

User Guide

Turbo Instrument Controller (TIC) PC Program



Note: Laptop PC not included



This program can be used on the following products:

| Description | Item Number |
|---|-------------|
| TIC Instrument Controller | D397-00-000 |
| TIC Instrument Controller 6-Gauge | D397-01-000 |
| TIC Instrument Controller 6-Gauge Capacitance Manometer | D397-02-000 |
| TIC Turbo Controller 100 W | D397-11-000 |
| TIC Turbo Controller 200 W | D397-12-000 |
| TIC Turbo & Instrument Controller 100 W | D397-21-000 |
| TIC Turbo & Instrument Controller 200 W | D397-22-000 |



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EZZI VISION

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CONTACT US

T: 1800 GO EZZI

E: sales@ezzivision.com.au

W: ezzivision.com.au

VIC: 13/62 Ramset Drive, Chirnside Park,
VIC 3116, Australia

NSW: Unit 1, 80 O'Riordan St, Alexandria,
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WA: Unit 11, 24 Baile Road, Canning Vale,
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1 Introduction

1.1 Scope and definitions

This user guide provides operational instructions for the Edwards TIC PC Program. You must use the PC program as described in this user guide. The PC program is compatible with the following:

| Description | Item Number |
|---|-------------|
| TIC Instrument Controller | D397-00-000 |
| TIC Instrument Controller 6-Gauge | D397-01-000 |
| TIC Instrument Controller 6-Gauge Capacitance Manometer | D397-02-000 |
| TIC Turbo Controller 100 W | D397-11-000 |
| TIC Turbo Controller 200 W | D397-12-000 |
| TIC Turbo & Instrument Controller 100 W | D397-21-000 |
| TIC Turbo & Instrument Controller 200 W | D397-22-000 |

Note: The screen shots shown in the manual represent the combined Turbo Instrument Controller, they will differ slightly for the Turbo Controller and Instrument Controller.

1.2 Description

TIC is supplied with a fully functional variant sensitive Windows™ based PC program, which replicates and adds to the TIC control menus. It enables single or multiple TIC systems to be configured, controlled and monitored from a single PC.

The PC program also supports data logging, and individual TIC system configurations may be created and saved for use at a later date.

The PC program includes a software upgrade utility, which enables the TIC software to be upgraded over the serial link from files supplied electronically, either on magnetic media, by e-mail, or from a website.

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2 Using the program

2.1 Logging on

When the PC program has been downloaded from the Turbo Instrument Controller CD (Part No. D397-00-879), you will be able to access it using the following steps:

- Click the 'START' button.
- Move your cursor to 'PROGRAMS'. A list of programs that are installed on your PC appears.
- Locate Edwards Applications from this list and using the mouse, position the cursor over it.
- A button should then be revealed 'TIC PC Monitor'.
- Click on this button to start the application.

The TIC PC program will then launch and the screen shown below will appear. Refer to [Figure 1](#).

Figure 1 - Connecting to the system



Gea/39711/001

2.1.1 Selecting a system type

In this area the user will be able to automatically or manually select the typical system that the TIC has been incorporated into. [Figure 1](#) shows the set-up screen.

Note: The 'None' option under the 'Controller Type' heading is needed when using the PC program without a TIC and with a DX or nEXT turbo pump only.

2.1.2 Selecting a COM port

For the PC program to work, an RS232 cable needs to be connected from the TIC to a PC COM port. The COM port selection box shown in [Figure 1](#) allows the user to select the COM port that has been used to connect the TIC. If the required port does not appear in the list it is because it is currently in use by another program. Close the other program before continuing or use a different COM port.

2.1.3 The multidrop address

The PC program can only monitor one TIC at a time. If there is more than one TIC connected in the system then each additional TIC will be given a different multidrop address.

2.1.4 Auto connecting

When the COM Port and Multidrop Address selections are correct, click on the 'Auto-detect system' button.

The monitoring system will query the link to determine what pump or controller is attached. Progress will be indicated on a bar. When it succeeds, the monitoring system will then launch accessing information from the attached unit.

If the monitoring system fails to identify the attached unit the user can still manually set the connection type.

2.1.5 Manually connecting

The 'manual select system' button when pressed will provide a list of selectable items.

The monitoring system will then launch, accessing information from the TIC via the COM port selected in [Section 2.1.2](#).

2.2 The monitoring system

[Figure 2](#) shows the setup of the monitoring system. Anything that can be done from the navigation screens on the TIC (refer to [Section 4](#) in the main manual), can be done from this screen, which includes the five tabs that can be seen in [Figure 2](#):

- Pump status & control
- Relays
- Gauges
- Pump speed & power
- TIC data
- Alerts

Note: A sixth tab provides information relating to the type of pump connected to the TIC.

More information on each of the tabs can be found in [Section 2.3.1](#) to [2.3.7](#) inclusive.

2.3 Layout of the screen

The bottom half of the screen is divided into tabs containing non-selectable information about the operation of the main attachments to the TIC.

The top half of the screen is divided into tabs that contain user configurable information. More detailed information on these tabs is contained in the following Sections.

