

# Instruction Manual

## Drypump Profibus Module



Description	Item Number	Description	Item Number
Drypump Profibus Module	D397-52-000		





# Declaration of Conformity

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Crawley,  
West Sussex RH10 9LW, UK

declare under our sole responsibility that the product(s)

Drypump Profibus Module

D397-52-000

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

EN61326-1:2006  
(Industrial location,  
Class B Emissions)

Electrical Equipment for Measurement, Control and Laboratory Use  
- EMC Requirements.

following the provisions of

2004 / 108 / EC

Electromagnetic Compatibility Directive.

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*01-Oct-2008 Eastbourne*

Date and Place

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

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

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# 1 INTRODUCTION

## 1.1 Scope and definitions

This manual provides installation, operation and maintenance instructions for the Edwards Drypump Profibus Module. You must use the Module as specified in this manual.

Read this manual before you install and operate the Module. 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.

Throughout this manual, page, figure or title numbers are sequential.

The following labels appear on the module:



Warning - refer to accompanying documentation.



Edwards offer European customers a recycling service.

## 1.2 Outline description



**WARNING**

Edwards take no responsibility for damage or injury caused by improper use of the equipment.



**WARNING**

This equipment provides remote control of an Edwards Drypump. You must refer to the safety information in the Drypump instruction manual.



**WARNING**

This unit should not be relied upon for safety related functions.

The Drypump Profibus Module provides a Profibus DP V0 slave interface for Edwards drypumps with a PDT (Pump Display Terminal) port. This does not include older pumps with a PDM (Pump Display Module) port. The module communicates with the pump using the RS232 interface. Commands received from the Profibus network are relayed to the pump. Data from the pump is stored in the module and transmitted over the Profibus network when requested. Most drypumps provide the DC power for the module. The front panel of the module has four LEDs which indicate the status of the module and the Profibus network. The Profibus slave address is set using rotary switches. The back panel of the module has a 9-way 'D' connector for the Profibus network, a 9-way 'D' connector for the RS232 link to the drypump and a power connector.



## 2 TECHNICAL DATA

### 2.1 Mechanical data

Weight	0.28 kg
Dimensions	129 x 30.5 x 117 mm

Refer to Section 3.2 for installed dimensions and panel cut-out.

### 2.2 Operating and storage data

Ambient operating temperature	0°C to 40°C
Humidity	Max 90% RH non-condensing
Maximum altitude	2000 m
IP rating	IP30 - indoor use only
Ambient storage temperature	-30°C to 70°C

### 2.3 Electrical data



#### **WARNING**

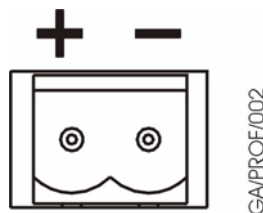
Do not exceed the maximum supply voltage. Excessive supply voltage will cause permanent damage to the control electronics and may result in a mechanical hazard in some failure conditions.

Electrical supply	9 V d.c. to 52 V d.c.
Power consumption	5 W max. Switch on surge 500 mA max.
Fuse	No internal fuse

#### 2.3.1 D.C. Power connector

Connector type	2 Way Receptacle. Mating part is cable-mount Terminal Block. Suitable parts include: Phoenix MSTB 2.5/2-G-5.08; Weidmuller BLZ 5.08/2; Amp 796634-2; IMO 21.950/2 (Refer to <a href="#">Figure 1</a> ).
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Figure 1 - Pin connections for the 2-way Power Connector



2.3.2 Profibus connector

Connector type	9-way 'D' type socket (Refer to Figure 2)
Profibus Data signals	Electrically compliant with RS485 specification. Isolated from chassis.
Profibus Power Supply	10 mA supply (protected) for external terminator resistors if required.
Chassis	For Profibus cable screen connection
Repeater control signal	Digital signal, nominally 0-5 V but with series 340 ohm resistor. High = module transmitting. Low = Receiving or Idle.

Figure 2 - Pin connections for 9-way 'D' type socket

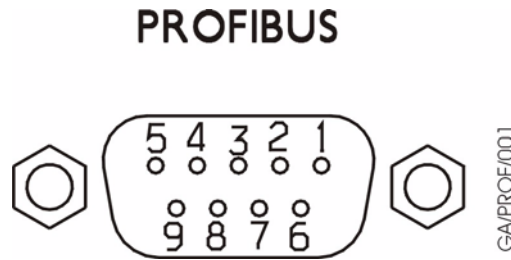


Table 1 - Pin connections for 9-way 'D' type socket

Pin	Allocation
1	Chassis (box)
2	Not connected
3	Profibus Data + (B)
4	Control Signal for Repeater
5	Profibus Data reference (isolated)
6	Profibus 5V output (isolated)
7	Not connected
8	Profibus Data - (A)
9	Not connected
Shell	Chassis (box)

### 2.3.3 RS232 Connector

Connector type	9-way 'D' type Plug (Refer to Figure 3) For connection to serial comms port of SCU-750/1500 Controller only.
RS232 protocol	9600 baud, 1 stop bit, 8 data bits, no parity

Figure 3 - Pin connections for 9-way 'D' type plug

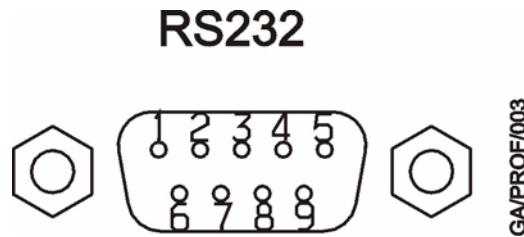


Table 2 - Pin connections for 9-way 'D' type plug

Pin	Allocation
1	Not connected
2	RS232 receive
3	RS232 transmit
4	Not connected
5	RS232 common
6	Not connected
7	Not connected
8	Not connected
9	Not connected
Shell	Chassis (box)

## 3 INSTALLATION

### 3.1 Unpack and inspect

Remove all of the packaging material and check the Module. If the Module is damaged, follow the Edwards return of equipment procedures that are laid out in the back of this manual. Do not use the Module if it is damaged.

