

FLEXGRIP PLUGIN FOR FANUC CRX

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1 Introduction

The FLEXGRIP plugin enables the seamless integration of GRIPKIT EASY gripping modules with FLEXGRIP option into the robot program. It provides an interface that is easy to operate from the robot programming environment and enables flexible gripping with adjustable parameters. This means that complex robot applications can be implemented in no time at all with minimal effort.



This manual describes the functions of the FLEXGRIP plug-in for robots of the CRX series from FANUC. For information on installation, commissioning, and operation of the GRIPKIT EASY gripping module, please refer to its operating instructions. These can be found online at <u>www.weiss-robotics.com/gripkit-easy/</u>.

1.1 Notation and symbols

The following symbols are used in these instructions to provide a better overview:



Functional or safety-relevant information. Failure to observe this may endanger the safety of personnel and the system, damage the appliance, or impair the function of the appliance.



Additional information for a better understanding of the facts described.



Reference to further information.

1.2 Intended use

The FLEXGRIP plug-in is intended for communication between GRIPKIT EASY gripping systems with a FLEXGRIP interface and a robot controller. The requirements of the applicable directives and the installation and operating instructions in this manual must be observed and complied with. Any other or additional use is considered improper use. The manufacturer is not liable for any resulting damage.

1.3 System requirements

This plugin is compatible with GRIPKIT EASY from firmware version 2.0.0. The license option "OPT-GKEASY-MB" must be activated on the gripping systems used. Contact our technical sales department for further information.

One of the following FANUC robot controllers is required for operation:

- R-30iB plus with software version V9.40P/06 (or higher)
- Option for the Tablet Teach Pendant to use the UI functions, if activated

A robot from the CRX series is required.

The following robot options are required to operate the software:

• R632 KAREL



Contact your FANUC dealer to obtain the robot options.

1.4 License terms

The FLEXGRIP plug-in is protected by copyright. The applicable license terms are included with the software package. By installing the plugin, you accept these license terms.

2 Installation

2.1 Installing the FLEXGRIP plugin

The plugin provides its own instruction blocks for use with the Tablet Teach Pendant. These can be inserted into a robot program using drag & drop.

- 1. Download the latest plugin file "flexgrip_plugin_fanuc_<version>.zip" from our website.
- 2. Unpack the previously downloaded ZIP archive with the plug-in into the root directory of a USB stick and insert it into the USB slot of the robot controller (UD1).

To install, first start the robot and switch on the Tablet Teach Pendant. Wait until the Tablet TP app is open and the Teach Pendant has connected to the controller. Then carry out the following steps:





After being prompted to restart the robot controller, switch it off at the main switch and then on again after about ten seconds or use the restart function via the teach pendant (for more information, refer to the instructions for the robot controller). The teach pendant does not need to be restarted. Wait until the teach pendant has reconnected to the robot controller.

2.2 Configuration of the tool I/O interface

The communication interface in the tool flange is used for communication between robots and gripping modules with a FLEXGRIP interface. This is automatically configured as required when the plugin is installed.



Observe the notes on the tool interface in the operating instructions for the robot!



The supply voltage of the tool flange is automatically set to 24 Volts. Make sure that no devices are connected that do not support this voltage!

2.3 Behavior in the event of an error

If an error occurs that is caused by the plug-in or connected gripper modules, the running robot program is stopped by means of an error. This usually results in the robot's current movements being aborted. The same applies if the addressed device is in the "FAULT" state or changes to this state due to a command.



Errors are also saved in the robot's log file and can be called up via the teach pendant, MENU button \rightarrow 4 (ALARM) \rightarrow 4 (Appl Log). Some messages appear in more detail in the USER log Please also observe the notes on TELNET output in section 3.7.1

The most common causes of errors and possible solutions are described in section 0 listed.

3 Using the plugin

3.1 Hardware commissioning

Connect the gripping modules as described in their operating instructions.



Connecting and disconnecting gripping modules from the robot arm is only permitted when the robot controller is switched off!

