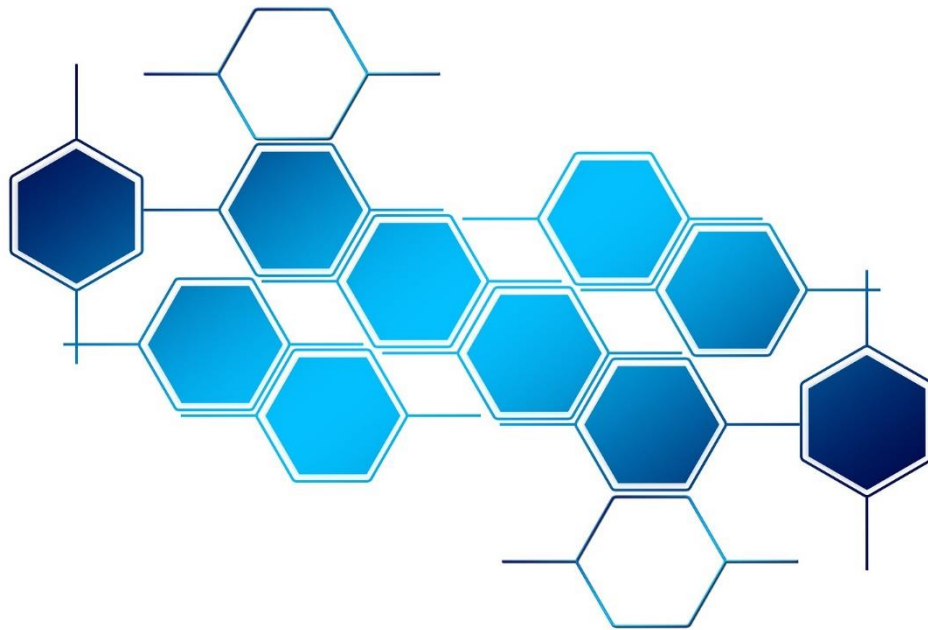


Server's Plugin

User Manual - Version 1.0



WELCOME TO WORK PRO

Thank you for choosing the BlueLine Digital MKII of WORK PRO.

This document contains essential information about the use of the system.

Please, consult regularly WORK PRO website to download the latest version of the document and software updates: <https://www.workpro.es/>

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1. Introduction

WorkCAD3 has a server's plugin to open communications with third-parties. This plugin accepts the following types of communications:

- UDP.
- TCP client.
- TCP server.
- Serial Port.
- RUDP.

In this way, besides being able to communicate with BlueLine series devices, you will also be able to communicate with third-parties devices through custom interfaces that you can create with WorkCAD3 Editor.

We recommend you that if you don't have experience in layouts creation check WORK PRO YouTube's channel associate with WorkCAD3.

https://www.youtube.com/watch?v=RJ-ZV9pLCFg&list=PLB48E41z2Alc82CIG5RHQe5NDYZf_VBYy

2. Installation

To install the plugin you just have to paste the library file **jsWidgetsComm_X_X_X.dll** in the "plugins" folder that follows the following path. **C:\Program Files (x86)\WorkCAD3\plugins**

Once installed the plugin the servers will be visible inside WorkCAD3 Editor.

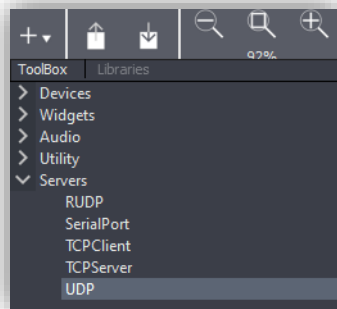
3. Use of Server's Plugin

Hereunder, it is detailed the use of different communication servers enabled by the plugin.

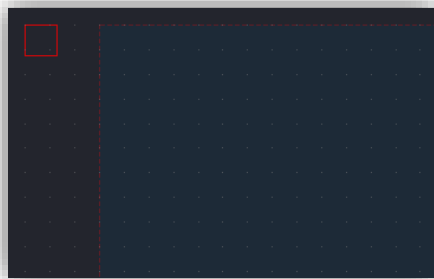
3.1. UDP

3.1.1. Sending commands by UDP

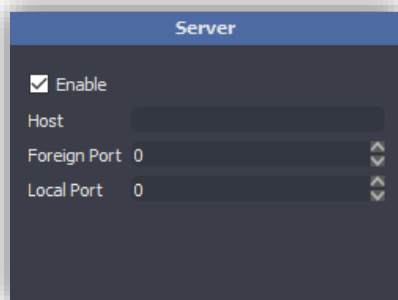
First, drag and drop the UDP server from the Add/Toolbox/Servers/UDP button to the layout page.



The UDP server will be represented in the layout as a red edge rectangle.



Click on it to access to the UDP server configuration options.

