Device Manager PRO

User Guide
01/21



9MA10294.02

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When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Eliwell software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury of equipment damage.

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Updates to the user guide

Publication date	Code	Updates
03/19	9MA10294.00	First publication
06/19	9MA10294.01	Added operation mode management (The Configuration panel Added import/export parameters functions (Import/export controller parameters).

Provided documentation

Document	Addressee	Code	Date	Distribution format
User Guide (this guide)	Installer Configuration technician Technical support	9MA10294.02 - 01/21	01/21	online help

Safety Information

Notice

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric and Eliwell for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

Before You Begin

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guarding on a machine can result in serious injury to the operator of that machine.

⚠ WARNING

UNGUARDED EQUIPMENT

- Do not use this software and related automation equipment on equipment which does not have point-of-operation protection.
- Do not reach into machinery during operation.

Failure to follow these instructions can result in death, serious injury or equipment damage.

This automation equipment and related software is used to control a variety of industrial processes. The type or model of automation equipment suitable for each application will vary depending on factors such as the control function required, degree of protection required, production methods, unusual conditions, government regulations, etc. In some applications, more than one processor may be required, as when backup redundancy is needed.

Only you, the user, machine builder or system integrator can be aware of all the conditions and factors present during setup, operation, and maintenance of the machine and, therefore, can determine the automation equipment and the related safeties and interlocks which can be properly used. When selecting automation and control equipment and related software for a particular application, you should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual (nationally recognized in the United States of America) also provides much useful information.

In some applications, such as packaging machinery, additional operator protection such as point-of-operation guarding must be provided. This is necessary if the operator's hands and other parts of the body are free to enter the pinch points or other hazardous areas and serious injury can occur. Software products alone cannot protect an operator from injury. For this reason the software cannot be substituted for or take the place of point-of-operation protection.

Ensure that appropriate safeties and mechanical/electrical interlocks related to point-of-operation protection have been installed and are operational before placing the equipment into service. All interlocks and safeties related to point-of-operation protection must be coordinated with the related automation equipment and software programming.

Qualification of Personnel

Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and with this product.

The qualified person must be able to detect possible hazards that may arise from parametrization, modifying parameter values and generally from mechanical, electrical, or electronic equipment. The qualified person must be familiar with the standards, provisions, and regulations for the prevention of industrial accidents, which they must observe when designing and implementing the system.

CyberSecurity Defense-in-Depth

NOTE: Schneider Electric adheres to industry best practices in the development and implementation of control systems. This includes a "Defense-in-Depth" approach to secure an Industrial Control System. This approach places the controllers behind one or more firewalls to restrict access to authorized personnel and protocols only.

⚠ WARNING

UNAUTHENTICATED ACCESS AND SUBSEQUENT UNAUTHORIZED MACHINE OPERATION

- Limit the number of devices connected to a network to the minimum necessary.
- Isolate your industrial network from other networks inside your company.
- Protect any network against unintended access by using firewalls, VPN, or other, proven security measures.
- Monitor activities within your systems.
- Prevent subject devices from direct access or direct link by unauthorized parties or unauthenticated actions.
- Prepare a recovery plan including backup of your system and process information.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Consult the Schneider Electric Cybersecurity Best Practices

(https://www.eliwell.com/download/downloader.php?cat=prd_docs&id=1938) for additional information.

Replace the Default Password

Change the default password upon first use. In addition, consider carefully the implications for giving any access to other people.

⚠ WARNING

UNAUTHENTICATED ACCESS AND SUBSEQUENT UNAUTHORIZED MACHINE OPERATION

- Immediately change any and all default passwords to new, secure passwords.
- Do not distribute passwords to unauthorized or otherwise unqualified personnel.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: A secure password is one that has not been shared or distributed to any unauthorized personnel and does not contain any personal or otherwise obvious information. Further, a mix of upper and lower case letters and numbers offer greater security. You should choose a password length of at least seven characters.

Start-up and Test

Before using electrical control and automation equipment for regular operation after installation, the system should be given a start-up test by qualified personnel to verify correct operation of the equipment. It is important that arrangements for such a check be made and that enough time is allowed to perform complete and satisfactory testing.

⚠ WARNING

EQUIPMENT OPERATION HAZARD

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future references.

Software testing must be done in both simulated and real environments.

Verify that the completed system is free from all short circuits and temporary grounds that are not installed according to local regulations (according to the National Electrical Code in the U.S.A, for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to prevent accidental equipment damage.

Before energizing the equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.
- Remove all temporary grounds from incoming power lines.
- Perform all start-up tests recommended by the manufacturer.

Operation and Adjustments

The following precautions are from the NEMA Standards Publication ICS 7.1-1995 (English version prevails):

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer’s instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer’s instructions and the machinery used with the electrical equipment.
- Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

About the Book

At a Glance

Document Scope

This User Guide contains instructions on how to read and write data on compatible parametric controllers using Device Manager PRO.

It is not intended to replace any specific product documentation, nor any of your own design documentation. On the contrary, it offers additional information to the product documentation for installing, configuring and implementing the system.

A detailed functional description or the specification for a specific user application is not part of this document. Nevertheless, the document outlines some typical applications where the system might be implemented.

Validity Note

This document has been updated with the release 1.2.2 of Device Manager PRO. The technical characteristics of the devices described in the present document also appear online.

The characteristics that are presented in the present manual should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the manual and online information, use the online information as your reference.

You can download the present document, as well as the technical publications and other technical information listed in the Related Documents table bellow, from our website at www.eliwell.com.

Related Documents

Title of document	Reference Document Code
EWCM 9000 PRO DOMINO - EWCM 9000 PRO-HF User Guide	CMCTA (EN) CMCTA (IT)

Product Related Information

⚠ WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines(1) .
- Each implementation of this equipment must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury or equipment damage.

(1) For additional information, refer to NEMA ICS 1.1 (latest edition), "Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control" and to NEMA ICS 7.1 (latest edition), "Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems" or their equivalent governing your particular location.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Only use software tools approved by Eliwell for use with this equipment.
- Update your application program every time you change physical hardware configuration.

Failure to follow these instructions can cause death, serious injury or equipment damage.

About Device Manager PRO

What is Device Manager PRO

Introduction

Device Manager PRO has been developed to support the system installer or configurator after the installation of parametric controllers in the field. Specifically, it allows to perform the following tasks:

- read and write controller system and operating parameters
- view the plant layout and the status of its components
- download and analyze data collected from the field
- update the firmware on the controller

Compatible parametric controllers

Currently, Device Manager PRO can be used to connect and communicate with the following controllers:

Non-isolated models

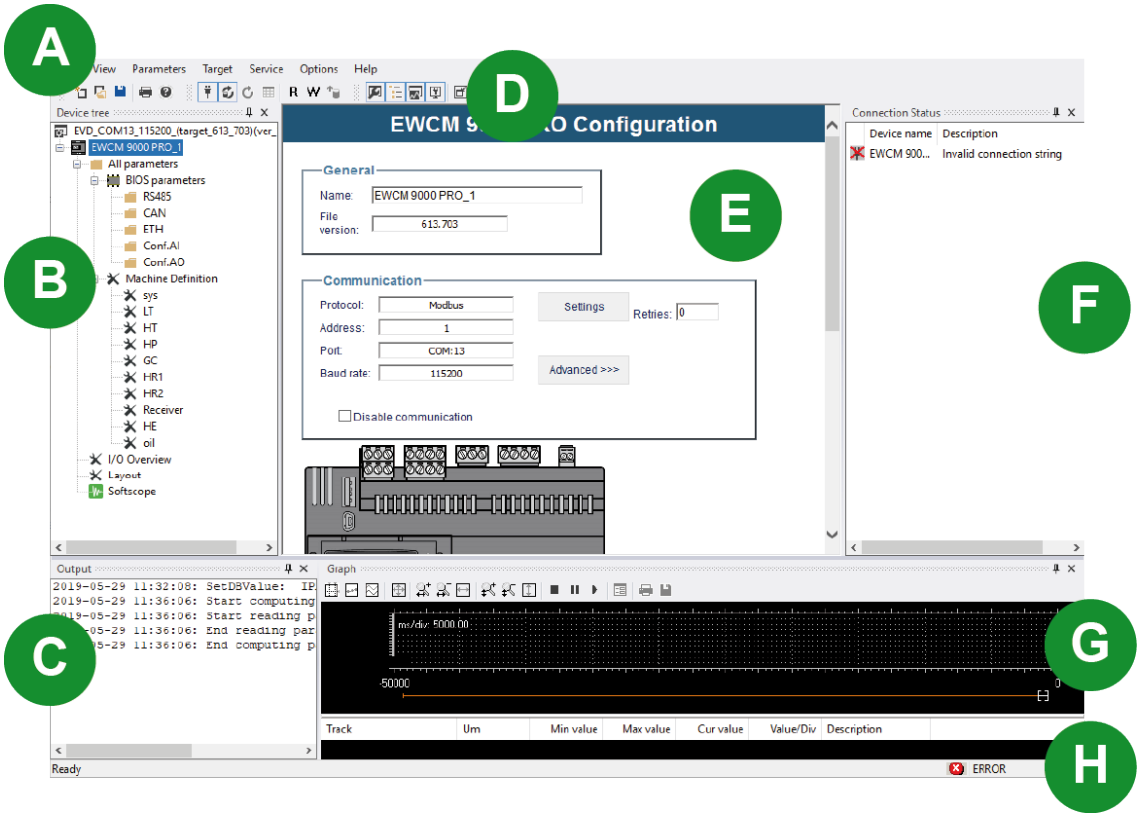
Controller	Reference	Description
EWCM 9000 PRO	EPA00PCTA5**	EWCM 9000 PRO 42B /CO2T DOMINO
	EPAS0PCTA5**	EWCM 9000 PRO 42B SSR /CO2T DOMINO
	EPA01PCTA5**	EWCM 9000 PRO 42D /CO2T DOMINO
	EPAS1PCTA5**	EWCM 9000 PRO 42D SSR /CO2T DOMINO