Please also observe the instructions for activating the termination resistors on the flange board of the gripping module.



The instructions for activating the termination resistors can be found in the operating instructions for the gripping module.

3.2 Functionality

The FLEXGRIP plugin consists of a configuration page and various program instructions with which the robot controller interacts with the connected gripping modules.

The instructions can be inserted into the HMI editor using drag and drop. If the program is created textually, the functions explained in the following sections must be used.

Instructions that return values write them to predefined numeric registers. Their indices can be set either via the configuration page of the plugin or the instructions themselves. The device state of a gripper is automatically updated in the assigned Numeric Register if it can be changed by an instruction.

3.2.1 Help menus

The info icon next to an input field displays a help menu. Parameter-specific information is displayed here.

et c	Return Register				×
e ¢	The return register holds the current finger position in 1/100 mm after the instruction is executed.				
1e					Close
ting	3		Value		
nnei	r Address	0	1		^
ppo					

Gubb	Speed Override				×	
The	With the speed override value, the optimum finger speed can be					
The	adjusted.					
Gene	Values below the minimum speed override will be clamped to the minimum value implicitely.					
Settir	Always consider the workpiece when setting values greater than 100 % to avoid damages to the workpiece!					
Gripp	p					
Positio	n / mm	U	5.00	Close		
Speed	Override / %	0	100	~	^	

3.3 Preparation of the plugin

Open the configuration page by selecting the "Plugins" tab in the menu and tapping on the "GRIPKIT FLEXGRIP" entry.

	100% 🏧 🔁 🔩		LT			100% 🔤 🗾 📢
UTILITIES Hints		FLEXGRIP Configura	tion			
No. 100/43		FLEXGRIP				
Production		Device state regi	ctore			
Teaching		Device state regi	SLEIS			
Setup otected		Select the Numeric every gripper comm	Register and inst	for ea	ich grip	per below. The registers will be used in
Status 🕨		every gripper comm		uouor		
Utility F		Gripper Address		_	Nun	neric Register Number
PLUGI		1	10	~	^	
Install		2	11	~	^	
Plugin List		3	12	~	^	
		4	13	~	^	
		Other settings				
		Setting				Value
		Release acceleratio	on overri	de fact	tor	 Maximum ▼
[TYPE] LICENSE	PATENTS					
▲ Play	▲ Robot Operation	▲ Pla	у			▲ Robot Operation

The FLEXGRIP plugin supports the use of four gripping modules. These must be addressed accordingly before use. The "GRIPKIT-Easy Configurator" configuration program is used for this purpose.



Each gripping module used requires a unique address! Assigning the same address to several connected gripping modules can lead to incorrect behavior!



The GRIPKIT EASY Configurator is available free of charge as a download from our website.

Commands that can influence the gripping state (HOME, GRIP, RELEASE, DISABLE and ENABLE) save the state of the device in a numeric register after the command has been executed. The registers can be set separately for each gripper and are valid for all robot programs.



Further information on the numerical registers can be found in the robot operating instructions.



Further information on the possible gripping states can be found in the operating instructions for the gripping module and in Appendix A.

3.3.1 Release acceleration

The global parameter "Release Acceleration Override Factor" can be used to reduce peak currents when moving the fingers quickly. This occurs in particular when pre-positioning or releasing with several grippers at the same time or over a long distance. Three settings can be specified for the parameter using the selection field:

Value	Description
Minimum	Minimum acceleration
Reduced	Reduced acceleration, around 60 %
Maximum	Maximum acceleration



Only reduce the release acceleration if you experience problems when moving the gripping modules used. Please consult our technical support team!



The release acceleration applies in every RELEASE instruction and also across programs!

3.4 Use of the instructions

3.4.1 Available commands

To create robot programs quickly and easily, the plugin provides various instructions. These can be dragged and dropped into the program via the program editor of the robot controller. They are located in the "Motion" group.