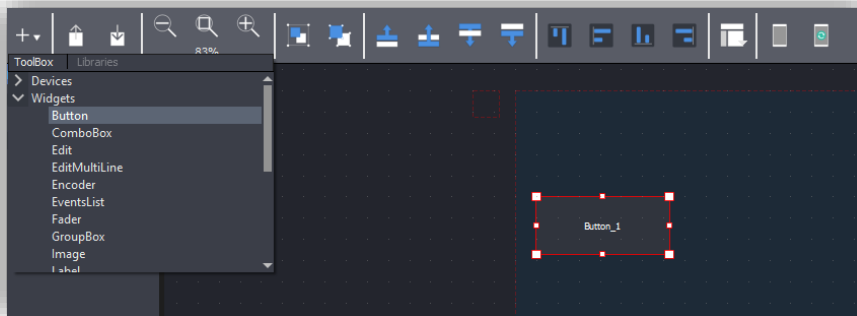


- **Enable.** Enable or disable the server.
- **Host.** Destination IP address.
- **Foreign Port.** Destination port.
- **Local Port.** Origin port.

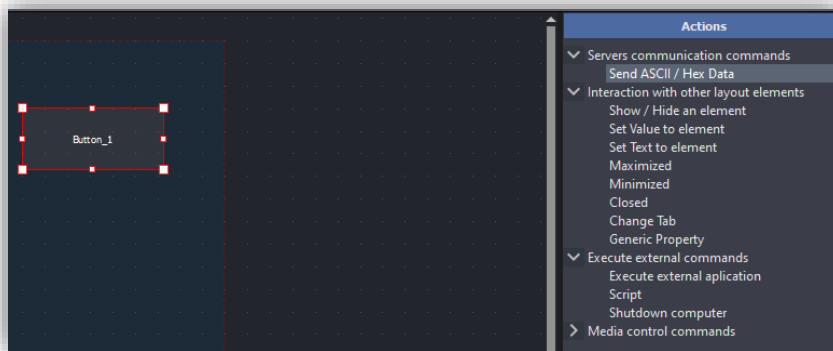
Once the server is configured, we must drag and drop over a widget the "Send ASCII/HEX Data" action located in "Servers communications commands". In this case we will use a button that sends the command over UDP when is pressed.

Follow steps below:

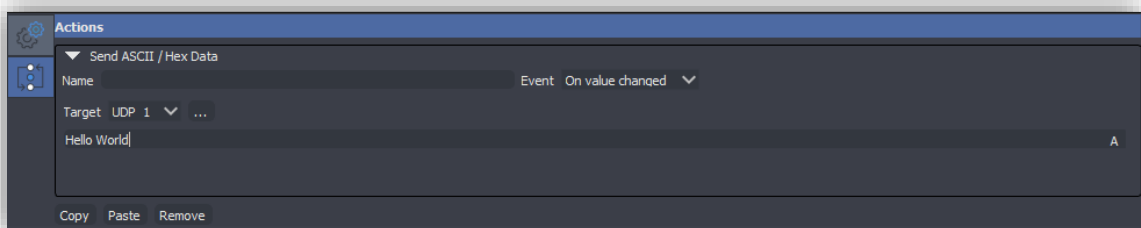
1. We drag and drop the widget button over the layout from Add/Toolbox/Widgets/button.



2. We drag and drop the action "Send ASCII/HEX Data" over the button from the actions tab.




3. We include the data to send within the "Send ASCII/HEX Data" action. For that we select the button and we go to the actions and parameters tab.



- **Name.** Name that we want to give to the command.
- **Event.** Event that executes the action. Use "On value Change". The action will be executed when the button value changes. It means the button switches off/on or on/off. Due to the trigger's internal configuration, the command will be sent when the value is maximum, that is to say, the button turns on.

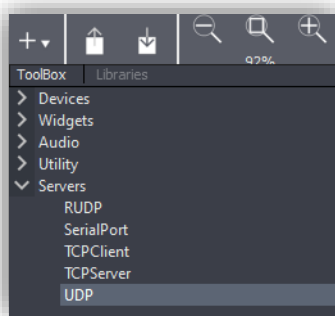
To see the trigger's configuration activate the advanced view from View/Advanced View.

- **Target.** Server to use, in this case UDP_1 (name of the UDP server). We choose it through the drop-down menu or by clicking on the server (red box) after pressing the button .
 - **Data field.** Data to send as ASCII (A) or as HEX (H).
4. We launch the layout in test mode or we transfer it to the end device. When the button is pressed, we will send the data entered.

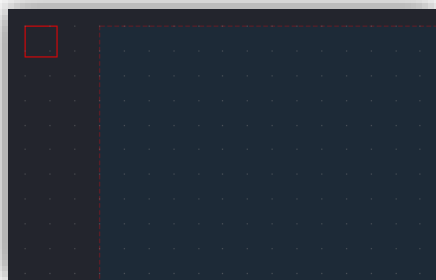
3.1.2. Receiving commands by UDP

If you want that the WorkCAD3 layout acts as a UDP commands receiver, the implementation should be made by scripting. So, you will need to have knowledge in JavaScript.