Check that your package contains the items that are listed in Table 3. If any of these items are missing, notify your supplier in writing within three days. If the Module is not to be used immediately, store the Module in suitable conditions as described in Section 6.1.

Table 3 - Component checklist

Quantity	Description	Check(✓)
1	Module	<input type="checkbox"/>
1	Instruction Manual	<input type="checkbox"/>
1	Cable for connection between pump PDT port and Profibus Module	<input type="checkbox"/>
2	DIN Rail clips	<input type="checkbox"/>
2	Mounting screws	<input type="checkbox"/>
4	Rubber feet	<input type="checkbox"/>
1	CD (includes GSD file)	<input type="checkbox"/>

### 3.2 Fitting the module

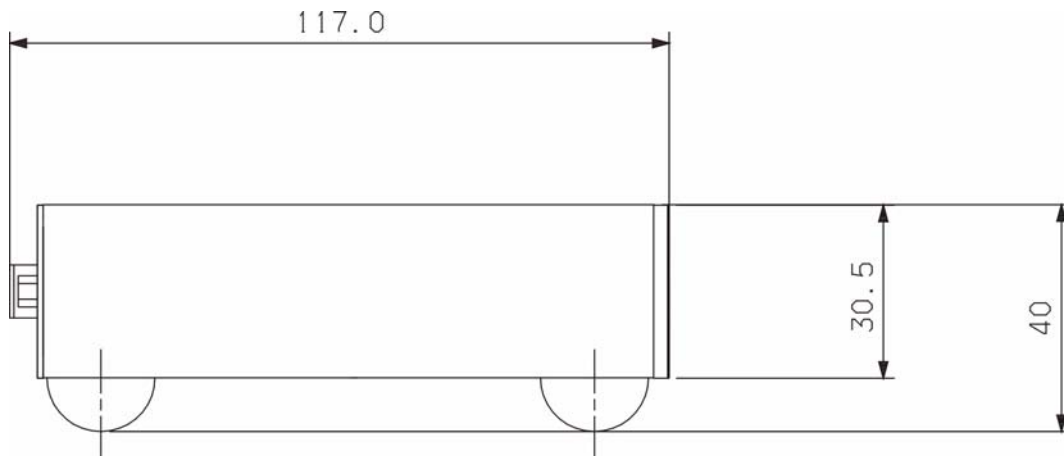
**CAUTION**

The unit is IP30 rated. Please ensure that the unit is not installed where fluids can enter into the Module.

The module can be rack mounted, panel mounted, DIN rail mounted or free-standing. Sufficient space must be provided at the rear of the unit for the cables. If right-angled connectors are used additional space will be required.

If the unit is to be used free-standing it should be laid flat to ensure stability. The four self-adhesive rubber feet can be used to prevent sliding. Figure 4 shows the dimensions of the module with the rubber feet attached.

Figure 4 - Dimensions of the Profibus module (mm)



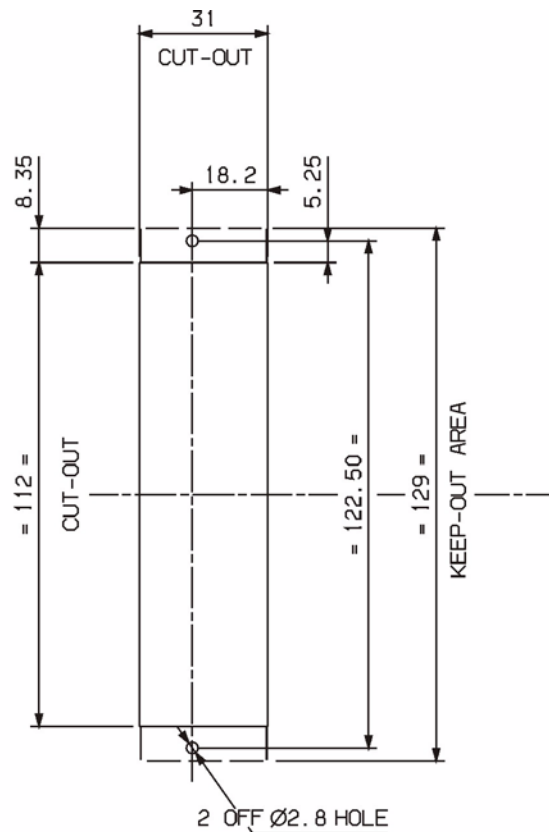
### 3.2.1 Rack mounting

For Rack mounting the unit should be fitted in a space 6HP wide x 3U high, using the 2-off M2.5 screws provided.

### 3.2.2 Panel mounting

For panel mounting cut the aperture in the panel using the dimensions shown in Figure 5. The module can be fixed into the panel with the 2-off M2.5 screws.

Figure 5 - Panel mounting the Module



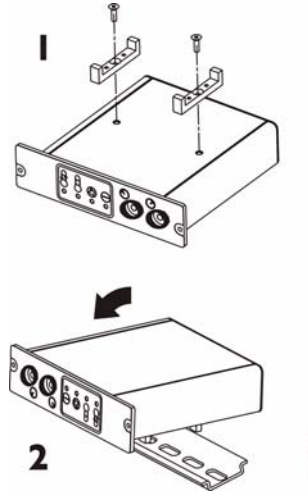
CUT-OUT REQUIRED FOR PROFIBUS MODULE

### 3.2.3 DIN rail mounting

For DIN rail mounting the 2 clips should be attached to the module using 2-off M3 screws provided (one in the centre of each clip), as shown in Figure 6. The clips should then be roughly aligned with the box sides. The clips can then be fitted to a suitable DIN-rail, as shown in Figure 6.

It is recommended to use end stops on a DIN rail system.

Figure 6 - DIN rail mounting the Module



### 3.3 Electrical connections



**WARNING**

When installing the module ensure that the cables are laid out and secured in a manner that will not create a trip hazard.

The Profibus module should not be connected to a Drypump when the tool is "On Process".

