



303Mx

HIGH POWER MATRIX SYSTEM

The SemiTek 303Mx High-Power Switch Matrix System features plug-in matrix cards capable of handling up to 50A and up to 1500VDC. Multiple rack-mount cages allow the system to be configured with any number of points and share four (4) high power busses. Any point can be individually addressed as a Source, Meter or DUT point providing a universal matrix.



303-High Power Matrix System

For use with test and measurement instruments when high voltage or high current is required to be switched to individual devices or arrays. Typical applications include testing FETs, semiconductor parametric and capacitance-voltage tests. May be used in conjunction with instruments from



... as well as others.



Applications

The 303Mx High Power Matrix System is ideal to automate the integration and control of OEM electronic test and measurement instruments in applications for

- Characterizing devices
- Conformance testing
- Reliability testing
- Life cycle testing
- Production test
- General Purpose

Testing a broad range of devices including

- Transistors
- IGBT
- SCR
- Optocouplers
- MOSFETS
- Relays
- Triacs
- Sidacs
- Arrays
- Jfet
- Diodes



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Matrix Card

- Individual 4x4 Matrix Plug-in, Removable Switch Matrix Card
- Ability to pass 50A and 1500 VDC
- Kelvin-wire Matrix
- Guarded
- Socket-mounted relays for easy maintenance
- Suppression diodes to eliminate relay coil inductive kickback
- Expandable
- BNC front connector interface
- Customized switch matrix cards are also available

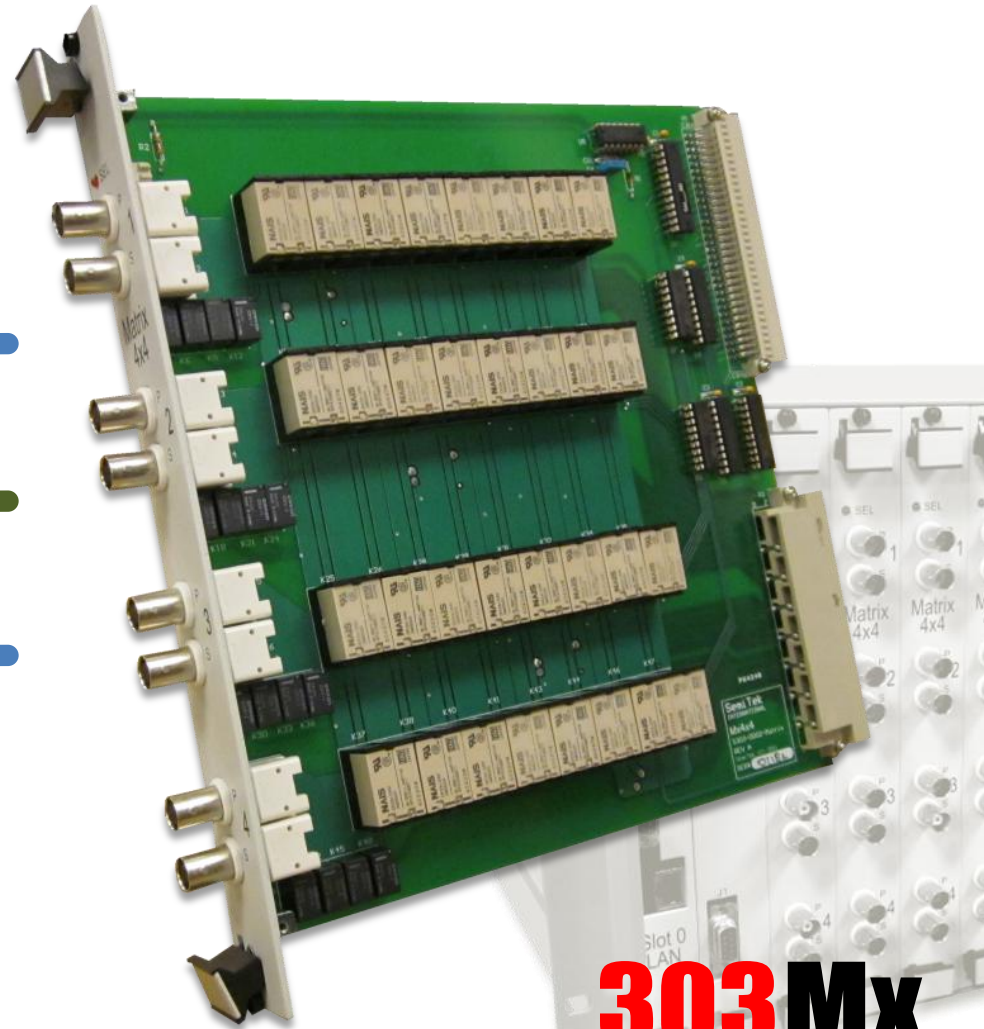
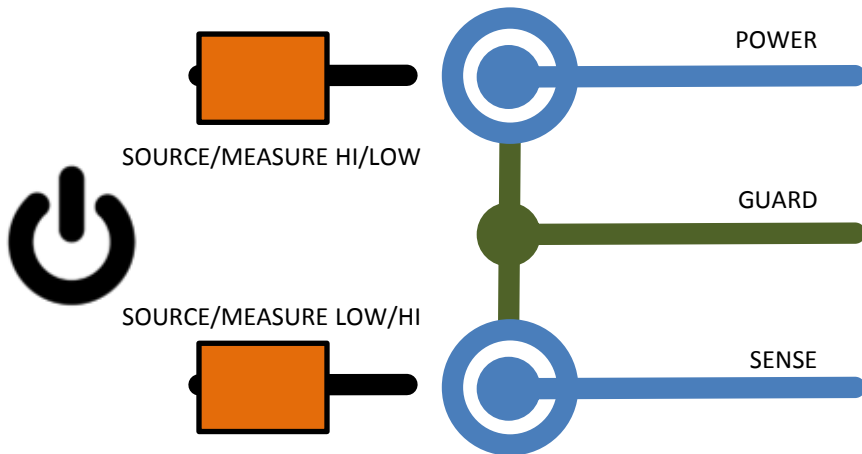