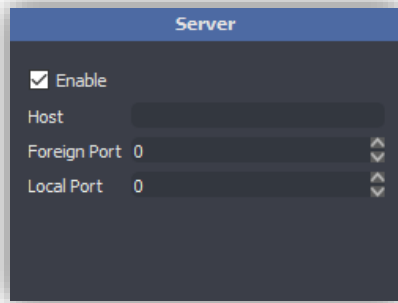
First of all, drag the UDP server from the Add/Toolbox/Servers/UDP button, to the layout page.



The UDP server will be represented in the layout as a red edge rectangle.



Click over it access the UDP server configuration options.

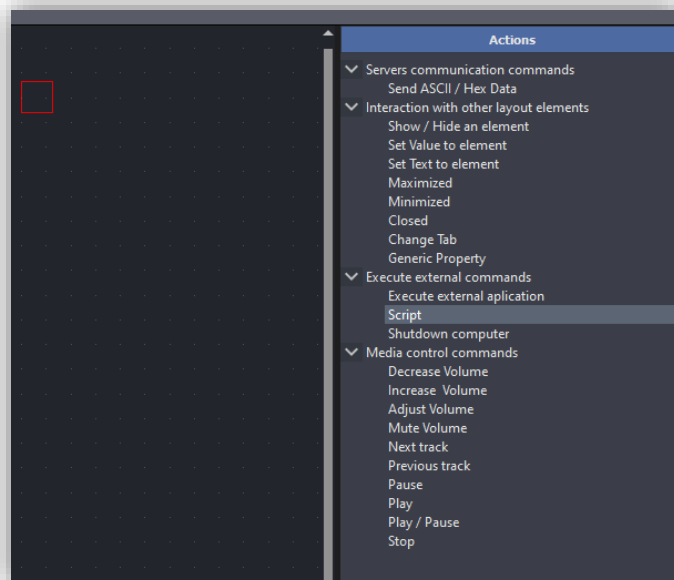


- **Enable.** Enable or disable the server.
- **Host.** Destination IP address.
- **Foreign Port.** Destination port.
- **Local Port.** Origin port.

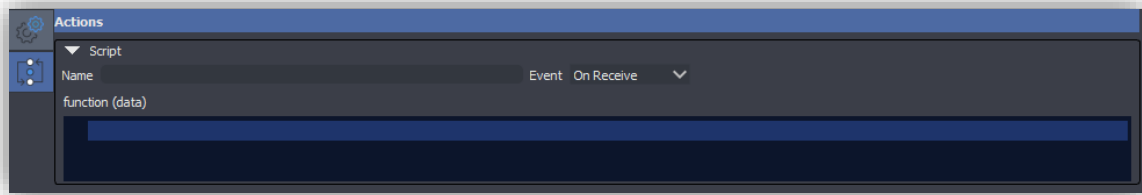
Once the server is configured, we must drag and drop the “Script” action located in “Execute external commands” to the UDP server.

Follow steps below:

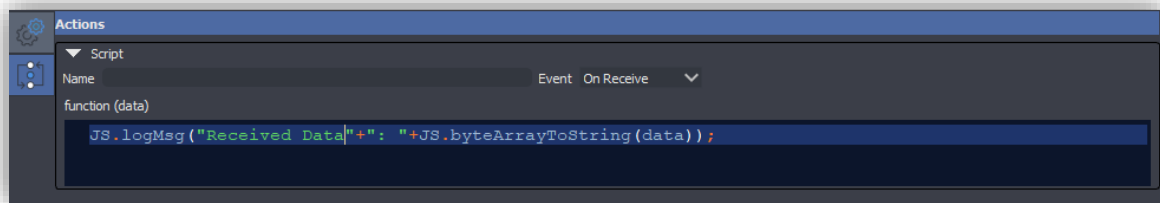
1. We drag and drop the “script” action over the server from the actions tab.



2. We write the corresponding script.



- **Name.** Name that we want to give to the script.
- **Event.** Event that executes the script. Use "On Receive". When the server receives a UDP datagram, the script is executed.
- **Function (data).** Field to include the script and the one to which the received data is passed.



In the following script example, the server shows the received data by log window.

3. We launch the layout in test mode or we transfer it to the end device. When receiving a command over UDP its content is shown by the WorkCAD3 log.

To open the WorkCAD3 log go to the View/Log Window.