When you select an instruction, the "Details" tab takes you to the detailed view of the instruction, where you can make specific settings depending on the instruction.



3.4.2 Waiting for a change of state

Commands that influence the state of the gripping module can wait for a state change of the controlled gripping module.

These commands provide a corresponding parameter. If you do not want to wait for the gripping module to change state after starting the respective command, the "Wait for state transition (WST)" function must be deactivated using the corresponding dropdown field.



If WST is deactivated, collisions with the gripping module and the environment may occur!



Further information on the device statuses can be found in the operating instructions for the gripping module and in Appendix A.

The WST function can be switched off for some commands. To ensure that the program runs safely, the status change must be detected manually. A corresponding instruction is provided for this (see section 0).

3.5 Command set

The available commands for controlling the gripping modules are explained in more detail in the following sections.

3.5.1 Reading out the device status

The "FLEXGRIP State" instruction can be used to read the device state of a connected gripper at a specific point in the robot program. This queries the state of the selected gripper and saves it in the numeric register, which was set via the plugin configuration page.



Further information on the device statuses can be found in the operating instructions for the gripping module and in Appendix A.



Usage in the text editor

CALL IPL_WR_FLEXGRIP_STATE(<Address>,<Register Index>)

Parameters	Description	Value range
Address	Gripper address	14
Register Index	Index of the numeric register for saving the read status	See robot operating manual

3.5.2 Referencing

GRIPKIT gripping modules require a one-off referencing process, which is started with the "FLEXGRIP Home" instruction, before movement commands are executed.



A GRIPKIT gripping module cannot execute any movement commands without having carried out referencing first!

Depending on the gripper finger, it may be necessary to set the homing direction. This can be set in the "Homing Direction" selection field.



Incorrectly selected homing direction can cause the gripping module to behave incorrectly!



Usage in the text editor

CALL IPL_WR_FLEXGRIP_HOME (<Address>, <Direction>, <WST>)

Parameters	Description	Value range
Address	Gripper address	14

	Lipping direction	0: Referencing
Direction		inwards
Direction		1: Referencing
		outwards
\A/CT	Activating the WST function to wait for a state change	0: WST deactivated
VVSI		1: WST activated



Caution: Parts may be lost if used in the wrong position in the robot program!

3.5.3 Enable gripper

The "FLEXGRIP Enable" instruction is used to activate gripping modules. When activated, the position control is activated and the current finger position is held.



Usage in the text editor

CALL IPL_WR_FLEXGRIP_ENABLE (<Address>, <WST>)

Parameters	Description	Value range
Address	Gripper address	14
WST	Activating the WST function to wait for a state change	0: WST deactivated 1: WST activated

3.5.4 Disable gripper

The "FLEXGRIP Disable" instruction is used to deactivate gripping modules. When deactivated, the drive and position control are deactivated. The fingers can be moved by hand.



Usage in the text editor



Parameters	Description	Value range
Address	Gripper address	14
WST	Activating the WST function to wait for a state change	0: WST deactivated 1: WST activated



Caution: Parts may be lost if used in the wrong position in the robot program!

3.5.5 Grip

On the details page of the "FLEXGRIP Grip" instruction, you can set the gripper parameters with which the selected gripper should grip a workpiece.

In addition to the gripper address, the following parameters can be set:

Parameters	Description
Desition (man	Target position of the finger movement from which the gripped part
Position / mm	detection reports INO PART
Speed override / %	Speed factor with which the fingers move when gripping
Speed Overnue / 70	Input in percent
Gripping Force / N	Gripping force with which a workpiece is to be held
Oripping force / N	Input in Newton



Further information on the movement parameters can be found in the operating instructions for the gripping module.



When selecting the gripping parameters, ensure that they are suitable for the workpiece! Damage to the workpiece due to incorrect parameterization or loss of parts possible!



