PURPOSE

This guide will provide an overview and instructions on how to use the test.con software to create custom programs and interface screens.

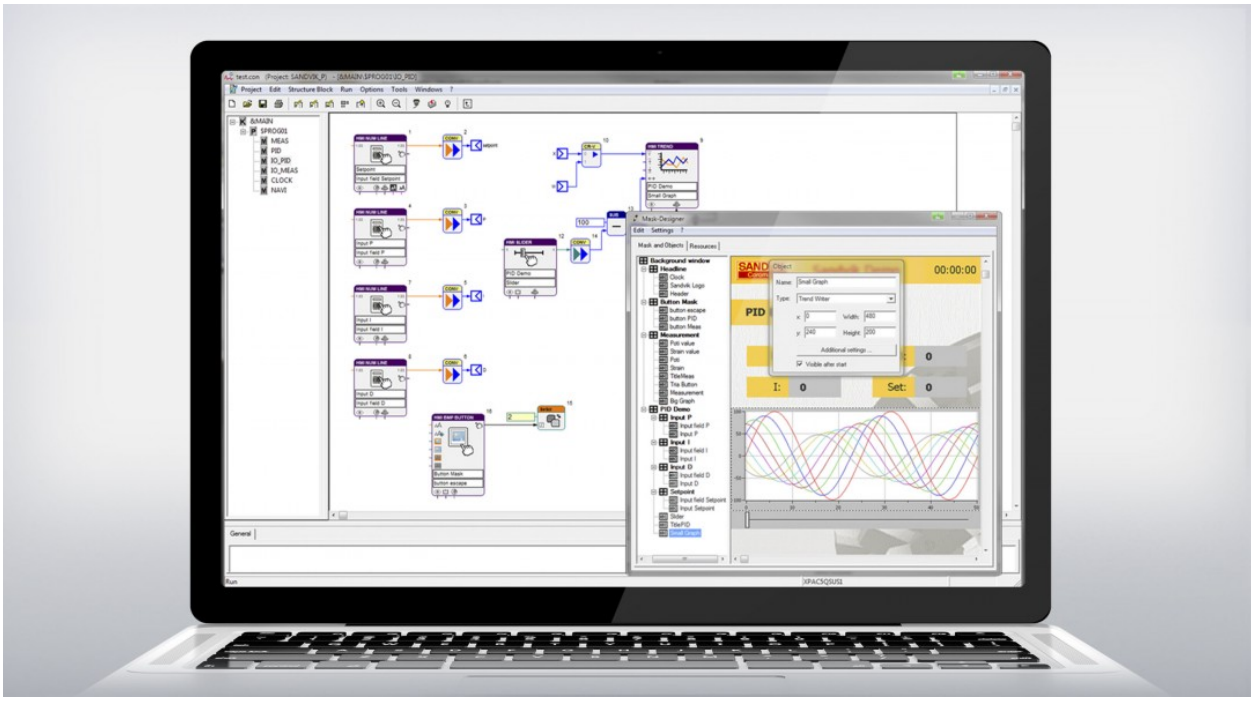

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Table of Contents

Compatible Hardware 3
Q.station 3
Q.monixx 3
Q.gate 3
Software Overview 3
test.commander 4
test.con 5
Interface Screens 5
Start Page: System Overview 6
Red: Online Values 6
Green: test.con Program 6
Orange: I/O Modules 6
Yellow: System Health 7
Blue: Network Settings 7
PAC Functionality 7
Project Configuration 7
Controller Settings 7
Channel Configuration 8
Data Logger 9
test.con 11
Creating a New Project 11
User Interface 12
Connecting to a Controller 13
Function Block Library 14
Editing a Project 15
HMI Blocks 18
Download Project 21
References 23

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Compatible Hardware

The test.con software is used in conjunction with "T" versions of the Gantner Instruments PAC functionality enabled controllers. These versions of the controllers have the license for the software preloaded on the device.

The Q.station and Q.monixx also have "D" versions where it features an onboard touchscreen display for easy access to the HMI screen.

Q.station

- Onboard memory, USB, and SD Card. FTP and network drive connection.
- Up to 20 Data loggers (continuous, triggered, event-based)
- Communication: Ethernet, EtherCAT, and CAN

Q.monixx

- Onboard memory, USB, and SD Card. FTP and network drive connection.
- Onboard IO: 8 analog inputs, 12 digital inputs, 7 serial channels
- Up to 4 Data loggers (continuous, triggered, event-based)
- Communication: Ethernet

Q.gate

- Synchronization and timestamp of measurement values
- Connection of USB for storage. Push data to FTP or network drive location
- High data rate over Ethernet

Software Overview

The suite of software provided by Gantner Instruments is able to configure the system, monitor and visualize data, and create customized human machine interfaces.

GI.bench/test.commander is used to configure your DAQ system and prepare it for use with test.con.

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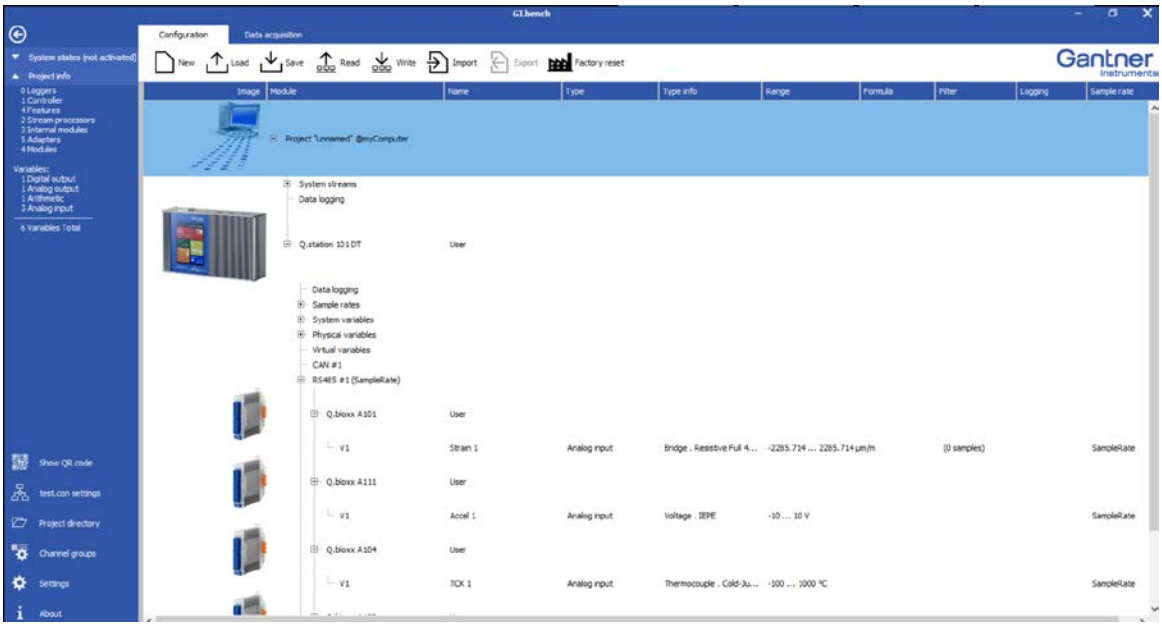
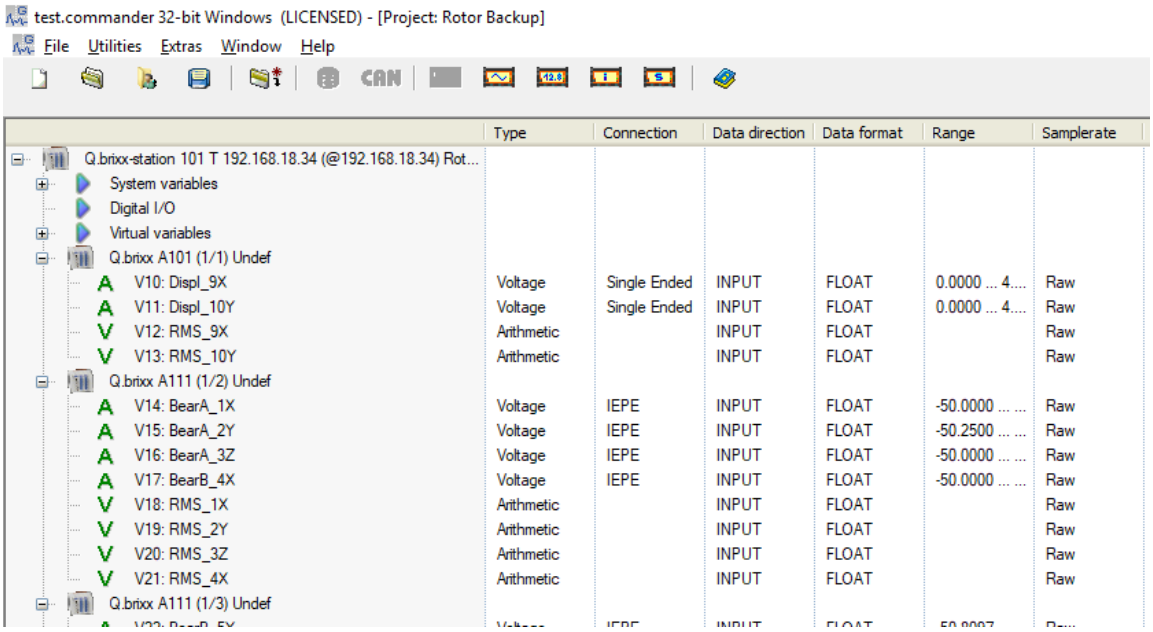
GI.bench

This is the new software for configuration and visualization with a Q.station controller.



test.commander

This is the original software for the configuration of the controller and measurement modules. Here channels are configured and the loggers can be modified.