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Matrix Card

Each switch matrix point consists of a guarded Power and Sense coaxial connection.



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Buss Architecture

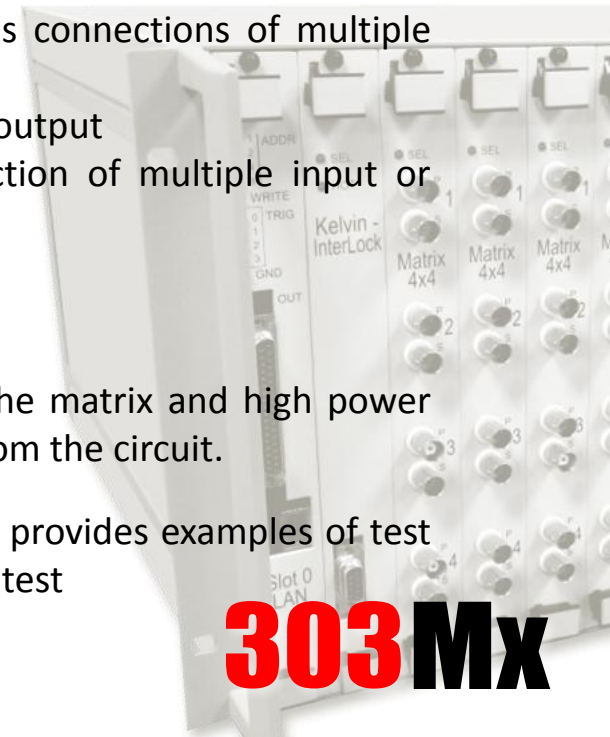
The 303Mx System is designed with four (4) high power, electrically isolated busses. Under program control, switch matrix points or nodes are switched on to one of the four busses to complete a source/measure to DUT(s) circuit. Multiple nodes can be added to a buss as in applications where a single power source can be used to power multiple devices.

Using the common buss architecture and the 4x4 Switch Matrix cards provides

- The flexibility of a non-blocking type matrix allowing simultaneous connections of multiple nodes without the expense
- The efficiency of a blocking matrix allowing a single input to a single output
- And the versatility of a full matrix allowing simultaneous connection of multiple input or multiple output nodes
- Execution of addressed nodes simultaneously
- Multi-site testing

