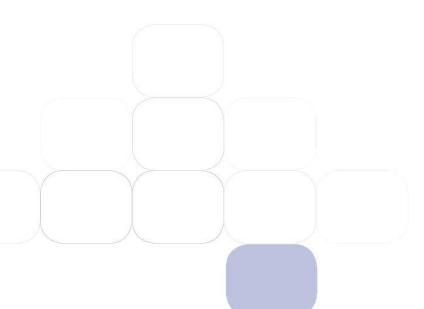


Thank you for purchasing this software. Please read this manual thoroughly to familiarize yourself with the many unique features and exciting innovations we have built into your new equipment. Esco provides many other resources at our website, www.escoglobal.com, to complement this manual and help you enjoy many years of productive and safe use of your Esco products.



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User Manual

Voyager

Monitoring, Programming & Datalogging Software

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Chapter 1 - Product Information

Esco Voyager is a software system for monitoring and programming multiple Esco devices. The main features include:

- Remote Monitoring and Data Logging:
 - o Automatic, continuous monitoring of device parameters (Temp, CO2, RH, etc.).
 - Viewing and graphing device parameters in real-time.
 - Saving and exporting log data in various formats.
 - Automatic emailing of log data at user-defined intervals.
 - Download of data logs from equipment memory (only for devices with built-in data logging memory, i.e. CO2 Incubators, Ultra-Low Temperature Freezers)
- Alarm
 - o Alarms when exceeding a user-defined parameter limit
 - o Automatic email alerts
 - Documentation of all alarms with time/date stamp
- Remote programming and equipment configuration
 - Development of programs using a graphical interface, for subsequent download to device memory (only for equipment with program functions, i.e. Forced Convection Laboratory Ovens and Incubators).
 - Configure devices remotely (set points, time, local alarm limits, etc.).

Esco Voyager can be used for the following equipment:

- Lexicon Ultra-Low Temperature Freezer
- Celculture CO₂ Incubator
- Isotherm Forced Convection Oven
- Isotherm Forced Convection Incubator
- Isotherm Natural Convection Incubator
- Isotherm Low Temperature BOD Incubator



Chapter 2 - Installation

2.1 System Requirements

Operation system : Windows 2000, XP, 7, and Windows 2003 Server.

Memory : 512 MB
Hard disk space : 1 GB
Interface : USB/RS232

Prerequisite Software : .NET Framework 2.0 (included)
 Windows Installer 3.1 (included)

Williaows installer 5.1 (illela

Internet connection is required for auto mailing feature

RJ45 (RS485) to USB Converter requires a correct driver to work.

- Windows 98 & ME for Windows 98 and Windows Me (incompatible with Voyager)
- Windows XP for Windows XP, Vista and 7 32 bit
- Windows Vista x64 for Windows Vista and 7 64 bit
- Linux for Linux (incompatible with Voyager)

The driver is included in the USB-Serial Converter | ATC-820B folder in the CD/DVD.

2.2 Device Requirements

- Lexicon Ultra-Low Temperature Freezer v.1 (currently unavailable)
- Celculture CO₂ Incubator (CCL) v. 1.3.1
- Isotherm Forced Convection Oven (OFA) v. 1
- Isotherm Forced Convection Incubator (IFA) v. 1
- Isotherm Natural Convection Incubator (INA) v. 1 (currently unavailable)
- Isotherm Low Temperature BOD Incubator (IFC) v. 1

The device require RS485 port connection

Please check the firmware version of the device before attaching it to the Voyager system

2.3 CD/DVD Menu Options

- Install Voyager to install the Voyager software
- Read Voyager Manual to open the attached Voyager manual (Adobe Reader required)
- Install Adobe Reader to install the Adobe Reader Software
- Read Converter Manual to open the attached RJ45(RS485) to USB converter manual (Adobe Reader required)
- View All Files to view the files and folder structure in the CD/DVD



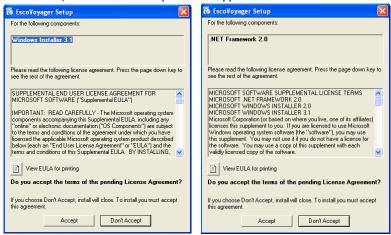
2.4 Installation Steps

1. Run Setup

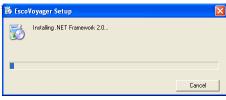
Double click setup.exe.

