Instruction Manual

USB Interface Cable
(Small GV Pumps)

Description	Item Number
USB Interface Cable	D398-01-810

Declaration of Conformity

We, Edwards,
Innovation Drive,
Burgess Hill,
West Sussex,
RH15 9TW, UK

declare under our sole responsibility, as manufacturer and person within the EU authorised to assemble the technical file, that the product(s)

USB Interface Cable (Small GV Pumps)	D398-01-810

to which this declaration relates is in conformity with the following standard(s) or other normative document(s)

EN55032:2015 Class B	Electromagnetic compatibility of multimedia equipment. Emission requirements.
EN55024:2010 + A1:2015	Information technology equipment. Immunity characteristics. Limits and methods of measurement.

and fulfils all the relevant provisions of

2014/30/EU	Electromagnetic Compatibility (EMC) Directive
2012/19/EU	Waste from Electrical and Electronic Equipment (WEEE) Directive
2011/65/EU	Restriction of Certain Hazardous Substances (RoHS) Directive

Note: This declaration covers all product serial numbers from the date this Declaration was signed onwards.

L G Marini

Mr Larry Marini, Senior Technical Manager

21.08.2017, Eastbourne

Date and Place

This product has been manufactured under a quality system registered to ISO9001

Contents

Section — Page

For return of equipment, complete the HS Forms at the end of this manual.

Illustrations

Figure — Page

Tables

Table — Page

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Contents

Associated Publications

Publication title	Publication number
nXDS Scroll Pump Instruction Manual	A735-01-880
nXDS Serial Comms Interface Instruction Manual	A735-01-860
nEXT Turbo Pump Instruction Manual	B800-00-880
Vacuum Pump and Vacuum System Safety	P400-40-100

1 Introduction

1.1 Scope and definitions

This manual provides installation, operation and maintenance instructions for the use of the following Edwards interface kit:

- D398-01-810 USB Interface Cable
  - to connect a PC/Laptop's USB port to an Edwards nEXT or nXDS pump.

Read this manual before you install and operate either of these kits. Important safety information is highlighted as WARNING and CAUTION instructions; you must obey these instructions. The use of WARNINGS and CAUTIONS is defined below.

WARNING

Warnings are given where failure to observe the instruction could result in injury or death to people.

CAUTION

Cautions are given where failure to observe the instruction could result in damage to the equipment, associated equipment and process.

The following IEC warning label appears on Edwards equipment:

Warning - refer to accompanying documentation.

Edwards offer European customers a recycling service.

The units used throughout this manual conform to the SI international system of units of measurement.

1.2 Description

This USB Interface Cable enables the user to be able to connect an Edwards nEXT or nXDS pump to the USB port on a PC/Laptop and serially communicate with it, whilst also still being able to provide parallel control to the pump from a TIC, TAG or the users own control system.

Figure 1 - USB Interface Cable

The USB Interface Cable is manufactured into a Y-cable assembly.

The central, 15-way, dual-entry, D-type socket is connected to the pump.

The USB branch of the Y-cable, which contains an USB-RS232 serial converter manufactured by FTDI, connects to the USB port on a PC/Laptop, providing serial communication to control and monitor the pump.

The 15-way, single-entry, D-type plug branch of the Y-cable enables the user to connect the pump to a TIC, TAG or the user's own control system, providing parallel communication to control and monitor the pump. This 15-way, single-entry, D-type plug branch of the Y-cable also provides power to the nEXT range of pumps and consequently it is a necessity; for the nXDS range of pumps, which are mains powered, this branch of the Y-cable does not provide power to the pump and consequently it is optional.

The primary purpose for this USB Interface Cable is to allow an Edwards nEXT or nXDS pump to be supported using various Edwards PC software tools such as nST (nEXT nXDS Support Toolkit) and others. So, the final component of this kit is P45000000, an Edwards instruction manual CD-ROM containing FTDI USB drivers for the Windows operating-system (along with this instruction manual).

Note: *The CD-ROM does not contain the actual Edwards PC software support tools, which must be acquired separately. Some of those software tools may be available for Edwards' internal use only.*

2 Technical data

The active part of the D398-01-810 USB Interface Cable is a USB adapter cable assembly manufactured by FTDI: their part number is USB-RS232-WE-1800-BT.