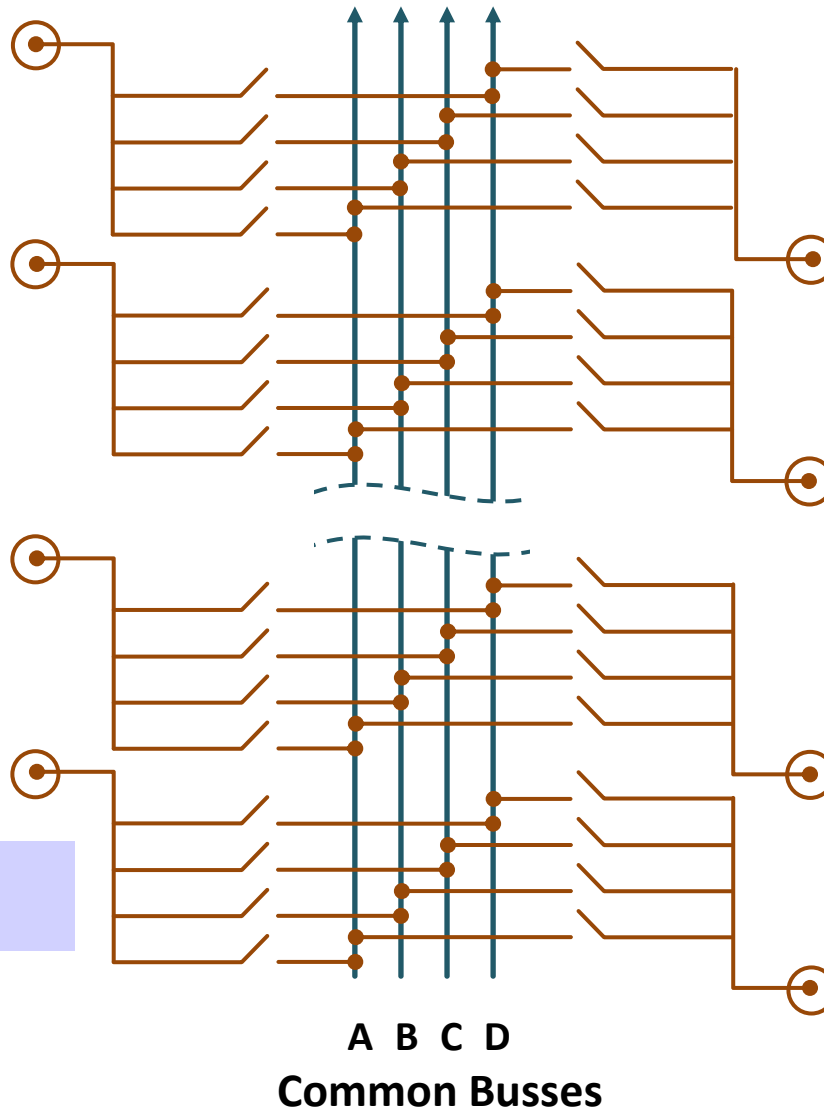
Four-wire circuit paths are maintained from the input node through the matrix and high power buss to the output node to eliminate all trace and test-lead resistance from the circuit.

The following pages diagram the 303Mx system's buss architecture and provides examples of test circuits to measure resistance of a resistor and R_{DSon} of a MOSFET. The test instruction code follows on the Control/Programming slide.