2. Checking Prerequisites

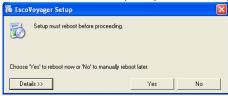
If the Operation System doesn't have .NET framework 2.0 and/or Windows Installer 3.1 installed, the software's setup form will appear.



Click Accept button to continue with the installation, and the software setup will commence.



You may be asked to reboot the computer prior continuing Voyager installation.





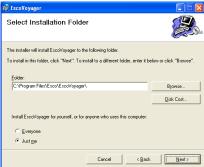
3. Esco Voyager Installation

Click next to continue.



4. Select Installation Folder

Click "Next >" to continue.

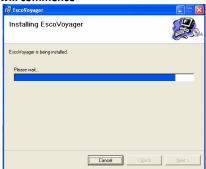


5. Confirm the installation by clicking "Next >"



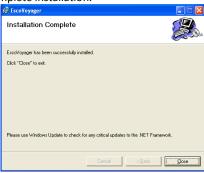


6. The installation will commence



7. Finish installation.

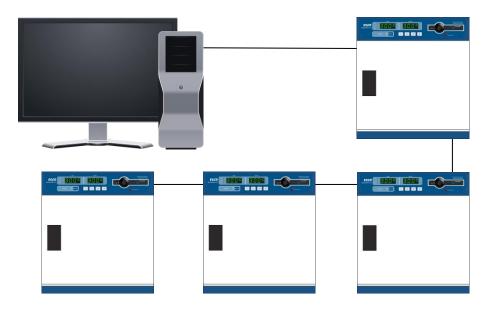
Click Close to complete installation.



Chapter 3 - Connecting the Devices

Esco Voyager connects to devices using RS485 communication protocol and EscoBus addressing protocol through either RS232 or USB port. Voyager also uses common CAT5 cable (more commonly known as LAN cable) with RJ45 connectors as a connecting wire between devices, also PC and device.

Since common PC do not normally use RS485 protocol, a converter is required – either RJ45 (RS485) to USB or RJ45 (RS485) to RS232.



Note: At the end of the daisy chain, terminate the connection.

To set the Escobus address for the device, please check the device's user manual.



Chapter 4 - Operating Esco Voyager

4.1 Starting Esco Voyager

Double click Esco Voyager shortcut on the desktop or click **START** menu and select **All Programs** | **Esco Voyager** | **Esco Voyager** to start Esco Voyager.

At Startup the Voyager will display a Login dialog Box.



Enter user name and password and click OK button to login Esco Voyager. If this is the first time the software run, then enter these information:

User Name: admin Password: admin

After login successfully, the main form will be displayed:





4.2 Locking and Unlocking Esco Voyager

In main form, click menu $File \rightarrow Lock$ or press Ctrl + L to lock Voyager Enter password to unlock.



4.3 Working in the Background

When the user closes main window, Voyager will continue to run in the background to monitor the devices and send alerts.



The user can either close the Voyager or open the main window by right clicking on the Voyager icon present in the system tray:

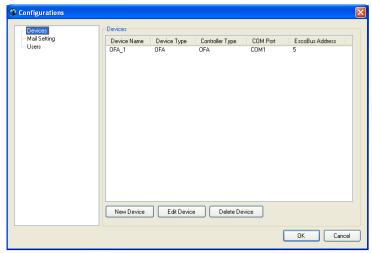


4.4 Configuration

To open configuration, click on *Settings* in the main window. Configurations dialog is shown as below:



4.4.1 Devices



This configuration block gives a consolidated view of all the devices and allows the user to Add, Edit and Delete Devices.

Add New Device

Click on "*New Device*" to open the New Device dialog. This is same as adding a device from the Main Window (see next chapter).



