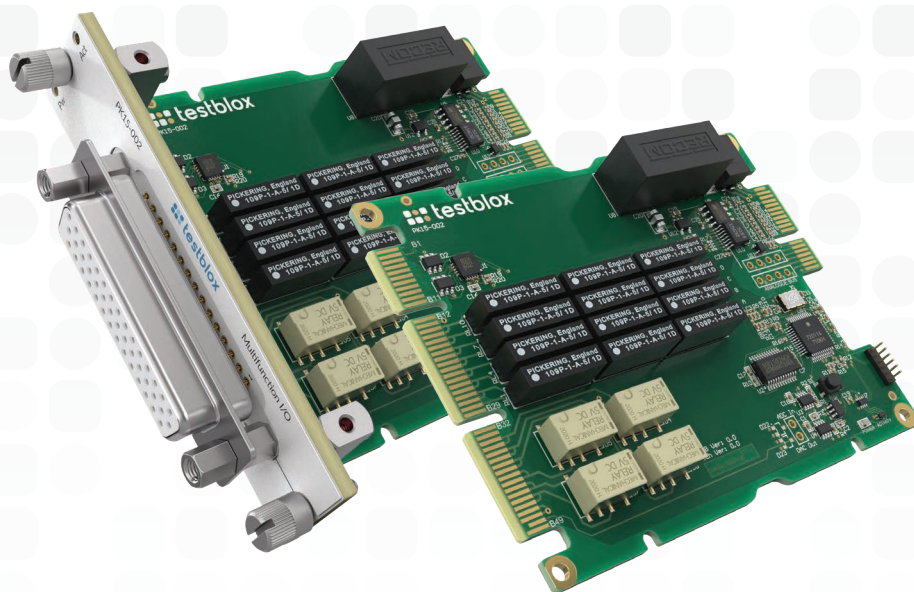




Testblox PK15-002

Multi-function Module



The PK15-002 is a multi-function module in Testblox card format which includes multiplexer and SPDT switch functions as well as digital I/O, DAC and ADC channels. Control of the module is provided by USB via the Testblox backplane.

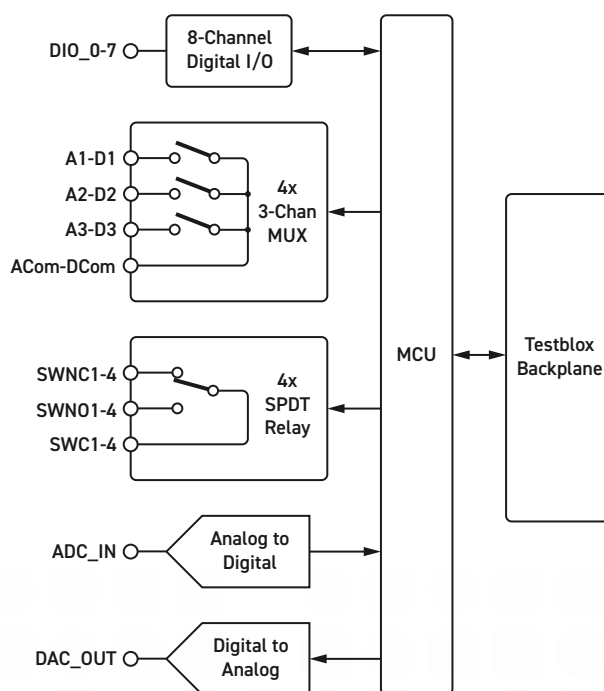
SPDT switching is provided by electro-mechanical relays capable of switching voltages up to 60 V and current up to 2 A.

The multiplexer is arranged as four banks of three channels and constructed from instrument quality reed relays with 1 A current handling.

Functionality

- Multi-function Module With:
 - 8-Bit Digital I/O
 - Quad 3-Channel Multiplexer
 - 4x SPDT Relays
 - Analog-to-Digital Converter
 - Digital-to-Analog Converter
- Drivers Supplied for Windows & Linux
- 3 Year Warranty

The PK15-002 is available with a front panel allowing access to the signal paths via a 44-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.