Isolated models

Controller	Reference	Description
EWCM 9000 PRO	EPB00PCTA5**	EWCM 9000 PRO 42B /CO2T DOMINO ISOL
	EPBS0PCTA5**	EWCM 9000 PRO 42B SSR /CO2T DOMINO ISOL
	EPB01PCTA5**	EWCM 9000 PRO 42D /CO2T DOMINO ISOL
	EPBS1PCTA5**	EWCM 9000 PRO 42D SSR /CO2T DOMINO ISOL

The Device Manager PRO user interface

Description



Element	Description
A	Menu bar
B	**Device tree** panel: shows the main functions of the application.
C	**Output** panel: displays log information
D	Toolbar
E	Work area: displays different panels and information according to the selected element in the **Device tree** panel.
F	**Connection Status** panel: displays the name of the controller included in the project and its connection status
G	**Graph** panel: not in use
H	Status bar: displays the status of the connection to the controller

Menu bar

Below a description of the most significant functions:

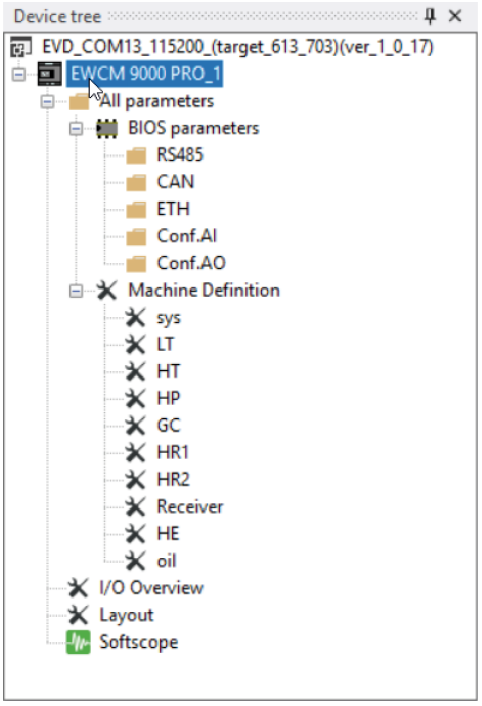
Menu	Function
File	Perform main file functions.
View	Show/hide panels and toolbars.
Parameters	Perform main functions on parameters.
Target	Display communication protocol information.
Service	Display offline graphs and import/export parameters files.
Options	Set data logging and refresh behaviour.
Help	Display online help.

Toolbar

Below a description of the most significant functions:

Button	Function
	Show/hide the **Device tree** panel.
	Expand/minimize the work area.
	Connect/disconnect from the controller.
	Select all the parameters in the current panel.
	Read the values of the selected parameters from the controller.
	Write the values of the selected parameters to the controller.
	Read the values of all the parameters from the controller.

The Device tree panel



Element	Function
All parameters	Display the **All Parameters** panel containing all the controller parameters.
Bios parameters	Group communication and I/O parameters.
Machine Definition	Group parameters for the specific controller and plant, organized by function.
I/O Overview	Display a graphic representation of the I/O allocated on the controller and its expansions.
Layout	Display the plant layout and components status.
Softscope	Display the Softscope tool.

Connection status

Status	Description
CONNECTED	Successfully connected to the controller
DISCONNECTED	Disconnected from the controller
ERROR	Unable to connect to the controller

Device Manager PRO workflow

Introduction

For each plant you work on, you need to create a project file in Device Manager PRO. This file contains information on how to connect to the controller, the values of its parameters, and the tracks which are displayed in graphical format.

The project can also contain graphic information on the plant layout (see The Machine Layout panel) and a set of measures whose values can be tracked to test the performance of the elements of the plants (see The Softscope tool).

Online workflow with Device Manager PRO

Device Manager PRO is typically used during plant commissioning to set up controller parameters while actually connected to the controller itself. To do this you follow the sequence of steps below:

Step	Description	See
1	Physically connect with the controller	Hardware connection procedures
2	Detect the controller installed on the network, if necessary	Retrieve communication information from the controller
3	Create a project file or open an existing project	Create a new project or Open an existing project
4	Define communication parameters with the controller	Set up communication with the controller
5	View current settings on the controller	View controller parameters
6	Adjust controller operating parameters and download them to the controller	Set controller parameters
7	Analyze and adjust operating parameters	Collect and analyze data with the Softscope

Offline workflow with Device Manager PRO

You can also use Device Manager PRO to work offline. This means that you prepare a project file containing a draft of the plant parameters settings in your office and then download it to the controller and adjust it once in the field. This method is typically used during plant design, to prepare for commissioning.

To work offline you follow the sequence of steps below:

Step	Description	See
1	Create a project file or open an existing project	Create a new project or Open an existing project
2	Prepare draft operating parameters	Set controller parameters
3	Physically connect with the controller	Hardware connection procedures
4	Detect the controller installed on the network	Retrieve communication information from the controller
5	Define communication parameters with the controller	Set up communication with the controller
6	Adjust controller operating parameters and download them to the controller	Set controller parameters
7	Optional. Import or export operating and application parameters using an USB flash drive.	Import/export controller parameters
8	Analyze and adjust operating parameters	Collect and analyze data with the Softscope

Installation and hardware connections

Installation

Installation requirements

The installation of Device Manager PRO requires one of the following operating system:

- Windows 10

Installation procedure

The installation procedure is guided by an installation wizard.

Hardware connection scenarios

Introduction

Device Manager PRO can be connected to the controllers in the field both locally and remotely.

Local connections are direct cable connection from the PC where Device Manager PRO is installed and the controller on the field. Remote connections are performed by means of already existing networks.

According to the connection method a different communication protocol is used. This information needs to be specified when you set up communication parameters (see Set up communication with the controller).

Some maintenance tasks can only be performed using a local connection (see Maintenance procedures).

Local connection: USB connection

This connection method uses a USB cable to connect the USB micro-B port on the controller to the USB port on the PC. This method is simple but is constrained by the USB cable length.

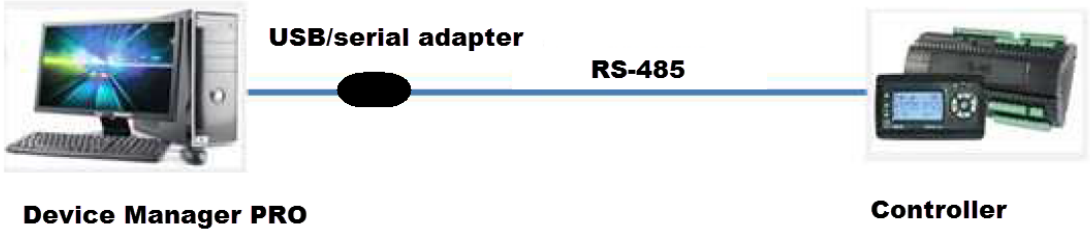


This connection method uses the Modbus protocol. For instructions on how to set up this connection, see Set up communication with the controller.

Local connection: serial connection

This connection method uses a serial RS-485 cable from the controller, a USB/serial adapter and a USB cable to connect to the USB port on the PC.

Note: The USB/serial adapter may require driver installation.



This connection method uses the Modbus protocol. For instructions on how to set up this connection, see Set up communication with the controller.

Local connection: USB connection

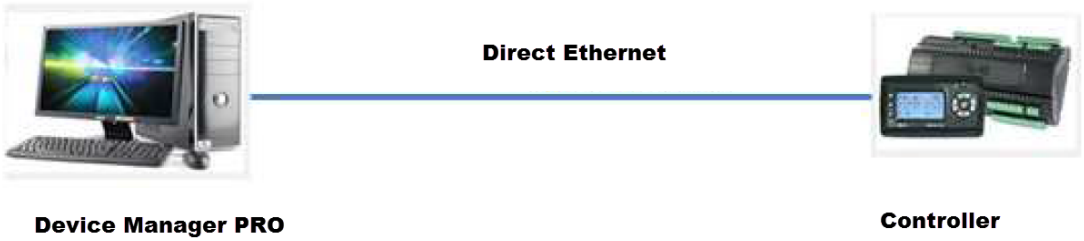
This connection method uses a USB cable to connect the USB micro-B port on the controller to the USB port on the PC. This method is simple but is constrained by the USB cable length.



This connection method uses the Modbus protocol. For instructions on how to set up this connection, see Set up communication with the controller.

Local connection: Ethernet connection

This connection method uses an Ethernet crossover cable to connect the Ethernet port on the controller to the Ethernet port on the PC.



This connection method uses the Modbus TCP protocol. For instructions on how to set up this connection, see Set up communication with the controller.

