PHABRIX®
broadcast excellence

Sx hand held test and measurement

Combined generator, analyzer and monitor
A range of portable instruments for testing
SD-SDI, HD-SDI and 3G-SDI

WWW.PHABRIX.COM

MBC-012-SXB02

Hand held test and measurement

The PHABRIX Sx range provides the ultimate in multi-format handheld SDI test signal generation, analysis and monitoring.

Focussed on the professional broadcast market, each of the PHABRIX Sx products include 3G-SDI, HD-SDI and SD-SDI test signal generation and analysis.

Instrument choices include:

- PHABRIX SxA with AES audio support,
- PHABRIX SxD two input/output dual-link support
- PHABRIX SxE with eye and jitter measurement

Each instrument combines a generator, analyzer and monitor within a rugged aluminium housing. Comprehensive signal generation may be locked to either bi-level, tri-level, or SDI sources.

Embedded audio features allow the generation and monitoring of up to 4 groups (16 mono channels) of audio.

With its large 4.3 inch 'best-in-class' TFT screen, images are crisp and clear with easily selected functions made possible through applied ergonomics and colour coded menu selection.

On-board Ethernet networking enables browser based remote control and monitoring. Internal storage for up to 2GB of test patterns and acquired data provide enhanced user flexibility.

Each unit is powered by an internal lithium polymer rechargeable power pack with a flexible 5V DC external input.

A range of software options are available for specific user enhancement.

Designed for ease of use and portability, the PHABRIX Sx range is the most comprehensive solution to SDI generation, analysis and monitoring on the market today.

Broadcast applications

With portability in mind, the Sx range has been successful in many broadcast sectors.

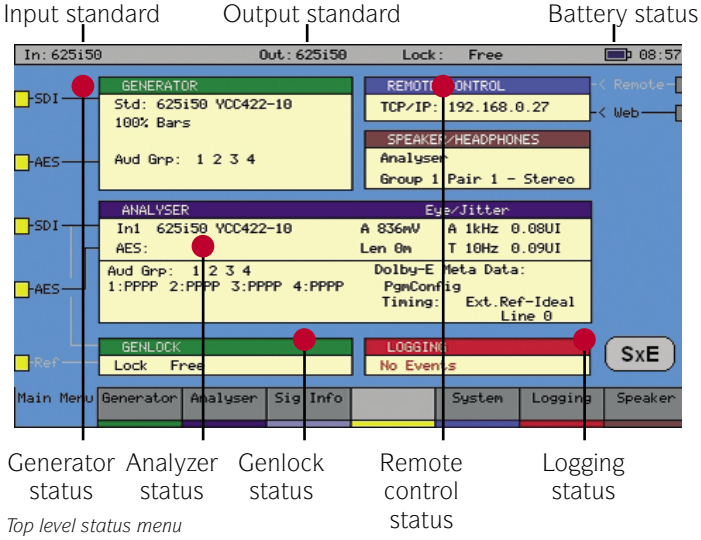
- Broadcast manufacturing
- Studios
- Outside broadcast facilities, flyaways and trucks
- Production monitoring
- Control room
- Transmission remote control
- 3D application
- Telcos

The Sx has been designed as a cost effective investment for test and measurement with the quality, reliability and reputation established by the PHABRIX brand internationally. PHABRIX products can be found in many of the world's top broadcasters and R&D establishments where laboratory accuracy and functionality are critical.

A PHABRIX SxA in TVNZ

Easy to use

The first thing that becomes clear when introduced to a PHABRIX instrument is how easy it is to use. The working interface offers the simplest presentation of control and data hiding the complexity behind button presses which are never more than two layers from the top level menu.



