



GRILINK PLUGIN FOR TM ROBOT

Version 2.0.0



Content

1	Introduction	2
1.1	Notation and symbols.....	2
1.2	Intended use	2
1.3	System requirements.....	2
1.4	License terms	3
2	Installation	4
2.1	Preparing the Flash drive	4
2.2	Software installation.....	4
2.3	Network configuration.....	4
3	Plugin Components.....	6
3.1	Query device status - DEVSTATE.....	7
3.2	Deactivate device - DISABLE	8
3.3	Reference gripping module - HOME	9
3.4	Gripping workpiece - GRIP	10
3.5	Release workpiece - RELEASE	11
3.6	Query of position and sensor values - VALUE.....	12
3.7	Control gripping force holding - HOLD.....	13
3.8	Control of the LED display - LED.....	14
Anhang A	Device status.....	15

1 Introduction

With the GRIPLINK technology, servo-electric and smart pneumatic gripping modules from WEISS ROBOTICS can be connected to robot systems from leading manufacturers via a network connection. The GRIPLINK plugin for TM ROBOT is the control side link and allows the easy integration of the GRIPLINK technology from WEISS ROBOTICS into robot systems of the manufacturer TM ROBOT.



This manual describes the function of the GRIPLINK plug-in for TM Robot. For information on mounting, commissioning and operation of the GRIPLINK controller, refer to the operating instructions of the respective module. These can be found online at www.griplink.de/manuals

1.1 Notation and symbols

For a better overview, the following symbols are used in these instructions:



Function or safety-relevant note. Non-observance may endanger the safety of personnel and plant, damage the device or impair the function of the device.



Additional information for a better understanding of the described facts.



Reference to further information.

1.2 Intended use

The GRIPLINK plug-in is intended for communication between the GRIPLINK controller from WEISS ROBOTICS and a robot controller. The requirements of the applicable directives and the installation and operating instructions in these instructions must be observed and complied with. Any other use or use beyond the scope of this manual is considered improper use. The manufacturer is not liable for any damage resulting from this.

1.3 System requirements

The following TM ROBOT products are required for operation:

- TM ROBOT with TM Flow version 1.80.5300 or higher



Contact TM ROBOT or your TM ROBOT partner to purchase these products.



The IP address of the GRIPLINK controller must be in the same subnet as that of the robot controller. The GRIPLINK controller manual describes the exact procedure for changing the IP address.

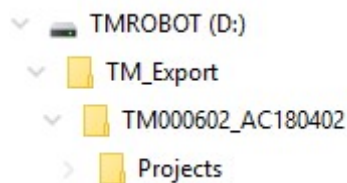
1.4 License terms

The GRIPLINK plugin is protected by copyright. The respective valid license terms are included in the software package. With the installation you accept these license terms.

2 Installation

2.1 Preparing the Flash drive

Since the directory structure of the USB Flash drive depends on the individual serial number of the robot, it makes sense to first export an existing project from the robot to the Flash drive. The required directory structure is created automatically. For more information on exporting projects, please refer to the documentation for the robot system. The Flash drive should now have the following directory hierarchy:



The name of the middle directory depends on the serial number of the robot. Create a new directory with the name "ComponentObject" and copy the GRIPLINK components from the ZIP archive of the GRIPLINK plug-in into this directory. Now remove the Flash drive and insert it into a free USB port on the robot system.



Make sure that you are using the latest version of the GRIPLINK plugin. The current version can be downloaded from www.griplink.de/plugins.

2.2 Software installation

To operate the GRIPLINK-ET4, the GRIPLINK plugin provided by Weiss Robotics is required on the robot controller. To install the plugin, perform the following steps:

1. Insert the Flash drive into the robot controller and import the plugin components into TM Flow via ≡ -> "System" -> "Import/Export" -> "Import" -> "Component" -> Select all components -> "Import" below left.
2. After importing, the components must be activated by selecting ≡ -> "Parameters" -> "Component" -> All components -> "Save".
3. The components for using the GRIPLINK-ET4 in your project are now available.



For more information about the installation of components please refer to the TM Flow software installation manual.

2.3 Network configuration

The connection between the GRIPLINK controller and the robot controller is established via a TCP/IP network connection. For this purpose, an IP address must be assigned to the robot controller in the

system settings. Please note that the IP address of the robot controller must be in the same subnet as the IP address of the GRIPLINK Controller.

The IP address of the GRIPLINK Controller is set to 192.168.1.40 by default and can be adjusted at any time via its web interface. To do this, connect the GRIPLINK Controller to a PC or laptop and open the web interface in the browser of your choice by entering the address <http://192.168.1.40>. You can access the IP settings via the "Config" button.

The command interface of the GRIPLINK accepts incoming connections on port 10001 (TCP).



For more information on the configurations of the GRIPLINK controller, please refer to the associated user manual.

