

# DNNF012

# DNNF020

Software uniVision



Interface Protocol

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# 1. Introduction

The interfaces of the relevant products are explained in this section

## 1.1 Interface Overview

The interface overview shows the inputs and outputs for all products.

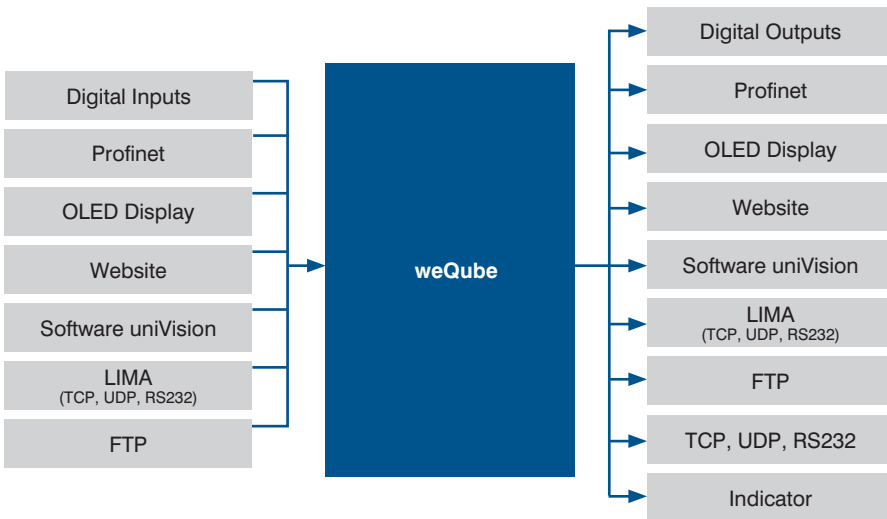


**NOTE!**

The LIMA interface is described in this document. All other interfaces (e.g. process data via TCP/IP, UDP, FTP and RS 232) are explained in detail in the uniVision manual or other instructions.

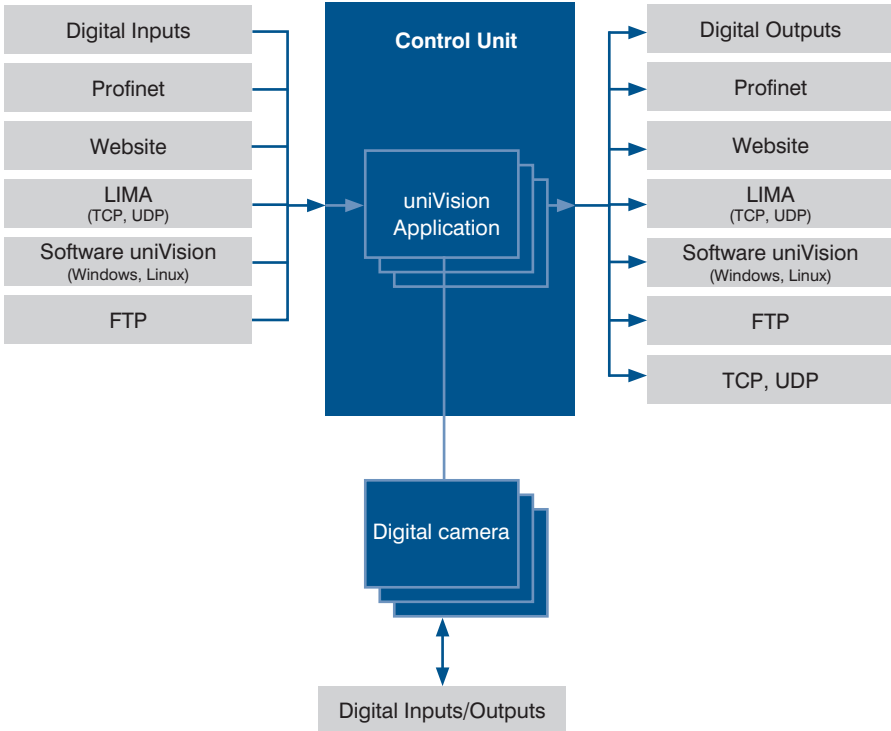
### 1.1.1 weQube Smart Camera

The weQube Smart Camera includes the following inputs and outputs.