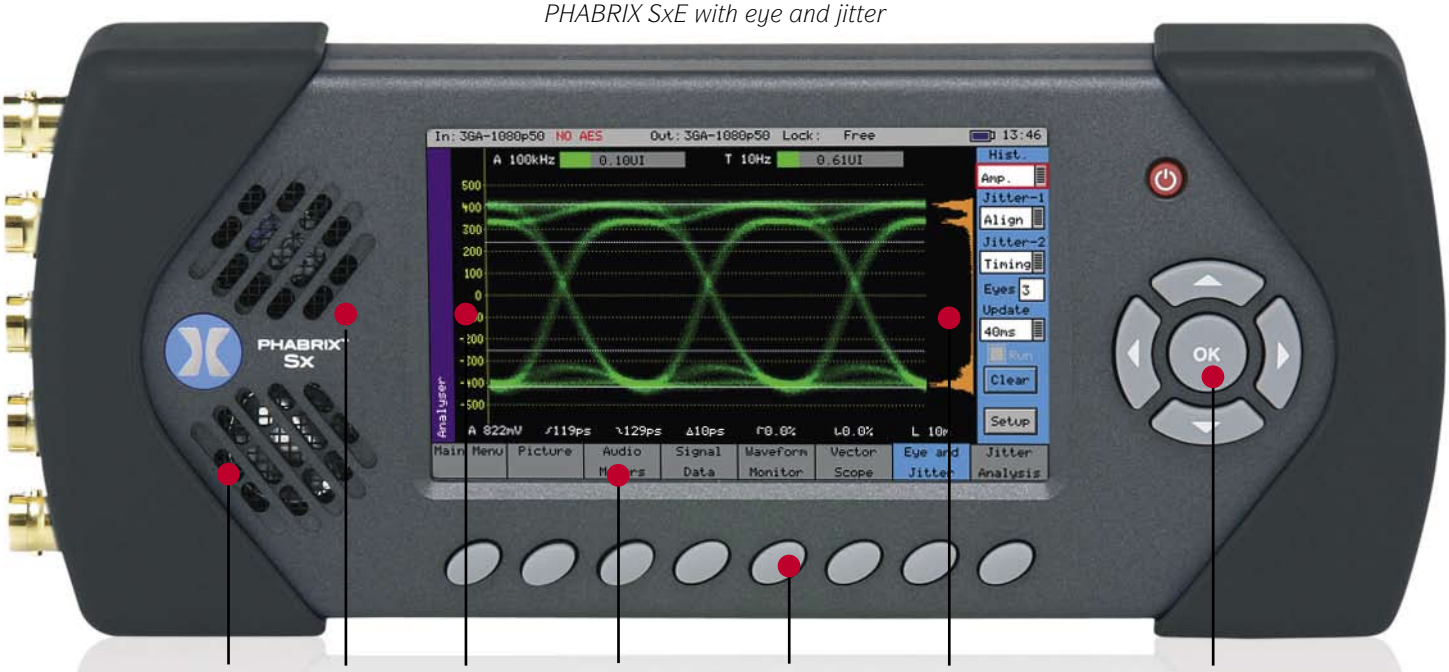
Top level status menu

As a generator, analyzer and monitoring solution, each of the PHABRIX Sx range display the 'status window' on boot up which presents all of the primary instruments and logging features in one easy to view window. It is also the 'top level menu'

Toolsets are colour identified throughout the instrument so at a glance to the left of the screen the vertical coloured strip presents the tool selected, i.e. Green for generator. The 8 control buttons underneath the screen correspond to the menu boxes above which again are colour identified for easy navigation throughout the instrument.

The onboard speaker or stereo headphone socket can verify audio on the signal and be set to make an audible tone indicating logged events.

PHABRIX SxE with eye and jitter



The PHABRIX difference

Integral to the success of the PHABRIX instruments has been the ability of each to generate at one standard and analyze at another all within a single hand held device. The wide variety of SMPTE formats that can be generated and analyzed and the quality of signal source provided have established the Sx range as a 'must have' when diagnosing faults within the ever complex broadcast environment.

Over 32 static video test patterns are provided with additional bouncing box to check video signals haven't frozen. Moving zone plate is also available across all standards. User defined patterns can be added at any time as DPX, YUV, TGA, BMP formats. Selecting standards couldn't be easier with the Sx automatically filtering both standard, frame rate and colour space accordingly to the required selection. A simple drop down menu gives access to a range of test patterns. Idents can be added to the signal generated to identify the signal in multi monitor situations such as control rooms.

Analysis of the signal is equally highly focussed. A simple picture view can be selected and when in zoom mode, pixel for pixel accuracy allows the user to move around the video frame with ease checking for specific problems. Cursors can be activated which track through the instrument on a specific pixel in picture, waveform and optional SDI analysis mode.