The IP address of the robot controller can be set in the TM Flow development environment in the menu item "System" → "Network" under "Local Area Connection" → "Static IP".

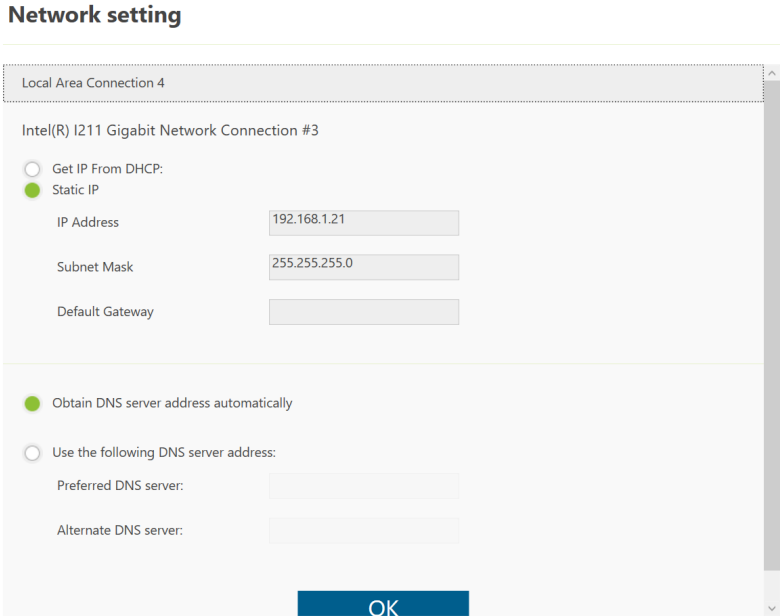


Figure 1: Setting the IP address on the robot controller



For more information on the robot controller configurations, please refer to the associated TM Flow software installation manual.

3 Plugin Components

The GRIPLINK plugin provides the user with a collection of GRIPLINK-specific functions, hereinafter also referred to as "components".

The basic program flow with the components of the GRIPLINK plug-in is always as follows

1. For servo gripping modules without absolute encoder: Reference gripping module with HOME
2. Grasp/release with GRIP or RELEASE

The available GRIPLINK-specific components are described below.

Component	Description
Disable	Deactivate device
Devstate	Query device status
Home	Reference gripping module
Grip	Grasp workpiece
Release	Release workpiece
Value	Query of position and sensor values
Hold	Control gripping force retention
LED	Control of the LED display

3.1 Query device status - DEVSTATE

This component returns the state of the selected device.

Symbol



Parameter

SetParams: nPortNumber

Index of the device port (0 to 3)

GetDevstate: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveState: Device

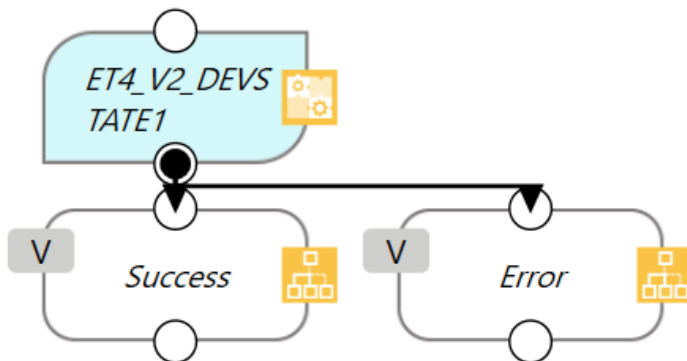
GRIPLINK with IP address and port (192.168.1.40;10001)

Return value

Variable

Griplink_WeissRobotics_ET4_V2_DEVSTATE1_var_Devstate current device state as int (see Anhang A)

Component



3.2 Deactivate device - DISABLE

Deactivates the device connected to the selected device port. This component can be used, for example, to change tools.

Symbol



Parameter

SetParams: var_Port_number

Index of the device port (0 to 3)

SendDisable: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveData: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

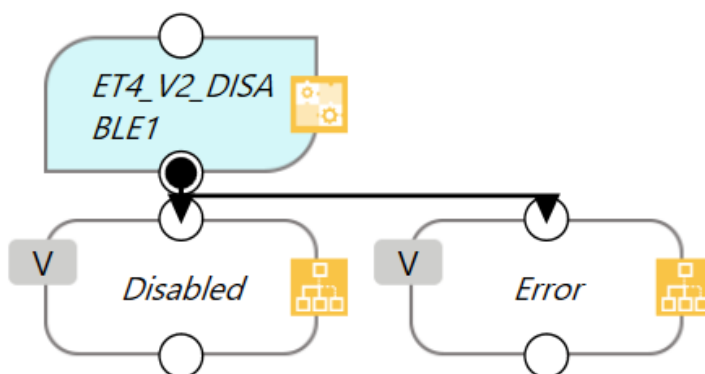
GetDevstate: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveState: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

Component



3.3 Reference gripping module - HOME

References the selected servo gripper. The component performs a reference run of the gripping module and waits until this is completed. After the HOME command has been executed, the fingers of the gripping module are powerless and must be moved to a defined position with *Grip* or *Release*.