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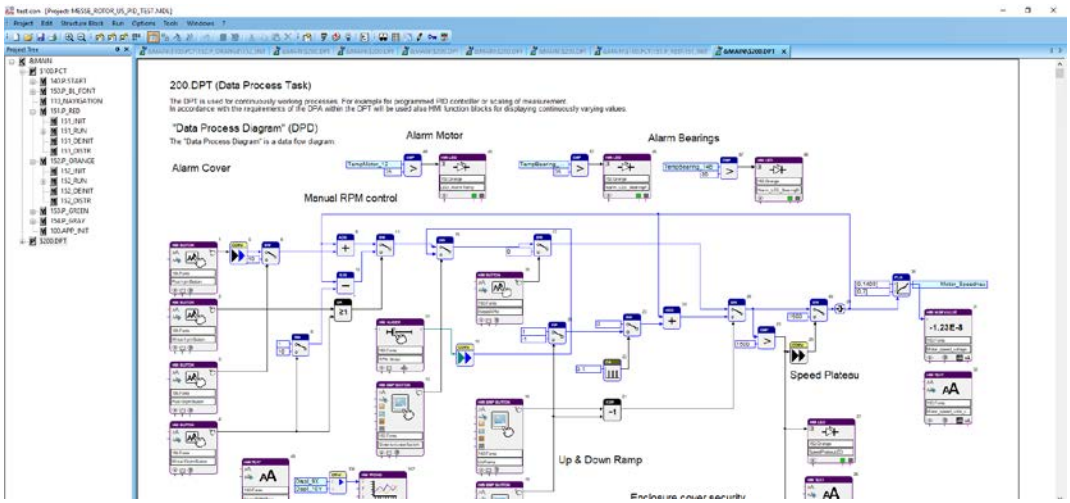
test.con

This is a graphical programming software for the implementation of logic and control and the customization of the interface screens.



Interface Screens

The screen can be interacted with either with a controller that has an onboard display or through an external monitor using a VNC viewer (Q.station/Q.gate). The first page you will see will provide access to live values, system health, IP settings, and the test.con program if one is loaded. Click on the green box to enter the test.con program.

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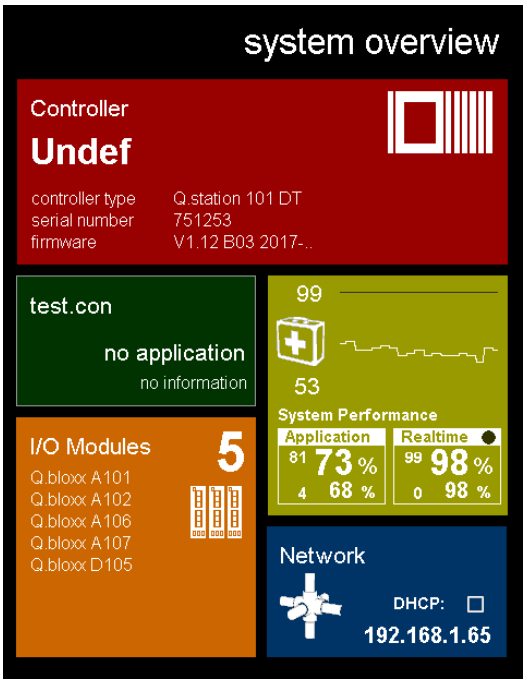

Start Page: System Overview

This is the landing page of the controller interface that shows the various pages that can be accessed. Each box can be selected to navigate to its respective landing page where further information and functionality is displayed.

Red: Online Values

This page will display a comprehensive list from the DAQ system for the channel's values in real-time. Additionally, each channel can be visualized independently in real-time through a trend chart.

Green: test.con Program

This provides access to the test.con program if one is loaded. It will bring you to the program's landing page where any customized screens can be accessed.

Orange: I/O Modules

This page shows a list of the connected measurements modules and which UART and address the modules have been assigned.

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Yellow: System Health

This page provides an overview of the controller's performance through its CPU usage and processor temperature.

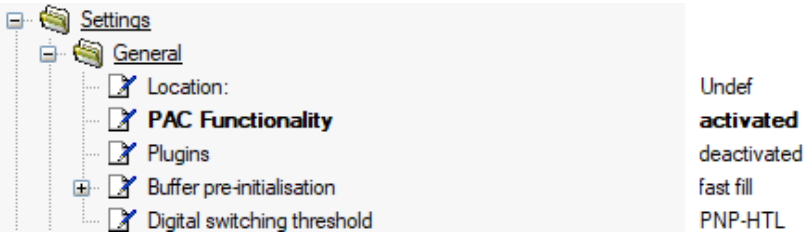
Blue: Network Settings

Here the IP, subnet, and gateway addresses can be viewed or modified. DHCP can also be enabled for the controller to obtain an IP address dynamically.

PAC Functionality

A custom program built in test.con can be downloaded and ran on the controlerr. Before downloading a program to the controller, we need to verify that the PAC functionality of the controller is activated.

With the controller loaded in test.commander, double-click on the controller and navigate to Settings > General. Make sure PAC Functionality is set to activated. Write changes to controller.



Project Configuration

Configuration of the controller and any connected measurement modules is done using the test.commander software.

Controller Settings

Double-click the controller in the project window to open the settings menu. The available settings will vary slightly per controller. Here you can configure the sample rate, slave interface communication rate, and more.

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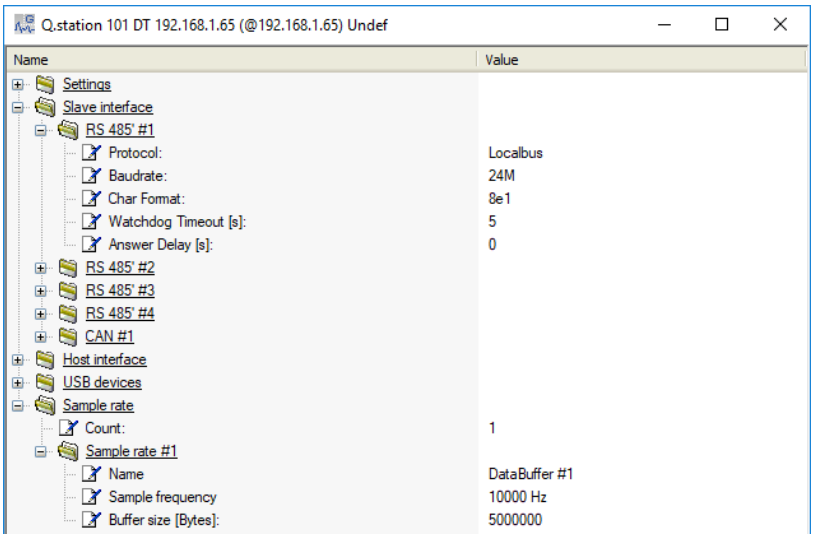
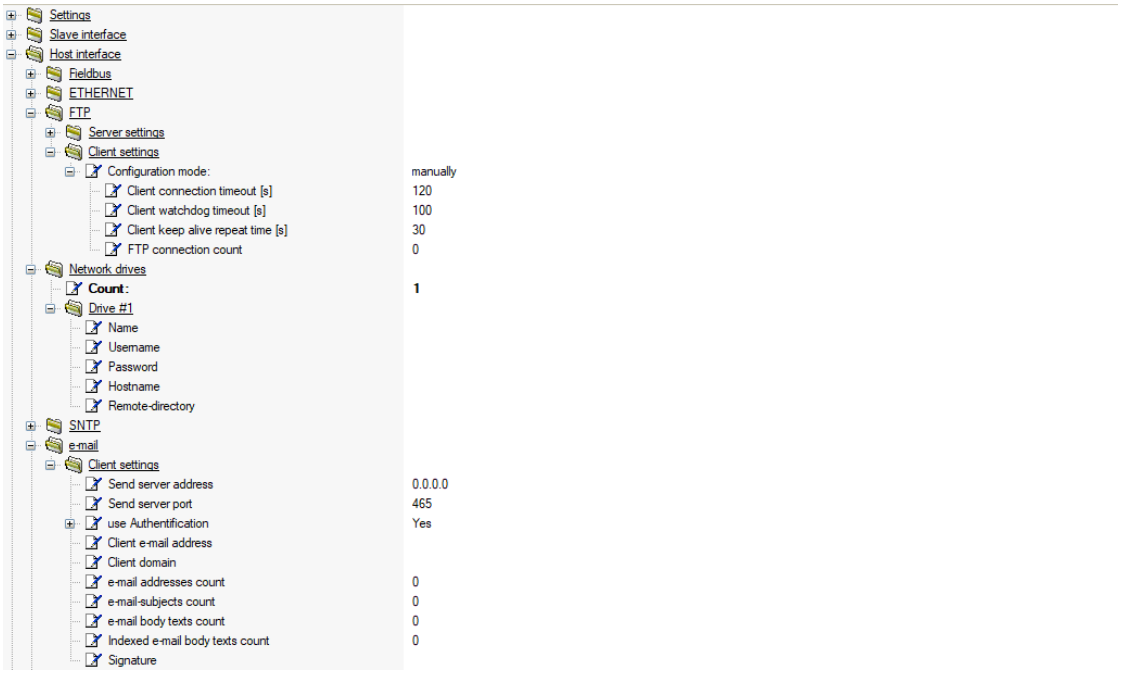


Under the Host interface section, the different storage destinations can be configured such as FTP folder, network drive, and e-mail.