Figure 2 - System status

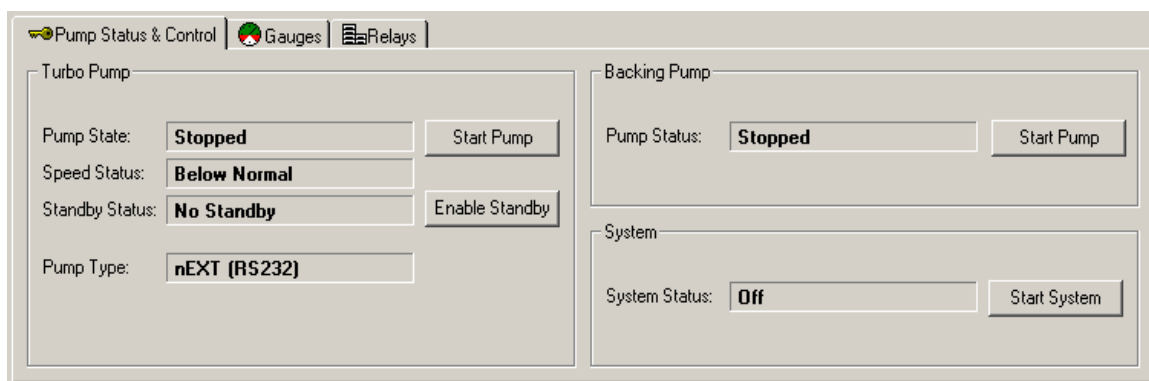


gea/d39711/f2

2.3.1 Pump status & control

This tab allows the user to check the current status of the attached pump; these pumps can also be switched On and Off from this screen. Refer to [Figure 3](#).

Figure 3 - Pump status & control tab when connected to a DX or nEXT turbo pump



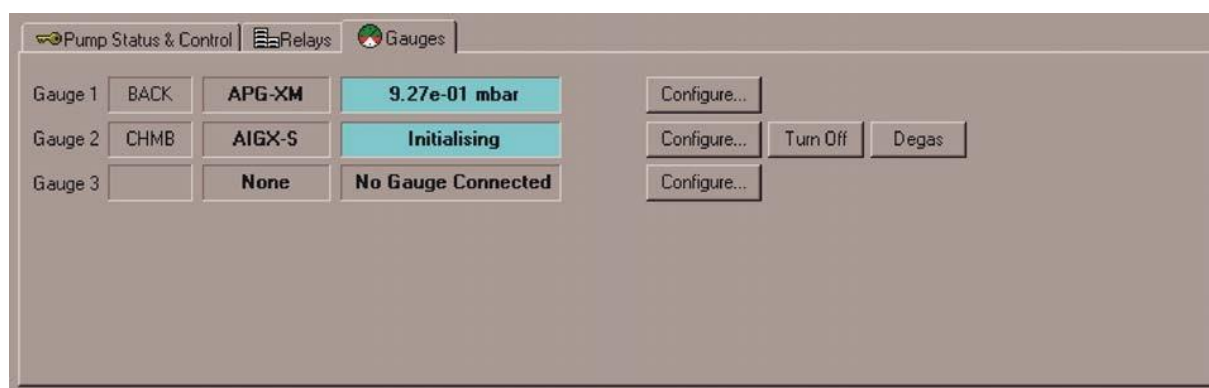
gea/d39711/f3

2.3.2 Gauges

An important function within the TIC is the linking and configuring of gauges. This tab allows quick access to individually configure each gauge. Refer to [Figure 4](#). Other gauges functions appropriate to the gauge such as manually turning on the gauge can be accessed from this screen.

Refer to [Section 3](#) for detailed linking and configuring information.

Figure 4 - Gauges tab



Gea/39711/004

2.3.3 Relays

An important function within the TIC is the linking and configuring of relays. This tab allows quick access to individually configure each relay. Refer to [Figure 5](#). The relays can be manually controlled from this screen.

Refer to [Section 3](#) for detailed linking and configuring information.