Edit Device

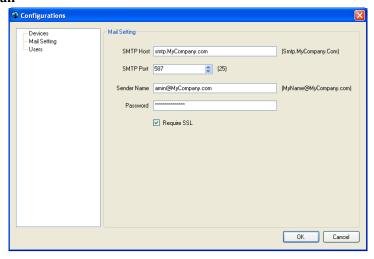
Click on "Edit Device" to edit the selected device.

Delete chamber

Click on "Delete Device" to delete selected device.

Note: Deleting a Device will delete all related measures.

4.4.2 Mail



Set Email settings for Data Logging and Email Alerts Services.

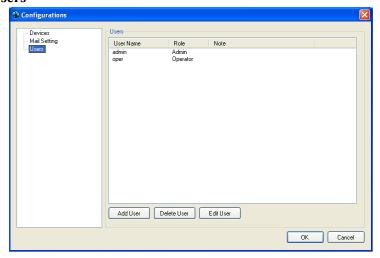
• SMTP Host : Set SMTP server address. Like Smtp.MyCompany.com.

SMTP Port : Port of SMTP.

• Sender Name : Sender's Email Address. Like MyName@MyCompany.com.

Password : Sender's Email Password.
 Require SSL : Some SMTP servers need SSL.

4.4.3 Users





This configuration block shows the user list having access to Voyager. The user can have one of the two levels of access:

- Operator has access to all functions except configurations.
- Admin has access of all functions.

Add User

Click "Add User" button to open new user dialog as following:



Options:

- o **User Name:** User name of the new user cannot be same with existed users.
- o Role: Role of the new user.
- o Note: Note of the new user.
- o Password.
- o **Confirm:** Confirm of password, must be same with password.
- o Click "OK" button to save new user.

Delete User

Click "Delete User" button to delete selected user.

Edit user

Click "Edit User" button to open edit user dialog as following:



Click "OK" to save.

Chapter 5 - Device Block

5.1 Adding a Device (from the main window)



In the Main form click on Add device link to add a New Device.

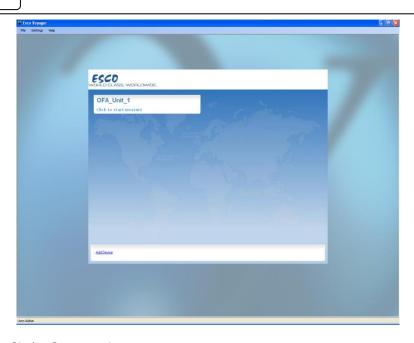


The user has to enter the following options:

- **Device Name:** A suitable Name for the Device.
- **Device Type:** Select Type Of Device
- **COM Port:** Select COM Port the Device is connected.
- EscoBus Address: Set EscoBus address of the Device.
- Click OK to save.

For each device added a device block is added on the main window as shown below:





5.2 Edit/Delete Device

Right click on the Device Block and click on the "**Device**" \rightarrow "Edit" menu item to edit the properties of the Device.

To delete the Device Click on "Device" → "Delete".



5.3 Open Program Editor

Right Click on the Device block and click on the "**Program**" menu item to open the Program Editor.



See section Program Management for more details.

NOTE: Programming functionality is available only for Laboratory Ovens and Incubators (OFA, IFA, INA).



5.4 Measure Management

Left click on the Device Block or right click and select "Measure" \rightarrow "Start" menu item. This will open the Measure Configuration window. Once the measure is started, the user can Pause, Resume or Stop the measure by right clicking on the device block and clicking on the respective menu items.



See section Measure Management for more details.

5.5 View Device Status

Once the measure is started the user can view the real time sensor readings on the device block. These values are updated at the measure monitor rate selected while configuring the measure.



5.6 Export Data Log

The user can export the data acquired by Voyager into an Excel or Text file by clicking on the "Export Data Log" \rightarrow "Voyager Log" \rightarrow "Data Log". The user can also export the communication log of Voyager by clicking on "Communication Log".



5.7 Export Device Log

For Devices with built-in data logging capabilities the user can export the Device Data Log by Clicking on "Export Data Log" \rightarrow "Device Log" \rightarrow "Flash Data". The User can also view the Event Log of the Device by Clicking on "Event Log".