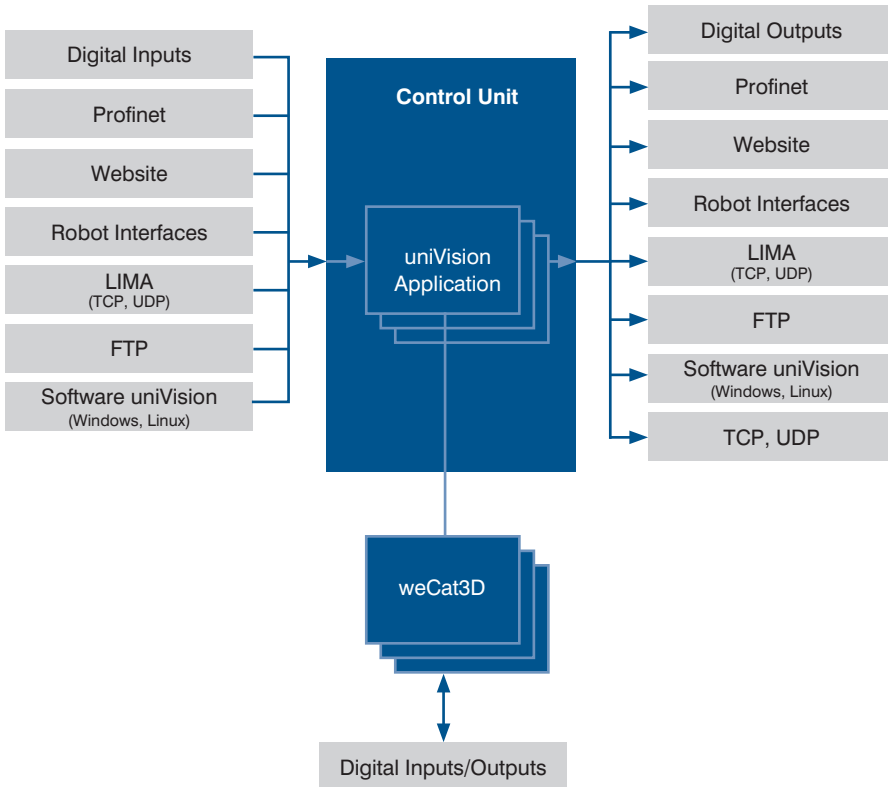
## 1.1.2 Vision System

The vision system consists of a control unit and one or more digital cameras. Independent of each other, several uniVision applications can evaluate images from different digital cameras on the control unit. The inputs and outputs of digital cameras and uniVision applications are shown in the following overview.



### 1.1.3 Control Unit with 2D/3D Profile Sensors

The control unit with 2D/3D profile sensors consists of a control unit and one or more 2D/3D profile sensors. Independent of each other, several uniVision applications can evaluate profiles from different 2D/3D profile sensors on the control unit. The inputs and outputs of 2D/3D profile sensors and uniVision applications are shown in the following overview.

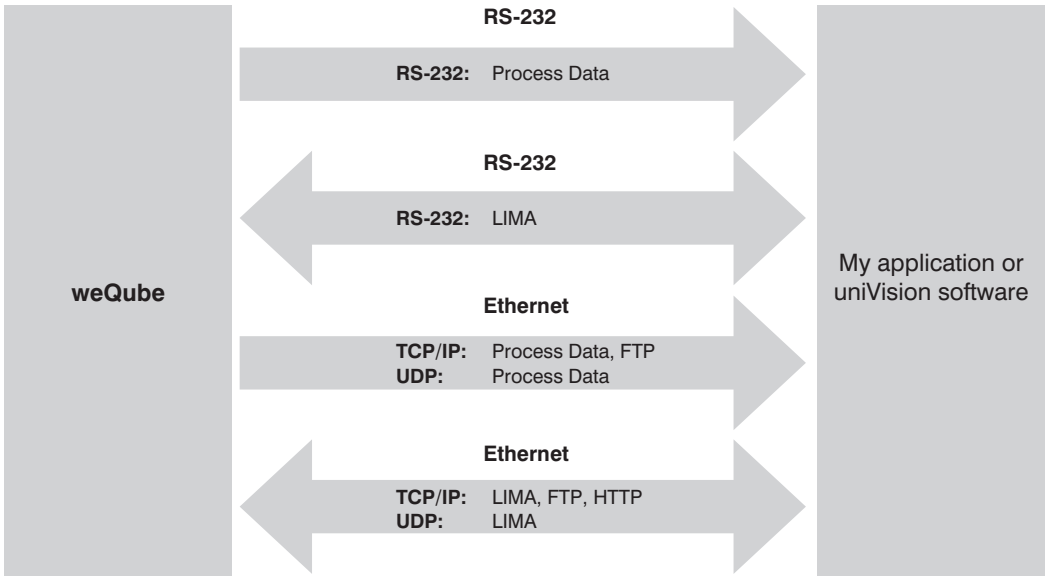


## 1.2 The System's Network Protocols

The network interfaces are described in detail below.




## 1.3 weQube Smart Camera

Various options for communication with the weQube Smart Camera via TCP/IP socket, UDP and RS-232 are depicted in the following graphic.



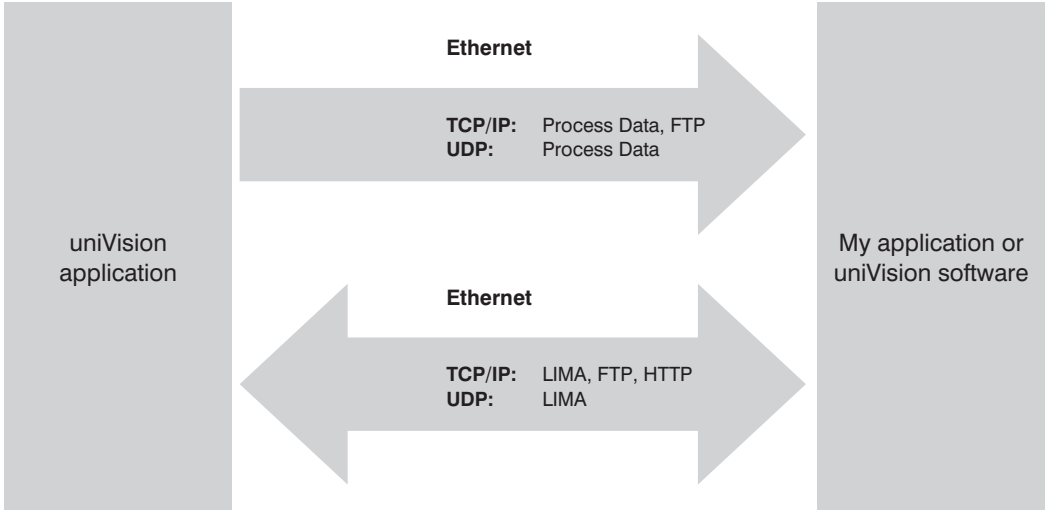
### Basic RS-232 settings:




- Baud rate: 115,200 bps
- 8 data bits
- No parity
- 1 stop bit

Protocol	Port	Description
TCP/IP	32001	<p>Fixed port for communication via the LIMA protocol. Write and read commands can be transmitted via this port. Only one connection is permissible via this port.</p> <p> <b>NOTE!</b> uniVision software communicates with the Smart Camera via this port.</p>
TCP/IP	32002	<p>Standard port for transmitting process data. The port can be configured via the Device TCP.</p>
UDP	32002	<p>Port for transmitting the device status of the weQube Smart Camera. Fixed port for transmitting process data via the UDP device module.</p> <p> <b>NOTE!</b> It is possible to define how often the device status is sent via UDP in the device settings.</p>
UDP	32003	<p>Fixed port for transmitting LIMA commands.</p> <p> <b>NOTE!</b> Up to 65,535 bytes can be transmitted via UDP. Longer commands can be transmitted via TCP/IP.</p>
UDP	32004	<p>Fixed port for sending LIMA responses from the Smart Camera to the remote peer. A LIMA response is received for LIMA commands sent via port 32003.</p>





## 1.4 Control Unit with uniVision Application

One or more uniVision applications evaluations can be executed on a single control unit. Various options for communication with the uniVision applications via TCP/IP socket and UDP are depicted in the following graphic.



Protocol	Port	Description
TCP/IP	32001	<p>Fixed port for communication via the LIMA protocol. Write and read commands can be transmitted via this port. Only one connection is permissible via this port.</p> <p> <b>NOTE!</b> The uniVision application's IP address is displayed in the device list.</p> <p> <b>NOTE!</b> uniVision software communicates via this port in the processing mode.</p>
TCP/IP	32002	<p>Standard port for transmitting process data. The port can be configured via the Device TCP.</p> <p> <b>NOTE!</b> The uniVision application's IP address is displayed in the device list.</p>



Protocol	Port	Description
TCP/IP	32005	<p>Fixed port for communication via the LIMA protocol. Only read commands can be transmitted via this port. Up to five simultaneous connections are possible via the port.</p> <p> <b>NOTE!</b> The uniVision application's IP address is displayed in the device list.</p> <p> <b>NOTE!</b> The uniVision application communicates via this port in the live mode.</p>
UDP	32002	<p>Port for transmitting the device statuses of the:</p> <ul style="list-style-type: none"> <li>• control unit</li> <li>• uniVision application</li> </ul> <p>Fixed port for transmitting process data via the Device UDP.</p> <p> <b>NOTE!</b> It is possible to define how often the device status is sent via UDP in the device settings.</p>
UDP	32003	<p>Fixed port for transmitting LIMA commands.</p> <p> <b>NOTE!</b> Up to 65,535 bytes can be transmitted via UDP. Longer commands can be transmitted via TCP/IP.</p>
UDP	32004	<p>Fixed port for sending LIMA responses from the uniVision application to the remote peer. A LIMA response is received for LIMA commands sent via port 32003.</p>

## 2. LIMA Protocol

First of all set up and save the device settings and the project via uniVision software. Afterwards, the LIMA protocol can be used to query certain values from the device or to change them at the device (e.g. project change).



### NOTE!

uniVision software also uses LIMA commands for communication with the device. Consequently, the connection from uniVision software to the device must be interrupted before connection is established via another interface.



### NOTE!

The LIMA protocol can not be used offline.

## 2.1 Establishing Connection via TCP/IP

### 2.1.1 weQube Smart Camera

Establish a TCP/IP connection to the weQube Smart Camera.

- IP address of the Smart Camera
- Port: 32001 (fix)

Example based on the default settings of the weQube Smart Camera:

- IP address: 192.168.100.1
- Port: 32001

### 2.1.2 Control Unit with uniVision Application

Establishing a TCP/IP connection to the uniVision application which is running at the control unit:  
uniVision application's IP address

Port: 32001 (fixed)



### NOTE!

The uniVision application's IP address is displayed in the device list.

Example with standard settings for application-1:

IP address: 192.168.100.251

Port: 32001

## 2.2 General Information on LIMA Communication

The following general points must be observed for LIMA communication:

- Evaluation of responses to LIMA commands is recommended. Depending on the command, it may take several seconds to receive a response.
- LIMA commands may only be transmitted sequentially to the weQube or the uniVision application. The next command may not be transmitted until a response to the previous command has been received.
- Data consistency must be assured during communication. Evaluation of the run counter is recommended to this end, for example in order to determine whether or not any new events have occurred.

Error diagnosis for responses to LIMA commands:

Response to LIMA Command	Cause	Possible Solution
Device Busy	The LIMA command cannot be processed because the device is currently processing another LIMA command.	<ul style="list-style-type: none"> <li>• Resend the LIMA command at a later point in time.</li> </ul>
Lima Error on File Read	The project could not be loaded because the respective project is not available in the project folder.	<ul style="list-style-type: none"> <li>• Make sure that a project with the corresponding name is available in the project folder.</li> <li>• Check the name of the project in the LIMA command.</li> </ul>
Invalid Path	The LIMA command contains a path specification which is not available in the uniVision project.	<ul style="list-style-type: none"> <li>• Enter the correct path specification to the LIMA command (<a href="#">see section “3. LIMA Command Example”, page 22</a>)</li> </ul>

### NOTE!



Compatibility is not assured in the event of a major release or a feature release (i.e. if the first or second digit is changed, e.g. from uniVision 2.0.1 to uniVision 2.1.0). LIMA commands and path specifications may change as a result. Details concerning compatibility are included in the operating instructions for uniVision software.

## 2.3 Project Commands

With the commands in this group you can modify the actual project tree. Further you can load and save projects.

Commands transmitted via the TCP/IP connection are identified with the letter T, and those transmitted via the RS-232 interface are identified with the letter R.

### NOTE!



The RS-232 interface is only available with the weQube Smart Camera. The uniVision application is not equipped with a serial interface.

### NOTE!



The listed commands function for the weQube Smart Camera and for uniVision applications. If a command is only available for a certain device type, this information is included in the corresponding section.

