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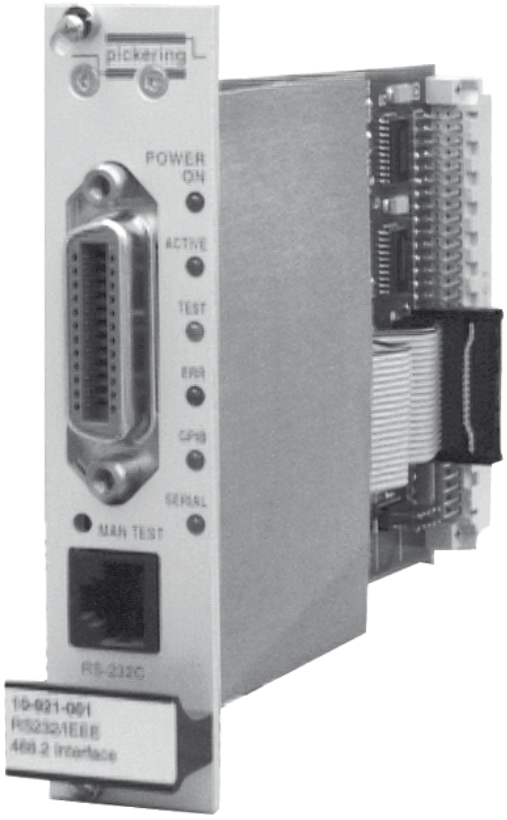
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Find the *Pickering 10-921* at our website: ***Click HERE***

10-920A/921/922
RS-232/IEEE-488.2/Ethernet Interface

- IEEE-488, RS-232 & Ethernet Interface
- 32 Bit Microprocessor For Fast Response
- Fully IEEE-488.2 Compatible, So Providing a Familiar Software Interface
- Supports ALL System 10/20 Modules and Configurations
- Special Support for Large Matrix & Multiplexer Systems
- Extensive Error Handling and Reporting in English Language or Numeric Format
- Full Self Test Diagnosis Support
- Comprehensive & Easy To Use Instruction Set
- Large I/O Buffers Increase Throughput
- LabWindows®, LabView® and VEE® Drivers



The 10-921 IEEE-488.2/RS-232 and 10-922 IEEE-488/Ethernet Interface Modules provides a versatile means of communicating with a Pickering Interfaces' Switching System. The instruction set has been designed to ease integration of System 10/20 into your Test or Data Acquisition environment. The use of a 32 bit microprocessor ensures maximum response and throughput.

The 10-921 interface module provides any System 10/20 Switching System with a full RS-232 and IEEE-488.2 interface. The 10-921 interface features powerful but easy to use instructions, which hide many of the intricacies required when operating complex switching systems, especially large multiplexers (scanners) and matrices.

IEEE-488.2 Compatible

The 10-921 Intelligent Interface is totally compatible with the IEEE-488.2 (1987) standard, both the IEEE-488 and RS-232-C interfaces follow IEEE-488.2 Protocols.

This software standard is the basis for SCPI and is much used in VXI based instrumentation. For further information on the IEEE-488.2 standard please refer to the 10-920 data sheet or you may request a programming manual from Pickering.

RS-232: The serial interface allows System 10 and 20 units to be controlled from any standard PC, with a wide range of baud rates plus a choice of software or hardware handshaking. IEEE-488 (GPIB): High speed IEEE-488.2 interface. The 10-921 is a faster version of the popular 10-920A interface module, the two modules are compatible.

Ethernet: Model 10-922 has an Ethernet (10BaseT) port that supports standard protocols such as TCP/IP and SMNP.

Fast and Easy Programming

The 10-921 uses a 32 bit microprocessor (Motorola 68332) to give maximum operating throughput. All programming is done in ASCII using English-like instructions with support for most number formats, all instructions follow exactly the same syntax. Incoming instructions are placed into an input buffer, therefore a large block of instructions may be sent to the interface which can then be left to execute, thus leaving the control computer free to carry out other tasks. A large output buffer simplifies status and error reporting.

