D39753880
Issue D

Instruction Manual

GXS/CXS Profibus Module

Description	Item Number
GXS/CXS Profibus Module	D39753000

Original Instructions

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1 Introduction

1.1 Scope and definitions

This manual provides installation, operation and maintenance instructions for Edwards GXS and CXS pump Profibus Modules. 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.

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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 pump. You must refer to the safety information in the pump instruction manual.

WARNING

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

The GXS and CXS Profibus Module provides a Profibus DP V0 slave interface for Edwards GXS and CXS pumps. 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. The pumps 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 pump and a power connector.

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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

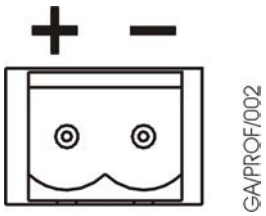
Do not exceed the maximum supply voltage. Excessive supply voltage will cause permanent damage to the control electronics and may result in a mechanical hazard in some failure conditions.

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 Figure 1).

Figure 1 - Pin connections for the 2-way Power Connector



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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

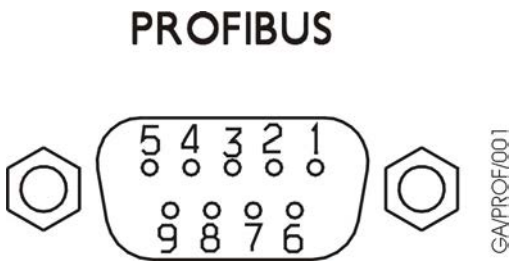

Table 1 - Pin connections for 9-way 'D' type socket

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)

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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

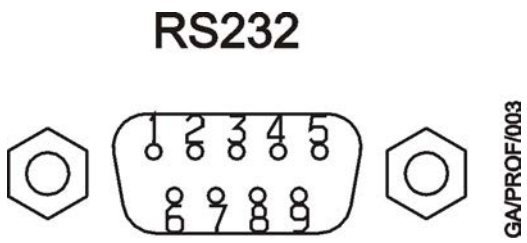

Table 2 - Pin connections for 9-way 'D' type plug

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)

2.3.4 Front panel USB connector

Connector type	USB Micro-B socket
Function	Software upgrade by Edwards service personnel only

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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

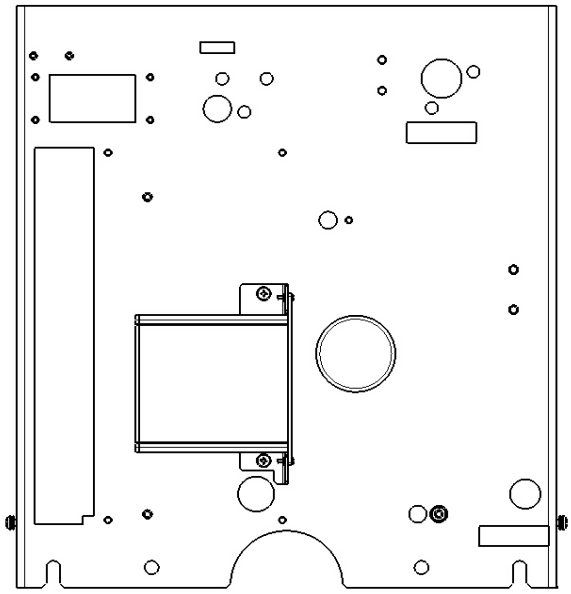
Quantity	Description	Check (✓)
1	Module	❑
1	Cable for connection between pump PDT port and Profibus Module	❑
4	Mounting screws (2-off M2.5, 2-off M5)	❑
1	Mounting bracket	❑

3.2 Fitting the module to a GXS pump

Fit the Mounting Bracket to the M5 captive nuts in the rear of the pump using the M5 combined bolts and washers provided. The bracket fits upright, essentially above the exhaust with the mounting holes separated by 125 mm vertically.

Fit the Profibus module to the bracket using the M2.5 mounting hardware provided. See Figure 4 below.

Figure 4 - Profibus mounted on pump rear



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3.3 Fitting the module to a CXS pump

To fit the module to the CXS pump, contact Edwards.

3.4 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.

