



Software version 1.0

Instruction Handbook

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PREFACE

- [Symbols used in the manual](#)
- [Reference documents](#)
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Symbols used in the manual

The symbols for **WARNING**, **CAUTION** and **NOTES** are indicated below together with their significance.



This symbol indicates operating procedures, technical information and precautions that if ignored and/or are not performed correctly could cause injuries.



This symbol indicates operating procedures, technical information and precautions that if ignored and/or are not performed correctly could cause damage to the equipment.



This symbol indicates operating procedures, technical information and precautions that it are important to highlight.

Reference documents

This document refers to **RoboShop** software tool for **C5GPlus/R1C** Control Unit.

In addition to the current manual, the complete manuals set for **C5GPlus/R1C** consists of:

Comau	Control Unit	<ul style="list-style-type: none">– Technical Specifications– Transport and installation– Control Unit Use.
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These manuals are to be integrated with the following documents:

Comau	Robot	<ul style="list-style-type: none">– Technical Specifications– Transport and installation– Maintenance
	Programming	<ul style="list-style-type: none">– Motion programming
	Applications	<ul style="list-style-type: none">– According to the required type of application.

Modification history

- In the 02/0218 manual version, the following considerable changes have been made, compared to 01/1017 previous version:
 - updated [par. 2.3 Requirements on page 21](#)
 - description improved for [par. 2.5 How to get a full licence for RoboShop on page 23](#)
 - Description modified for [Logger](#) environment, to manage:
 - new commands: [Export CSV File](#), [Log Search](#),
 - using the colour background to handle errors severity
 - described the new **Save Comment** key to handle [Cause&Remedy User Comment](#) field usage
 - described **Match case** new option of [Find - Replace](#) command ([Editor](#) environment)
 - described the [Virtual Controller](#) connection type, opposed to the [Real Controller](#) one.

1. GENERAL SAFETY REQUIREMENTS



This chapter deals with general specifications that apply to the whole Robot System. Considering its significance, this chapter is referred unreservedly in each system instructions handbook.

This chapter deals with the following topics:

- [Responsibilities](#)
- [Safety Requirements](#).

1.1 Responsibilities

- The system integrator is responsible for ensuring that the [Robotic System \(Robot and Control Unit\)](#) is installed and handled in accordance with the Safety Standards in the country where the installation takes place. The application and use of the necessary protection and safety devices, the issuing of declaration of conformity and any EC marking of the system are the responsibility of the Integrator.
- COMAU refuses any responsibility for accidents caused by incorrect or improper use of the [Robotic System \(Robot and Control Unit\)](#), by tampering with circuits, components, software and with the use of spare parts that are not included in the spare parts list.
- The application of these Safety Requirements is the responsibility of the persons assigned to direct / supervise the activities indicated in the section [Applicability](#), which should make sure that the [Authorised Personnel](#) is aware of and scrupulously follow the requirements contained in this document in addition to the general Safety Standards applicable to [Robotic System \(Robot and Control Unit\)](#) in the Country where the system is installed.
- The non-observance of the Safety Standards may cause to the operators permanent injuries or death and can damage the [Robotic System \(Robot and Control Unit\)](#).



The installation shall be carried out by qualified Personnel and must conform to all National and Local standards.

1.1.1 Safety Fundamental Requirements Applied and Respected

The robotic system is composed of Control Unit and Robot series SMART 5 considers as applied and respected the following Safety Fundamental Requirements, Annex 1 of Directive on Machinery 2006/42/CE: 1.1.3 – 1.1.5 – 1.2.1 – 1.2.2 – 1.2.3 – 1.2.4.3 – 1.2.5 – 1.2.6 – 1.3.2 – 1.3.4 – 1.3.8.1 – 1.5.1 – 1.5.2 – 1.5.4 – 1.5.6 – 1.5.8 – 1.5.9 – 1.5.10 – 1.5.11 – 1.5.13 – 1.6.3 – 1.6.4 – 1.6.5 – 1.7.1 – 1.7.1.1 – 1.7.2 – 1.7.4.

In case it is provided only the Robot series SMART 5 are to be considered as applied the following requirements: 1.1.3 – 1.1.5 – 1.3.2 – 1.3.4 – 1.3.8.1 – 1.5.1 – 1.5.2 – 1.5.4 – 1.5.6 – 1.5.8 – 1.5.9 – 1.5.10 – 1.5.11 – 1.5.13 – 1.6.4 – 1.6.5 – 1.7.1 – 1.7.1.1 – 1.7.2 – 1.7.4.

1.2 Safety Requirements

1.2.1 Purpose

These safety requirements are aimed to define the behaviour and obligations to be observed when performing the activities listed in the [Applicability](#) section.

1.2.2 Definitions

Robotic System (Robot and Control Unit)

Robotic system is the workable assembly composed of: Robot, Control Unit, Teach Pendant and other possible options.

Protected Area

The protected area is the zone confined by the protection barriers and intended to be used for the installation and operation of the Robot.

Authorised Personnel

Authorised personnel defines the group of persons who have been appropriately trained and assigned to carry out the activities listed in the section [Applicability](#).

Staff in Charge

The staff in charge defines the personnel who manage or supervise the activities of the employed persons defined in the preceding point.

Installation and Startup

The installation is intended as the mechanical, electrical and software integration of the Robot and Control System in any environment that requires controlled movement of Robot axes, in compliance with the safety requirements of the Country where the System is installed.

Functioning in Programming Mode

Operating mode under the control of the operator, that excludes automatic operation and allows the following activities: manual movement of Robot axes and programming of work cycles at low speed, programmed cycle testing at low speed and, when allowed,

at working speed.

Functioning in Auto / Remote Mode

Operating mode in which the Robot autonomously executes the programmed cycle at work speed, with the operators outside the protected area, with the protection barriers closed and included in the safety circuit, with local (located outside the protected area) or remote start/stop.

Maintenance and Repair

Maintenance and repair are activities that involve periodical checking and / or replacement of Robot and Control System (mechanical, electrical, software) parts or components, and trouble shooting, that ends when the Robot and Control System has been reset to its original project functional conditions.

Decommissioning and Dismantling

Decommissioning defines the activities involved in the mechanical and electrical removal of the Robot and Control System from a production unit or from an environment in which it was under study.

Dismantling consists of the demolition and dismantling of the components that make up the Robot and Control System.

Integrator

The integrator is the professional expert responsible for the Robot and Control System installation and startup.

Misuse

Misuse is defined as the use of the system outside the limits specified in the Technical Documentation.

Action Area

The Robot action area is the enveloping volume of the area occupied by the Robot and its equipment during movement in the area.

1.2.3 Applicability

These requirements must be applied when carrying out the following activities:

- [Installation and Startup](#)
- [Functioning in Programming Mode](#)
- [Functioning in Auto / Remote Mode](#)
- [Robot Axes Brake Release \(if present\)](#)
- [Maintenance and Repair](#)
- [Decommissioning and Dismantling.](#)

1.2.4 Operating Modes

Installation and Startup

- The startup is only possible when the Robot and Control System has been correctly and completely installed.
- The system installation and startup is exclusively the task of the authorised personnel.
- The system installation and startup is only permitted exclusively inside a protected area of an adequate size to house the Robot and the equipment it is outfitted with, without passing beyond the protection barriers. It is also necessary to check that in normal Robot movement conditions there is no collision with parts inside the protected area (e.g structural columns, power supply lines, etc.) or with the barriers. If necessary, limit the Robot work area using mechanical hard stop (see optional units).
- Any fixed Robot control stations must be located outside the protected area and in a point such as to permit a full view of the Robot movements.
- The Robot installation area must be as free as possible from materials that could impede or limit the visibility.
- During installation the Robot and the Control Unit must be handled as described in the product Technical Documentation; if lifting is necessary, check that the eye-bolts are fixed securely and use only adequate slings and equipment.
- Fix the Robot to mount holder, with all the provided bolts and pins, tightened to the tightening torque indicated in the product Technical Documentation.
- If present, remove the fixing brackets of the axes and verify the proper fixing of the equipment the Robot is outfitted with.
- Check that the Robot guards are correctly fixed and that there are no moving or loose parts. Check that the Control Unit components are intact.
- Install the Control Unit outside the protected area: the Control Unit should not be used as part of the fencing.
- Check that the voltage value of the power mains is consistent with that indicated on the nameplate of the Control Unit.
- Before electrically connect the Control Unit, check that the circuit breaker on the power mains is locked in open position.
- Connection between the Control Unit and the supply mains at the works, is to be with a cable dimensioned appropriately for the power installed on the Control Unit (for further details see the Control Unit “Transport and Installation” manual).
- Connect the ground cable (PE) then connect the power conductors to the main switch.
- Connect the power supply cable, first connecting the ground cable to the circuit breaker on the power mains line, after checking with a tester that the circuit breaker terminals are not powered. It is recommended to connect the cable armouring to the earth.
- Connect the signals and power cables between the Control Unit and the Robot.

GENERAL SAFETY REQUIREMENTS

- Connect the Robot to earth through the Control Unit or by means of specific ground terminal blocks, depending on the predispositions available on the Robot and/or on the Control Unit.
- If present, check that the Control Unit door (or doors) is/are locked with the key.
- A wrong connection of the connectors may cause permanent damage to the Control Unit components.
- The Control Unit manages internally the main safety interlocks (gates, enabling pushbuttons, etc.). Connect the Control Unit safety interlocks to the line safety circuits, taking care to connect them as required by the Safety standards. The safety of the interlock signals coming from the transfer line (emergency stop, gates safety devices etc.) i.e. the realisation of correct and safe circuits, is the responsibility of the Robot and Control System integrator.



In the cell/line emergency stop circuit it is necessary to include the contacts of the Control Unit emergency stop push-buttons, available on X30. The push-buttons are not interlocked inside the emergency stop circuit of the Control Unit.

- The safety of the system cannot be guaranteed in case of interlocks erroneous, incomplete or missing execution.
- The safety circuit executes a controlled stop (IEC 60204-1 , class 1 stop) for the safety inputs Auto Stop/ General Stop and Emergency Stop. The controlled stop is only active in Automatic mode; in Programming mode the power is disabled immediately.
- When preparing protection barriers, especially light curtains and access doors, take into consideration the Robot stopping times and distances according to the stop category (0 or 1) and the weight of the Robot.



If present, on the Control Unit, make sure that the setting of the stop circuit timer is consistent with the type of Robot connected (for further details see the Control Unit "Transport and Installation" manual)

- Check that the environmental and operating conditions do not exceed the limits specified in the Technical Documentation of the specific product.
- The calibration operations must be carried out with great care, as indicated in the Technical Documentation of the specific product, and should be concluded by checking the correct position of the machine.

- To load or update the system software (for example after boards replacing), use only the original software handed over by COMAU. Scrupulously follow the system software loading procedure described in the Technical Documentation supplied with the specific product. After loading, always make some Robot moving tests at low speed remaining outside the protected area.
- Check that the barriers of the protected area are correctly positioned.

Functioning in Programming Mode

- The programming of the Robot is exclusively the task of the authorized personnel.
- Before starting to program, the operator must check the [Robotic System \(Robot and Control Unit\)](#) to make sure that there are no potentially dangerous irregular conditions, and that there is nobody inside the protected area.
- The programming should be controlled from outside the protected area whenever possible.
- Before operating inside the [Protected Area](#), the operator must make sure from outside that all the necessary protections and safety devices are present and in working order, and especially that the Teach Pendant is working properly (low speed, emergency stop device, enabling device, etc.).
- During the programming phases, only the operator with the Teach Pendant is allowed inside the [Protected Area](#).
- If the presence of a second operator in the working area is necessary when checking the program, this person must have an enabling device interlocked with the safety devices.
- Activation of the motors (DRIVE ON) always must be controlled from a position outside the operating range of the Robot, after checking that there is nobody in the area involved. The Drive On operation is considered complete when the relevant machine status indication is shown.
- When programming, the operator must remain at an appropriate distance from the Robot to be able to avoid any irregular machine movements, and in any case in a suitable position to avoid the risk of being trapped between the Robot and structural parts (columns, barriers, etc.), or between movable parts of the Robot.
- When programming, the operator must avoid to remain in a position where parts of the Robot, pulled by gravity, could move downwards, upwards or sideways (when installed on a inclined plane).
- Testing a programmed cycle at working speed with the operator inside the protected area, in some situations where a close visual check is necessary, is only to be carried out after a complete test cycle at low speed has been carried out. The test must be controlled from a safe distance.
- Special attention is to be paid when programming using the Teach Pendant: in this situation, although all the hardware and software safety devices are active, the Robot movement depends on the operator.
- During the first running of a new program, the Robot may move along a path that is not the one expected.
- The modification of program steps (such as moving by a step from one point to another of the flow, wrong recording of a step, modification of the Robot position out of the path that links two steps of the program), could give rise to movements not envisaged by the operator when testing the program.

GENERAL SAFETY REQUIREMENTS

- In both cases operate cautiously, always remaining out of the Robot range of action and test the cycle at low speed.

Functioning in Auto / Remote Mode

- The activation of the automatic operation (AUTO and REMOTE states) is permitted only with the **Robotic System (Robot and Control Unit)** integrated inside an area with protection barriers properly interlocked, as required by the Safety Standards currently in in the Country where the installation takes place.
- Before starting the automatic mode the operator must check the Robot and Control System and the protected area to make sure there are no potentially dangerous irregular conditions.
- The operator can activate automatic operation only after having checked:
 - that the Robot and Control System is not in maintenance or repair status;
 - that the protection barriers are correctly positioned;
 - that there is nobody inside the protected area;
 - that the Control Unit doors are closed and locked with the appropriate key;
 - that the safety devices (emergency stop, protection barrier safety devices) are functioning;
- Special attention is to be paid when selecting the remote mode, in which the line PLC can perform automatic operations of motors power up and program starting.

Robot Axes Brake Release (if present)

- In the absence of motive power, the Robot axes repositioning is possible by means of optional brake release devices and suitable lifting devices. Such devices only allow the brake deactivation of each axis. In this case, all the system safety devices (including the emergency stop and the enabling push-button) are disabled; also the Robot axes can move upwards or downwards because of the s generated by the balancing system or by the gravity .



Before using the manual brake release devices, it is recommended to sling the Robot, or hook it to an overhead travelling crane.

- The use of brake releasing device may cause the axes falling due to gravity, as well as possible impacts due to an incorrect reset, after applying the brake releasing module. The procedure for the correct usage of the brake releasing device (both for the integrated one and module one) is to be found in the maintenance handbooks.

- When after the interruption of an unfinished MOVE the motion is enabled again, the typical function of trajectory recuperation may generate unpredictable paths that may imply the risk of impact. This same condition arises at the next restart of the automatic cycle. Avoid moving the Robot in positions that are distant from the ones required for the motion restarting; alternatively disable the outstanding MOVE programmes and/or instructions.

Maintenance and Repair

- When assembled in COMAU the Robot is supplied with lubricants that do not contain any harmful to health substances, however, in some cases, repeated and prolonged exposure to the product may cause skin irritation, or if swallowed, sickness.

First Aid Measures. In case of contact with the eyes or skin: rinse the affected areas with copious amounts of water; should irritation persist, seek medical advice. If swallowed, do not induce vomiting or administer anything by mouth; consult a doctor as soon as possible.

- Maintenance, trouble-shooting and repair are only to be carried out by authorised personnel.
- When carrying out maintenance and repair operations, the specific warning sign stating the maintenance status must be placed on the control panel of the Control Unit, until the end of the operation, even if it should be temporarily suspended.
- Maintenance and components or Control Unit replacement operations must be carried out with the main switch in open position and locked with a padlock.
- Even if the Control Unit is not powered (main switch open), there may be interconnected voltages deriving from connection to peripheral units or external power sources (e.g. 24 Vdc input/output). Power off the external sources when operating on involved system parts.
- Removal of panels, protection shields, grids, etc. is only allowed with the main switch open and padlocked.
- Defective components must be replaced with others having the same Part Number, or equivalent components defined by COMAU.



If present, the safety components, in case of replacement, must be configured using the same parameters of the components just removed.

- Trouble-shooting and maintenance activities must be carried out, whenever possible, outside the protected area.
- Trouble-shooting executed on the control is to be carried out, whenever possible without power supply.
- Should it be necessary, during trouble-shooting, to intervene with the Control Unit powered, all the precautions specified by Safety Standards must be observed when operating in presence of dangerous voltages.
- Trouble-shooting on the Robot must be carried out with the power supply turned off (DRIVE OFF).
- At the end of the maintenance and trouble-shooting operations, all the deactivated safeties must be reset (panels, protection shields, interlocks, etc.).

GENERAL SAFETY REQUIREMENTS

- Maintenance, repair and trouble-shooting operations must be concluded with the check of the correct functioning of the **Robotic System (Robot and Control Unit)** and all the safety devices, executed from outside the protected area.
- During the software loading phases (for example after replacement of electronic boards) use only the original software handed over by COMAU. Scrupulously follow the system software loading procedure described in the specific product Technical Documentation; after loading, to be sure, always run a test cycle, remaining outside the protected area
- Disassembly of Robot components (e.g. motors, balancing cylinders, etc.) may cause uncontrolled movements of the axes in any direction: before starting a disassembly procedure, consult the warning plates applied on the Robot and the Technical Documentation supplied.
- If present, always restore the protective covering where previously installed.

Decommissioning and Dismantling

- The decommissioning and removal of the Robot and Control System is exclusively the task of **Authorised Personnel**.
- Move the Robot in transport position and assemble the axes locking brackets (when required) following the instructions on the plate on the Robot and its Technical Documents.
- Before decommissioning initiation, the mains voltage at the Control Unit inlet must be powered off (switch off the circuit breaker on the power mains and lock it in open position).
- After using the specific instrument to check there is no voltage on the terminals, disconnect the power supply cable from the circuit breaker on the power mains, first disconnecting the power conductors, then the earth one. Disconnect the power supply cable from the Control Unit and remove it.
- First disconnect the connection cables between the Robot and the Control Unit, then the ground cable.
- If present, disconnect the Robot pneumatic system from the air distribution mains.
- Check that the Robot is properly balanced and if necessary sling it correctly, then remove the Robot securing bolts from the mount holder.
- Remove the Robot and Control Unit from the work area, following all the requirements indicated in the products Technical Documents; if lifting is necessary, check the eyebolts proper fixing and use only suitable slinging devices and equipment.
- Before starting dismantling operations (disassembly, demolition and disposal) of the Robot and Control System components, contact COMAU, or one of its branches, who will indicate, according to the type of Robot and Control Unit, the operating methods in accordance with safety principles and environment safeguarding.



Disposal operations must be carried out in accordance with the legislation of the country where the Robot System is installed; dispose the batteries, oils and other chemical liquids respecting the environment and in accordance with the legislative standards in , transferring them to the appropriate waste collection sites.

- The waste disposal operations are to be carried out complying with the legislation of the country where the Robot and Control System is installed.

2. GENERAL DESCRIPTION

2.1 Introduction

The current manual gives detailed information about **RoboShop** program which is the Interface on Personal Computer towards **C5G/R1C** Control Units.

RoboShop can run on Microsoft® Windows® desktop operating systems, supported by Microsoft® and requires administrator privileges to be installed.

It should be installed on the PC running the installation program, from the dedicated directory.



NOTE ABOUT THE LICENCE

Two types of licences are available for **RoboShop** program:

- **basic** licence
- **full** licence, which enables using the **Virtual Robot Controller**.

If the user wishes to pass from the **basic** licence to the **full** licence, execute the steps described in [How to get a full licence for RoboShop](#) paragraph.

The following topics are described in this chapter:

- [Basic functions](#)
- [Requirements](#)
- [Install and activate](#)
- [How to get a full licence for RoboShop](#)
- [Introduction to the User Interface](#).