Full support is given to application program debug using the VIEW? and REPORT? instructions, any incoming instruction which causes offence (due to incorrect or invalid instructions or arguments) can be read back together with a description of the problem. In addition self testing and detailed fault diagnosis simplify test system debug and maintenance.

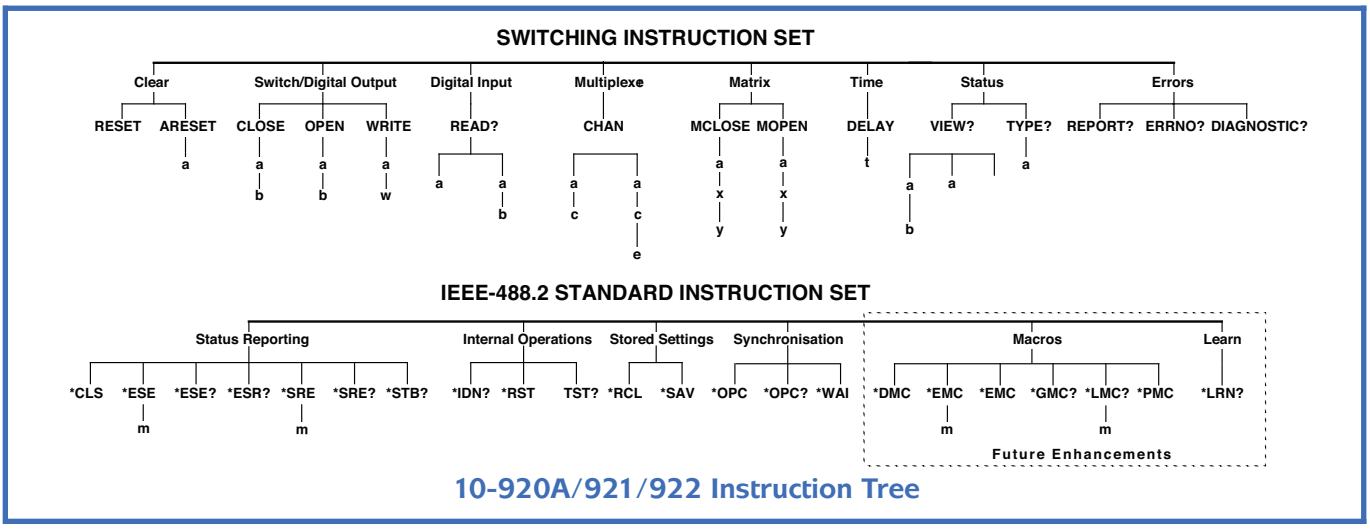
*SAV/*RCL Stored Status Support

The 10-920A/921/922 has 256 internal registers which can be used for storing the state of the complete switching system into nonvolatile flash memory. These can be later recalled, using the *RCL instruction, thus saving the user having to send a large number of switch programming commands.

LabWindows®, LabView® & HP VEE Support

Drivers are available to support LabWindows/CVI, LabView and HP VEE. These are available free of charge from our Web site or CD ROM.

ISSUE 5, JUL 2006



10-920A/921/922 Instruction Tree

System 10 Device Specific Instructions

ARESET `a`	Addressed Reset, clear module `a`.
CHAN `a,c`	Close channel `c` on scanner `a`.
CLOSE `a,b`	Close switch `b` on module `a`.
DELAY `t`	Delay of `t` milliseconds.
DIAGNOSTIC?	Returns full self-test fault diagnosis, if any.
ERRNO?	Returns an error value in range "0" - "255".
MCLOSE `a,x,y`	Close switch at coordinates `x,y` on module `a`.
MOPEN `a,x,y`	Open switch at coordinates `x,y` on module `a`.
OPEN `a,b`	Open switch `b` on module `a`.
READ `a`	Read input word from module `a`.
REPORT?	Returns error string describing the last error.
RESET	Reset all modules to clear state (as at power on).
TYPE? `a`	Return type and size of module `a`.
VIEW? [`a,b`]	View status of whole system or module.
WRITE `a,w`	Write word `w` to module `a`.