Chapter 6 - Program Management

A program is a sequence of one or more temperature steps which will be maintained by the device. The user can create a program using Voyager and export it to the device or save it into an external file which can be used for future programming. Program can also be imported from an external file or device.

NOTE: Programs are only for devices with program functions, i.e OFA, IFA and INA.

6.1 Open Program

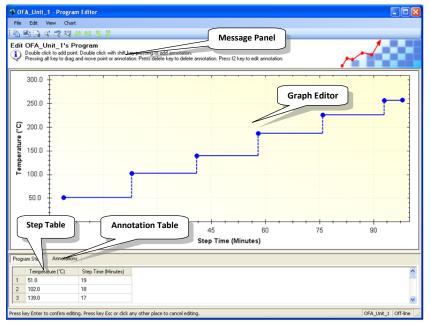
To open a new Program right click the mouse on the Device you want program and Click on "**Program**" as shown below:



This will open the Program editor as shown below.



6.2 Edit program



The Program Editor has the following Sections:

- Message Panel: Prompt operation guide, error messages and warning messages.
- Graph Editor: Displays program curve. Step points and annotations position can be
 moved in this area. The X axis is total time (minutes) of a step point. The Y axis is
 temperature value of the step.
- **Step Table:** List steps in the program. Steps values can be edited in this table.
 - o Temperature (°C) : Temperature value of the step. Editable.
 - Step Time (Minutes) : Heating time of the step. Editable.
- Annotation Table: List annotations. Annotations position value and text can be edited.



X : X axis value. Editable.Y : Y axis value. Editable.

O I . I axis value. Eultable.

Text : Text of annotation. Editable.

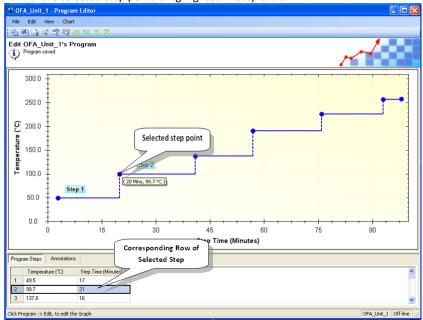


6.2.1 Edit Step Point

The following are operations for editing a step point:

• Select a Step Point:

Click the step point to be edited in the Graph editor. The selected step point is marked with red circle round as shown in the below picture. The corresponding row of the selected step point is highlighted in Step table.



You can also select a step by selecting a row in Step table. Selecting a row in Step table will highlight the corresponding step point in Graph editor.

• Insert a Step Point:

Double click at the position where the step point is to be added or Right Click at the position click "Add Point". A step point will be inserted at that position.

Delete a Step Point:

Select a step point. Press "Shift" + "Delete" key or click menu "Edit" → "Delete Point" or right click on the point you want to delete and click "Delete Point".

Voyager will prompt confirming message. Click Yes to delete the selected step point. To delete all step point, click menu "Edit" → "Delete All Points".

• Move Step Point:

There are 2 ways of moving a step point.

 One is to move Step Point in Graph editor: Select the Step Point and drag it to the required position.



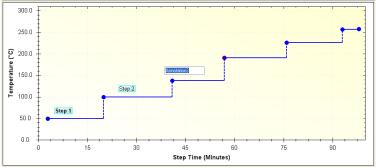
Another is edit position in Step Table: Select the Step Point in Graph editor. The
corresponding row of the selected step point is highlighted in Step table. Edit
Temp and Step Time value in Step table. The step point's position will change
according to Temp and Step Time value.

6.2.2 Edit Annotation

The following are operations about editing annotation:

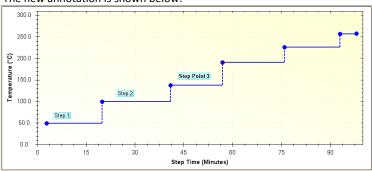
Insert an annotation:

Right click at the position in the Graph editor where you want to add the Annotation or press the "Shift" key and double click. A text editor prompts at the click position.



Type annotation text and click key enter to confirm editing. Press key Esc or click other place to cancel annotation editing.