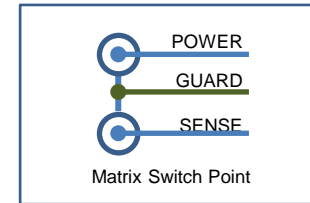




Addressable
Input/Output
Nodes



Node Detail



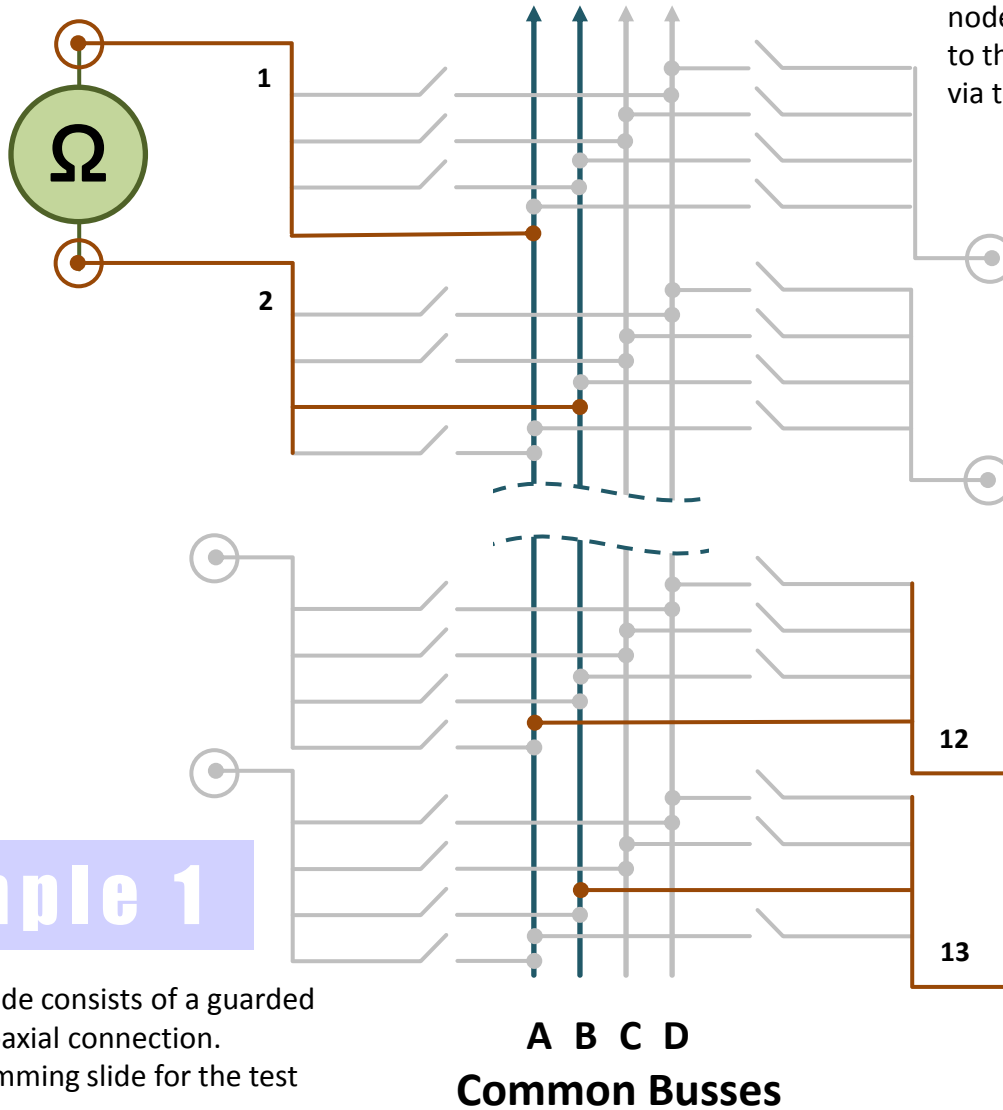
Each node consists of a guarded Power and Sense coaxial connection.

Addressable
Input/Output
Nodes



Diagram

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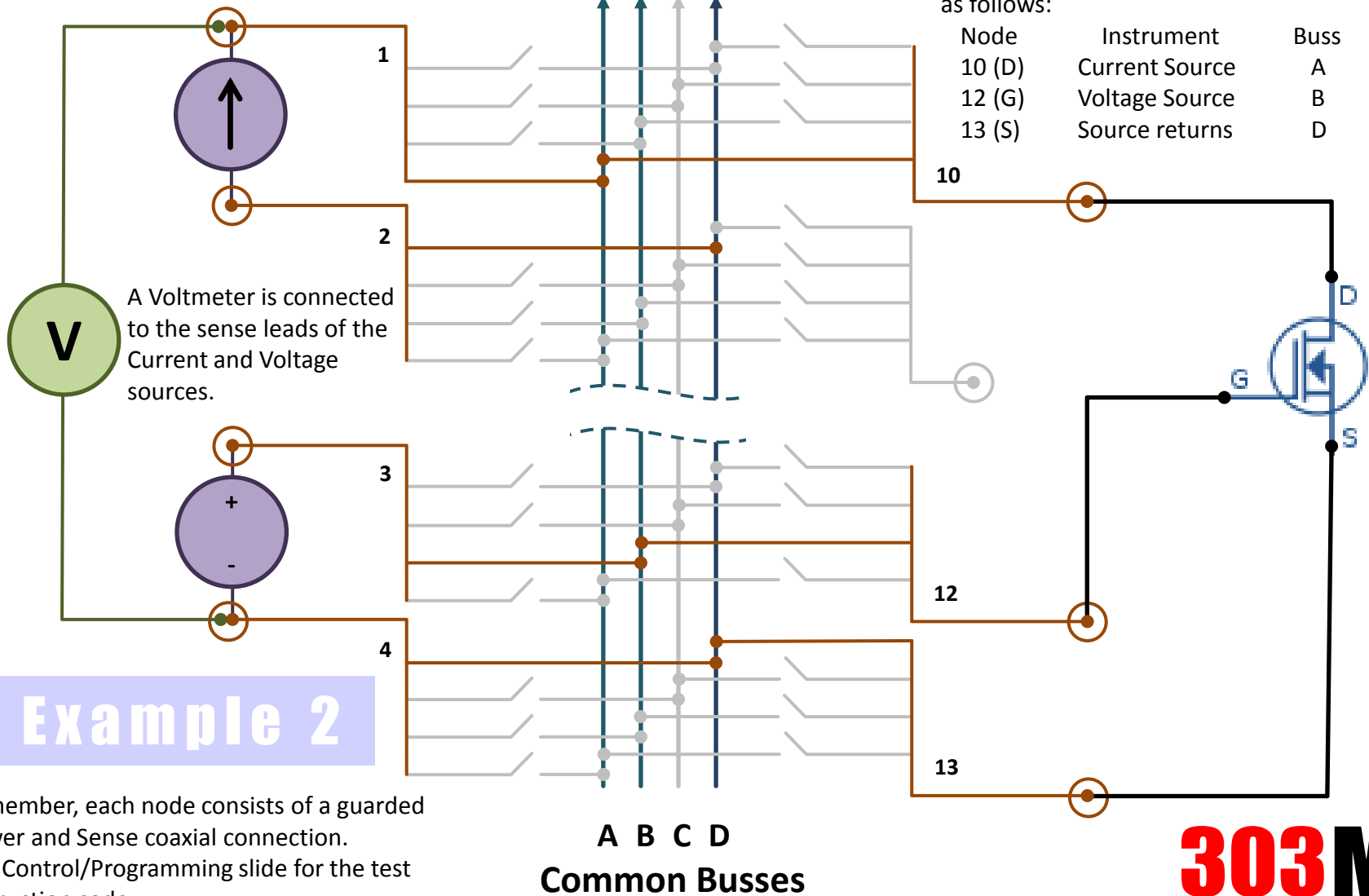
In this simple test circuit, a resistor at node address 12 and 13 is connected to the Ohmmeter at addresses 1 and 2 via the A and B busses.