Usage in the text editor

Parameters	Description	Value range
Address	Gripper address	14
Position	Target position in 1/100 mm	-3.000 3.000
Speed	Speed factor in %	0 100
Force	Gripping force in 1/10 N	0 2.000
WST	Activating the WST function to wait for a state change	0: WST deactivated 1: WST activated

Example:

A gripper with 80 Newton is to be gripped with gripper 1. If the fingers are blocked in the direction of movement before 20.5 mm, the system should switch to the "HOLDING" state. The movement should be carried out at reduced speed (factor 50 %). Afterwards, the program should wait for a state transition.

Position 20.5 mm	→ Value 20.5 · 100 = 2,050
Speed factor 50 %	\rightarrow Value 50
Gripping force 80 N	→ Value 80 · 10 = 800
Wait for state transition	\rightarrow Value 1

CALL IPL WR FLEXGRIP GRIP(1,2050,50,800,1)

3.5.5.1 Evaluation of the gripping state

After gripping a component, the gripping state register can be used to recognize whether a component has been gripped or not. The illustrated program excerpt shows an example.

Here, gripper 1 is used for gripping. Its gripping state is saved in numeric register 10. If the value of register 5 (corresponds to the "HOLDING" state), the following program path is executed.

	100% 🏧 🚬 💽
	▼
FLEXGRIP_DEMO	
• 15 • • • • • • • • • • • • • • • • • •	20 • • • •
ng	Details
If	
Conditions:	
● R ▼ [10 ∨ ^]	
= V constant V 5	
0	
▲ Play	▲ Robot Operation

There is no specific program for this function. Use simple register comparisons like this one:

```
IF (R[10]=5) THEN
ELSE
ENDIF
```

3.5.5.2 Evaluation of the finger position

The "FLEXGRIP Position" instruction can be used to read out the position of the finger jaws, for example to check the size of the gripped component. This writes the current position of the finger jaws in 1/100 mm to a numeric register.



When selecting the register, make sure that it is only used for evaluating the gripping width of the gripping module!

≡ ^{FLEXGRIP_DEMO™}		1009	% Î		
FLEXGRIP_DEMO				≜ Ľ	
• 15 • • • • • • • • • • • • • • • • • •	= 20) •	•	•	
				₿	4
Programming		De	etails		
FLEXGRIP - POSITION		W) we	ISS ROE	BOTICS
Get current finger position of gripper 1					
The position value is stored in the numeric re	egister	R[50].			
General settings					
Setting		Value			
Gripper Address	0	1	\sim	^	
Return register number	0	50	~	^	
▲ Play	▲ F	lobot Ope	ration		i

CALL IPL_WR_FLEXGRIP_POSITION(<Address>,<Register Index>)

Parameters	Description	Value range
Address	Gripper address	14
Register Index	Index of the numeric register for saving the read position	See robot operating manual

In the section of the previous robot program shown below, the command is used to read out the grip width via "FLEXGRIP Position". The value is saved in the numeric register with index 5.

The value of the register is checked in the following IF branch. If the grip width is greater than 10 mm and less than 11 mm (i.e. the register value is greater than 1,000 or less than 1,100), the "Part OK" program path is executed. Otherwise, the "Part not OK" program path is executed.

FLEXGRIP_DEMO	100% 🐖 🚬 📢
FLEXGRIP_DEMO	
• 15 • • • • • • • • • • • • • • • • • •	• 20 • • • • • • • • • • • • • • • • • •
Programming	Details
If	
Conditions:	
○ constant ▼ 1 ~	
> 🔻 constant 🔻 1	~ ^
R[50] > 1000 AND R[50] < 1	500
▲ Play	▲ Robot Operation

There is no specific program for this function. Use simple register comparisons like the one below:

3.5.5.3 Grip with multiple grippers

If gripping is to be performed synchronously with several grippers, WST must be deactivated for all but the last GRIP command called.

The WST instruction can then be used to wait separately for the other gripper modules to change state.