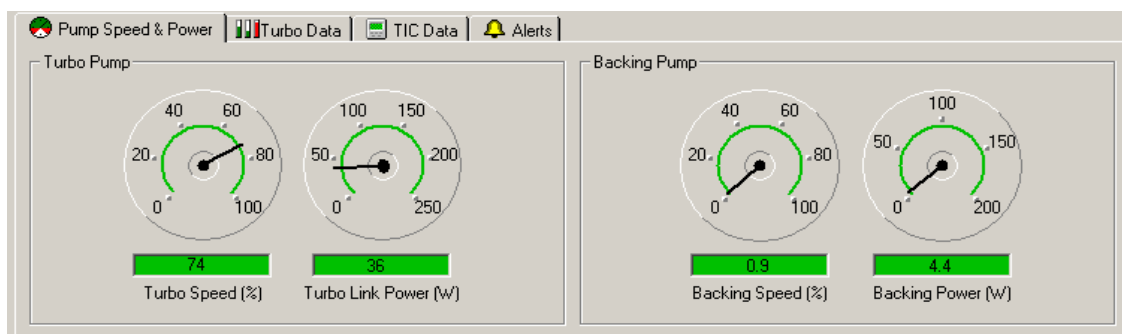
Figure 5 - Relays tab



Gea/39711/005

2.3.4 Pump speed and power

Figure 6 - Pump speed and power tab



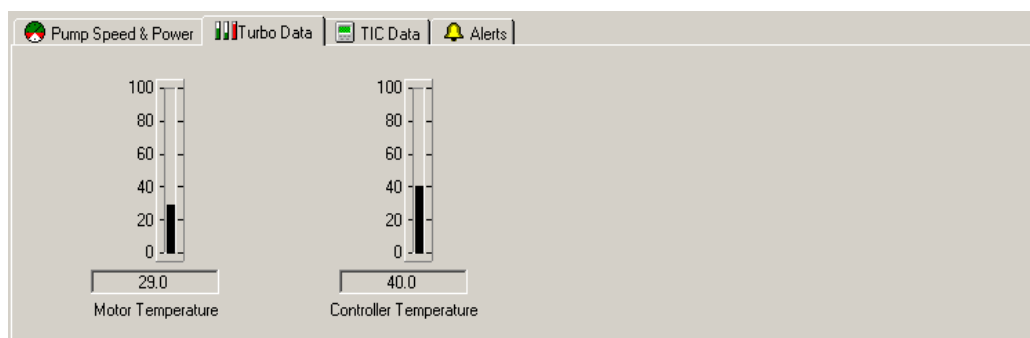
gea/d39711/f6

The lower half of [Figure 2](#) shows the pump speed and power tab. Useful information about the speed and power of the attached pumps is shown here.

2.3.5 Turbo data

[Figure 7](#) shows the additional data obtained when a DX or nEXT turbo pump is connected.

Figure 7 - Turbo data tab

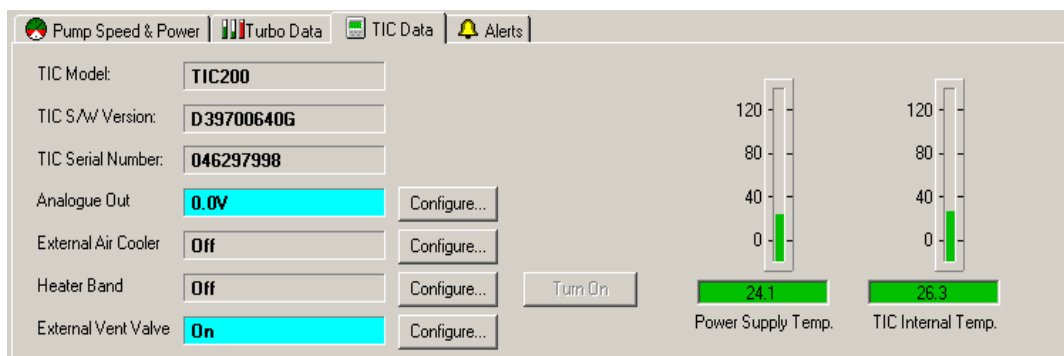


gea/d39711/f7

2.3.6 TIC data

Figure 8 shows the TIC data tab. This tab can be used to gather information about the status of the system.

Figure 8 - TIC data

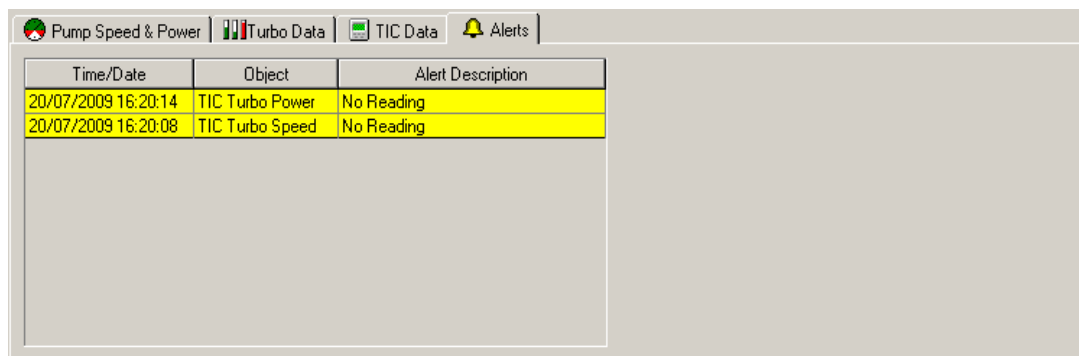


gea/d39711/f8

2.3.7 Alerts

Figure 9 shows the Alerts tab. Any alerts that occur during operation, that have not already been cleared, will appear on this screen. All of the alerts can be viewed here but they can only be cleared manually through the controller. Refer to the appropriate TIC manual for instructions on how to clear alerts.

Figure 9 - Alerts tab



| Time/Date | Object | Alert Description |
|---------------------|-----------------|-------------------|
| 20/07/2009 16:20:14 | TIC Turbo Power | No Reading |
| 20/07/2009 16:20:08 | TIC Turbo Speed | No Reading |

gea/d39711/f9

3 Configuring gauges and relays

Follow the procedure below, to configure gauges or relays:

1. Go to the Relays or Gauges tab as appropriate.
2. Click on the 'Configure' button that corresponds to the gauge or relay that you desire to change. The screen shown in [Figure 10](#) will appear.
3. Click on the 'Request ALL Parameters' button. This function retrieves all of the information about each individual item from the TIC.
4. Click on the desired item from the list and a set of fields will appear, for that item, on the right of this screen. These fields can then be altered according to the changes that are desired.

Note: Pressure values used in the configuration setup will be in Pascals.

3.1 Slaving a gauge or a relay

After requesting all of the parameters, a gauge/relay can be slaved to another item. This is done in a similar way as on the TIC (refer to the TIC Main Manual Part No. D397-22-880), except for the master and enable fields.