PK15-002 Architecture



Specifications

Switching Specification - SPDT Relays

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 Low power load (2 W) Medium power load (30 W) Full power load (60 W)	>1×10 ⁸ >1.5×10 ⁷ (0.1 A, 20 VDC) >5×10 ⁶ (1 A, 30 VDC) >1×10 ⁵ (2 A, 30 VDC), >1×10 ⁵ (0.1 A, 300 VDC)

Switching Specification - Multiplexers

Switch Type	Reed
Contact Type	Ruthenium
Max Switch Voltage	60 VDC/50 VAC
Max Switch Current	1 A
Max Continuous Carry Current	1 A
Max Power	20 W
Initial On Path Resistance	<500 mΩ
Off Path Resistance	>10 ⁹ Ω
Thermal Offset	<10 μV
Operate Time	<0.5 ms, 0.25 ms typical
Expected Life (operations): Low power load High power load	>1×10 ⁹ >1×10 ⁶

Specification - Digital I/O

Number of Channels	TBD
Input Voltage Range	TBD
Input Settling Time	TBD
Output Voltage	TBD
Output Sink Current	TBD
Output Protection	TBD

Power Requirements

Input Voltage Range	TBD
Current	TBD



Specifications

Specification - ADC	
Resolution	TBD
Input Voltage Range	TBD
Input Rise Time	TBD
Input Settling Time	TBD

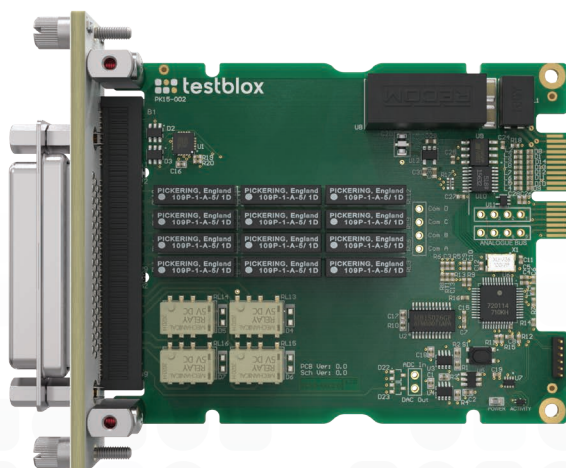
Specification - DAC	
Resolution	TBD
Output Voltage	TBD
Output Rise Time	TBD
Output Settling Time	TBD

Mechanical/Environmental	
Module Dimensions	90 mm x 69 mm (without front panel)
Module Weight	<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 Multi-function Module, Digital I/O, 4x 3-Channel MUX, 4xSPDT, ADC, DAC, with edge connector	PK15-002-000
Testblox Multi-function Module, Digital I/O, 4x 3-Channel MUX, 4xSPDT, ADC, DAC, with 44-pin Female D-type front panel connector	PK15-002-203
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