≔ ^{SYNC_GRIP}	100% 🏧		1	100% 🏧 🛌 [
		•		
SYNC_GRIP		SYNC_GRIP		
	5 ispers 1 and 2 HOLDING		Grippers 1 and 2 HOLDING	
rogramming	Details	Programmi	ng	Details
FLEXGRIP - GRIP		CS FLEXGRIP - GRIP	Ť	
Grip with 1 and the selected parame Position: 5 mm Speed Override: 100 % Gripping force: 80 N Attention: The program does not	iters wait for a device state transition!	Grip with 2 and the sele Position: 5 mm Speed Override: 100 % Gripping force: 80 N The program waits unti The new device state is	ected parameters 6 il the device state changes or a tin s stored in the numeric register R	neout occurs. [11].
General settings	Value	General settings		
Gripper Address	i 1 ~ ^	Setting	Value	
Position / mm	i 5.00 ~ ^	Gripper Address	U	2 ~ ^
Speed Override / %	i 100 ~ ^	Position / mm	0	5.00 ~ ^
▲ Play	▲ Robot Operation	Speed Override / %	Robot	Operation

Once the GRIP commands have been executed and the status has changed, the corresponding status registers of the grippers can be used to check whether they are in the HOLDING state (refer to section 3.5.5.1).

≡ ^{SYNC_GRIP}	100% 🐖 🚬 尾		SYNC_GRIP ⊠	100%		R
		~				
SYNC_GRIP		SYNC	_GRIP			
				5		
Programming	Details		Programming	Det	ails	
FLEXGRIP - WST		If				
		Cond	itions:			
Wait for state transition of gripper 1		0	constant 🔻 1			
The state value after a transition occurred is stored in R[10].	the numeric register		> 🔻 constant 🔻	1 ~ ^		
If a timeout occurs, the program halts immediately.			R[10] = 5 AND R[11] = 5	5		
General settings						
Setting Va	alue					
Gripper Address ()	1 🗸 ^					
Device state register number	10					
		J				
▲ Play ▲ Rot	oot Operation		▲ Play	▲ Robot Opera	ation	

3.5.6 Releasing and pre-positioning

With the "FLEXGRIP Release" instruction, the selected gripper module can be pre-positioned if no workpiece has been gripped, in order to grip a workpiece in the next step. This is particularly helpful for optimizing cycle times when the WST function is deactivated.

A gripped workpiece can be released at the deposit position with the same instruction.

In addition to the gripper address, the following parameters can be set:

Parameters	Description
Position / mm	Target position of the finger movement Input in millimeters
Speed override / %	Speed factor with which the fingers move when gripping Input in percent



Further information on the movement parameters can be found in the operating instructions for the gripping module.



Caution: Parts may be lost if used in the wrong position in the robot program!



Usage in the text editor

CALL IPL_WR_FLEXGRIP_RELEASE (<Address>, <Position>, <Speed>, <WST>)

Parameters	Description	Value range
Address	Gripper address	14
Position	Target position in 1/100 mm	-3.000 3.000
Speed	Speed factor in %	0 100
WST	Activating the WST function to wait for a state change	0: WST deactivated 1: WST activated

Example 1 (pre-positioning):

During the movement to the pick-up position, gripper 1 should be pre-positioned to 10 mm. The robot program should not be blocked (WST deactivated). It should be pre-positioned at full speed (100%).

Position 10.0 mm	→ Value 10 · 100 = 1,000
Speed factor 100 %	\rightarrow Value 100

CALL IPL_WR_FLEXGRIP_RELEASE(1,1000,100,0)

Example 2 (releasing and pre-positioning):

The workpiece gripped with gripper 1 should first be released at a reduced speed (30 %) to 5 mm and the gripper should then be opened to 30 mm at full speed (100 %) while the robot is moving (WST deactivated).