- The master is a number that corresponds to an item (e.g. 914 corresponds to gauge 2). The full list can be found in the Serial Communications Manual (Part No. D397-30-880).
- The slaving that has been set, is enabled by simply changing the 0 to a 1.
- The setpoints and units are changed in the same way as on the TIC.

When the data has been altered, click on the 'Send Selected Parameter' button, instructing the TIC to change the parameters as per the changes just made.

If it was sent and received correctly, the source will change from 'system' to 'edited' and in the 'sent status' column will be 'sent ok'.

If it was not sent or received correctly, the data that was changed will need to be checked to make sure that there are no errors.

3.2 Saving and opening a configuration

When the TIC has been configured to your specifications, the parameters can be saved. This means that instead of changing the parameters every time the TIC is switched on, a file can be opened with the correct parameter settings for your application.

3.2.1 Saving a configuration

To save a specific configuration for use at a later date, follow the procedure below:

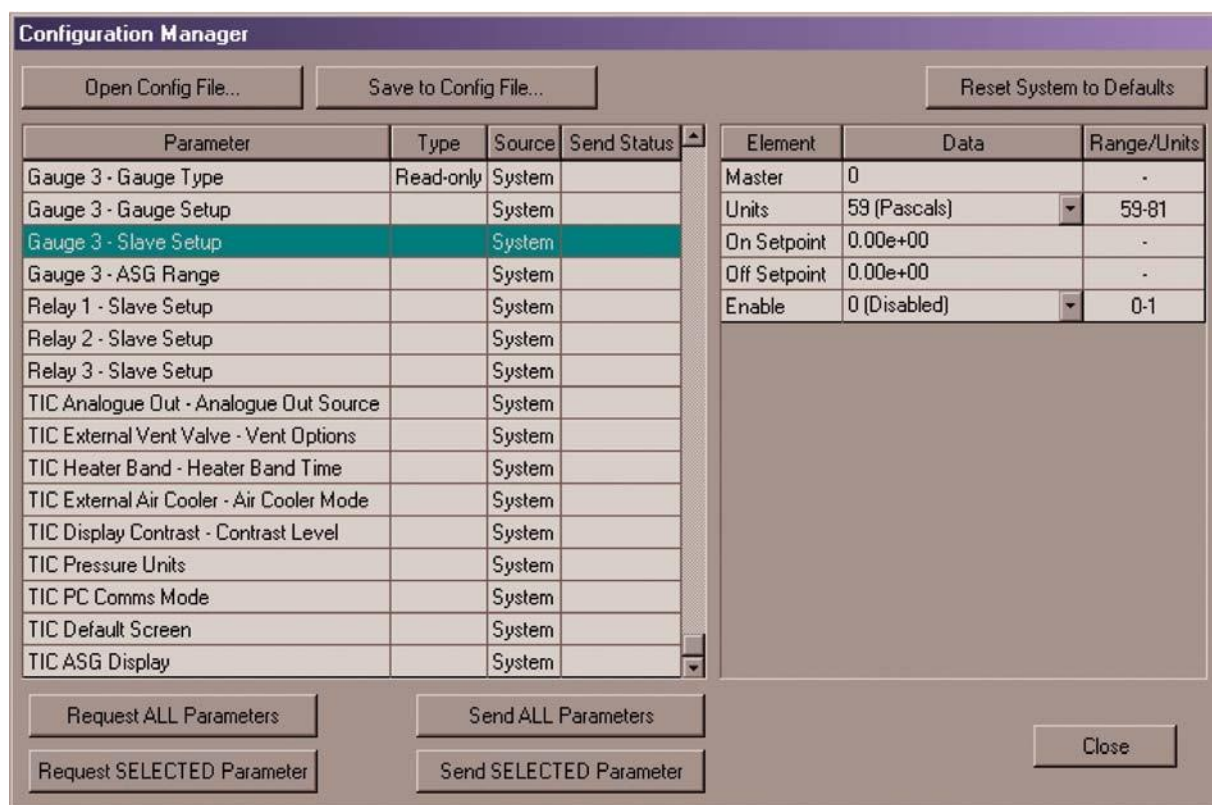
1. Click on the 'Save to Config File' button and a Windows Explorer type screen will appear.
2. Navigate the system to a folder where you would like to save the configuration file.
3. Re-name the file to a suitable name for the application (e.g. Test Case).
4. Click on the 'Save' button and the file will be saved.

3.2.2 Opening a configuration

To open a saved configuration, follow the procedure below:

1. Open the configuration screen (refer to Figure 10) and click on the 'Open Config File' button. A Windows Explorer type screen opens.
2. Navigate the system to the folder that the configuration file was saved in and open it.
3. Double click on the desired configuration file to open it.
4. All or selected parameters can now be sent to the TIC.

