Interface EIC-900

Instructions

1 Introduction

The External Instrument Connection EIC-900 is an interface unit between UNICORN[™] control system and free standing instruments. The housing has the same design as all ÄKTA[™] components.

EIC-900 has analogue and digital outputs/inputs to monitor and control a range of external devices and signals.

EIC-900 has 2 permanent high resolution analogue inputs, 4 configurable analogue inputs/outputs and 8 configurable digital inputs/outputs. Configuration is made at request.

Configuration of this particular instrument is described in the document *System specific wiring and instructions* enclosed.

Safety

- The instrument is designed for indoor use only.
- Do not use in a dusty atmosphere or close to spraying water.

WARNING! The system must be connected to a grounded mains socket.

2 Installation

Installing the unit

- 1 Connect the external components to the plugable terminal blocks and the high resolution inputs on the rear of the unit according to the *System specific wiring and instructions* enclosed.
- 2 Connect two *UniNet-1* cables to the *UniNet-1* connectors. The unit can be connected anywhere between the PC and the termination plug. (If EIC-900 is delivered mounted in a system this is already done.)

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3 Connect the mains supply to EIC-900 with a mains socket. (Rack mounted units are already connected to the rack foot mains socket.) The instrument is delivered with both European and US type mains cables as standard. Any voltage 100-240 V AC, 50 or 60 Hz can be used.

The unit contains no user replaceable fuse.



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3 Operation

On/Off

EIC-900 is on when the power supply is connected.

All interaction with the instrument is through UNICORN.

4 Maintenance

Wipe the instrument housing regularly with a damp cloth. Let the instrument dry completely before use. No other periodic maintenance is required.

5 Trouble shooting

If the suggested actions do not correct the fault, call Amersham Pharmacia Biotech.

Fault Action

No response from EIC-900 in UNICORN

- 1 Check that the cables and connectors are properly connected
- 2 Check the connection to the power supply
- Other faults Contact Amersham Pharmacia Biotech

Reference information

Product description

IEC-900 contains no user replaceable items.

On delivery EIC-900 is configured according to the enclosed *System specific wiring and instructions*.

Other input/output modules available on request

8 digital modules in any combination:

- Digital inputs: 10-32 V DC 2.5-28 V DC
 - Digital outputs: 5-60 V DC

4 analogue modules with 12 bit resolution in any combination:

Analogue inputs: 4-20 mA 0-5 V DC

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- Analogue outputs: 4-20 mA 0-5 V DC
- 2 fixed analogue inputs ±5 V DC with 20 bit resolution.

All channels are isolated from the system ground and also individually. The maximum common mode voltage with respect to the system ground is ± 60 V DC.

The +24 V DC output is isolated from system ground and capable to supply two 4-20 mA current loops.

Connection examples

This section gives examples on how to connect external devices to EIC-900.

External instrument with voltage output

For monitoring e.g. pressure, UV monitor signals or other signals available as voltage outputs.

Use the high resolution inputs, channel 0 and/or channel 1.

• Connect a signal cable (enclosed) to the desired channel.

- Remove the protection cover from the wires marked 1 and 2.
- Connect wire 1 to the external instrument high output.
- Connect wire 2 to the external instrument low output.

If the signal is noisy, remove the protection cover from the unmarked wire (the thickest one) and connect it to the external instrument low output (the same terminal as for wire 2).



An external instrument connected to a high resolution input on the EIC-900

External instrument with a 4-20 mA input

In the example below the analogue input/output channel 0 is equipped with a 4-20 mA output module.

The 4-20 mA current loop is a common way to control inustrial devices. Normally, a voltage source is needed to supply the loop. A 24 V DC voltage source is provided in the EIC-900 for this purpose. If a voltage source is needed, connect according to figure below. (Refer to the manual for the specific instrument).

If the voltage source is built into the external instrument, refer to the manual for the specific instrument.



Controlling an external instrument using 4-20 mA current loop. In this example the EIC-900 internal voltage source is used to supply the loop

External instrument with a digital input

Useful for controlling pumps on/off, UV monitor autozero, fraction collector feed tube, alarms etc.

The digital outputs in the EIC-900 act as solid state switches (open collector outputs).

A common way to control an external instrument using the digital output channel 1 is shown below. In this case, the external instrument has a commonly used TTL-active low input.