## 2.3.1 Loading a Project (T, R)


<b>Purpose</b>	Loading of a project.
<b>Attributes</b>	FILE: Filename of the project (*.u_p) SOURCE (optional): FTP or local folder
<b>Request</b>	<LIMA DIR="Request" CMD="Project_Load" FILE="TestProject.u_p"/>
<b>Reply</b>	<LIMA DIR="ReplyOk" CMD="Project_Load">
<b>Description</b>	<p>The current running project is stopped and deleted. The project described with FILE is opened started.</p> <p>If the attribute SOURCE is not available the local folder is used as a default source.</p> <p>If the SOURCE segment is set to FTP, the FTP server is used as the storage location. The FTP server settings (IP, user name, password) are specified in the device settings.</p> <ol style="list-style-type: none"> <li>1. Set up the FTP server with username, password and folders (e.g. FileZilla Server).</li> <li>2. Open the settings for the Smart Camera or the uniVision application in the device list in uniVision software.</li> <li>3. Enter the IP address of the device on which the FTP server is running and the user name and password for the FTP server to the settings. Details can be found in the uniVision operating instructions.</li> <li>4. Projects stored on the FTP server can now be loaded to the device using the LIMA command.</li> </ol> <p>Example:</p> <pre>&lt;LIMA DIR="Request" CMD="Project_Load" SOURCE="FTP" FILE="Folder1/ Folder2/TestProject.u_p"/&gt;</pre>

## 2.3.2 Saving a Project (T, R)

<b>Purpose</b>	Saving of the current running project.
<b>Attributes</b>	FILE: Filename of the project (*.u_p) DESTINATION (optional): FTP or local folder
<b>Request</b>	<LIMA DIR="Request" CMD="Project_Save" FILE="TestProject.u_p"/>
<b>Reply</b>	<LIMA DIR="ReplyOk" CMD="Project_Save">
<b>Description</b>	<p>The current running project is saved with the given filename described by FILE. The Filename is written to the Filename child of IDataModApplication before saving.</p>

## 2.3.3 Writing a Value to the Project (T, R)

<b>Purpose</b>	Write a value in a project or write thresholds for a value.
<b>Attributes</b>	<p>PATH: Path name for the node which needs to be changed</p> <p>VALUE (optional): Specification of the value, differentiation according to type (string, bool ...)</p> <p>MIN (optional): Specification of the minimum value</p> <p>MAX (optional): Specification of the maximum value</p>

<b>Request</b>	<p><b>Command for writing a value in a package:</b></p> <pre>&lt;LIMA CMD="Project_SetNode" DIR="Request" PATH="Module Application. Device Camera.Light Current [%]" VALUE="20"/&gt;</pre> <p><b>Command for writing thresholds for a value:</b></p> <pre>&lt;LIMA CMD="Project_SetNode" DIR="Request" PATH="Module Application. Module Threshold.Pixel Count [unit]" MIN="1000" MAX="2000"/&gt;</pre>
<b>Reply</b>	<pre>&lt;LIMA DIR="ReplyOK" CMD="Project_SetNode"/&gt;</pre>
<b>Description</b>	<p>Any desired value in the project can be changed with this command. Fundamentally, linked values cannot be changed. The thresholds for a value can also be changed with this command.</p> <p> <b>NOTE!</b> Incorrect use of the command may render the device unusable.</p>

### 2.3.4 Reading Out a Value from the Project (T, R)

<b>Purpose</b>	Read out a value from the project. This makes it possible to retrieve results such as distances, diameters or the coordinates of detected points.
<b>Attributes</b>	PATH: Path to the node you want to interrogate.
<b>Request</b>	<pre>&lt;LIMA CMD="Project_GetNode" DIR="Request" PATH="Module Application. Device Camera.Light Current [%]"/&gt;</pre>
<b>Reply</b>	<pre>&lt;LIMA DIR="ReplyOk" CMD="Project_GetNode" PATH="Module Application. Device Camera.Light Current [%]" VALUE="20"/&gt;</pre>
<b>Description</b>	This command can be used to read out a any desired value from the project.

### 2.3.5 Write Value in a Cell in the Spreadsheet Module (T)

<b>Purpose</b>	Write a value in a cell in the spreadsheet module.
<b>Attributes</b>	<p>CELLS: Cell information starting at 0 for the first line/column in the format line@column (e.g. 0@1 for the cell in the first line and the second column)</p> <p>PATH: Path name for the node which needs to be changed</p> <p>VALUE: Value to be written in the cell</p>
<b>Request</b>	<pre>&lt;LIMA DIR="Request" CMD="Project_SetSpreadSheetCells" CELLS="0@1" PATH="Module Application.Module Spreadsheet" VALUE="Test"/&gt;</pre>
<b>Reply</b>	<pre>&lt;LIMA DIR="ReplyOk" CMD="Project_SetSpreadSheetCells"/&gt;</pre>
<b>Description</b>	A cell in the spreadsheet module can be changed by the command.