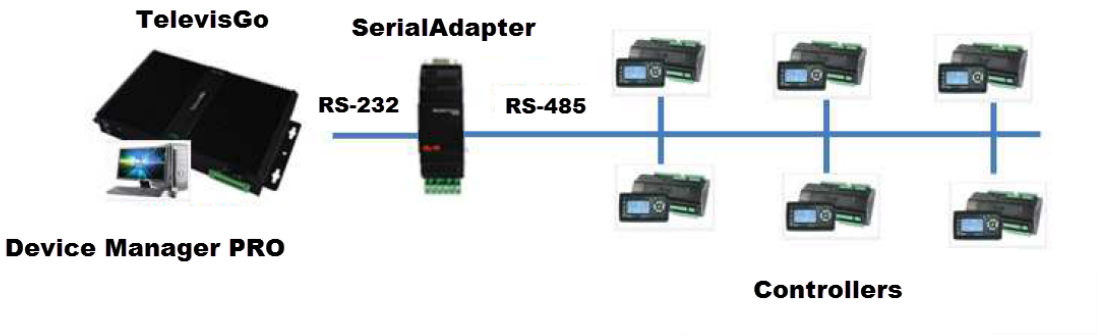
Local connection: SerialAdapter connection

This connection method requires the following conditions:

- Device Manager PRO is installed on the TelevisGo computer
- the TelevisGo software is temporarily disabled
- the TelevisService service is stopped
- a monitor and a keyboard are connected to the TelevisGo computer

When using this connection method you do not need to set up any other physical connection since all required connections, including the SerialAdapter to the PC serial port, are already in place for the TelevisGo communication.

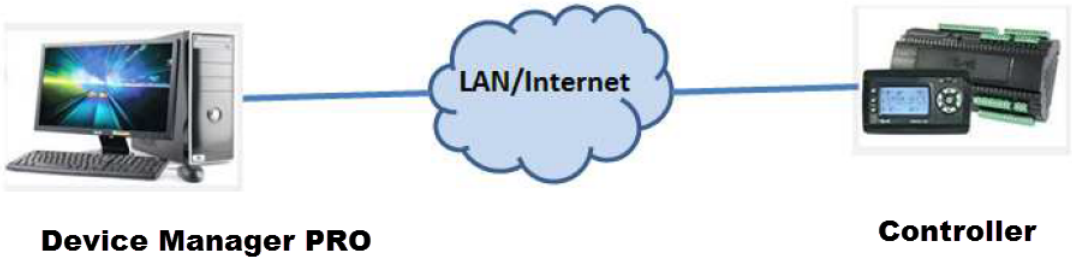
Note: During this connection session, the functions of TelevisGo are not available.



This connection method uses the proprietary TelevisSerialAdapter protocol. For instructions on how to set up this connection, see Set up communication with the controller.

Remote connection: Ethernet remote connection

This connection method requires that the controller and the PC where Device Manager PRO is installed are on the same network. Be aware that firewalls might interfere and possibly make communication impossible.



This connection method uses the Modbus TCP protocol. For instructions on how to set up this connection, see Set up communication with the controller.

Remote connection: TelevisGo remote connection

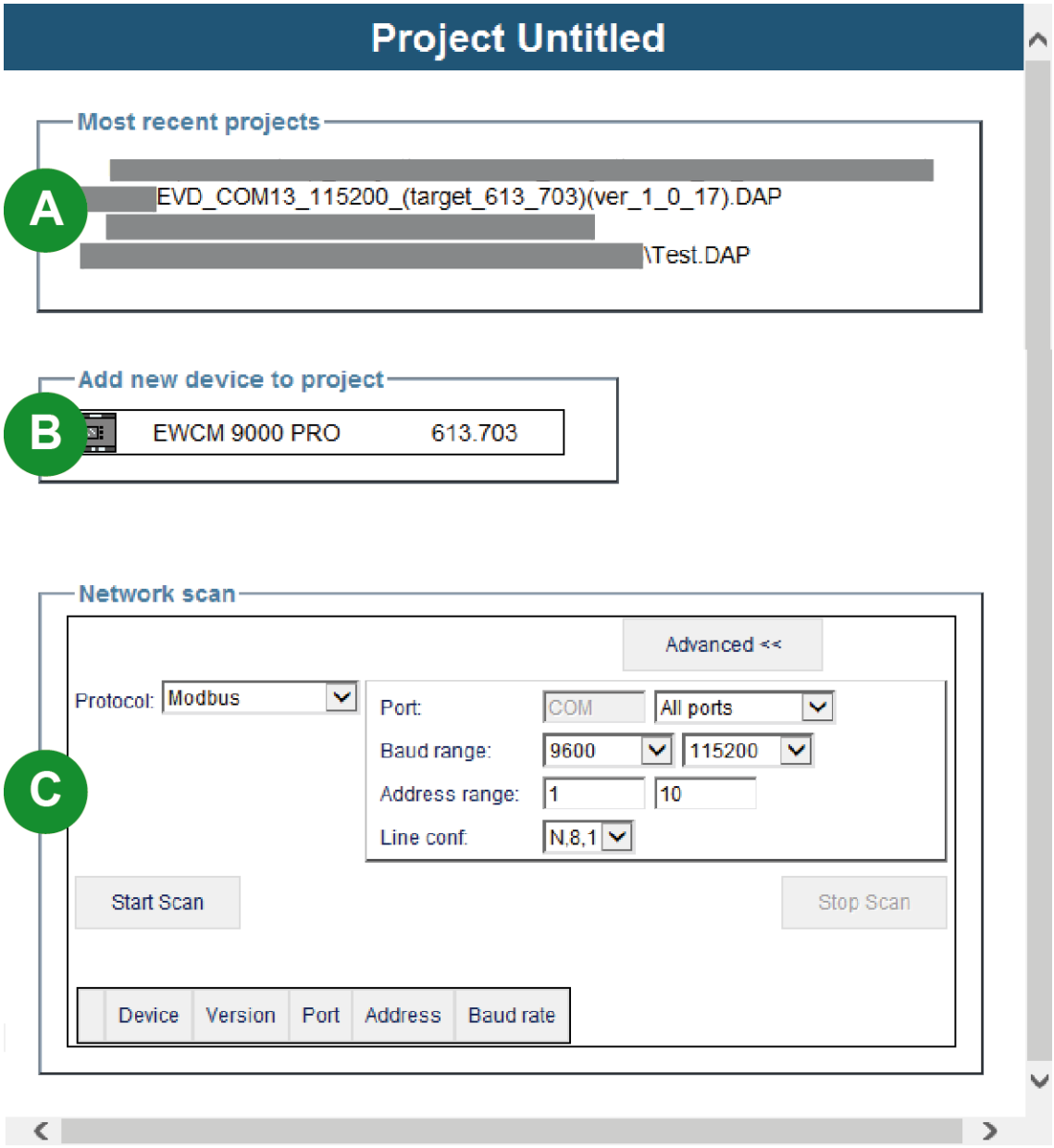
This connection method is necessary when the PC where Device Manager PRO is installed in a different location than that of the controller. In this scenario TelevisGo must be up and running and it must be configured to read data from the controllers.



This connection method uses the proprietary TelevisSerialAdapter protocol. For instructions on how to set up this connection, see Set up communication with the controller.

The Device Manager PRO main panel

Description



Element	Description
A	List of recent projects
B	Controllers available as target
C	Network scan function

Network scan function

Element	Function
Protocol	Select the protocol to be used for scanning
Advanced	Show/hide communication parameters for the selected protocol
Start Scan	Start network scanning
Stop Scan	Stop network scanning

Element	Function
Device	Display information on the device detected on the network
Version	
Port	
Address	
Baud Rate	

Hardware connection procedures

Safety information

⚠ WARNING

INCORRECT OPERATION OF THE DEVICE

- Connect the connection cable to the PC first and then to the controller port.
- Disconnect the connection cable from the controller before disconnecting it from the PC.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Connect to the controller

1. Make sure you have all the equipment (cables and adapters) required by the selected connection method.
2. Make sure the controller is in stand-by mode.
3. Start Device Manager PRO.
4. If you use a connection cable, plug it in to the PC where Device Manager PRO is installed and then to the controller.
5. Make sure communication parameters are set correctly (see Set communication parameters).

Disconnect from the controller

1. If you use a connection cable, unplug it from the controller and then from the PC where Device Manager PRO.
2. Exit Device Manager PRO.

Basic procedures

Create a new project

From the main panel, in the **Add new device to project** section, select the controller you want to connect to: the work area displays information on the selected controller.

If you work on very similar plants, you may find it easier to reuse an already existing project rather than start from scratch with a new one.

Open an existing project

File > **Open**, select the project you want to work on: the work area displays information on the selected project.

Save a project for future use

At any time you can save a project and use it for future connections or reference.

Projects are saved in the proprietary .DAP format.

Retrieve communication information from the controller

1. From the main panel, select the protocol used for the connection.
2. Click **Advanced** to set the ranges of the scan.
3. Click **Start Scan** to start scanning the network: information on the detected controller are displayed.

You can refer to this information when you set up the connection with the controller (see Set up communication with the controller).

