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Find the *Emerson / Fisher Controls DH6005X1-EAS* at our website: *Click HERE*

Functional Description:

The Type DH6005 Programmable Controller Interface Unit permits operation of programmable controllers from a process control instrumentation system. Through the interface unit, users can monitor the operation and control the functions of programmable controllers from any instrumentation system that communicates via a PROVOX data highway.

Card File Layout:

SLOT PRI/SEC	Description	CABLING To/From Devices	Cable P/N
3	PWR CNVTR		
5	RS-232-C I/O Card[2]	Programmable Cntrls	
7	MPU/ROM		
8	Expansion ROM (see note)		
9	RAM 8K or 24K[3]		
10	RAM 8K (opt.)		
11	RAM 8K (opt.)		
13	NVM		
17	CIA[1]	LTD/LD	RG6/U(DH708X)
17	CIA II[4]	Highway II	RG6/U(DH778X)
19	CIA (optional)[1]	LTD/LD	RG6/U(DH708X)
19	CIA II (optional)[4]	Highway II	RG6/U(DH778X)

NOTE: Consult compatibility chart pg. 4-8 for part numbers.

[1]See CIA Data pg. 4-1-1.

[2]Cable from the Isolated RS-232-C I/O Card to the Programmable Cntrls (PC) is provided with the PC. See Table 1 for pin out of RS-232-C I/O Card connector.

[3]Extended devices must have 24K.

[4]See CIA II Data pg. 4-18-1.

Cabling:

Alarm and Power Terminal Block and Screw Terminal Identification

Terminal	Description
1	Alarm 1
2	Alarm 2
3	PSC
4	PSC
5	+24V DC

RS-232-C I/O Card Connector Pin Assignment

Pin #	Signal	Mnemonic	Direction	EIA CKT
1	Protective Ground			AA
2	Transmit Data	TXD	output	BA
3	Receive Data	RXD	input	BB
4	Request To Send	RTS	output	CA
5	Clear To Send	CTS	input	CB
6	Data Set Ready	DSR	input	CC
7	Isolated Signal Common	ISC		AB
8	Data Carrier Detect	DCD	input	CF
20	Data Terminal Ready	DTR	output	CD

NOTE: RS232 is DTE with output voltage of +/- 15V.

Specifications:

Power requirements
Power required 1.1 Amps at 24V per standard card set
Maximum Capacities
1024 discrete values or combination of discrete and analog values
Interface to Programmable Cntrls RS-232-C:
Communication Rate - (Software Selectable) 19.2k bits per sec
Communication Protocol - 1 Start Bit
8 Data Bits (RTU)
1 Stop Bit
No Parity
Number of cntrls that can be addressed - 8
Cable Length - 50 ft.
Configuration Protection:
NVM retains configuration data and restart parameters for not less than 24 hr after power failure
Alarm Contact Ratings:
Resistive Rating - 0.8 Amps at 29V DC

Operating Conditions:

	MINIMUM	MAXIMUM
Ambient temperature -	5°C (41°F)	40°C (104°F)
Ambient relative humidity -	10%	90%

Switches, Jumpers and Indicators:

MPU/ROM Card

Pause Switch:	Holds CIA's in reset.
Reset Switch:	Manually resets the MPU.
Red Indicator:	Lights when the pause operation switch is depressed and may blink alternately with the green watchdog timer indicator when the MPU/ROM card or RAM card is faulty.^E
Green Indicator:	Lights when the watchdog timer is armed and MPU has passed self-test. Blinks alternately with the Red Indicator when a card problem is detected.

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Switches, Jumpers and Indicators continued:

New Style Communications MPU/ROM PWB P/N 31B0124X012.

Manufacturing Test Jumpers

Location	Normal Position	Description
J1	IN	On Board Clock
J2	OUT	External Clock
J3	OUT	WDT

CIA Card

Green Indicator: Lights during normal operation.

Address Switches: 8 switches select the highway address. See CIA Data pg. 4-1-1.

Isolated RS-232-C I/O Card

Upper Green LED: Lights when selftest successfully completed.

Lower Green LED: Lights when cable is connected to a powered up device. Normally this will be a PC.

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Type DH6005 Programmable Controller Interface Unit

Fisher Controls *December 1986* *Bulletin 4.10: DH6005*

The Type DH6005 Programmable Controller Interface Unit permits operation of programmable controllers from a process control instrumentation system. Through the interface unit, users can monitor the operation and control the functions of programmable controllers from any instrumentation system that communicates via a PROVOX® data highway.