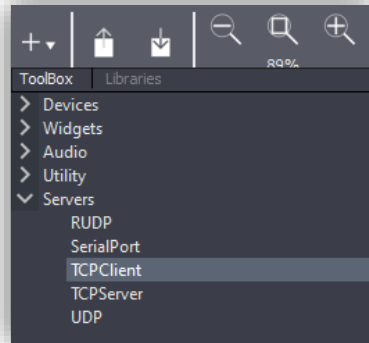
To access the JavaScript functions created for WorkCAD3 go to Help/Documentation.



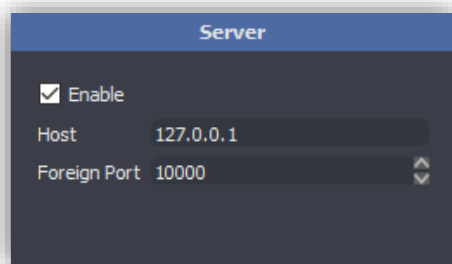
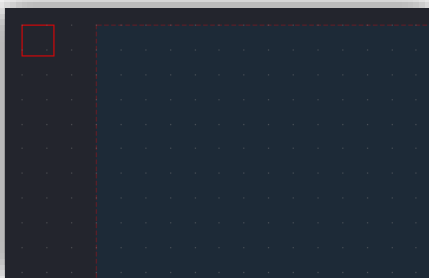
The use of the UDP server for the reception of information will be mainly used in monitoring functions with third-parties devices. If you don't have the necessary knowledge in JavaScript, mail to support@equipson.es to receive the adequate orientation.

3.2. TCP Client

First, drag and drop the TCP client from the Ad/Toolbox/Servers/TCPClient button to the layout page.



The TCP client will be represented in the layout as a red edge rectangle.



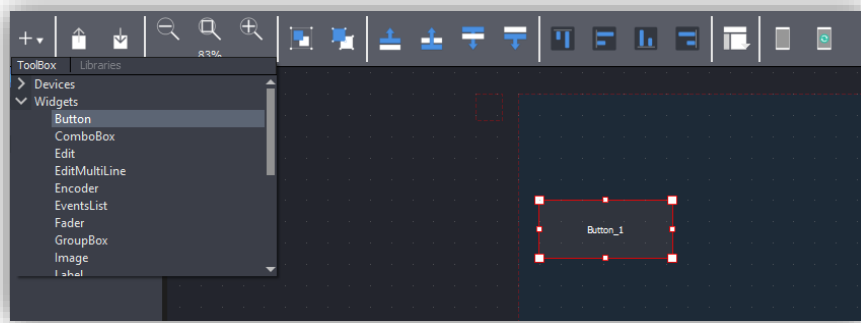
Click over it to access the TCP client configuration options.

- **Enable.** Enable or disable the TCP client.
- **Host.** Destination IP address
- **Foreign Port.** Destination port.

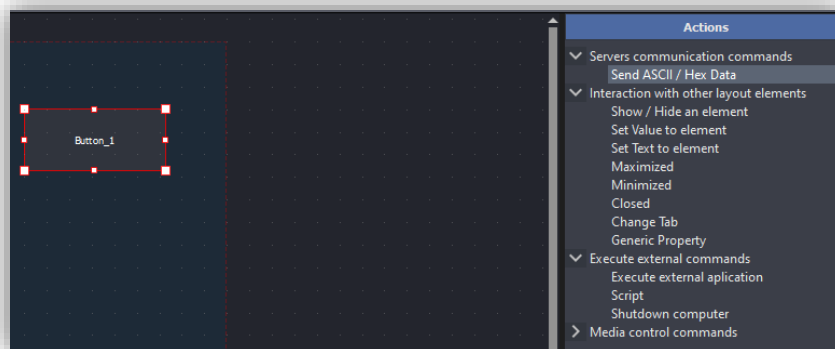
Once the server is configured, we must drag and drop the action "Send ASCII/HEX Data" located in "Servers communications commands" over a widget. In this case we use a button as widget that will send a command over TCP when is pressed.

We follow the following steps:

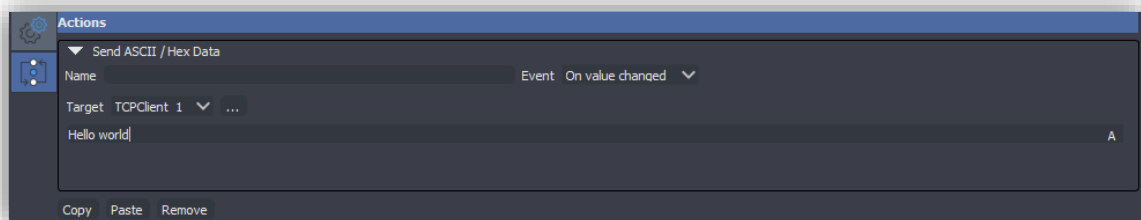
1. We drag and drop the widget button over the layout from Add/Toolbox/Widgets/button.



