EWELLIX

MAKERS IN MOTION

INSTALLATION, OPERATION AND
MAINTENANCE MANUAL

LIFTKIT-TM

TM ROBOT

EWELLIX

Contents

> ⚠ **WARNING**
>
> Please read this manual before installing, operating or maintaining this lifting column. Failure to follow safety precautions and instructions could cause lifting column failure and result in serious injury, death or property damage.
> Keep this manual nearby for future reference.

1.0 General information

1.1 Information in this manual

This manual provides important information on how to work with the actuator (also called device or drive) safely and efficiently.

The manual is part of the device, must always be kept in the device's direct proximity and should be available for personnel to read at any time . All personnel working with the device must read and understand this manual before starting any work. Strict compliance with all specified safety notes and instructions is a basic requirement for safety at work.

Moreover, the accident prevention guidelines and general safety regulations applicable at the place of use of the device must also be complied with.

For a better representation of the circumstance of use, the illustrations used are not necessarily to scale and may vary from the actual design of the device.

1.2 Explanation of symbols and signal words

Safety precautions

Safety precautions are identified by symbols and signal words as shown to the right . The signal words indicate the severity of the hazard and the chance it could occur.

Follow these safety precautions and act cautiously in order to avoid accidents, personal injury and damage to property.

These installation instructions describe the setup and operation of LIFTKIT, a vertical lifting axis for collaborative robots.

Warning label

The box contains hazardous voltage. Disconnect the power before opening the box.

Do not touch or change any wiring inside the box, except it is stated in this manual.

⚠ DANGER
Indicates a dangerous situation, which will lead to death or serious personal injury, if the precautionary measures are ignored.

⚠ WARNING
Indicates a dangerous situation, which can lead to minor or moderate injury or property damage, if the precautionary measures are ignored.

⚠ CAUTION
Indicates a dangerous situation, which can lead to minor or moderate injury the precautionary measures are ignored.

NOTICE
Indicates information considered important, but not hazard-related (e.g. messages relating to property damage).
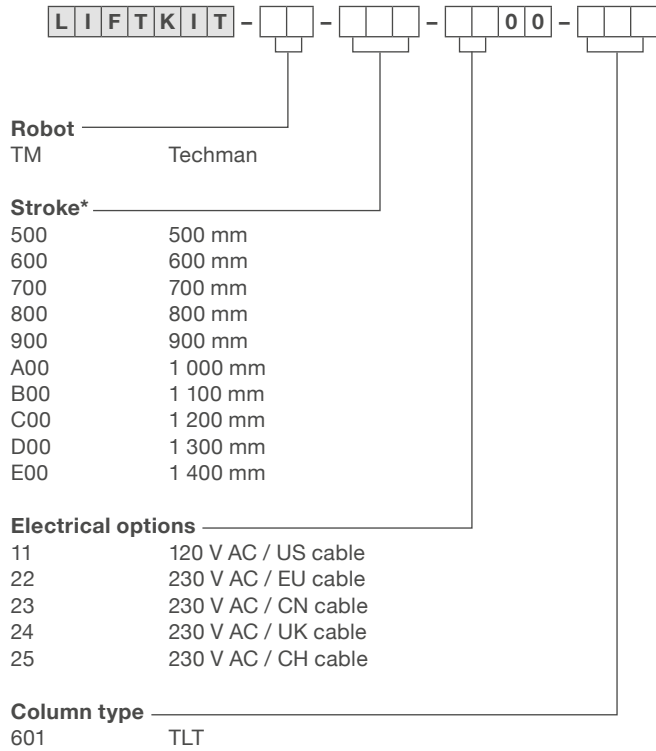
NOTE
Emphasizes useful hints and recommendations as well as information for efficient and trouble-free operation.

1.3 LIFTKIT designations

LIFTKIT contains a lifting column, a controller and additional accessories enabling easy integration with a collaborative robot. Depending on LIFTKIT typekey chosen, different configurations of these included products are possible.

| L | I | F | T | K | I | T | – | ☐ ☐ | – | ☐ ☐ ☐ | – | ☐ ☐ | 0 | 0 | – | ☐ ☐ ☐ |

Robot

TM	Techman

Stroke*

500	500 mm
600	600 mm
700	700 mm
800	800 mm
900	900 mm
A00	1 000 mm
B00	1 100 mm
C00	1 200 mm
D00	1 300 mm
E00	1 400 mm

Electrical options

11	120 V AC / US cable
22	230 V AC / EU cable
23	230 V AC / CN cable
24	230 V AC / UK cable
25	230 V AC / CH cable

Column type

601	TLT

* Longer stroke up to 1 400 mm available on request

1.4 Related documents

This instruction manual does not replace the operating manuals of the included products, but adds additional instructions relevant to the setup and operation of the LIFTKIT's system related to collaborative robots.

For general information and safety instructions please refer to installation, operation and maintenance manuals available at www.ewellix.com.

- TC-08023-EN-May 2020 THG-TLG-TLT operating manual
- TC-08005-EN-March 2020 SCU operating manual

1.5 Target audience

This manual is intended for qualified technical personnel who install and use LIFTKIT in their application. This manual and the corresponding operating manuals should be kept available for reference at all times.

Qualified personnel is able to carry out assigned work and to recognize and prevent possible dangers self-reliantly due to its professional training, knowledge and experience as well as profound knowledge of applicable regulations.

2.0 Safety

This section provides safety aspects supplementary to the safety aspects described in the relevant operating manuals of the included devices. Failure to comply with the guidelines and safety instructions contained in this manual may result in serious hazards that could cause possible serious injury or death, or damage to the device or equipment.

The listed safety aspects must be reviewed and taken into account in the final application risk assessment prior to the use of LIFTKIT.

2.1 Intended use

LIFTKIT has been designed and built for the intended use as described in the operating manual of the column, with additional intended use defined as

• Lifting of a robot to extend its operating range.

Any use that extends beyond the intended use or a use different than the one described above is deemed misuse.

Any type of claims resulting from damage caused by misuse are excluded.

2.2 Safety elements

The LIFTKIT has a range of safety elements built in to allow its integration into a robot application, including safety relay certified according ISO 13849-1, allowing STO up to PLe, Cat. 4

2.3 Application notes

• Integration with an emergency-stop is required for its intended use.
• Install emergency stop functions for the column and integrate them into the safety chain of the complete system prior to operating LIFTKIT.
• The emergency stop function has to be connected in such a way that a disruption of the power supply or the activation of the power supply after a power disruption cannot cause a hazardous situation for persons and objects.
• The emergency-stop systems must always be freely accessible.

