PHABRIX®

Sx Series

Portable generator/analyser/monitors for
hybrid IP/SDI & Eye/Jitter testing

4x

the flexibility

Sx hand held versatility

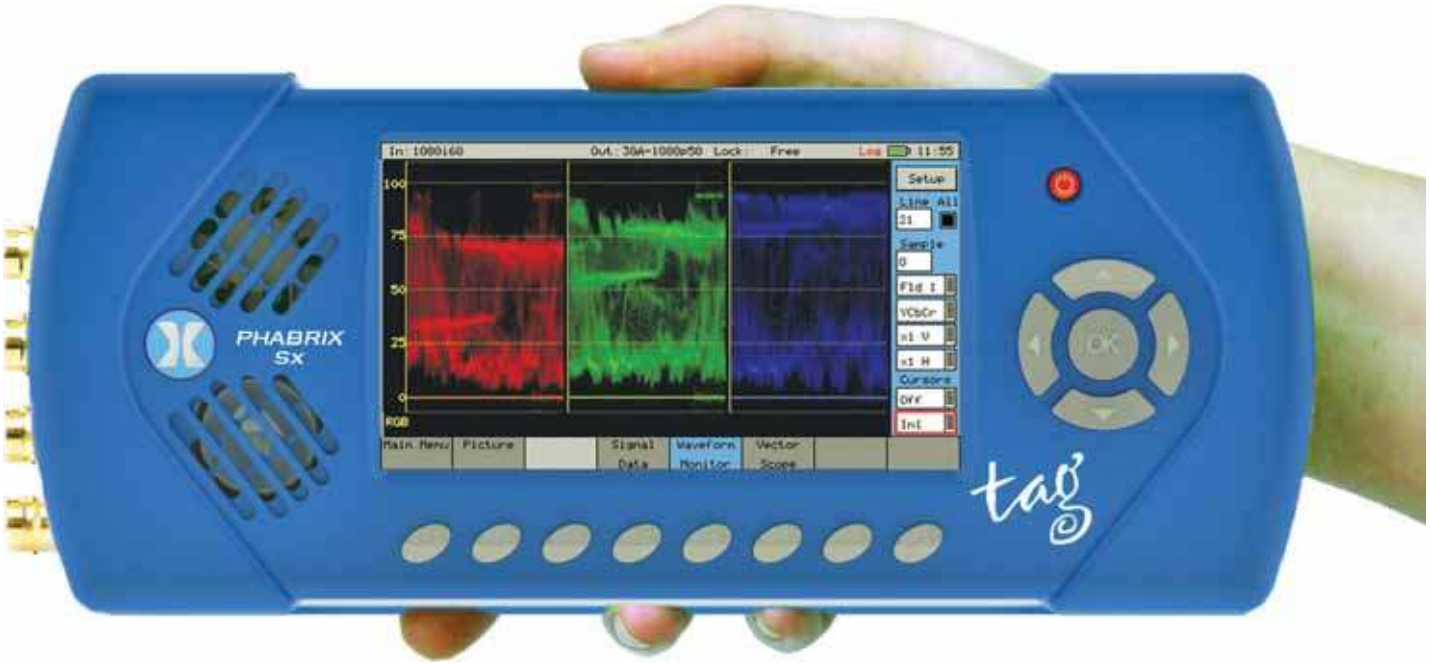
Sx TAG
IP* • SDI
IP Gateway
Optical • Analogue
Video • Audio
SD • HD • 3G*
AES • Dolby*

SxE
Eye and Jitter
Video • Audio
SD • HD • 3G
AES • Dolby*

SxA
Video • Audio
SD • HD • 3G
AES • Dolby*

SxD
Video • Audio
Dual Link SDI
SD • HD • 3G
Dolby*

*Software Option



“the Sx is ideal for broadcast, live production and video technology manufacturing...”