Figure 2 - USB adapter cable assembly

2.1 Electrical

USB powered, +5 V d.c. from the PC

15 mA operating supply current

USB 2.0 full speed compatible

USB Type A male connector

Pin 1: VCC (+5 V d.c.)

Pin 2: Data-

Pin 3: Data+

Pin 4: Ground

2.2 Operating temperature

0°C to 40°C

3 Installation

3.1 Unpack and inspect

CAUTION

Do not use this PC interface kit if it is damaged.

Remove all packing materials and check the contents. If any item is damaged, notify your supplier and the carrier within three days; state the relevant PC interface kit Item Number together with your order number and your supplier's invoice number.

Check that you have received the items listed for the relevant PC interface kit. If any item is missing, notify your supplier in writing within three days.

Table 1 - D398-01-810 USB Interface Cable contents

Quantity	Description	Check
1	D39801810	USB Interface Cable
1	P45000000	Edwards Instruction Manual CD ROM

3.2 Install the USB Interface Cable

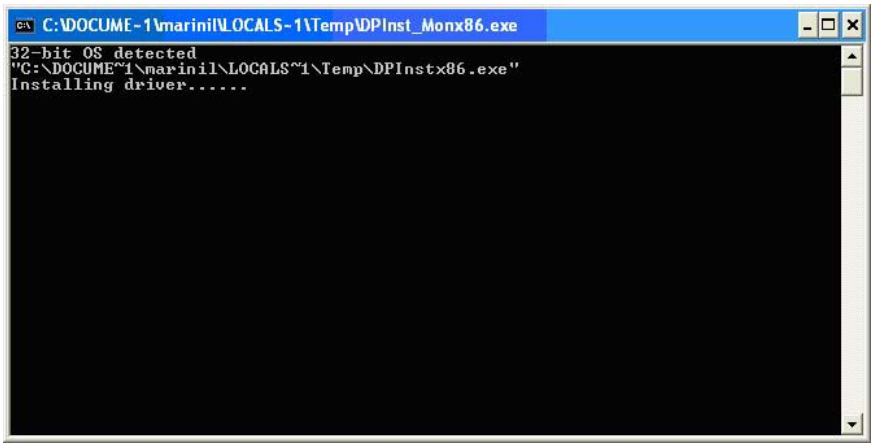
Note: *You must install the FTDI USB driver software from the CD-ROM before you connect the D39801810 USB Interface Cable to your PC/Laptop.*

The instruction manual CD-ROM contains the required FTDI driver software for the Windows XP and Windows 7 operating systems, both 32-bit and 64-bit versions. Edwards PCs generally have Windows XP 32-bit installed but from January 2012 new Edwards PCs will come with Windows 7 64-bit installed. Non-Edwards users must supply their own PC.

Follow these steps precisely:

1. Install the FTDI USB driver by inserting the P45000000 instruction manual CD-ROM into your PC/Laptop and then navigating to the "Software" folder, which is contained within the "Autoplay" folder.
2. Double-click the USB driver installation file CDM20814_Setup.exe
3. Click Run on this dialog box.

4. A Windows command window will be displayed briefly while the relevant USB drivers are installed for your particular version of Windows.