Communication between the programmable controllers and the interface unit is through multi-wire cable; communication between the interface unit and the rest of the instrumentation system is through the PROVOX data highway.

Product Description

The Type DH6005 interface unit consists of:

- A card file
- A cable tray
- A card set

The card file, which mounts on standard EIA rails in a system cabinet, provides all internal electrical connections for the card set. The cable tray provides a path for cable routing.

The card set includes:

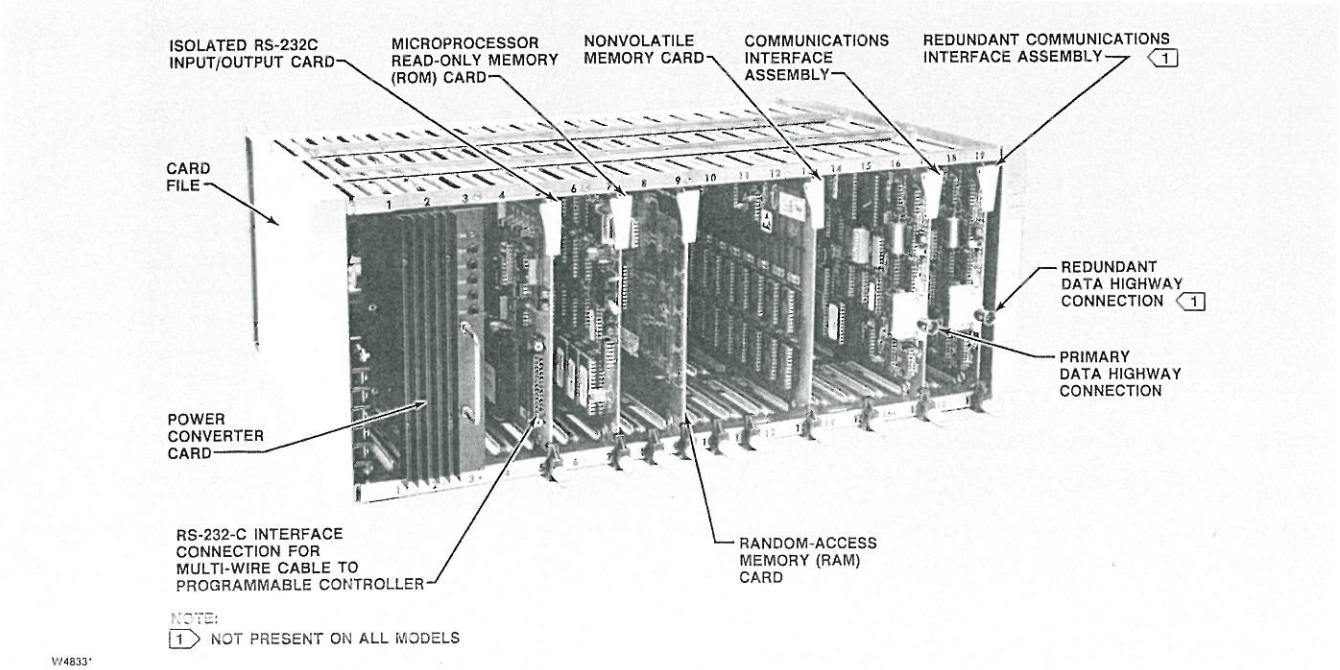
- A microprocessor unit (MPU) card
- A random-access memory (RAM) card
- A nonvolatile memory card
- An isolated RS-232C I/O card
- A communications interface assembly card
- A power converter card

The MPU card and the RAM card format the interface unit database, supervise communications over both the data highway and the cable to the programmable controllers, and perform the operation check.

The nonvolatile memory card retains all configuration data and restart parameters required to restart the interface unit should power to the unit fail.

The isolated RS-232C I/O card provides the communication and protocol for the RS-232C interface to the programmable controllers.