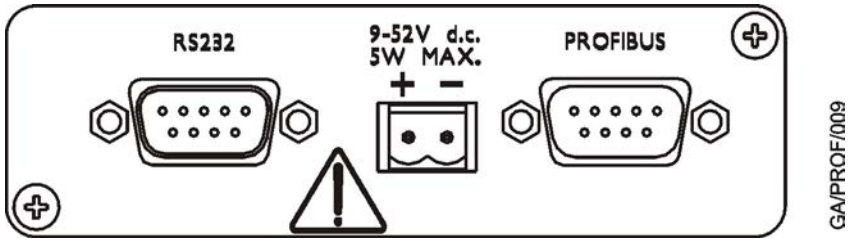
The Profibus module should not be connected to a pump when the pump or tool are "On Process".

The Profibus Module uses the pump's rear (system) PDT port (a 5-way XLR socket) for communication with the pump. 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.

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

Use the cable provided in the kit to 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 pump rear (system) PDT port.

Figure 5 - Profibus module rear connections



3.5 Profibus network connection

Standard Profibus network cables and connectors compliant to EN50170 should be used to connect the Edwards 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 5 V and 0 V signals are supplied on the standard pins for this purpose.

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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 has the file name "EDW0C5F.GSD", (GXS-CXS) which is registered with the Profibus Association.

When configuring your system the "ID" number will be 0C5F and the unit's description will be “Edwards_GXS/CXS_Pump”.

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_GXS/CXS_Pump" as a slave and set the address to match the address switches.
6. Select Module 11 to provide on and off control of the pump and select Module 992 to monitor pump alert state. Add other Profibus software modules as required.

4.3 Front panel display

Figure 6 - Profibus front panel display

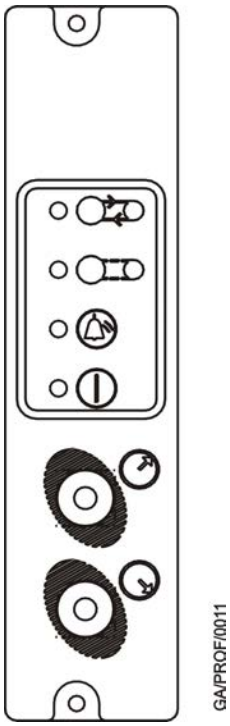

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Table 4 - Front panel symbols and their functions

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 1 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 5 - 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

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Table 5 - 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
46	2	E	109	6	D

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Table 5 - Address switch settings

Address in Decimal	Upper switch setting	Lower switch setting	Address in Decimal	Upper switch setting	Lower switch setting
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 0 or a value greater than 125 (decimal), the RED error LED will flash at 1 Hz and the module will go on-line or 1 the RED error LED will flash at 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.

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4.6.1 Parameterisation

Only the Profibus mandatory 7 bytes of parameterisation data are used by the pump 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 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	B02

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.

Modules should have no more than one entry in the configuration list. For reliable operation do not exceed the maximum number of configuration items.

Configuration Item	Maximum Number
Modules	40
Input and Output bytes added together	116

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4.6.3 Diagnostics description

The modules use extended diagnostics in the format below.

Max_Diag_Data_Len = 12

Bytes	1-6	7	8 and 9	10 and 11	12
Description	Mandatory	No of bytes of extended diagnostics (6)	Not used (values always zero)	Module failed configuration, MSB in 10, LSB in 11	Serial comms lost (0=OK, 1=lost)

A configuration error will be signalled if the number of modules configured exceeds the maximum number allowed by the Profibus module.

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 GXS/CXS pump GSD file has been designed to control many different pump types within the GXS and CXS pump family ranges.

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 pump setup. In this case a Warning or Alarm will not be indicated over Profibus.

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

4.7 Software modules

Terminology: DP= Dry Pump; MB= Mechnical Booster.