Set up communication with the controller

Set communication parameters

1. Find out the COM port you are connected to on your PC.
2. From the **Configuration** panel, in the **Communication** section click **Settings**: the **Device Link Manager Config** window opens.
3. Select the communication protocol you want to use, then click **Activate**: the protocol is displayed as **Active**.
4. Click **Properties**: the configuration window for the active protocol is displayed.
5. Select the COM port you have identified in step 1.
6. Set all relevant communication parameters according to the controller you are connecting to.

   Note: You may need to scan the network in order to find out some of the information you have to enter during this procedure (see Retrieve communication information from the controller).

7. In the **Protocol** section enter the correct address of the controller.
8. Click **OK** to confirm: the **Communication** section displays a summary of all the communication parameters set.
9. Save the project for future reuse.

First connection

Once the first connection between PC and EWCM 9000 PRO controller starts, DMPRO asks you to enter the default password of the web-server and to replace it by a new different one.

Lets consider that the EWCM 9000 PRO controller has 3 scenarios:

Scenario	Description	Firmware
BRAND NEW	Represents a controller just manufactured with default password of the web-server.	638.04
NOT BRAND NEW	Represents a controller already accessed by a user and which default password of the web-server has changed.	638.04
OBSOLETE	Represents a controller already available on the market without default password settings/ restrictions	638.02

Replace the Default Password

Change the default password upon first use. In addition, consider carefully the implications for giving any access to other people.

⚠ WARNING

UNAUTHORIZED DATA ACCESS

- Immediately change any and all default passwords to new, secure passwords.
- Do not distribute passwords to unauthorized or otherwise unqualified personnel.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: A secure password is one that has not been shared or distributed to any unauthorized personnel and does not contain any personal or otherwise obvious information. Further, a mix of upper and lower case letters and numbers offer greater security. You should choose a password length of at least seven characters.

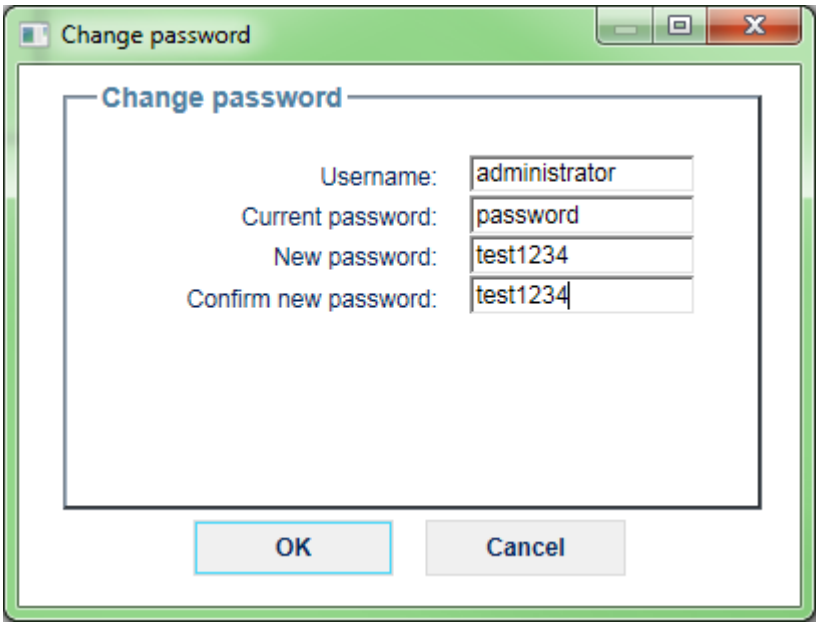
BRAND NEW Scenario

While attempting to connect to the controller a dialog window will appear to change the default password:

Username is **administrator**

Default password is **password**

Change the password as shown in the example:



If you enter an invalid username, or invalid default password, or mismatch confirm new password, an error message will appear.

If password change succeeds you can connect to the controller.

NOT BRAND NEW Scenario

See Connect to and disconnect from the controller

OBSOLETE

See Connect to and disconnect from the controller

Connect to and disconnect from the controller

You can connect to the controller only after you have correctly set all communication parameters.

- To connect to the controller click : if connection succeeds, the connection status is displayed as **CONNECTED**. If connection fails, an error message is returned and the connection status is displayed as **ERROR**.
- To disconnect from the controller click : the connection status is displayed as **DISCONNECTED**.

Put the controller in standby mode

From the **Configuration** panel, in the **Other operations** section, set the operation mode to **StandBy**: the controller switches to standby mode.

Return the controller to active mode

From the **Configuration** panel, in the **Other operations** section, set the operation mode to **On**: the controller returns active.

Reference data

Suggested settings for Modbus communication

Parameter	Value
Baudrate	115200
Frame settings	E 8.1

Mandatory settings for TelevisSerialAdaper communication

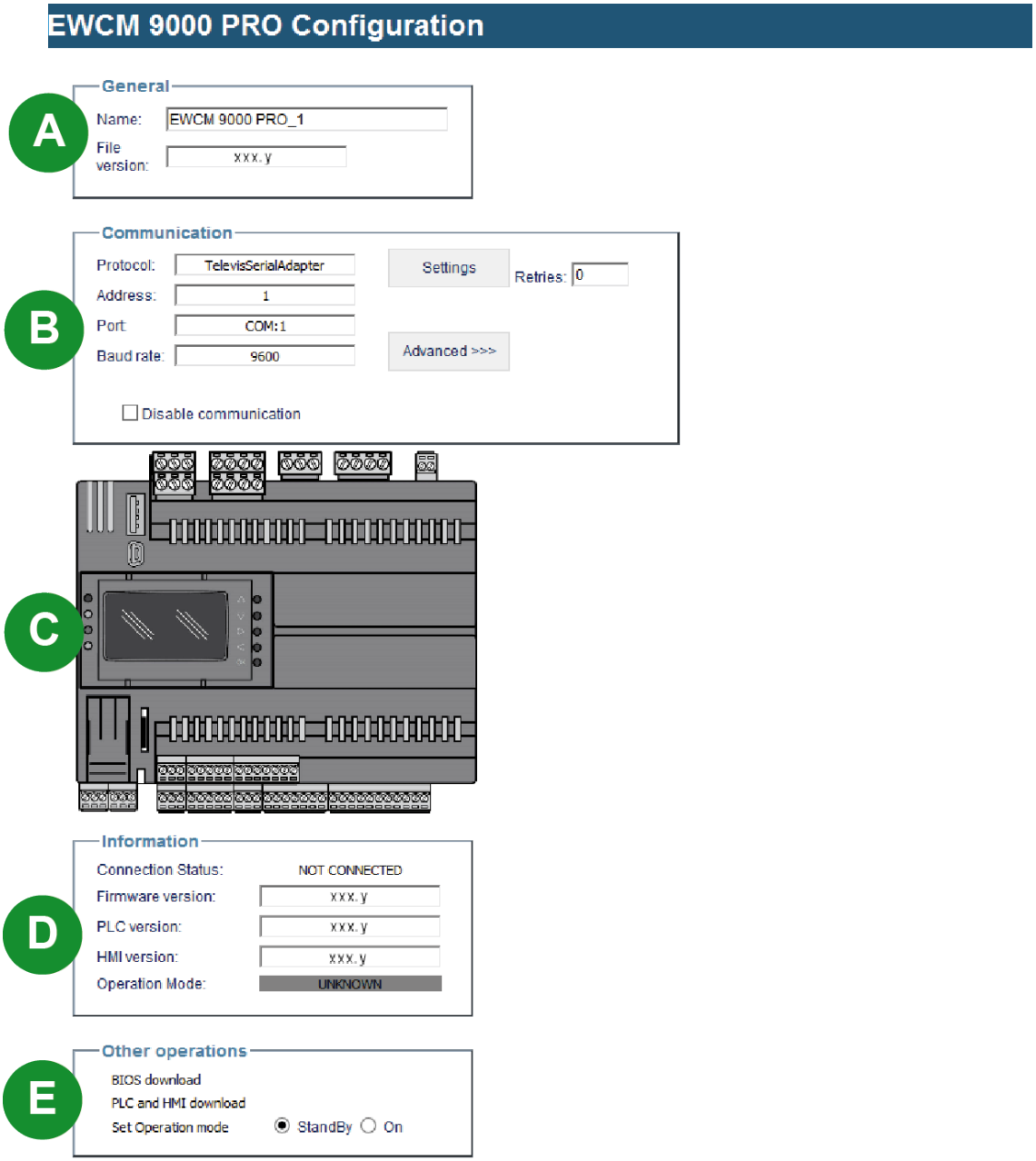
Parameter	Value
Baudrate	9600
Frame settings	E 8.1

The Configuration panel

Introduction

This panel displays general information about the connected controller.