2.2 Basic functions

RoboShop program provides a **Graphical User Interface** including dedicated environments for using the following functionalities:

- connecting to **C5G / R1C** Control Unit, at a reachable IP address according to the current physical connection and without any limitations on the ports (full open ports)
- viewing files existing on the Control Units and the PC
- editing and translating them in executable format (**.COD**)
- searching and viewing errors
- opening a **Terminal** window to directly issue commands towards the Control Unit.
- robot 3D viewing.

2.3 Requirements

The requirements should be complied for **RoboShop** program installation:

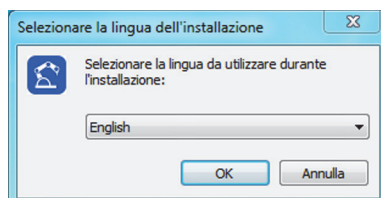
- Windows PC (not a virtual machine), compatible with all Windows Desktop OS 64 bit currently supported by Microsoft
- RAM minimum size: 8 Giga
- Hardware virtualization technology extensions (Intel VT-x, AMD-V) enabled - done on system Bios
- administrator rights needed for installation.

2.4 Install and activate

To install **RoboShop** on the PC, run the dedicated installation program and follow the wizard simple indications.

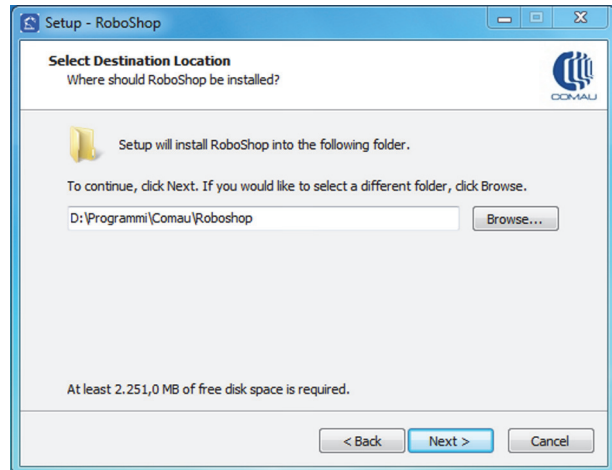
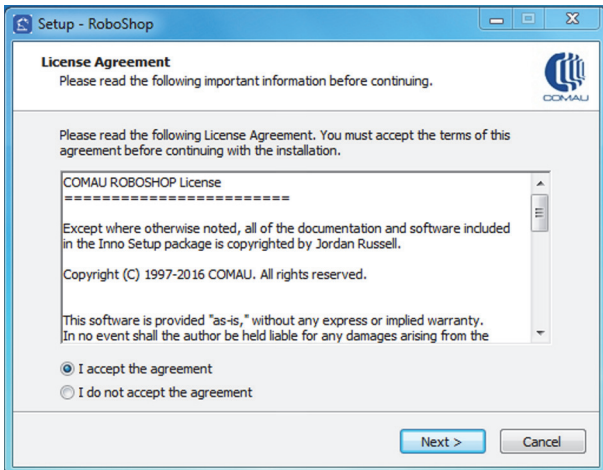
The needed steps are as follows:

- a. select the installation language.
Note that the chosen language will NOT be the one for **RoboShop** use, but only the one used during the installation phase.

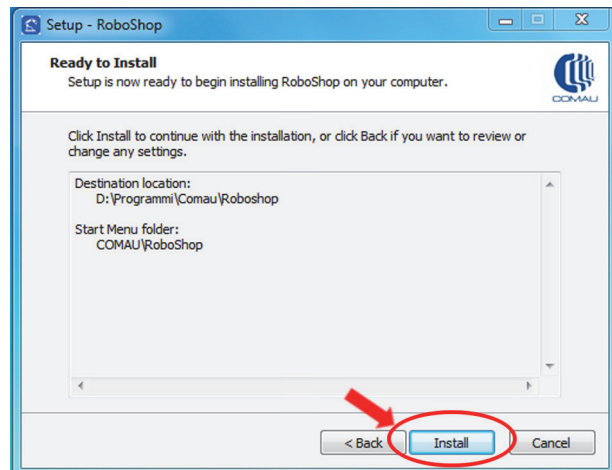
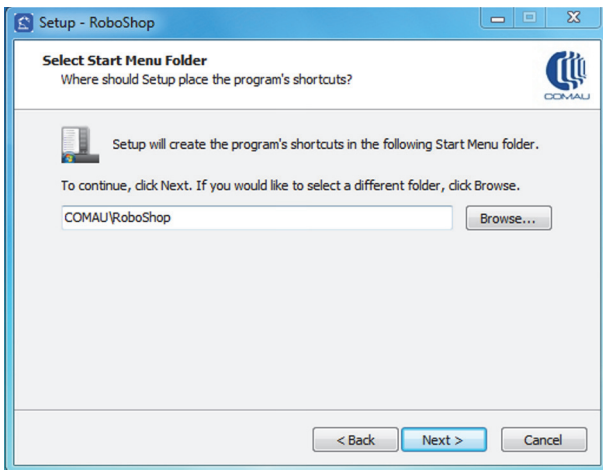


- b. Accept the licence conditions and then choose the install folder for **RoboShop**.

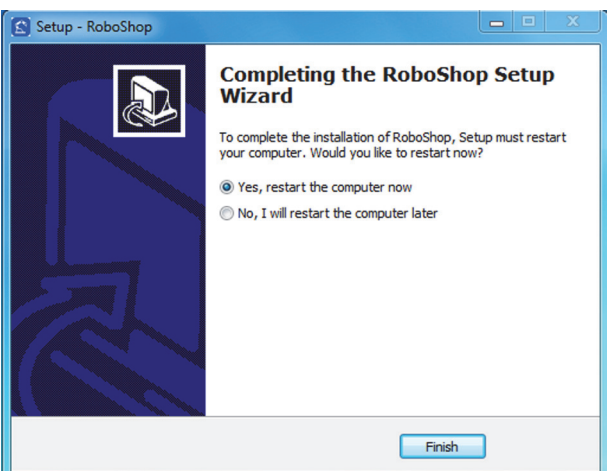
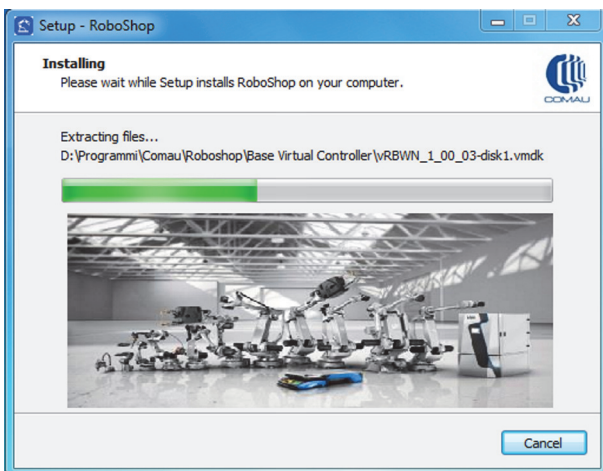
GENERAL DESCRIPTION



- c. Choose the wished folder for the Start Menu. Start the installation phase by clicking **Install** key.



- d. A progress bar shows the operation completion status. Restart the system at the end.



To activate **RoboShop**, simply click the icon from either the Start Menu or the PC Desktop.

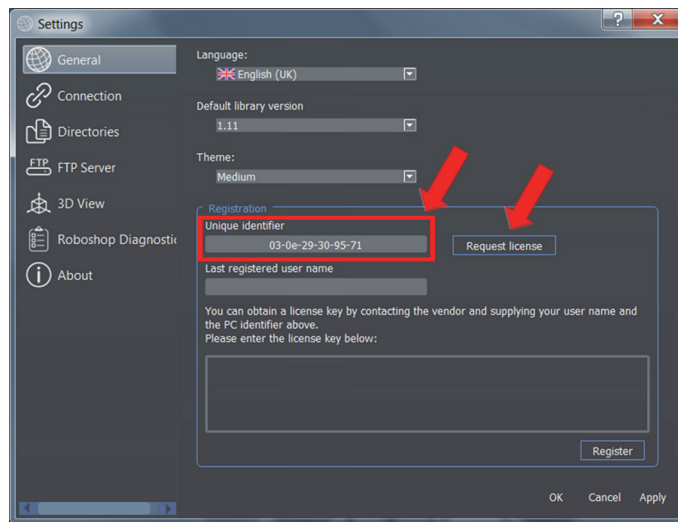


2.5 How to get a full licence for RoboShop

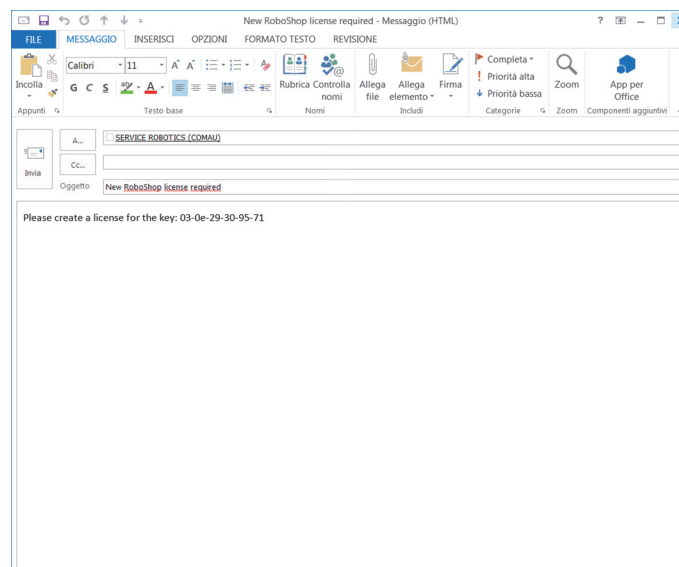
Ask COMAU Customer Service, to obtain a full licence.

Act as follows:

- a. from **RoboShop** select **Settings** functionality. An alphanumeric string is provided in the **Unique Identifier** field, belonging to the **Registration** area.



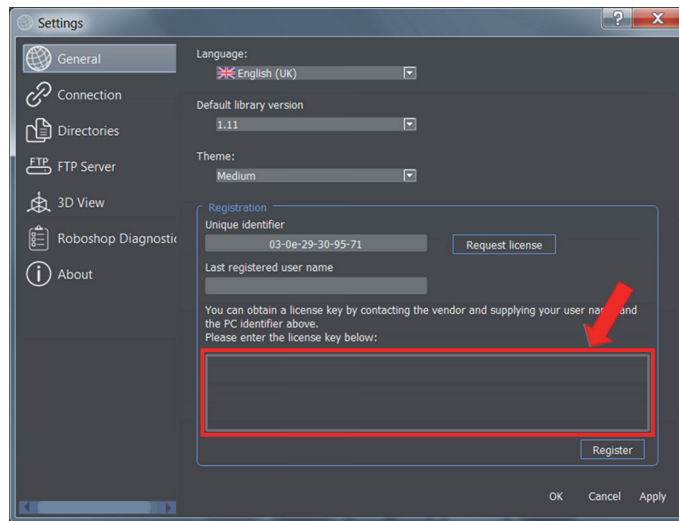
- b. Press **Request license** key which opens an email to send such a string to COMAU Customer Service (service.robotics@comau.com).



Note that the email is already filled in. Nothing must be added.

- c. Send the email.
- d. COMAU will return a licence key to be copied to the suitable field (as shown in the below figure).

GENERAL DESCRIPTION

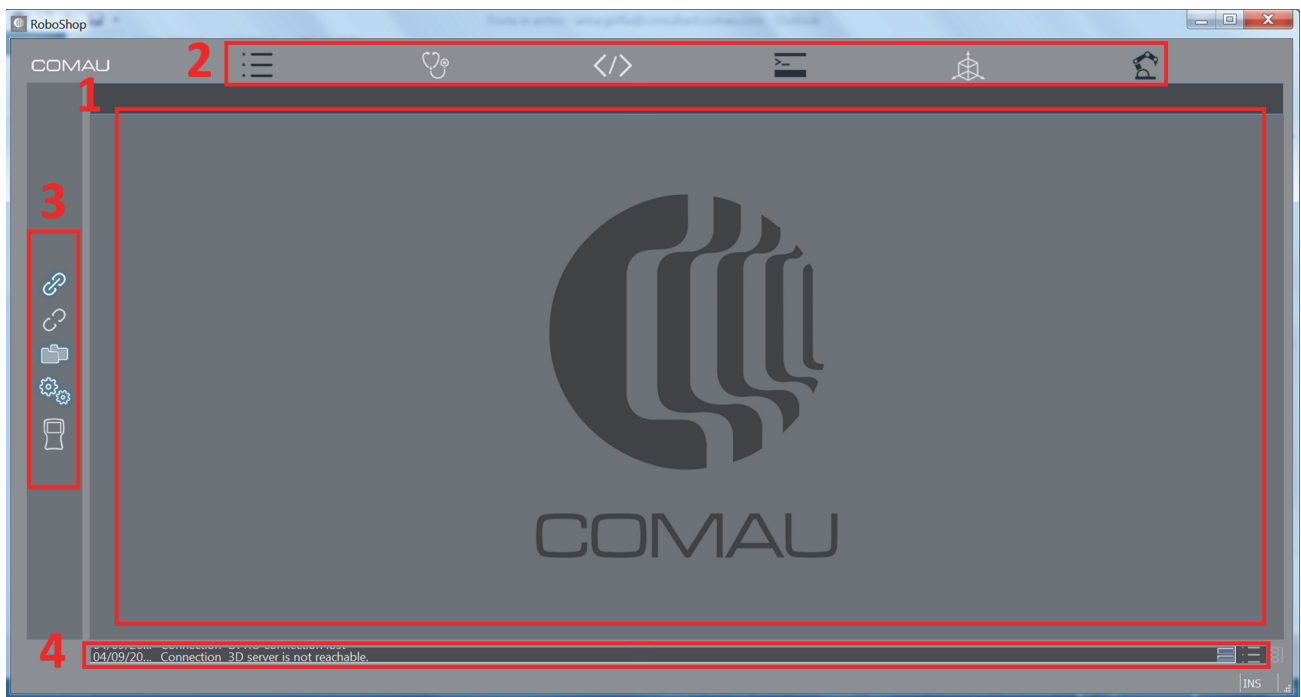


- e. Click **Register** key
- f. A message is displayed, at the end of the operation, stating that the registration has been successfully completed. Restart **RoboShop** program.

2.6 Introduction to the User Interface

RoboShop User Interface includes the following areas, each one allowing to access information and commands related to the System:

- **1** - Viewing Area
- **2** - Environments
- **3** - Global Functions
- **4** - Logs Bar.



A detailed description of all the User Interface areas and the corresponding commands, is provided in the following chapters.

3. VIEWING AREA

3.1 Basic information

This is the **RoboShop** program main area: the majority of information exchanged with the Control Unit is here displayed.

The available **windows** are:

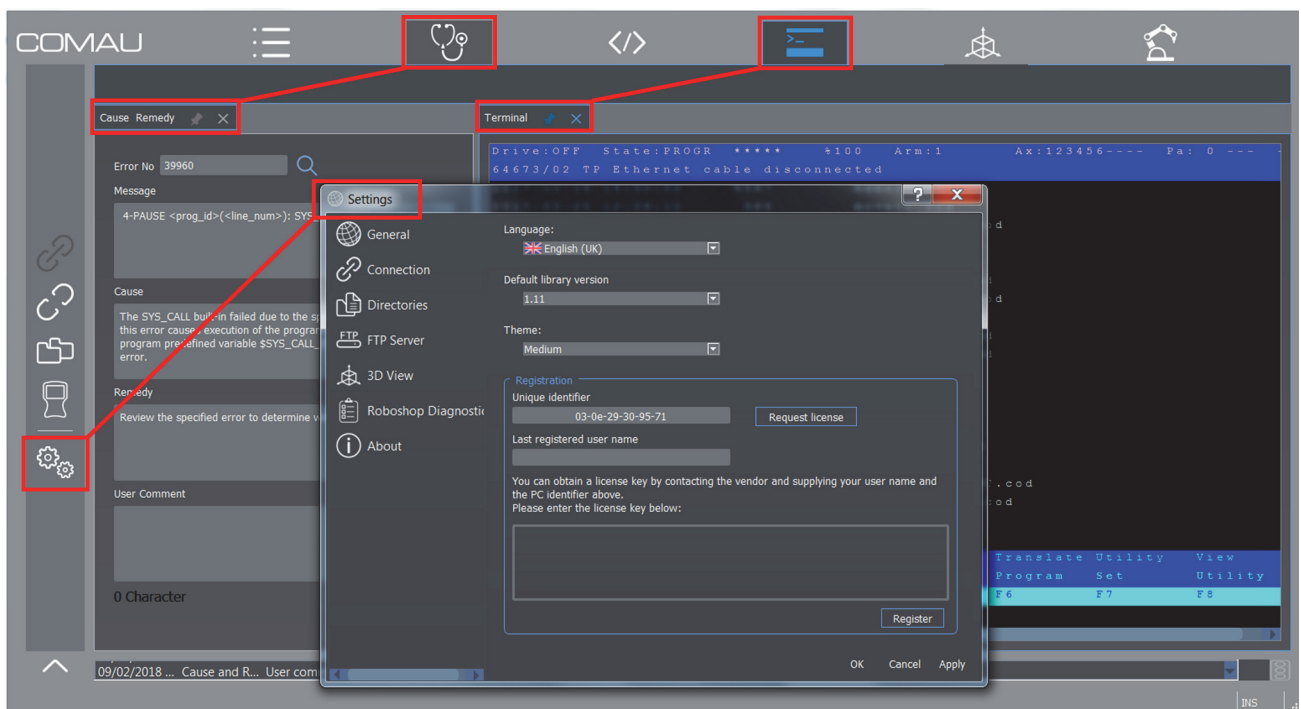
- [Logger](#) - allows viewing, sorting and filtering errors and actions occurred on the Control Unit
- [Cause&Remedy](#) - allows reading the cause of a specified error and its remedy, if any
- [Editor](#) - allows creating, viewing and editing programs
- [Terminal](#) - is the direct interface with the Control Unit
- [3D Visualization](#) - shows the 3D visualization environment for the robot attached to the connected Control Unit
- [Motion Data](#) - displays both the joint and cartesian values of the connected robot current position
- [Connection](#) - allows connecting to the specified Control Unit
- [Disconnection](#) - allows disconnecting from the currently connected Control Unit
- [File System](#) - allows handling **files and folders** existing on the Control Unit, on the PC and connected devices, and **objects** related to the current 3D visualization
- [Settings](#) - allows accessing information and settings related to **RoboShop** program.

3.2 Opening and closing the windows

- Opening
- Closing

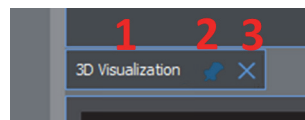
3.2.1 Opening

To open a window, click the wished key, related to either [Environments](#) or [Global Functions](#), as shown in the examples here below.



Two types of viewing are available:

- **Panel** - It is made up of a display window for the required data and a label called **tab**, including the following information:



- **name (1)** - name of the corresponding opening key
- **placeholder (2)** - allows making the panel movable or fixed. Clicking the first time, the panel is released from the viewing area. The next click causes the window to be fixed to the viewing area again
- **closure key (3)** - allows closing the panel. Further information are provided in [par. 3.2.2 Closing on page 28](#).