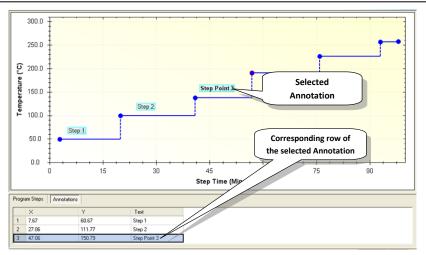




Select an annotation:

Click annotation to select it. Selected annotation will be highlighted. Corresponding row of the selected annotation also will be highlighted.





You can also select an annotation by select a row in Annotation table. Selecting a row in Step table will highlight the corresponding annotation in Graph editor.

• Delete an Annotation:

Select an Annotation. Press key "**Delete**" or click menu "**Edit**" → "**Delete Annotation**", system will prompt confirming message. Click Yes to delete the selected annotation.

Edit an Annotation:

Select an annotation. Press key F2 or click menu Edit-Edit Annotation. The annotation editor will display like inserting an annotation. Change annotation text and press key Enter to confirm editing.

6.2.3 Import and Export Program

Program can be stored in 2 ways:

- External file: Program can be saved to or imported from external program file (*.prg).
- **Device Memory:** Program can be saved to or Imported from device's memory.

The File menu contains sub menus to load or save program.

Menu	Description
File	
Import Program	
From File	Show open dialog to select an external program file.
From Chamber	Import program of device memory.
Save Program	
To File	Save program to external file.
To Chamber	Send program to Device's memory.



6.2.4 Operations in Graph

The following is operations about graph. These functions are available in tool bar. Same operations are available in measure form.

Operations are available in measure form.				
Menu	Description			
Chart				
Сору	Copy image of graph to clipboard.			
Save Image As	Open save dialog to save image of graph.			
Print	Print image of graph			
Zoom	Zoom's current graph pane.			
Un-zoom	Undo zoom current graph pane.			
Set Scale To Default	Set graph scale to default.			
Expand Horizontal	Expand X axis.			
Shrink Horizontal	Shrink X axis.			
Expand Vertical	Expand Y axis			
Shrink Vertical	Shrink Y axis.			

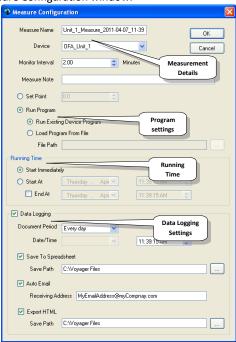
Chapter 7 – Measurement

7.1 Measure Configuration

Left click on the Device Block or right click and select "Measure" → "Start" menu item.



This will open the Measure Configuration window.



The user has to enter the following options in the "Measure Configuration" dialog:

• **Measure name** : Not empty. Name of the measure.

Device : Device to be addressed.

Monitor interval : Rate at which data will be acquired.

• Measure note : Notes of the measure.

Program or Set Point:



For programmable devices the user can either run the device at a constant temperature, In which case he has to enter the "Set Point" or he can run a program. In case he wants the device to run a program he can either choose to run the program already loaded into the device or he can export a new program from a file.

NOTE: These options are not available for Non Programmable devices (ULT Freezers, CO₂ Incubators and IFC)

- **Running Time** : Specify running time period.
 - o Start Immediately: If this option selected, measure starts when OK button clicked.
 - o Start At: If this option selected, measure will start at the specified time.
 - End At: If this option checked, measure will end at the specified time. Else measure will run until user clicks stop menu.
- Data Logging : Enable Data Logging. If enable, checked documentation services (saving spreadsheet, sending email, or exporting html) will be executed in specified period.
 - <u>Document period</u>: Period type of datalogging. Can be every day, every week or every month.
 - <u>Date/Time</u>: Detailed period value. Date is different according to document period.
 The following table list date values of Period values:

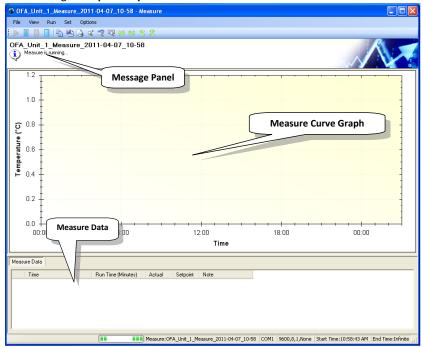
Document period	Date values
Every day	-
Every week	Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday.
Every month	1-31

- Save to Spreadsheet: Enable auto save measure data to spreadsheet file. These spreadsheet files are saves at "Save Path".
- Auto Email: Enable auto send email of measure data. The receiving email is specified by "Receiving Address".
- <u>Export HTML</u>: Enable export measure data to html files. These files are saved at "Save Path" under "Export HTML".