Description



Element	Description
A	Name of the controller and version of the installed software
B	Parameters for communication with the controller
C	Graphical representation of the controller
D	Information about the controller: • connection status • onboard firmware/PLC/HMI versions • operation mode status
E	Maintenance tasks: • BIOS update • PLC/HMI update • change operation mode

Connection status

Status	Description
CONNECTED	Controller connected to Device Manager PRO
NOT CONNECTED	Controller not connected to Device Manager PRO

Operation mode status

Status	Description
ON	Controller connected an operating
STANDBY	Controller connected but in standby
UNKNOWN	Unable to define controller operation mode (controller not connected)

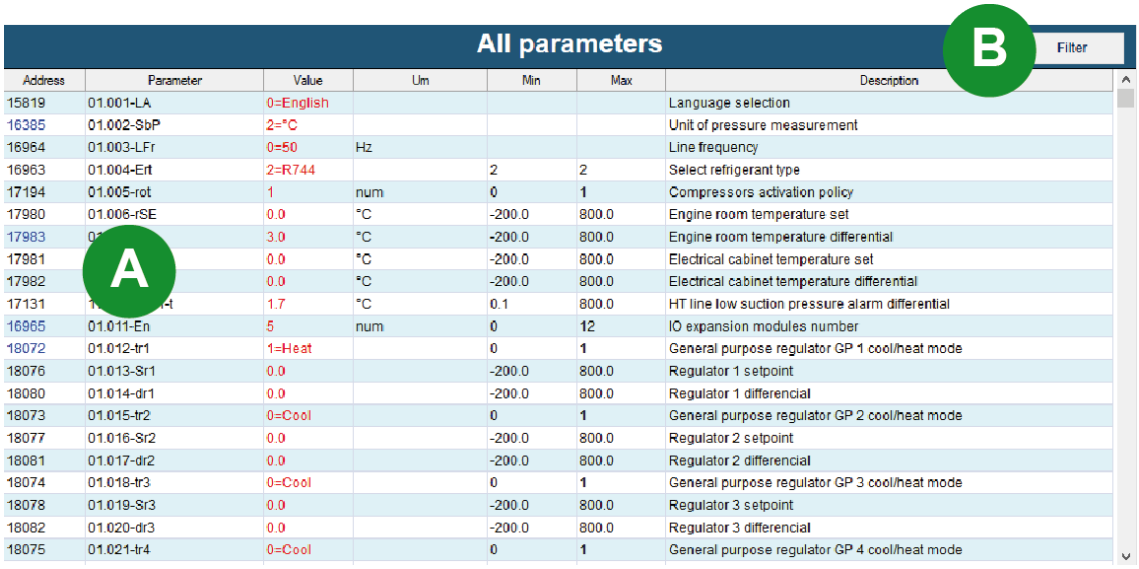
Parameters management

The All parameters panel

Introduction

This panel displays the parameters that can be set on the controller. For each parameter, value, unit of measure, range and a short description are shown. From this panel you can read and write data from and to the field.

Description



Address	Parameter	Value	Um	Min	Max	Description
15819	01.001-LA	0=English				Language selection
16385	01.002-SbP	2=°C				Unit of pressure measurement
16964	01.003-LFr	0=50	Hz			Line frequency
16963	01.004-Ert	2=R744		2	2	Select refrigerant type
17194	01.005-rot	1	num	0	1	Compressors activation policy
17980	01.006-rSE	0.0	°C	-200.0	800.0	Engine room temperature set
17983	01.007-rdE	3.0	°C	-200.0	800.0	Engine room temperature differential
17981	01.008-rSE	0.0	°C	-200.0	800.0	Electrical cabinet temperature set
17982	01.009-rdE	0.0	°C	-200.0	800.0	Electrical cabinet temperature differential
17131	01.010-LSt	1.7	°C	0.1	800.0	HT line low suction pressure alarm differential
16965	01.011-En	5	num	0	12	IO expansion modules number
18072	01.012-tr1	1=Heat		0	1	General purpose regulator GP 1 cool/heat mode
18076	01.013-Sr1	0.0		-200.0	800.0	Regulator 1 setpoint
18080	01.014-dr1	0.0		-200.0	800.0	Regulator 1 differencial
18073	01.015-tr2	0=Cool		0	1	General purpose regulator GP 2 cool/heat mode
18077	01.016-Sr2	0.0		-200.0	800.0	Regulator 2 setpoint
18081	01.017-dr2	0.0		-200.0	800.0	Regulator 2 differencial
18074	01.018-tr3	0=Cool		0	1	General purpose regulator GP 3 cool/heat mode
18078	01.019-Sr3	0.0		-200.0	800.0	Regulator 3 setpoint
18082	01.020-dr3	0.0		-200.0	800.0	Regulator 3 differencial
18075	01.021-tr4	0=Cool		0	1	General purpose regulator GP 4 cool/heat mode

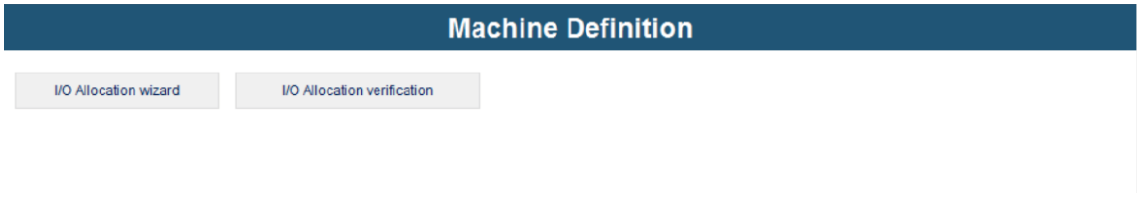
Element	Description
A	List of all the parameters that can be configured on the controller. Parameters are displayed in different colors: • red - values available in the project but not yet read from or written to the controller • black - values read from or written to the controller that match the factory settings • blue - values read from the controller that do not match the factory settings
B	Filter to display only a limited number of parameters.

The Machine Definition panel

Introduction

This is the main page of the Machine Definition section and it allows you to allocate the I/O on the controller by running an automatic procedure. If you have assigned the I/O manually, from this panel you can check if you have accidentally created any conflict.

Description



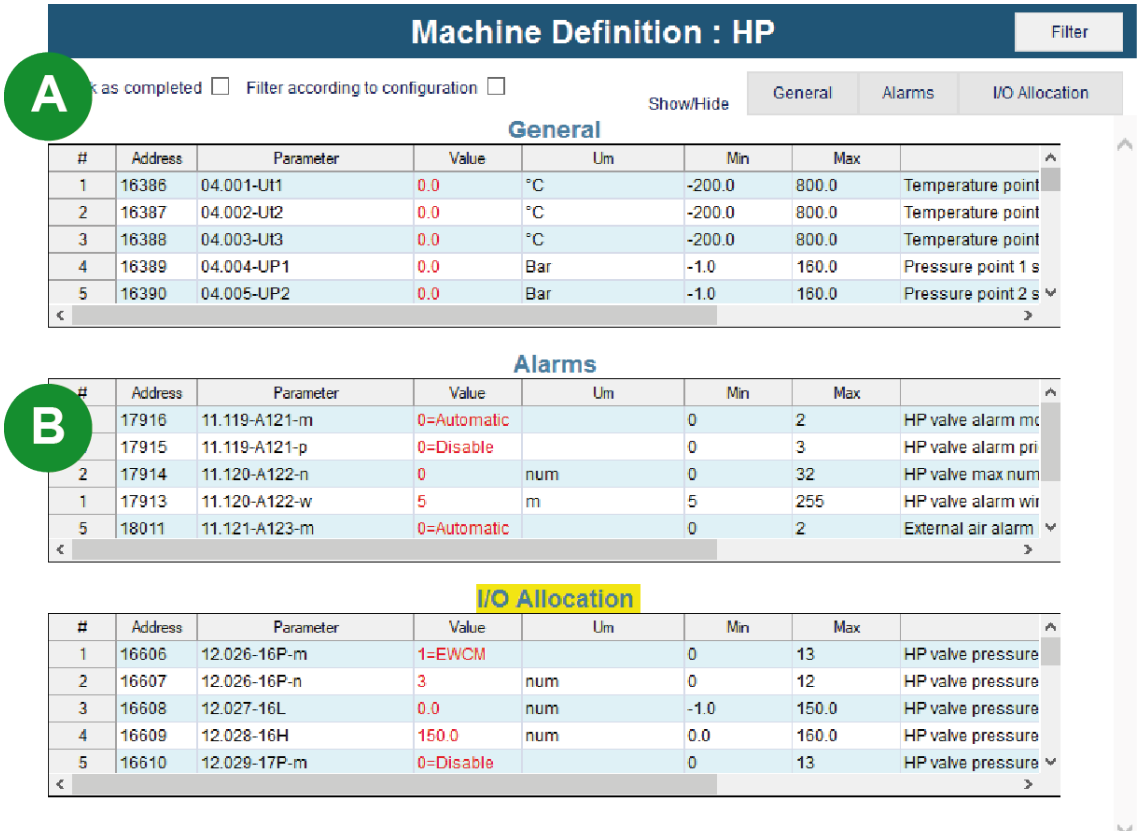
Element	Function
I/O Allocation wizard	Starts the wizard to guide the automatic I/O allocation procedure.
I/O Allocation verification	Finds conflicts in I/O allocations.

The Machine Definition detail pages

Introduction

These pages display controller parameters grouped by function (low temperature, high temperature etc.). For each parameter, value, unit of measure, range and a description are shown.