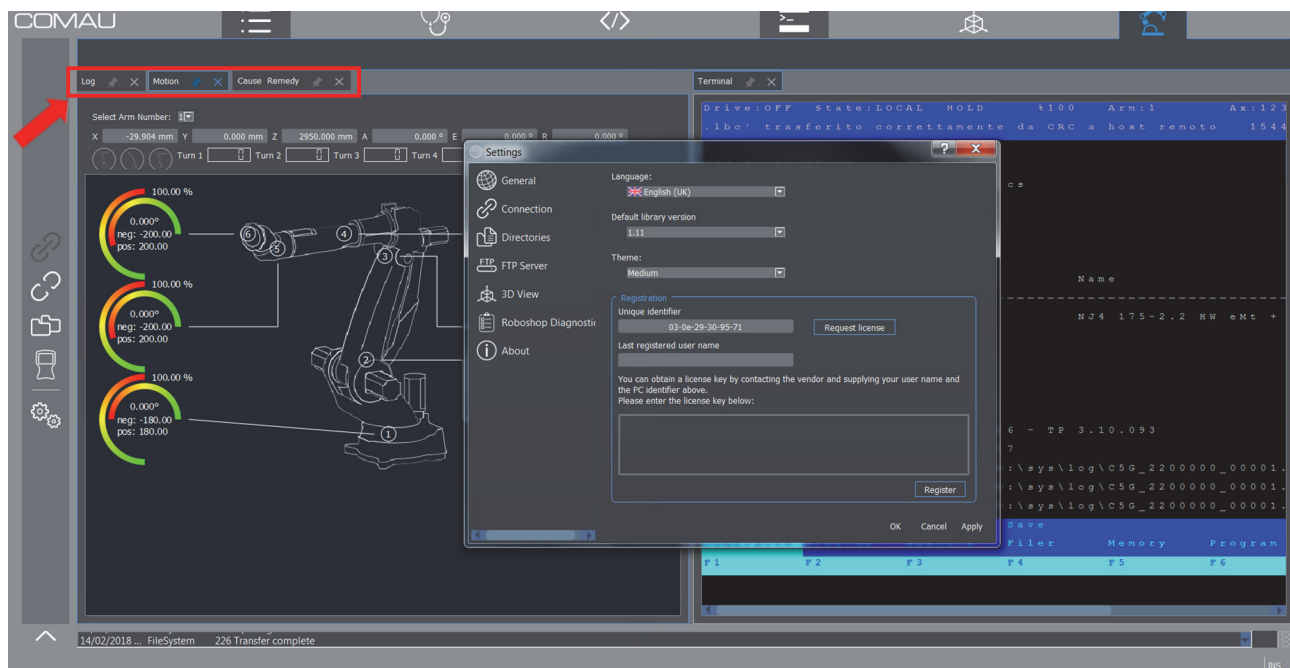


The viewing area can include a maximum of TWO panels at the same time, related to the [Environments](#).

If some more [Environments](#) are wished to be opened, the opened but not displayed panels are selectable by means of the corresponding **tabs**.

VIEWING AREA

– Front Window



The above figure, shows an example with 4 open **Environment** panels (**Logger**, **Cause&Remedy**, **Motion Data** and **Terminal**) but only two displayed: **Motion Data** and **Terminal**. **Logger** and **Cause&Remedy** panels, open but not visible, can anyway be displayed by means of their tab.

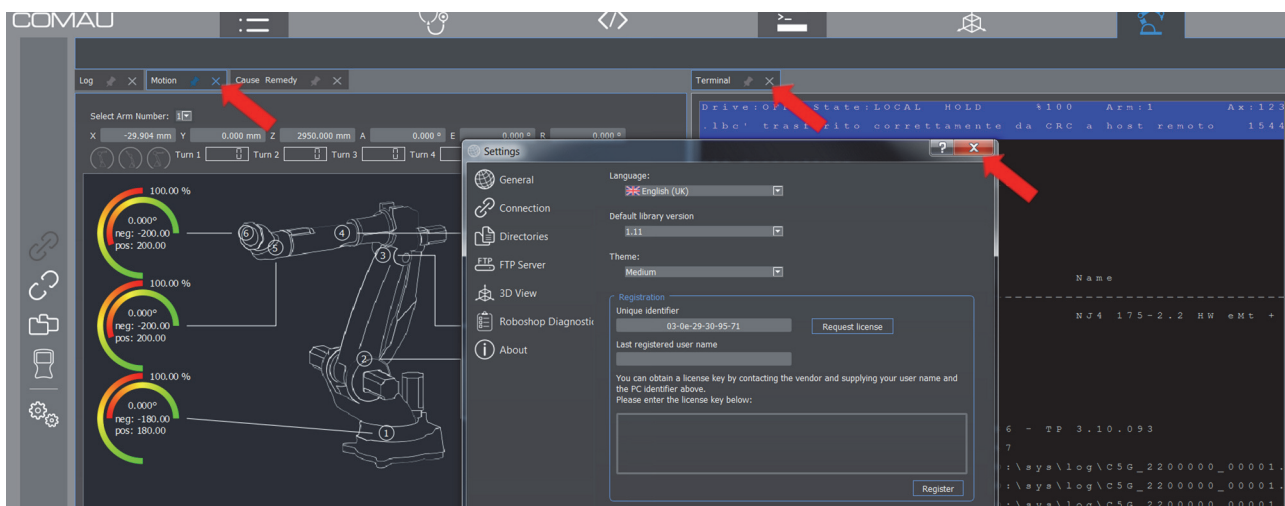
A Front Window is also opened, related to **Settings** functionality (see **Global Functions**) .

**NOTE**

As far as opening a window, the only exception is the use of **Logger** key: it can be clicked more than once, to open different Log sessions, in order to be able to view more than one Log file at the same time.

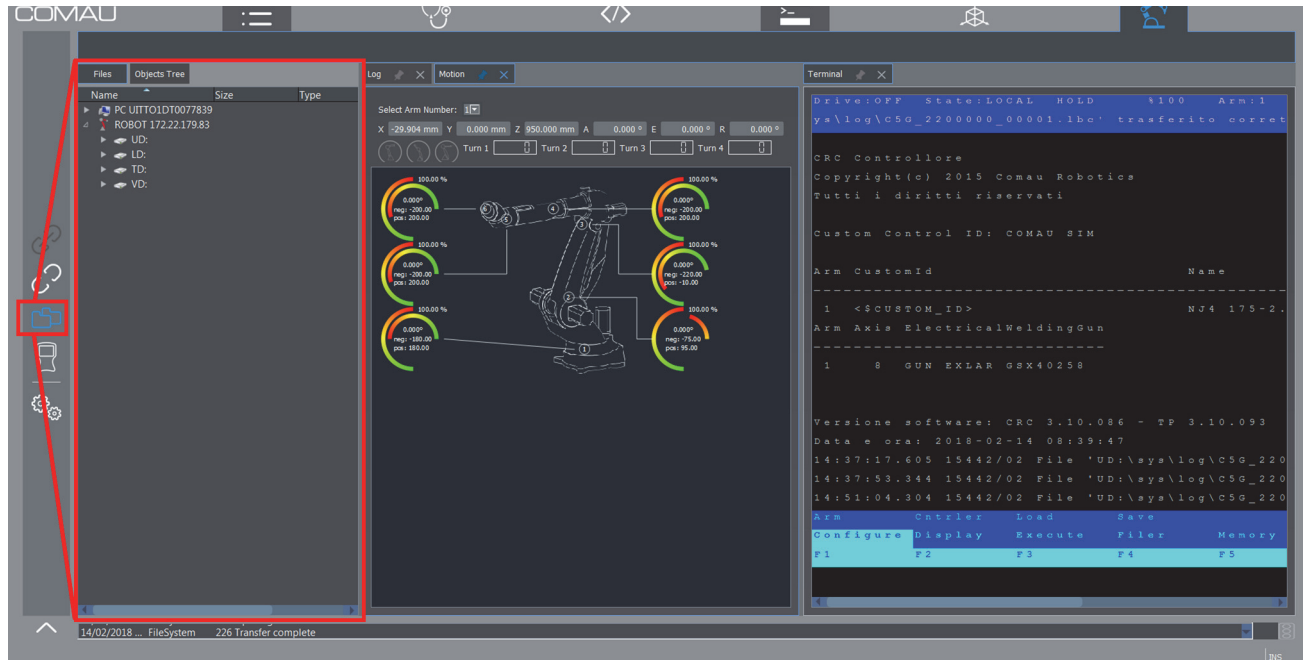
3.2.2 Closing

Use the **closure key** to close a window. It is displayed in the high rightmost corner of the window, as shown in the below figure.



**NOTE**

The only exception is the **File System** window which requires clicking the corresponding key again, to close it (see the figure below).



4. ENVIRONMENTS

4.1 Introduction

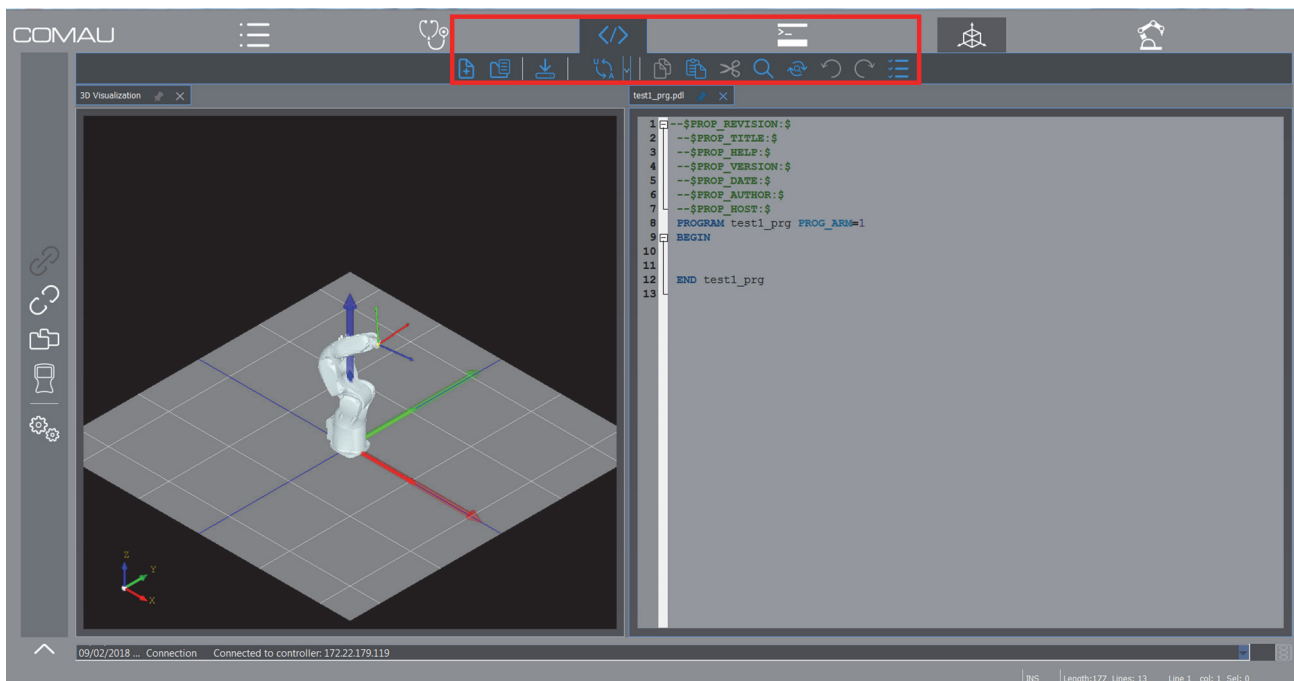
This area includes keys which allow displaying the wished **Environments**.



Note that some Environments are even available when disconnected from the Control Unit: their keys are active (displayed in white) even when offline.

Depending on the **Environment**, some contextual keys might become available, which are necessary to properly handle the **Environment** itself.

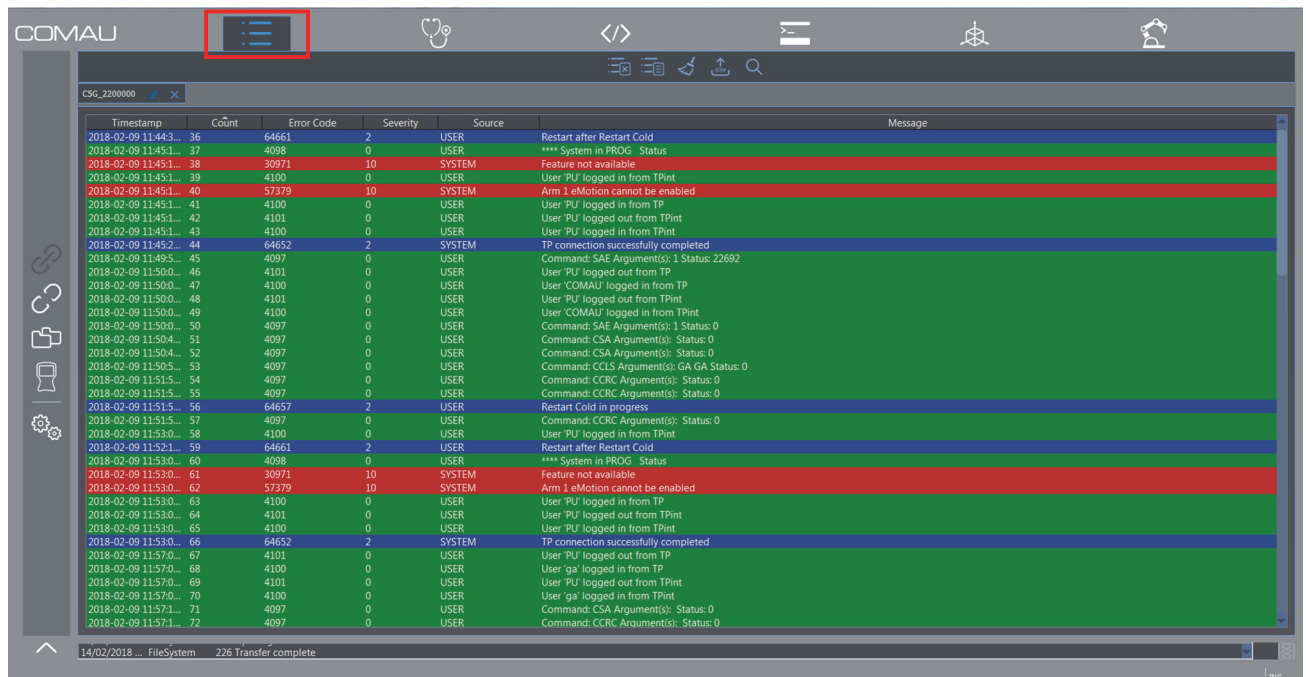
In the shown below example, the **Editor** environment contextual keys are highlighted in red.



The available Environments are:

- [Logger](#)
- [Cause&Remedy](#)
- [Editor](#)
- [Terminal](#)
- [3D Visualization](#)
- [Motion Data.](#)

4.2 Logger



- Description
- Contextual keys.

4.2.1 Description

This environment allows viewing, in the form of a list, the system Log files content, referred to the connected system and/or saved somewhere else:

- the history of the events occurred on the Control Unit - [System Log](#) contextual key
- the list of the files operations - [File Operation](#) contextual key.

Each time this key is clicked, **RoboShop** opens a new **Logger** session.

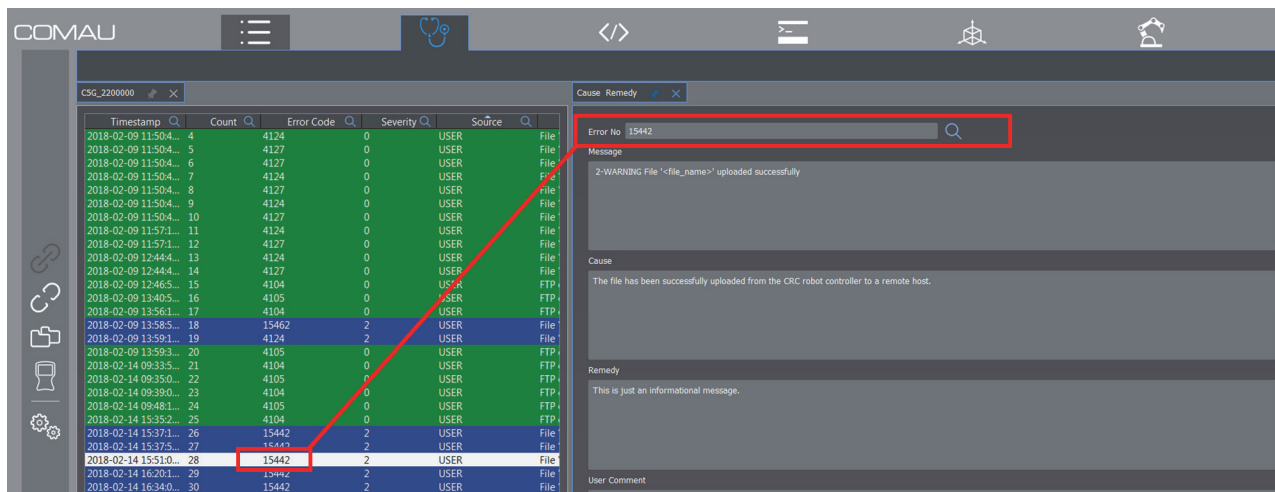
To access the Log files, act in one of the following ways:

- to view either the [System Log](#) or the [File Operation](#) list, open the **Logger** environment by clicking the corresponding key and select the wished list, by means of the related **contextual key** ([par. 4.2.2 Contextual keys on page 32](#))
- to view whichever Log file, open the [File System](#) window, choose the wished Log file, in the suitable device and folder, then open it by double clicking on its name. **RoboShop** opens the **Logger** environment and displays such a file.

The displayed Log list (above figure), can be sorted by the content of any wished column (e.g. date, error code, etc.). Simply click on the name of the wished column. Click the second time to invert the order (increasing/decreasing).

By double clicking on a Log list element, the [Cause&Remedy](#) environment is opened displaying the selected error information, as shown in the following figure.

ENVIRONMENTS

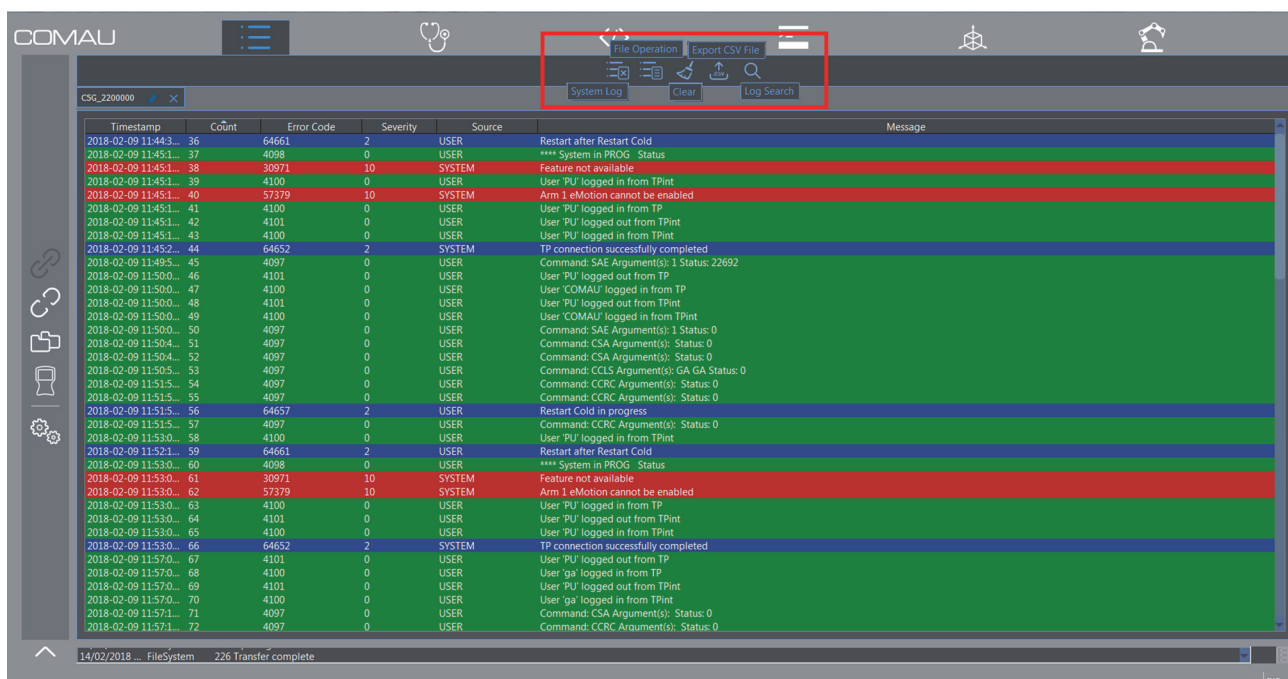


Each element in the Log list has its own background colour, to indicate the message severity (as shown in the following figure).