2. We drag and drop the action "Send ASCII/HEX Data" over the button from the actions tab.




3. We include the data to be sent in the "Send ASCII/HEX Data" action. For that we select the button and we go to the actions and parameter tab.



- **Name.** Name that we want to give to the command.
- **Event.** Event that executes the action. Use "On value Change". The action will be executed when the button value changes. It means the button switches off/on or on/off. Due to the trigger's internal configuration, the command will be sent when the value is maximum, that is to say, the button turns on.

To see the trigger's configuration activate the advanced view from View/Advanced View.

- **Target.** Server to use, in this case TCPClient_1 (name of the TCP client). We choose it through the drop-down menu or by clicking on the server itself (red box) after pressing the button  .
 - **Data field.** Data to send as ASCII (A) or as HEX (H).
4. We launch the layout in test mode or we transfer it to the end device. When the button is pressed the data over TCP will be send.

3.3. TCP Server

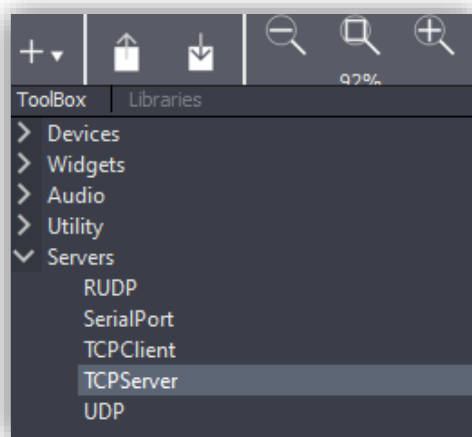
Keep in mind that, unlike UDP, TCP allows fragmentation. It means that a packet can be divided in segments.

This will not be an issue for the client because the TCP/IP pile protocols will take care of segment the packet in the corresponding layer. But when we act as a server, we need to implement the segments reconstruction, which will depend of each protocol. Furthermore, a TCP server can keep connections with different clients so we will have to create the corresponding socket for each one.

Both the creations of sockets and the segments reassembly will have to be done by scripting, because normally we will work with proprietary TCP clients protocols.

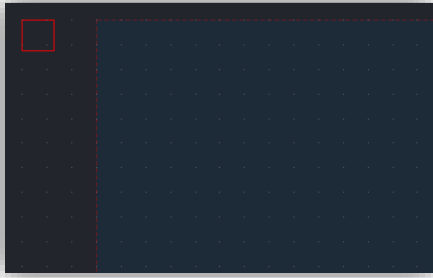
In this chapter we will find out how to add the script to the TCP server, although the content will be programmed in JavaScript, by an expert programmer.

First, drag and drop the TCP server from the Add/Toolbox/Servers/TCPServer buttoonto the layout

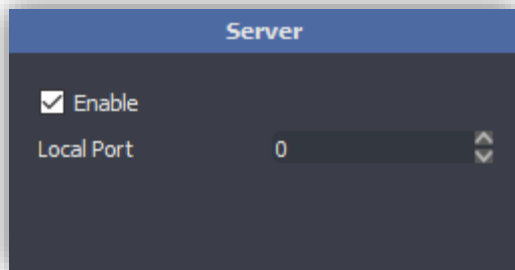


page.

The TCP server will be represented in the layout by a red edge rectangle.



Click over it to access to the TCP server configuration options.

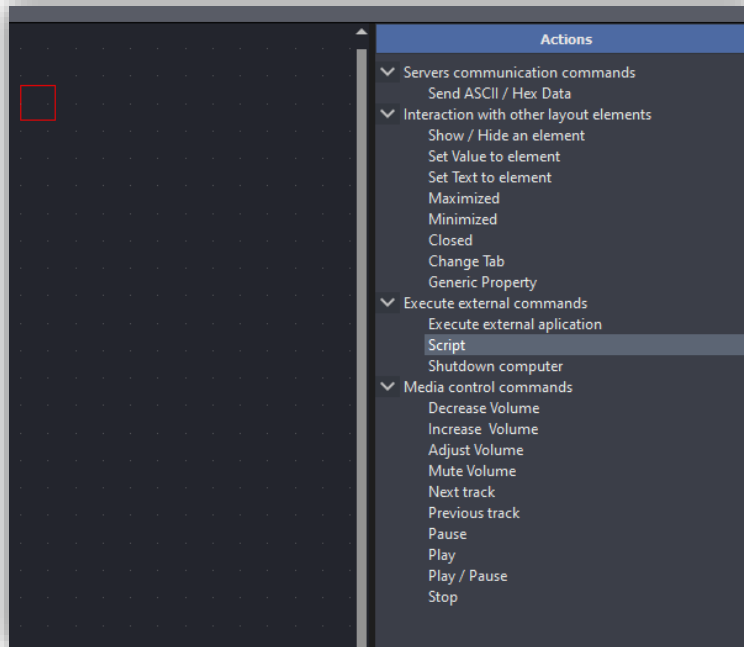


- **Enable.** Enable or disable the TCP server.
- **Local Port.** Local port to receive the TCP segments.

