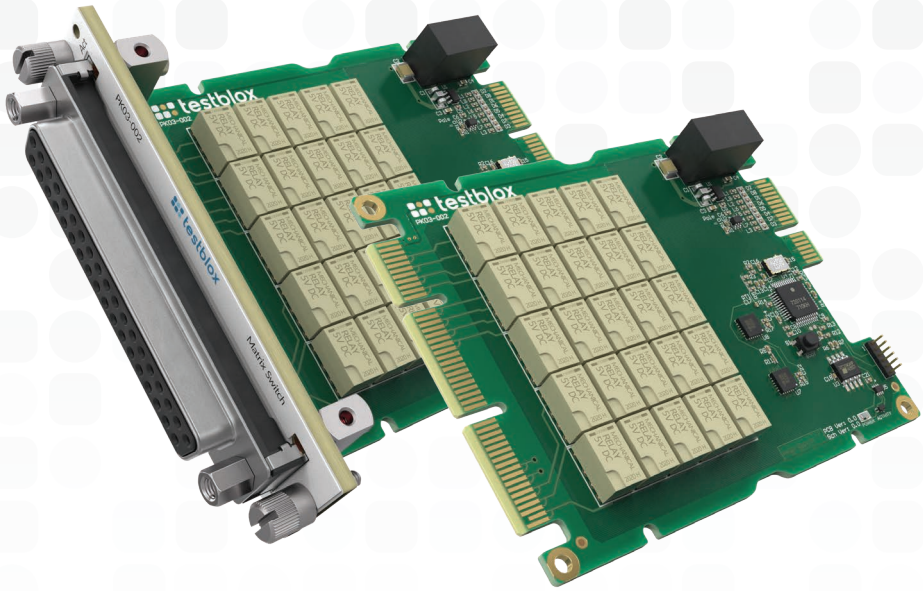
Testblox PK03-002

5x5 2-Pole 2 A Matrix



PRELIMINARY DATA

The PK03-002 is a low cost, matrix module constructed using electro-mechanical relays. It is available in 5x5, 2-pole configuration and is capable of switching voltages up to 60 V and current up to 2 A.

The matrix allows signal paths to be set between any X and Y terminal or multiple X and Y terminals. Also connections can be set between X terminals using a Y path, or between Y terminals using an X path. Larger matrices can be created by cascading signals between adjacent modules.

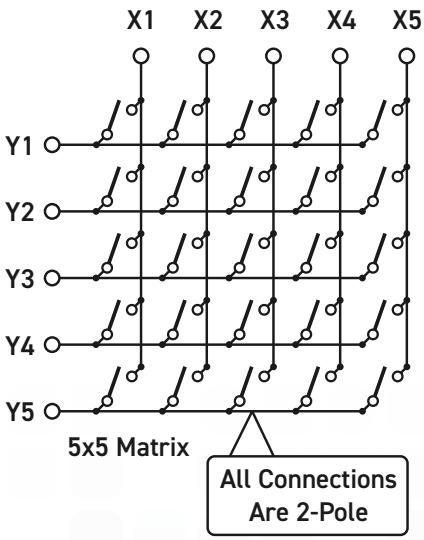
2-pole matrices are ideal for applications where two wires must be switched simultaneously, for example, signal and ground.

Functionality

- 5x5 Matrix With 2-Pole Connections
- Electro-mechanical Relays
- Maximum Current 2 A Hot or Cold Switching
- Switch up to 60 V
- Operating Speed <3 ms
- Drivers Supplied for Windows & Linux
- 3 Year Warranty

The module is fitted with high quality electro-mechanical signal relays with palladium-ruthenium, gold covered contacts. These are suitable for switching low-level signals as well as current up to 2 A.

The PK03-002 is available with a front panel allowing access to the switch paths via a 37-pin D-type connector. Alternatively it can be supplied without a front panel so user connections can be made directly to the module's edge connector.