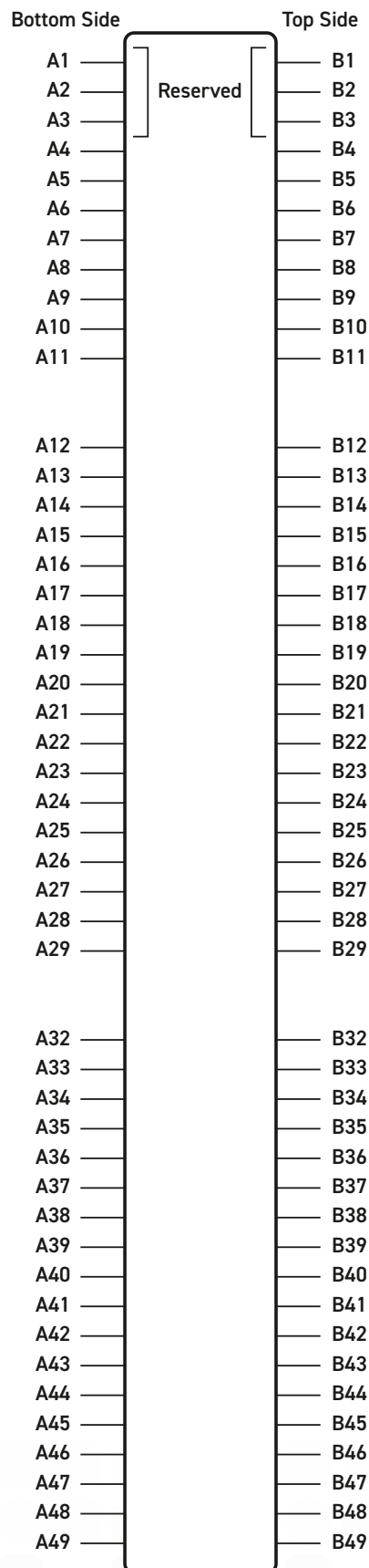




Pinout - Front Edge Connector

Pinout for Front Connector - PK15-002-000

Pin A1 - Reserved	Pin B1 - Reserved
Pin A2 - Reserved	Pin B2 - Reserved
Pin A3 - Reserved	Pin B3 - Reserved
Pin A4 - DIO_1	Pin B4 - DIO_0
Pin A5 - DIO_1	Pin B5 - DIO_0
Pin A6 - DIO_3	Pin B6 - DIO_2
Pin A7 - DIO_3	Pin B7 - DIO_2
Pin A8 - DIO_5	Pin B8 - DIO_4
Pin A9 - DIO_5	Pin B9 - DIO_4
Pin A10 - DIO_7	Pin B10 - DIO_6
Pin A11 - DIO_7	Pin B11 - DIO_6
Pin A12 - GND	Pin B12 - GND
Pin A13 - GND	Pin B13 - GND
Pin A14 - D_COM	Pin B14 - D3
Pin A15 - D_COM	Pin B15 - D3
Pin A16 - D2	Pin B16 - D1
Pin A17 - D2	Pin B17 - D1
Pin A18 - C_COM	Pin B18 - C3
Pin A19 - C_COM	Pin B19 - C3
Pin A20 - C2	Pin B20 - C1
Pin A21 - C2	Pin B21 - C1
Pin A22 - B_COM	Pin B22 - B3
Pin A23 - B_COM	Pin B23 - B3
Pin A24 - B2	Pin B24 - B1
Pin A25 - B2	Pin B25 - B1
Pin A26 - A_COM	Pin B26 - A3
Pin A27 - A_COM	Pin B27 - A3
Pin A28 - A2	Pin B28 - A1
Pin A29 - A2	Pin B29 - A1
Pin A32 - NC	Pin B32 - NC
Pin A33 - NC	Pin B33 - NC
Pin A34 - SWN01	Pin B34 - SWC1
Pin A35 - SWN01	Pin B35 - SWC1
Pin A36 - SWNC1	Pin B36 - SWN02
Pin A37 - SWNC1	Pin B37 - SWN02
Pin A38 - SWC2	Pin B38 - SWNC2
Pin A39 - SWC2	Pin B39 - SWNC2
Pin A40 - SWN03	Pin B40 - SWC3
Pin A41 - SWN03	Pin B41 - SWC3
Pin A42 - SWNC3	Pin B42 - SWN04
Pin A43 - SWNC3	Pin B43 - SWN04
Pin A44 - SWC4	Pin B44 - SWNC4
Pin A45 - SWC4	Pin B45 - SWNC4
Pin A46 - GND	Pin B46 - GND
Pin A47 - GND	Pin B47 - GND
Pin A48 - ADC_IN	Pin B48 - DAC_OUT
Pin A49 - ADC_IN	Pin B49 - DAC_OUT