No other instrument offers you an easy to use, easy to carry format

portability

0.9 kg
including battery

Aluminium
ruggedised case

Up to 2hrs
lithium polymer battery

9w
power usage

function

Combined generation, analysis & monitoring

SD-SDI • HD-SDI • 3G-SDI

interface

analogue • IP • optical

All Sx units support SDI interfaces. * In addition the TAG supports analogue, optical, HDMI and IP.

tag

formats

SMPTE compliant standards, 35 on-board test patterns, zone plate, bouncing box, A/V delay, DPX custom pattern support, colour fields

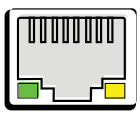
SMPTE 296M	720 x 576	60	PAL
SMPTE 260M	720 x 483	59.94	NTSC
SMPTE 274M	1280 x 720	50	Progressive
SMPTE 425B	1920 x 1080	29.97	
	1920 x 1080	50	Progressive
	1920 x 1080	59.94	Progressive
SMPTE 327M	2048 x 1080	25	4:2:2
		24	4:4:4
		23.98	

SFP

copper to fibre
fibre to copper

The TAG offers SFP connection with optical and copper variants

connection



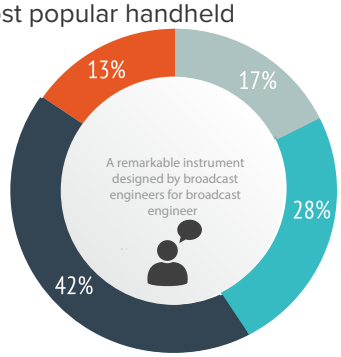
ethernet, browser, remote control, custom reports, picture grabs, logs

reliability

Over 6000 in use

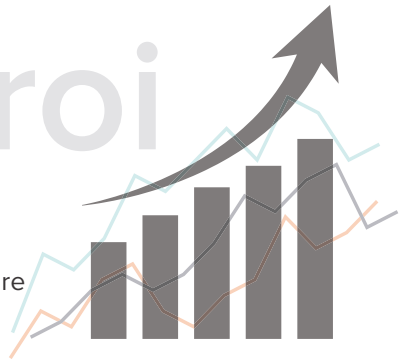
With so many satisfied customers worldwide, the Sx is the broadcast industry's most popular handheld instrument.

Broadcaster
Studio
OB
Manufacturing
Satellite
Medical
Military



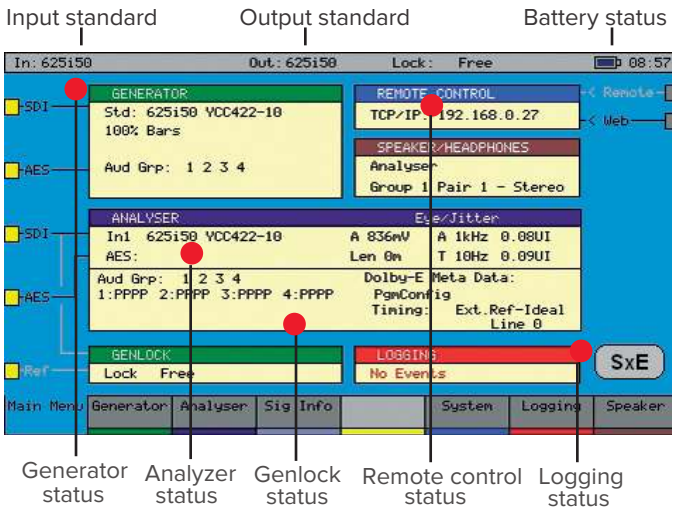
roi

The Return On Investment for a Sx unit is measured in years of service. The first Sx series was launched in 2008 and due to PHABRIX's free lifetime upgrade policy, are still used. FPGA technology makes upgrading software and firmware a simple task of connecting to an open network to download the latest version.



innovation

World's first portable 3G instrument.
World's first portable physical layer analysis.



control

No control screen more than two button presses away. Thumbwheel selection for easy navigation.

audio

Full 16 channel audio meters, AES and an option for metadata support of Dolby E, Dolby D and Dolby D plus

video

Analogue, SD, HD, 3G video montoring, CRC, EDH, standards checking, pixel check, picture zoom, cursors, signal analysis, error logging, HANC/VANC, A/V delay, waveform, vector