Along with traditional toolsets such as waveform and vectorcope, the Sx provides sophisticated video checking of signal data such as CRC errors, EDH errors and active picture checksum as standard. For more sophisticated R&D analysis a separate full video frame SDI analysis option is available to view the stream in various modes.

With support for 16 channel embedded audio as standard,16 PPM meters are available to view in one screen simultaneously. Dolby E analysis and generation are additional audio enhancements.

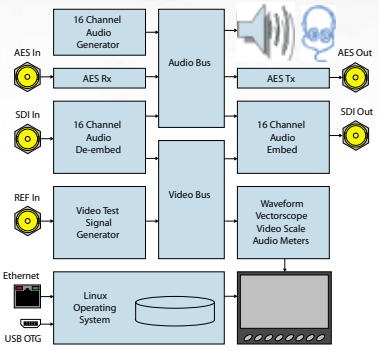
PHABRIX SxE in South Africa

Logging is an important feature which can be set in a variety of ways. The event log is available for download at any time with ample space for over 10,000 log events if required.

At any time a simple two second press of the thumb control will save images of the screen to disk for later analysis or for inclusion in commissioning reports.

Technology

The Sx uses ultra reliable Linux as its operating system providing a robust and stable core. Each of the Sx's is assured up to date hardware and software development thanks to its FPGA design which can be simply updated at any time when connected via Ethernet to any open network. Feature enhancements are easily added to the instruments this way and our R&D regularly add requested features to the Sx's in the field. Development is on going with the Sx platform and this results in new toolsets which can be added as options. The Sx can be powered by A/C adapter if required or by integral lithium polymer battery which provides the Sx range with unmatched time of untethered use (2-3hrs) between recharge.



Schematic of the PHABRIX SxA (AES version)

Warranty

The Sx range benefits from a 2 year warranty once registered. Each Sx leaves our UK factory with its own unique list of quality controlled settings to ensure consistency and traceability. Calibration services are available.

Carry case and AC power supply as standard

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Broadcast engineer's toolset

Acknowledged as one of the industry's easiest to use interfaces, Sx instruments have been designed to fully implement the PHABRIX GUI.

Engineers can simply, and importantly swiftly control their T&M instrument either through clever presets or user selectable configuration.

Each instrument is never more than a two button press away from the main menu.

In addition the Sx range of instruments can be further enhanced with a range of software options available on the platform. A simple software code will unlock these at any time.

- SDI analysis and anciallary packet analyzer
- Command scripts and print report
- Advanced formats
- Programmable moving zone plate
- Dolby E bitstream analyser
- Dolby E bitstream generator
- Ancillary status
- Enhanced remote control
- Advanced eye/jitter analysis *(SxE only)*


main menu


signal data


audio status


misc


generator


waveform


ANC inspector


utils


genlock


vectorscope


Dolby-E analysis


engineer


audio group 1/2 3/4


eye pattern


video timing


logging events


Dolby-E generation


jitter analysis


memories


log setup


analyzer


video status


scripts


log eye jitter


audio meters


misc status


network


speaker

Remote control

The Sx range can be controlled remotely using the ethernet connection and any standard web browser. The simple user interface of the instrument is mirrored here to allow ease of use.

At any time the user can select, print and save any of the screen views be it video or instrument. Using the command scripts option a comprehensive print report can also be automatically generated with any personalized company logo.

The Sx is its own web server. By entering the unique IP address of the instrument into a standard web browser, communication can be established over the network. The screen displayed is an exact copy of the remote instrument itself so no new interface needs to be learnt.

Each instrument can be controlled or remotely configured using a standard web browser

Screen grabs and reports can be downloaded directly from the web browser.

The command scripts option allows the user to set the test parameters for each unit. Memories are easily saved and recalled for regular compliance testing procedures if required. Print reports can be activated which automatically create a html report page which can be downloaded from the instrument and printed for both internal and customer use.

print reports

The Sx can also be user defined and password protected if required.

The Sx range at a glance

The PHABRIX Sx range of hand held test and measurement instruments have revolutionized the way broadcast engineers work.