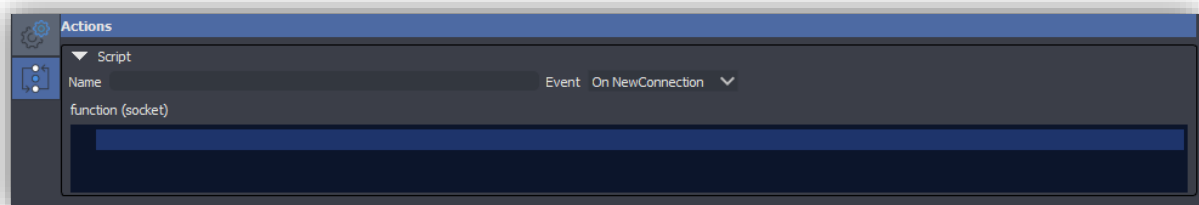
Once the server is configured, we must drag and drop the "Script" action located in "Execute external commands" to the TCP server.

Follow the steps below:

1. We drag and drop the "script" action over the server from the actions tab.

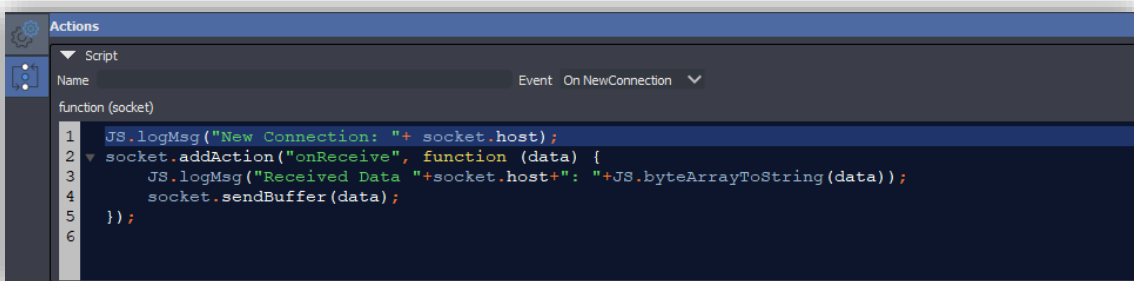


2. We write the corresponding script



- **Name.** Name that we want to give to the script.
- **Event.** Event that executes the script. Use "On NewConnection". When the server receives a new connection by a client the corresponding socket is created.
- **Function (socket).** Field where we include the script, the one to which we pass the created socket whenever is a new connection.

In the following example, the server shows the client IP, the received data by the Log window and



makes an echo to resend the inbound data to the client.

3. We launch the layout in test mode or we transfer it to the end device. When TCP segment is received its content is shown in the WorkCAD3 log and resend to the client.

To open the WorkCAD3 log go to View/Log Window.

To access the created JavaScript functions for WorkCAD3 go to Help/Documentation.



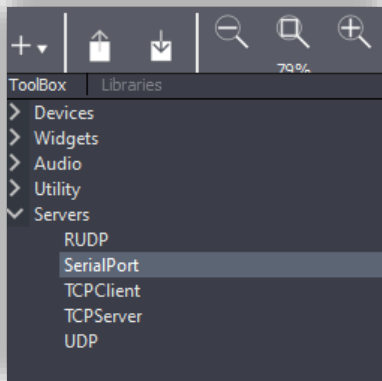
The use of the UDP server for the reception of information will be mainly used in monitoring functions with third-parties devices. If you don't have the necessary knowledge in JavaScript, mail to support@equipson.es to receive the adequate orientation.

3.4. Serial

The Serial Port server allows using the final device on WorkCAD3 player is running as serial port emitter/receiver.

3.4.1. Sending commands by serial port

First, drag and drop the Serial Port server from the Add/Toolbox/Servers/SerialPort button to the layout page.



The Serial Port server will be represented in the layout as a red edge rectangle.



Click on it to access the Serial Port server configuration options.

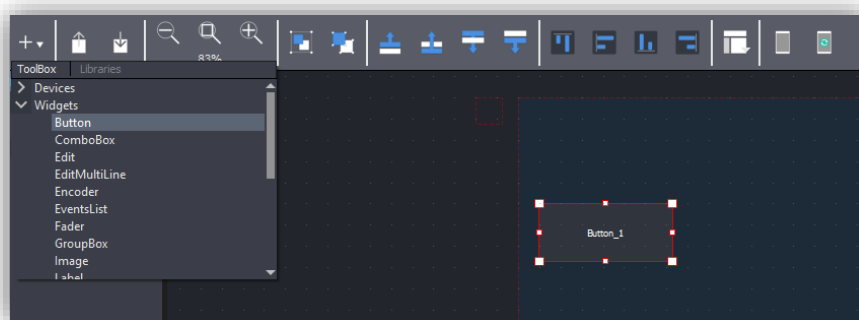


- **Enable.** Enable or disable the Serial Port server.
- **Port.** Serial communication COM Port.
- **Baudrate.** Speed of transmission.
- **Data Bits.** Number of bits per word.
- **Stop bits.** Number of bits that indicates the end of a word.
- **Flow control.** Flow control, for the forecast of collisions.
- **Parity.** Parity control, for transmission errors detection.