Table 6 - Summary of software modules

Module No.	Module Name	No. of Output bytes	No. of Input bytes	Units	Applicability
990	Pump Family	0	2	-	GXS/CXS (not pXH)
991	Pump Serial Number	0	17	-	GXS/CXS
110	Remote/Local State	0	3	-	GXS/CXS
992	Alert Status	0	4	-	GXS/CXS
11	Pump Control	1	2	-	GXS/CXS
14	DP Run Hours	0	3	hrs	GXS/CXS
20	DP Number of Starts	0	3	-	GXS/CXS
21	DP Time to Stop	0	3	s	GXS/CXS
3	DP Current	0	3	0.1A	GXS/CXS
4	DP Power	0	3	0.1kW	GXS/CXS
184	DP Speed Absolute	0	3	0.1Hz	GXS/CXS
994	DP Speed Relative	0	3	0.1%	GXS/CXS
699	DP Speed Demand	2	0	0.1%	GXS/CXS
55	DP Body Temperature	0	3	°C	GXS/CXS
63	Pump Internal Temperature	0	3	°C	GXS/CXS
12	MB Override	1	2	-	GXS/CXS
46	Gas ballast	1	2	-	GXS/CXS
47	Inlet Purge	1	2	-	GXS/CXS
7	MB Current	0	3	0.1A	GXS only
8	MB Power	0	3	0.1kW	GXS only
174	MB Speed Absolute	0	3	0.1Hz	GXS only
995	MB Speed Relative	0	3	0.1%	GXS only
698	MB Speed Demand	2	0	0.1%	GXS only
54	MB Body Temperature	0	3	°C	GXS only
34	Nitrogen Flow Switch	0	2	-	GXS/CXS
68	Active Utility Control	1	2	-	GXS/CXS
39	Exhaust Pressure	0	3	mbar	GXS only
53	Active Gauge	0	6	Pa	GXS only
52	Water Flow Rate	0	3	0.1L/min	GXS only
161	Gate Valve	1	2	-	GXS/CXS
323	Pump Warmup	0	2	-	GXS/CXS
328	Pump Good	0	2	-	GXS/CXS
331	DP Clean Control	1	2	-	GXS/CXS
332	ASG Auxiliary Pressure	0	6	Pa	GXS only
333	Interpump Temperature	0	3	°C	GXS/CXS
334	Process Pressure	0	3	mbar	GXS/CXS

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Table 6 - Summary of software modules (continued)

Module No.	Module Name	No. of Output bytes	No. of Input bytes	Units	Applicability
993	Profibus Software Version	0	2	-	GXS/CXS
1	Winterisation	1	0	-	GXS/CXS
322	Solvent Soak	1	2	-	GXS/CXS
346	DP 2nd Speed Reference	3	3	0.1Hz	GXS/CXS
316	PID Pressure Control	1	2	-	GXS/CXS
344	PID Pressure Demand	2	0	0.1mbar	GXS/CXS
313	MB 2nd Speed Reference	3	3	0.1Hz	GXS only
812	pXH Override	1	2	-	GXS only
817	pXH Run Hours	0	3	hrs	GXS only
818	pXH Number of Starts	0	3	-	GXS only
820	pXH Current	0	3	0.1A	GXS only
821	pXH Power	0	3	0.1kW	GXS only
823	pXH Speed Absolute	0	3	0.1Hz	GXS only
996	pXH Speed Relative	0	3	0.1%	GXS only
697	pXH Speed Demand	2	0	0.1%	GXS only
813	pXH Body Temperature	0	3	°C	GXS only
268	CXS P2 OR EMS	0	2	-	CXS only
270	CXS Exhaust Valve	0	2	-	CXS only
271	CXS Exhaust Temperature Warning	0	2	-	CXS only
272	CXS Exhaust Temperature Alarm	0	2	-	CXS only
273	CXS Exhaust Pressure Warning	0	2	-	CXS only
274	CXS Exhaust Pressure Alarm	0	2	-	CXS only
275	CXS Body Thermal Switch	0	2	-	CXS only
276	CXS Motor Thermal Switch	0	2	-	CXS only
277	CXS Flame Arrester	0	2	-	CXS only
279	CXS MB Motor Running	0	2	-	CXS only
280	CXS MB Motor Thermistor	0	2	-	CXS only
281	CXS MB Water Flow	0	2	-	CXS only
282	CXS N2 Flow	0	2	-	CXS only
285	CXS MB Outlet Pressure	0	2	-	CXS only
286	CXS Enclosure Water Level	0	2	-	CXS only
287	CXS Solvent Level	0	2	-	CXS only
288	CXS Process Interlock	0	2	-	CXS only
150	CXS Spare	0	2	-	CXS only
267	CXS DP Body	0	2	-	CXS only
289	CXS Bypass Valve	1	2	-	CXS only
1011	CXS On Process Warning	1	0	-	CXS only
1012	CXS On Process Cold	1	0	-	CXS only

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4.7.1 Module 990 - Pump Family

This module should not be configured with a pXH pump.