The element background can be:

- green: an INFORMATIONAL message is active. The system is NOT in ALARM state
- blue: a WARNING message is active
- red: an ERROR message is active. The system is in ALARM state
- purple: a FATAL message is active. The system is in FATAL ERROR state.

4.2.2 Contextual keys



Once the environment is opened, the following **contextual keys** are enabled (highlighted in the figure above):

– System Log

Opens the system Log (system events) and displays it in the currently selected **Logger** window, as shown in the previous figure

– File Operation

Opens the files operations Log and displays it in the currently selected **Logger** window (figure below)

Timestamp	Count	Error Code	Severity	Source	Message
2018-02-09 11:504...	4	4124	0	USER	File 'UD\sys\cnfg\CSG_2200000.csg' renamed to 'UD\sys\cnfg\CSG_2200000.bks'
2018-02-09 11:504...	5	4127	0	USER	File 'UD\sys\cnfg\CSG_2200000.csg' created
2018-02-09 11:504...	6	4127	0	USER	File 'UD\sys\cnfg\CSG_2200000.udb' created
2018-02-09 11:504...	7	4124	0	USER	File 'UD\sys\cnfg\CSG_2200000.csg' renamed to 'UD\sys\cnfg\CSG_2200000.bks'
2018-02-09 11:504...	8	4127	0	USER	File 'UD\sys\cnfg\CSG_2200000.csg' created
2018-02-09 11:504...	9	4124	0	USER	File 'UD\sys\cnfg\CSG_2200000.udb' renamed to 'UD\sys\cnfg\CSG_2200000.bku'
2018-02-09 11:504...	10	4127	0	USER	File 'UD\sys\cnfg\CSG_2200000.udb' created
2018-02-09 11:571...	11	4124	0	USER	File 'UD\sys\cnfg\CSG_2200000.csg' renamed to 'UD\sys\cnfg\CSG_2200000.bks'
2018-02-09 11:571...	12	4127	0	USER	File 'UD\sys\cnfg\CSG_2200000.csg' created
2018-02-09 12:444...	13	4124	0	USER	File 'UD\sys\cnfg\CSG_2200000.csg' renamed to 'UD\sys\cnfg\CSG_2200000.bks'
2018-02-09 12:444...	14	4127	0	USER	File 'UD\sys\cnfg\CSG_2200000.csg' created
2018-02-09 12:465...	15	4104	0	USER	FTP connection from 172.22.181.65, user 'COMAU'
2018-02-09 13:405...	16	4105	0	USER	FTP connection from user 'COMAU' terminated
2018-02-09 13:561...	17	4104	0	USER	FTP connection from 172.22.181.65, user 'COMAU'
2018-02-09 13:585...	18	15462	2	USER	File 'UD\sys\Keyen_CSG_2200000.cod' downloaded successfully
2018-02-09 13:591...	19	4124	2	USER	File 'UD\sys\Keyen_CSG_2200000.cod' renamed to 'UD\sys\Keyen_CSG_2200000.ALL.cod'
2018-02-09 13:593...	20	4105	0	USER	FTP connection from user 'COMAU' terminated
2018-02-14 09:335...	21	4104	0	USER	FTP connection from 172.22.181.78, user 'ga'
2018-02-14 09:350...	22	4105	0	USER	FTP connection from user 'ga' terminated
2018-02-14 09:390...	23	4104	0	USER	FTP connection from 172.22.181.78, user 'ga'
2018-02-14 09:481...	24	4105	0	USER	FTP connection from user 'ga' terminated
2018-02-14 15:352...	25	4104	0	USER	FTP connection from 172.22.181.132, user 'MU'
2018-02-14 15:371...	26	15442	2	USER	File 'UD\sys\log\CSG_2200000_00001.lib' uploaded successfully
2018-02-14 15:375...	27	15442	2	USER	File 'UD\sys\log\CSG_2200000_00001.lib' uploaded successfully
2018-02-14 15:510...	28	15442	2	USER	File 'UD\sys\log\CSG_2200000_00001.lib' uploaded successfully
2018-02-14 16:201...	29	15442	2	USER	File 'UD\sys\log\CSG_2200000_00001.lib' uploaded successfully
2018-02-14 16:340...	30	15442	2	USER	File 'UD\sys\log\CSG_2200000_00001.lib' uploaded successfully

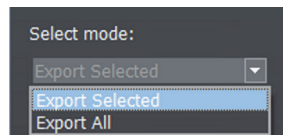
– Clear

Clears the currently selected **Logger** window.

– Export CSV File

Allows exporting log information to a **.CSV** file. A window is opened when issuing this command, providing a menu (figure below):

- **Export Selected** - to export the currently selected elements only
- **Export All** - to export the whole currently open log.



– Log Search

Allows filtering errors by column. When this command is issued, the search symbol is made available in each column header (figure below), in order to allow searching at the column level. Click such a search symbol to choose whether removing all filters in the column (**All**), or customizing the wished search operation (**Custom**).

Timestamp	Count	Error Code	Severity	Source	Message
2018-02-09 11:451...	39	All	0	USER	User 'PU' logged in from TPint
2018-02-09 11:451...	37	Custom...	0	USER	*** System in PROG Status
2018-02-09 11:451...	38	57379	10	SYSTEM	Feature not available
2018-02-09 11:451...	40	57379	10	SYSTEM	Arm 1 eMotion cannot be enabled
2018-02-09 11:451...	41	4100	0	USER	User 'PU' logged in from TP
2018-02-09 11:451...	42	4101	0	USER	User 'PU' logged out from TPint
2018-02-09 11:451...	43	4100	0	USER	User 'PU' logged in from TPint
2018-02-09 11:452...	44	64652	2	SYSTEM	TP connection successfully completed

Choosing **Custom** item, depending on the column type, a specific window is opened for the required search operation. Click **OK** key in the open window, to start searching.

The following search setup window are provided for the different column types:

ENVIRONMENTS

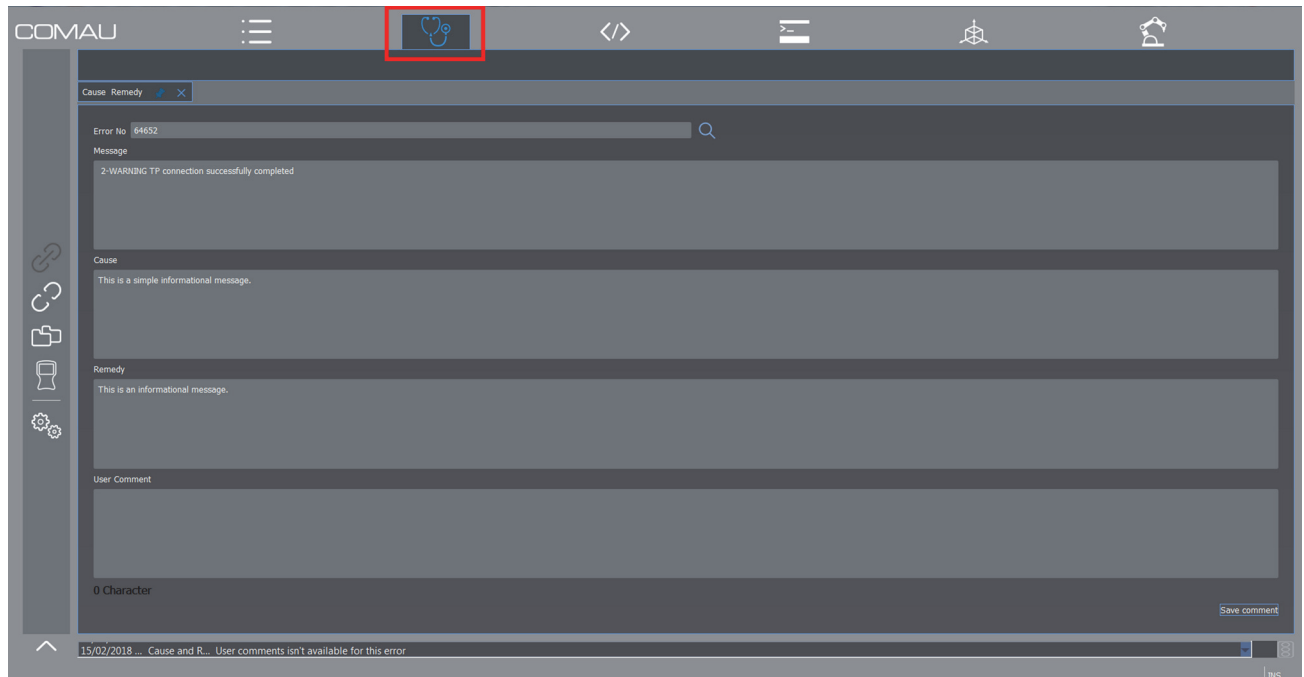
- **Timestamp** - allows matching or excluding elements, by specifying start date and/or time and end date and/or time, or a specific moment (e.g. today, yesterday, this week, etc)

- **Count** - allows matching or excluding elements, by specifying a range or a list of elements separated by commas, based on their count number.

- **Code** - allows matching or excluding elements, by choosing a range of elements or a list of elements separated by commas, based upon their error code. This window is exactly like the **Count** column one.
- **Severity** - allows matching or excluding elements, by choosing a range of elements or a list of elements separated by commas, based upon their error severity. This window is exactly like the **Count** column one.
- **Source** - allows matching or excluding elements, by choosing the element source (ACT_POST, PROGRAM, SYSTEM, USER, etc).

- **Message** - allows matching or excluding elements, by choosing the message content (e.g. "Feature not available"), or a list of contents separated by commas, choosing whether looking for the whole phrase, single words, all words in any sequence, matching case, using wildcards.

4.3 Cause&Remedy



- [Description](#)
- [Contextual keys.](#)

4.3.1 Description

This environment allows to get information about the cause of a specified error and its corresponding remedy, if any.

The user must insert the error number in **Error No** field and either press Enter key or click the find symbol.

RoboShop program looks for such an error in the **.CRD** file, specified in [Settings - Directories - Crd files](#) area.

Such files, including all the errors and corresponding causes and remedies, are divided by language, referred to:

- allrobmsgd.crd - German
- allrobmsge.crd - English
- allrobmsgf.crd - French
- allrobmsgi.crd - Italian
- allrobmsgp.crd - Portuguese
- allrobmsgs.crd - Spanish.

Additional applications specific ones, if involved, are as follows:

- aw_ms.crd - arc welding
- cl_ms.crd - common libraries
- gl_ms.crd - glue

ENVIRONMENTS

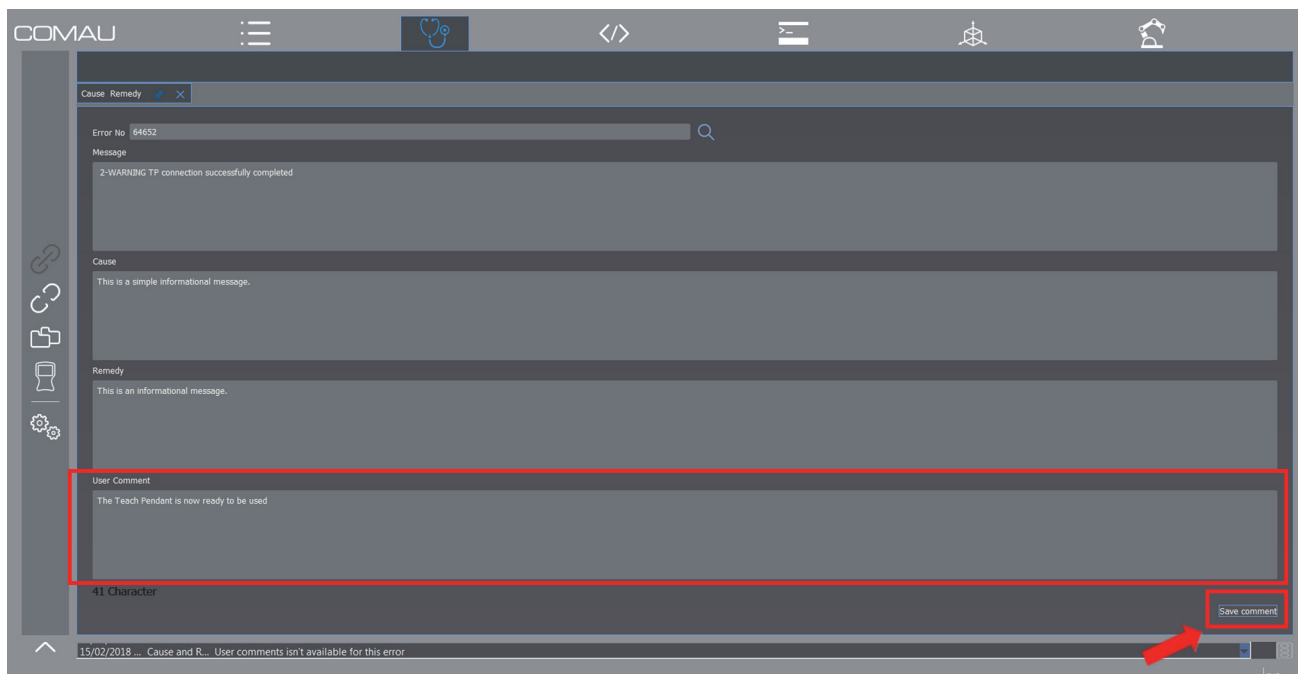
- hn_ms.crd - handling
- st_ms.crd - stud
- sw_ms.crd - spot welding
- tc_ms.crd - tool change.



Refer to [par. 5.6.3.5 Crd files on page 62](#) to add or remove a **.CRD** file.

The user is allowed to customize any comments associated to a certain error, by typing his/her own comment in the associated **User Comment** field and then clicking **Save Comment** key to confirm. Such a text string is saved in the file specified in the [User text archive](#) field.

If deleting the existing comment is wished, cancel the text string from the **User Comment** field and then click **Save Comment** key to confirm.



Note that, in case of error marked as a SYSTEM ERROR, cause and remedy are not displayed, since they are internal system errors. Please contact COMAU Customer Service in such a situation.

4.3.2 Contextual keys

None.

4.4 Editor

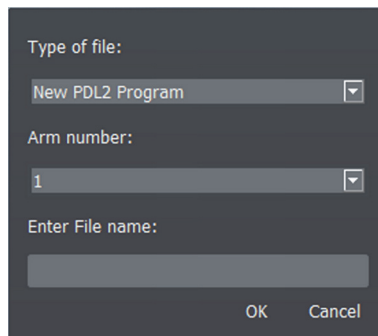
- [Description](#)
 - [Contextual keys](#).
-

4.4.1 Description

This environment allows editing any files in Unicode or ASCII codes. More in detail, it allows creating, viewing, modifying and saving the majority of the existing files on a Control Unit, meaning **.PDL**, **.COD**, **.LSV**, **.VAR**, **.C5G**, **.XML** and their backup copies (**.BKP**, **.BKC**, **.BKL**, **.BKV**, **.BK5**, **.BKM**).

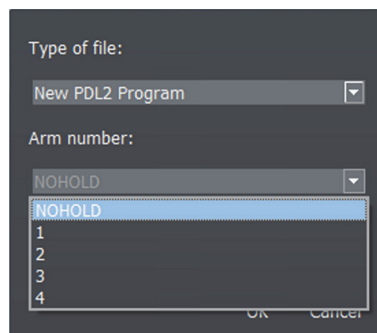
It takes advantage of assisted writing mechanisms, with autotype functionality and use of colours.

The **New File** creation window is displayed when clicking the **Editor** key.



The user can insert the following information in it, referred to the new file:

- **Type of file** - indicates whether a new file is wished containing a PDL2 language program (**New PDL2 Program**) or empty (**Blank File**)
- **Arm number** - if the new file contains a PDL2 program, this field specifies either the used arm for motion programs or the **NOHOLD** attribute (figure below). In case of empty file, this field is not active



- **Enter File name** - indicates the wished filename.

Clicking **OK**, **RoboShop** opens the **Editor** window for the new file.

To open an already existing file, instead, on the PC or on the Control Unit, select the corresponding device and folder including such a file, by means of the [File System](#) function and click twice on its filename. In such a way, the file is opened in the **Editor** environment.

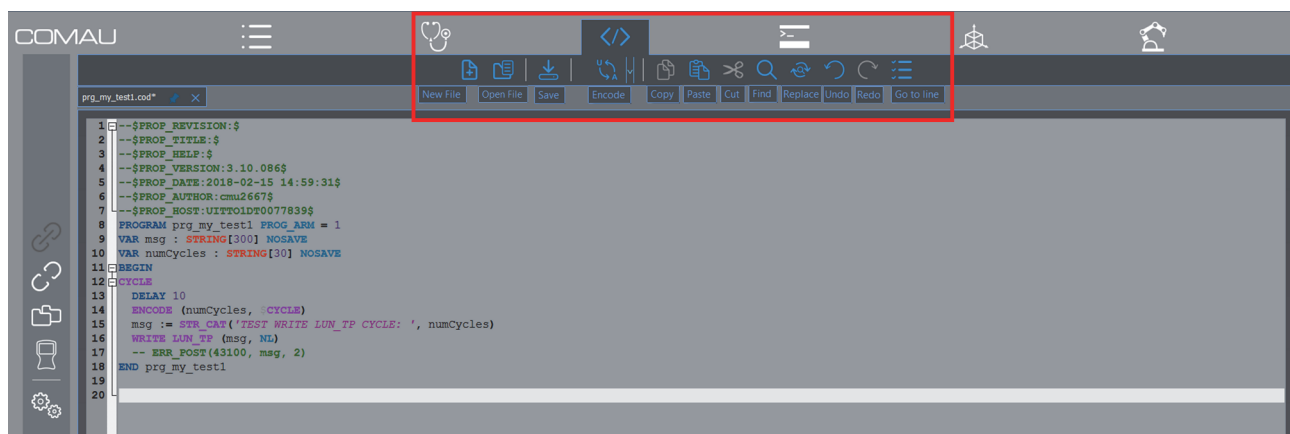
ENVIRONMENTS

The file associated standard attributes (called **Properties**) are also displayed:

- revision
- title
- version
- file creation date
- author
- host where the file has been created.