Description



Element	Description
A	Functions available in the panel
B	List of all the parameters that can be configured on the controller. Parameters are displayed in different colors: • red - values available in the project but not yet read from or written to the controller • black - values read from or written to the controller that match the factory settings • blue - values read from the controller that do not match the factory settings

Functions

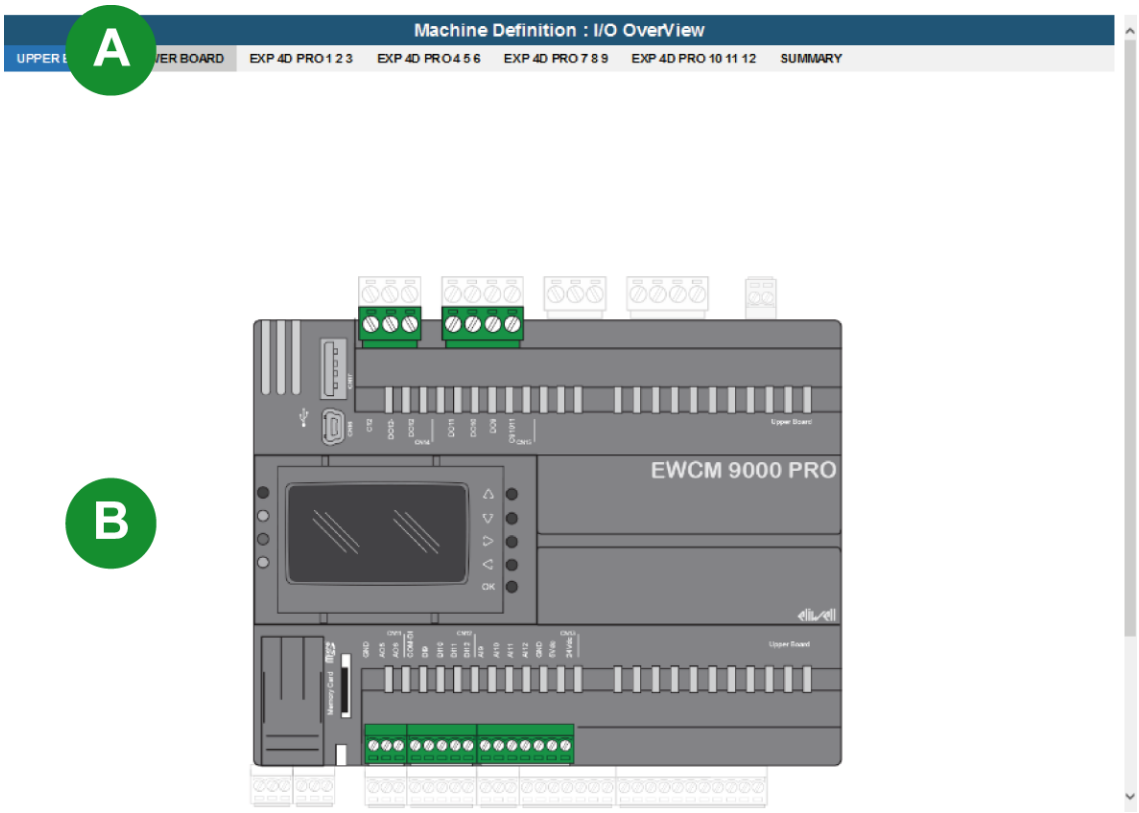
Element	Function
Filter	Display a subset of parameters.
Mark as completed	Mark the currently selected group of parameters as correctly configured (highlighted in bold in the **Device tree** panel). Display only the parameters for the components actually installed in the plant.
Filter according to configuration	Display only the parameters for the components actually installed in the plant.
Show/Hide	Show/hide only specific categories of parameters for the selected group.

The I/O Overview panel

Introduction

This panel displays how I/O are allocated on the controller and on its expansions, if present.

Description



Element	Description
A	Tabs to display I/O allocations
B	Graphic representation of the controller and of the components connected to each I/O

View controller parameters

View all parameters

In the **Device tree** panel select the **All parameters** folder: the **All parameters** panel opens and displays all the configurable parameters for the connected controller.

See the User Guide of the controller for more details on each parameter.

View specific parameters

1. In the **Device tree** panel, select the group of **Machine Definition** parameters to be displayed.
2. In the **Machine Definition** panel click **Filter** to display a filter window.
3. Set the filter parameters then click **Search**: only the parameters matching your filter criteria are displayed.
4. To remove the filter and display all data, click **Clear Filter**.
5. To show/hide a specific category of parameters click on the corresponding **Show/Hide** button.

Read parameters from the controller

1. In the work area, select the parameters to be read from the controller.
2. To select all parameters at once, click .
3. Click : the values read from the controller are displayed in the table.

View I/O allocations on the controller

1. In the **Device tree** panel, select **I/O Overview**: the physical allocations of all the I/O on the controller and on its expansions is displayed in the work area.
2. Click on the **Summary** tab to display all I/O allocation information in the form of a table.

Print out this table for fast and easy reference of I/O allocations on the controller.

View the components status

In the **Device tree** panel, select **Layout**: the status of all the components connected to the controller and to its expansions is displayed in the work area.

Set controller parameters

Introduction

Controller parameters can be set automatically, using a wizard, or manually. The following procedures can only be performed online, that is when the controller is connected to Device Manager PRO.

Set parameters automatically

1. Click **I/O Allocation wizard**: the procedure wizard is displayed.
2. For each step, answer the question then click **Next Step** to proceed.
3. To go back to a previous step, click on the corresponding tab.
4. When you have answered to all the questions for all the steps, click on **Summary** to check them.
5. Click **OK** to confirm: all necessary parameters are set on the controller.
6. To check the settings, do one of the following:
   - Run a consistency verification, or
   - View I/O allocations on the controller.

Set parameters manually

NOTICE
INCORRECT OPERATION OF THE DEVICE
Verify all relevant parameters after loading a new set of parameters configuration.
Failure to follow these instructions can result in equipment damage.

1. Select a group of controller parameters in the **Machine Definition** section of the **Device tree** panel: the corresponding parameters are displayed in work area.
2. Click on a specific category to show/hide its relevant parameters.
3. Select **Filter according to configuration** to display only the parameters for the components actually installed in the plant.
4. Set each parameter to the desired value.

   Note: Values outside admitted ranges are automatically rejected.

5. Click : the values displayed in the table are downloaded to the controller.
6. Select **Mark as completed** when you have set all the required parameters: the parameters group in the **Device tree** panel is highlighted in bold.

Run a consistency verification

Click **I/O Allocation verification**: Device Manager PRO looks for conflicts in I/O allocations, conflicting settings are highlighted in red in the relevant **Machine Definition** detail page.

NOTICE
INCORRECT OPERATION OF THE DEVICE
Verify that there is no I/O allocation conflict before you write parameters to the controller.
Failure to follow these instructions can result in equipment damage.

Import/export controller parameters

Introduction

Controller parameters can be set by importing a parameter configuration file on the controller. To perform this operation you need to:

- define the parameters in Device Manager PRO
- export the parameters on a USB flash drive
- import the parameters from the USB flash drive to the controller

Together with controllers parameters you can also export and import the firmware of the controller, that is PLC and HMI files.

You can also import in Device Manager PRO a parameters configuration file you have previously prepared and stored on a USB flash drive.

This data transfer method is fast and can be performed also when the controller is not connected to Device Manager PRO. The USB flash drive used for data transfer must have the characteristics described in Characteristics of the USB flash drive.

Export parameters from Device Manager PRO

1. In the **Device tree**, select the device for which you want to export the parameters.
2. Select **Service > Export Parameters File** in the menu bar: the files for export are created in the USB folder.
3. Select **Service > Open USB Folder** in the menu bar: the content of the folder is displayed.
4. Copy the following files to the USB flash drive:
   - param.raw
   - upload.txt file

NOTICE
INCORRECT OPERATION OF THE DEVICE Do not modify or rename the exported files. **Failure to follow these instructions can result in equipment damage.**

Export parameters and firmware from Device Manager PRO

1. In the **Device tree**, select the device for which you want to export parameters and firmware.
2. Select **Service > Export Application and Parameters File** in the menu bar: a dialog box is displayed.
3. Export the files.

If you want to...	Then...
export only the firmware files	click **No**.
export both firmware (PLC and HMI) and parameters files	1. Click **Yes**. 2. Select the parameters file, and click **Open**.

4. Select **Service > Open USB Folder** in the menu bar: the content of the folder is displayed.
5. Copy the files to the USB flash drive.

NOTICE
INCORRECT OPERATION OF THE DEVICE Do not modify or rename the exported files. **Failure to follow these instructions can result in equipment damage.**

Import parameters from an USB flash drive to Device Manager PRO

1. In the **Device tree**, select the device for which you want to import the parameters.
2. Select **Service > Import Parameters File** in the menu bar.
3. Select the parameter file to be imported (RAW or DAT file), then click **Open**: the parameters contained in the file are copied to Device Manager PRO.

Export parameters from the controller to an USB flash drive

1. Make sure the controller is correctly connected to Device Manager PRO.
2. Connect the empty USB flash drive to the controller.
3. Select **Service>Generate PARAM.BIN e PARAM.DAT** in the menu bar: the two files are exported to the USB flash drive.

Import files on the controller

For detailed instructions on how to import files from the USB flash drive to the controller, and from the controller to the USB flash drive, refer to the controller's documentation.

After you have downloaded the parameters file to the controller, run a consistency verification, to make sure there are no conflicts (see Run a consistency verification).

After you have downloaded the firmware to the controller, switch the controller back to its active status (see Return the controller to active mode).