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	GXS
29	CXS
31	iXL500
32	iXS

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, a control device (e.g. Profibus, PDT) must take control. That control device must release control before another control device can turn **ON** any item. However in some cases a control device can turn **OFF** an item without having 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; 61=Drypump Front Panel; 101=PDM1; 102=PDM2; 103=PDT Front; 104=PDT Rear; 110=Profibus in Control; 221=Micro-TIM.
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.

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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.

Note: *The value is only sent from the Profibus module to the pump on change of demand state (to prevent rapid cycling if the pump had an alarm state). Thus if the demand state is on, but the pump has been stopped by something other than the Profibus module, it will be necessary to demand an Off and then an On to restart the pump.*

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Input Bytes: Byte 1 reports the state (feedback) specifically of the DP.
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 DP 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 the pump to stop. 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).

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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

On the PDT this temperature is called “TCS REF”.
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 63 - Pump Internal Temperature

On the PDT this temperature is called “DP Temp”.
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).

4.7.16 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. It is also not recommended to run the MB with the DP stopped.

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

Note: *Demand value is only sent from the Profibus module to the pump on change of state.*

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).

4.7.17 Module 46 - Gas Ballast

WARNING

Configuring this module contains significant risk as if the pump is stopped with the valve open the vacuum system may over-pressurise.

This module provides Control of the Gas Ballast valve and feedback of its actual state. Normally Gas Ballast valve operation is controlled by the main DP control function (module 11) and use of this module can override the (automatic) Gas Ballast valve control from that module.

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Output Byte: Single byte is Gas Ballast valve control.
Values: 1=Open
2=Closed
3=Return to normal behavior
other values - ignored

Input Bytes: Valve state.
Values: 0=Off (Closed)
4=On (Open)
2nd input byte is condition byte (see Section 4.6.4).

4.7.18 Module 47 - Inlet Purge

WARNING

Configuring this module contains significant risk as if the pump is stopped with the valve open the vacuum system may over-pressurise.

This module provides Control of the Inlet Purge Gas valve and feedback of its actual state. Normally Inlet Purge Gas valve operation is controlled by the main DP control function (module 11) and use of this module can override the (automatic) Inlet Purge Gas valve control from that module.

Output Byte: Single byte is Inlet Purge valve control.
Values: 1=Open
2=Closed
3=Return to normal behavior
other values - ignored

Input Bytes: Valve state.
Values: 0=Off (Closed)
4=On (Open)
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 0.1 A.
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 0.1 kW.
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 0.1 Hz.
Byte 3 is condition byte (see Section 4.6.4).

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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

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 34 - Nitrogen Flow Switch

Requires Gas Module with this feature. This object only gives valid readings when the pump is running.
Output Bytes: None
Input Bytes: Byte 1 Nitrogen Flow state. 0=Inadequate flow; 1=Adequate flow.
Byte 2 is condition byte (see Section 4.6.4).

4.7.26 Module 68 - Active Utility Control

Active Utility Control (also called Green Mode) 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. The Profibus module must have control of the pump to turn AUC on or off. (See Section 4.7.3). If the pump is not warm it will be in AUC mode regardless of demand.
Output Byte: Single byte is AUC control. Values: 1=On (speed and flow reduced); 2=Off (Speed and flow normal);
Other values - ignored.

Note: *Demand value is only sent from the Profibus module to the pump on change of state.*

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).

4.7.27 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 mbar.
Byte 3 is condition byte (see Section 4.6.4).

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4.7.28 Module 53 - Active Gauge

Requires Active Accessories module to be fitted and active gauge to be fitted to it. Also requires active gauge to be fitted on the PDT, this signal is called “AG”.

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).

4.7.29 Module 52 - Water Flow Rate

Requires water flow sensor to be fitted (to General Accessories Port).