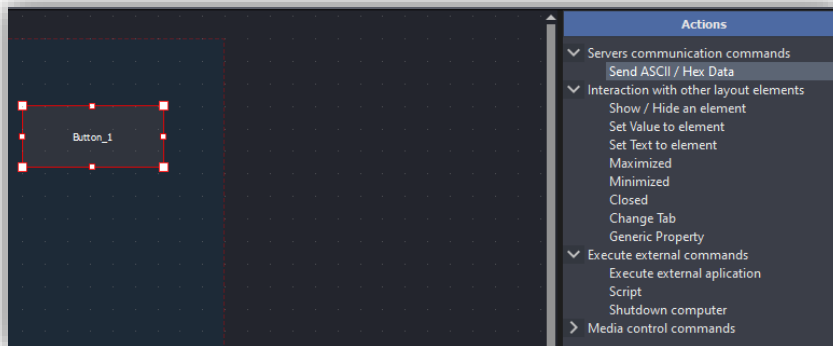
Once the Serial Port server is configured, we must drag and drop over a widget the "Send ASCII/HEX Data" action located in "Servers communications commands". In this case we will use a button that when is pressed sends the command by serial port.

Follow steps below:

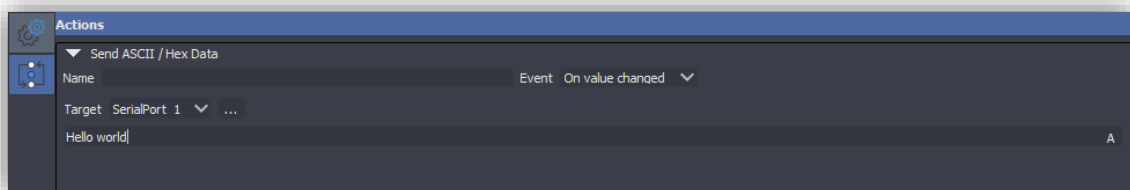
1. We drag and drop the widget button over the layout from Add/Toolbox/Widgets/button.



2. We drag and drop the action "Send ASCII/HEX Data" over the button from the actions tab.




3. We include the data to send in the action "Send ASCII/HEX Data". For that we select the button and we go to the actions and parameters tab.



- **Name.** Name that we want to give to the command.
- **Event.** Event that executes the action. Use "On value Change". The action will be executed when the button value changes, it means the button switches off/on or on/off. Due to the trigger's internal configuration, the command will be sent when the value is maximum, it means when the button turns on.

To see the trigger's configuration, activate the advanced view from View/Advanced View.

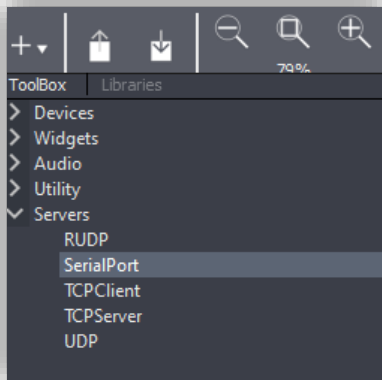
- **Target.** Server to use, in this case SerialPort_1 (name of the Serial Port server). We choose it through the drop-down menu or clicking on the server (red box) after pressing the button  .
- **Data field.** Data to send as ASCII (A) or as HEX (H).

4. We launch the layout in test mode or we transfer it to the end device. When pressing the button we will send the data entered by serial port.

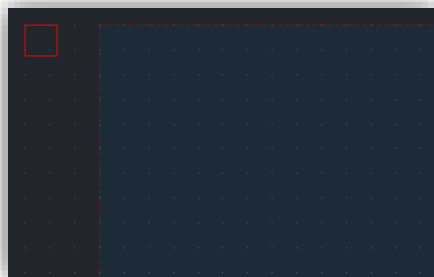
3.4.2. Receiving commands by serial port

If you want that the WorkCAD3 layout acts as a commands receiver, the implementation should be made by scripting. So you will need to have knowledge in JavaScript.

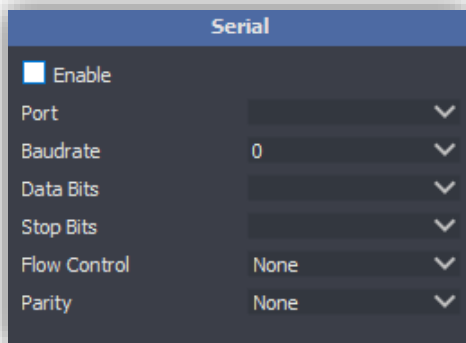
First, drag and drop the Serial Port server from the Add/Toolbox/Servers/SerialPort button to the layout page.