Characteristics of the USB flash drive

To be used for parameters import and export, the USB flash drive must be:

- FAT32 formatted
- empty

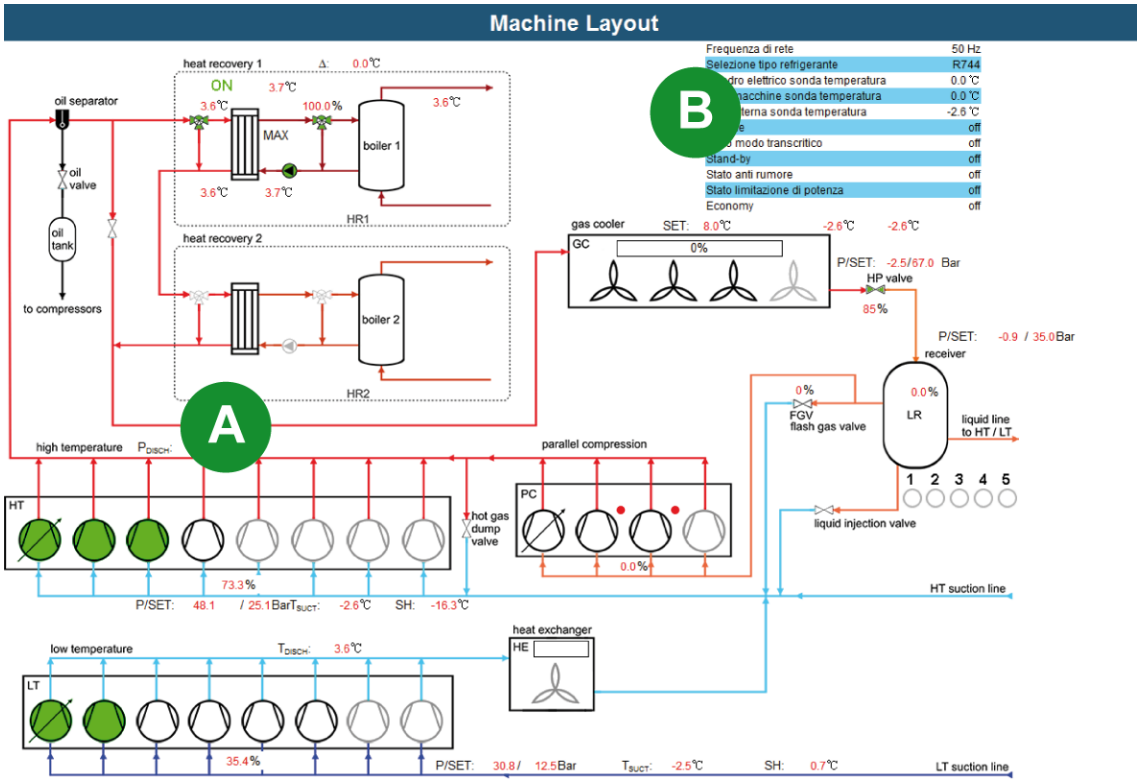
The Machine Layout panel

Introduction

This layout describes the maximum machine set-up that can be supported by a controller and its expansions. The status of each element is updated in real time.

Alarms displayed in this graphic are enabled in the Alarms section of each component parameters (see Set controller parameters).

Description



Element	Description
A	Plant layout
B	Summary of main information on plant status

Component status

Element	Description
	Component configured and active
	Component configured

Element	Description
	Component not configured
	Active alarm on the component

The Softscope tool

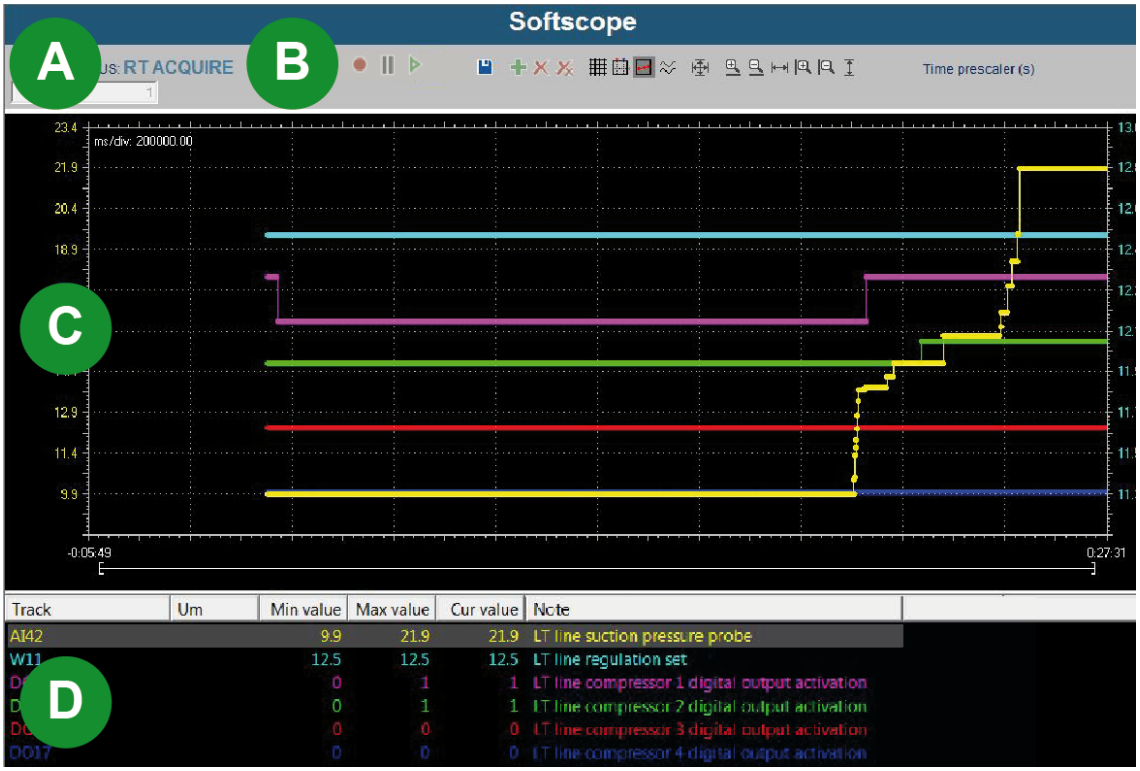
Introduction

This tool allows you to collect specific values recorded by the controller for a period of time (maximum 48 hours) and display them for further analysis. All tracked values are sampled at the same time and at 1 second intervals.

The data recording time must be defined according to the type of controller used, the measure tracked and the analysis to be performed.

Recorded data can be saved as graphs and analyzed later, when the controller is offline.

Description



Element	Description
A	Status of communication with the controller
B	Toolbar
C	Main graph: displays the trends of the tracks recorded by the controller. The unit of measure displayed in the y axis depends on the specific track selected.
D	List of tracks selected for data analysis and displayed on the main graph.

Softscope communication status

Status	Description
IDLE	Device Manager PRO is ready to start data recording.
NOT CONNECTED	Device Manager PRO is not connected to the controller.
RT ACQUIRE	Device Manager PRO is displaying the data recorded by the controller.
RECORDING	The connected controller is recording the values for the selected tracks.
UNDEFINED	Device Manager PRO cannot connect to the controller.

Toolbar

Button	Function
	Start/stop data recording on the controller.
	Start/pause the display of currently acquired data in the main graph.
	Save the acquired data in a OSCX file.
	Add a track to be recorded.
	Remove the selected track from the list of tracks to be recorded.
	Remove all tracks from the list of tracks to be recorded.
	Show/hide the graph grid.
	Show/hide more information on the recording interval.
	Show/hide the track acquisition points.
	Display all recorded tracks as separate in the graph.
	Scaling functions to resize the trends in the graph.
	Zooming functions
Time prescaler	Data sampling interval in seconds (cannot be modified)

Collect and analyze data with the Softscope

Select the measures to be collected

1. In the **Device tree** panel, select **Softscope**: the **Softscope** panel is displayed in the work area. If you have saved a set of measures to be tracked in your last session, they will be displayed.
2. Click  to display a list of measures that can be tracked.
3. Select all the measures you want to track then click **OK**: the selected measures are listed and color coded in the order in which you have selected them.
4. Save these settings if you want to reuse this same set of measures for your next recording session.

Start/stop data collection

Note: Each time you start a recording session, data stored in the previous session are overwritten.

- Click  to start data recording on the controller: data recording continues on the controller even if you exit this function or Device Manager PRO.
- Click again to stop data recording on the controller.

Do not stop data recording before you start displaying collected data. If you do, you will no longer be able to display current and future data.

Note: When historical data exceed the data acquisition buffer specific for each controller, older data will be overwritten.

Display and analyze recorded data

1. Click : recorded data are displayed in the main graph. Newly acquired data is displayed as it is recorded.

   Note: The upload of the recorded data from the controller could take up to several minutes, depending on the amount of data recorded.