Output Bytes: None

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

4.7.30 Module 161 - Gate Valve

This module provides gate valve control and demand 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 may 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.

Note: *Demand value is only sent from the Profibus module to the pump on change of state.*

Input Bytes: Byte1 valve demand 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).

Note: *If demand status is not the same as actual state, a warning will be raised in Module 992.*

4.7.31 Module 323 - Pump Warm-up

Output Bytes: None

Input Bytes: Byte 1 is Warm-up status. Values: 0 = Not Warming up (either because already warm or off);
4 = Warming up.
Byte 2 is condition byte (see Section 4.6.4).

4.7.32 Module 328 - Pump Good

For this module "Good" means Running and Warm and not in clean and No errors. However pump can still be good when in AUC mode. Not Good means at least one of the 4 conditions for good is not currently met.

Output Bytes: None

Input Bytes: Byte 1 is Pump Status. Values: 0 = Not Good; 4 = Good.
Byte 2 is condition byte (see Section 4.6.4).

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4.7.33 Module 331 - DP Clean Control

This function can only be used if the DP clean valve is fitted. To operate the DP clean valve the pump must first be in AUC mode and if it is not the command will be ignored.

Output Byte: Single byte is DP Clean valve control. Values: 1=On (clean process); 2=Off (valve closed); Other values - ignored.
Input Bytes: Byte1 DP Clean state - Values: 0=Off (normal); 4= on (cleaning process).
2nd input byte is condition byte (see Section 4.6.4).

4.7.34 Module 332 - Auxiliary Active (Strain) Gauge Pressure

This function requires an active gauge (almost always an Active Strain gauge) to be fitted to the manifold between the MB and DP. On the PDT this signal is called 'AUX'.

Output Bytes: None
Input Bytes: Bytes 1-4 are 32-bit IEEE754 format floating point value (MSB transmitted first)
Byte 5 is units (59=Pascals, 66=volts).
Byte 6 is condition byte (see Section 4.6.4).

4.7.35 Module 333 - Inter-pump Temperature

This function requires a 4-20ma Temperature sensor (almost always a PT100 type) to be fitted to the manifold between the MB and DP. On the PDT this signal is called 'PT100_1'.

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

4.7.36 Module 334 - Process Pressure

This function requires a 4-20ma Pressure sensor to be fitted (externally mounted). On the PDT this signal is called 'PR'.

Output Bytes: None
Input Bytes: Bytes 1&2 form 16-bit signed number for pressure in mbar
Byte 3 is condition byte (see Section 4.6.4).

4.7.37 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.

4.7.38 Module 1 - Winterisation

This function keeps the water system active when the pump is not running. Function is ignored if pump is running (as water system will be active anyway).

Output Bytes: Single byte, 1=On, 2=Off, other values ignored.

4.7.39 Module 322 - Solvent Soak

Output Bytes: Single byte. Values: 1=On, 2=Off, other values ignored.
Input Bytes: Byte 1 status. Values: 0=Off, 3=On going off, 4=On.
2nd input byte is condition byte (see Section 4.6.4).

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4.7.40 Module 346 - DP 2nd Speed Reference

To operate this module must first be configured in the pump software - for example using the PDT sequences menu.

Output Bytes: Byte1 2nd speed control. Values: 1=On (go to 2nd speed); 2=Off (use normal speed demand)
Other values - ignored.
Bytes 2 & 3 form 16-bit unsigned number for 2nd speed demand in 0.1 Hz.

Input Bytes: Bytes 1 & 2 form 16-bit unsigned number for speed being demanded by pump control system at that point in time in 0.1 Hz.
Byte 3 is condition byte (see Section 4.6.4).

4.7.41 Module 316 - PID Pressure Control

Do not attempt to use PID pressure control useless the pump system is properly configured AND tuned. Procedure for set-up is in the Pump System Manual (e.g. M58800880 Section A2.11 or M52800880 Section A2.11). Process includes the set-up of an appropriate vacuum gauge.

Output Byte: Control. Values: 1=On (PID control active); 2=Off (may be normal configured speed or green mode effect depending on how PID configured).

Input Bytes: Bytes 1 is PID status. Values 0=Off; 3=On going off; 4=on.
Byte 2 is condition byte (see Section 4.6.4).