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PHABRIX SxA AES

The PHABRIX SxA with its combined analyzer, generator and monitoring toolsets represents a very cost effective entry level instrument purposely designed for the 'go anywhere' engineer with its focussed set of testing tools. Whether testing broadcast infrastructure in a busy studio, commissioning department, engineering bay or OB environment, the SxA can test faults, track errors in both video and audio situations and if necessary capture images of the screen for later analysis. Logging can be activated for a time based report. AES audio analysis and generation provides additional support. The PHABRIX SxA represents a sophisticated out-of-the box instrument with dedicated broadcast tools accessed by an incredibly clear interface which has made the SxA a popular digital engineering tool worldwide.

DC 5V power & recharge Ethernet Headphone

3G, HD, SD SDI In/Out AES In/Out Bi/Tri-level reference input

PHABRIX SXA AES
Combined generator-analyzer-monitor
3G/HD/SD-SDI with AES
16 channel embedded audio

PHABRIX SxD dual link

The PHABRIX SxD offers dual link as standard in addition to the SxA and SxE formats increasing the formats available to over 350 different combinations including the new SMPTE 372M allowing testing for bit-rates of 2.970 Gbit/s, and 2.970/1.001 Gbit/s over two wires able to carry 1080p video. The PHABRIX SxD also supports the different colour spaces 4:2:2 YUV, 4:4:4 RGB, 4:4:4 YUV, at 10/12 bit. The SxD has two inputs and two outputs with full CRC/EDH checking on each signal and logging. Embedded audio checking is also available. The PHABRIX SxD is the first hand held platform to offer such a complete variety of testing formats capable of generating any combination of formats from two outputs simultaneously for a variety of applications as varied as studio work and camera testing to 3D applications including the 3G level B.

DC 5V power & recharge Ethernet Headphone

3G, HD, SD SDI In/Out x2 Bi/Tri-level reference input

PHABRIX SXD DUAL LINK
Combined generator-analyzer-monitor
3G/HD/SD-SDI with dual link
3G level A and level B
over 350 formats supported as standard
16 channel embedded audio

PHABRIX SxE eye and jitter

The SxE represents the most comprehensive hand held instrument available in the world today. The SxE has the full functions of the SxA plus physical layer analysis. Displaying eye and jitter diagrams with optional filter selection for timing and alignment measurements on its large 4.3" 16:9 colour TFT screen, it is unique in offering laboratory level testing. Cursors and histogram functions allow detailed measurements to be made. The ability of the SxE to produce eye patterns from a 3G signal is particularly significant for those users requiring a solution to testing high end products in the 3G arena. Jitter too is one of the most important issues in the design and operation of high-speed serial links and the SxE's jitter tools can be applied from SD-SDI, HD-SDI to 3G-SDI. These comprehensive features propel the SxE into the domain of much more expensive bench bound products and has resulted in it achieving many technological awards.

DC 5V power & recharge Ethernet Headphone

3G, HD, SD SDI In/Out AES In/Out Bi/Tri-level reference input

PHABRIX SXE EYE AND JITTER
Combined generator-analyzer-monitor
3G/HD/SD-SDI with eye & jitter
automated physical layer measurements
16 channel embedded audio
AES

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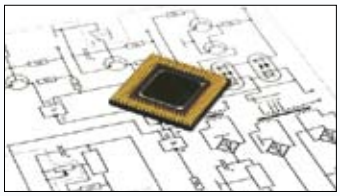
Application notes

Broadcast manufacturers



The Sx range offers exceptional 'in house' test and measurement value for broadcast manufacturing. Already installed in many manufacturers around the world, PHABRIX technology provides full access for automation. Eye and Jitter analysis from SD-SDI, HD-SDI to 3G-SDI is available.

Broadcast engineering bays

With its combined video and audio toolset, the Sx provides a single instrument solution for the demanding requirements within broadcast engineering bays. The Sx offers direct video confidence on its integral display screen. Here the Sx can offer generation and analysis in one closed loop operation.

Studios

Many studios require an entry level solution for their T&M. The Sx offers exceptional value for investment, Ready configured with SD-SDI, HD-SDI and 3G-SDI, the Sx has a range of options which can be added at any time to further enhance the sophisticated toolset provided as standard. Engineer memories and scripting for routine equipment checks makes the Sx easy to use throughout a busy studio.

