return key.

Not given parameters will be filled with default values (see Table 5-2)

5.2.1 Example of an input box for Integer values without given function parameters

Function call

```
i = InputInt ()
```

shown input box

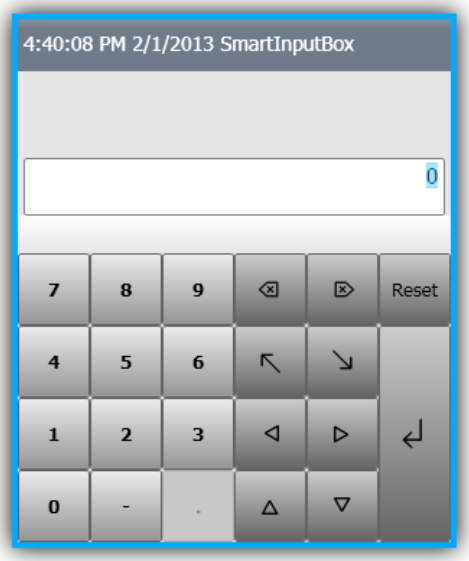


Figure 5-1: Input box without given function parameters

5.2.2 Example of an input box for Integer values with given function parameters

Function call

```
i = InputInt ("Enter an integer value:", "input box INT", 5, -
5,10,1)
```

shown input box

Figure 5-2: InputInt input box with given function parameters

5.3 Generate an input for floating point numbers

Function call in the KRL program

```
Input Real (<Text[]>, <Mod[]>, <Value>, <Min>, <Max>, <Step>)
```

Return Value

REAL

Example

```
DECL REAL r
r = real input ("Enter real value:", "input box REAL", 15.5, -
20,20,5)
```

Optional function parameters

Optionally, you can pass parameters to the function call. These affect the appearance and behavior of the input box.

Parameters	Description	Type	Default value
<Text[ ]>	Description text that appears in the window. If you specify a translation file of the specified text to be translated according to the selected language	Char	-
<Mod[ ]>	Text that is displayed in the window title or specify a translation file (*. Kxr)	Char	"SmartInputBox"
<value>	Default value of the return value	REAL	0.0
<Min>	Lower limit of range	REAL	-
<Max>	Upper limit of range	REAL	-
<Step>	Step size for the UP / DOWN keys	REAL	1.0

Table 5-3: Passing parameters to the function call Input Real

The program pointer of the KRL program remains at the code line of the function call unless the entry box is closed by clicking the Return key.

Not given parameters will be filled with default values (see Table 5-2)

5.3.1 Example of an input box for Real values with given function parameters

Function call

```
i = input Real ("Enter real value:", "real input box", -5.5, -
10,10,1.5)
```

shown input box

Figure 5-3: Real input box input function with the passed parameters

5.4 Close an open window in the input box krl program

By default, the command window is closed by pressing the Return key. However, there is also the option of a function call to close the window (.e.g. using a Submit program).

Function call in the KRL program

```
InputBoxReset ()
```

Return Value

Value of the given parameter <Value>

Example

```
InputBoxReset ()
```

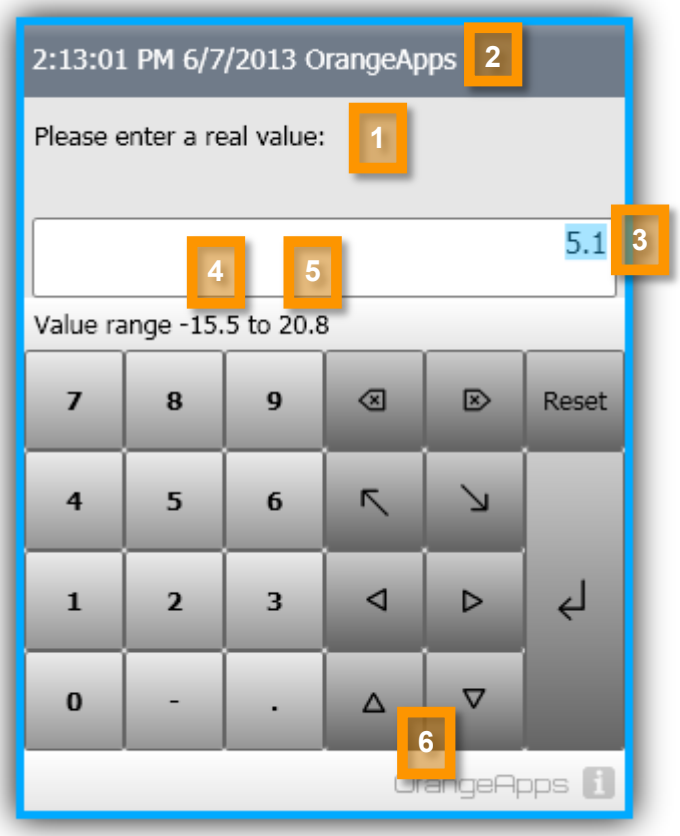
Function parameters

-

The value of the given parameter <Value> will be the return value of the function.