Channel Configuration

Double-clicking on a module in the project window will launch the ICP100 software. This is used to make channel specific configurations to the measurement modules. Click on the box under each section to bring up the menu for that specific channel.

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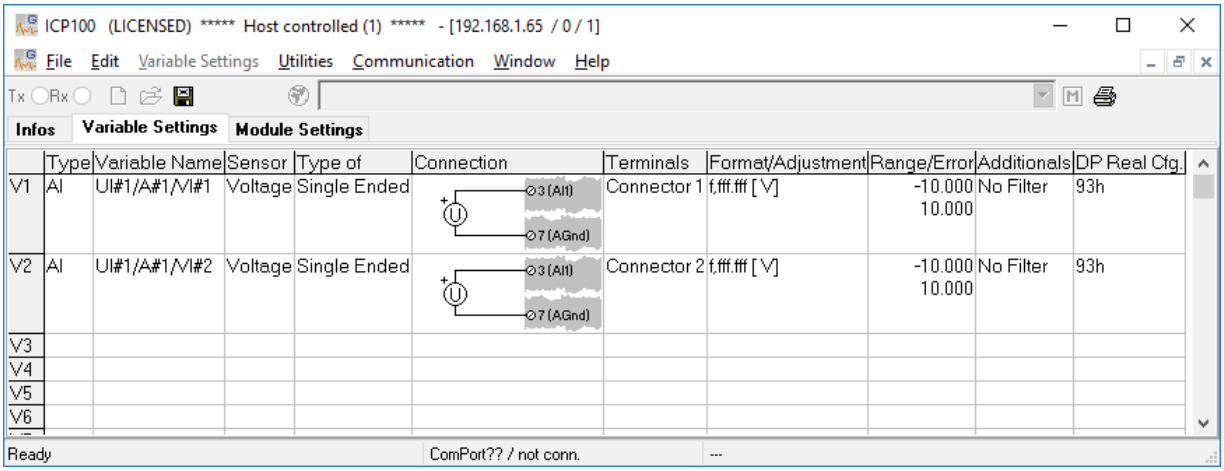
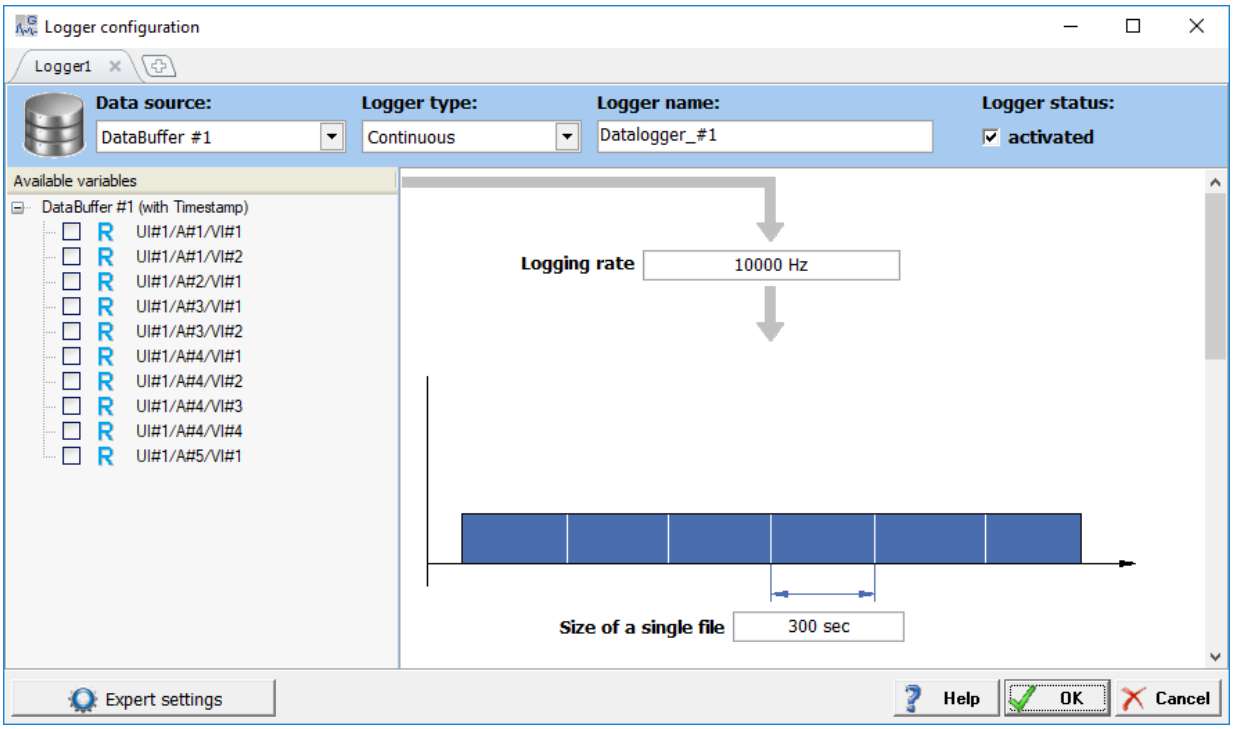


Data Logger

Highlight the controller in the project window and click on the icon or right-click the controller and select Logger configuration to open the logger configuration window. Some of the initial settings is the data source, logger type (continuous, triggered, event-based, logger name, channels to log, and logging rate.



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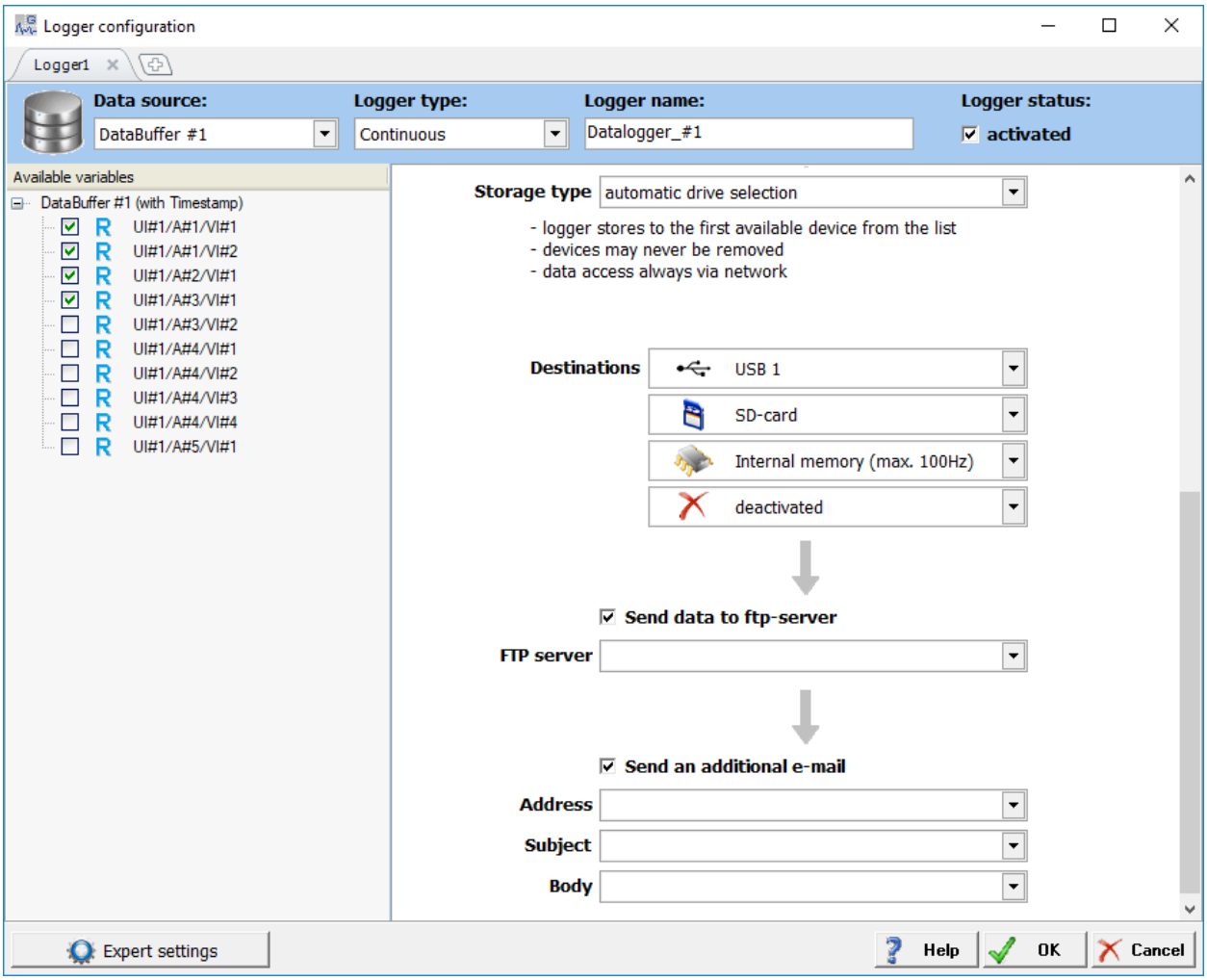
Scroll down to see the storage type options, how the data is transferred to the desired destination. Below that is where you select where the data should be sent. By default, it will store data to the controller's internal memory. If other destinations were configured, it will be selectable from the drop-down list. There is also the option to log to a connected USB drive or SD-Card.