Outside broadcast

The outside broadcast environment requires an instrument that can be easily carried around and contains a selection of both generation, analysis and monitoring toolsets. This makes the Sx the ideal solution in this demanding environment. With its clear bright screen and immediate toolset, the Sx can be found in OB trucks internationally. Offering the longest untethered solution due to its lithium battery, the Sx last longer than any other portable instrument of this size. The additional toolset of eye and jitter on the SxE only further enhances this perfect solution.

Satellite/Transmission

Uplink and transmission facilities need a toolset which has a focussed solution for testing infrastructure. The video and audio capabilities of the Sx range make track and trace fault and confidence testing an ideal placement for the Sx. With comprehensive logging of data across a range of signals, the Sx offers a high quality solution.

System integrators

Specifying instruments for a range of broadcast applications is the speciality of a system integrator. PHABRIX has designed its Sx instruments with a range of tools and options for a perfect fit. Whether in an engineering bay, outside broadcast facility, truck or in support of uplink and transmission, PHABRIX has a proven industry record for quality, cost effectiveness and ease of use provided by its T&M instrumentation and focussed software options.

Telecommunications

As the link between telecommunications and broadcast continues to merge, the Sx provides Telcos with a toolset mix that includes data analysis of both digital and data networks. The Sx has already proven itself in many telecommunication industries in both R&D support and field support.

Rack mount test and measurement PHABRIX Rx series

PHABRIX is world renowned for its award winning handheld Sx series of instruments where portability is paramount. Please ask for details about the rack mount modular products from PHABRIX. These include the dual screen Rx2000 and the Rx1000 and Rx500 rasterizers. The Rx2000 and Rx1000 platforms can accept up to four broadcast specific modules from video to audio. This allows up to a staggering 8 simultaneous signal monitoring capability within a very cost effective solution designed to support SD-SDI, HD-SDI and 3G-SDI.

Software Options

SDI analysis including ancillary data packet analyzer

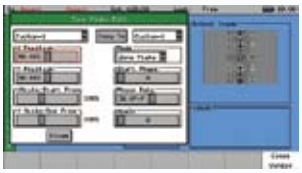
SDI analysis provides the engineer with a detailed view of the data words contained within the SDI stream. This allows the analysis of complex faults and is particularly useful when determining compatibility issues between equipment and when debugging new product developments in a R&D environment.Ancillary packet analysis includes SDID and DID filters.

Command scripts with print report

This option allows a series of pre-defined actions such as controlling the generator, analyser and logging functions within the PHABRIX instrument using a script stored in internal memory. A print report feature allows an internal HTML form to be auto filled with parameters set and subsequently downloaded and printed. Exceptional ease of use.

Enhanced remote control

This option allows full remote control of the instrument via TCP/IP Sockets to allow any aspect of the unit to be modified or queried. Complex applications can be created to perform test and measurement functions such as automated testing of routers or other broadcast equipment and infrastructure.



Programmable moving zone plate

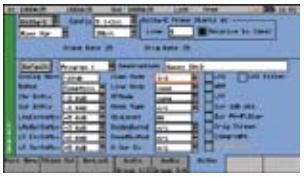
The zone plate can be used to test a range of video processing requirements using horizontal, vertical and temporal (time) controls. Temporal control is particularly useful for testing up/down converters/monitors and applications which compress signals.

Advanced formats

Advanced formats include 4:2:2 YUV, 4:4:4 RGB and 4:4:4 YUV at 10/12 bit and 3G level A and B and is available for the SxA and SxE only. The SxD comes complete with these formats. Among the support for 3G level B is the ability to analyze signals such as SMPTE 425-B carrying 1 x SMPTE 372M Dual-Link payload.

Dolby - E bitstream analyser

This option displays Dolby-E meta data present in a selected audio stream and determines whether the Dolby-E packet is timed correctly on the SDI video stream. The Dolby-E may be monitored from any of the SDI input embedded audio channel pairs or the AES input. Peak audio levels metering is also displayed.