## 2.3.6 Reading Out an Image Channel (T, for Smart Camera and Vision System Only)

<b>Purpose</b>	Read out an image channel.
<b>Attributes</b>	PATH: The path of the image channel that needs to be read out. TYPE: Type of output (BMP or RAW)
<b>Request</b>	<p><b>For Smart Camera with monochrome image chip:</b></p> <pre>&lt;LIMA DIR="Request" CMD="Project_GetImage" TYPE="RAW" PATH="Module Application.Device Camera.Image Sensor.Raw 8 Bit"/&gt;</pre> <p><b>For Smart Camera with color image chip:</b></p> <pre>&lt;LIMA DIR="Request" CMD="Project_GetImage" TYPE="RAW" PATH="Module Application.Device Camera.Image Sensor.Raw 8 Bit Bayer"/&gt;</pre> <p>The other image channels (HSV, RGB, BGRA) can also be read out for the color image chip. Enter the required path to the command to this end. The selected image channel must be activated in the camera. For example:</p> <pre>&lt;LIMA DIR="Request" CMD="Project_GetImage" TYPE="BMP" PATH="Module Application.Device Camera.Image HSV.Value"/&gt;</pre> <p><b>For vision system with monochrome digital cameras:</b></p> <pre>&lt;LIMA DIR="Request" CMD="Project_GetImage" TYPE="RAW" PATH="Module Application.digital-camera-1.Image Monochrome.Grey"/&gt;</pre> <p><b>For vision system with color digital cameras:</b></p> <pre>&lt;LIMA DIR="Request" CMD="Project_GetImage" TYPE="RAW" PATH="Module Application.digital-camera-1.Image BGRA.BGRA"/&gt;</pre> <p>Further image channels can also be selected for the color image chip. Enter the required path to the command to this end. The selected image channel must be active. For example:</p> <pre>&lt;LIMA DIR="Request" CMD="Project_GetImage" TYPE="RAW" PATH="Module Application.digital-camera-1.Image HSV.Value"/&gt;</pre> <p><b>Output images from other modules can also be queried with this command, for example:</b></p> <pre>&lt;LIMA DIR="Request" CMD="Project_GetImage" TYPE="BMP" PATH="Module Application.Module Threshold HSV.Output Image.Binary"/&gt;</pre>
<b>Reply</b>	<pre>&lt;LIMA DIR="ReplyOk" CMD="Project_GetImage" DATALEN="353280" [Image channel attachment including x byte]</pre>
<b>Description</b>	<p>TYPE=BMP: The image will be transmitted as a bitmap including BMP header.</p> <p>TYPE=RAW: Only the raw data will be transmitted without header.</p>

## 2.4 General Commands

This section contains commands that don't fit any other section.

### 2.4.1 Searching the Network for Devices (T, R)

<b>Purpose</b>	Scan network for wenglor devices
<b>Attributes</b>	IP: Ip address of the client that perform the scan.
<b>Request</b>	<LIMA DIR="Request" CMD="SCAN_WENGLOR" IP="172.17.47.70"/>
<b>Reply</b>	<p><b>Control unit:</b></p> <pre>&lt;LIMA DIR="ReplyOk" CMD="SCAN_WENGLOR" ARTICLENUMBER="BB1C001" DEVICENAME="control-unit" DHCP="0" ETHADDR="00:01:29:00:00:00" GATEWAYIP="0.0.0.0" IPADDR="192.168.100.252" NET- MASK="255.255.255.0" TCPPOINT="32001"/&gt;</pre> <p><b>uniVision application:</b></p> <pre>&lt;LIMA DIR="ReplyOk" CMD="SCAN_WENGLOR" ARTICLENUMBER="BB1C001" DEVICENAME="application" DHCP="0" ETHADDR="55:44:33:22:11:00" GATEWAYIP="0.0.0.0" IPADDR="192.168.100.251" NET- MASK="255.255.255.0" TCPPOINT="32001"/&gt;</pre> <p><b>weQube Smart Camera:</b></p> <pre>&lt;LIMA DIR="ReplyOk" CMD="SCAN_WENGLOR" ARTICLENUMBER="B50S001" DEVICENAME="weQube" ETHADDR="54:4a:05:00:08:4b" IPADDR="192.168.100.1" TCPPOINT="32001"/&gt;</pre>
<b>Description</b>	<p>This command is implemented for the access by udp.</p> <p>This command has to be sent as a broadcast. The detected device sends back a broadcast message with some identification variables.</p>

## 2.4.2 Triggering the Device (T, R)

<b>Purpose</b>	Trigger command
<b>Attributes</b>	NAME (optional): Device name
<b>Request</b>	<p><b>Control unit with 2D/3D sensor:</b>  <code>&lt;LIMA DIR="Request" CMD="Device_Trigger" NAME="wecat3d-1"/&gt;</code></p> <p><b>Vision system:</b>  <code>&lt;LIMA DIR="Request" CMD="Device_Trigger" NAME="digital-camera-1"/&gt;</code></p> <p><b>Smart Camera:</b>  <code>&lt;LIMA DIR="Request" CMD="Device_Trigger"/&gt;</code></p> <p><b>Abbreviated command for all products:</b>  <code>&lt;T/&gt;</code></p>
<b>Reply</b>	<p><b>Control unit with 2D/3D sensor:</b>  <code>&lt;LIMA DIR="ReplyOk" CMD="Device_Trigger" NAME="wecat3d-1"/&gt;</code></p> <p><b>Vision system:</b>  <code>&lt;LIMA DIR="ReplyOk" CMD="Device_Trigger" NAME="digital-camera-1"/&gt;</code></p> <p><b>weQube Smart Camera:</b>  <code>&lt;LIMA DIR="ReplyOk" CMD="Device_Trigger"/&gt;</code></p> <p><b>Response to abbreviated command for all products:</b>  <code>&lt;TOk/&gt;</code></p>
<b>Description</b>	<p><b>Control unit with 2D/3D sensor:</b>  This command can be used to initiate a line start trigger for a weCat3D sensor in a uniVi-  sion application.</p> <p><b>Vision system:</b>  This command can be used to trigger an image recording with the vision system.</p> <p><b>Smart Camera:</b>  The trigger command can be used to start an image recording with the Smart Camera.</p> <p>An abbreviated command is available for the purpose of simplification.</p>