The Profibus Module uses a Drypump's PDT port (normally a 5-way XLR socket) for communication with the Drypump. It is not possible to connect any other devices to the same PDT port when that port is used by the Profibus Module for example a PDT.

Some PDT connectors are not able to supply enough power to operate the Profibus module. However for most pump types an alternative power source will be available. See Table 4 below.

Table 4 - Drypump connections

Drypump Type	PDT Port Position	Drypump Connection Ports
iXH	Front	Use Rear PDT Port only
iXH	Rear	PDT Port only (see Section 3.3.1)
iXL (Large)	Front	Use Rear PDT Port only
iXL (Large)	Rear	PDT port only (see Section 3.3.1)
pXH	Front	Use Rear PDT Port only
pXH	Rear	PDT Port only (see Section 3.3.1)
iGX Remote	Front	PDT Port only (see Section 3.3.1)
iGX Remote	Rear	PDT + LON for power (see Section 3.3.2)
iGX Systemable	Either	External Power Required - Contact Edwards for advice
pHMB	Upper	PDT Port only (see Section 3.3.1)
pHMB	Lower	PDT + LON for power (or upper PDT only)
iH	Front	PDT + LON for power (see Section 3.3.2)
iF	Front	PDT + LON for power (see Section 3.3.2)

If the pump has several accessories attached, guidance should be sought from Edwards to ensure the pump is able to provide enough power.

### 3.3.1 Connection to a PDT Port only

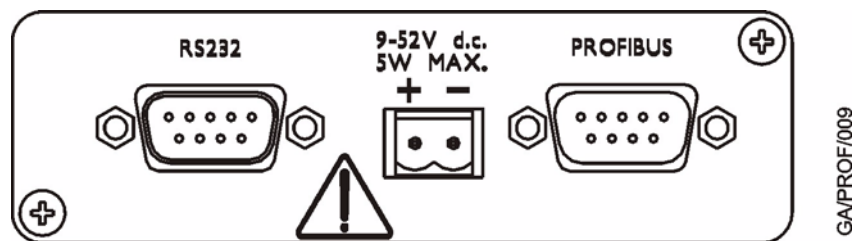
If connecting to a PDT port capable of powering the Profibus module then either use the cable provided in the kit (5m long) or cable length may be increased using 5-way XLR Extension cables. See [Section 7.2](#).

Connect the 9-way D-type free socket and the DC power connector to the Profibus module. Connect the 5-way XLR plug to the Drypump PDT port.

### 3.3.2 Connection to a PDT Port and a LON Port

Where connections to both a PDT socket and a LON socket is required the LON/PDT Power/RS-232 Splitter cable must be used. See [Section 7.2](#). This is to be used with the cable provided in this kit. The 5-way XLR plug of the long cable should be connected to the 5-way XLR socket of the short splitter cable to make one cable assembly. The XLR plugs can then be connected to the pump and the 9-Way D-type and Power connector connected to the Profibus module. Cable length may be increased using 5-way XLR Extension cables. See [Section 7.2](#).

Figure 7 - Profibus module rear connections



## 3.4 Profibus network connection

Standard Profibus network cables and connectors compliant to EN50170 should be used to connect the Edwards Drypump Profibus Module to your system.

Bus-termination is not supplied with the module, but must be used as for a normal Profibus DP system. Bus termination must be used at both ends of the Profibus trunk and not anywhere else. If the module is placed at one end of the trunk a connector containing the standard termination resistors should be used. The appropriate 5V and 0V signals are supplied on the standard pins for this purpose.

# 4 OPERATION

## 4.1 Profibus system information

The Profibus module is for connection to a Profibus DP network and operates as a V0 slave only.

The Profibus master requires a GSD file for each slave. The GSD file for this slave is contained on the CD supplied with the unit and has the file name "EDW0BC2.GSD", which is registered with the Profibus Association.

When configuring your system the "ID" number will be 0BC2 and the unit's description will be "Edwards Drypump".

*Note: The GSD file should not be altered.*

## 4.2 Quick start set up instructions

1. Install the module and connect the cables as described in Section 3.
2. Set the address switches on the Profibus module. See Section 4.4.
3. Apply power (or power cycle the Profibus Module, for example by disconnecting then reconnecting the power connector).
4. Load the GSD file into your Profibus system configurator.
5. Select "Edwards Drypump" as a slave and set the address to match the address switches.
6. Select Module 11 to provide on and off control of the Drypump and select Module 992 to monitor pump alert state. Add other Profibus software modules as required.

## 4.3 Front panel display

Figure 8 - Profibus front panel display

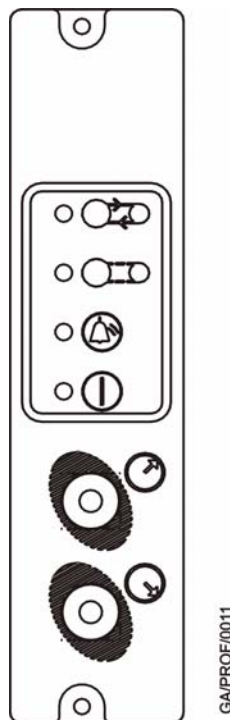




Table 5 - Front panel symbols and their functions

Symbol	Name	Function
	Data exchange	Module is in data exchange as defined by the Profibus standard.
	Off-line	Module is not in data exchange as defined by the Profibus standard.
	Error	ON at the same as Offline LED = Configuration or parameterisation error: Flashing at 1 Hz = Invalid address selected.
	Power	Internal 5 V supply is operating.
	Upper address switch	Sets value of upper nibble of address (Hexadecimal).
	Lower address switch	Sets value of lower nibble of address (Hexadecimal).

## 4.4 Address set-up

The module address can be set from 0 to 125 using the two hexadecimal rotary switches on the front panel. The lower switch defines the lower half of the address byte (nibble) and the upper switch defines the upper half of the address byte. Each node on a Profibus network must have a unique address. The address switches will only be read by the unit at power-up. Any change of address setting after power-up will be ignored until next power-up.

The following table may assist.