4.7.42 Module 344 - Pressure Demand

Sets the PID pressure demand for use with module 316 above.

Output Bytes: Form 16-bit unsigned number for pressure setpoint (absolute) in 0.1 mbar.

4.7.43 Module 313 - MB 2nd Speed Reference

Not applicable to CXS (fixed booster speed). To operate this module must first be configured in the pump software - for example using the PDT sequences menu.

Output Bytes: Byte1 2nd speed control. Values: 1=On (go to 2nd speed); 2=Off (use normal speed demand)
Other values - ignored.
Bytes 2 & 3 form 16-bit unsigned number for 2nd speed demand in 0.1 Hz.

Input Bytes: Bytes 1 & 2 form 16-bit unsigned number for speed being demanded by pump control system at that point in time in 0.1 Hz.
Byte 3 is condition byte (see Section 4.6.4).

4.7.44 Module 812 - pXH Override.

Not applicable to CXS (fixed booster speed). This module provides pXH state feedback. It can also be used to override the control of Module 11 (as normally MB operation would follow DP) to either stop or start a booster. It is not recommended to run the booster without it's backing Dry-Pump running. Rapid overheating will occur!

Output Byte: Single byte is pXH 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).

4.7.45 Module 14 - pXH Run Hours

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

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4.7.46 Module 818 - pXH Number of Starts

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

4.7.47 Module 820 - pXH Current

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

4.7.48 Module 821 - pXH Power

Input Bytes: Bytes 1 & 2 form 16-bit unsigned number for pXH Power in 0.1 kW.
Byte 3 is condition byte (see Section 4.6.4).

4.7.49 Module 823 - pXH Speed Absolute

Not applicable to CXS (fixed booster speed).

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

4.7.50 Module 996 - pXH Speed Relative

Not applicable to CXS (fixed booster speed).

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

4.7.51 Module 697 - pXH Speed Demand

Not applicable to CXS (fixed booster speed).

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

4.7.52 Module 813 - pXH Body Temperature

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

4.7.53 Module 268 - CXS P2 or EMS

This signal provides the control system with information about a customer interlock that can inhibit pump operation. It has usually either been used for connection to a customer Emergency Stop System or for connection to an exhaust pressure switch.

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Bad.
Byte 2 is condition byte (see Section 4.6.4).

4.7.54 Module 270 - CXS Exhaust Valve

Input Bytes: Byte 1 is status. Values: 1 = Good (valve open), 0 = Bad (valve closed).
Byte 2 is condition byte (see Section 4.6.4).

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4.7.55 Module 271 - CXS Exhaust Temperature Warning

Input Bytes: Byte 1 is status. Values: 1 = No warning, 0 = Warning
Byte 2 is condition byte (see Section 4.6.4).

4.7.56 Module 272 - CXS Exhaust Temperature Alarm

Input Bytes: Byte 1 is status. Values: 1 = No Alarm, 0 = Alarm
Byte 2 is condition byte (see Section 4.6.4).

4.7.57 Module 273 - CXS Exhaust Pressure Warning

Input Bytes: Byte 1 is status. Values: 1 = No warning, 0 = Warning
Byte 2 is condition byte (see Section 4.6.4).

4.7.58 Module 274 - CXS Exhaust Pressure Alarm

Input Bytes: Byte 1 is status. Values: 1 = No Alarm, 0 = Alarm
Byte 2 is condition byte (see Section 4.6.4).

4.7.59 Module 275 - CXS Body Thermal Snap Switch

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Bad (Hot)
Byte 2 is condition byte (see Section 4.6.4).

4.7.60 Module 276 - CXS Motor Thermal Snap Switch

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Bad (Hot)
Byte 2 is condition byte (see Section 4.6.4).

4.7.61 Module 277 - CXS Flame Arrestor

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Bad.
Byte 2 is condition byte (see Section 4.6.4).

4.7.62 Module 279 - CXS MB Motor Run

CXS MB is always EH type (non-inverter).

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Not running.
Byte 2 is condition byte (see Section 4.6.4).

4.7.63 4.7.60 Module 280 - CXS MB Motor Thermistor

CXS MB is always EH type (non-inverter).