2.4 Potential risks

The following risks during LIFTKIT operation have to be considered in an application specific risk assessment

• The column does not detect an impact automatically and does not stop movement upon impact. This can lead to:
  - Crushing of a person or an object in the path of the column, causing serious injury or death or property damage.
  - Dynamic impact to a person or an object causing serious injury or death or property damage.
• It is possible that the column movement does not stop at the desired position
  - Movement of the robot can occur at a different position than intended, causing significant serious injury or death or property damage.

2.5 E-Stop setup and behavior

The LIFTKIT has two e-stop mechanisms. One is integrated into the SBOX, the other directly into the SCU. The SCU mechanism is software controlled and is much faster, but only the SBOX mechanism guarantees an STO up to PLe, Cat.4. It is recommended to integrate both mechanism into the safety system. See the following table for comparison:

E-Stop mechanism	Performance level ISO 13489-1	Stop distance	Stop time
SCU	Not rated	18 mm	200 ms
SBOX	Up to PLe, Cat. 4	28 mm	750 ms

3.0 LIFTKIT components

3.1 Scope of delivery

- 1 Lifting column TLT
- 1 Control unit SCU16/56/96
- 1 SBOX power cable EU/US/CH/CN
- 1 RS232 interface cable M/0133976
- 1 Controller I/O cable M/0133975
- 1 EHA3A operating handswitch
- 1 Techman attachment plate
- 1 bottom mounting plate

- 8 M10x40 screws for mounting plates
- 4 screws M6x20 for Techman robot
- 2 pins ⌀ 8x20 to align Techman robot
- Quick start guide
- 1 SBOX
- 1 SBOX key
- 1 SBOX I/O cable
- 1 SBOX to controller power cable
- 1 Ethernet cable
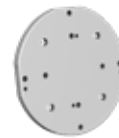- SBOX mounting attachments
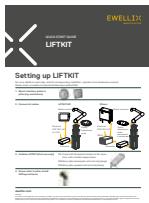
Quick start guide

Control unit SCU16/56/96

SBOX

Techman attachment plate

Bottom mounting plate

Lifting column TLT

EHA3A operating handswitch

Screws for mounting plates

SBOX Key

SBOX I/O cable

SBOX power cable

SBOX to controller power cable*

Controller I/O cable

RS232 interface cable

Ethernet cable

*this cable is only intended to use to connect the Ewellix SBOX with the Ewellix SCU controller

4.0 Mechanical installation

4.1 Tools required

• Hex key size 5 and 6

• Screw driver 2 mm

4.2 Robot installation on the lifting column

Refer to the numbers in 3.1 Scope of delivery, and in the figure below.

1. Take the listing column out of the box

2. Loosen and remove 4 transport screws at the bottom (**1**)

3. Attach the bottom mounting plate (**2**) using 4 M10x40 screws (screw 10) on the outer guiding tube

    a. Ensure tightening torque 40 Nm on these screws

4. Fix the bottom plate securely to the ground or a frame using at least four attachment holes on the plate (**3**)

    a. Alternatively, if mounting to a SLIDEKIT, attach the bottom plate with 8x M6 screws to the LIFTKIT's attachment plate.

5. Loosen and remove 4 transport screws at the top (**1**)

6. Attach the top OMROM attachment plate (**4**) using 4 M10x40 screws (screw 10) on the inner guiding tube.

    a. Ensure tightening torque 40 Nm on these screws

7. If required, insert the 2 alignment pins on the top plate and press them in (or use a plastic hammer)

8. Align the robot with the alignment pins and fix the robot base with the four screws provided (M6x20 (screw 11))
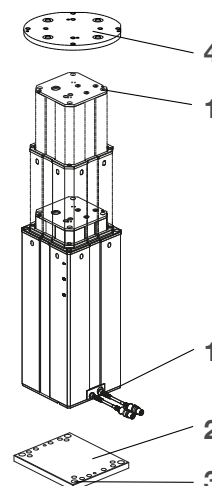
1. Transport screws
2. Bottom mounting plate
3. Ground fixations holes
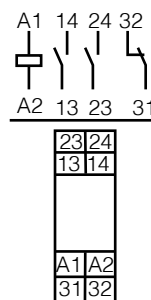4. Top mounting plate

5.0 Hardware connection SBOX

5.1 Hardware connection SBOX
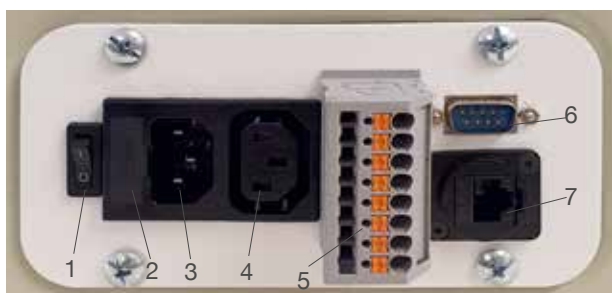
1. On/Off Switch
2. Fuse
3. Power In
4. Power Out
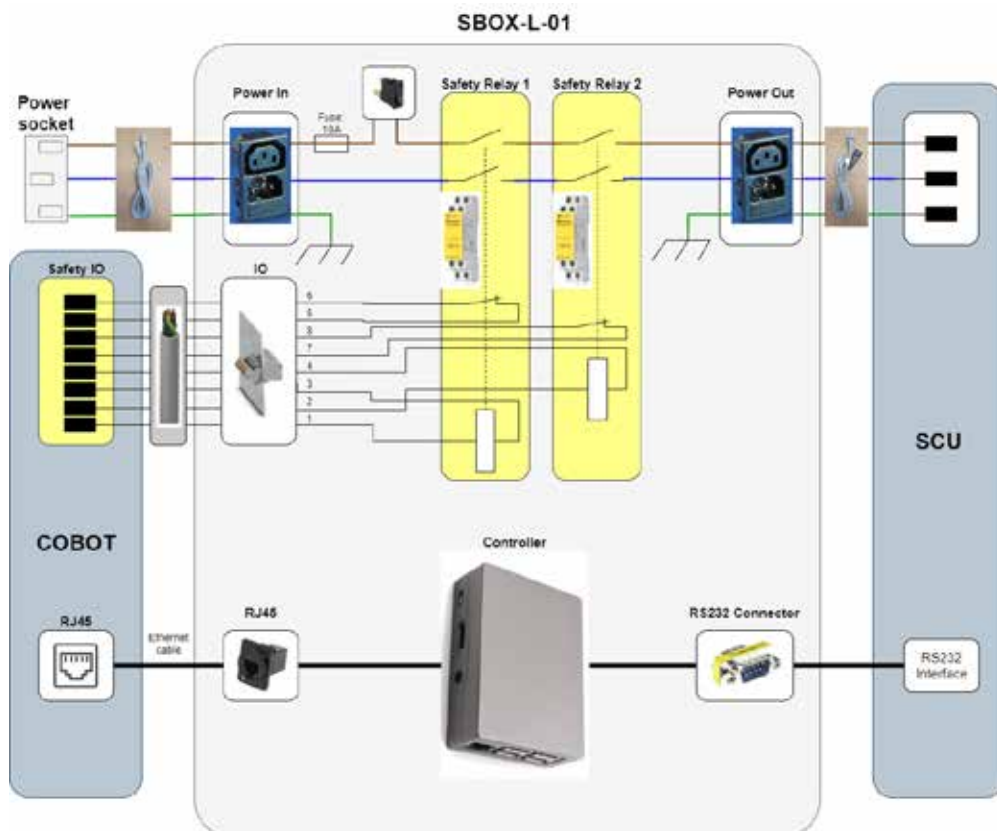5. I/O Conenctor
6. RS232 Connector
7. Ethernet Connector