Table 6 - Address switch settings

Address in Decimal	Upper switch setting 	Lower switch setting 	Address in Decimal	Upper switch setting 	Lower switch setting 
0	0	0	63	3	F
1	0	1	64	4	0
2	0	2	65	4	1
3	0	3	66	4	2
4	0	4	67	4	3
5	0	5	68	4	4
6	0	6	69	4	5
7	0	7	70	4	6
8	0	8	71	4	7

Table 6 - Address switch settings









Address in Decimal	Upper switch setting 	Lower switch setting 	Address in Decimal	Upper switch setting 	Lower switch setting 
9	0	9	72	4	8
10	0	A	73	4	9
11	0	B	74	4	A
12	0	C	75	4	B
13	0	D	76	4	C
14	0	E	77	4	D
15	0	F	78	4	E
16	1	0	79	4	F
17	1	1	80	5	0
18	1	2	81	5	1
19	1	3	82	5	2
20	1	4	83	5	3
21	1	5	84	5	4
22	1	6	85	5	5
23	1	7	86	5	6
24	1	8	87	5	7
25	1	9	88	5	8
26	1	A	89	5	9
27	1	B	90	5	A
28	1	C	91	5	B
29	1	D	92	5	C
30	1	E	93	5	D
31	1	F	94	5	E
32	2	0	95	5	F
33	2	1	96	6	0
34	2	2	97	6	1
35	2	3	98	6	2
36	2	4	99	6	3
37	2	5	100	6	4
38	2	6	101	6	5
39	2	7	102	6	6
40	2	8	103	6	7
41	2	9	104	6	8
42	2	A	105	6	9
43	2	B	106	6	A
44	2	C	107	6	B
45	2	D	108	6	C

Table 6 - Address switch settings

Address in Decimal	Upper switch setting 	Lower switch setting 	Address in Decimal	Upper switch setting 	Lower switch setting 
46	2	E	109	6	D
47	2	F	110	6	E
48	3	0	111	6	F
49	3	1	112	7	0
50	3	2	113	7	1
51	3	3	114	7	2
52	3	4	115	7	3
53	3	5	116	7	4
54	3	6	117	7	5
55	3	7	118	7	6
56	3	8	119	7	7
57	3	9	120	7	8
58	3	A	121	7	9
59	3	B	122	7	A
60	3	C	123	7	B
61	3	D	124	7	C
62	3	E	125	7	D

**Note:** If the address is set to a value greater than 125 (decimal) the RED error LED will flash at around 1 Hz and the module will go on-line. If this occurs either, change the address and cycle the power or remove power and change the address.

## 4.5 Baud-rate

All 10 standard DP baud-rates are supported. These are: 9.6Kbd; 19.2Kbd; 45.45Kbd; 93.75Kbd; 187.5Kbd; 500Kbd; 1.5Mbd; 3Mbd; 6Mbd; 12Mbd. The unit has no facility for adjusting baud-rate as detection is automatic, and it will therefore respond to the baud-rate chosen by the master.

## 4.6 Software format

The Slave software is based upon a modular configurable architecture so the user has considerable control of the contents of the Data exchange messages.

The software modules (defined in the GSD files) relate to the controller serial communications objects.

When the unit is linked onto the Profibus it will be parameterised and then configured before entering data exchange. The configuration choices are in the GSD file and its comments describe the data content of the input and output bytes. These choices will often be made using a third party configurator such as SyCon that presents a user-friendlier interface.

16-bit values are transmitted with the MSB first and the LSB last.

### 4.6.1 Parameterisation

Only the Profibus mandatory 7 bytes of parameterisation data are used by the Drypump Profibus slave. None of these values can be adjusted by the user.

### 4.6.2 Configuration

During configuration the user can define what modules are required and in which order the data is transferred. The unit simply adds the input and output data bytes to the message maps in the order that they are defined in the configuration message.

Example:

Module = Mod\_A 3 bytes in (Ai1, Ai2, Ai3), 1 byte out (Ao1)  
Module = Mod\_B 2 bytes in (Bi1, Bi2), 2 bytes out (Bo1, Bo2)

A) Configure Mod\_A, Mod\_B gives

Output map: -

Byte1	Byte2	Byte3
Ao1	Bo1	Bo2

Input map:-

Byte1	Byte2	Byte3	Byte4	Byte5
Ai1	Ai2	Ai3	Bi1	Bi2

B) Configure Mod\_B, Mod\_A gives

Output map:-

Byte1	Byte2	Byte3
Bo1	Bo2	Ao1

Input map:-

Byte1	Byte2	Byte3	Byte4	Byte5
Bi1	Bi2	Ai1	Ai2	Ai3

Data is always referred to the Master so output is Control data from Master to Slave and Input data is feedback from Slave to Master. There are many software modules and many bytes of data. Care must be taken in correctly selecting and aligning the data into your system.

### 4.6.3 Diagnostics description

The modules use extended diagnostics in the format below.

Max\_Diag\_Data\_Len = 12

Bytes	1-6	7	8-11	12
Description	Mandatory	No of bytes of extended diagnostics (6)	Not used (values always zero)	Serial comms lost (0=OK, 1=lost)

Loss of serial comms may take up to 20 seconds to be signalled. If this occurs the Slave will signal the Master with a 'Data High' flag in the Frame Control byte but will continue to be in Data Exchange with the data values all set to zero. The extended diagnostics message will be available to the Master.

If RS232 communications are restored the Slave will again signal the Master with a 'Data High' flag in the Frame Control byte and will return to 'good' Data Exchange values. Again the extended diagnostics message will be available to the Master.

#### 4.6.4 Data exchange values

The Edwards Drypump GSD file has been designed to control all types of Edwards Drypumps with a PDT port. This includes:

- Many different pump families (for example iH, iGX, iXH).
- Different pump types (standard Drypumps, Mechanical Boosters and Proximity Boosters).
- Variations of which accessories are fitted (for example gas modules, exhaust and water sensors).

Due to the many possible hardware variations some of the GSD file modules will not be applicable or suitable for a particular pump.