The communications interface assembly card connects the interface unit and the data highway. A second communications interface assembly, which installs in the control unit file, is available for connecting the interface



Type DH6005 Programmable Controller Interface Unit

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Specifications

INFORMATION TRANSFER CAPACITY	1024 discrete values (256 discrete points, four discrete values per point); or 64 analog values (64 integer points, one analog value per point); or a combination of discrete and analog values. The combination total cannot exceed 1024; one analog value is equivalent to 16 discrete values. These are maximum limits—additional constraints may occur based on reporting rates.
INTERFACE TO PROGRAMMABLE CONTROLLERS	**Interface Type:** RS-232C **Communications Rate:** Configurable for 300, 600, 1200, 2400, 4800, 9600, or 19,200 bits per second **Data Character Format:** One start bit, eight data bits, one stop bit (no parity) **Number of Controllers That Can Be Addressed:** Maximum of eight **Maximum Cable Length:** 50 feet (15.2 m). Commercial modems may be required for cable lengths greater than 50 feet (15.2 m) or when interfacing more than one programmable controller (consult installation instructions for the specific programmable controller used)
PROGRAMMABLE CONTROLLER REGISTER REQUIREMENTS	**Maximum Number of Register Addresses:** 64 divided randomly among up to eight programmable controllers, plus one address per programmable controller dedicated to status information **Register Size:** 16 bits **Register Capacity:** 16 discrete values per register or one analog value per register
DATABASE UPDATE RATE	Typically 350 millisecond average and 1 second maximum at the 19,200 baud communications rate. Any outputs performed are on the same lines and slow the update rate. Also, if the programmable controller being addressed is on a higher priority task than the PCIU task, the PCIU waits until the programmable controller responds (with an overall timeout).
CONFIGURATION PROTECTION	The nonvolatile memory retains interface unit configuration data and restart parameters for not less than 24 hours after a power failure.
REPORTING	Reports to a maximum of 24 operator interfaces of systems which communicate via a data highway. A single point may have different reporting intervals to different highway devices. **Periodic Reporting Intervals:** 0.5, 1, 3, 5, 10, 15, and 60 seconds. **Periodic-Exception Reporting Intervals:** 0.5, 1, 3, 5, 10, 15, and 60 seconds, with a 10-minute override.
ALARM CONTACT RATINGS	Double-pole single-throw (DPST), normally closed contacts with a resistive rating of 0.8 amperes at 29 volts dc.
POWER REQUIRED	21 to 28 volts dc. Nominal input current at 24 volts dc is 1.7 amperes with one communications interface assembly and 2.2 amperes with a second communications interface assembly.
SWITCHES & INDICATORS	**Microprocessor Unit:** The pause switch disengages communications. The manual reset switch manually resets the microprocessor. The red light emitting diode (LED) indicates reset of communications interface assemblies. The green LED indicates normal operation. **Communications Interface Assembly:** The green LED indicates normal operation. There are eight switches to set highway and device addresses. **Isolated RS-232C Input/Output Card:** Two green LEDs indicate interface card normal operation and interface readiness.

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Specifications (Continued)

OPERATING CONDITIONS[1]

Condition	Reference Limits[1]	Normal Limits[1]	Operative Limits[1]	Transport & Storage Limits[1]
Ambient Temperature[1]	73 & 81°F (23 & 27°C)	41 & 122°F (5 & 50°C)	32 & 131°F (0 & 55°C)	−40 & 149°F (−40 & 65°C)
Maximum Temperature Variation	3.5°F/h (2°C/h)	36°F/h (20°C/h)	9°F/min (5°C/min)	18°F/min (10°C/min)
Ambient Relative Humidity (without condensation)	35 & 45%	10 & 90%	5 & 95%	5 & 95%
Electromagnetic Field[2]	100 mV/m 20 to 1000 MHz	10 V/m 20 to 1000 MHz	30 V/m 20 to 1000 MHz	

ELECTRICAL CLASSIFICATION

Refer to the Nonhazardous Area Classification bulletin.

MOUNTING

The card file and cable tray require 8.5 inches (215.9 mm) [5 units] of vertical rail space.

WEIGHT

Base Unit: 19 pounds, 10 ounces (9 kg).
Second Communications Interface Assembly: 11 ounces (0.31 kg).

1. These items are defined in ISA Standard ISA-S51.1-1979.
2. These conditions are explained in SAMA Standard PMC33.1-1978. The conditions are applicable only when the unit is installed in a cabinet and all cabinet doors are closed.

unit to a secondary data highway to support backup communications.