With a triggered or event-based logger, data collection can be initiated on a certain condition, which can be controller using the test.con program. One way is to create a virtual setpoint variable, which the value can be controlled using the function blocks within the test.con software.

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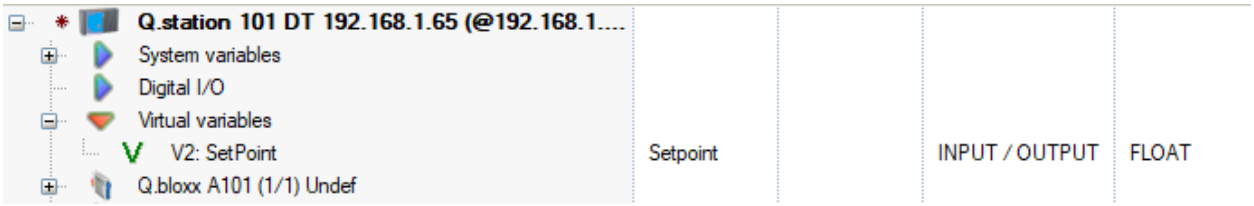
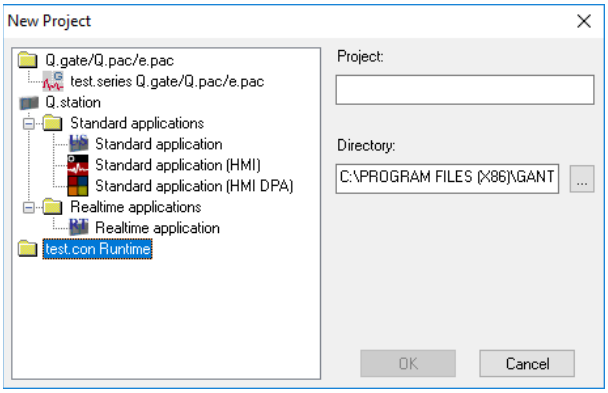


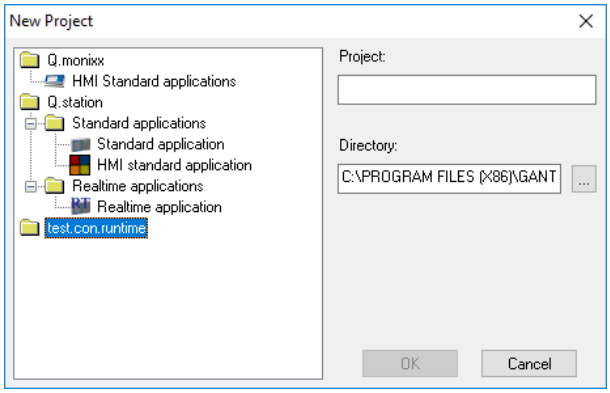
test.con

A custom program built in test.con can be downloaded and ran on the controller. Before downloading a program to the controller, we need to verify that the PAC functionality of the controller is activated.

Creating a New Project

Run the test.con software and go to Project > New. Depending on the version of the software, you will see templates for the program depending on the type of controller.





For the Q.monixx and Q.gate, there is one standard template. For the Q.station, there is a template for a standard/user-space and realtime application. With the Q.station standard application there are a few options, with HMI DPA being the most commonly used. In the case of a Q.station, both a user-space and realtime application can be loaded on the controller and work together.

User space application: programming a user-defined graphical interface
Real-time application: data transfer, data processing, data buffering

In this example we will create a Q.station Standard Application (HMI DPA). Give the project a name and click OK. The default save location is in installation directory: C:\Program Files (x86)\Gantner Instruments\test.con [version #]\PROJECT ENGLISH

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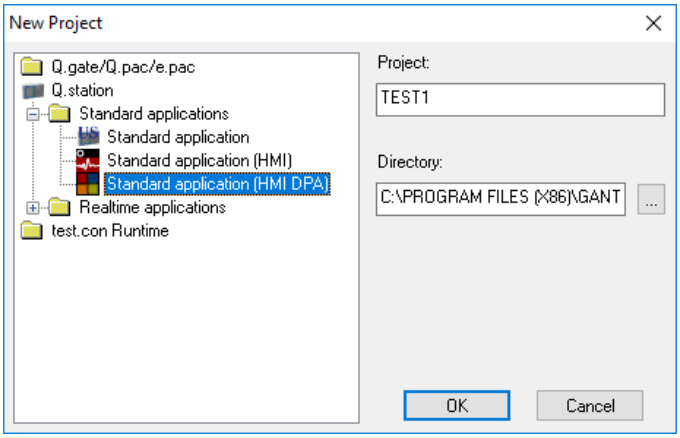
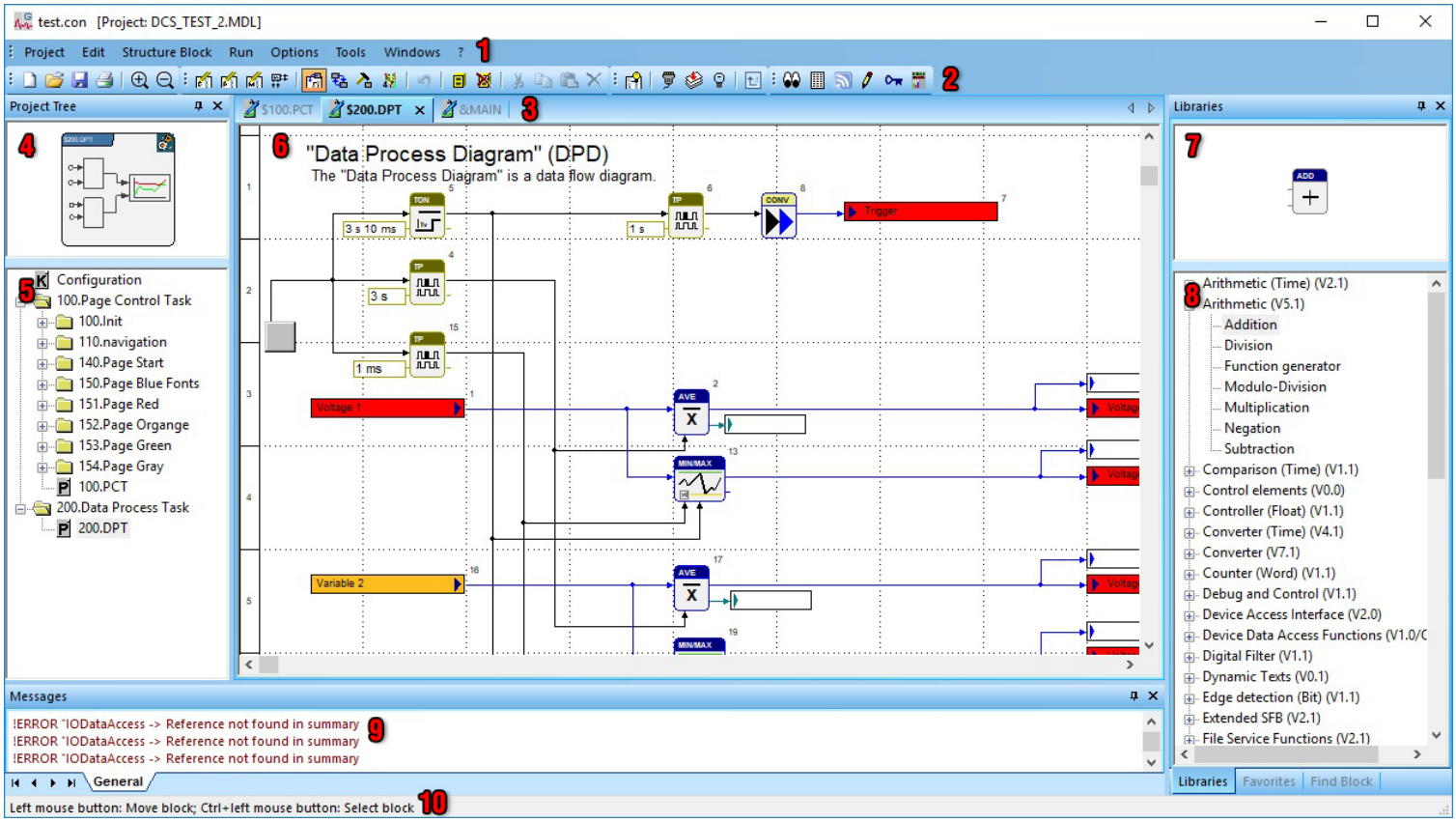


User Interface

This is an overview of the software's graphical user interface. Commands can be called from menus, toolbar, context menus (right-click), and key combinations.