### 2.4.3 Starting a Recording (T, for Control Unit with 2D/3D Sensor and Vision System Only)

<b>Purpose</b>	Transmit the start signal for Profile or image recording.
<b>Attributes</b>	NAME (optional): Device name
<b>Request</b>	<p><b>Control unit with 2D/3D sensor:</b></p> <pre>&lt;LIMA DIR="Request" CMD="Device_Acquisition" NAME="wecat3d-1" STATE="on"/&gt;</pre> <p><b>Vision system:</b></p> <pre>&lt;LIMA DIR="Request" CMD="Device_Acquisition" NAME="digital-camera-1" STATE="on"/&gt;</pre>
<b>Reply</b>	<p><b>Control unit with 2D/3D sensor:</b></p> <pre>&lt;LIMA DIR="ReplyOk" CMD="Device_Acquisition" NAME="wecat3d-1" STATE="on"/&gt;</pre> <p><b>Vision system:</b></p> <pre>&lt;LIMA DIR="ReplyOk" CMD="Device_Acquisition" NAME="digital-camera-1" STATE="on"/&gt;</pre>
<b>Description</b>	After the start signal has been transmitted, the vision system or the control unit with 2D/3D sensor is ready for image or profile recording.

### 2.4.4 Stopping a Recording (T, for Control Unit with 2D/3D Sensor and Vision System Only)

<b>Purpose</b>	Transmit the stop signal for Profile or image recording.
<b>Attributes</b>	NAME (optional): Gerätename
<b>Request</b>	<p><b>Control unit with 2D/3D sensor:</b></p> <pre>&lt;LIMA DIR="Request" CMD="Device_Acquisition" NAME="wecat3d-1" STATE="off"/&gt;</pre> <p><b>Vision system:</b></p> <pre>&lt;LIMA DIR="Request" CMD="Device_Acquisition" NAME="digital-camera-1" STATE="off"/&gt;</pre>
<b>Reply</b>	<p><b>Control unit with 2D/3D sensor:</b></p> <pre>&lt;LIMA DIR="ReplyOk" CMD="Device_Acquisition" NAME="wecat3d-1" STATE="off"/&gt;</pre> <p><b>Vision system:</b></p> <pre>&lt;LIMA DIR="ReplyOk" CMD="Device_Acquisition" NAME="digital-camera-1" STATE="off"/&gt;</pre>
<b>Description</b>	After receiving the stop command, the vision system or the control unit with 2D/3D sensor stops recording profiles or images.

## 2.4.5 Reading Out the Firmware Version (T, R)

<b>Purpose</b>	Read out firmware revision level.
<b>Attributes</b>	
<b>Request</b>	<LIMA DIR="Request" CMD="Device_GetFirmwareVersion"/>
<b>Reply</b>	<LIMA DIR="ReplyOk" CMD="Device_GetFirmwareVersion" PRODUCT_DATE="28.01.2018" PRODUCT_VERSION="1.1.3"/>
<b>Description</b>	The device's firmware version is read out with this command.

## 2.4.6 Restarting the Device (T, R)

<b>Purpose</b>	Restart the device.
<b>Attributes</b>	
<b>Request</b>	<LIMA DIR="Request" CMD="Device_Reboot"/>
<b>Reply</b>	<LIMA DIR="ReplyOk" CMD="Device_Reboot"/>
<b>Description</b>	This command is used to initiate restarting of the device. Depending on the device, rebooting takes several seconds.

## 2.4.7 Resetting the Status Bits (T, R)

<b>Purpose</b>	Reset previously set status bits.
<b>Attributes</b>	
<b>Request</b>	<LIMA DIR="Request" CMD="Device_ClearState"/>
<b>Reply</b>	<LIMA DIR="ReplyOk" CMD="Device_ClearState"/>
<b>Description</b>	The status bit can be reset with this command. Continuous errors are reset the next time read-out takes place.

### 2.4.8 Reading out the Network Status (T, R)

<b>Purpose</b>	Read out the connection status of the network interface.
<b>Attributes</b>	
<b>Request</b>	<LIMA DIR="Request" CMD="Device_GetNetworkState"/>
<b>Reply</b>	<LIMA DIR="ReplyOk" CMD="Device_GetNetworkState" STATE_FTP="offline" STATE_RTE="offline" STATE_TCP/IP="offline"/>
<b>Description</b>	The connection statuses of the individual network protocols including TCP/IP, FTP and Industrial Ethernet are read out with this command.

### 2.4.9 Reading Out the Device Status (T, R)

	Retrieve the current device status.
<b>Attributes</b>	
<b>Request</b>	<LIMA DIR="Request" CMD="Device_GetState"/>
<b>Reply</b>	<LIMA DIR="ReplyOk" CMD="Device_GetState" STATE="0"/>
<b>Description</b>	u32 general_busy :1; u32 general_warning :1; u32 general_criticalError :1; u32 general_fatalError :1; u32 general_reserved :2; u32 peripheral_tcpip :1; u32 peripheral_udp :1; u32 peripheral_industrialEthernet :1; u32 peripheral_camera :1; u32 peripheral_digitalIO :1; u32 peripheral_focusIllumination :1; u32 peripheral_UART :1; u32 peripheral-reserved: 1; u32 memory_flash :1; u32 memory_ram :1; u32 memory_sdcard :1; u32 memory_fileaccess :1; u32 memory_compatibility :1; u32 memory_reserved :1; u32 temperature_Overtemperature :1; u32 temperature_undertemperature :1; u32 temperature_reserved :2; u32 image_sequencing :1; u32 image_processing :1; u32 image_trigger :1; u32 image_reserved :1; u32 reserved :4;

### 2.4.10 Resetting the Device to Default Settings (T, R)

<b>Purpose</b>	Return the device settings to their default values (except for network settings).
<b>Attributes</b>	REBOOT: 1 or 0 Causes a restart after entering 1, standard = 0.
<b>Request</b>	<LIMA DIR="Request" CMD="Device_FactoryReset" REBOOT="1"/>
<b>Reply</b>	<LIMA DIR="ReplyOK" CMD="Device_FactoryReset"/>
<b>Description</b>	All environment variables are returned to their default settings. If the reboot attribute has been set, the device is restarted.