8. K1.A1
9. K2.A1
10. K1.A2
11. K2.A2
12. K1.31
13. K1.32
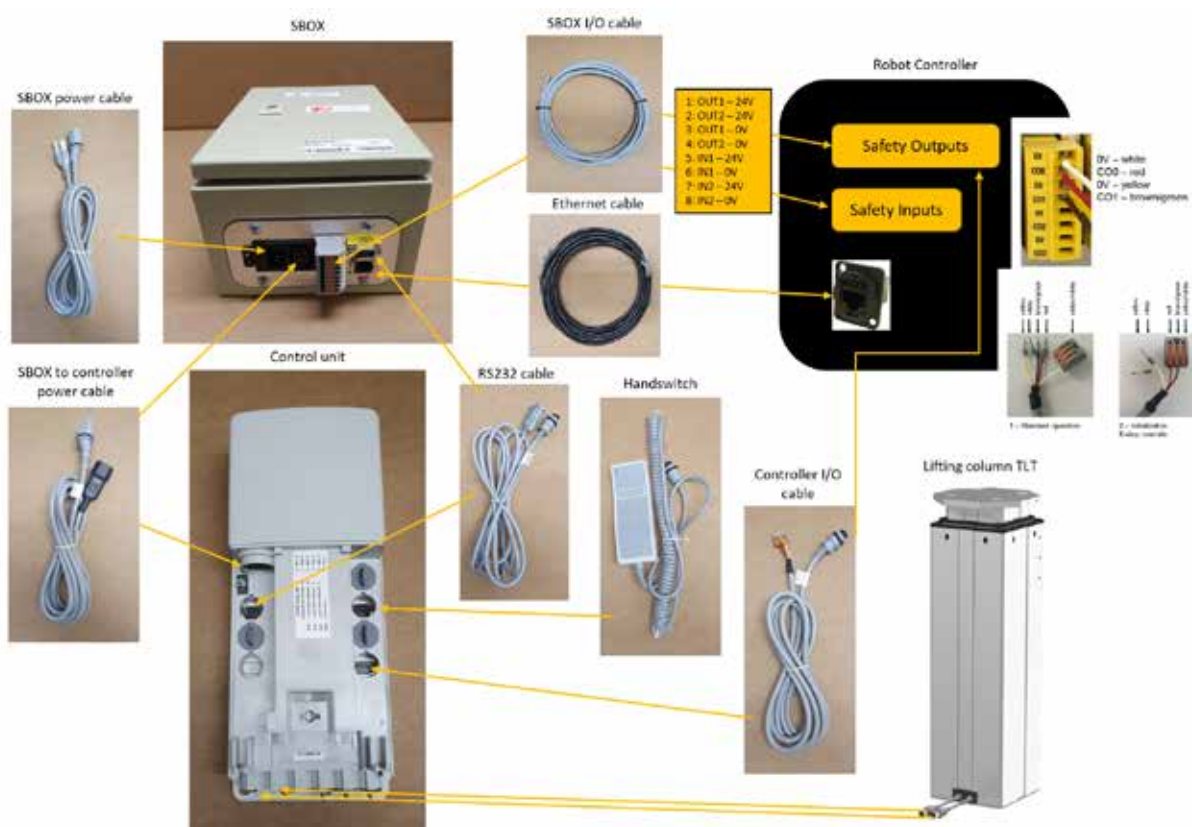14. K2.31
15. K2.32

5.2 Safety connection

The SBOX-L-01 has two integrated safety relay with forcibly guided contacts. Their coil and feedback contacts are wired directly to the I/O connector.