Figure 10 - Configuration screen



| Parameter | Type | Source | Send Status |
|---|-----------|--------|-------------|
| Gauge 3 - Gauge Type | Read-only | System | |
| Gauge 3 - Gauge Setup | | System | |
| Gauge 3 - Slave Setup | | System | |
| Gauge 3 - ASG Range | | System | |
| Relay 1 - Slave Setup | | System | |
| Relay 2 - Slave Setup | | System | |
| Relay 3 - Slave Setup | | System | |
| TIC Analogue Out - Analogue Out Source | | System | |
| TIC External Vent Valve - Vent Options | | System | |
| TIC Heater Band - Heater Band Time | | System | |
| TIC External Air Cooler - Air Cooler Mode | | System | |
| TIC Display Contrast - Contrast Level | | System | |
| TIC Pressure Units | | System | |
| TIC PC Comms Mode | | System | |
| TIC Default Screen | | System | |
| TIC ASG Display | | System | |

| Element | Data | Range/Units |
|--------------|--------------|-------------|
| Master | 0 | - |
| Units | 59 (Pascals) | 59-81 |
| On Setpoint | 0.00e+00 | - |
| Off Setpoint | 0.00e+00 | - |
| Enable | 0 (Disabled) | 0-1 |

dcs/0145/008

Note: When saving, a Windows Explorer type screen will appear.

4 Data logging

Data logging is a very useful facility within the TIC PC Program. It enables the user to log specific data that the TIC collects from the attached items.

This data is in the form of a table when viewed from within the PC Program. It can also be accessed through Microsoft Excel, allowing the user to manipulate the data with the facilities available in this package.

4.1 Logging data

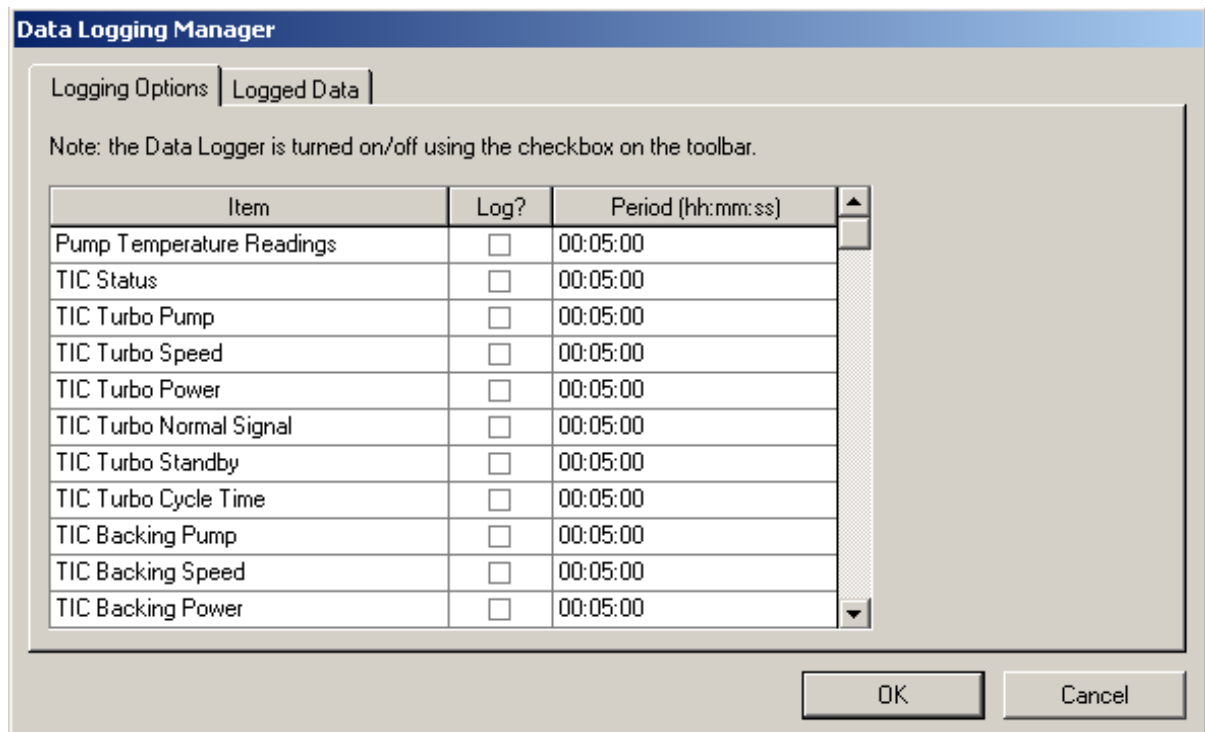
Note: Pressure values used in data logging will be in Pascals.

Note: Logging is only available when programme is running.

Use the following procedure to be able to log data that is specific to your application:

1. Click on the 'Utilities' menu at the top left of the screen and then on data logging. [Figure 11](#) shows the data logging screen that will open.
2. Click in the tick boxes of the item(s) that you would like to log.
3. In the 'Period' column, change the time period to represent the sampling interval for that particular item.
4. Click on the 'OK' button to accept the data that has been entered.
5. Click in the 'Activate Data Logger' tick box at the top of the screen.