Common Toolsets

Generator

Analyser

Audio


Start window


Generator


Reference


User Defined


Full Field White


Full Field Blue


Full Field Cyan


Full Field Green


Full Field Magenta


Full Field Red

Full Field Yellow


Zone Plate


100% Full Field Bars


75% Full Field Bars


75% Bars Over Red


SMPTE Bars


SMPTE 219-100 Bars


SMPTE 219-100 Bars


SMPTE 219+i Bars


ARIB 28-100


ARIB 28-75


ARIB 28+i


Tartan Bars


Stair 5 Step


Star 5 Step Vert


Star 10 Step


Star 10 Step Vert


Pathological EQ/PLL


Pathological EQ


Pathological PLL


Y Ramp Up


Y Ramp Down


Vertical Ramp


Legal Chroma Ramp


Full Chroma Ramp

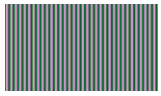

Y Cr, Cb Ramp


Y Cr, Cb Ramp


Chroma Ramp


Multi Burst


Pluge

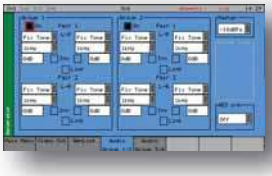

Bowtie


AV Delay Pattern 1


AV Delay Pattern 2


Bouncing Box

Ident Overlay


Audio generator group 1/2

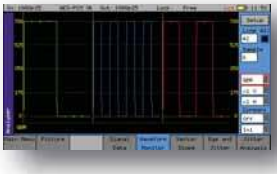

Audio generator group 3/4

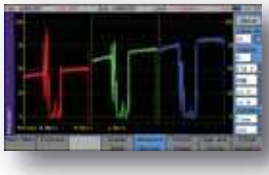
Over 350 formats supported.