5.3 Schematic SBOX

SBOX-L-01
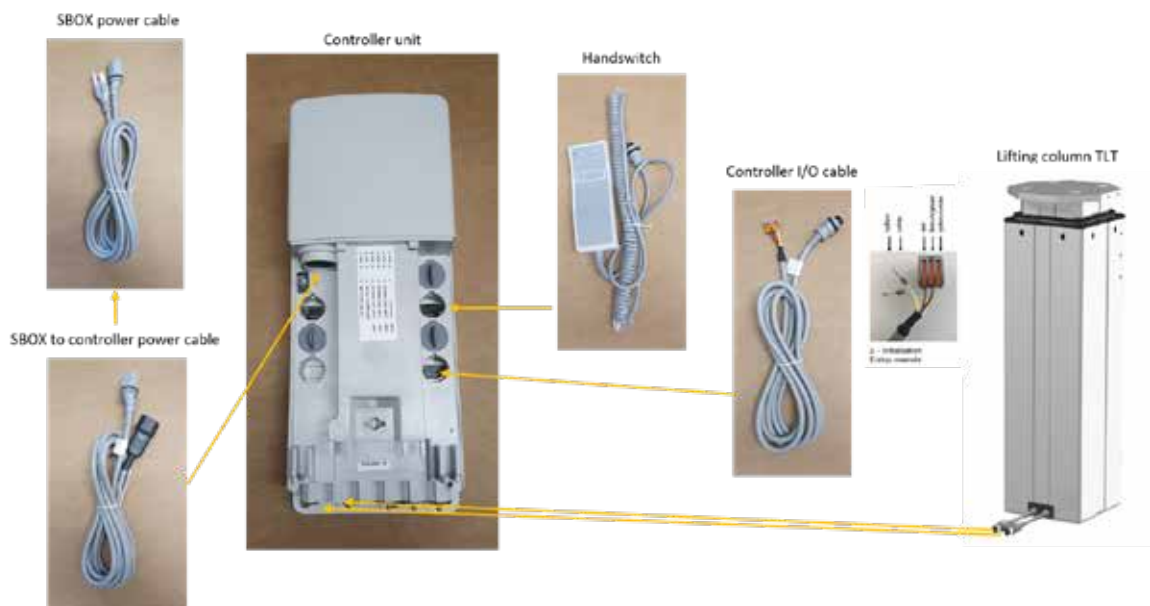
5.4 LIFTKIT connection setup

6.0 Initialization of LIFTKIT before connection to robot controller

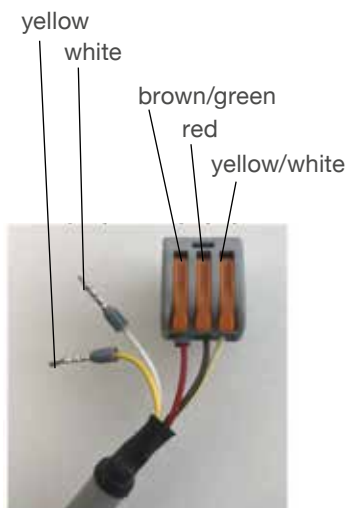LIFTKIT must be initialized before its first operation. For this, follow the steps below:

1. Connect the LIFTKIT like the following **figure 2**. It is recommended to do the initialization without the robot mounted on the column.

Fig. 2

2. Override of the emergency stop link. Short-circuit the three wires with the provided clamp as shown in the **figure 3**.

Fig. 3

3. Press both handswitch buttons simultaneously for about 5 seconds, until the SCU rattles and beeps. Now the column will run at 50% speed and force.

4. Move the column downwards until it hits the end position. The SCU controller beeps.

5. Move the column upwards to the top position until it hits the end position. The SCU controller beeps.

6. Now the end positions have been identified and virtual limits have been set to always stop the column using soft ramps.

7. The column should move without beeping at its full speed. If it does not reach its full stroke, or it continues to beep, repeat the initialization procedure.

# 7.0 Software instruction for Ewellix LIFTKIT Component for TMflow

7.1 Introduction

The Ewellix LIFTKIT component allows customers to integrate the LIFTKIT tlifting column's capabilities with TMflow applications. Currently, there is only one component available for LIFTKIT integration: "Command".

7.2 Installation

Download the zipped component file from the Ewellix website: **ewellix.com -> telescopic-pillars -> liftkit -> liftkit-tm -> Software update**

1. 1.Take the zipped component file and place it into a TMROBOT-formatted USB drive or a network drive that is mapped to the robot's Network Service feature.

   1.1. For the USB stick to be in TMROBOT format, it needs to be on the NTFS file system and named TMROBOT (all-caps), as shown below.
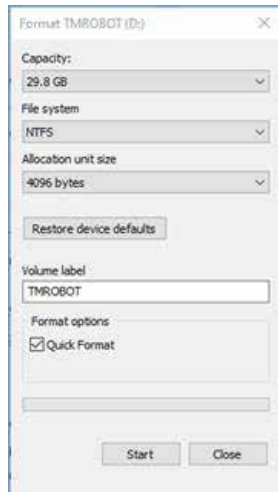

   1.2. The Network Service feature looks like this:

2. In the drive of your choosing, place the zipped compo-
nent file into a directory that looks like this, for example:
D:\TM_Export\RobotName\ComponentObject
Column_Ewellix_LIFTKIT_v01_Command.zip

3. Open the Import/Export menu in TMflow, then plug the
USB drive into the robot controller or select the network
drive as shown here:

0	\USB\TMROBOT
1	\\ade-sr1\ADE\TM
Device	0	\USB\TMROBOT

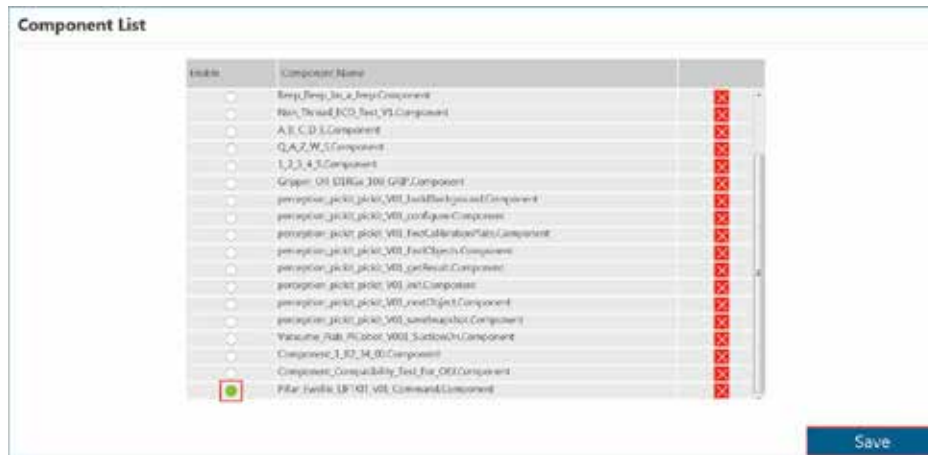4. Select "Import", then select the correct Robot ID. In this
example, the robot ID is simply, "RobotName" based on
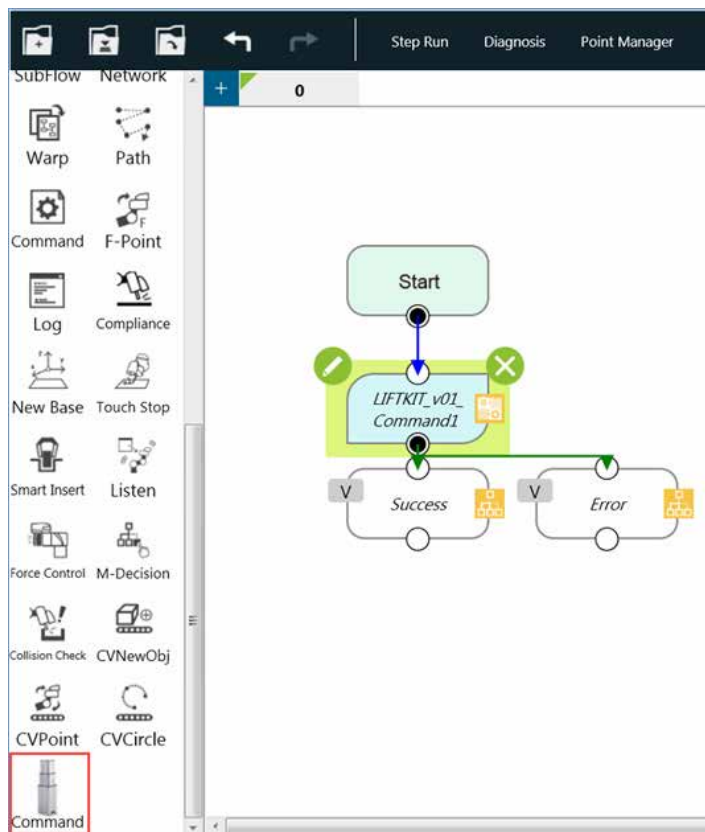the directory above.
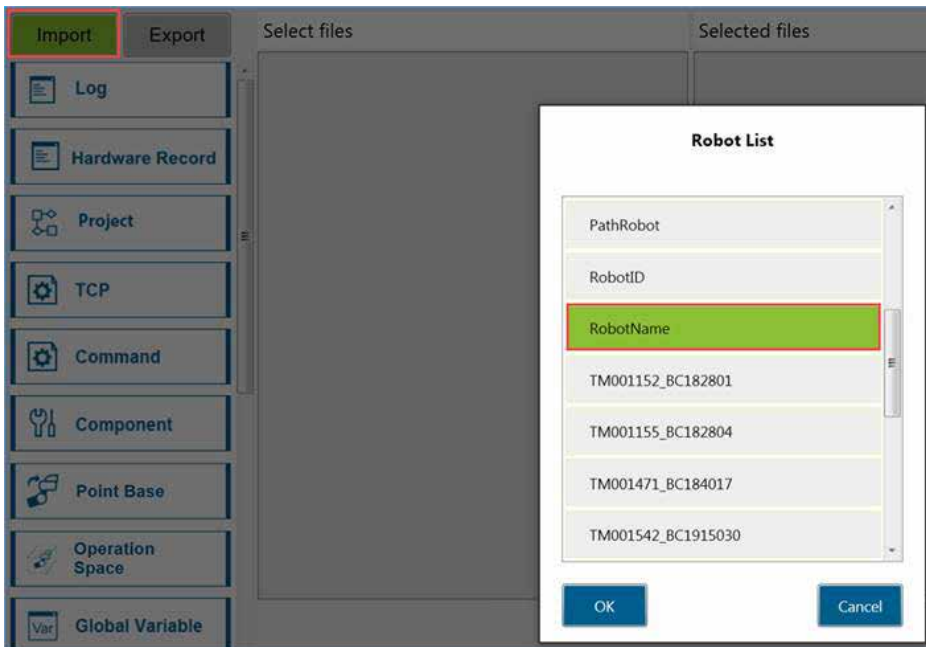
5. Select "Component", then click on the Ewellix column
component, then click "Import".
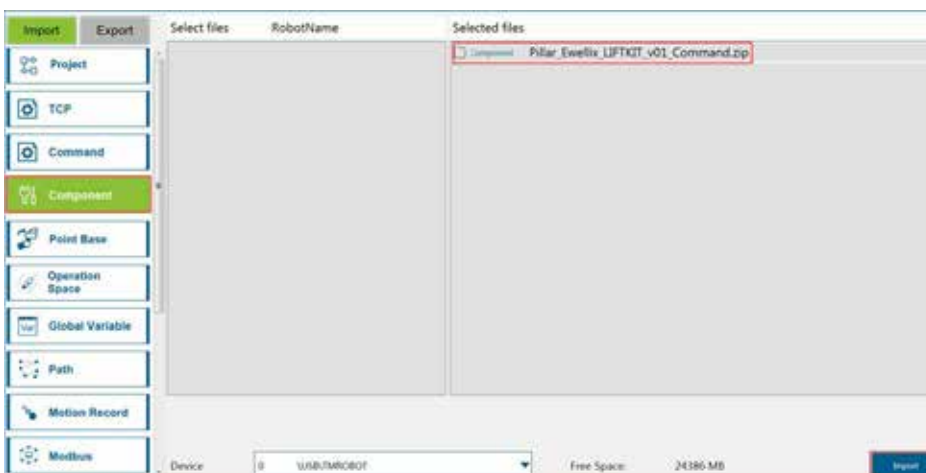
6. Go to the Component menu in the robot settings page, then enable the Ewellix component. Click Save when done.

7. Now the component is ready for drag-and-drop use with TMflow projects!

7.3 Command Component

The Command component has four primary functions, each performed in the order listed:

1. Specify Column IP Address (does not reconfigure the column's IP)

2. Get Column Info (such as current status, current virtual limits, and current position)

3. Set Column Info (such as column type and virtual limits)

4. Move the Column to an absolute position

Command Component & Icon

Column Ewellix LIFTKIT v01 TestProject
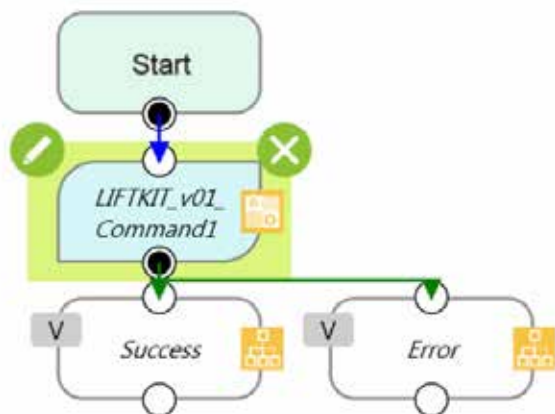
User Input Menu

Set_IP

Set_IP Settings

IIn this menu, click Edit Device to adjust the IP address and port settings of the LIFTKIT

> **NOTE**
>
> DO NOT select Add or Choose a different device, as this will cause the component to fail.

> **NOTE**
>
> The default IP address of the component matches the default IP address that the LIFTKIT uses out-of-the-box. This menu should only needed if the LIFTKIT IP address has been reconfigured by the user.

Get_Info

Get_Info Settings

var_GetInfo:

- **Function**: Determines whether the component will request information from the column using the "Get" commands such as *get_position* and *get_type*.
- **Type**: Boolean variable
- **Default**: true

> **NOTE**
>
> If set to true, this is the first step that the component will perform. This means that the information gathered during this step will be snapshotted before any "Set" commands or motion commands are issued.