System 10/20 modules may be programmed completely using just the device specific instructions, i.e. the IEEE-488.2 instructions can, if wished, be totally ignored with little loss of functionality.

IEEE-488.2 Common Instructions

*CLS	Clear Status Command.
*ESE `m`	Sets the selected bits in the SESE Register.
*ESE?	Event Status Enable Query.
*ESR?	Event Status Register Query.
*IDN?	Identification Query.
*OPC	Operation Complete Command.
*OPC?	Operation Complete Query.
*RCL `r`	Restore the state of all modules to that stored in memory `r`.
*RST	Device Reset command
*SAV `r`	Save the current state of all modules to memory `r`.
*SRE `m`	Sets the selected bits in the SRE Register.
*SRE?	Status Register Enable Query.
*STB?	Status Byte Query.
*TST?	Self Test Query.
*WAI	Wait-to-Continue Command

If the information here is of insufficient detail Pickering Interfaces can, upon request, send you a 50 page programming manual. It is also available at our web site.

RS-232 Interface Specifications

- Connector Type is Standard 9 Way D-Type Socket (on flying lead).
- Input/Output Buffer Max Transfer Rate = 2kByte/Sec.
- Input/Output Buffer Size = 1kByte.
- RS-232-C Interface Functions: RxD, TxD, CTS, RTS plus software handshake.
- Baud Rates: 1200, 2400, 4800, 9600, 19200, 38400 & 57600.

IEEE-488 Interface Specifications

- Connector Type is Standard 24-Way GPIB type.
- Input/Output Buffer Burst Transfer Rate = 50kByte/Sec.
- Input/Output Buffer Size = 1kByte.
- IEEE-488.1 Interface Functions: SH1, AH1 T6, L4, SR1, RL0, PP0, DC1, DT0, C0, E2.
- Compatible with Slower 10-920A Module.
- Fully Compatible with Original IEEE-488 (1978) Standard.

Instruction Execution Times

The average instruction execution time is around 5ms, this varies from <1ms up to >100ms depending upon instruction type and system complexity (Note: *TST? Self Test Command may take up to 1 minute for large matrix systems).

Typical execution times are:

`CHAN a,c`	2ms	`CLOSE a,b`	5ms
`MCLOSE a,x,y`	5ms	`READ?`	5ms
`VIEW? a`	<1ms	`WRITE a,w`	2ms

Example Instructions

`CHAN 6,75`	Close channel 75 on multiplexer with address 6.
`CLOSE 5,2`	Close switch 2 on module with address 5.
`MOPEN 2,12,98`	Open matrix crosspoint at x=12, y=98 on matrix with address 2.

10-921 Front Panel has the following on the front panel: Indicators for Power On, System Active, Self-Test Active, Self-Test Error, RS-232 Active and IEEE-488 Active. In addition a recessed switch will initiate self test and system exercise.

Width and Dimensions

All modules conform to the 3U height (128mm) Eurocard standard and are 160mm deep. Panel width is 1.2 Inches.

Product Order Codes

System 10 RS232/IEEE-488.2 Interface	**10-920A-001**
System 10/20 RS232/IEEE-488.2 Interface	**10-921-001**
System 10/20 Ethernet Interface	**10-922-101**

Latest Details

Please refer to our Web Site for Latest Product Details.
www.pickeringtest.com

Operating/Storage Conditions

Operating Conditions

Operating Temperature:	0°C to 55°C
Humidity:	Up to 95% non-condensing
Altitude:	5000m

Storage and Transport Conditions

Storage Temperature:	-20°C to +75°C
Humidity:	Up to 95% non-condensing
Altitude:	15000m

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