The power converter card provides the necessary operating power for the card set from a 24 volt dc supply, and provides overvoltage protection for the unit. The power converter also has alarm circuits to detect low output of regulated voltages. In the event of low output, alarm relay contacts within the power converter open. These contacts are normally wired in conjunction with the alarm module of a power distribution panel assembly.

Interfacing to Programmable Controllers

The interface unit uses integer and discrete points to communicate information to and from the programmable controllers. An integer point represents an analog value such as a timer or counter information within a programmable controller. A discrete point includes up to four discrete (on-off) values in a programmable controller. In addition, the interface unit can be configured so that programmable controller status information such as battery condition, mathematical overflow, and input/output (I/O) module failure can generate operator alarms.

All programmable controller input values to the interface unit must be stored in the programmable controller in contiguous blocks of memory registers accessible by the interface unit. The controller must be programmed to include block move or block transfer statements to place information in these registers.

Through the interface unit, the instrumentation system can generate commands to operate pumps, motors, and valves, or to set timer values within a programmable controller. Such commands change discrete values within the controller (force coils) to start a pump or stop a motor, or change analog values (load registers) to set timer values. These commands are communicated to the interface unit via output-type points.

The interface unit is compatible with the programmable controllers of the following manufacturers, some of which may require interface translators and program loaders:

- Allen Bradley — PLC, PLC-2, PLC-3, PLC-4
- General Electric Series Six — 60, 600, 6000
- Gould — 484, 584, 884, 984
- Square D — 100, 300, 500, D-Log
- Texas Instruments — PM 520, PM 530, PM 550 (IQ 85)
- Reliance — Automate 20, Automate 30

Interface translators convert programmable controller communications into system-usable format. Program loaders input control information, relay ladder logic, and move statements. Translators and program loaders are available from the controller manufacturers.

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Interfacing to the Data Highway

The interface unit reports information to the data highway by request-response or on a periodic or periodic-exception basis.

Request-response reporting means that the interface unit transmits data only when data is requested by the system.

Periodic reporting means that the interface unit transmits data automatically at one of several selectable intervals.

Periodic-Exception reporting means that the interface unit transmits data automatically, at one of several selectable intervals, but only if the data has changed since the previous report. Periodic-Exception reporting includes a 10-minute override: if 10 minutes elapse without data changing, the interface unit reports the same data again.

Operation Checks

The interface unit provides the following operation checks:

- Continuous self-check which monitors the performance of the interface unit.
- Continual check of the RS-232C interface. If an error is detected, an error indication appears on the console display and on LED indicators on the interface unit.
- Validity check of commands received via the data highway. If an invalid command is received by the interface unit, an invalid command indication is returned to the device that sent the command.

Ordering Information

When ordering, specify:

Type DH6005

Programmable Controller Interface Unit

Base Product

Base unit

Second Communications Interface Assembly

None

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Type DH6005 Programmable Controller Interface Unit (PCIU)

Fisher Controls *July 1992* *Bulletin BU4.10:DH6005(S1)*

Supplementary Sheet

The information presented here supplements the information in product bulletin *Type DH6005 Programmable Controller Interface Unit (PCIU)* (BU4.10:DH6005) dated December 1986.

Communications Interface

The Type DH6005 Programmable Controller Interface Unit (PCIU) can be connected to either a PROVOX® Data Highway or a PROVOX Highway II. A communications interface assembly connects a PCIU to the highways. Depending on the highway, a different assembly is used, as follows:

- The Type DH7001 Communications Interface Assembly (CIA) connects a PCIU to a PROVOX Data Highway.
- The Type DH7721 Communications Interface Assembly II (CIA II) connects a PCIU to a PROVOX Highway II.

Each assembly consists of a printed circuit card. The two cards are functionally equivalent. Either converts and synchronizes information for transmission between PCIUs and other PROVOX highway devices over a PROVOX highway.

Each card contains a single channel. Two cards are used in redundant communication systems to provide a fault-tolerant data path. A card mounts inside the PCIU card file.

See product bulletin *PROVOX Highway II Communications System* (BU4.10:010) for a detailed description of the Highway II system and the CIA II card.

Ordering Information

Use this information when ordering the communications interface for a PCIU.

When ordering, specify:

- For a PROVOX Data Highway

  Type DH7001 Communications Interface Assembly (two required for redundant communications)

- For a PROVOX Highway II

  Type DH7721 Communications Interface Assembly II (two required for redundant communications)

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