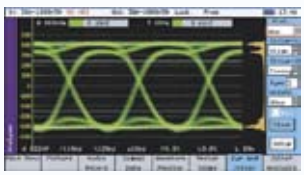


Dolby - E bitstream generator

Among the tools included in the Dolby E streaming option is the ability to adjust the ‘start of frame’ for Dolby E packets. Dolby streams are provided for all program configurations with fixed audio data. Meta data can be edited by the user and stored in memories.

Ancillary data status

This option provides a very quick status view of the ancillary data present in a SDI signal. It does not decode the data fully and is intended to be a fast analysis tool to show if a packet type is present, absent or red if in fault. Full logging is available along with DID and SDID custom setup.



Advanced eye and jitter analysis

The analysis option for the PHABRIX SxE only adds an additional jitter screen plus enhancements to the eye display. The extra features added to the eye and jitter module are focussed toward broadcast manufacturers who have a need for high end analysis tools. Histograms, decade filters, multiple eye display, full screen jitter display and alignment and timing thermometers are all available with comprehensive logging.

Engineering bundle

A combination of options known as the ‘engineering bundle’ is available specific to each Sx instrument which combines options into one cost effective purchase,

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Sx Hand held range



Description	SxA	SxD	SxE
Waveform/Vectorscope/Monitor combined	•	•	•
Display 480 x 272 pixels auto scaling 16:9 24 bit TFT 95 x 54mm display	•	•	•
3G-SDI, HD-SDI, SD-SDI as standard. Independent selection for output and input	•	•	•
Video			
Output 1 x 75 Ohm BNC	•	•	•
Input 1 x 75 Ohm BNC	•	•	•
Dual Link output 2 x 75 Ohm BNC		•	
Dual Link input 2 x 75 Ohm BNC		•	
Genlock Bi/Tri/SDI with cross lock	•	•	•
Adjustable timing 0 to1frame	•	•	•
Text indent/ Logo indent	•	•	•
EDH checking (SD-SDI) - CRC checking (HD-SDI) - Active picture checksum (HD-SDI)	•	•	•
Video test signals 10 bits	•	•	•
Video test signals 12 bits *(unless advanced format option added to SxA and SxE)*		•	
Static test patterns 32 - Bouncing box - Moving zone plate - User defined DPX, YUV, TGA, BMP	•	•	•
SMPTE formats supported Full list www.phabrix.com/formats	•	•	•
SDI bit rates 3Gbps, 1.485Gbps, 270Mbps	•	•	•
Video timing Offset line - pixel - range	•	•	•
Physical layer measurements			
Automated measurement - Eye amp, Rise/Fall time, Delta, Overshoot/undershoot			•
Jitter thermometers Alignment, timing			•
Eye bit rates 3Gbps, 1.485Gbps, 270Mbps			•
Audio			
Generator/Monitor 48 kHz 20-bit (SD-SDI) 24-bit (HD SDI)	•	•	•
16 channel embedded audio	•	•	•
AES output 1x75 Ohm BNC	•		•
AES input 1x75 Ohm BNC	•		•
Test signal Fixed tones 16	•	•	•
Test signal Variable tones 1 Hz-24Khz in 1 Hz steps	•	•	•
Test signal White noise generation	•	•	•
Audio levels variable 0 to -100dB in 1dB steps	•	•	•
Audio phase invert	•	•	•
Dolby E present indication x 8 pairs	•	•	•
Internal speaker 0.5 watts	•	•	•
Audio DAC 24 bit stereo	•	•	•
Headphone socket 3.5mm	•	•	•
Logging			
Eye and Jitter + export log			•
SDI Signal + export log	•	•	•
AES + export log	•		•
General			
Navigation panel thumb switch plus 4 direction buttons plus 8 menu buttons	•	•	•
Internal battery supply - Lithium polymer	Up to 3 hours	Up to 3 hours	1.5 hours at 3G eye
Cable length indication Selective cable type	•	•	•
Internal storage 2 GB	•	•	•
Remote control - Web browser interface - Ethernet 10/100 BASE T	•	•	•
AC power supply Included (universal)	•	•	•
Carry Case Included	•	•	•
Size H: 92mm W:225mm D: 42mm Weight 0.70kgs including integral battery	•	•	•

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PICK HIT BroadcastEngineering IBC 2010
PICK HIT NAB BroadcastEngineering 2011
iabm AWARD winner
iabm AWARD finalist
STAR 2009
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