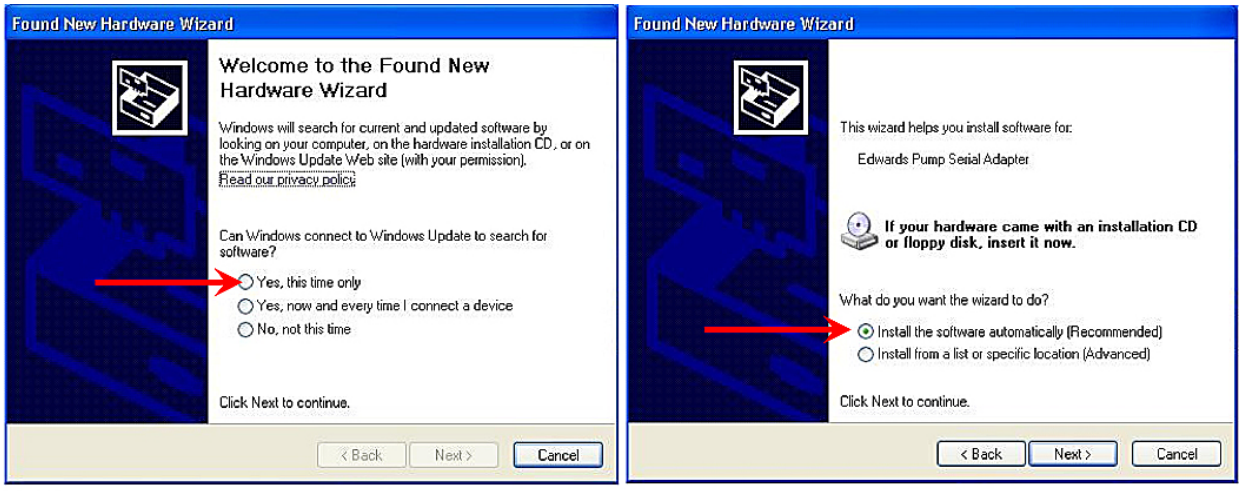
5. Once that command window disappears, the USB drivers have been installed. Then take the D39801810 USB Interface Cable and plug the USB end into any one of the PC's USB ports.

6. The Windows "Found New Hardware Wizard" should appear after Windows detects the USB Interface Cable.

   The Wizard may ask if you want to connect to Windows Update; select "Yes this time only" and click "Next".

   Then it will ask "What do you want the wizard to do?"; select "Install the software automatically (Recommended) and click "Next".

   It may then take a while checking the windows update website for an update driver; wait until it is complete.



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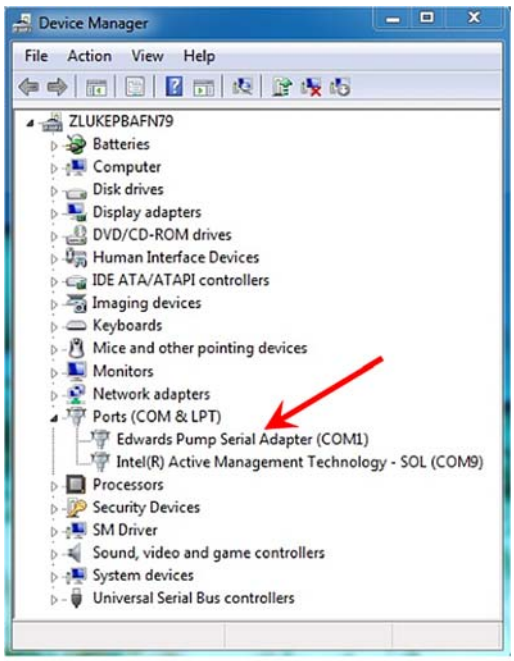
7. You may briefly see messages pop up indicating that Windows has sensed the new USB device has been plugged in and, after a short delay, confirming that the device is now ready for use.

8. Once Windows has recognised the new USB device is plugged in and has confirmed it is ready for use, find out what COM port number has been assigned by Windows to your new USB Interface Cable, by navigating to Device manager.

   WIN XP: - **Start | Control Panel | System | Hardware | Device Manager**

   WIN 7: - **Start | Control Panel | Hardware and Sounds | Device manager**



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In this example, Windows has designated the USB Interface Cable as COM port 1, but your system is likely to assign a different COM port number. Make a note of the COM port number, for use later when configuring the communications settings of Edwards PC software support tools or the users own PC/Laptop software tool.

9. Now the remaining 15-way D-type connectors can be connected to an Edwards nEXT or nXDS pump and either an Edwards TIC or TAG or the users own control system.

   See Section 4 details of how to connect the USB Interface Cable to an Edwards nEXT or nXDS pump.

4 Operation

WARNING

When installing the USB Interface Cable, ensure that all cables are laid out and secured in a manner that will not create a trip hazard.

4.1 Connecting to an nEXT pump

1. Connect the central, 15-way, dual-entry, D-type socket on the USB Interface Cable to the 15-way D-type plug on the flying lead of the nEXT pump.

2. Connect the 15-way, single-entry, D-type plug on the USB Interface Cable to the 'Turbo' port on the rear of a TIC or TAG or to the 'Turbo' connection of the user's own control system. The TIC and TAG both provide the required power to operate the nEXT pump. If the user's own control system is being utilised, then it must provide the required power to operate the nEXT pump (See B800-00-880 nEXT instruction manual for power requirements).