PK03-002 Switching Architecture

support@testblox.com

pickering testblox

Specifications

Switching Specification	
Switch Type	Electro-mechanical
Contact Type	Palladium-Ruthenium, Gold Covered Bifurcated
Max Switch Voltage	60 VDC/50 VAC
Max Switch Current	2 A
Max Continuous Carry Current	2 A
Max Pulsed Carry Current Example (for a single switch path)	6 A for 100 ms (up to 10 % duty cycle)
Max Power	62.5 VA, 60 W from 30 V to 220 VDC, 30 W to 300 VDC (resistive load)
Initial On Path Resistance	<500 mΩ
Off Path Resistance	$>10^9$ Ω
Thermal Offset	<5 µV
Operate Time	<2 ms
Expected Life (operations)	
Very low power signal load	$>1x10^8$
Low power load (2 W)	$>1.5x10^7$ (0.1 A, 20 VDC)
Medium power load (30 W)	$>5x10^6$ (1 A, 30 VDC)
Full power load (60 W)	$>1x10^5$ (2 A, 30 VDC), $>1x10^5$ (0.1 A, 300 VDC)

RF Specification - In a 50 Ω System		
Bandwidth (-3 dB)	60 MHz (typical) (TBD)	
Crosstalk (typical)	10 kHz	-65 dB (TBD)
	100 kHz	-60 dB (TBD)
	1 MHz	-50 dB (TBD)
	10 MHz	-30 dB (TBD)
Isolation (typical)	10 kHz	60 dB (TBD)
	100 kHz	60 dB (TBD)
	1 M Hz	60 dB (TBD)
	10 MHz	40 dB (TBD)

Power Requirements	
Input Voltage Range	TBD
Current	TBD

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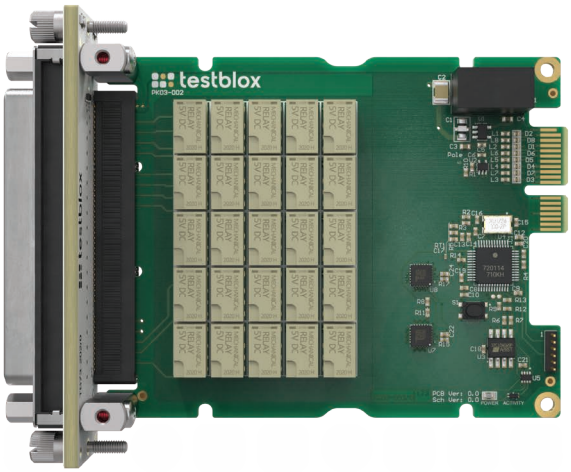
Specifications

Mechanical/Environmental	
Module Dimensions Module Weight	90 mm x 69 mm (without front panel) <100 g
Connector Durability (mating life): Backplane Connector Front-edge Connector Front-panel Connector Module insertion and removal	 >100 cycles >100 cycles >100 cycles Modules are not hot swappable
Environmental: Operating Temperature Storage Temperature Relative Humidity Maximum altitude	 0 °C to +55 °C -20 °C to +75 °C Up to 90 % non-condensing 5000 m

Safety & CE Compliance	
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

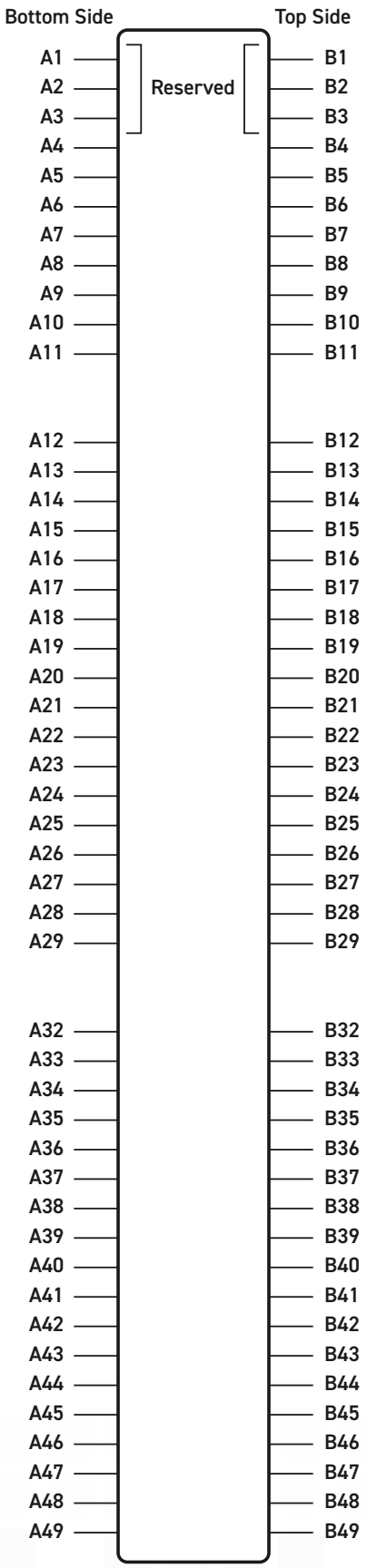
Product Order Codes

Testblox Matrix Module 5x5 2-Pole 60 V 2 A with I/O edge connector	**PK03-002-000**
Testblox Matrix Module 5x5 2-Pole 60 V 2 A with 37-pin Female D-type front panel connector	**PK03-002-203**
Single-Module USB Type-C Backplane	**TB92-001**
Three-Module USB Type-C Horizontal Backplane	**TB93-003-001**
Four-Module USB-Type-C Vertical Backplane	**TB94-004-001**