Rather than attempting to define the exact pump configuration before data-exchange (a process that would take several minutes) and signal a configuration error for an inappropriate Profibus configuration selection, the module will accept any configuration and enter data-exchange very quickly. However at the start of data-exchange this means almost no data will actually be available to the Profibus unit and thus not to the Profibus user. Instead a "CONDITION BYTE" is appended to most of the configurable modules. The condition byte indicates whether the data in that module is both present and valid. The condition byte uses bits as status flags. Flags are used for 'Valid Object No.' and 'Valid Reading'. A valid object number indicates the pump has messages for that object number. A valid reading indicates that the object number does not have its "No Reading" flag set. These flags will show condition as invalid (flag bit value of 0) until known to be valid. Thus data exchange will start with the Condition byte status flags set to invalid. The user should ignore all other (preceding) data within that software module until both status flags indicate data is valid.

The condition byte also provides Alarm and Warning bit flags. See below.

Bit No.	Function	Meaning of 0	Meaning of 1
7	Reserved		
6	Reserved		
5	Alarm	No Alarm	Alarm
4	Warning	No Warning	Warning
3	Reserved		
2	Reserved		
1	Valid Reading	Invalid	Valid Reading
0	Valid Object No.	Invalid	Valid Object

Thus a good condition byte will have the value 03 (hex). Data is NOT valid (should be ignored) unless BOTH valid flags are set.

The Warning and Alarm flags may be inhibited in the Drypump setup. In this case a Warning or Alarm will not be indicated over Profibus.

The update rate (latency) varies significantly for different parameters, typically between a second and a minute. In addition a Drypump takes up to 15 secs from power-up before it starts to communicate with peripherals.

## 4.7 Software modules

Terminology: DP=DryPump; MB=Mechanical Booster; PB=Proximity Booster.

Table 7 - Summary of software modules

Module No.	Module Name	No. of Output bytes	No. of Input bytes	Units
990	Pump Family	0	2	-
991	Pump Serial Number	0	17	-
110	Remote/Local State	0	3	-
992	Alert Status	0	4	-
11	Pump Control	1	2	-
14	DP Run Hours	0	3	hrs
20	DP Number of Starts	0	3	-
21	DP Time to Stop	0	3	s
3	DP Current	0	3	0.1A
4	DP Power	0	3	0.1kW
184	DP Speed Absolute	0	3	0.1Hz
994	DP Speed Relative	0	3	0.1%
699	DP Speed Demand	2	0	0.1%
55	DP Body Temperature	0	3	°C
57	DP End Cover Temperature	0	3	°C
70	DP Body Temperature 2	0	3	°C
63	Pump Internal Temperature	0	3	°C
12	MB Override	1	2	-
7	MB Current	0	3	0.1A
8	MB Power	0	3	0.1kW
174	MB Speed Absolute	0	3	0.1Hz
995	MB Speed Relative	0	3	0.1%
698	MB Speed Demand	2	0	0.1%
54	MB Body Temperature	0	3	°C
62	MB End Cover Temperature	0	3	°C
812	PB Override	1	2	-
817	PB Run Hours	0	3	hrs
818	PB Number of Starts	0	3	-
820	PB Current	0	3	0.1A
821	PB Power	0	3	0.1kW
823	PB Speed Absolute	0	3	0.1Hz
996	PB Speed Relative	0	3	0.1%
697	PB Speed Demand	2	0	0.1%
813	PB Body Temperature	0	3	°C
814	PB End Cover Temperature	0	3	°C
46	Nitrogen Gas Ballast Valve	1	2	-

**Table 7 - Summary of software modules**

Module No.	Module Name	No. of Output bytes	No. of Input bytes	Units
47	Nitrogen Inlet Purge Valve	1	2	-
35	Nitrogen Flow Rate	0	3	SLm
68	Active Utility Control	1	2	-
39	Exhaust Pressure	0	3	0.1kPa
56	Exhaust Gas Temperature	0	3	°C
84	Exhaust Pipe Temperature	0	3	°C
52	Water Flow Rate	0	3	0.1L/min
161	Gate Valve	1	2	-
53	Active Gauge	0	6	-
993	Profibus Software Version	0	2	-

#### 4.7.1 Module 990 - Pump Family

Output Bytes: None

Input Bytes: Byte 1 is pump type. See table below for example values.

Value (in decimal)	Pump Family
1	iH
2	iL
4	iF
15	EPX
18	iGX
19	pHMB
20	System Controller
22	GX
25	iXH
26	iXL120
27	pXH
28	iXL (Large)

Byte 2 is condition byte (see [Section 4.6.4](#)).

#### 4.7.2 Module 991 - Pump Serial Number

Output Bytes: None

Input Bytes: Bytes 1-16 are ASCII characters for Pump serial number  
Byte 17 is condition byte (see [Section 4.6.4](#)).

### 4.7.3 Module 110 - Remote/Local State

Drypumps have more than one control device that in principle can control the pump. The Drypump will only let one control device have control at a time. This is indicated by this module. At power-up no control device has control. To start a pump, or turn ON any item like a valve, the control device (Profibus or PDT) must take control. That control device must release control before another control device can turn ON any item. However any control device can turn OFF an item (even without control). The Profibus module only takes control of the pump when it receives a run command from the tool using Module 11 and no other control device has control.

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number which is the object number of the unit which has control of the pumping system. Example values (decimal): 0=No Control; 101=PDM1; 102=PDM2; 103=PDT Front; 104=PDT Rear; 110=Profibus in Control.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

### 4.7.4 Module 992 - Alert Status

This module is a summary of all the warnings and alarms from the pump (except those inhibited by the Drypump internal setting). It does not just signal alarms and warnings from configured Profibus modules but signals all received alarms and warnings including from functions that cannot be configured through Profibus.

The four input bytes are bit flags. If a flag value is 0 that function has no alert. If the exact cause of a warning is unclear it is recommended the user investigate the pump locally using a PDT.