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Bad.
Byte 2 is condition byte (see Section 4.6.4).

4.7.64 Module 281 - CXS MB Water Flow

CXS MB is always EH type (non-inverter).

Input Bytes: Byte 1 is status. Values: 1 = Good flow 0 = Bad flow.
Byte 2 is condition byte (see Section 4.6.4).

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4.7.65 Module 282 - CXS N2 Flow

Input Bytes: Byte 1 is status. Values: 1 = Good Nitrogen Flow 0 = Inadequate flow.
Byte 2 is condition byte (see Section 4.6.4).

4.7.66 Module 285 - CXS MB Outlet Pressure

CXS MB is always EH type (non-inverter).

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Bad (High Pressure)
Byte 2 is condition byte (see Section 4.6.4).

4.7.67 Module 286 - CXS EXD Water Level

CXS water sensor in bottom of EXD enclosure.

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Bad (water leak)
Byte 2 is condition byte (see Section 4.6.4).

4.7.68 Module 287 - CXS EXD Solvent Level

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Bad
Byte 2 is condition byte (see Section 4.6.4).

4.7.69 Module 288 - CXS Process Interlock Input

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Bad
Byte 2 is condition byte (see Section 4.6.4).

4.7.70 Module 150 - CXS Spare

This signal is not normally used but provides a status signal to the control system.

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Bad
Byte 2 is condition byte (see Section 4.6.4).

4.7.71 Module 267 - CXS DP Body

This signal provides the status of the DP body thermal snapswitch.

Input Bytes: Byte 1 is status. Values: 1 = Good, 0 = Bad
Byte 2 is condition byte (see Section 4.6.4).

4.7.72 Module 289 - CXS Bypass Valve

CAUTION

Do not attempt to use this facility unless specific guidance and approval is provided by Edwards as under many circumstances it may result in significant pump performance reduction and rapid pump life reduction.

This module provides Control of a CXS Bypass valve and feedback of its actual state. The valve is not used in most applications but can be used either as a gate valve bypass (with a limited orifice for PID pressure control) or as a partial exhaust gas recirculation valve for rapid pump heating. The later function has very considerable pump risk.

Output Bytes: Single byte is valve control. Values: 1=Open; 2=Closed; Other values - ignored.

Input Bytes: Byte 1 is status. Values: 0=Off (Closed); 4= on (Open).
Byte 2 is condition byte (see Section 4.6.4).

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4.7.73 Module 1011 - CXS On Process Warning

CAUTION

Use of this option increases likelihood of pump stop during Process.

To avoid premature controller failure this parameter is should not be changed more than 100 times/day.

Normally a pump will not go On Process if a Warning exists. This module can be used to change a controller's configuration to allow pump to go On Process even if the pump is in a Warning state.

Output Byte: Values: 1=True (allows pump to go on Process despite Warning) 2=False (sets normal state which inhibits pump going On process if a warning exists); Other values - ignored.

4.7.74 Module 1012 - CXS On Process Cold

CAUTION

To avoid premature controller failure this parameter is should not be changed more than 100 times/day.

Normally a pump will not go On Process unless warm. This module can be used to change a controller's configuration to allow pump to go On Process even if the pump is cold.

Output Bytes: Values: 1=True (allows pump to go on Process even if cold) 2=False (sets normal state which inhibits pump going On process if pump is cold); Other values - ignored.

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5 Maintenance

5.1 Fault finding

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

Table 7 - 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 or 0, 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. Check Profibus cable connected. Check Profibus master is on-line.
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.

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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.

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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

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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.*

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Declaration of Conformity

We, Edwards,
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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)

GXS/CXS Profibus Module 0397-53-000

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

EN61326-1:2013 (Class B Emissions, Industrial Immunity)	Electrical equipment for measurement, control and laboratory Use. EMC requirements. General requirements

and fulfils all the relevant provisions of

2014/30/EU	Electromagnetic Compatibility (EMC) Directive
2011/65/EU	Restriction of Certain Hazardous Substances (RoHS) Directive

L G Marini

Larry Marini, Senior Technical Manager

16.08.2016, Eastbourne

Date and Place

This product has been manufactured under a quality management system certified to ISO 9001:2008

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