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1. **Menu Bar**: access to the various menus (Project, Edit, Structure Block, etc.)
2. **Toolbar:** quick access to common tools
3. **Page tabs:** recently opened pages, can switch between
4. **Structure Block:** connection diagram of active page
5. **Project Tree:** organized list of project pages
6. **Workspace:** area to customize program for active page
7. **Function Block:** currently selected function block
8. **Function Block Library:** list of loaded libraries of function blocks
    a. Can view blocks by favorites or search manually
    b. Right-click blocks to find help menu for detailed info on each block
9. **Message Window**
10. **Status Line**

Connecting to a Controller

We will scan and connect to a Gantner controller. This will allow us to select inputs/outputs within the program and help later in downloading the project. Connecting to a live system isn't absolutely required to begin editing a project.

Go to Tools > Network PAC-Scanner. The Network Scanner window will open and scan your network for a connected controller. Select it and click OK.

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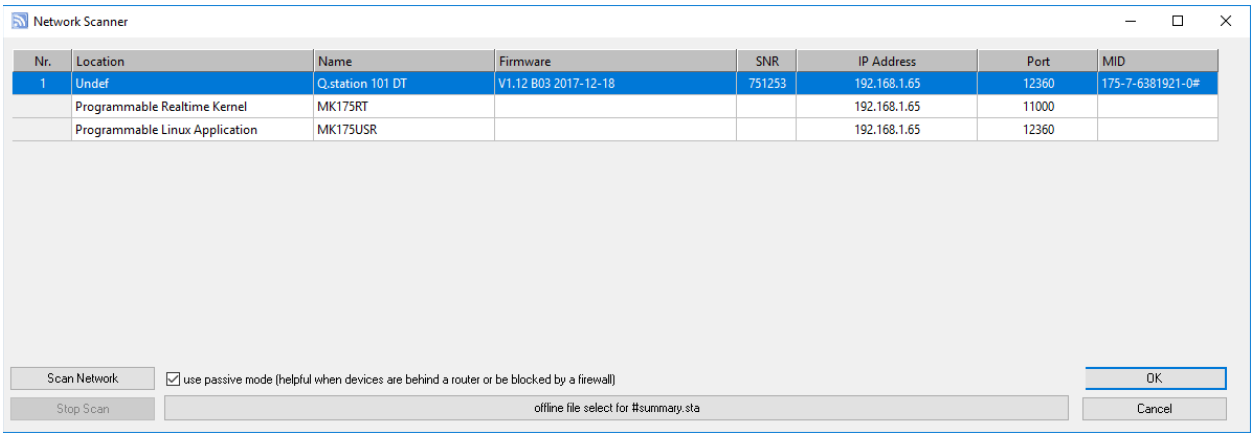
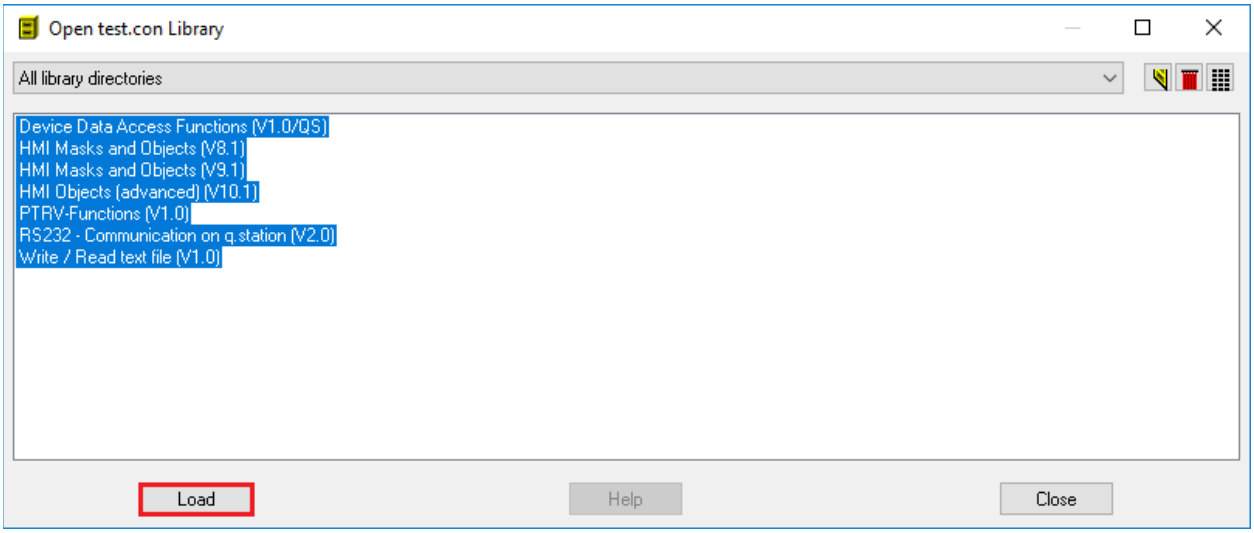


Function Block Library

There are several categories or libraries of function blocks. Make sure all the function blocks are loaded by going to Project > Load Library. Select the available libraries and click Load. These libraries will now be available in the function block library tree. This only needs to be done once per test.con project.



The selected libraries will now be available from the function block library tree on the right-hand side:

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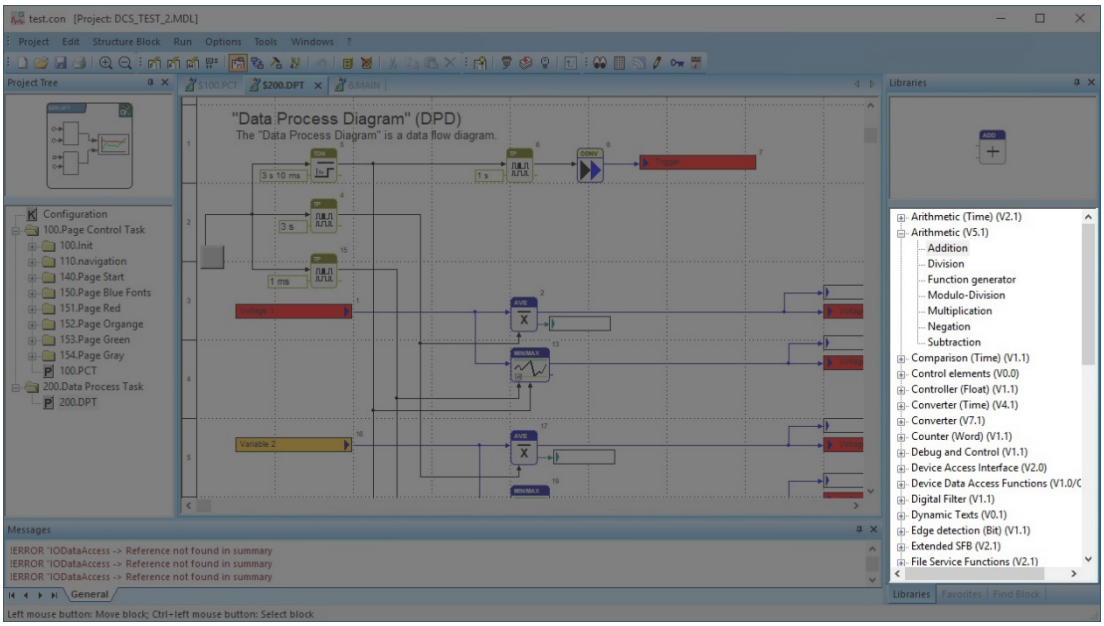
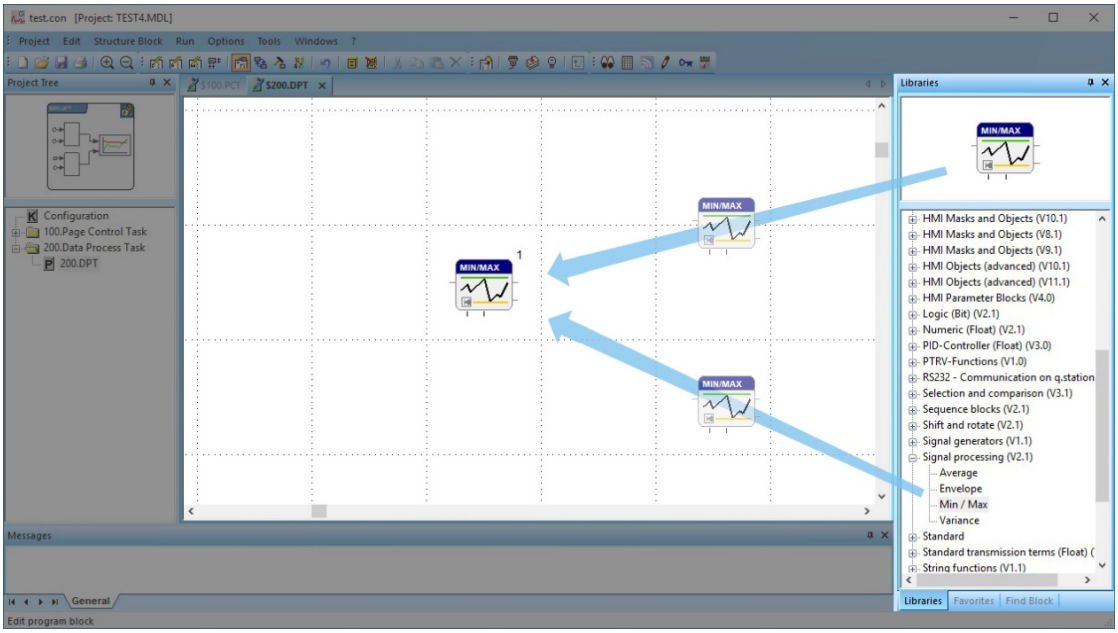


Editing a Project

For a standard application (HMI DPA), the logic/programming is primarily done on the *200.DPT* page. Programming is not limited to this page, multiple pages can be made, as well as individual macros. Go to Edit > Configuration to begin editing the DPT page.