The Serial Port server will be represented in the layout as a red edge rectangle.



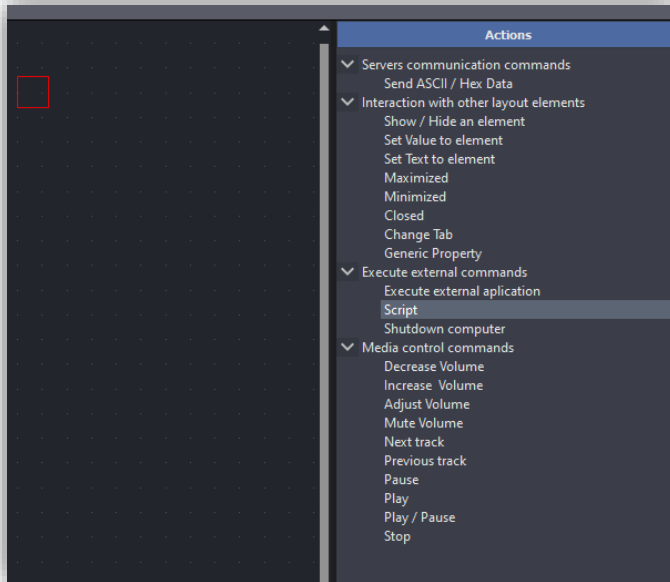
Click on it to access to the Serial Port server configuration options.



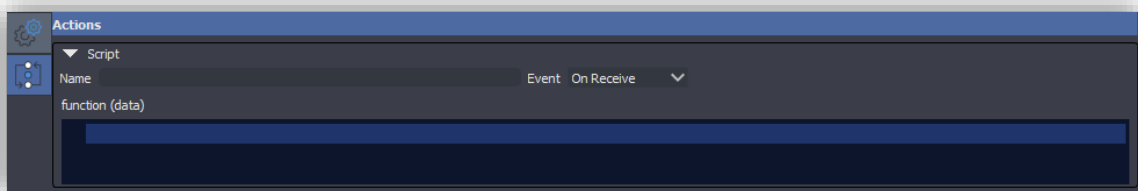
- **Enable.** Enable or disable the Serial Port server.
- **Port.** Serial communication COM Port.
- **Baudrate.** Speed of transmission.
- **Data Bits.** Number of bits per word.
- **Stop bits.** Number of bits that indicates the end of a word.

- **Flow control.** Flow control, for the forecast of collisions.
- **Parity.** Parity control, for transmission errors detection.

Follow steps following below:

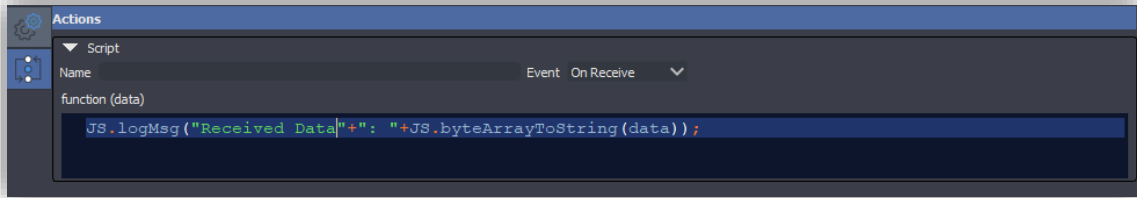


1. We drag and drop the "script" action over the server from the actions tab.



2. We write the corresponding script.
 - **Name.** Name that we want to give to the script.
 - **Event.** Event that executes the script. Use "On Receive". When the server receives a command by serial port, the script is executed.
 - **Function (data).** Field to include in the script and the one to which the received data is passed.

In the following script example shows the received data by log window.



3. We launch the layout in test mode or we transfer it to the end device. When receiving a command by serial port its content is shown by the WorkCAD3 log.

To open the WorkCAD3 log go to View/Log Window.

To access the created JavaScript functions for WorkCAD3 go to Help/Documentation.



The use of the Serial Port server for the reception of commands will be mainly used in monitoring functions with third-parties devices. If you don't have the necessary knowledge in JavaScript, go to support@equipson.es to receive the adequate orientation

3.5. RUDP

RUDP is a not connection orientated with reliable delivery protocol of the transport layer, which allows to resending datagrams when there are errors or losses in the transmission.

RUDP is a protocol used by WorkCAD3 to communicate with BlueLine y LightMouse devices. Due to RUDP is not a standard it will be hide in future versions of the server's plugin. Its use is similar to the UDP server.