Pinout - Front Edge Connector

Pinout for Front Connector - PK03-002-000	
Pin A1 - Reserved	Pin B1 - Reserved
Pin A2 - Reserved	Pin B2 - Reserved
Pin A3 - Reserved	Pin B3 - Reserved
Pin A4 -	Pin B4 -
Pin A5 -	Pin B5 -
Pin A6 -	Pin B6 -
Pin A7 -	Pin B7 -
Pin A8 -	Pin B8 -
Pin A9 -	Pin B9 -
Pin A10 -	Pin B10 -
Pin A11 -	Pin B11 -
Pin A12 -	Pin B12 -
Pin A13 -	Pin B13 -
Pin A14 -	Pin B14 -
Pin A15 -	Pin B15 -
Pin A16 -	Pin B16 -
Pin A17 -	Pin B17 -
Pin A18 -	Pin B18 -
Pin A19 -	Pin B19 -
Pin A20 -	Pin B20 -
Pin A21 -	Pin B21 -
Pin A22 -	Pin B22 -
Pin A23 -	Pin B23 -
Pin A24 -	Pin B24 -
Pin A25 -	Pin B25 -
Pin A26 -	Pin B26 -
Pin A27 -	Pin B27 -
Pin A28 -	Pin B28 -
Pin A29 -	Pin B29 -
Pin A32 -	Pin B32 -
Pin A33 -	Pin B33 -
Pin A34 -	Pin B34 -
Pin A35 -	Pin B35 -
Pin A36 -	Pin B36 -
Pin A37 -	Pin B37 -
Pin A38 -	Pin B38 -
Pin A39 -	Pin B39 -
Pin A40 -	Pin B40 -
Pin A41 -	Pin B41 -
Pin A42 -	Pin B42 -
Pin A43 -	Pin B43 -
Pin A44 -	Pin B44 -
Pin A45 -	Pin B45 -
Pin A46 -	Pin B46 -
Pin A47 -	Pin B47 -
Pin A48 -	Pin B48 -
Pin A49 -	Pin B49 -



Pinout Diagram for Front Edge Connector

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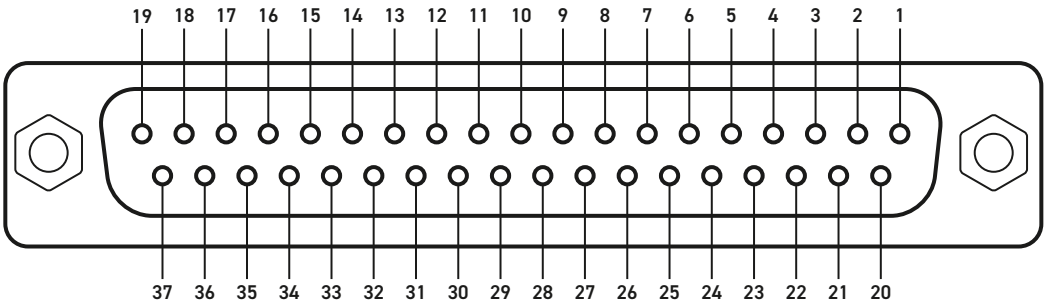
Pinout - Using 37-pin D-type Interface Board

Pinout for 37-pin D-type Interface Connector - PK03-002-203	
Pin 1 -	Pin 20 -
Pin 2 -	Pin 21 -
Pin 3 -	Pin 22 -
Pin 4 -	Pin 23 -
Pin 5 -	Pin 24 -
Pin 6 -	Pin 25 -
Pin 7 -	Pin 26 -
Pin 8 -	Pin 27 -
Pin 9 -	Pin 28 -
Pin 10 -	Pin 29 -
Pin 11 -	Pin 30 -
Pin 12 -	Pin 31 -
Pin 13 -	Pin 32 -
Pin 14 -	Pin 33 -
Pin 15 -	Pin 34 -
Pin 16 -	Pin 35 -
Pin 17 -	Pin 36 -
Pin 18 -	Pin 37 -
Pin 19 -	



37-pin Female D-type Connector
as viewed from front of module

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About Testblox

Testblox is an integrated, modular instrumentation platform designed specifically for automated functional test. Its playing-card-sized modules can be embedded inside standard test fixtures, bringing measurement, switching, power, and I/O closer to the device under test. This reduces rack space, cabling, and overall system complexity while providing the reliability and support expected in production ATE.