Example 1

Remember, each node consists of a guarded Power and Sense coaxial connection. See Control/Programming slide for the test instruction code.



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Control

Programming is simple and includes the necessary commands to set up and control the matrix.



The SemiTek 303Mx DLL is compatible with National Instruments LabVIEW™ as well as other system design software. A programmer defines the test circuit by specifying the source instrument and measurement meter to use and makes the connection to the Device Under Test through the matrix.

In addition to the DLL Function Calls, the SemiTek 303Mx System includes its own controller for set-up, diagnostics and troubleshooting.

Programming

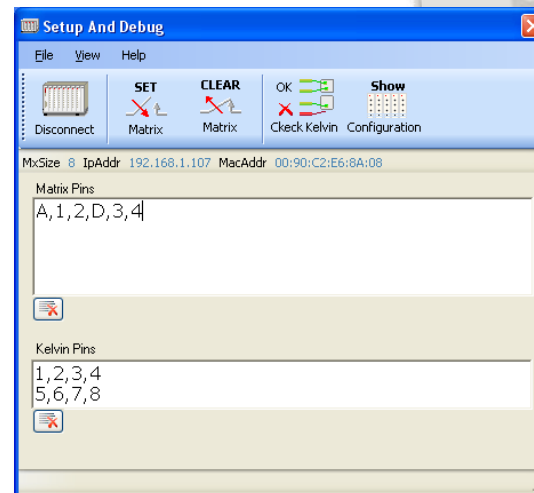
In reference to the previous slides,

Example 1 – Testing the resistance of a resistor, the test instruction would read:

A,1,12 B,2,13

Example 2 – Testing the RDSon of a MOSFET, the test instruction would read:

A,1,10 B,3,12 D,2,4,13





Specifications

Point-to-point, we don't care! Every circuit of the 303Mx is designed to carry high power loads.

- MATRIX CONFIGURATION: Expandable in 4x4 increments utilizing 4 common busses
- CURRENT: to 50A
- VOLTAGE: to 1500VDC
- PATH RESISTANCE: <math><100\text{m}\Omega</math>
- ISOLATION LEAKAGE: >60G Ω
- VOLTAGE DROP: <math><2.5\text{V}</math> @ 50A
- CONTACT LIFE: 5×10^7 operations
- RELAY STABILIZATION: 12ms
- CONNECTOR TYPE: BNC Standard Coaxial



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Features

The SemiTek 303Mx High Power Switch Matrix System has many extra features including:

- PC/Windows 7 based operating system
- Friendly graphical user-interface
- DLL Function Calls for use with National Instruments LabVIEW™ or other system design software tools
- Ethernet PC control
- Kelvin-Interlock to check each point's connection ensuring proper hook up
- 6U Enclosure with proprietary high-power backplane interface with room for up to 11 plug-in removable/replaceable cards
- Base unit is expandable to 44 points when configured with 4x4 High-Power matrix cards. Units maybe stacked for higher point counts.
- Easily interfaced with external source and measure instruments



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Close, but need something more custom?
Please contact us to discuss your application.

For more information . . .

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