Figure 11 - Data logging screen



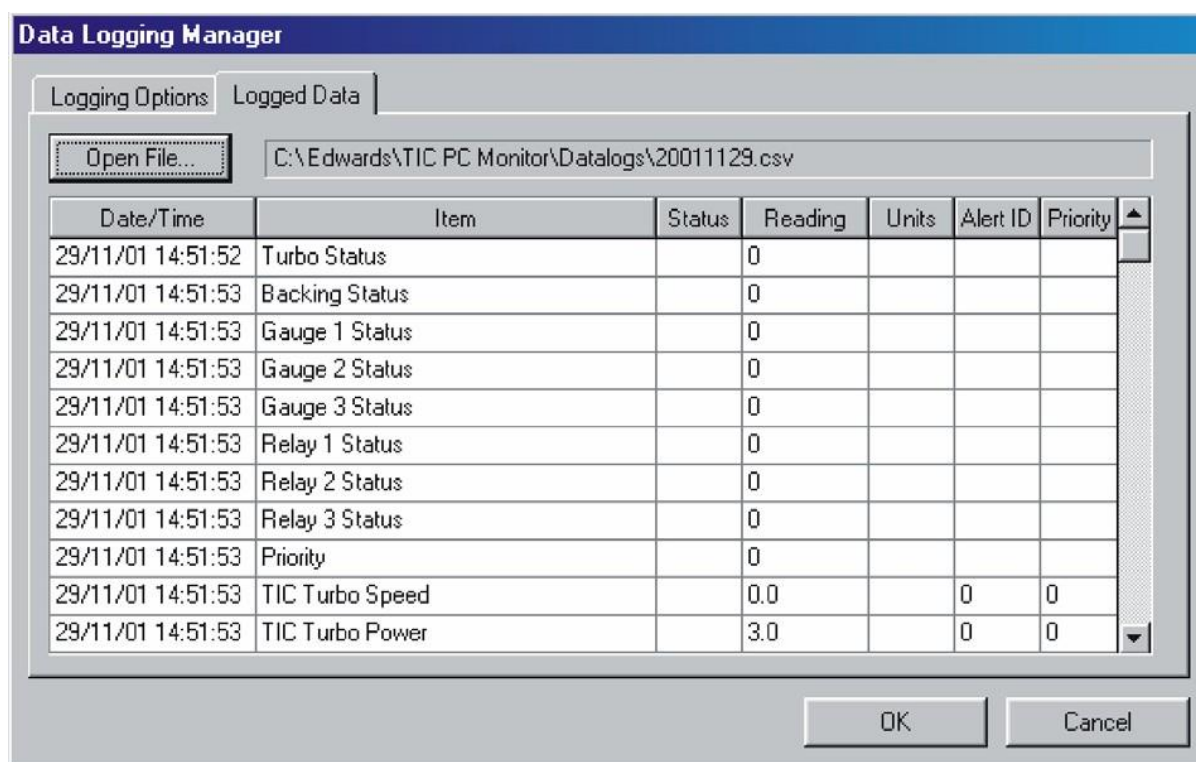
gea/d39711/f11

4.2 Viewing the logged data

Follow the procedure below to view the data that has been logged.

1. Open the data logging screen as in [Section 4.1](#).
2. Click on the 'Logged Data' tab to open the screen shown in [Figure 12](#).
3. Click on the 'Open File' button and a Windows Explorer type screen opens.
4. Double click on the log file that you would like to view. Log Files are titled by the date that they were started (e.g. 20011207.csv).
5. The logged data from that file will then be shown in the window.

Figure 12 - Viewing logged data



dcs/0123/009

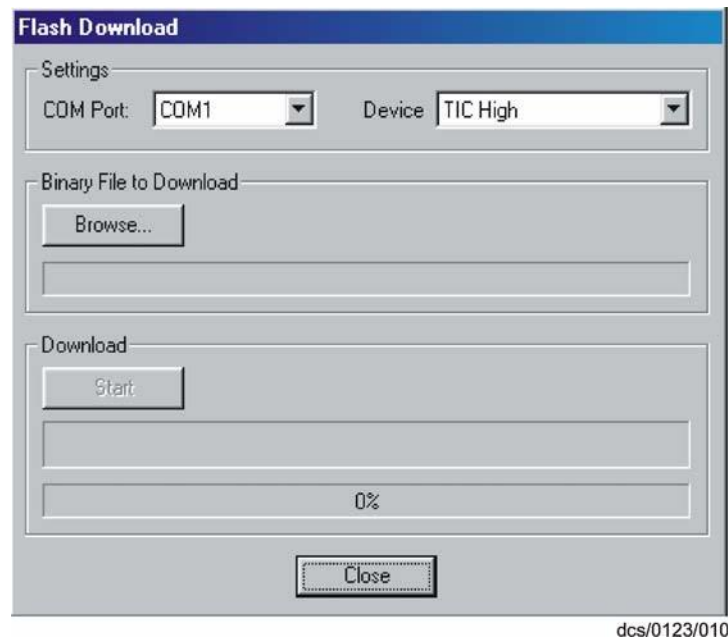
5 Flash download

Note: Instruction manuals and the latest TIC software are available to download at: www.upgrades.edwardsvacuum.com

The software within the TIC may be upgraded in the future. The Flash Download function will allow you to download this new software from the Web or maybe an e-mail, so that the need to buy a complete new controller will be unnecessary. The following procedure should be used to download any new software.

1. Click on the 'Utilities' menu and then onto 'Flash Download'. Figure 13 shows the screen that will appear.
2. Firstly, select the Communications port that the connection to the TIC is made through.
3. Click on the device pull down menu. Here will be a list of options allowing a fast download, slow download or download directly to an EXT75DX. The download time for each option is as follows:
 - TIC56K will take between 3 and 4 minutes.
 - TIC9K6 will take 20+ minutes.
 - EXT75DX will take less than a minute.
4. Then browse to the '.Bin' file that is to be downloaded.
5. Then click on 'Start' and the download of the new software will begin. The percentage bar at the bottom gives an indication of the progress of the download.
6. When the download is complete, click on the 'close' button and the TIC will now have new software.