The Testblox portfolio includes analog and digital I/O, digital multimeters, power supplies, DUT communication, and a broad selection of switching modules, including multiplexers, matrices and general-purpose relays. Electrically isolated modules help prevent ground loops and simplify integration. Engineers can control Testblox systems using Brygga Test Management Software, Python, LabVIEW or C#, with a consistent software model across the platform.

Modules can be used individually with a single-module backplane or combined together with three- or four-module backplanes to create a test system tailored to the application. DUT signals are available directly from each module's front-edge connector or through standard D-sub cabling.

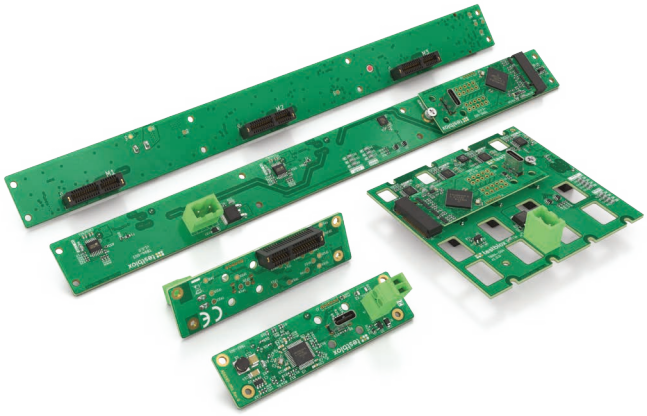
Testblox is a multi-vendor platform developed through complementary expertise. Testblox AB provides the core architecture, backplanes, system software and selected I/O; Wireflow contributes multifunction I/O and power-supply technology; and Pickering Interfaces contributes switching and measurement expertise. Together, they deliver specialist instrumentation through a common form factor, electrical interface and software workflow.

Designed and manufactured in Europe, Testblox modules are backed by a three-year warranty and a commitment to more than 20 years of hardware availability—providing a compact, cost-effective platform built for long-term automated test.

For more information, visit: www.testblox.com

Testblox Backplanes

Every Testblox system requires a backplane. Choose a one-, three- or four-module backplane to bring compact measurement, switching, power and I/O into your test fixture, with a USB-C connection to the host computer.



Backplane	Part Number	Typical Use
Single-Module USB-C Backplane	TB92-001	A single instrument in a compact fixture
Three-Module Horizontal USB-C Backplane	TB94-003-001	A low-profile arrangement of instruments
Four-Module Vertical USB-C Backplane	TB94-004-001	More instruments within a small footprint

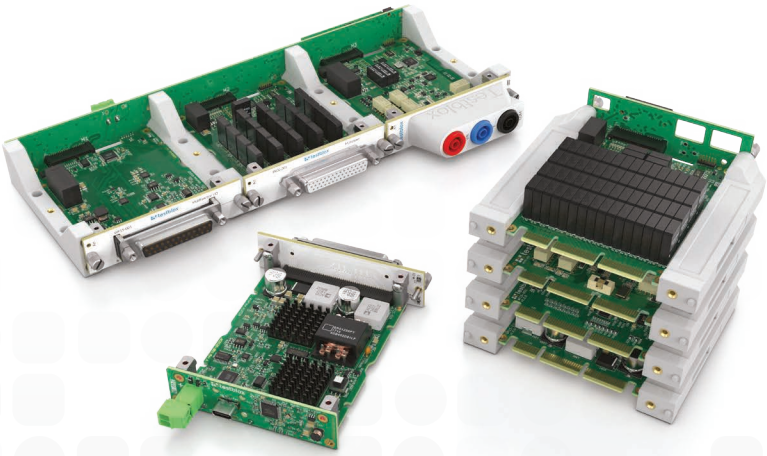
USB communication and system power

Control the system using USB Full Speed at 12 Mbit/s through a USB Type-C connector.
All backplanes use an external 24 V supply through a pluggable screw terminal. Check the selected backplane datasheet for power requirements; the system is not powered by the USB-C connection.