Output Bytes: None

Input Bytes:

- Byte 1 Bit 7 = Alarm - EMS system
- Byte 1 Bit 6 = Alarm - Drypump Drive
- Byte 1 Bit 5 = Alarm - Mechanical Booster Drive
- Byte 1 Bit 4 = Alarm - Proximity Booster Drive
- Byte 1 Bit 3 = Alarm - Drypump Temperature
- Byte 1 Bit 2 = Alarm - Mechanical Booster Temperature
- Byte 1 Bit 1 = Alarm - Proximity Booster Temperature
- Byte 1 Bit 0 = Alarm - Exhaust Temperature
- Byte 2 Bit 7 = Alarm - Exhaust Pressure
- Byte 2 Bit 6 = Alarm - Gas
- Byte 2 Bit 5 = Alarm - Gate Valve
- Byte 2 Bit 4 = Alarm - Water Flow
- Byte 2 Bit 3 = Alarm - Service Due
- Byte 2 Bit 2 = Alarm - System Controller - System
- Byte 2 Bit 1 = Alarm - System Controller - Device
- Byte 2 Bit 0 = Alarm - other (any Alarm not in categories above).
- Byte 3 Bit 7 = Warning - EMS system
- Byte 3 Bit 6 = Warning - Drypump Drive
- Byte 3 Bit 5 = Warning - Mechanical Booster Drive
- Byte 3 Bit 4 = Warning - Proximity Booster Drive
- Byte 3 Bit 3 = Warning - Drypump Temperature
- Byte 3 Bit 2 = Warning - Mechanical Booster Temperature
- Byte 3 Bit 1 = Warning - Proximity Booster Temperature
- Byte 3 Bit 0 = Warning - Exhaust Temperature
- Byte 4 Bit 7 = Warning - Exhaust Pressure
- Byte 4 Bit 6 = Warning - Gas
- Byte 4 Bit 5 = Warning - Gate Valve
- Byte 4 Bit 4 = Warning - Water Flow
- Byte 4 Bit 3 = Warning - Service Due
- Byte 4 Bit 2 = Warning - System Controller - System
- Byte 4 Bit 1 = Warning - System Controller - Device
- Byte 4 Bit 0 = Warning - other (any Warning not in categories above).

For example input bytes 00 80 00 E0 would indicate an Exhaust pressure alarm + Warnings for Exhaust pressure, gas and gate valve.



To start the pump after the pump has stopped due to an alarm, the tool controller must send a Stop command followed by a Start command. See [Section 4.7.5](#).

#### 4.7.5 Module 11 - Pump Control

This is the main control software module. It is used to start and stop ALL connected pumps in sequence. The general start sequence is DP(s) then MB(s) then PB(s). The shutdown sequence is the reverse.

Output Byte: Single byte is Pump Control.  
Values: 1=On  
2=Fast Shutdown,  
3=Auto Shutdown(slow),  
Other values - ignored.

Input Bytes: Byte 1 reports the state (feedback) specifically of the Drypump.  
Values: 0=Off  
1=Off going On (starting)  
2=On going off fast (stopping fast)  
3=On going off slow (stopping slow)  
4=On.  
2nd input byte is condition byte (see [Section 4.6.4](#)).

#### 4.7.6 Module 14 - DP Run Hours

Output Bytes: None  
Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for DP run time in hours.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.7 Module 20 - DP Number of Starts

Output Bytes: None  
Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number which is the number of times the Drypump has been started.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.8 Module 21 - DP Time to Stop

Output Bytes: None  
Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for number of seconds it will take pump to stop if normal(slow) off is used. If pump is not in the process of stopping the value will be zero.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.9 Module 3 - DP Current

Output Bytes: None  
Input Bytes: Bytes 1 & 2 form a 16-bit signed number for DP current in 0.1A.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.10 Module 4 - DP Power

Output Bytes: None  
Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for DP Power in 0.1kW.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.11 Module 184 - DP Speed Absolute

This module will only be valid on inverter driven pumps.

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for actual DP speed in 0.1Hz.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.12 Module 994 - DP Speed Relative

This module will only be valid on inverter driven pumps.

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for actual DP speed in 0.1% of configured full speed.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.13 Module 699 - DP Speed Demand

This module should only be used on inverter driven pumps.

Output Bytes: 2 Bytes which are a 16-bit unsigned number for DP speed demand in 0.1% of configured full speed.

Input Bytes: None

#### 4.7.14 Module 55 - DP Body Temperature

The actual meaning and measurement location of this temperature measurement will vary between pump families and pump types, even if a valid temperature reading is indicated by the condition byte.

For iXH parameter is DP Body Temperature

For iGX parameter is DP Body Temperature

For iH/iF/iL parameter is DP Motor Temperature

Output Bytes: None

Input Bytes: Bytes 1 & 2 are a 16-bit signed number for DP temperature in °C.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.15 Module 57 - DP End Cover Temperature

The actual meaning and measurement location of this temperature measurement will vary between pump families and pump types, even if a valid temperature reading is indicated by the condition byte.

For iXH parameter is DP End Cover Temperature

For iGX parameter is DP Motor Temperature

For iH/iF/iL parameter is DP Body Temperature

Output Bytes: None

Input Bytes: Bytes 1 & 2 are a 16-bit signed number for DP temperature in °C.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.16 Module 70 - DP Body Temperature 2

The actual meaning and measurement location of this temperature measurement will vary between pump families and pump types, even if a valid temperature reading is indicated by the condition byte.

For iXH parameter is DP Body Temperature 2 (but not fitted to most pumps)

For iGX parameter is Not Used

For iH/iF/iL parameter is DP High Vacuum Stage (but only fitted to the largest pumps)

Output Bytes: None

Input Bytes: Bytes 1 & 2 are a 16-bit signed number for DP temperature in °C.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.17 Module 63 - Pump Internal Temperature

The actual meaning and measurement location of this temperature measurement will vary between pump families and pump types, even if a valid temperature reading is indicated by the condition byte.

For iXH parameter is DP internal temperature

For iGX parameter is Not Used

For iH/iF/iL parameter is Not Used

Output Bytes: None

Input Bytes: Bytes 1 & 2 are a 16-bit signed number for temperature in °C.

Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.18 Module 12 - MB Override

This module provides MB state feedback. It can also be used to override the control of Module 11 (as normally MB operation would follow DP) to stop a booster. It can further start a booster, but only if the Profibus module has control of the pump. (See [Section 4.7.3](#)). Use this command with caution as if the Profibus module does not have control it will be possible to stop the booster but not restart it.

Output Byte: Single byte is MB override. Values: 1=On; 2=Off; Other values - ignored.

Input Bytes: Byte 1 reports the state (feedback) specifically of the Booster. Values: 0=Off; 1=Off going On;

2=On going off fast; 3=On going off slow; 4=on.

2nd input byte is condition byte (see [Section 4.6.4](#)).

#### 4.7.19 Module 7 - MB Current

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit signed number for MB current in 0.1A.

Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.20 Module 8 - MB Power

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for MB Power in 0.1kW.

Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.21 Module 174 - MB Speed Absolute

This module will only be valid on inverter driven pumps.

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for actual MB speed in 0.1Hz.

Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.22 Module 995 - MB Speed Relative

This module will only be valid on inverter driven pumps.

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for actual MB speed in 0.1% of configured full speed.

Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.23 Module 698 - MB Speed Demand

This module should only be used on inverter driven pumps.

Output Bytes: 2 Bytes which are a 16-bit unsigned number for MB speed demand in 0.1% of configured full speed.

Input Bytes: None

#### 4.7.24 Module 54 - MB Body Temperature

The actual meaning and measurement location of this temperature measurement will vary between pump families and pump types, even if a valid temperature reading is indicated by the condition byte.

For iXH parameter is MB Body Temperature  
 For iGX parameter is MB Body Temperature  
 For iH/iF/iL parameter is MB Body Temperature

Output Bytes: None

Input Bytes: Bytes 1 & 2 are a 16-bit signed number for MB temperature in °C.  
 Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.25 Module 62 - MB End Cover Temperature

The actual meaning and measurement location of this temperature measurement will vary between pump families and pump types, even if a valid temperature reading is indicated by the condition byte.

For iXH parameter is MB End Cover Temperature  
 For iGX parameter is MB Motor Temperature  
 For iH/iF/iL parameter is Not Used.

Output Bytes: None

Input Bytes: Bytes 1 & 2 are a 16-bit signed number for MB temperature in °C.  
 Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.26 Module 812 - PB Override

This module provides PB state feedback. It can also be used to override the control of Module 11 (as normally PB operation would follow DP) to stop a booster. It can further start a booster, but only if the Profibus module has control of the pump. (See [Section 4.7.3](#)). Use this command with caution as if the Profibus module does not have control it will be possible to stop the booster but not restart it.

Output Byte: Single byte is MB override. Values: 1=On; 2=Off; Other values - ignored.

Input Bytes: Byte 1 reports the state (feedback) specifically of the Booster. Values: 0=Off; 1=Off going On;  
 2=On going off fast; 3=On going off slow; 4=on.  
 2nd input byte is condition byte (see [Section 4.6.4](#)).

#### 4.7.27 Module 817 - PB Run Hours

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for PB run time in hours.  
 Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.28 Module 818 - PB Number of Starts

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number which is the number of times the booster has been started.  
 Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.29 Module 820 - PB Current

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit signed number for PB current in 0.1A.  
 Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.30 Module 821 - PB Power

Output Bytes: None  
Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for PB Power in 0.1kW.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.31 Module 823 - PB Speed Absolute

This module will only be valid on inverter driven pumps.  
Output Bytes: None  
Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for actual PB speed in 0.1Hz.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.32 Module 996 - PB Speed Relative

This module will only be valid on inverter driven pumps.  
Output Bytes: None  
Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for actual PB speed in 0.1% of configured full speed.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.33 Module 697 - PB Speed Demand

This module should only be used on inverter driven pumps.  
Output Bytes: 2 Bytes which are a 16-bit unsigned number for PB speed demand in 0.1% of configured full speed.  
Input Bytes: None

#### 4.7.34 Module 813 - PB Body Temperature

The actual meaning and measurement location of this temperature measurement will vary between pump families and pump types, even if a valid temperature reading is indicated by the condition byte.

For iXH parameter is PB Body Temperature  
For pHMB parameter is PB Body Temperature  
For iH/iF/iL parameter is Not Used

Output Bytes: None  
Input Bytes: Bytes 1 & 2 are a 16-bit signed number for PB temperature in °C.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.35 Module 814 - PB End Cover Temperature

The actual meaning and measurement location of this temperature measurement will vary between pump families and pump types, even if a valid temperature reading is indicated by the condition byte.

For iXH parameter is PB End Cover Temperature  
For pHMB parameter is PB Motor Temperature  
For iH/iF/iL parameter is Not Used

Output Bytes: None  
Input Bytes: Bytes 1 & 2 are a 16-bit signed number for PB temperature in °C.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.36 Module 46 - Nitrogen Gas Ballast Valve

This module provides Nitrogen gas ballast valve control and status if a gas module with this feature is fitted to the pump. It can be used to turn off the valve, however it can only turn on the valve if the Profibus module has control of the pump. (See [Section 4.7.3](#)). Use this command with caution as if the Profibus module does not have control it will be possible to turn off the valve but not turn it back on.

Output Byte: Single byte is valve control. Values: 1=On; 2=Off; Other values - ignored.

Input Bytes: Byte1 valve state - Values: 0=Off; 1=Off going On; 2=On going off fast; 3=On going off slow; 4=on.  
2nd input byte is condition byte (see [Section 4.6.4](#)).

#### 4.7.37 Module 47 - Nitrogen Inlet Purge Valve

This module provides Nitrogen inlet purge valve control and status if a gas module with this feature is fitted to the pump. It can be used to turn off the valve, however it can only turn on the valve if the Profibus module has control of the pump. (See [Section 4.7.3](#)). Use this command with caution as if the Profibus module does not have control it will be possible to turn off the valve but not turn it back on.