The reference run can be configured via the web interface of the GRIPLINK controller.

Symbol



Parameter

SetParams: var_Port_number

Index of the device port (0 to 3)

SendHome: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveData: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

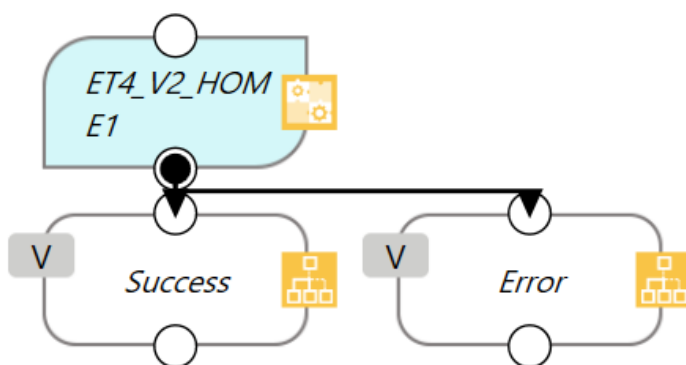
GetDevstate: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveState: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

Component



3.4 Gripping workpiece - GRIP

Grips a workpiece with the selected gripping module and the selected handle. The component waits until the gripping state changes to either "HOLDING" or "NO PART".



The gripping parameters can be configured via the web interface of the GRIPLINK interface converter.

Symbol



Parameter

SetParams: var_Port_number

Index of the device port (0 to 3)

SetParams: var_Grip_index

Selected grip (0 to 3 or 0 to 7 for CRG gripping modules)

SendGrip: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveData: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

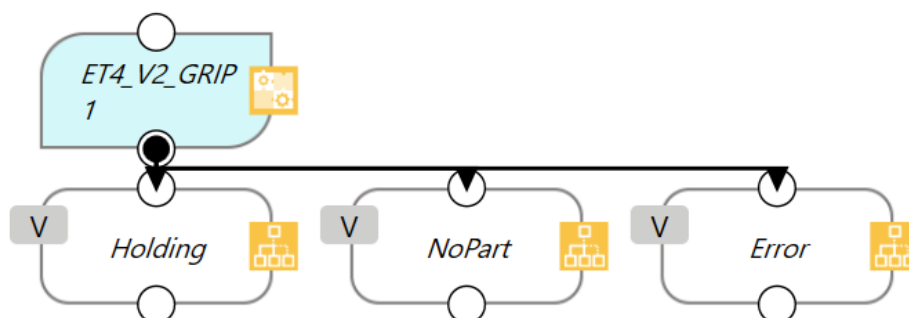
GetDevstate: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveState: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

Component



3.5 Release workpiece - RELEASE

Releases the workpiece gripped with the selected gripping module. The component waits until the workpiece has been released.



The gripping parameters can be configured via the web interface of the GRIPLINK controller.

Symbol



Parameter

SetParams: var_Port_number

Index of the device port (0 to 3)

SetParams: var_Grip_index

Selected grip (0 to 3 or 0 to 7 for CRG gripping modules)

SendRelease: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveData: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

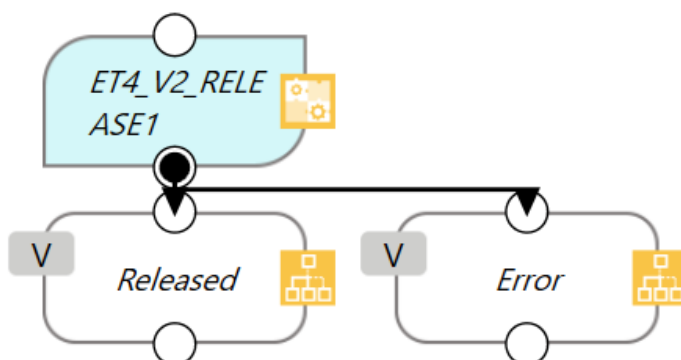
GetDevstate: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveState: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

Component



3.6 Query of position and sensor values - VALUE

The VALUE component reads a measured value from the connected device. Depending on the device, one or more measured values are available, which can be selected via the index to be specified.



For gripping modules and similar actuators, index 0 always corresponds to the position/gripping distance in micrometers.