### 2.4.11 Resetting Network Settings (T, R)


<b>Purpose</b>	Network settings are reset to their default values.
<b>Attributes</b>	REBOOT: 1 or 0 Forces a restart after entering 1, standard = 0.
<b>Request</b>	<LIMA DIR="Request" CMD="Device_NetReset"/>
<b>Reply</b>	<LIMA DIR="ReplyOK" CMD="Device_NetReset"/>
<b>Description</b>	All environment variables which affect network settings are returned to their default values. If the reboot attribute has been set, the device is restarted.

## 2.5 Teach+ Commands

### 2.5.1 Starting Teach+ (T, R)

<b>Purpose</b>	Start a Teach+ recording.
<b>Attributes</b>	IMAGECOUNT: Number of recordings to save (mandatory parameter)
<b>Request</b>	<LIMA CMD="TeachPlus_Start" DIR="Request" IMAGECOUNT="10"/>
<b>Reply</b>	<LIMA DIR="ReplyOk" CMD="TeachPlus_Start"/>
<b>Description</b>	The Teach+ recording is started with this command.

### 2.5.2 Aborting Teach+ (T, R)

<b>Purpose</b>	Cancel a Teach+ recording.
<b>Attributes</b>	
<b>Request</b>	<LIMA CMD="TeachPlus_Cancel" DIR="Request"/>
<b>Reply</b>	<LIMA DIR="ReplyOk" CMD="TeachPlus_Cancel"/>
<b>Description</b>	A running Teach+ recording can be aborted with this command.
	 <p><b>NOTE!</b> If the recording is canceled, the Teach+ file is saved with the recordings saved until that point.</p>

### 2.5.3 Querying the Status of the Teach+ Recording (T, R)

<b>Purpose</b>	Query the current status of the Teach+ recording.
<b>Attributes</b>	
<b>Request</b>	<LIMA CMD="TeachPlus_GetState" DIR="Request"/>
<b>Reply</b>	<LIMA DIR="ReplyOk" CMD="TeachPlus_GetState" STATE="off"/>
<b>Description</b>	<p>STATE="recording images" PENDING="75" /&gt;</p> <p>The status of a Teach+ recording can be queried with this command. The STATE attribute can have one of the following values:</p> <ul style="list-style-type: none"> <li>• Off</li> <li>• Recording images</li> <li>• Writing archive</li> </ul> <p>The PENDING attribute indicates how many recordings still have to be saved.</p>

### 2.6 Reading out Identification Data (T, R)

<b>Purpose</b>	Read out identification data.
<b>Attributes</b>	NAME: Name of the identification variables
<b>Request</b>	<LIMA DIR="Request" CMD="Identification_Get" NAME="SerialNumber"/>
<b>Reply</b>	<LIMA DIR="ReplyOK" CMD="Identification_Get" NAME="SerialNumber" VALUE="0123483"/>
<b>Description</b>	Individual identification data can be read out with this command. These are permanently assigned to the device and cannot be changed.

Name	Description
ArticleNumber	Article number
Description	Description
DeviceGroup	Sensor group
DeviceType	Sensor type
SerialNumber	Serial number
ProductionDate	Date of manufacture
IsFixFocus	Fix focus version
ProductVersion	Product Version
IndustrialEthernet	Industrial Ethernet type
ethaddr	MAC address

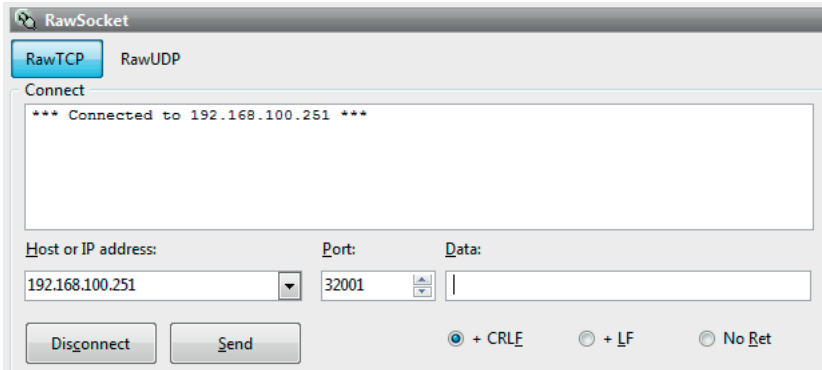
### 3. LIMA Command Example

The following example shows how certain values can be retrieved from the uniVision project using a LIMA command. The path from the uniVision project is required to this end.

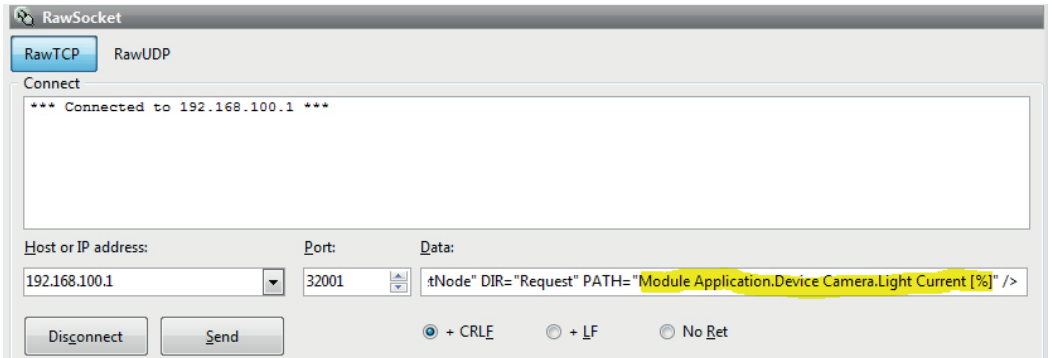
1. Open a TCP/IP connection to the weQube (e.g. with Free IP Tools):