Set_Info

Set_Info Settings

var_SetVirtualLimits:

- **Function**: Determines whether the component will modify the column's current virtual limits settings using the *set_virtualLimits* command.
- **Type**: Boolean variable
- **Default**: false

var_LowerLimit:

- **Function**: Sets the lower virtual limit used in the set_virtualLimits command.
- **Type**: Float variable
- **Default**: 0

var_UpperLimit:

- **Function**: Sets the upper virtual limit used in the set_virtualLimits command.
- **Type**: Float variable
- **Default**: 700

var_SetType:

- **Function**: Determines whether the component will modify the column's current type using the *set_type* command. If set to true, this will require both the column and communication box to be power cycled for the changes to take effect, and the component will exit immediately after the type is set.
- **Type**: Boolean variable
- **Default**: false

var_Type:

- **Function**: Sets the value of the column type that will be set once the *set_type* command is issued. Use the *get_typesAvailable* command in the *Get Info* function of the component for a list of acceptable column types.
- **Type**: String variable
- **Default**: "LIFTKIT-601"

Move_Absolute

Move_Absolute Settings

Set_IP	>		
Get_Info	>	bool	Pillar_Ewellix _LIFTKIT_v01 _Command1 = false _var_MoveA bsolute
Set_Info	>	float	Pillar_Ewellix _LIFTKIT_v01 _Command1 = 0 _var_Absolut ePosition
Move_Absolute	>		
Advanced_Settings	>	int	Pillar_Ewellix _LIFTKIT_v01 _Command1 = 10000 _var_MoveTi

var_MoveAbsolute:

- **Function**: Determines whether the component will issue the *moveTo_absolutePosition* command to the column.
- **Type**: Boolean variable
- **Default**: false

var_AbsolutePosition:

- **Function**: Sets the absolute position to which the column will move when issued the *moveTo_absolutePosition* command.
- **Type**: Float variable
- **Default**: 0

var_MoveTimeout_ms:

- **Function**: Sets the amount of time in ms for the column to reach its commanded position before timing out.
- **Type**: Integer variable
- **Default**: 10000

Advanced_Settings

Advanced Settings

Set_IP	>		
Get_Info	>	float	Pillar_Ewellix _LIFTKIT_v01 _Command1 = 20 _var_Position Tolerance
Set_Info	>	int	Pillar_Ewellix _LIFTKIT_v01 _Command1 = 50 _var_WaitTi me_ms
Move_Absolute	>		
Advanced_Settings	>	int	Pillar_Ewellix _LIFTKIT_v01 _Command1 = 50 _var_MaxRec

var_Position_Tolerance:

- **Function**: Sets the maximum allowable difference between the column's commanded position and its actual position once its motion is complete.
- **Type**: Float variable
- **Default**: 20 (units are in mm)

var_WaitTime_ms:

- **Function**: Sets the wait time in milliseconds. Wait time is the amount of delay time required between each serial command sent from TMflow to the column. In newer versions of TMflow, this is referred to as "Extra Idle Time".
- **Type**: Integer variable
- **Default**: 50 ms

var_MaxReceiveTime_ms:

- **Function**: Sets the maximum receive data time in milliseconds. Max receive time is the amount of time TMflow will wait for data to be received in the buffer for reading before timing out.
- **Type**: Integer variable
- **Default**: 50 ms

Imported Variables

Imported Variables
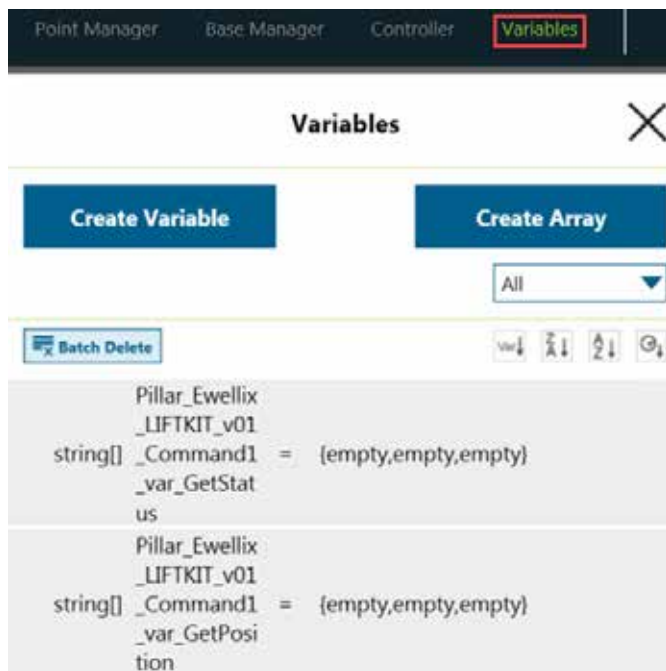
var_GetStatus:

- **Function**: Reports the current status of the LIFTKIT, used in all three functions of Get_Info, Set_Info, and Move_Absolute. If multiple functions are used in one component instance, then the value of GetStatus will be overwritten multiple times.
- **Type**: String Array

var_GetPosition:

- **Function**: Reports the current absolute position of the LIFTKIT.
- **Type**: String Array
- **Default**: empty

var_GetStroke:

- **Function**: Reports the maximum stroke of the LIFTKIT unit.
- **Type**: String Array
- **Default**: empty

var_GetVirtualLimits:

- **Function**: Reports the currently configured virtual upper and lower limits for the LIFTKIT.
- **Type**: String Array
- **Default**: empty

var_GetType:

- **Function**: Reports the currently configured LIFTKIT type. If the reported LIFTKIT type is different from what the actual LIFTKIT unit should be, then this can be reconfigured using the Set_Type command within the Set_Info function.
- **Type**: String Array
- **Default**: empty

var_GetTypesAvailable:

- **Function**: Reports the available types of the LIFTKIT that can be used with the Set_Type command. If the purchased LIFTKIT unit's type does not exist in this list, please contact Ewellix customer support.
- **Type**: String Array
- **Default**: empty

var_ErrorCode:

- **Function**: The error code that is output when there is an error (See Appendix A for a list of LIFKIT component error codes)
- **Type**: Integer variable, ranges from 4000-4005 (or 0 if there is no error)
- **Default**: 0

var_PreviousPosition:

- **Function**: If the Move_Absolute function is used, this variable will store the LIFTKIT's current absolute position before moving to the commanded position.
- **Type**: Float variable
- **Default**: 0