An external instrument connected to a digital input on the EIC-900

Technical specifications

Operating data

Supply voltage 100-240 V AC, 50 or 60 Hz Power consumption Max. 70 VA

High resolution inputs -5 V - +5 V

-5 V - +5 V Range Resolution 10 µV, 20 bit Noise <0.04 mV (expressed as Std deviation at 10 Hz sampling frequency, 2400 samples) <±0.003% of FS Linearity Input impedance >100 kΩ Accuracy Better than ±5 mV Max. voltage input ±24 V

Analogue inputs/outputs 4 - 20 mA in

Range	4 - 20 mA
Resolution	0.004 mA, 12 bit
Input impedance	250 Ω
Accuracy	Better than ±0.06 mA at room
	temperature
	Better than ±0.45 mA in
	temperature range +4 to +40 °C
Max. input	10 V or 40 mA

Analogue inputs/outputs 4 - 20 mA out

Range 4 - 20 mA Resolution 0.004 mA, 12 bit 15 V min., 24 V typical, 60 V Loop supply (DC) max. Max. load resistance vs. loop supply 450 Ω @ 15 V 750 Ω @ 24 V 1500 Ω @ 60 V Accuracy Better than ±0.026 mA at room temperature Better than ±0.21 mA in temperature range +4 to +40 °C

Analogue inputs/outputs 0 - 5 V in

Range	0 - 5 V DC
Resolution	1.22 μV, 12 bit
Input impedance	1 MΩ
Accuracy	Better than ±0.006 V at room temperature
	Better than ±0.034 V in temperature range +4 to +40 °C
Max. input voltage	±60 V

Analogue inputs/outputs 0 - 5 V out

Range	0 - 5 V DC
Resolution	1.22 μV, 12 bit
Output current (sou	urce or sink)
Short circuit curror	±25 MA
Short circuit curren	125 mA, typical
Accuracy	Better than ±0.011 V at room temperature Better than ±0.048 V in temperature range +4 to +40 °C
Fixed DC output 2	24 V
Output voltage	24 V DC
Accuracy	23.15 - 24.85 V in temperature range +4 to +40 °C
Output current	80 mA
Digital inputs/out	puts 2.5 - 28 V in
Input voltage range	e
	2.5 - 28 V
Input allowed for n	<i>o output</i> 1 V, 0.2 mA
Input impedance	900 Ω
Digital inputs/out	puts 10 - 32 V in
Input voltage range	e 10 - 32 V
Input allowed for n	o output 3 V. 1 mA
Input impedance	1000 Ω
Digital inputs/out	puts 5 - 60 V out
Line voltage	10 - 32 V
Current rating	Max. 3 A
Output voltage dro	p @ max. current <1.6 V
Off-state leakage	<i>℗ max. voltage</i> <1 mA
Computer commu	inication
	PC running UNICORN 2.10 or higher, through UniNet-1 cable connection
Environmental an	d Physical data
Ambient temporate	

Ambient temperature, operation +4 to +40 °C Relative humidity 20-95% Degree of protection IP 20 Dimensions, H x W x D mm 100 x 260 x 370 Weiaht 4.5 ka

EMC Standards

This product meets the requirement of the EMC Directive 89/336/EEC through the harmonized standards EN 50081-1 (emission) and EN 50082-1 (immunity).

Note: The declaration of conformity is valid for the instrument when it is:

• used in laboratory locations

• used in the same state as it was delivered from Amersham Pharmacia Biotech except for alterations described in the user manual

• connected to other CE labelled Amersham Pharmacia Biotech instruments or other products as recommended.

Accessories and spare parts

Item	Code no.
UniNet cable, 3 m	18-1109-74
Terminal connection kit	18-1122-00
Signal cable, 6 pin minidin open	18-1110-64

Important user information



Meaning: Consult the instruction manual to avoid personal injury or damage to the product or other equipment.

WARNING!

The Warning sign is used to call attention to the necessity to follow an instruction in detail to avoid personal injury. Be sure not to proceed until the instructions are clearly understood and all stated conditions are met.

CAUTION!

The Caution sign is used to call attention to instructions or conditions that shall be followed to avoid damage to the product or other equipment. Be sure not to proceed until the instructions are clearly understood and all stated conditions are met.

Note

The Note sign is used to indicate information important for trouble-free or optimal use of the product.

Should you have any comments on this instruction, we will be pleased to receive them at:

Amersham Pharmacia Biotech AB SE–751 84 Uppsala Sweden

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