IP-Address of the weQube: 192.168.100.1 (default)

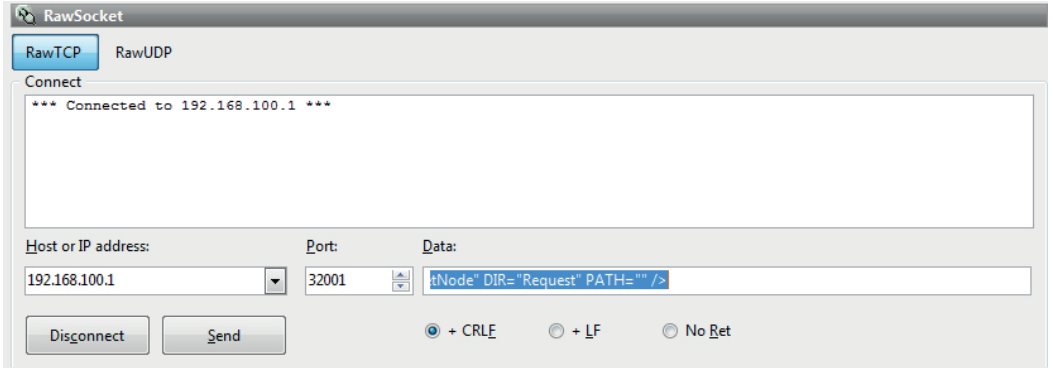
TCP-IP Port of the weQube: 32001



2. Copy the LIMA command "Project\_GetNode" of the interface protocol and insert into the data field.



3. Delete the path from the LIMA command.

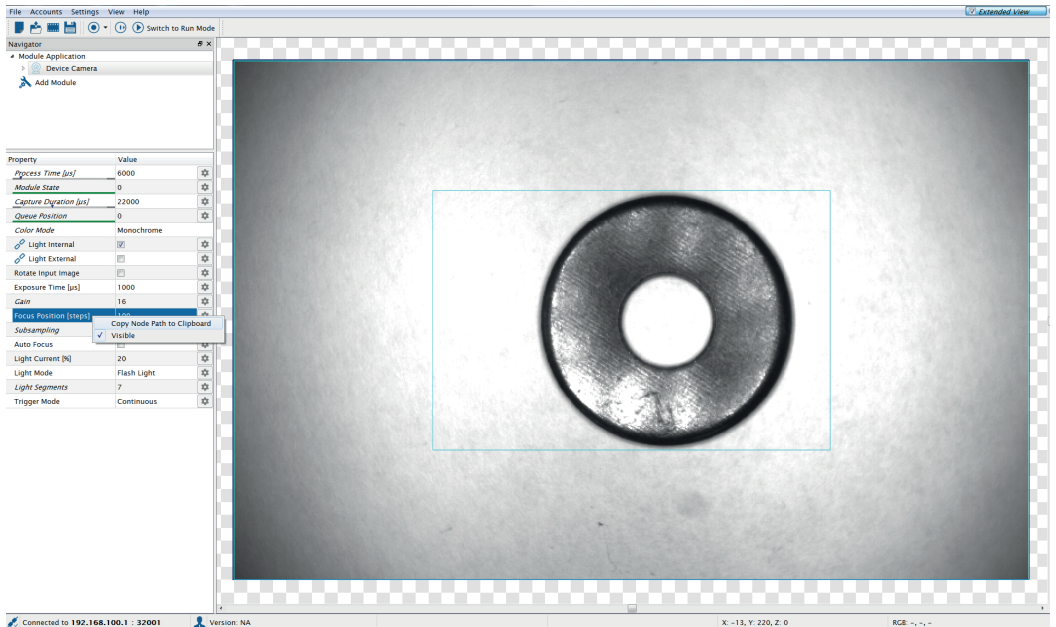


4. Close the TCP/IP connection to the weQube.

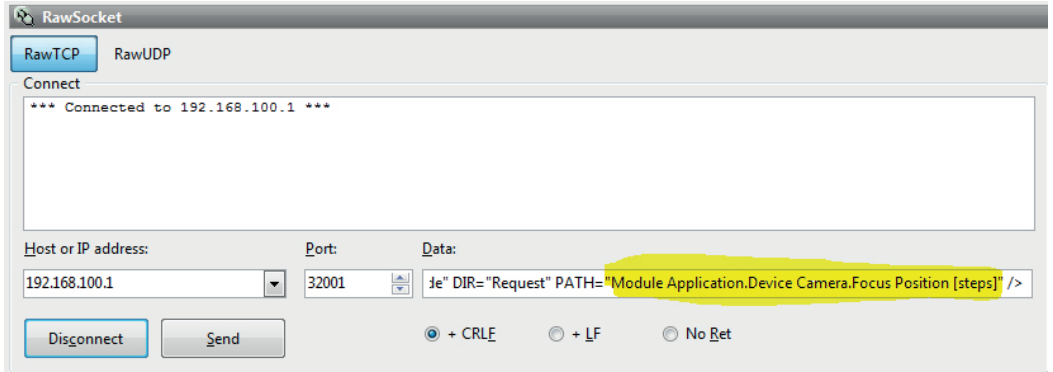
5. Open the uniVision software.

6. The extended view should be activated.

7. By right click on the relevant parameter and “Copy Node Path to Clipboard” copy Node to the clipboard.



- Close the uniVision software.
- Reconnect via a TCP/P connection (e.g. with Free IP Tools) to the weQube
- Insert the Node Path into the command.



- Send the LIMA command.
- The requested value is included in the LIMA answer.