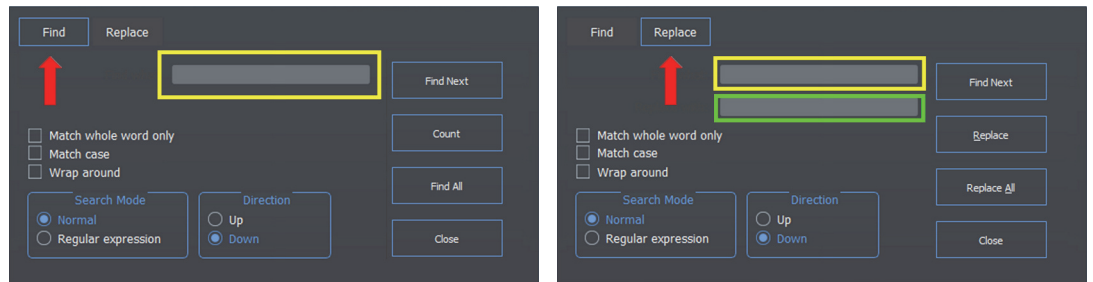
When opening a binary file (.COD, .VAR or .C5G), it is converted to a readable format for the user, which means in Unicode or ASCII code.

4.4.2 Contextual keys



When the environment is open, the following **contextual keys** are enabled:

- **New File**
allows opening a new file. The **New File** window is opened, exactly like when clicking the **Editor** key
- **Open File**
opens the specified file on the PC
- **Save**
Saves the file, in the path and with the name specified by the user:
 - **Save on local PC** - saves on the PC
 - **Save on controller** - saves on the Control Unit
- **Encode**
allows specifying how to encode the file content, for viewing it:
 - **Encode ANSI** - ASCII
 - **Encode UCS-2LE-BOM** - Unicode
- **Copy - Paste - Cut**
allows copying, pasting and cutting parts of the text
- **Find - Replace**
allows finding, in the file, the text specified by the user and, if wished, replacing it with another text. The **Find** or **Replace** window is automatically opened to manage the wished information.
The figures below show, respectively, the **Find** function and the **Replace** function.



The following fields are available:

- text to be found (highlighted in yellow)
- text to be replaced (highlighted in green)
- **Match whole word only** - looks for the whole word only
- **Match case** - matches uppercase/lowercase
- **Wrap around** - continues finding starting from the beginning, when the file end (or the file beginning) is reached
- **Search Mode** - search modality
- **Direction** - indicates whether searching is to be performed towards the file end (**Down**) or the file start (**Up**)

and the following commands:

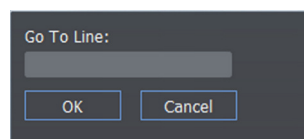
- **Find Next** - looks for the specified text next occurrence
- **Count** - displays the total amount of occurrences found in the file, for the specified text
- **Find All** - looks for and highlights all the occurrences of the specified text, in the current file
- **Replace** - substitutes the specified text to the found one
- **Replace All** - substitutes the specified text to the found one, everywhere in the current file
- **Close** - closes the **Find** or **Replace** window.

– **Undo - Redo**

allows cancelling the previous operation (**Undo**) or executing it again(**Redo**)

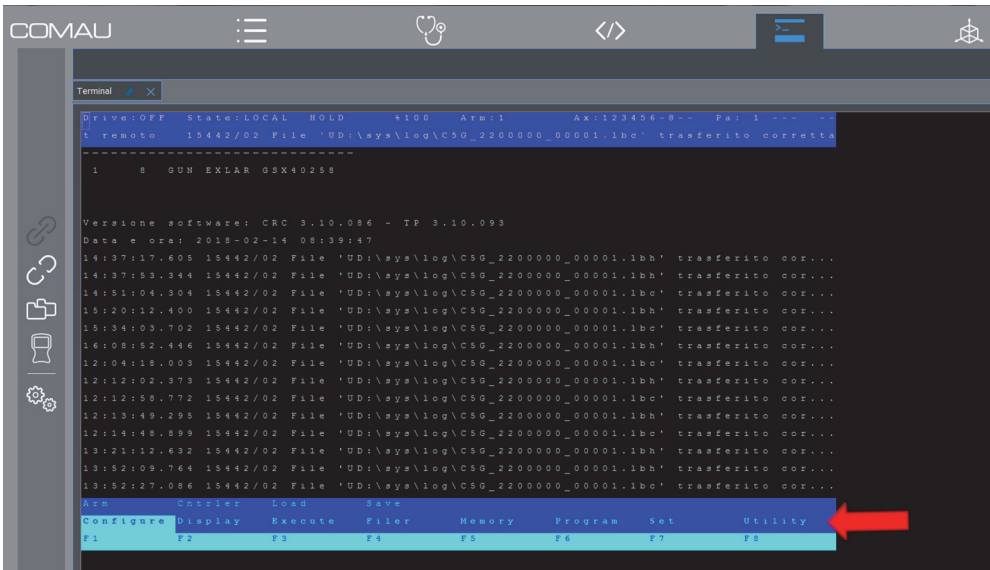
– **Goto line**

opens the corresponding window; as soon as the user clicks **OK**, the cursor is moved to the line specified in **Go To Line** field.



The translation of a file to the corresponding binary format, is started by activating the **Translate** command from within the **File System** global function.

4.5 Terminal



- Description
- Contextual keys.

4.5.1 Description

It represents the direct Interface with the Control Unit. It allows to issue all the available System Commands, i.e. configuration, information display, instructions immediate execution, files handling, editing, execution memory handling, programs handling, settings, etc.

Commands are displayed in the lowest row of the menu and can be selected by either clicking on them or using the associated **F1-F8** functional keys.

The red arrow in the figure above, indicates the line of the selectable commands.

NOTES ABOUT DIRECTORIES

- In case of file transfert from PC to Control Unit, set the directory to be used PC side. Refer to [Settings - Directories](#) function.
- It is also allowed to set the directory which a program will use to transfer files from or to the selected device on the control Unit. Refer to [Settings - Directories](#) function.

It is needed to be connected to the Control Unit ([par. 5.2 Connection on page 47](#)), to be able to open the **Terminal** window. Then click **Terminal** key.

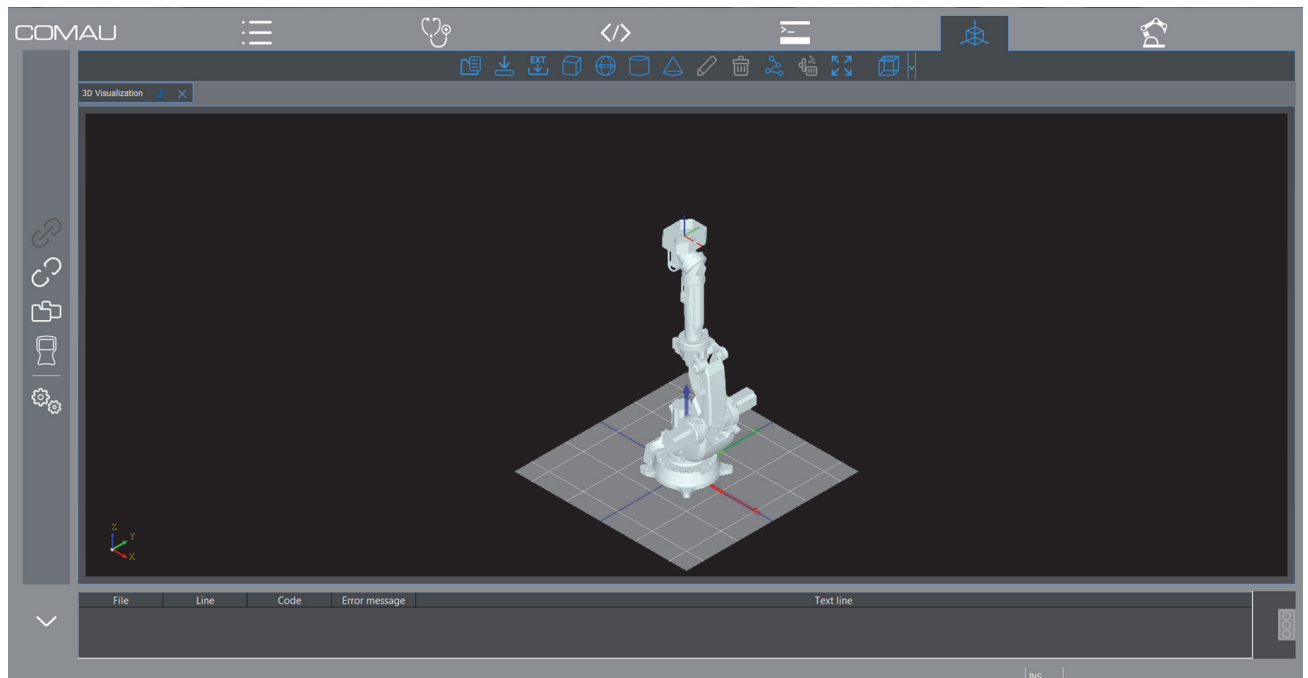
If another PC is already connected to the same Control Unit, opening this environment cannot be allowed and an informational message is displayed on the screen.

Viceversa, it is allowed to open **Terminal** environments towards more than one Control Unit, from the same PC, by running several sessions of **RoboShop**.

4.5.2 Contextual keys

None.

4.6 3D Visualization



- [Description](#)
- [Contextual keys](#).

4.6.1 Description

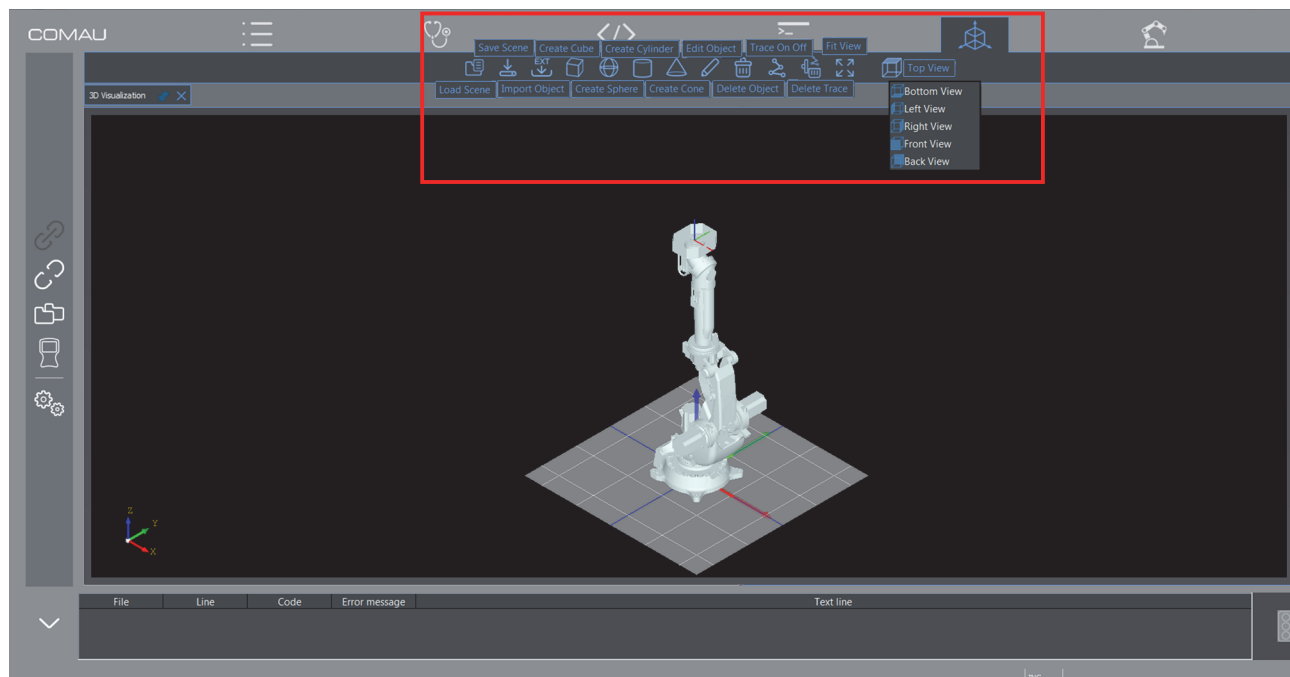
This key activates the **3D visualization** of the currently connected robot to the Control Unit, in the [Viewing Area](#).

Any movements executed by such a robot *il movimenti eseguiti da tale robot*, are shown in real time, on this panel.

The home screen can be modified by means of the mouse wheel, as follows:

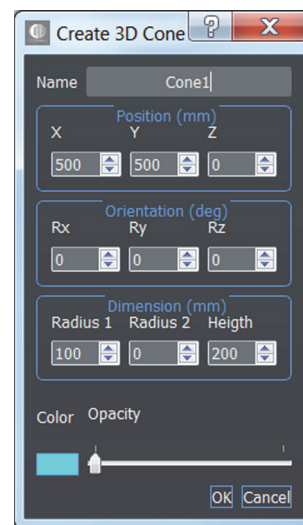
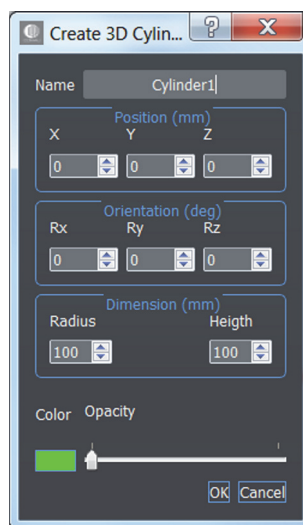
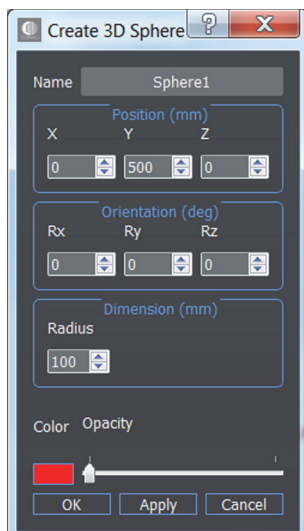
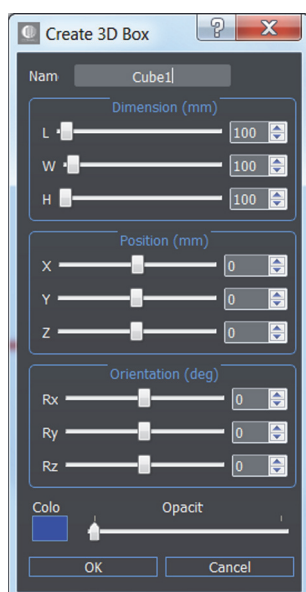
- **pressing the mouse wheel** - keeping the wheel pressed and moving the mouse at the same time, moves the scene (floor, robot and all objects if any) in the corresponding direction
- **pressing both the mouse wheel and the right key** - keeping the wheel and the right key pressed and moving the mouse at the same time, the floor inclination and therefore the scene view, can be modified
- **mouse wheel rotation** - rotating the wheel, causes the scene to be zoomed in and out.

4.6.2 Contextual keys



When the environment is opened, the following **contextual keys** are enabled (highlighted in red in the figure above):

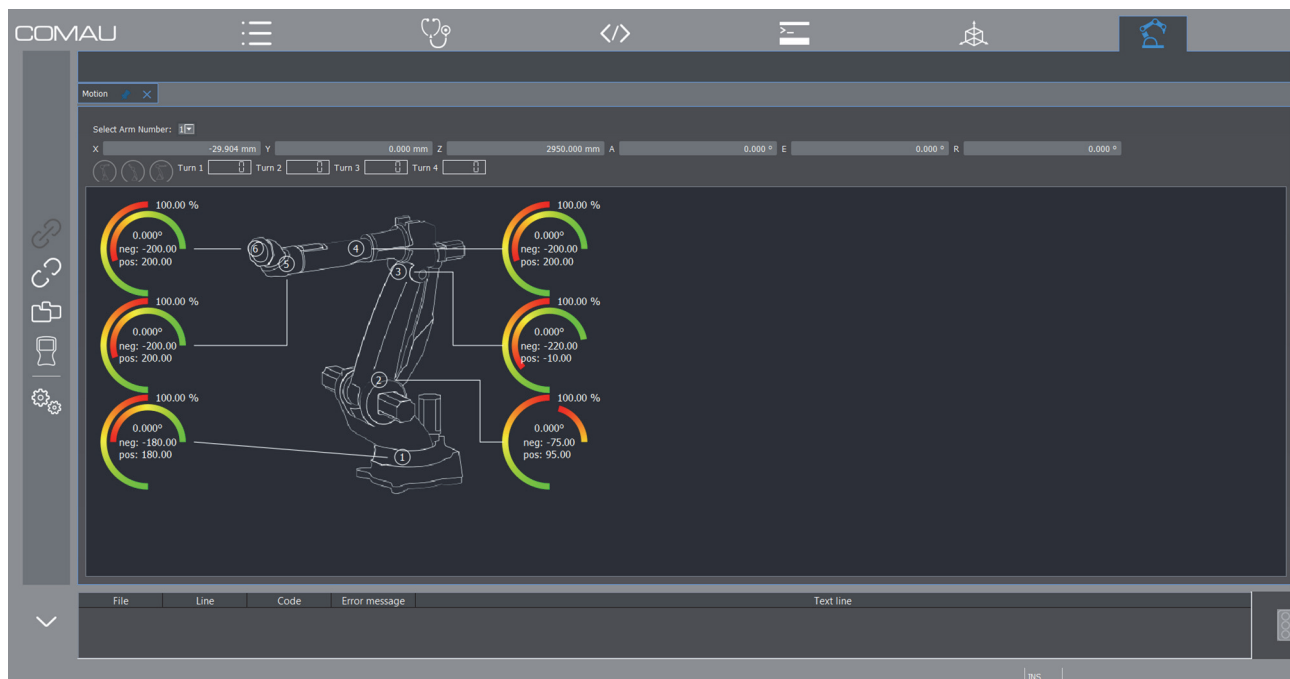
- **Load Scene**
loads a previously saved scene ([Save Scene](#) command)
- **Save Scene**
saves the current scene
- **Import Object**
allows importing external objects from files with **.stp**, **.step**, **.igs**, **.iges** extension
- **Create Cube / Sphere / Cylinder / Cone**
allows creating objects with a predefined geometric shape (cube, sphere, cylinder, cone).



Selecting one of such commands, the program opens the corresponding creation window (figures above), in which the user should insert the wished information for the new object: dimensions, position within the scene, orientation, colour and opacity. Creating and modifying objects are dynamic, which means that any data modifications are immediately displayed in the scene, to help the user.

- **Edit Object**
allows modifying already existing objects in the scene, acting exactly like for **Create** command
- **Delete Object**
allows deleting the currently selected object
- **Trace On Off**
Enables/disables (toggle functioning) viewing the robot TCP trajectory
- **Delete Trace**
Cancels the currently displayed trace
- **Fit View**
fits the scene to the **3D Visualization** window dimensions
- **Top View**
allows viewing the scene from the top. The following viewing are also available:
 - **Bottom View** - from the bottom
 - **Left View** - from left
 - **Right View** - from right
 - **Front View** - from the front
 - **Back View** - from the back.

4.7 Motion Data



- Description
- Contextual keys.

4.7.1 Description

This environment displays the values, in **joint** and in **cartesian** coordinates, of the current position of the robot connected to the Control Unit.

If the robot moves while this environment is open, the displayed values are refreshed in real time.

The available data are as follows:

- involved arm
- cartesian coordinates
- configuration flags
- joint coordinates - information related to each axis:
 - axis \$JNT_OVR, graphically represented by coloured arcs of a circle
 - axis current position
 - axis negative and positive stroke end.



Note that all displayed information in this panel, are also provided by the Teach Pendant **Motion Page**.

In the next figures, such two pages are compared using the same colour for the same information.



4.7.2 Contextual keys

None.