Output Byte: Single byte is valve control. Values: 1=On; 2=Off; Other values - ignored.

Input Bytes: Byte1 valve state - Values: 0=Off; 1=Off going On; 2=On going off fast; 3=On going off slow; 4=on.  
2nd input byte is condition byte (see [Section 4.6.4](#)).

#### 4.7.38 Module 35 - Nitrogen Flow Rate

Requires Gas Module with this feature.

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for Nitrogen flow rate in SLM (Standard Litres per Minute).  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.39 Module 68 - Active Utility Control

Active Utility Control is used to reduce pump speed (saving energy) and Nitrogen flow, when the chamber is not processing. The Drypump may need to be set up to operate in this mode. It can be used to turn off AUC, however it can only turn on AUC if the Profibus module has control of the pump. (See [Section 4.7.3](#)).

Output Byte: Single byte is AUC control. Values: 1=On (speed and flow reduced); 2=Off (Speed and flow normal);  
Other values - ignored.

Input Bytes: Byte1 AUC state - Values: 0=Off (normal); 1=Off going On; 2=On going off fast; 3=On going off slow;  
4=on (reduced).  
2nd input byte is condition byte (see [Section 4.6.4](#)).

#### 4.7.40 Module 39 - Exhaust Pressure

Requires Gas Module with this feature.

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit signed number for exhaust pressure in 0.1kPa.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.41 Module 56 - Exhaust Gas Temperature

Requires exhaust gas temperature sensor to be fitted.

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit signed number for exhaust gas temperature in °C.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.42 Module 84 - Exhaust Pipe Temperature

Requires exhaust pipe temperature sensor to be fitted.

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit signed number for exhaust pipe temperature in °C.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.43 Module 52 - Water Flow Rate

Requires water flow sensor to be fitted.

Output Bytes: None

Input Bytes: Bytes 1 & 2 form a 16-bit unsigned number for water flow rate in 0.1L/min.  
Byte 3 is condition byte (see [Section 4.6.4](#)).

#### 4.7.44 Module 161 - Gate Valve

This module provides gate valve control and status if a gate valve is fitted to the pump. It can be used to turn off the valve, however it can only turn on the valve if the Profibus module has control of the pump. (See [Section 4.7.3](#)). Use this command with caution as if the Profibus module does not have control it will be possible to turn off the valve but not turn it back on.

Output Byte: Single byte is gate valve control. Values: 1=On; 2=Off; Other values - ignored.

Input Bytes: Byte1 valve state - Values: 0=Off; 1=Off going On; 2=On going off fast; 3=On going off slow; 4=on.  
2nd input byte is condition byte (see [Section 4.6.4](#)).

#### 4.7.45 Module 53 - Active Gauge

Requires active gauge to be fitted.

Output Bytes: None

Input Bytes: Bytes 1-4 are 32-bit IEEE754 format floating point value.  
Byte 5 is units (59=Pascals, 66=volts).  
Byte 6 is condition byte (see [Section 4.6.4](#)).

#### 4.7.46 Module 993 - Profibus Software Version

Output Bytes: None

Input Bytes: Input bytes are Profibus Code version in ASCII  
1st character is s/w type e.g. 0x50 = P (Production)  
2nd character is revision letter e.g. 0x41 = A.

## 5 MAINTENANCE

### 5.1 Fault finding

In the event of a Profibus module failing to respond check the following:

Table 8 - Fault finding guide

Symptom	Fault
Power LED not lit	No DC supply or internal regulator faulty.
Off-line not lit and Error LED flashing.	Address selection is above 125, correct the address and re-power unit.
Off-line LED is lit and Error LED is lit.	Unsuitable parameterisation or configuration, check extended diagnostics for module number.
Off-line LED is lit and Error LED is not lit.	Check unit's address matches that being used by the master.
Power LED is lit and all other LED's are not lit.	Serial connection to Controller disconnected or faulty or Controller not powered on.
Data exchange LED is lit but data is not changing.	Serial connection has become faulty after entering data exchange. Check extended diagnostics for serial comms lost indication.

#### **CAUTION**

The Profibus Module contains no user serviceable parts. Do not disassemble the module.



## 6 STORAGE AND DISPOSAL

### 6.1 Storage

Store the Profibus Module in clean dry conditions until required. When required for use, install the Profibus Module as described in Section 3.

### 6.2 Disposal

Dispose of the Profibus Module and any components safely in accordance with all local and national safety and environmental requirements.

Alternatively, you may be able to recycle the Profibus Module and/or cables; contact Edwards or your supplier for advice (also see below).

The Profibus Module and associated cables are within the scope of the European Directive on Waste Electrical and Electronic Equipment, 2002/96/EC. Edwards offer European customers a recycling service for the Profibus Module/cables at the end of the product's life. Edwards' Registration Number as a UK producer of electrical and electronic products is WEE/BF0054TQ. Contact Edwards for advice on how to return the Profibus Module/cables for recycling.

# 7 SPARES AND ACCESSORIES

## 7.1 Introduction

Edwards products, spares and accessories are available from Edwards companies in Belgium, Brazil, Canada, France, Germany, Hong Kong, Italy, Japan, Korea, Switzerland, United Kingdom, U.S.A. and a world-wide network of distributors. The majority of these centres employ Service Engineers who have undergone comprehensive Edwards training courses.

Order spare parts and accessories from your nearest Edwards company or distributor. When you order, please state for each part required:

- Model and Item Number of your equipment
- Serial number (if any)
- Item Number and description of the part.

## 7.2 Accessories

PROFIBUS LON/PDT POWER/RS232 SPLITTER CABLE	D397-52-016
5 WAY XLR EXTENSION CABLE 3M	D373-70-591
5 WAY XLR EXTENSION CABLE 5M	D373-70-592
5 WAY XLR EXTENSION CABLE 10M	D373-70-595
5 WAY XLR EXTENSION CABLE 15M	D373-70-596
5 WAY XLR EXTENSION CABLE 25M	D373-70-597
PDT ADAPTOR, RJ12 PLUG/5 WAY XLR SOCKET	D373-70-726

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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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