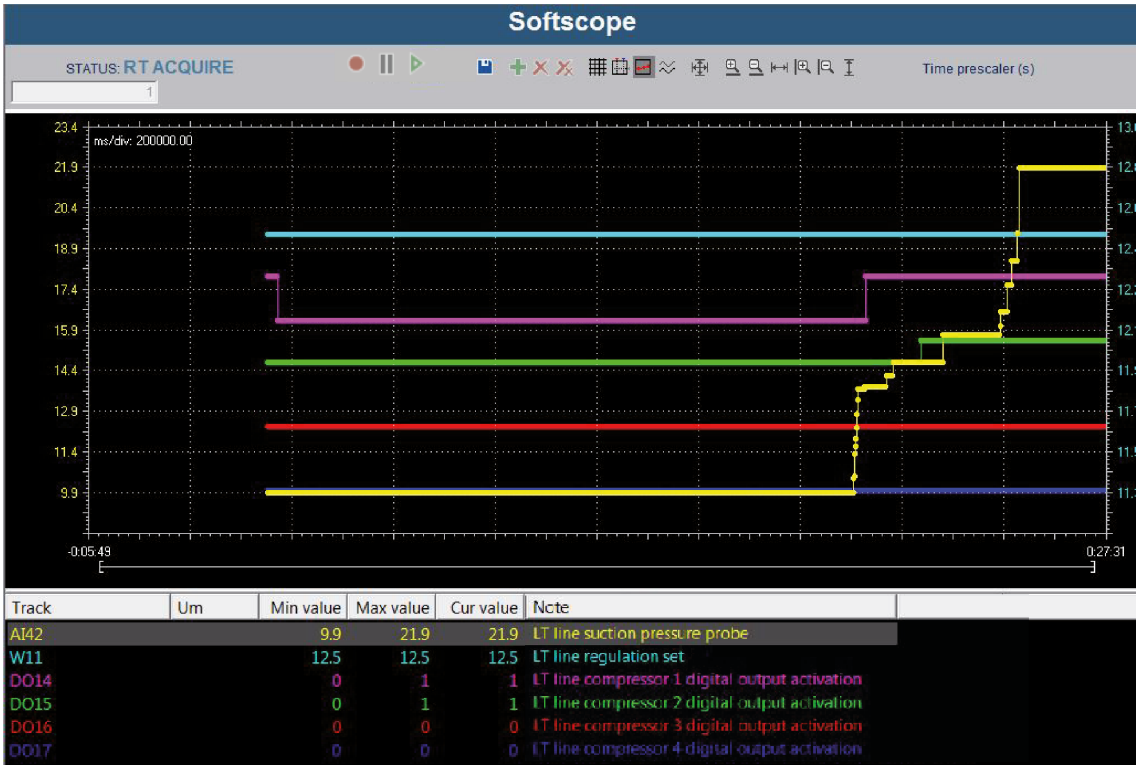
2. Adjust the graph display for a better view.
3. If you detect any anomaly, you can keep the recording going, adjust parameters settings and check here whether the anomaly has been corrected or not.
4. To save recorded data into a file and analyze them later, click  and assign a name to the file: data are saved as an OSCX file.

View recorded data offline

1. Select **Service>Offline Graph viewer** in the menu bar.
2. Select the file for the data you want to view, then click **Open**: the graph is opened in the **Offline graph viewer** window.
3. Adjust the graph display for a better view.

Example of data analysis

The following example shows the relationship between measures recorded from a probe and its setpoint.



Collected data

Track number	Value displayed
AI42 (yellow)	Pressure value measured by a probe
W11 (light blue)	Pressure setpoint
DO14 (purple)	Status of the two related digital compressors.
DO15 (green)	

Data analysis

The graphic shows how the first compressor is activated when the value read from the probe exceeds the setpoint, and how the second compressor is also activated when pressure value further increases.

Maintenance

Maintenance procedures

Introduction

NOTICE
INOPERABLE DEVICE
Perform software updates only under Eliwell Technical Support supervision.
Failure to follow these instructions can result in equipment damage or malfunction.

Set up data logging

1. Select **Options > Logging options** in the menu bar: the **Logging options** widow is displayed.
2. Select the information you want to be logged then click **OK**: the selected information will be traced and displayed in the **Output** panel.

Update PLC firmware and HMI

The following procedure can only be performed when the controller is connected to Device Manager PRO. For an offline procedure, see Import/export controller parameters.

NOTICE
INOPERABLE DEVICE
Perform this software update using only a local connection to the controller.
Failure to follow these instructions can result in equipment damage or malfunction.

1. In the **Device tree** panel select the controller to display the **Configuration** panel.
2. Click **PLC and HMI download**: the **PLC and HMI upgrade** panel is displayed.
3. Select the file for the update then click **Download**: the controller automatically switches to standby mode and the new PLC and HMI software is downloaded.
4. Switch the controller back to its active operation status (see Return the controller to active mode).

Update BIOS

NOTICE
INOPERABLE DEVICE
Do not remove the connecting cable until the BIOS download has been completed.
Failure to follow these instructions can result in equipment damage.

1. In the **Device tree** panel select the controller to display the **Configuration** panel.
2. Click **BIOS download**: the **BIOS upgrade** panel is displayed.
3. Select the file for the update then click **Download**: the new BIOS is downloaded to the controller.

This operation may require a few minutes.

Controller specific scenarios

EWCM 9000 PRO

Introduction

Below is a set of relevant information for using Device Manager PRO to configure controllers of the EWCM 9000 PRO series in a transcritical CO_2 refrigeration plant (see Compatible parametric controllers for a list of compatible controllers).

For more technical details on the controller itself, see the controller's User Guide.

Controller parameters

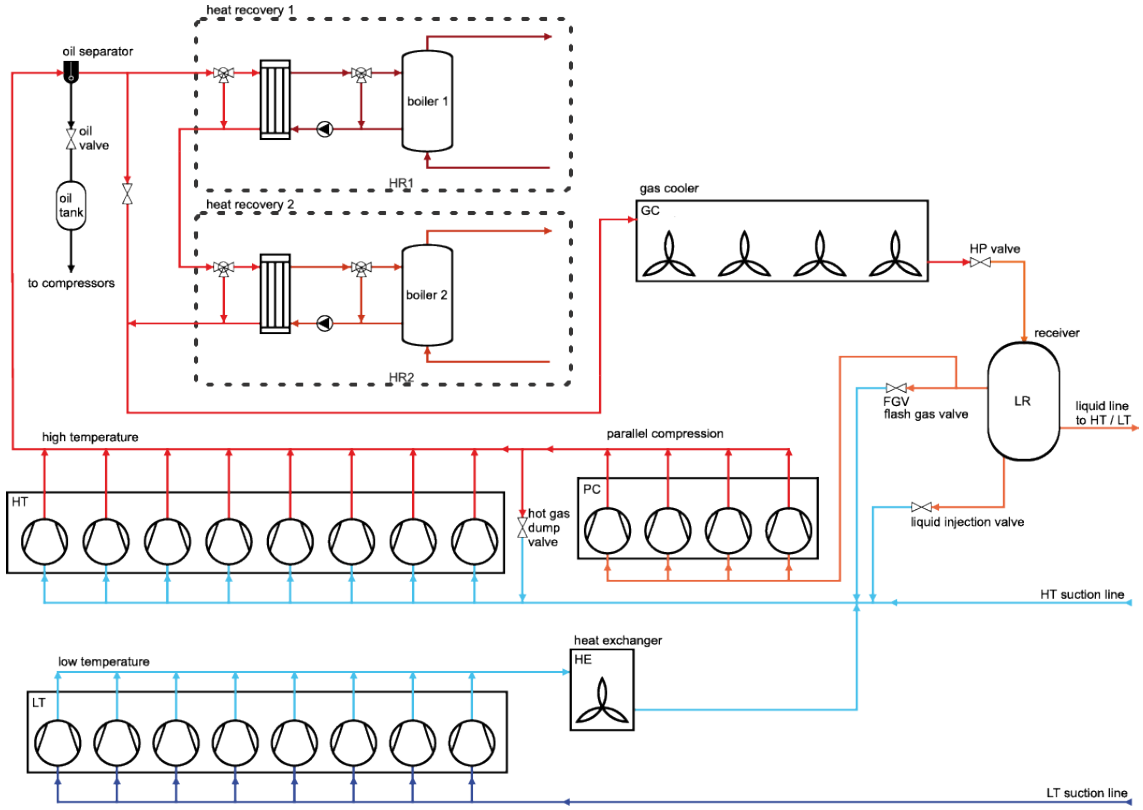
The controller operating parameters are included in the **Machine Definition** section and are grouped as follows.

Parameter group	Description
sys	Controller system parameters
LT	Low temperature valves, probes, compressors and inverters parameters and alarms
HT	High temperature valves, probes, compressors and inverters parameters and alarms
HP	High pressure valves, probes parameters and alarms
GC	Gas cooler fans, probes, inverters parameters and alarms
HR1	Heat recovery probes and valves parameters and alarms
HR2	
Receiver	Liquid receiver probes and valves parameters and alarms
HE	Intermediate heat exchanger fans, probes parameters and alarms
oil	Oil separator valves, probes parameters and alarms

For more technical details on the controller parameters and alarms, see the controller's User Guide.

Plant Layout

Below a description of a sample transcritical refrigeration system (CO_2) where the controller can be installed.



Element	Description
	Boiler
	Compressor
	Compressor-inverter
	Fan
	Heat exchanger
	Oil separator
	Oil tank
	Pump
	Receiver
	Three-way valve
	Valve

Eliwell Controls srl
Via dell'Industria, 15 Z.I. Paludi
32016 Alpago (BL) Italy
+39 (0) 437 986 111
www.eliwell.com

Technical customer support
+39 (0) 437 986 300
techsuppeliwell@se.com

Sales
+39 (0) 437 986 100 (Italy)
+39 (0) 437 986 200 (Other countries)
saleseliwell@se.com

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