Symbol



Parameter

SetParams: var_Port_number

Index of the device port (0 to 3)

SetParams: var_Index

Index of the measured value to be queried

GetValue: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveData: Device

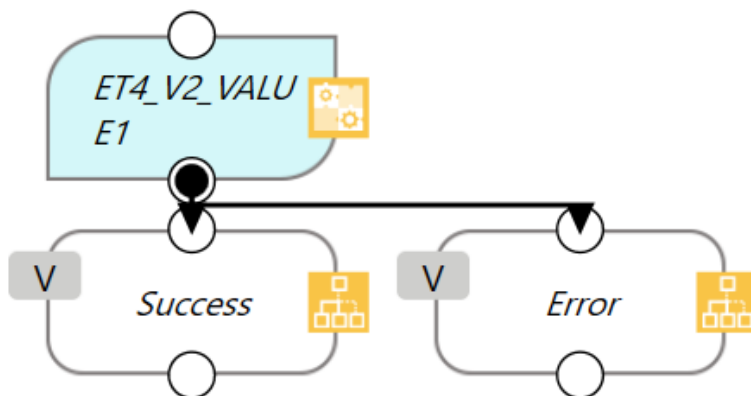
GRIPLINK with IP address and port (192.168.1.40;10001)

Return values

Variables:

Griplink_WeissRobotics_ET4_V2_VALUE1_var_Value returns the measured value as float

Component



3.7 Control gripping force holding - HOLD

The innovative gripping force safety device developed by WEISS ROBOTICS maintains the gripping force on the workpiece even if the power supply to the gripping module is unexpectedly interrupted. Thanks to the integrated absolute sensor technology, production can continue immediately when the power supply is restored, even without referencing. Furthermore, HOLD enables continuous gripping without the gripping module consuming energy and becoming hot.

The HOLD component activates or deactivates the gripping force retention for the selected gripping module.



HOLD is not available with all gripping modules.

Symbol



Parameter

SetParams: var_Port_number

Index of the device port (0 to 3)

SetParams: var_Enable

Gripping force retention: 1 = on, 0 = off

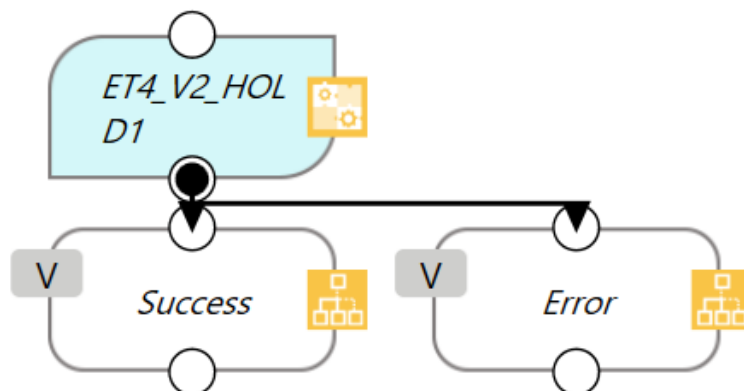
SendHold: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveData: Device

GRIPLINK with IP address and port (192.168.1.40;10001)

Component



3.8 Control of the LED display - LED

This component changes the color and pattern of the light ring of a selected gripping module. This function is only available for gripping modules of the CRG series from WEISS ROBOTICS.



Light patterns can be configured via the web interface of the GRIPLINK controller.

Symbol



Parameter

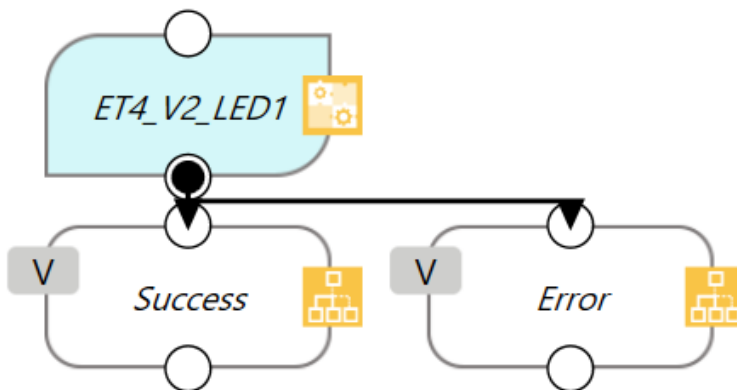
SetParams: var_Port_number
Index of the device port (0 to 3)

SetParams: var_Index
Index of the predefined light pattern

SendLED: Device
GRIPLINK with IP address and port (192.168.1.40;10001)

ReceiveData: Device
GRIPLINK with IP address and port (192.168.1.40;10001)

Component



Anhang A Device status

Gripping state	Code	Description
NOT CONNECTED	0	No device connected
NOT INITIALIZED	1	Not initialized
DISABLED	2	Ready for operation, but not active
RELEASED	3	Workpiece released
NO PART	4	No workpiece found
HOLDING	5	Workpiece is held
OPERATING	6	Ready for operation
FAULT	7	Error condition

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