Mounting inside the fixture

Testblox mounting accessories support and retain modules while allowing individual modules to be removed for maintenance. Choose the mounting accessory to suit the backplane and the fixture connection method. You are also free to print your own with the files available on testblox.com. DUT signals connect through each module's front-edge connector or an available D-sub front panel.

Accessory	Application
TB82-003	Module guides for the Three-Module Horizontal Backplane
TB82-001	Module guides for one module in the Four-Module Vertical Backplane
TB82-002	Module guides for four modules in the Four-Module Vertical Backplane



Before ordering, check module count, fixture clearance, DUT connectors, power budget and required mounting accessories. Refer to the individual module specifications for module-to-backplane isolation ratings.

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Testblox Software

Use Brygga Test Management Software to discover, configure and interactively test your Testblox system, then use the APIs and module simulation to develop your automated test application.

Brygga system setup and interactive control

Bring up hardware without writing code. Brygga Test Management Software combines system discovery, configuration, module test panels and firmware management in one test system management interface, helping you check connections and exercise instruments before automating a test.

Task	What you can do with Brygga
Discover and locate	Automatically discover connected backplanes and modules. Activate module front panel LEDs to match software entries to physical hardware.
View the system	See backplanes, installed modules, slot positions and connection status together.
Name and configure	Assign hardware and channel aliases shared with the API. Set module ranges, channels, limits and start-up states where supported.
Measure and control	Use module-specific test panels to take measurements, control outputs and operate switches without writing software.
Update firmware	Identify available firmware updates and install them on selected systems or modules.

APIs for automated test development

Integrate Testblox into your own test software using drivers, APIs and example programs. Windows and Linux support, together with Python, NI LabVIEW and C# integration, lets you use familiar development tools. Hardware and channel aliases assigned in Brygga carry through to the API, helping you use recognizable names in your test code. Refer to the software documentation for supported operating-system versions and module-specific functionality.

Module simulation

Configure simulated modules offline and develop your application before the hardware arrives. Simulation is intended to provide representative signal data, so you can exercise configuration, API calls and application logic while fixture development continues.

Software downloads and documentation: testblox.com/software

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Testblox Support & Services

Testblox combines a three-year warranty, long-term hardware availability and technical support to help you build and maintain production test systems throughout their working life.

Three year warranty and long term availability

Testblox modules are backed by a three-year warranty and a commitment to more than 20 years of hardware availability. This helps protect your test system investment and reduces the disruption associated with premature product obsolescence.

Contact Testblox to discuss lifecycle requirements, product availability and support for your application. Refer to the published warranty terms for coverage and the process for arranging service.

3 Year Warranty

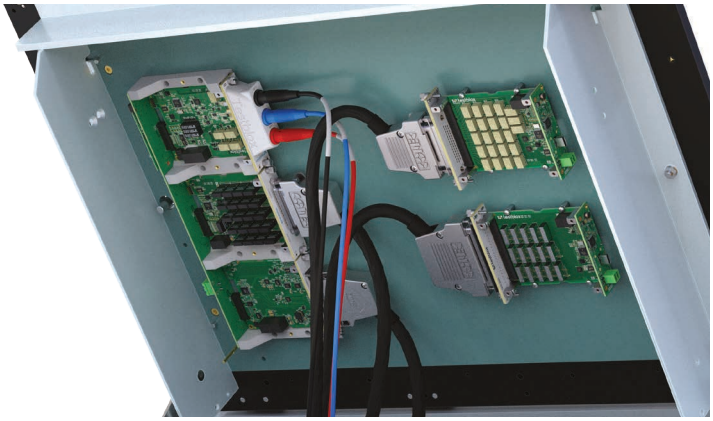
Technical help from setup to troubleshooting

Use the Testblox technical support forums to ask questions, share solutions and discuss hardware, software and system integration. For an issue that needs direct assistance, or includes confidential application information, contact the support team by email.

Contact or resource	Where to go
Technical support forums	https://forum.testblox.com/
Technical support and service enquiries	support@testblox.com
Product information	https://testblox.com/ or call:

Help us resolve your issue

Include the module and backplane order codes, serial numbers, software and firmware versions, host operating system, and a short description of the problem. Attach relevant error messages, logs and a simple example that reproduces the issue. Keep confidential data out of public forum posts.



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