Function blocks are added to the workspace by dragging it from the menus:



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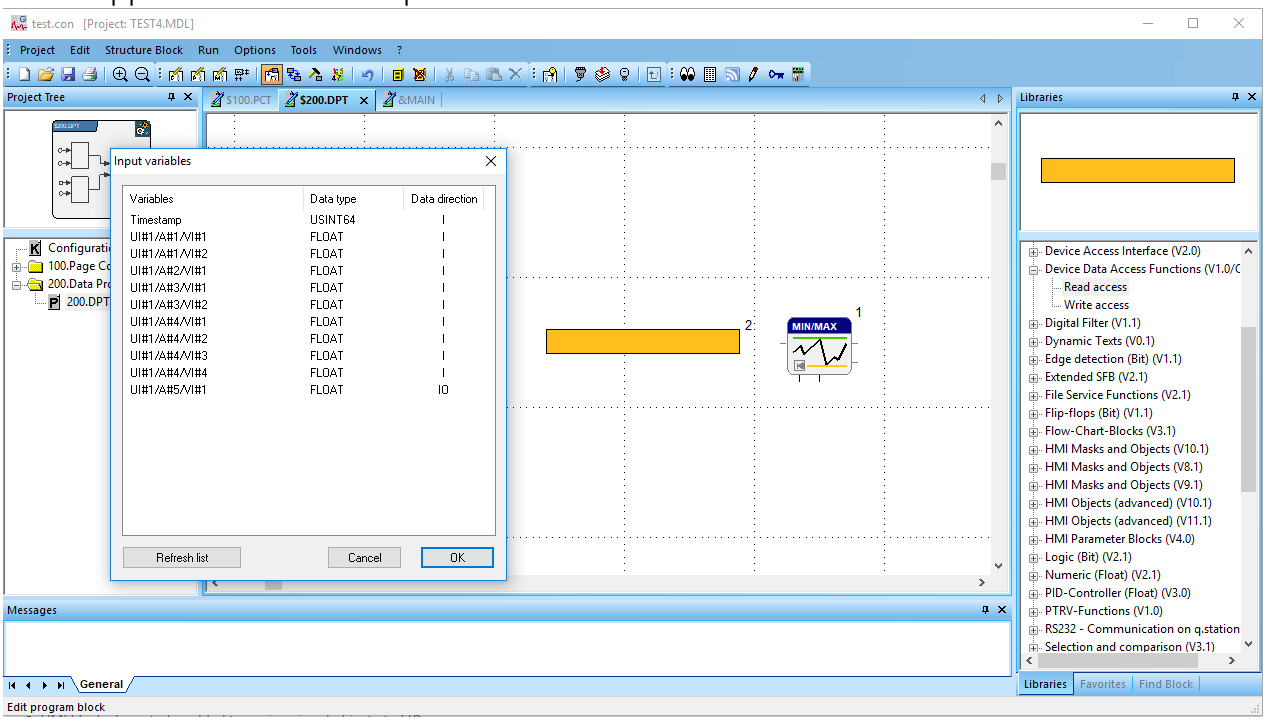
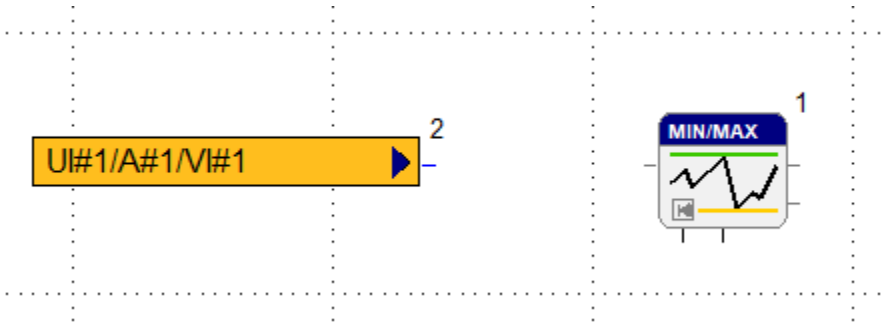
Inputs/outputs from the Gantner system can be added by using the Device Data Access Functions (Read/Write access), which will bring up the list of variables after it is dragged and dropped onto the workspace





I/O can also be added by right-clicking and input/output point on the function block, and select Assign Variable

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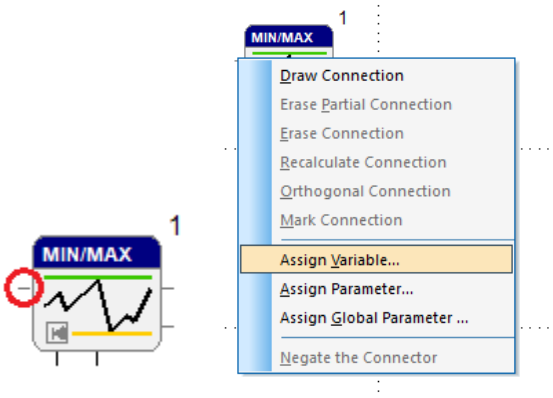
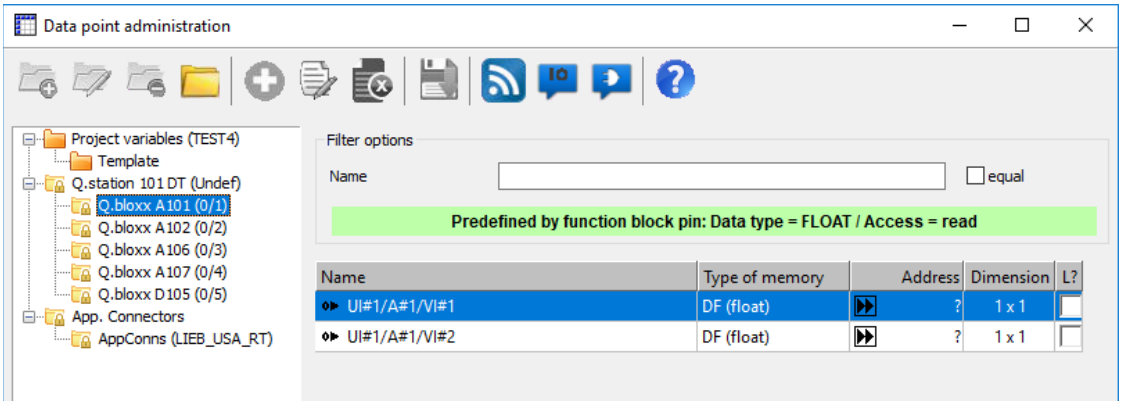
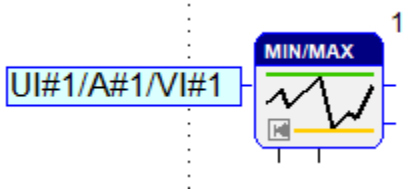


Then select the variable from the Data point administration window and click OK





Function blocks and inputs/outputs are implemented via drag & drop method, then making connection points between them. Click on the output of one block, then click the output of another to connect them, our inputs to outputs.