7.2 Measure Window

Once the measure is started the Voyager keeps acquiring data from the Device and updating the Measure Graph. The user can view the measure window by right clicking on the Device Block and clicking on "Open Graph" menu item.



Measure data table columns definition:

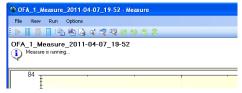
- Time: Measure record time (format like "20011-04-5 13:34:56").
- Run Time (Minutes): Minutes from begin to record time.
- Actual: Actual sensor value.
- Set Point: The Set Point Value.
- Note: Editable. Note the record.

Operations on graph are listed at section 0 6.2.4 Operations in Graph.

7.2.1 Pause, Resume, Stop Measure

Pause

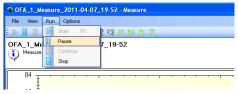
To Pause the Measure either click " $Run" \rightarrow$ "Pause" menu item or click on the Pause icon on the toolbar.





Resume

To Resume either click "Run" → "Continue" menu item or click on the Resume icon on the toolbar.



Stop

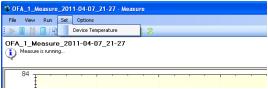
To Resume either click " $Run" \rightarrow "Stop"$ menu item or click on the Stop icon on the toolbar.



7.2.2 Set Device Parameters

OFA, IFA, INA and IFC

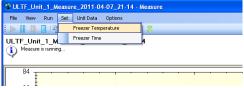
<u>Set Temperature</u>: When the Device is maintaining a constant Temperature the user can set the Device Temperature by clicking on "Set" → "Device Temperature" menu item as show below:



NOTE: The user can set the temperature of OFA, IFA or INA only when they are not running a program.

Ultra Low Freezers

<u>Set Temperature</u>: The user can set the Freezer Temperature by clicking on "Set" → "Freezer Temperature" menu item as show below:



<u>Set Time</u>: The user can also set the Freezer Time by clicking on "Set" → "Freezer Time" menu item.

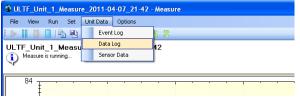


7.2.3 Read Device Data

The user can read Data from Devices which have in-built memory for Data Logging. These Devices include Ultra Low Freezers and Co2 Incubators.

Read Data Log

The user can read the Device Data Log by clicking on "Unit Data" → "Data Log".



Read Event Log

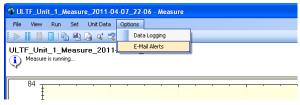
The user can read the Device Event Log by clicking on "Unit Data" → "Event Log".

Sensor Data

The user can read the real time sensor values by clicking on "Unit Data" → "Sensor Data".

7.3 Email Alerts

If email alerts are enabled the Voyager will notify the user via Email incase of any Alarm conditions like communication errors with device or device parameters going beyond the specified High/Low limits. To enable email alerts click on "Options" → "Email Alerts" menu item.



The Voyager will then prompt the user to options window as shown below:



Click on "Enable" and enter the email addresses of the users who will be notified in case of errors. Multiple Email Addresses can be entered with comma (;) separators.

NOTE: For Email Alerts to be sent the user has to previously enter the Email Settings in the Configuration Window. See Section Mail Setting for more info.

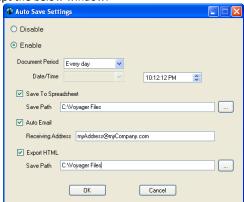


7.4 Data Logging

The user can change the Data Logging settings while the measure is running by clicking on "Options" \rightarrow "Data Logging".



The Voyager will prompt the below window:



Make the required changes and click OK to save the changes.