Typical Usage

Initial Installation and Testing

Upon the installation of the column with the TM robot, the Command component should be used by itself in an empty project to troubleshoot any connection issues and to test if the commands are working. Use the following steps to get the column running:

1. Create a new project and drag-and-drop the component into the flow.

2. If the column's IP address has been changed from the default, specify the new IP address in the component.

3. Run the project with the *Get_Info* function set to **true** and the other functions set to **false** (this is the default configuration of the component).

    a. If there is an Error Code displayed, follow the error code troubleshooting tips and repeat Step 3 until the column gives a response. See **Appendix A** for a list of LIFTKIT component error codes.

    b. If there is a response from the column other than "READY", the connection to the column was successfully established, but further action is required based on the response given. Depending on the column's current state, it may be possible to issue the *set_type* and *set_virtualLimits* commands with the component. Refer to the Ewellix LIFTKIT manual for more details on the available LIFTKIT commands, allowed states, and responses. After each troubleshooting step, repeat Step 3.

    c. If the response from the column is "READY", then it is now possible to send it motion commands.

4. If needed, use the *Set_VirtualLimits* command to set the appropriate virtual limits of the column.

5. Test the column's motion by using the *Move_Absolute* function to command the column to various positions within the range of the virtual limits.

Regular Operation

The component can be used multiple times throughout a TMflow project to get the current column status via the *Get_Info* function or to send the column motion commands with the *Move_Absolute* function. The relevant imported variables will be updated as the flow moves through the component.

NOTE

If the component is used more than once in a project for one LIFTKIT device, then the "Inherit old component" option must be selected when dragging and dropping each component after the first one into flow. This is because the LIFTKIT cannot accept multiple connections to the same socket.

NOTE

It is not recommended to use the *Set_Info* function during regular operation unless the virtual limits need to be reconfigured regularly for an application.

7.4 Error Codes

Error Code	Name	Description	Troubleshooting
4000	Connection Error	Could not connect to the column when the flow entered the component.	Check the following: **1**. Column is powered on. **2**. Column is connected to TM control box Ethernet port directly or via an Ethernet hub. **3**. The correct IP address and port number were selected in the Set_IP settings of the component.
4001	Connection Timeout	Connection to the column timed out.	The connection was established when the flow entered the component, but the column did not respond to the component commands within the timeout period. Check the following: **1**. No power or communication cables were removed from the column during operation. **2**. The Set_IP settings are set for the column and not for another device on the network. **3**. The MaxReceiveTime_ms variable values and WaitTime_ms values are large enough for the column to finish processing and sending the results to the TM.
4002	Invalid State	Column is in an invalid state for the specified command.	See Ewellix LIFTKIT manual for details.
4003	Error Response Received	Column issued an error response for the specified command.	See Ewellix LIFTKIT manual for details.
4004	Motion Timeout	The motion timeout period was reached before the column could issue the "READY" response to indicate completed motion.	Check the following: **1**. The MoveTimeout_ms value is large enough for the column to complete its motion. **2**. The column is performing the commanded motion in the expected way and the status of the column is "MOVING" during the motion.
4005	Position Tolerance Exceeded	The difference between the commanded position and the actual position is greater than the specified Position_Tolerance value.	Check the following: **1**. The Position_Tolerance value is large enough for column to realistically handle during operation but without hurting the application. **2**. The column is performing the commanded motion in the expected way.

7.5 Software update SBOX

Software updates can be done by flashing a new image to the controller SD card.
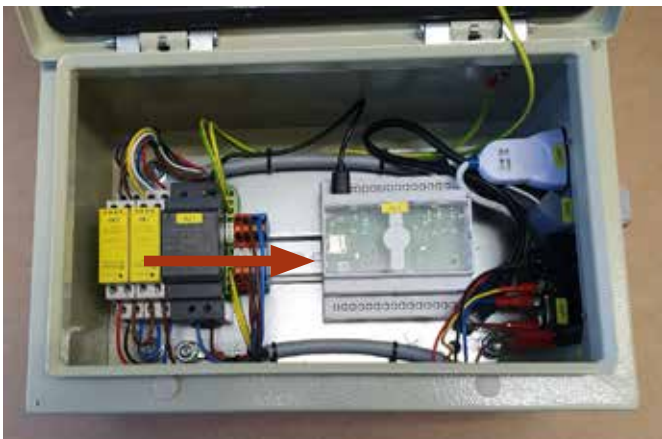
1. Remove all cables attached to the SBOX

2. Unplug the USB and the ethernet connector from the controller:

3. Move controller to the front plate:

4. Remove the SD card using a small tool like a pliers

5. Download and install one of these tools:
   - Raspberry imager, from https://www.raspberrypi.org/downloads/
   - balenaEtcher, from https://www.balena.io/etcher/
6. Copy Image on SD card:

   6.3. Place SD card into your laptop

   6.4. Do not format SD card

   6.5. Start Raspberry imager or balenaEtcher

   6.6. Choose Image

   6.7. Select SD Card

   6.8. Start writing process
7. Put SD card back into Controller following the steps 1 – 4 in reverse.

7.6 IP address

The SBOX-L-01 uses a static IP address. The default address is 192.168.1.100.

Changing the IP address

1. Create a file called "ip_changer.conf" on your PC
2. Insert the following content:

   static ip_address=192.168.1.100/24

   static routers=192.168.1.1

   static domain_name_servers=192.168.1.1

3. Change the IP addresses to your needs. Make sure that the "/24" stays behind the static IP address.
4. Put the file on an USB Stick.
5. Remove all cables from the SBOX-L-01
6. Open the Box
7. Insert USB Stick into the controller

8. Close the Box
9. Plug in the power cable into the SBOX-L-01
10. Switch on the SBOX-L-01
11. Wait 5 Minutes
12. Switch off the SBOX-L-01
13. Remove all cables from the SBOX-L-01
14. Open the Box
15. Remove USB Stick
16. Close Box
17. Connect all cables again
18. If everything worked, the USB Stick has the following empty file on it:

    update_ip_address_successfull_from_"Name of the USB Stick"

8.0 Specifications

Operating range extension

- Vertical lifting of the cobot by up to 1 400 mm (longer on request) with compact retracted height
- Robust column design for industrial use, vibration free motion and virtually maintenance free

Plug-and-play solution

- Hardware interface compatible with TM5, TM12, and TM14 robots
- Techman certified product
- Software control integrated with TMflow for easy motion programming