Figure 13 - Flash download



Note: The TIC PC Program does not support flash download to the nEXT range of Turbo pumps.

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Numerics

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Return of Edwards Equipment - Procedure

INTRODUCTION

Before returning your equipment, you must warn Edwards if substances you used (and produced) in the equipment can be hazardous. This information is fundamental to the safety of our Service Centre employees and will determine the procedures employed to service your equipment.

Complete the Declaration (HS2) and send it to Edwards before you dispatch the equipment. It is important to note that this declaration is for Edwards internal use only, and has no relationship to local, national or international transportation safety or environmental requirements. As the person offering the equipment for shipment, it is your responsibility to ensure compliance with applicable laws.

GUIDELINES

- Equipment is '**uncontaminated**' if it has not been used, or if it has only been used with substances that are not hazardous. Your equipment is '**contaminated**' if it has been used with any substances classified as hazardous under EU Directive 67/548/EEC (as amended) or OSHA Occupational Safety (29 CFR 1910).
- If your equipment has been used with radioactive substances, biological or infectious agents, mercury, polychlorinated biphenyls (PCB's), dioxins or sodium azide, you must decontaminate it before you return it to Edwards. You must send independent proof of decontamination (for example a certificate of analysis) to Edwards with the Declaration (HS2). Phone Edwards for advice.
- If your equipment is contaminated, you must either:
 - Remove all traces of contamination (to the satisfaction of laws governing the transportation of dangerous/hazardous substances).
 - Or, properly classify the hazard, mark, manifest and ship the equipment in accordance with applicable laws governing the shipment of hazardous materials.

Note: Some contaminated equipment may not be suitable for airfreight.

PROCEDURE

1. Contact Edwards and obtain a Return Authorisation Number for your equipment.
2. Complete the Return of Edwards Equipment - Declaration (HS2).
3. If the equipment is contaminated, you must contact your transporter to ensure that you properly classify the hazard, mark, manifest and ship the equipment, in accordance with applicable laws governing the shipment of contaminated/hazardous materials. As the person offering the equipment for shipment, it is your responsibility to ensure compliance with applicable law. **Note: Equipment contaminated with some hazardous materials, such as semiconductor by-products, may not be suitable for airfreight - contact your transporter for advice.**
4. Remove all traces of hazardous gases: pass an inert gas through the equipment and any accessories that will be returned to Edwards. Where possible, drain all fluids and lubricants from the equipment and its accessories.
5. Seal up all of the equipment's inlets and outlets (including those where accessories were attached) with blanking flanges or, for uncontaminated product, with heavy gauge tape.
6. Seal equipment in a thick polythene/polyethylene bag or sheet.
7. If the equipment is large, strap the equipment and its accessories to a wooden pallet. If the equipment is too small to be strapped to a pallet, pack it in a suitable strong box.
8. E-mail via scan, fax or post a copy of the original with signature of the Declaration (HS2) to Edwards. The Declaration must arrive before the equipment.
9. Give a copy of the Declaration (HS2) to the transporter. You must tell your transporter if the equipment is contaminated.
10. Seal the original Declaration in a suitable envelope: attach the envelope securely to the outside of the equipment package, in a clear weatherproof bag.
WRITE YOUR RETURN AUTHORISATION NUMBER CLEARLY ON THE OUTSIDE OF THE ENVELOPE OR ON THE OUTSIDE OF THE EQUIPMENT PACKAGE.

Return of Edwards Equipment - Declaration

Return Authorisation Number:

You must:

- Know about all of the substances which have been used and produced in the equipment before you complete this Declaration
- Read the Return of Edwards Equipment - Procedure (HS1) before you complete this Declaration
- Contact Edwards to obtain a Return Authorisation Number and to obtain advice if you have any questions
- Send this form to Edwards before you return your equipment as per the procedure in HS1

SECTION 1: EQUIPMENT

Manufacturer's Product Name _____

Manufacturer's Part Number _____

Manufacturer's Serial Number _____

Has the equipment been used, tested or operated?

YES ☐ Go to Section 2 NO ☐ Go to Section 4

IF APPLICABLE:

Tool Reference Number _____

Process _____

Failure Date _____

Serial Number of

Replacement Equipment _____

SECTION 2: SUBSTANCES IN CONTACT WITH THE EQUIPMENT

Are any substances used or produced in the equipment:

- Radioactive, biological or infectious agents, mercury, poly chlorinated biphenyls (PCBs), dioxins or sodium azide? (if YES, see Note 1) YES ☐ NO ☐
- Hazardous to human health and safety? YES ☐ NO ☐

Note 1: Edwards will not accept delivery of any equipment that is contaminated with radioactive substances, biological/infectious agents, mercury, PCB's, dioxins or sodium azide, unless you:

- Decontaminate the equipment
- Provide proof of decontamination

YOU MUST CONTACT EDWARDS FOR ADVICE BEFORE YOU RETURN SUCH EQUIPMENT

SECTION 3: LIST OF SUBSTANCES IN CONTACT WITH THE EQUIPMENT

| Substance name | Chemical Symbol | Precautions required (for example, use protective gloves, etc.) | Action required after a spill, leak or exposure |
|----------------|-----------------|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

SECTION 4: RETURN INFORMATION

Reason for return and symptoms of malfunction: _____

If you have a warranty claim: • who did you buy the equipment from? _____

• give the supplier's invoice number _____

SECTION 5: DECLARATION

Print your name: _____ Print your job title: _____

Print your organisation: _____

Print your address: _____

Telephone number: _____ Date of equipment delivery: _____

I have made reasonable enquiry and I have supplied accurate information in this Declaration. I have not withheld any information, and I have followed the Return of Edwards Equipment - Procedure (HS1).