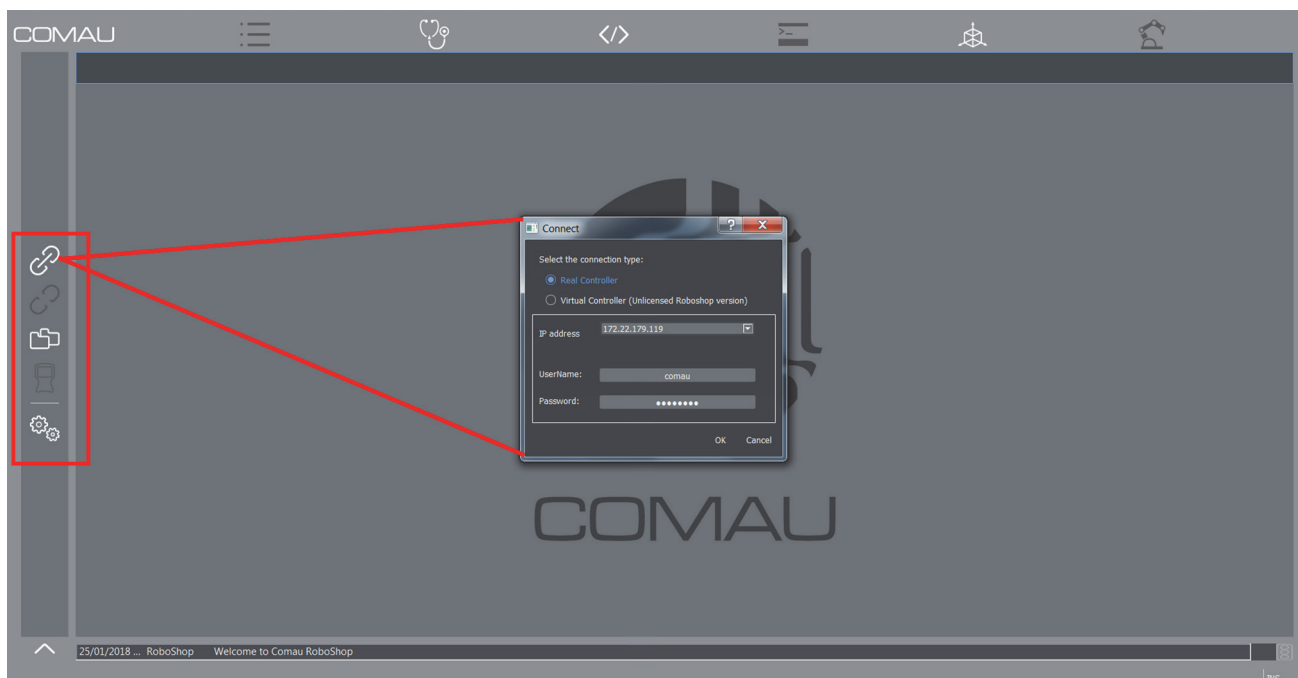
5. GLOBAL FUNCTIONS

5.1 Introduction

This area includes keys allowing to activate some **Global Functions**, meaning the ones available in all the **RoboShop** environments.

Such functions can be used in whichever situation, except some of them related to their specific functionality: e.g. it is not allowed to issue **Disconnection** function when not connected to the Control Unit!

In the example below, all the Global Function keys are highlighted together with the **Connection** window.



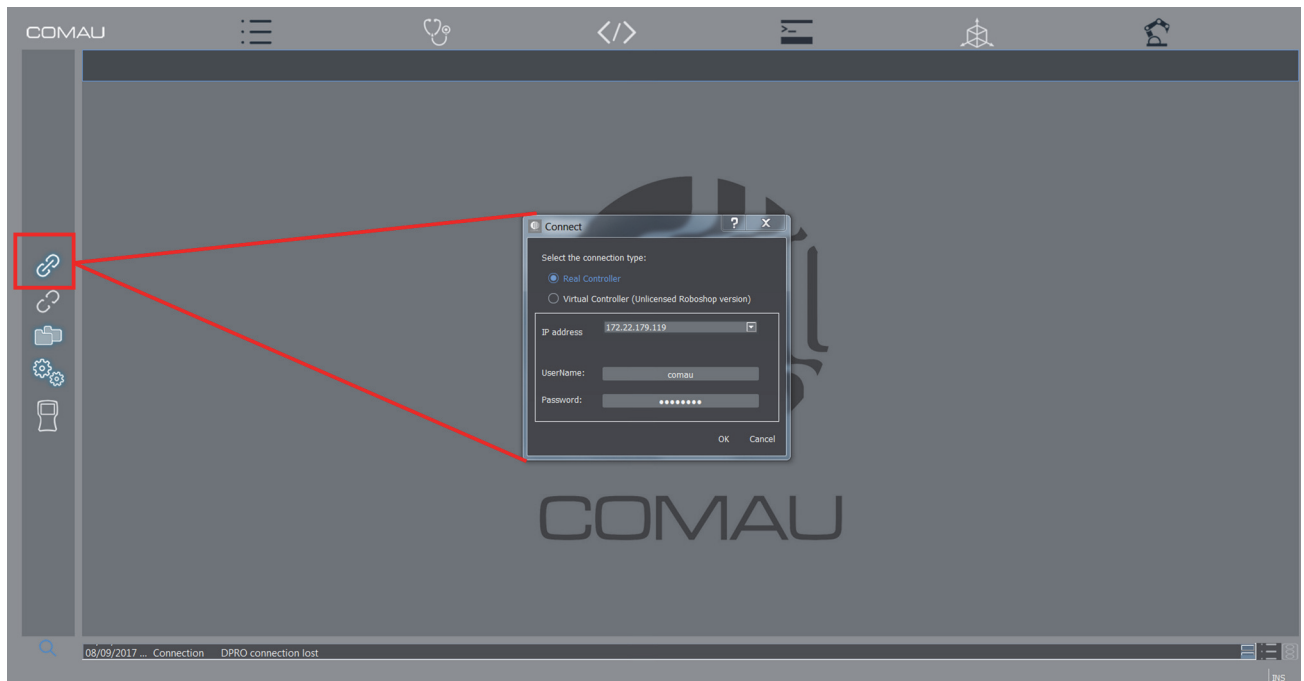
- Connection
- Disconnection
- File System
- Teach Pendant
- Settings.

5.2 Connection

The connection between PC and Real Control Unit is based on the **TCP/IP** protocol. When the physical connection is done, run **RoboShop** program.

Note that in case of Virtual Control Unit, the mentioned above physical connection is not required

Click **Connection** key to connect to the Control Unit, as shown in the figure below.



In the displayed window, choose whether connecting to

- **Real Controller** - actual Control Unit
- **Virtual Controller** - virtual Control Unit (full licence is needed). This type of connection requires the full licence. Refer to [par. 2.5 How to get a full licence for RoboShop on page 23](#).

5.2.1 Real Controller

In the displayed window, insert the needed information:

- **IP address** - Control Unit IP address or host name. It must be reachable according to the current physical connection, without any limitation on ports (all open ports)
- **Username**
- **Password**



Username and **Password** must have already been defined on the Control Unit involved in the connection operation.

Note that before connecting, the user could modify some dedicated parameters, by

means of the [Settings](#) functionality.

Click **OK** to activate the connection.

5.2.2 Virtual Controller



As already stated, the full licence is required to access this **RoboShop** functionality. Refer to [par. 2.5 How to get a full licence for RoboShop on page 23](#) to acquire it.

Selecting this choice, the Connection window changes as shown in the figure below.

If connecting to an already existing Virtual Controller is needed, select the wished one by means of the corresponding menu, highlighted in the figure above.

Specify the associated **Username** and **Password** and press **OK** to connect.

If instead accessing to other Virtual Controller functions is wished, press **Manage** key.

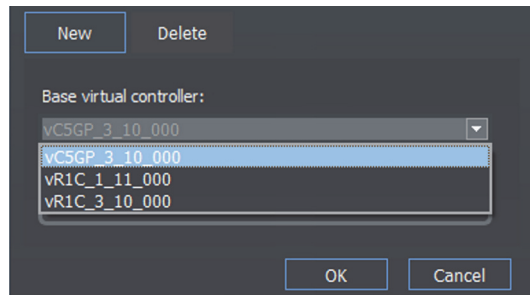
The available operations are as follows (as shown in the above figures):

- [New](#) - to create a new Virtual Controller
- [Delete](#) - to cancel an already existing Virtual Controller.

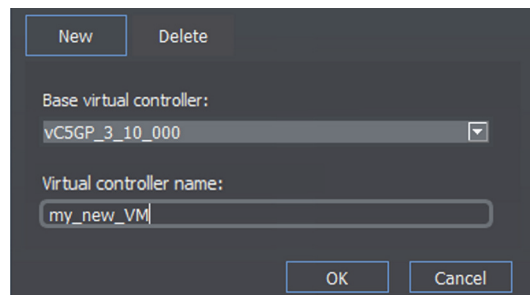
5.2.2.1 New

Execute the following steps to create a new Virtual Controller:

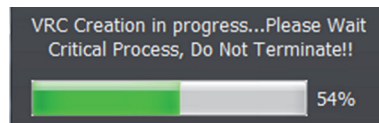
- a. open the displayed menu and choose the Virtual Controller with the wished software version.



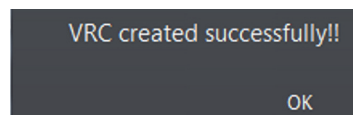
- b. Insert the wished name for the new Virtual Controller, in **Virtual controller name** field (e.g. **my_new_VM**).



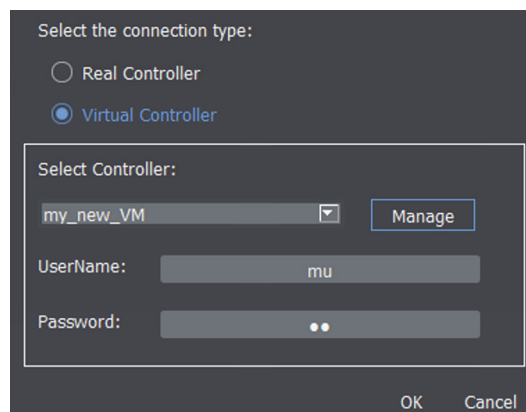
- c. Click **OK**. The program creates the new Virtual Controller. A progress bar shows the operation status.



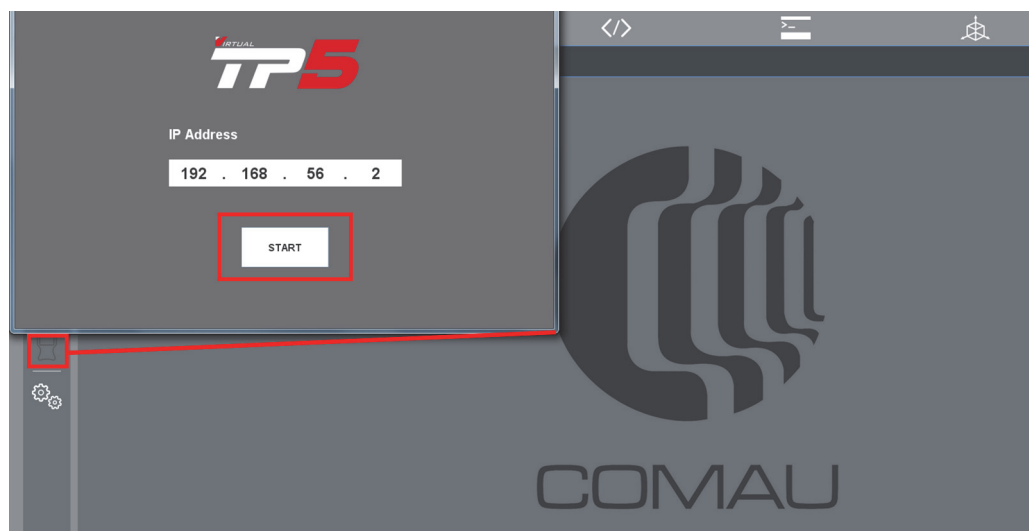
- d. A message is displayed at the end, to state the new Virtual Controller has been created.



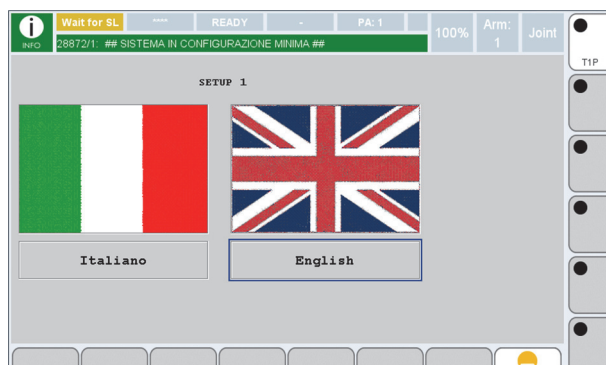
- e. Select it in the Connection window.
- f. Insert default Username and Password.



- g. Click **OK** key to connect.
- h. A Virtual System, activated for the first time, is in minimal configuration, i.e. in a default configuration in which neither arms nor auxiliary axes are specified; in such a case, the **SETUP1** program interface is automatically run, to allow the user to modify the configuration, according to his/her own needs.
- i. Activate the virtual **Teach Pendant** by means of the corresponding key and click **START**.



- j. Select the wished language for **SETUP1** execution (Italian or English), clicking the language name.



Execute the described below steps to customize the new Virtual System configuration.



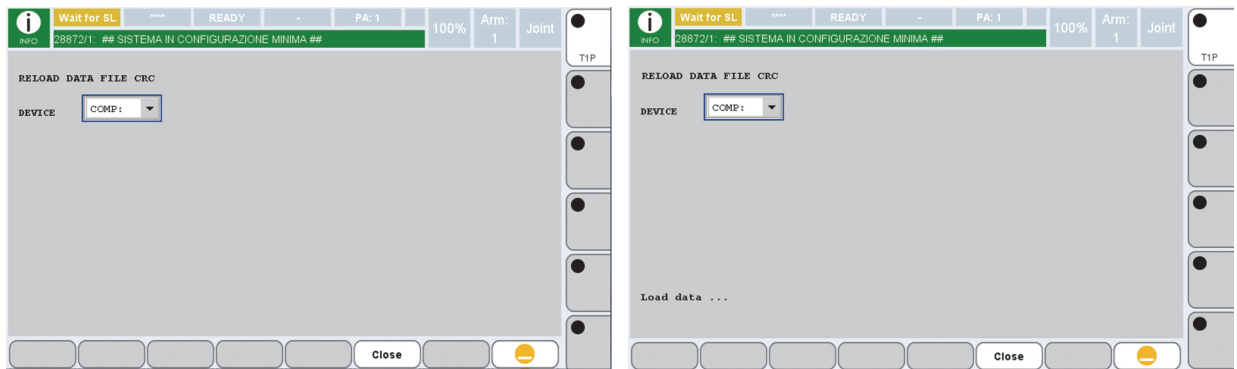
For a detailed description about the system configuration, refer to [Control Unit USE manual](#), chap. [SETUP Page](#), par. [5.17.3.11 - Reload Software](#).

- k. Click the **DEVICE** field in the displayed page, to open the menu and select the wished device from which loading the wished configuration.

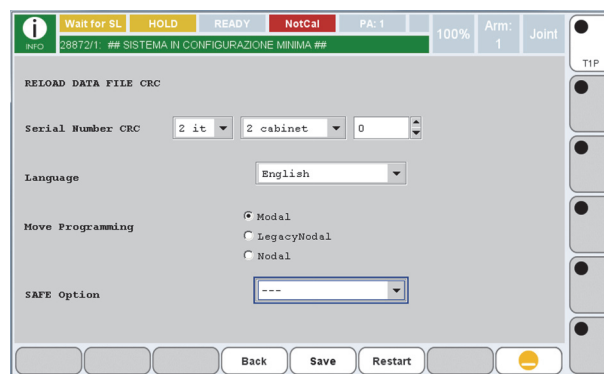


Before going on, verify that the Transfer Directory ([File Transfer folder](#)) is set to the directory of the data files related to the chosen Virtual Control version.

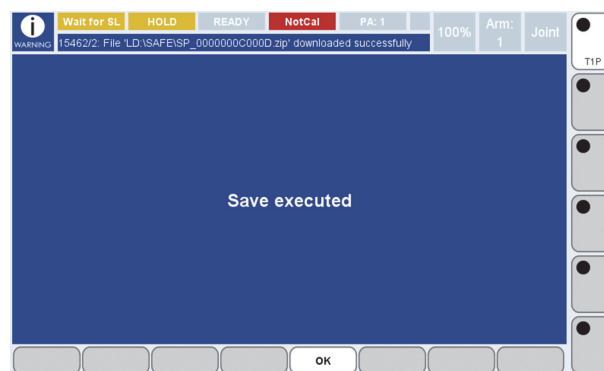
- l. Click **OK** to confirm.



- m. Select arm, family, model, auxiliary axes if any, MOVE statement mode, etc. to configure the virtual system.

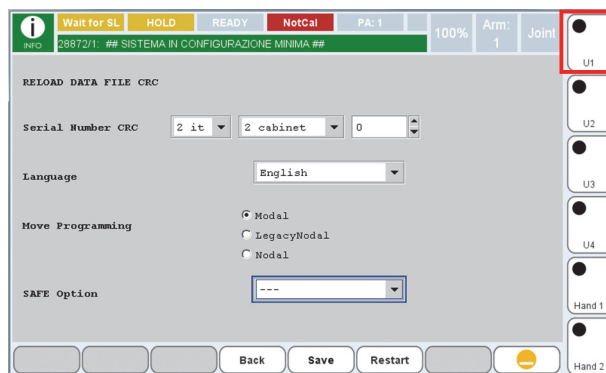


- n. Press **Save** key at the end, to save the newly created configuration.



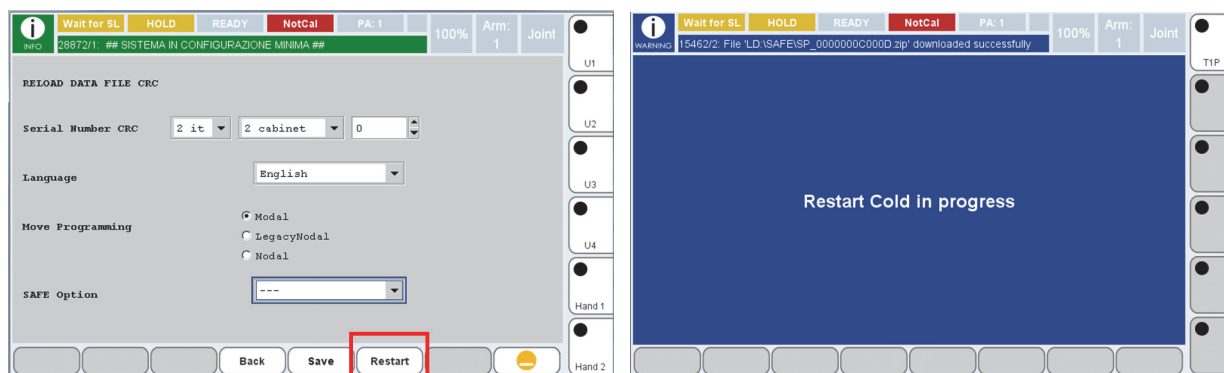
- o. Click **OK** key to confirm.
- p. Press **More** button (Virtual TP5 keyboard).
- q. Press **U1** button in the Virtual TP5 right menu, as highlighted in the following figure.

GLOBAL FUNCTIONS



r. Click **OK**.

s. Restart the Virtual System by pressing **Restart** key.