5.5 The input window

5.5.1 Steering the input window by function parameters



”

Figure 5-4: Function keys of the input window

Parameters

Number	Parameters
1	<Text>
2	<mod>
3	<value>
4	<Min>
5	<Max>
6	<Step>

Table 5-4: Function parameters to control the window display

5.5.2 Keys

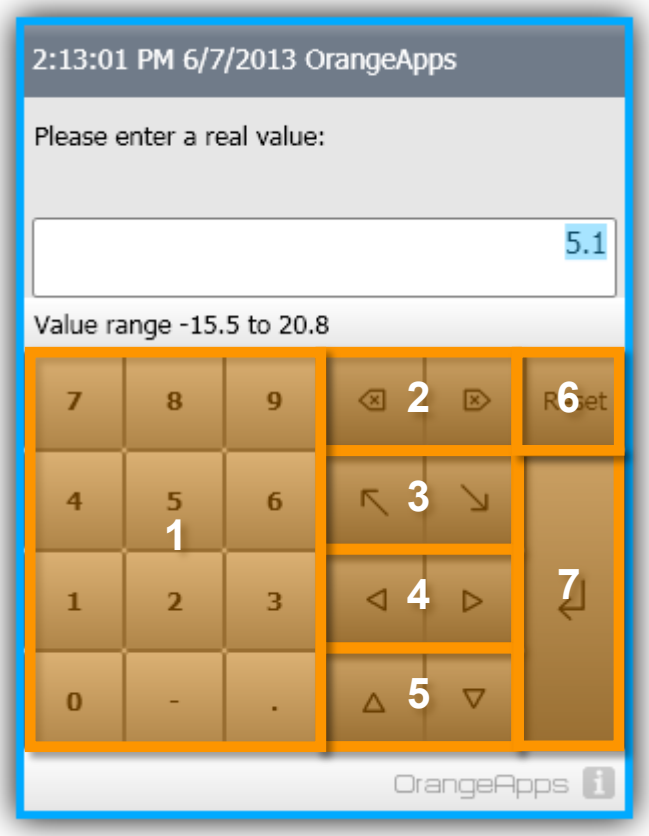


Figure 5-5: Function keys of the input window

Function keys of the input window

Number	Description	Parameters
1	Number field to enter the value	-
2	Delete keys forward and backward	-
3	Move the cursor to the beginning or end of the displayed value	-
4	Move cursor one digit to the left or right	-
5	Increase or decrease the displayed value gradually	<Step>
6	Reset button to reset the value to the default value	-
7	Return key to accept the displayed value	-

Table 5-5: Description of the input window

5.5.3 Check the input value

By the optional parameters <Min> <Max> a range of values can be defined. The entered value may not exceed this range in order to be able to close the box. If the entered value is outside the range the input area is outlined in red. In addition, the return key is switched inactive.

Representation of the input box at a value out of range

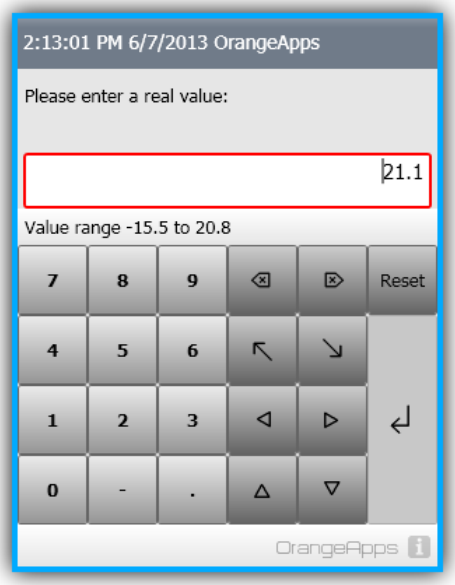


Figure 5-6: Check of the input value

Note

- If none of the parameters <Min> and <Max> specified, no value checking of the input value.
- If you specify only one of the parameters of the other parameters will be set to the default 0.
- The values of the parameters and <Min> <Max> be checked for plausibility. If the value is less than the <Max> <Min> value, an error message (see Chapter 6 Messages).