Cost savings and higher productivity

Cobots combined with Ewellix LIFTKIT provide a cost-effective solution to upgrade an existing assembly shop, moving from a manual handled to a fully automatized line.
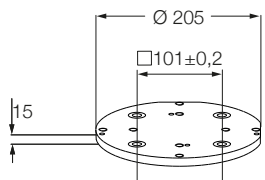
Technical data

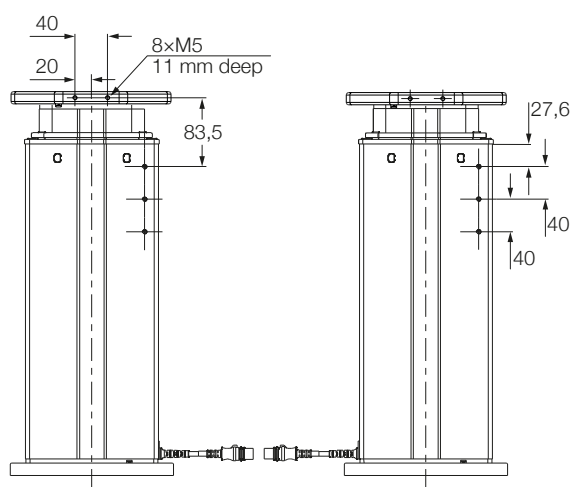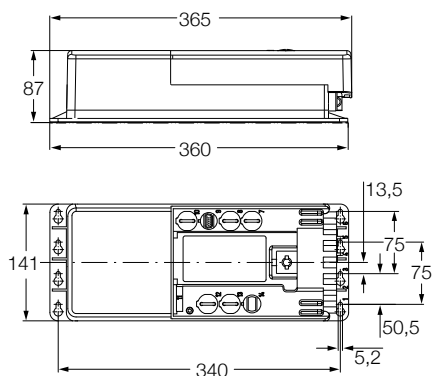|	Unit	LIFTKIT-TM-601
Column type	-	TLT
Performance Data		
Max. push load	N	1 500
Max. pull load	N	0
Max. dynamic moment	Nm	210
Max. static moment	Nm	3 000
Max. linear speed	mm/s	80
Duty cycle	-	10% (20% at 500N)
Mechanical Data		
Screw type	-	Acme screw
Stroke range	mm	500 - 1 400
Retracted length (software controlled)	mm	Stroke/2 + 275
Weight @ 0 mm stroke	kg	21
Δ weight per 500 mm stroke	kg	1,7
Robots compatibility	-	TM5, TM12, TM14
Cable management	-	Threads on column and interface
	-	Plate to attach cable management
Electrical		
Input Voltage/Current	-	120 VAC / 6,5 A 230 VAC / 3,3 A
Input frequency	Hz	50-60
Input Fuse	A	10
I/O voltage	-	24 VDC
I/O current	-	max. 10 A not protected
Emergency stop	-	STO up to PLe, Cat.4
Communication		
Control interface	-	Compatible with TMflow on TM HW 3.2 or higher
Positioning, repeatability	mm	± 1
Accessible positions	-	any
Feedback	-	Position & Status
Soft start and stop	-	Implemented for smooth operation
Software control	-	TMflow software
Environment		
Type of protection	-	IP40
Ambient temperature	°C	+10 to +40
Max. humidity	%	85
Vibration	-	Stationary industrial environment

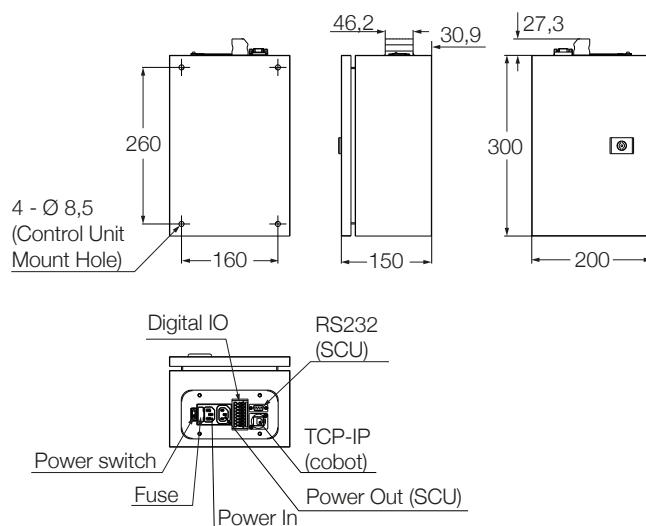# Dimensional drawing

TLT Lifting column

Robot attachment plate
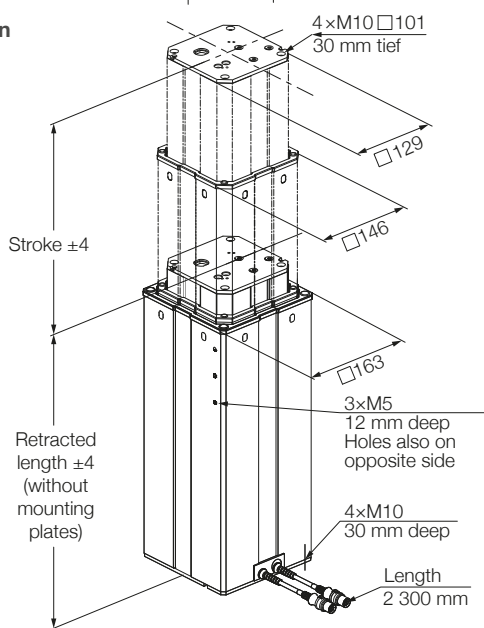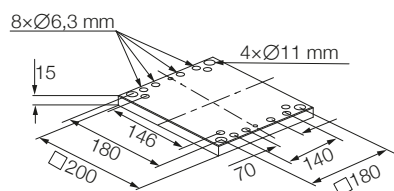
Ø 205
□101±0,2
15

TLT Column

4×M10 □101
30 mm tief

□129

Stroke ±4

□146

□163

3×M5
12 mm deep
Holes also on
opposite side

Retracted
length ±4
(without
mounting
plates)

4×M10
30 mm deep

Length
2 300 mm

40
20
8×M5
11 mm deep
83,5
27,6
40
40

Bottom fixation plate

8×Ø6,3 mm
4×Ø11 mm
15
180
146
□200
70
140
□180

Controller

365
87
360
13,5
75
75
50,5
141
5,2
340

SBOX

46,2
30,9
27,3
260
300
4 - Ø 8,5
(Control Unit
Mount Hole)
160
150
200

Digital IO
RS232
(SCU)
TCP-IP
(cobot)
Power switch
Power Out (SCU)
Fuse
Power In

ewellix.com

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