Release position 5 mm	→ Value 5 \cdot 100 = 500
Speed factor 30 %	\rightarrow Value 30
WST activated	\rightarrow Value 1

CALL IPL_WR_FLEXGRIP_RELEASE(1,500,30,1)

Pre-positioning 30 mm	\rightarrow Value 30 \cdot 100 = 3,000
Speed factor 100 %	\rightarrow Value 100
WST deactivated	\rightarrow Value 0

CALL IPL_WR_FLEXGRIP_RELEASE(1,3000,100,0)

3.5.7 Wait for state transition (WST)

The "FLEXGRIP WST" instruction is used if the previously executed command should not wait directly for a change of state.

Applications for this include synchronous gripping with several grippers (see section 3.5.5.3) or prepositioning during a robot movement (refer to section 0).



If WST is executed before a command with an expected state change has been executed, an error message appears. This must be avoided at all costs!



Generally, you should always wait directly for a state change if skipping is not absolutely necessary!



Usage in the text editor

CALL IPL_WR_FLEXGRIP_WST(<Address>)

Parameters	Description	Value range
Address	Gripper address	14

Example:

Refer to section 3.5.5.3

3.6 KAREL Plug-in

When the CRX plug-in is installed, a KAREL program is also installed, which can be used to control FLEXGRIP-capable gripping modules in addition to the graphical instructions.

The argument wizard can be configured for easy use in the program editor of the teach pendant.

- 1) Load the file "ARGDISPEG91.DT" from the zip archive (refer to section 2.1) onto the USB stick and insert it into the USB slot of the robot controller.
- 2) In the file explorer, navigate to the "UD1" directory and select the file. Then click on "LOAD" and confirm with "YES"

≣		AULT		100% 🛄 🛌		≣	•	DEFAUL	Τ Π		10	0%	<u>,</u>
FILE						FILE							
UD1: 1 2 2 3 3 4 4 5 6 6 7 7 8 9 9 101 122 123 144 155 166 177 8 9 9 101 122 123 144 155 166 122 123 124 125 126 127 127 127 127 127 127 127 127	* * * * * * * * * * * * * * * * * * * *	E91 RIP_1.1.* (all KL (all) CF (all) ITX (all) DC (all) PC (all) WN (all) SV (all) SV (all) SV (all) DO (I/O) DF (all) ML (all) DG (all) ML (all) DG (all) MM (all) DG (all) MM (all) DFG (all) MM (all) DFG (all) MM (all) DFG (all) MM (all) DFG (all) MM (all) DISPEG91	1/34 pr 2832 1.4364599 f: Market Listings) KAREL listings) KAREL data files) KAREL data files) KAREL codel TP programs) wariable files) config data) part model files) list-map images) libt-map images) libt-map images) libt-map images) libt-map images) libt files) libt files) lot	ARGDISPEG91 WR_FLEXGRIP_1.:	1.	UD1: 2 3 4 5 6 7 7 8 9 10 11 11 12 13 13 14 15 16 17 18 19 20 21 22 23 23 24 25 26 26 27 28 29 30 31 22 25 26 26 27 28 29 20 31 22 20 20 20 20 20 20 20 20 20 20 20 20	<pre>* ** ARGI WR_ * * * * * * * * * * * * * * * * * * *</pre>	A CFF CFF CFF CFF CFF CFF CFF CFF	1.1.0 (all files (all KAREI (all comma (all text (all KAREI (all KAREI (all KAREI (all systef (all systef (all systef (all systef (all pict (all pict (all pict) (all Maria (all Bict) (all Maria (all Maria (all Bict) (all Maria (all Maria) (all	1, PT IFL 43: 2 Source) sind files) 4 Listing: 4 data file 4 by p-codel 5 cograms) 5 cograms) 10 files) 10 files 10 files) 11 files; 11 file	/34 2392 AR 64599 WR) s) les) les) es) ings) es) es)	DISPEC91 FLEXGRIP_	1.1.
	:		YE					[TYPE]	[DIR]	LOAD	[BACKUP]	[υτις]	>
	•	Play	▲ Ro	bot				▲ Play			▲ Robot C	Dperation	

You can now use the "FLEXGRIP" program with argument wizard support in the program editor. The "CALL PROGRAM" function is used for this.