Signed: _____ Date: _____

Note: Please print out this form, sign it and return the signed form as hard copy.

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EUROPE/UNITED KINGDOM

Manor Royal
Crawley
West Sussex, RH10 9LW
Tel:
Office +44 (0) 1293 528844
Sales & Service 08459 21 22 23
Fax:
Office +44 (0) 1293 533453
Sales & Service
+44 (0) 1293 534149

AMERICAS

One Edwards Park
301 Ballardvale Street
Wilmington, MA 01887
Tel +1 978 658 5410
Fax +1 978 658 7969
Toll Free (USA only):
Tel 1800 848 9800

CANADA

5860 Chedworth Way
Mississauga, Ontario
Canada, L5R 0A2
Tel +1 800 387 4076
Fax +1 905 501 1225

BRAZIL

Rua Bernado Wrona 222
02710 São Paulo-SP
Brazil
Tel +55 11 3952 5000
Fax +55 11 3965 2766

GERMANY

Ammerthalstraße 36
85551 Kirchheim
Munich
Tel:
Sales 0 800 000 14 56
Service 0 800 000 14 57
Fax:
Office +49 89 99 19 18 99
Sales & Service
+49 89 99 19 18 88

ITALY

Via Carpaccio 35
20090 Trezzano sul Naviglio
Milan
Office +39 02 48 4471
Sales +39 02 48 447242
Service +39 02 48 447217
Fax +39 02 48 401638

FRANCE

125 Avenue Louis Roche
92238 Gennevilliers, Cedex
Paris
Tel:
Office +33 1 47 98 24 01
Sales +33 1 41 21 12 45
Service +33 1 41 21 12 45
Fax:
Office +33 1 47 98 44 54
Sales & Service
+33 1 41 21 12 38

BELGIUM

Bergensesteenweg 709
B1600 Sint-Pieters-Leeuw
Brussels
Tel +32 2 363 0030
Fax +32 2 363 0064

INDIA

203 Surya Kiran Building
19 Kasturba Gandhi Marg
New Delhi - 110 001
India
Tel +91 11 4151 0065
Fax +91 11 4151 0245

ISRAEL

5 Habarzel Blvd
Gat 2000 Industrial Zone
Qiryat Gat 82000
Tel +972 8 681 0633
Fax +972 8 681 0640

CHINA

23 Fu Te Road(N),
Wai Gao Qiao Free Trade Zone
Pudong, Shanghai,
200131, China
Tel +86 21 5866 9618
Fax +86 21 5866 9993

JAPAN

1078-1, Yoshihashi
Yachiyo-shi, Chiba
Japan, 276-8523
Tel +81 47 458 8831
Fax +81 47 458 8835

SINGAPORE

42 Loyang Drive
Loyang Industrial Estate
Singapore 508962
Tel +65 6546 8408
Fax +65 6546 8407

TAIWAN

No. 434 Chung-Hwa Road
Toufen Town, Miaoli County
351 Taiwan
Tel +886 37 611422
Fax +886 37 611401

KOREA

Daewoo Engineering Building
5th Floor
9-3 Sunae-dong
Bundang-gu, Sungnam City
Kyungki-do, Korea
Tel +82 31 716 7070
Fax +82 31738 1001

AUSTRALIA

1688 Ipswich Road
Rocklea Qld, 4106
Australia
Tel +61 4 0199 1193
Fax +61 2 9886 9249

PLEASE CONTACT ANY OF THE ABOVE FOR DETAILS OF OTHER SALES AND SERVICE CENTERS IN YOUR AREA.

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www.edwardsvacuum.com
info@edwardsvacuum.com

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Return the equipment or components for service

Before you send your equipment to us for service or for any other reason, you must send us a completed Declaration of Contamination of Vacuum Equipment and Components - Form HS2. The HS2 form tells us if any substances found in the equipment are hazardous, which is important for the safety of our employees and all other people involved in the service of your equipment. The hazard information also lets us select the correct procedures to service your equipment.

We provide instructions for completing the form in the Declaration of Contamination of Vacuum equipment and Components - Procedure HS1.

If you are returning a vacuum pump, note the following:

- If a pump is configured to suit the application, make a record of the configuration before returning the pump. All replacement pumps will be supplied with default factory settings.
- Do not return a pump with accessories fitted. Remove all accessories and retain them for future use.
- The instruction in the returns procedure to drain all fluids does not apply to the lubricant in pump oil reservoirs.

Download the latest documents from www.edwardsvacuum.com/HSForms/, follow the procedure in HS1, fill in the electronic HS2 form, print it, sign it, and return the signed copy to Edwards.

Note: *If we do not receive a completed HS2 form, we will not accept the return of the equipment.*