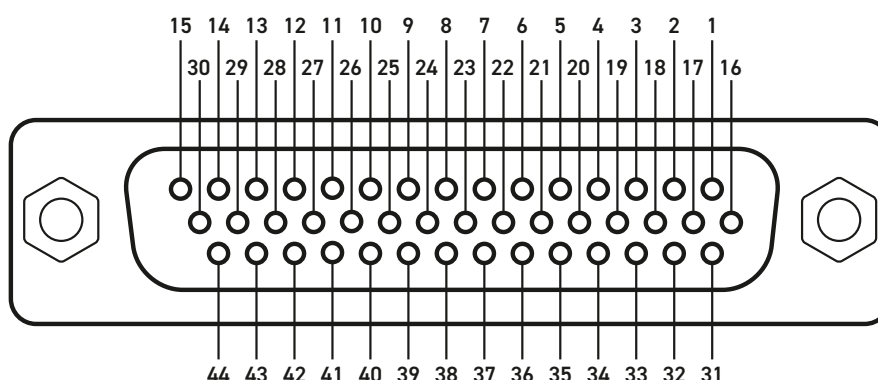


Pinout Diagram for Front Edge Connector

Pinout - Using 44-pin D-type Interface Board

Pinout for 44-pin D-type Interface Connector - PK15-002-203

Pin 1 - DAC_OUT	Pin 16 - ADC_IN	Pin 31 - GND
Pin 2 - SWC4	Pin 17 - GND	Pin 32 - SWNC4
Pin 3 - SWNC3	Pin 18 - SWN04	Pin 33 - SWN03
Pin 4 - SWC2	Pin 19 - SWC3	Pin 34 - SWNC2
Pin 5 - SWNC1	Pin 20 - SWN02	Pin 35 - SWN01
Pin 6 - NC	Pin 21 - SWC2	Pin 36 - NC
Pin 7 - A2	Pin 22 - A1	Pin 37 - A3
Pin 8 - B1	Pin 23 - A_COM	Pin 38 - B2
Pin 9 - B_COM	Pin 24 - B3	Pin 39 - C1
Pin 10 - C3	Pin 25 - C2	Pin 40 - C_COM
Pin 11 - D2	Pin 26 - D1	Pin 41 - D3
Pin 12 - GND	Pin 27 - D_COM	Pin 42 - GND
Pin 13 - DIO_6	Pin 28 - DIO_7	Pin 43 - DIO_5
Pin 14 - DIO_3	Pin 29 - DIO_4	Pin 44 - DIO_2
Pin 15 - DIO_0	Pin 30 - DIO_1	

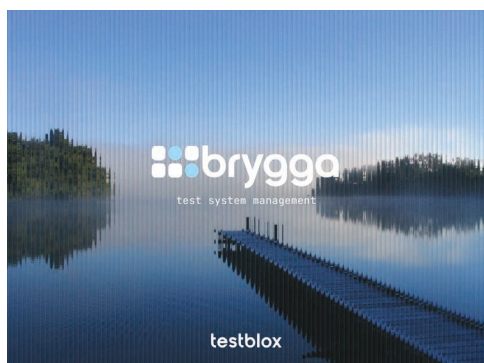


44-pin Female D-type Connector
as viewed from front of module



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.

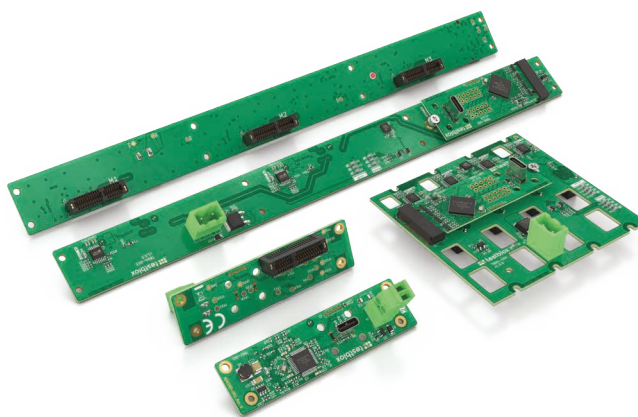
For more information, visit: www.testblox.com





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

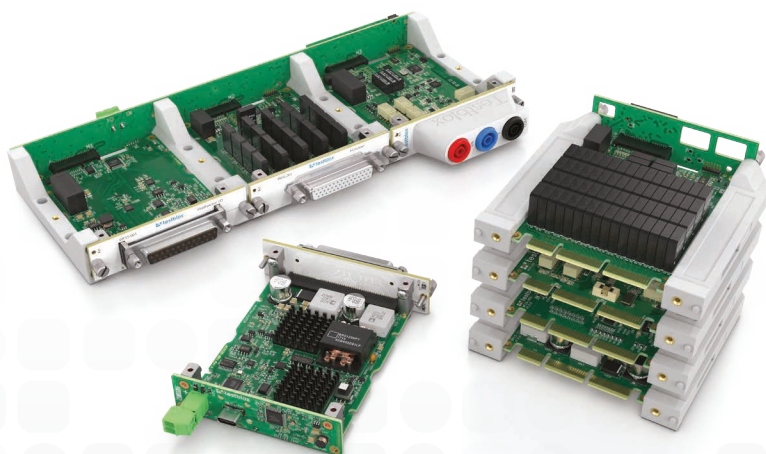
Control the system using USB Full Speed at 12 Mbit/s through a USB Type-C connector.

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.

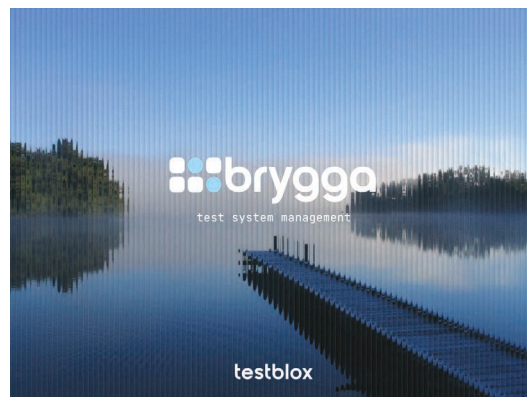


Testblox Software

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



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.



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.