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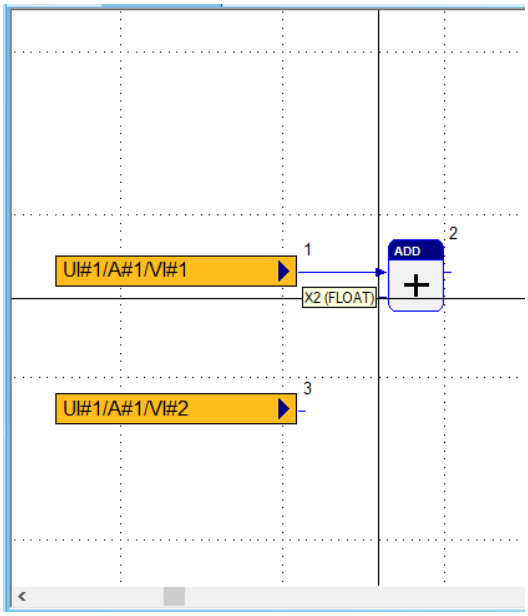
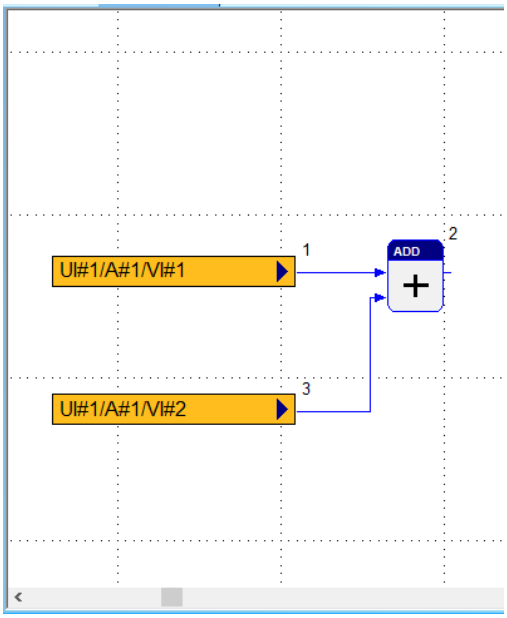
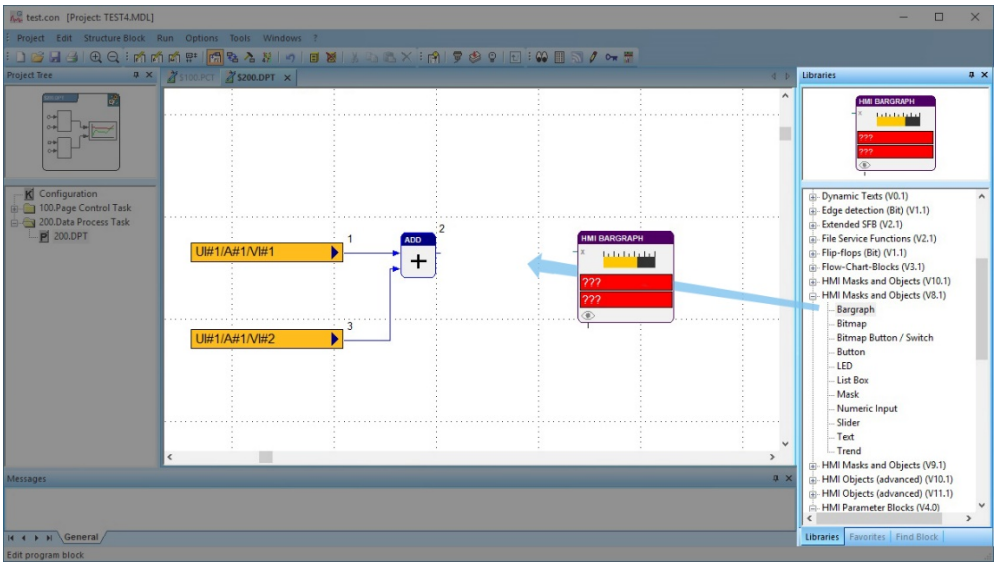




HMI Blocks

In the HMI Masks and Objects or HMI Objects libraries there are several types of visualization and graphical interface tools. These blocks create visual objects that can be assigned to the I/O. Dragging an HMI block onto the workspace will open the mask designer.



Enter the name of the object and select which page/mask it will be located. Click Yes.

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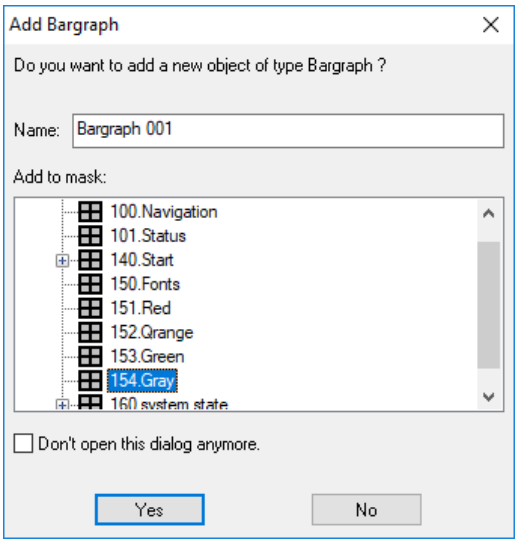

The object will be placed on the designed page. From here it can adjusted for size, placements, color, etc.

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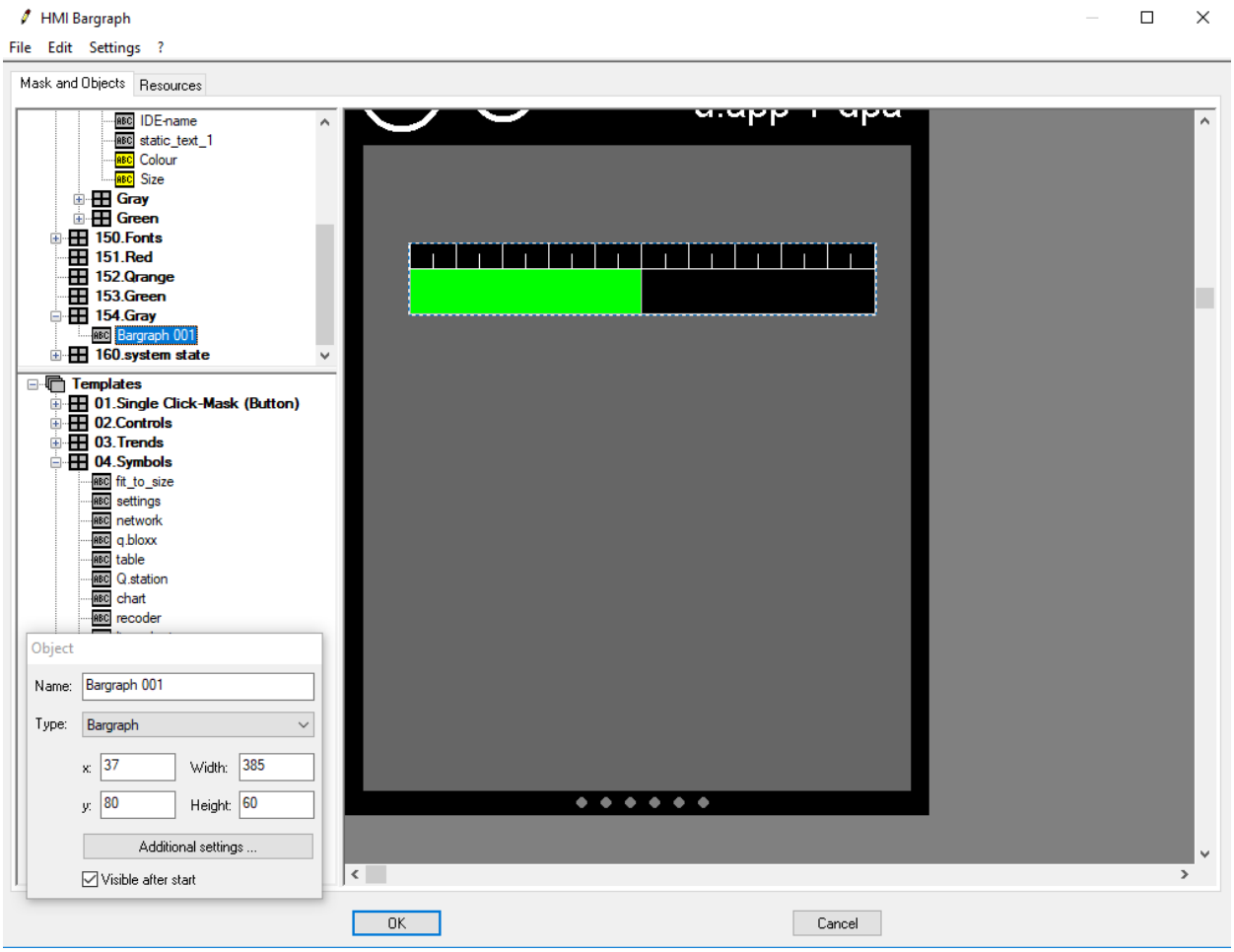
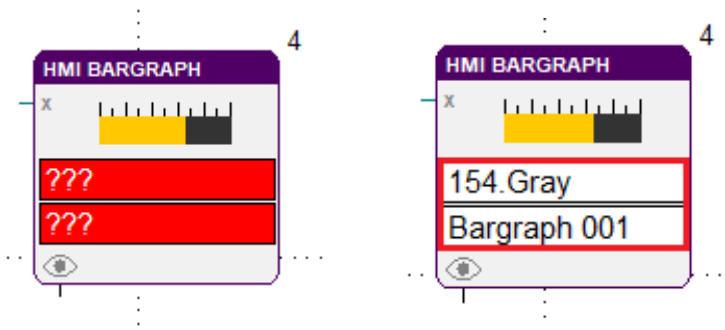


Click Additional settings in the Object window or double-click the object. Depending on the object, more settings will be available. When finished, make sure the object is highlighted, then click OK at the bottom. This will assign the name and location of the object. Then assign variables or parameters to the HMI block.