5.6 Use of translation files to display the description text in the input window

SmartInputBox offers the possibility to display the description text in the input window language dependent. You just need to specify a translation database (kxr-file) in the parameter <*MOD[ ]*>. If in the specified translation database, an entry for the <*Text[ ]*> parameter exists, it is translated according to the selected language.

Reference

- Is there's not entry in the database for the actual language English will be used as the default

5.6.1 Example of using a translation file

Target

The description text <Text> shall be displayed in the languages German, English, Spanish and Swedish.

Method

To edit a kxr-file always use an editor which is able to use the character encoding UTF-8 (eg Notepad + +). Do not use the editors Notepad or WordPad. Due to incorrect character encoding a malfunction of the kxr-file can happen.

- Insert a <*Mod[ ]*>.kxr file in the c:\KRC\DATA directory with the following content. The parameter <*Mod[ ]*> corresponds to the string in the function call parameter <*Mod[ ]*> of the input box.

```
<? Xml version = "1.0" encoding = "utf-8">
<resources xmlns="http://www.kuka.com/schemas/kxr/2009">
  <Module name = "<MOD>">
    <Message key = "<Text>">
      <text xml:lang="de-DEV"> German translation text </ text>
      <text xml:lang="en-DEV"> translation english text </ text>
      <text xml:lang="es-DEV"> spanish translation text </ text>
      <text xml:lang="sv-DEV"> Swedish translation text </ text>
    </ Message>
  </ Module>
</ Resources>
```

- Replace the parameters <*MOD*> in the line <module name> with the file name you selected.
- The <*Text*> parameter in the line <*message key*> corresponds to the parameter in the function call <*Text*> the input box.
- In lines <*text xml:lang=…*> the translation text is specified

Example

Function call

```
i = input Real ("Geschwindigkeit:", "MyTechPack", -5.5, -10,10,1.5)
```

Kxr file

MyTechPack.kxr

Content of MytechPack.kxr file

```
<? Xml version = "1.0" encoding = "utf-8">
<resources xmlns="http://www.kuka.com/schemas/kxr/2009">
  <module name="MyTechPack">
    <message key="Geschwindigkeit">
      Please enter <text xml:lang="de-DEV"> Speed: </ text>
      <text xml:lang="en-DEV"> Please enter velocity: </ text>
      <text xml:lang="es-DEV"> Por favor, Introduzca la velocidad:
</ text>
      <text xml:lang="sv-DEV"> In hastighet: </ text>
    </ Message>
  </ Module>
</ Resources>
```

Display the entry box in german language:

Table 5-6:Displayed input box in German language

Display the entry box in english language:

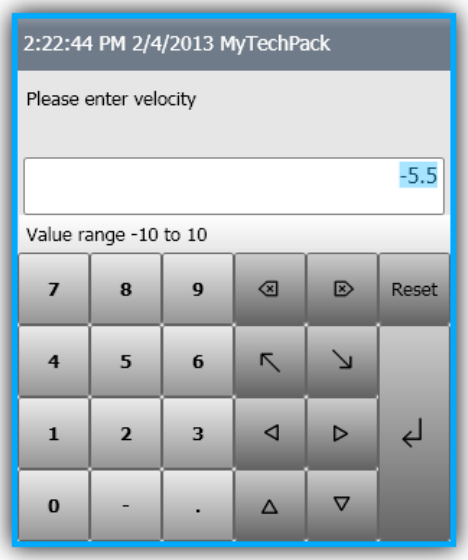


Table 5-7:Displayed input box in English

Display the entry box in Spanish language:

Table 5-8:Displayed input box in Spanish

6 Messages

The following messages can be displayed in the message window

Notification	Description	Error type	Error number
Invalid value	Invalid value assignment within the function call		1
InputBox is not completely installed! Module SmartInputBox is missing.	The krl SmartInputBox module was not found.	Quit	2
MIN value extends MAX value! Adjust parameters to continue the program	When you call the real function input InputInt or a greater value was specified as the parameter for the <Max> <Min> parameters. The program can be continued only if the parameters have been corrected.	Quit	3
No license file available for robot {serial number}	The license file to operate the software in a production environment is missing for this robot serial number	Status	101
License not valid or expired for robot {serial number}	The license to operate the software in a production environment for this robot serial number is expired or invalid	Status	102
Test License: x days left	x (= number) days until the license expires.	Info	103

Table 6-1 Messages

7 Appendix

7.1 List of Figures

7.2 List of Tables