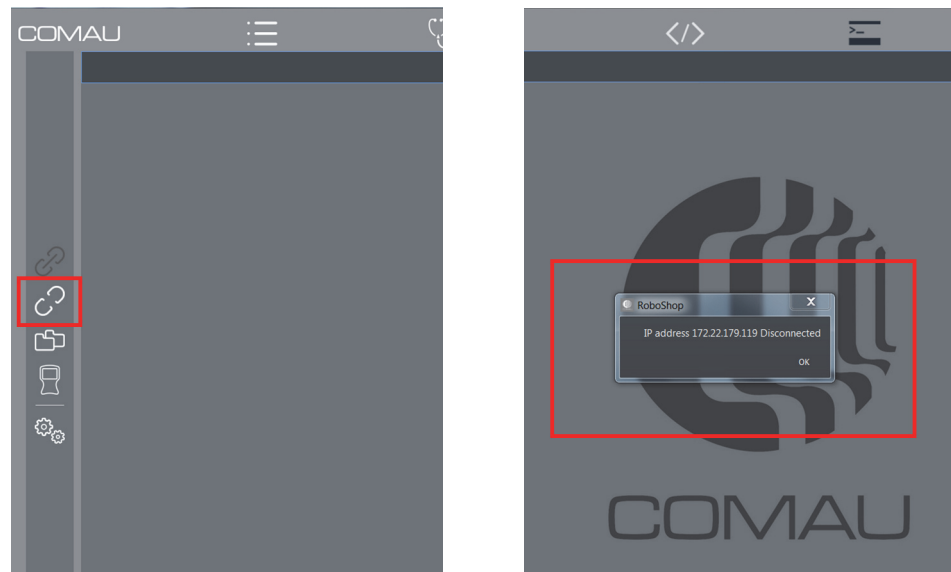
t. At the end of the system power up, the new Virtual Controller is properly configured and ready to be used.

5.2.2.2 Delete

Open the menu and select the name of the Virtual Controller to be cancelled.

Press **OK** key to confirm and start deleting.

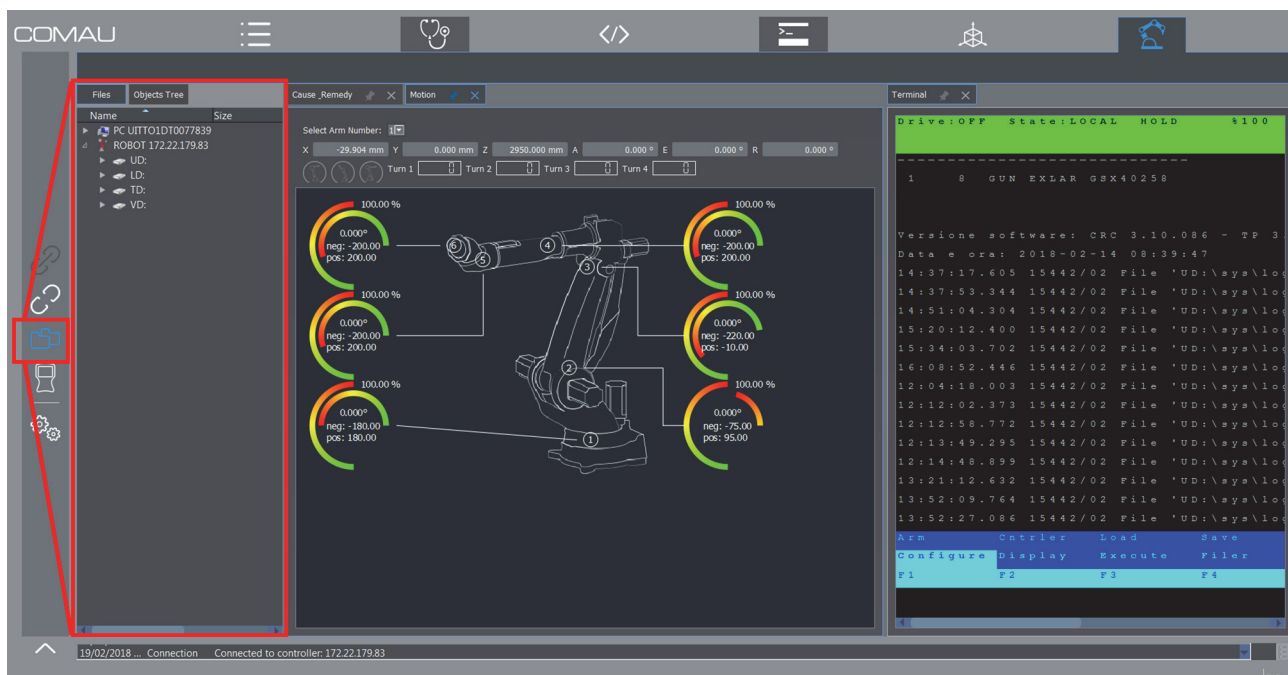
5.3 Disconnection



To disconnect from the Control Unit, click this key (highlighted in the left figure above) which closes the connection and displays a suitable message stating that the operation was successful (highlighted in the right figure above).

When disconnected, the [Terminal](#) window content is cleared. If the [3D Visualization](#) environment is open, the robot is deleted from the scene.

5.4 File System



This command displays two panels (figure above, highlighted panel on the left) including, respectively

- devices, directories and related files ([Files](#)),
- objects belonging to the currently open 3D visualization ([Objects Tree](#)).



Click **File System** key again, to close the two panels.

5.4.1 Files

This panel displays the tree structure including files and folders belonging to all devices existing on the **PC** and the ones belonging to the **Control Unit** when connected with **Roboshop**.

The displayed information is:

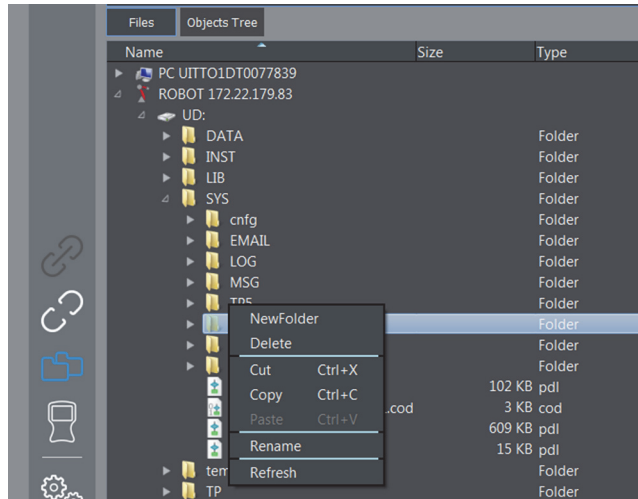
- **Name**
- **Size**
- **Type**
- date of the latest modification (**Date Modified**).

Depending on whether the right click is executed on a Folder or on a File, the following commands are made available

- [Folders Commands](#)
- [Files Commands](#).

5.4.1.1 Folders Commands

As displayed in the figure below, right clicking on a Folder or a Device, the following commands are made available:



- New folder
- Delete
- Cut / Copy / Paste
- Rename
- Refresh.

5.4.1.1.1 New folder

Allows opening a new folder, under the currently selected one.

The newly created folder has the default name of **New_Folder**. It is up to the user to assign the wished name, by means of the [Rename](#) command.

5.4.1.1.2 Delete

Allows deleting the selected folder and its subfolders. The program does not ask the user for any confirmation.

For retrieving the deleted folders and its subfolders, use **Paste** command ([par. 5.4.1.1.3 Cut / Copy / Paste on page 55](#)), selecting the folder inside which the restore should be executed.

5.4.1.1.3 Cut / Copy / Paste

Allows to **Cut/Copy/Paste** an individual folder (and its own subfolders, if any). Multiple selections are not allowed in the Files panel.



The user can also use the **drag and drop** functionality which allows to “drag” a folder and its subfolders and “drop” it to the wished position.

5.4.1.1.4 Rename

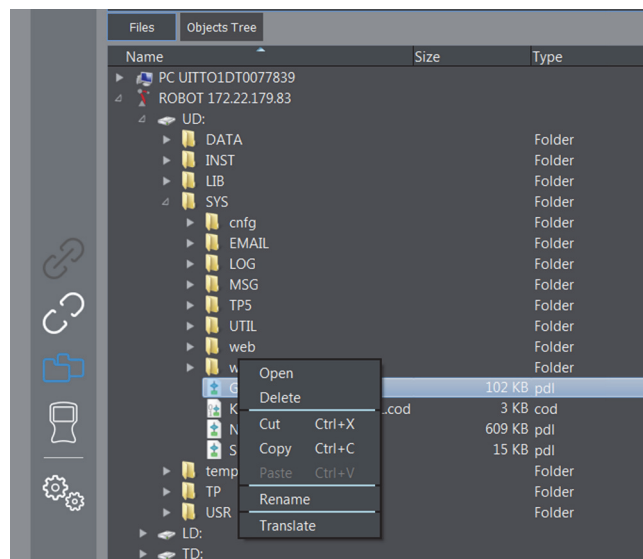
Allows renaming the selected folder.

5.4.1.1.5 Refresh

Allows refreshing the content of the **Files** panel view.

5.4.1.2 Files Commands

As shown in the figure below, some commands are made available when right clicking on a file:



- [Open](#)
 - [Delete](#)
 - [Cut / Copy / Paste](#)
 - [Rename](#)
 - [Translate.](#)
-

5.4.1.2.1 Open

Allows to open the selected file, in the [Editor](#) environment.

5.4.1.2.2 Delete

Allows deleting the selected file. The program does NOT ask the user for any confirmation.

If retrieving what deleted, use **Paste** command ([par. 5.4.1.2.3 Cut / Copy / Paste on page 56](#)), selecting the folder inside which the restore should be executed.

5.4.1.2.3 Cut / Copy / Paste

Allows to **Cut/Copy/Paste** an individual file. Multiple selections are not allowed in the Files panel.



The user can also use the **drag and drop** functionality which allows to “drag” a file and “drop” it to the wished position.

5.4.1.2.4 Rename

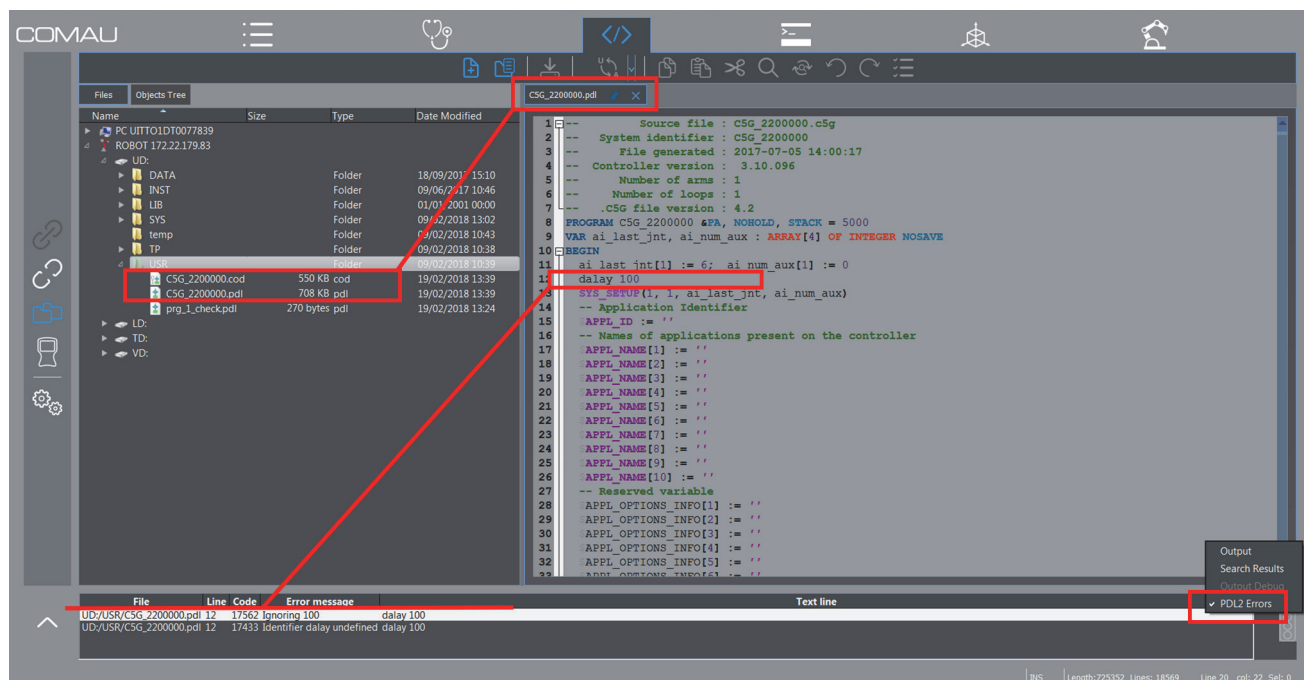
Allows renaming the selected file.

5.4.1.2.5 Translate

Executes the translation of the selected file. It is allowed to translate files from binary (e.g. **.COD**) to ASCII or Unicode (e.g. **.PDL**) and viceversa (e.g. opening a **.PDL** file and translate it to **.COD**). The previous version is saved as a backup file.

The only exception is represented by **.C5G** file which cannot be translated and saved to an ASCII file, but only displayed as a read-only file.

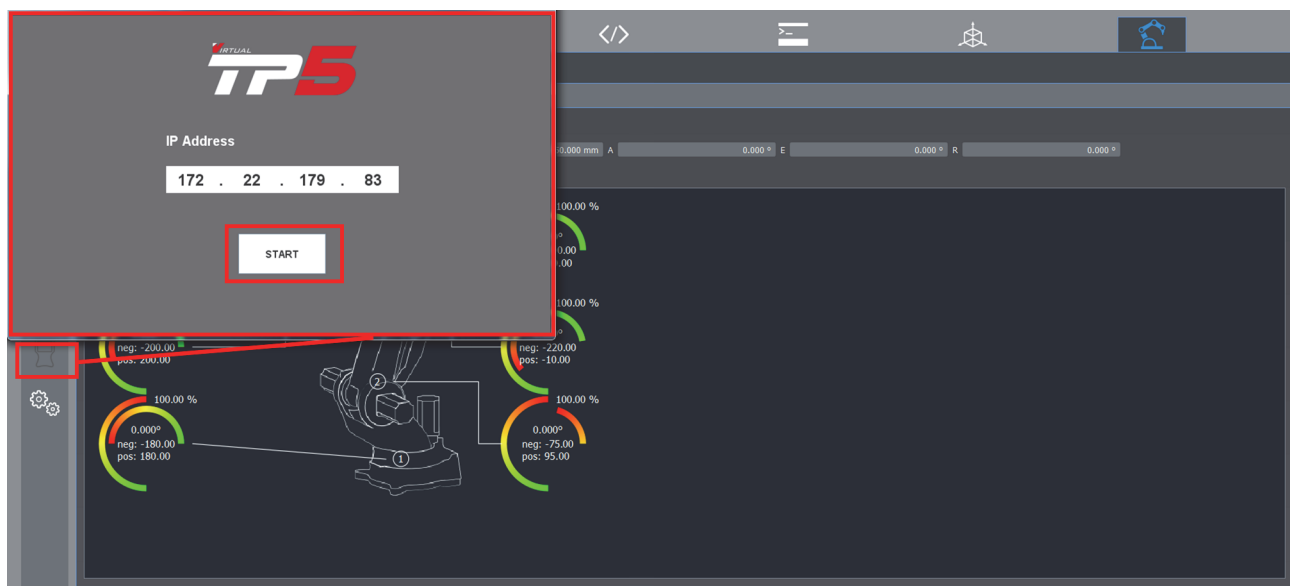
In case of errors, they are displayed in the **PDL2 Errors** window of the **Logs Bar**, as highlighted in the figure below.



5.4.2 Objects Tree

Displays a **tree** structure of all the **objects** belonging to the current 3D visualization.

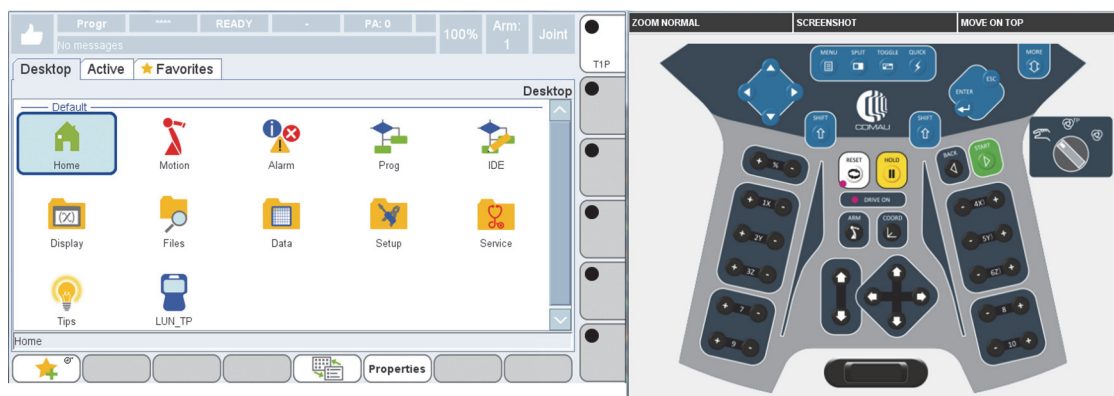
5.5 Teach Pendant



The **Virtual Teach Pendant** is started by clicking the key highlighted in red in the figure above.

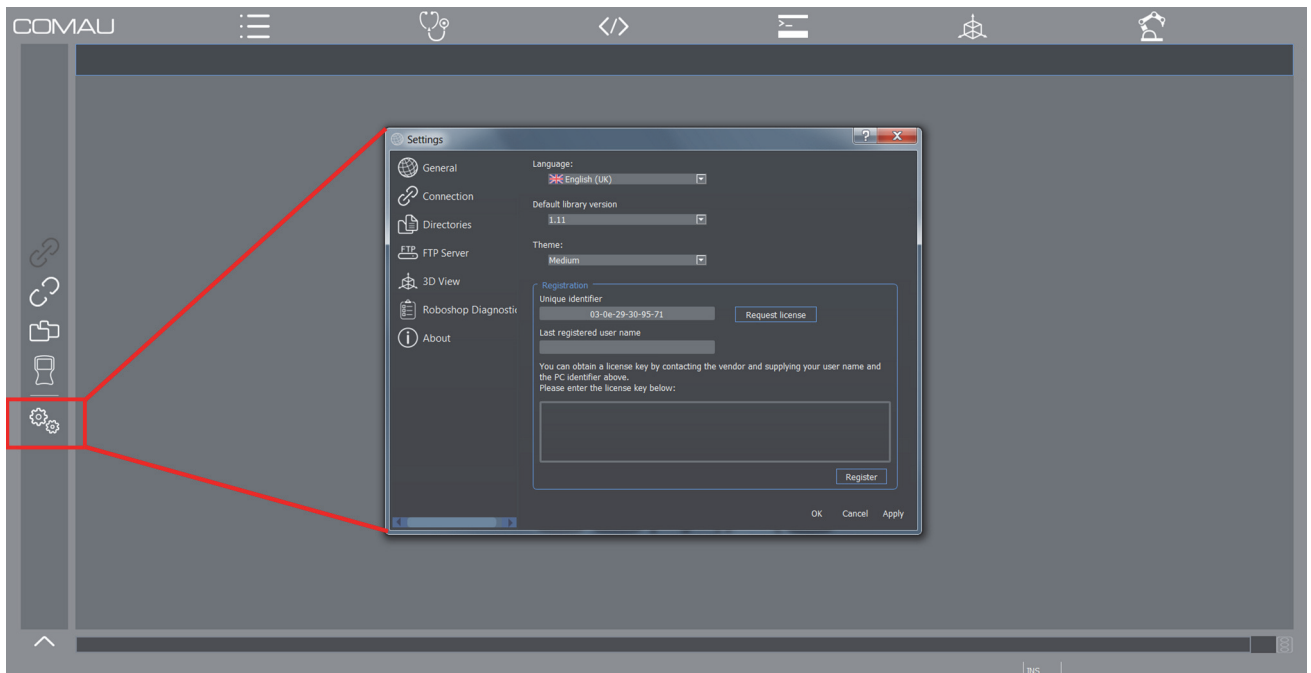
Click **START** key to continue.