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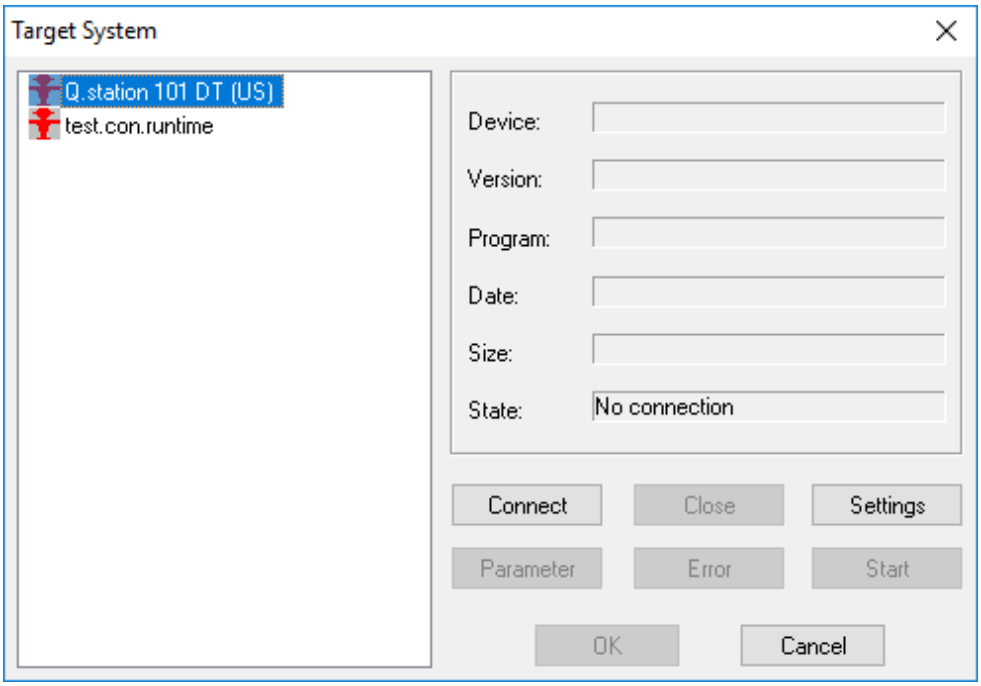
Download Project

Once the application is finished we can download the program onto the controller. Go to Run > Logon to Target System. Since we did a Network Scan already, your controller should appear on the left.



Click connect to establish the network connection to the controller. The red icon will turn green and the device info will appear if successful. If a previous test.con program is already loaded, that info will appear as well. Click OK to close out window.

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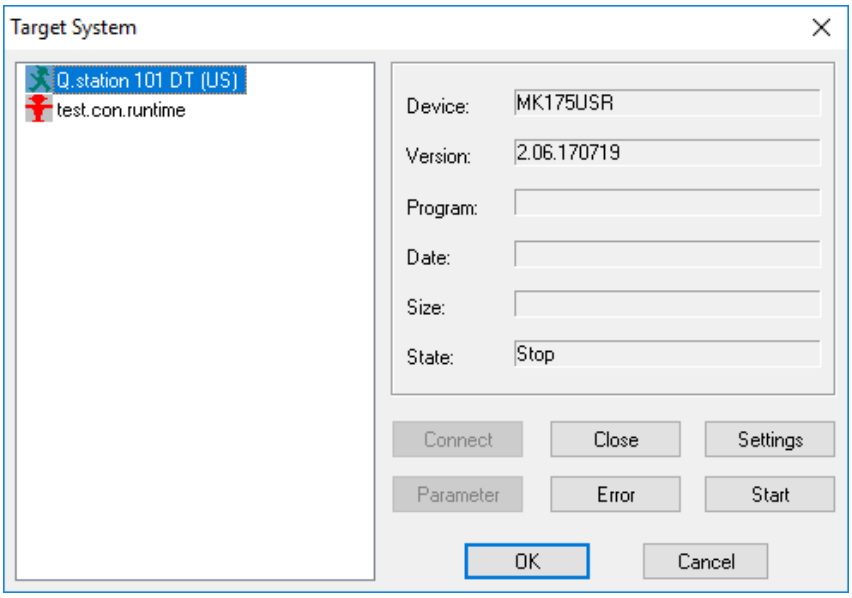
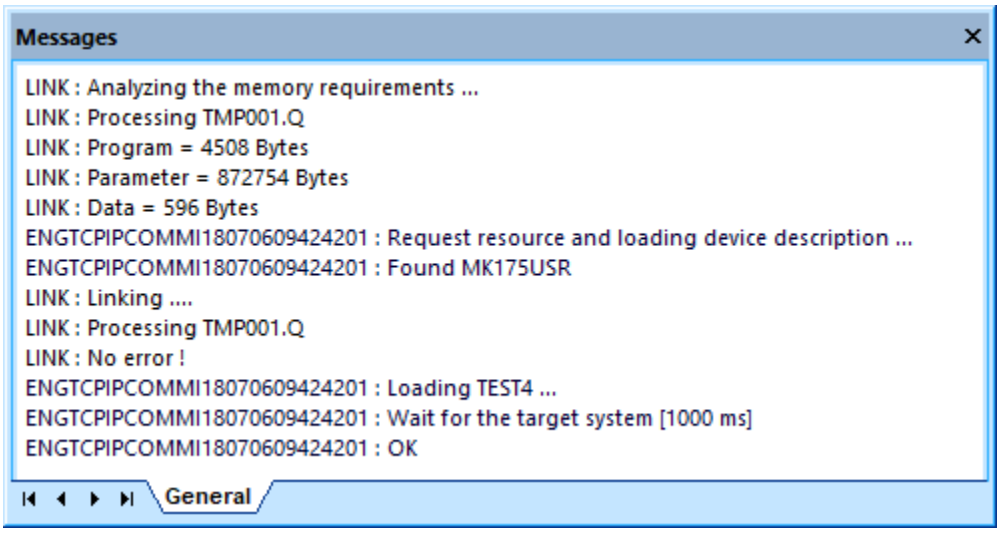


Now with connection established, go to Run > Download. Save the project if you haven't done so yet. If there are no errors, the program will be downloaded.



The software will enter an "online" state for online observation and manipulation of target system variables.

The system overview page will now show the active test.con project. Clicking on the green box will provide access to the customized graphical interface.

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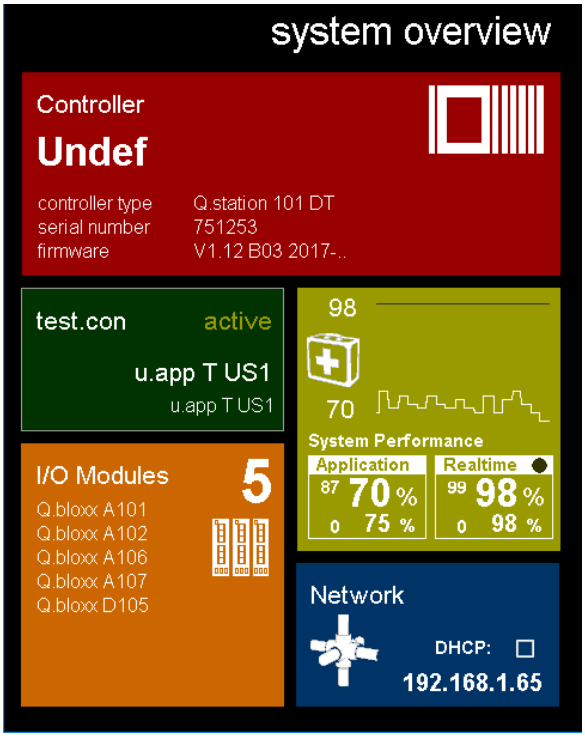

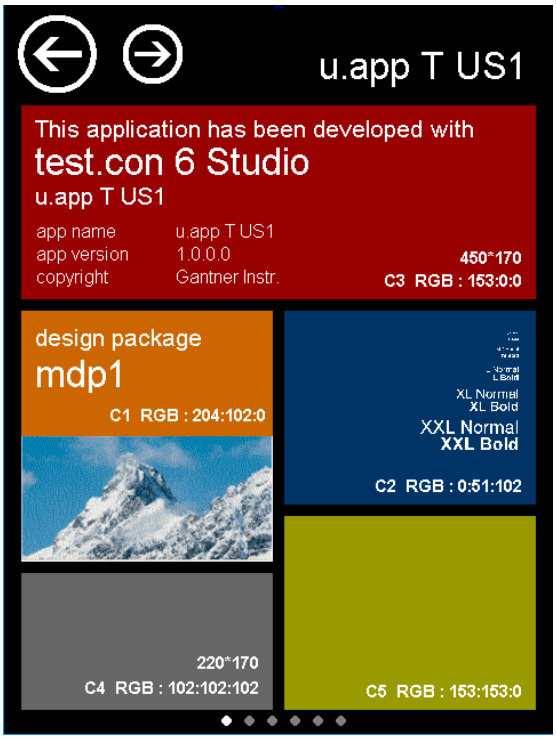

References

test.con Portal Site
http://testcon.info/home_testcon_en.html

test.con Software Download
https://gi-productbase.gantner-instruments.com/en/rest_api/downloads/public/205/

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