GPIB Breadboard Module 10-220A

- Fully Enclosed and Screened Breadboard Module
- Choice of 16-Bits Digital I/O, 32-Bits Output or 32-Bits Input
- Choice of Output Types: TTL, CMOS or Open Collector Transistor
- Provides Access to System 10 Analogue Bus
- 5V and 12V Power Supplies Available
- Pickering Interfaces Can Construct Special Circuits to Customer Requirements

***Please contact Pickering for alternative PXI/LXI/USB solutions**

System 10 Breadboard Modules are intended for applications where users wish to incorporate their own circuit within a System 10/20 case. Breadboard 10-220A has 32 I/O ports, with a choice of TTL, CMOS or open collector transistor outputs.

Typical Applications:

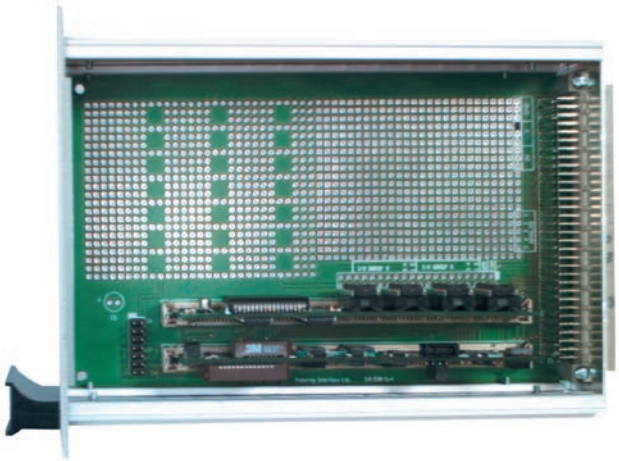
- Construction of Special One-Off Circuits
- Programmable Amplifiers
- Programmable Attenuators
- Filters
- Special Circuits to Drive External Relays
- Mounting Special Relay Types
- Analogue to Digital Conversion (ADC)
- Digital to Analogue Conversion (DAC)
- Dummy Multiplexer Channels for Calibration Purposes

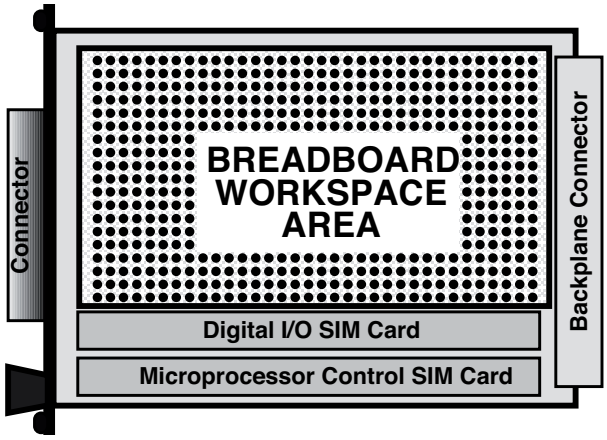
The 10-220A Series of Breadboard Modules allows the user to construct their own circuit in situations where a System 10 module is not available. For example when it is required to integrate a non-switching function within a System 10/20 case.

Typical applications include: Accessing the internal analogue bus, to create custom circuitry that can be conveniently housed within a System 10/20 case and to build special "one off" switching modules.

Pickering can construct and test breadboard circuits to your exact specifications, please contact sales office to discuss your application in detail.

If your requirement will not fit within a System 10 Breadboard Module then please look at the System 20 range.





PCB Layout for the 10-220A Breadboard Module

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General Breadboard Details

Maximum Component Height: 40mm.

Maximum Lead Length Below Board: 4mm.

Backplane Access: Available via a DIN 41612 connector, this gives access to the Analogue Bus (5 poles) and User Workspace Area (useful for custom inter-module connections).

Power Supply: Choice of 5 & 12Volts DC, up to 1A current (within the overall limit of the power supply, 45W for System 10). The 5V and Ground lines are bused around the pcb to facilitate circuit construction.

Additional 10-220 Breadboard Details

Input/Output Capability: 16 bits of digital output plus 16 bits of digital input. Data may be written or read in word (16 or 32 bit), byte or bit form.

Workspace Area: Square pad and DIP construction areas.

Input/Output Driver Types

The 10-220 Module is available in three basic versions; 32-bit output, 32-bit input, or combined 16-bit input and 16-bit output. Outputs can be specified as TTL or Open Collector.

TTL Compatible Output	
Driver I.C.:	74F245
Maximum drive:	15 TTL inputs
Max Voltage:	7V
Max Current Drive:	Sink: 8mA max
	Source: 0.4mA
Operate/Release Time:	<1ms (after internal bus DAV)

Open Collector Transistor (suitable for driving relay coils)	
Driver I.C.:	ULS2803A
Maximum Standoff Volts:	50V
Max Power per O/P:	1.0W
Max Power per Byte:	1.6W
Max Current Drive	500mA
Operate/Release Time:	<1ms (after internal bus DAV)

TTL Compatible Input	
Driver I.C.:	74F245
Maximum Standoff Voltage:	7V
Nominal True voltage:	>2.0V
Nominal False voltage:	<0.8V
Data is strobed when the READ? operation executes	

Mechanical Characteristics

The Breadboard Module conforms to the 3U height (128mm) Eurocard standard and is housed in a 160mm deep screened plug-in module. Panel width for all versions with standard connectors is 2.4 Inches.

Connectors

Connections are made via 2 front panel mounted 37-pin D-type male connectors, for pin outs please refer to the operating manual.

Extender Cable

A backplane extender cable is available (10-954-005) to assist in construction and debugging of you custom circuit.

Programming

The Digital I/O module is simple to program either by single bit or by word (8 or 16 bits).

ARESET a	Clear all outputs on module **a**
CLOSE a,b	Set bit number **b** on module **a**
DELAY t	Force a minimum delay of **t** milliseconds between two instructions
OPEN a,b	Clear bit number **b** on module **a**
READ? a[,b]	Read word (8 or 16 bits) on module **a**. If the bit number **b** is supplied then a 1 or 0 value for that bit only is returned
RESET	Clear all bits/switches on all modules
VIEW? a[,b]	View status of module **a**, can be viewed at any time either as a word or by bit **b** as a logical value (1 or 0)
WRITE a,w	Send word **w** to module **a**

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

Safety & CE Compliance

All modules are fully CE compliant and meet applicable EU directives: Low-voltage safety EN61010-1:2010, EMC Immunity EN61326-1:2013, Emissions EN55011:2009+A1:2010.

Product Order Codes - Ruthenium Reed

Breadboard 16 Bits Out + 16 Bits In	10-220A-001
Breadboard 32 Bits Out + 0 Bits In	10-220A-002
Breadboard 0 Bits Out + 32 Bits In	10-220A-003
Options:	
CMOS compatible logic	-C
Open collector transistor output	-O
High voltage remote driver	-H

Product Customization

Pickering System 10 modules are designed and manufactured on our own flexible manufacturing lines, giving complete product control and enabling simple customization to meet very specific requirements.

Customization can include:

- Alternative relay types
- Mixture of relay types
- Alternative number of relays
- Different performance specifications

All customized products are given a unique part number, fully documented and may be ordered at any time in the future. Please contact your local sales office to discuss.

Mating Connectors & Cabling

Backplane Extender Cable (0.5m)	10-954-005
37-Pin D-type Socket with Crimp Pins	10-960-037

For other 37-pin connection accessories for the 10-220A modules please refer to the 90-007D 37-pin D-type Connector Accessories data sheet where a complete list and documentation can be found for accessories, or refer to the Connection Solutions catalog.