Insert a "CALL program" statement. Select "COLLECT" from the bottom menu.



Select "KAREL Progs" and search for "FLEXGRIP". Select the FLEXGRIP entry.



The "FLEXGRIP" program has a number of additional function arguments depending on the command selected. The command can be set via the first argument using a selection list:

Command selection

Command "STATE"





Command "GRIP"



3.7 Troubleshooting

The FLEXGRIP plug-in issues error messages during operation. Important messages and solutions are explained below.



Gripper modules cannot be controlled from RoboGuide with the plugin!



The prefix "FLEXGRIP" is used for the error output.

3.7.1 TELNET edition

To analyze errors during operation, you can activate the TELNET output. Navigate to the corresponding setup menu via SETUP - Host Comm - 2 TELNET. Click in the "Password" field in the "CONS" line and enter a password (e.g. 1111).



Note for RoboGuide: The password must be entered using the keypad of the emulated old teach pendant. Use the numeric keypad and the "ENTER" keys to enter and confirm the password.

≣⊅	DEFAULT			10	0%	<u>,</u>
SETUP TEL	NET					
Usernam TP KCL CONS	ne Access OUTPUI INPUT INPUT	9 Passwoj 9 1111 1111 1111	rd Time	r 0 0 0	3/	'3
	[TYPE]	NONE	OUTPUT	INPUT	? HELP	
	▲ Play			A Robot O	peration	

Now you can connect to the robot controller via TELNET using a terminal program (e.g. PuTTY). This also works with RoboGuide.

3.7.2 Error messages

3.7.2.1 Message "Invalid gripper address: <address>"

Possible cause	Remedy
The gripper address used in the	 Check the program sequence
command is invalid	• The gripper address must be in the range [1 4].

3.7.2.2 Message "Command <command name> failed: <status code>"

This error message also appears on the display of the teach pendant:

≣	DEFAU		
	APSH-100	FLEXGRIP: Cmd WST failed: E_TIMEOUT (5)\n	RESET

Possible cause	Remedy
The executed command has failed	 Check the program sequence Check the displayed status code Check the system log on the gripping module with the "GRIPKIT EASY Configurator" software

Errors due to timeout (E_TIMEOUT, status code 5) usually occur if the gripper has not changed to one of the target states permitted for the command after a command.



The status diagram with permissible status transitions can be found in the operating instructions for the gripping module.

3.7.2.3 Message "Gripper <address> in FAULT state after command <command name>"

Possible cause	Remedy
The executed command has set the gripping module to the error state	 Check the program sequence Ensure that the gripper fingers do not collide with the environment Check the system log on the gripping module with the "GRIPKIT EASY Configurator" software

3.7.2.4 Message "WST not allowed. Perform command first with gripper <address>"

Possible cause	Remedy
The WST command was executed for a gripping module that has not yet received a command that leads to a state change	 Check the sequence of your robot program Make sure that a command with a change of state is executed before calling WST

3.7.2.5 Message "(FLEXGRIP, 211) Uninitialized data is used"

Possible cause	Remedy
The WST command was executed for a gripping module that has not yet received a command that leads to a state change	 Check the sequence of your robot program Make sure that a command with a change of state is executed before calling WST

3.7.2.6 Message "Failed to set R[<Index>]. Status: <StatusCode>"

Possible cause	Remedy
Internal error on the part of the	 Restarting the robot controller
robot controller	 If the error persists, contact your FANUC support

3.7.2.7 Message "Stack overflow"

Possible cause	Remedy
The size of the stack in the current program is insufficiently large	 Increase stack size via the program settings

Appendix A Device status

Device status	Code	Description
NOT CONNECTED	0	Gripper module not connected
NOT INITIALIZED	1	Gripper module not initialized
DISABLED	2	Ready for operation, drive inactive
RELEASED	3	Workpiece released
NO PART	4	No workpiece found
HOLDING	5	Workpiece is held
OPERATING	6	Ready for operation, drive active
FAULT	7	Error state

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