After a few seconds two windows are opened on the PC, representing respectively the **Virtual Teach Pendant screen** and **keyboard**.



For any further information about its use, please refer to the **Control Unit Use** manual, **Chap.5. - Description of vTP5 - Virtual Teach Pendant**.

5.6 Settings



The **Settings** global function is used to setup the **RoboShop** program operating parameters. It is activated by clicking the corresponding key (as shown in the figure above).

The setting functions concern the following topics:

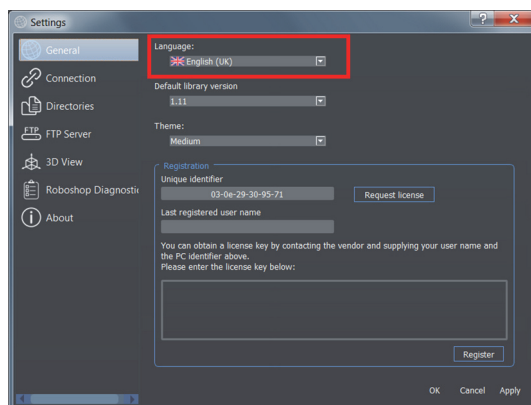
- [General](#)
- [Connection](#)
- [Directories](#)
- [FTP Server](#)
- [3D View](#)
- [Roboshop Diagnostic](#)
- [About.](#)

5.6.1 General

General type settings, about the language to be used, the translation default library, the user interface background and the **RoboShop** program registration.

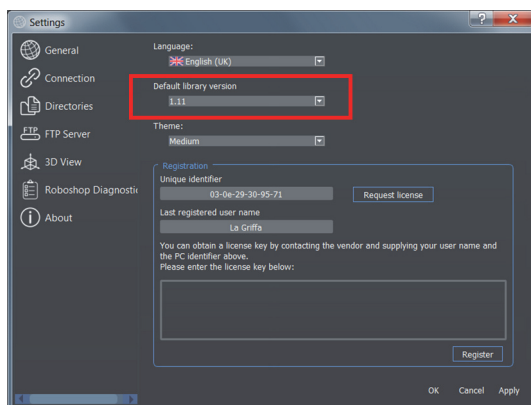
- [Language](#)
- [Default library version](#)
- [Themes](#)
- [Registration.](#)

5.6.1.1 Language



For right now, the only available language is English.

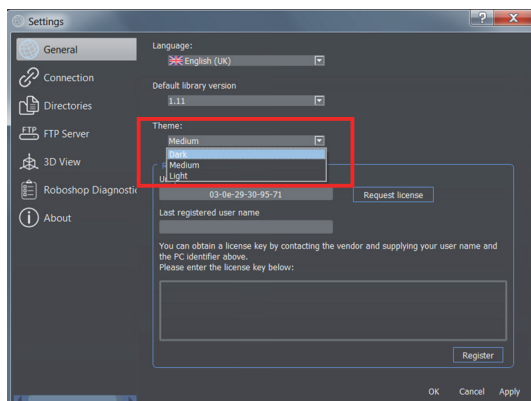
5.6.1.2 Default library version



This field specifies the translator library version, that will be used during the binary files (.COD, .VAR, .C5G) translation.

Upon connection, this field displays the Control Unit library version, which **RoboShop** environment automatically alignes with.

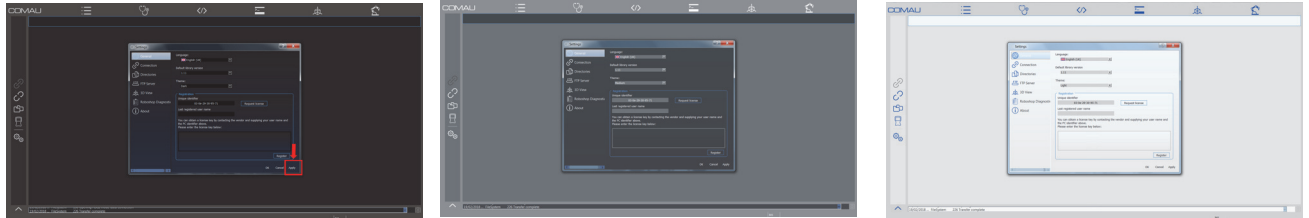
5.6.1.3 Themes



Three different background colours are available for the User Interface:

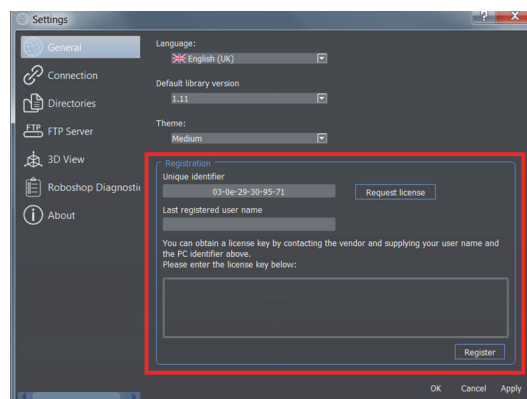
- Dark
- Medium
- Light

as shown in the figures below.



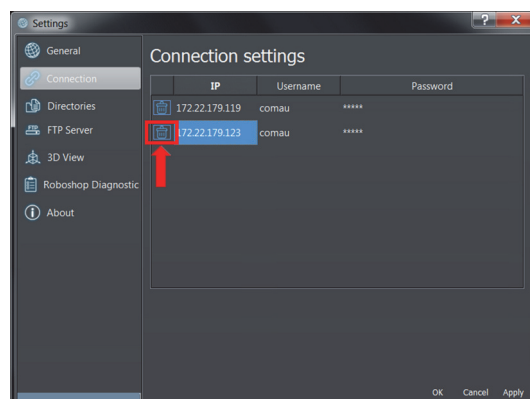
The user can choose his/her favourite one from the **Theme** menu and then click the **Apply** key to confirm, as shown in the left figure above.

5.6.1.4 Registration



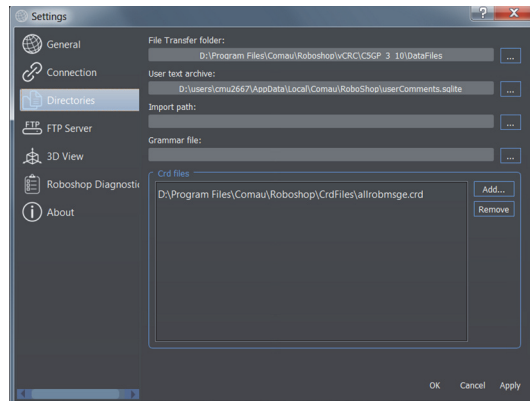
The use of this setting function is fully described in [par. 2.5 How to get a full licence for RoboShop](#) on page 23.

5.6.2 Connection



It displays the previously used **IP addresses** and allows deleting them if wished. To do so, select the address to be eliminated and click the deletion key (as shown in the figure above).

5.6.3 Directories



- File Transfer folder
- User text archive
- Import path
- Grammar file
- Crd files.

5.6.3.1 File Transfer folder

This setting is used during the files transfer/viewing from and to the connected PC.

5.6.3.2 User text archive

It is a file which contains the added user comments to the error messages, in [Cause&Remedy](#) environment.

5.6.3.3 Import path

Directory path to translate PDL2 programs containing the **IMPORT** clause.

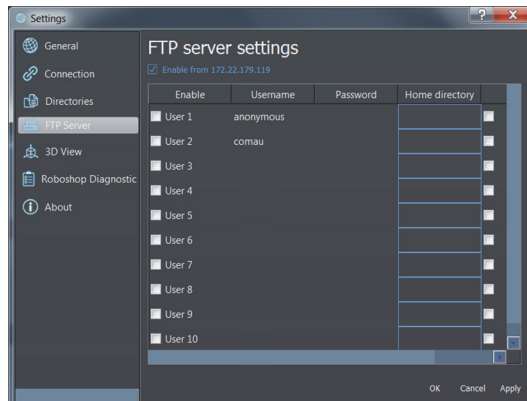
5.6.3.4 Grammar file

This field is only used for NODAL systems. It specifies the directory of the syntax file, on the PC.

5.6.3.5 Crd files

It allows adding and removing **.crd** files, i.e. the ones in which looking for errors cause and remedy from the Control Unit. Such files can be stored in whichever device on the network, not necessarily local to the PC on which **RoboShop** is active.

5.6.4 FTP Server



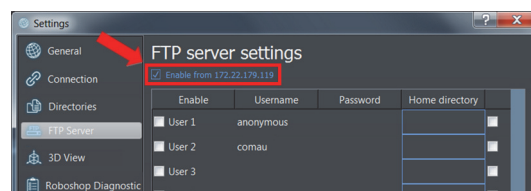
RoboShop can be connected to a Control Unit in FTP server mode.

Such a functionality configuration is done by means of the **FTP server settings** window, as shown in the previous figure.

The enabled Users can be defined in it. A maximum of 10 users can be configured.



In order to be able to operate in the FTP table, first of all select the **Enable from** checkbox, as shown in the figure below.



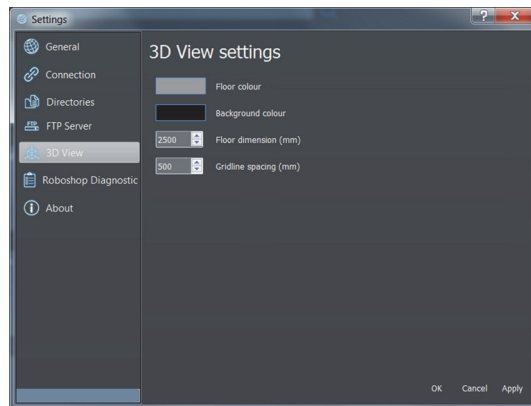
Then specify the following information for each User:

- whether enabled or disabled (**Enable**); select the corresponding checkbox to enable
- **Username** for connecting
- **Password** for connecting
- base directory, which is the connection **Home directory**
- **NET_C** - In case of backup and restore functionality, with **RoboShop** operating as a server for the Control Unit, this checkbox must be selected to use the **NETx**: devices (with 'x' from 1 to 9).



The first two users are predefined, so the only allowed setting for them is to specify the home directory.

5.6.5 3D View



This window allows setting the following **3D View** parameters:

- Floor colour
- Background colour
- Floor dimension (mm)
- Gridline spacing (mm).

5.6.5.1 Floor colour

Floor colour in the starting scene.

5.6.5.2 Background colour

Background colour in the starting scene.

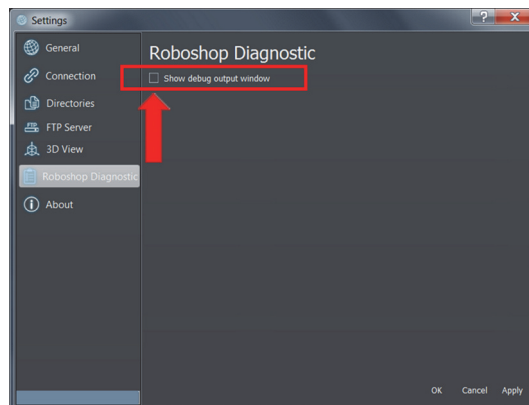
5.6.5.3 Floor dimension (mm)

Floor dimensions, in mm, in the starting scene.

5.6.5.4 Gridline spacing (mm)

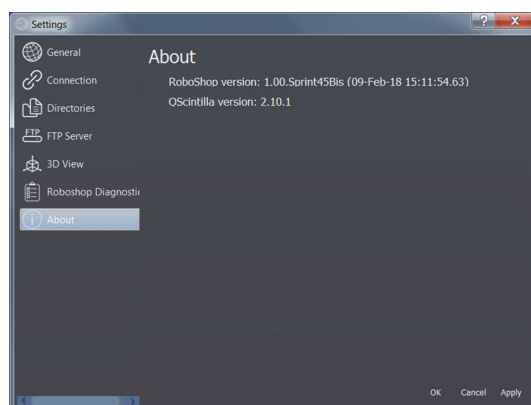
Spacing, in mm, in the floor grid.

5.6.6 Roboshop Diagnostic



Allows enabling the [Output Debug](#) bar viewing (functionality reserved to COMAU Customer Service), selecting the corresponding checkbox, as shown in the figure above.

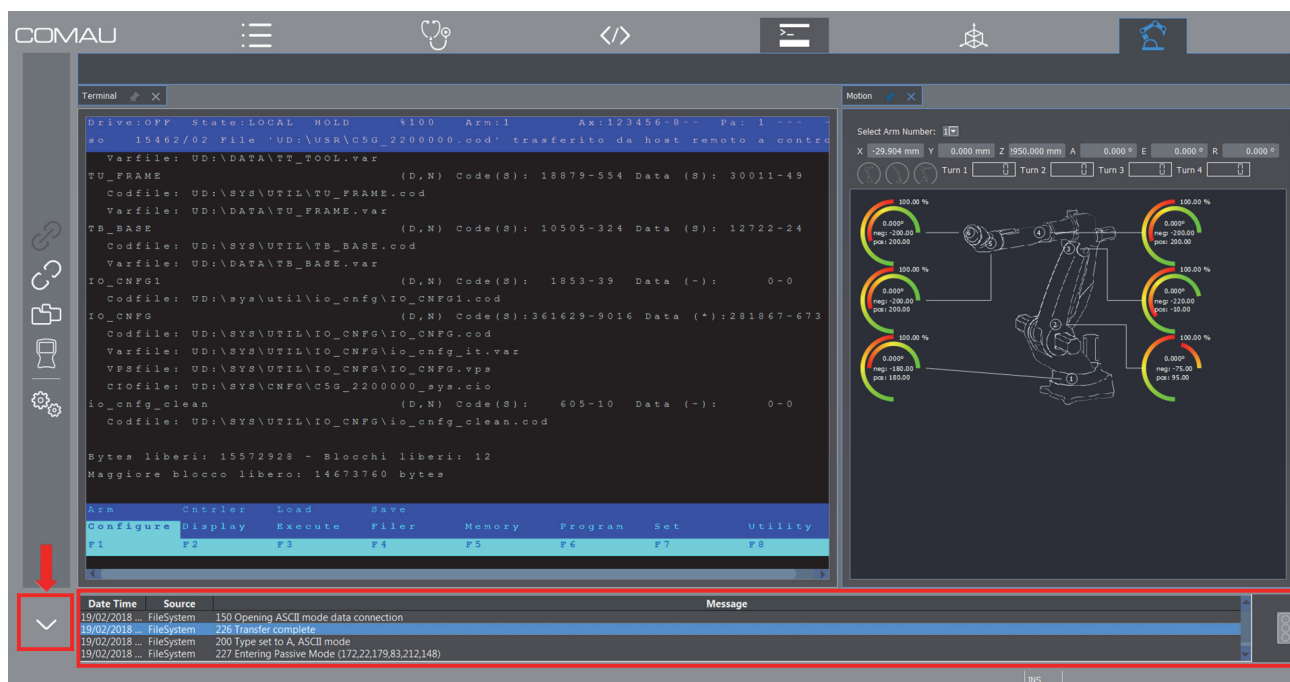
5.6.7 About



Provides information about **RoboShop** program.

6. LOGS BAR

6.1 Introduction



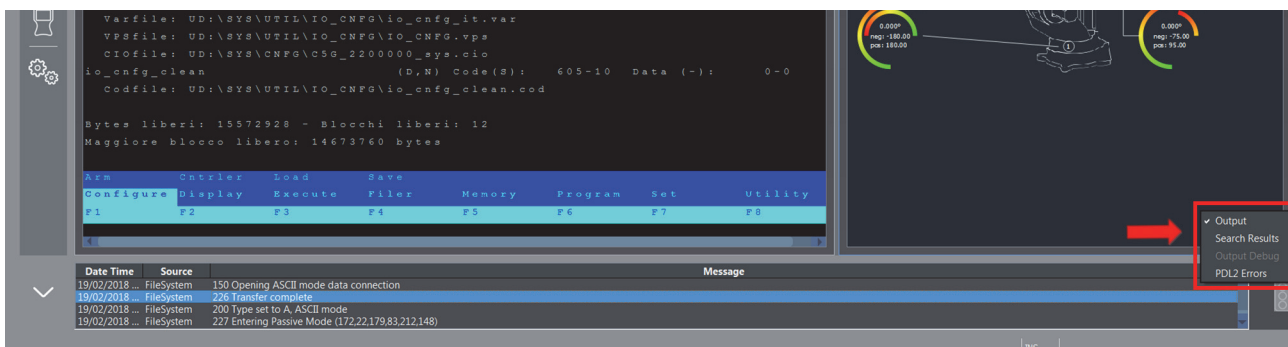
The **Logs Bar** displays messages coming from **RoboShop** existing environments and functionalities and also from active applications, if any.

Using the key placed on its left side (as highlighted in the figure above), the viewing area can be vertically enlarged/reduced.

The types of information provided in the **Logs Bar** are as follows:

- Output
- Search Results
- Output Debug
- PDL2 Errors.

The user can select the wished one by means of the menu in the low rightmost corner (as shown in the figure below).



6.2 Output

Displays all messages coming from any **RoboShop** environments and functions and from applications, if any, running on the Control Unit.

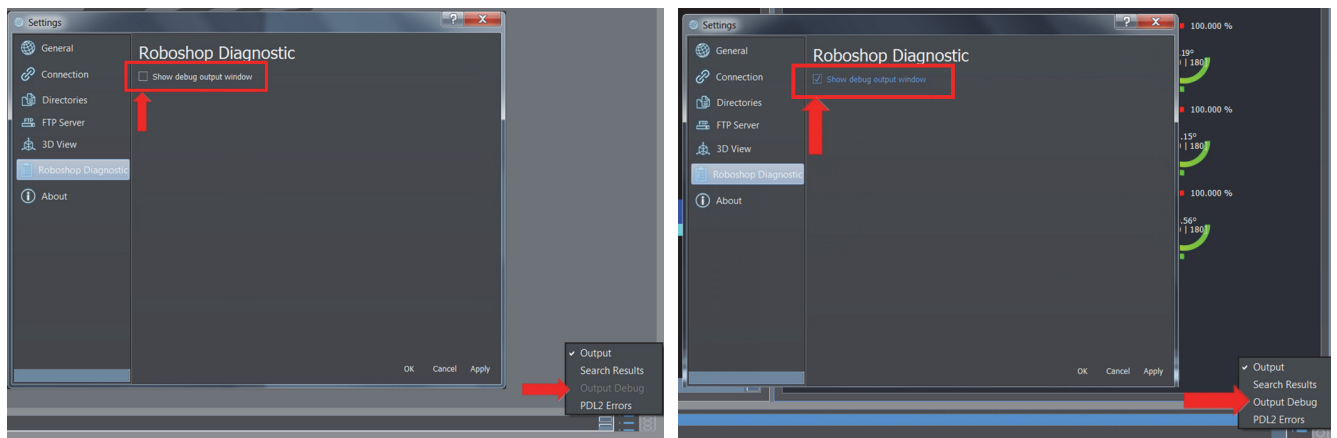
6.3 Search Results

Displays all the results of any search operations (**Find** command) in **Editor** environment.

6.4 Output Debug

Diagnostics function reserved to COMAU Customer Service.

To enable such a functionality, it is needed to modify the **Roboshop Diagnostic** setting, as shown in the figures below. Otherwise this command is not available.



6.5 PDL2 Errors

Displays the results of translating the program files (.COD, .PDL. and .VAR, .LSV).



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Original instructions

Made in Comau