3. Connect the USB plug on the USB Interface Cable to an available USB port on the user's PC/Laptop.

4.2 Connecting to an nXDS pump

1. Connect the central, 15-way, dual-entry, D-type socket on the USB Interface Cable to the 15-way D-type plug on the front panel of the nXDS pump.

2. The nXDS pump does not need power to be provided by the USB Interface Cable therefore the following connection is optional.

   Connect the 15-way, single-entry, D-type plug on the USB Interface Cable to the 'Backing' port on the rear of a TIC or TAG or to the 'Backing' connection of the user's own control system.

3. Connect the USB plug on the USB Interface Cable to an available USB port on the user's PC/Laptop.

5 Maintenance

5.1 Inspect the connections

Do the following checks each time you use this interface kit:

- Inspect the cable assembly and check for any signs of damage: e.g. discoloured or deformed insulation, bare wires visible. Repair or replace any damaged cable.
- Inspect each connector and check for any signs of damage: e.g. bent, discoloured or missing pins. Replace any damaged item.
- Inspect all connections and check they are secure. Push home any loose connections and, where available, make use of locking mechanisms.

5.2 Communication problems

If this interface kit does not work then check the following:

Table 2 - Fault finding the USB Interface Cable

Check	Action
Is the PC on?	Ensure that the electrical supply to the PC is switched on and that the PC itself is switched on.
Has the PC booted up properly?	Ensure that the Windows desktop is displayed on the PC screen and that it is responsive to keyboard and mouse activity.
Is the USB Interface Cable plugged in properly?	Check that the USB Interface Cable is correctly connected to the PC/Laptop's USB port, to the pump's 15-way interface connector and to the TIC or TAG.
Does Windows recognise that the USB Interface Cable is plugged in?	Go to Device Manager (see Section 3.2) in Windows and verify that you can see the "Edwards Pump Serial Adapter (COMn)".
Is the relevant PC software support tool running?	Ensure that nST or FEUU or other relevant software support tool has been launched and is responsive to keyboard and mouse activity.
Has the PC software support tool been configured to use the USB Interface Cable's correct COM port number?	Follow the instructions of the relevant software tool, e.g. nST or FEUU, and confirm that it is configured to use COMn, where n is the same number as seen in the previous check/action.
Do either of the USB Interface Cable LEDs flash when the USB connector is plugged into the PC?	If not, then the USB Interface Cable may be faulty. Try it on a different PC.
Is the pump on?	Ensure that the electrical supply to the pump is switched on.

6 Storage and disposal

6.1 Storage

Re-use or replace any protective packing materials and store the USB Interface Cable in clean dry conditions. When required for use, install the USB Interface Cable as described in Section 3.

6.2 Disposal

Edwards interface kits or any of their components must be disposed of safely in accordance with all local and national safety and environmental requirements.

The USB Interface Cable is within the scope of the European Directive on Waste Electrical and Electronic Equipment, 2002/96/EC. Edwards offers European customers a recycling service for the USB Interface Cable at the end of the product's life. Contact Edwards for advice on how to return the USB Interface Cable for recycling.

7 Abbreviations

CD	Compact Disk
d.c.	Direct current
FEUU	Flash EPROM Upgrade Utility, an Edwards PC software program used to change the software in a pump controller.
FTDI	Future Technology Devices International, the company that designs and manufactures the active part, i.e. the actual USB-RS232 adapter, used in the USB Interface Cable. They also manufacture their own standard USB-RS232 adapters, which Edwards does not supply but Edwards recommends for use with the other interface kits.
LED	Light Emitting Diode
nST	nEXT nXDS Support Toolkit; an Edwards PC software program that provides control, configuration, monitoring and updating functions for the nEXT and nXDS Edwards pumps. nST has replaced the older TIC PC Monitor software tool.
PC	Personal Computer
USB	Universal Serial Bus, the most common connection technology standard used by desktop and laptop PCs, allowing a PC to exchange data with the connected device. The USB standard defines several types of USB connector. Most PCs have two or more Type A USB sockets built-in. The USB Interface Cable has a Type A USB plug, allowing it to be plugged into a PC's USB port.
V	Volts