Picture monitor with cursors


Picture zoom


Input select internal/external


Waveform full frame


Waveform line select


Vectorscope

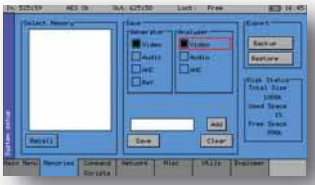

Vectorscope zoom x 2


16 channel audio meters

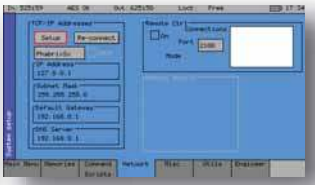

Audio meters group 1/2 - AES


Audio channel status

System



Instrument Presets



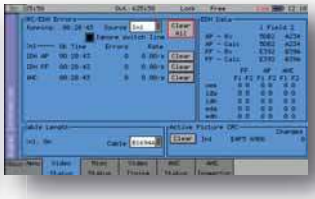
Network Configuration

Software License Status

Engineer Setup

Signal

Video timing

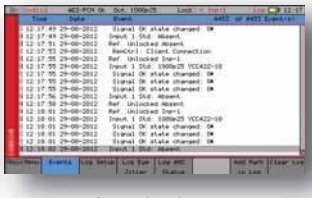


Video status

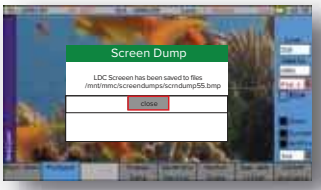
Video format/payload ID

Log

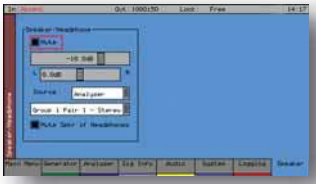
Logging setup



Log display

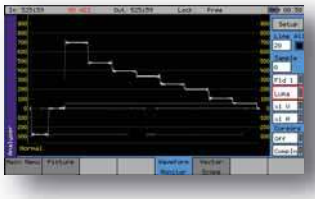


Screen grab



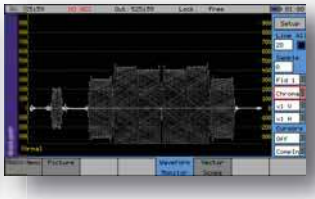
Speaker/headphone

TAG only



Composite waveform low pass

Reference View



Chroma

Audio AES eye

SFP status

Vectorscope

SxE only

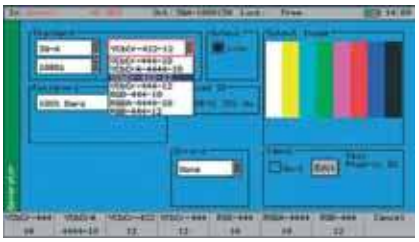
Automatic eye measurements

10 eye pattern view

Jitter Waveform

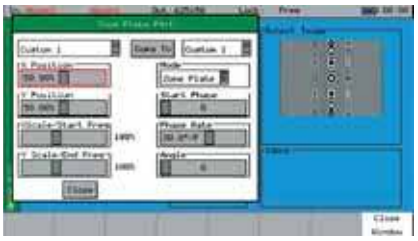
Eye and jitter parameter logging

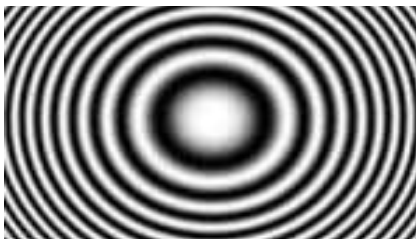
Optional Toolsets



Advanced formats PHSXOF

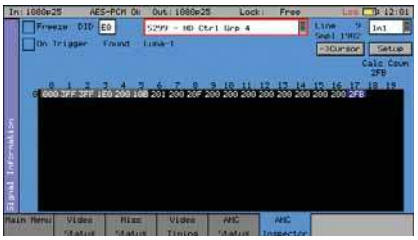
Adds additional formats 4:2:2 YUV, 4:4:4 RGB and 4:4:4 YUV at 10/12 bit plus 3G level A and B. 2K digital cinema formats included as defined in the SMPTE ST 2048-2:2011 standard 2048 x 1080 and SMPTE 428-9.

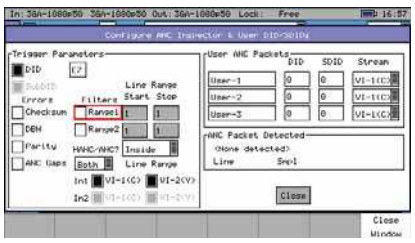




Moving zone plate PHSXOZ

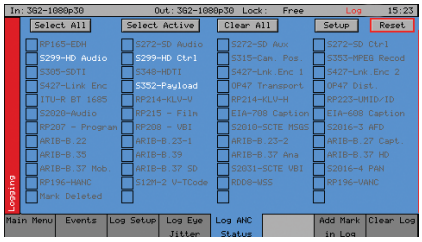
The option includes a control interface to enable frequency sweep adjustments. This allows for direction and motion to be applied. Temporal control is particularly useful for testing up/down convertors/monitors and appliations which compress signals. The interface allows for custom settings to be saved down to memories and recalled at any time.





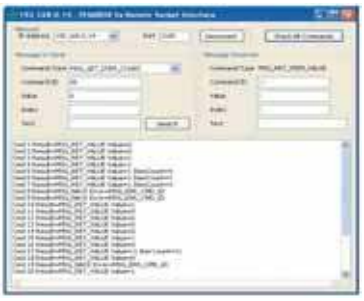
SDI Analysis and Ancillary data analyzer PHSXOSD

A combination of two instruments, this option provides a detailed view of the data words contained within the SDI stream and an ancillary data packet analyzer. This allows the analysis of complex faults and is particularly useful in determining compatibility issues between equipment and when debugging new product development in an R&D environment. The ancillary packet analyzer also includes a DID or SDID search editor, freeze and freeze on trigger function.



VANC analyzer grid PHSXOVNC

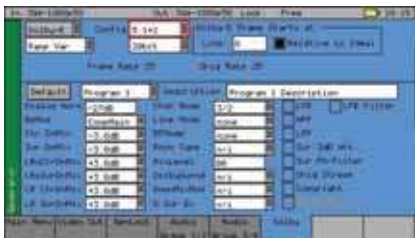
A simple grid layout provides a quick visual check for available vanc/anc ancillary data. The packet type is displayed as present, absent or red if in fault. Simple icons next to the packet indicate the fault. Each ancillary packet available from the grid view can be set to enable logging and then presented together with other information in the events window of the logging menu. User defined selections can be entered with the appropriate DID or SDID code. Any ancillary packet code can be saved down for future recall. Please note, this option does not fully decode the ancillary data, but indicates the data is present.

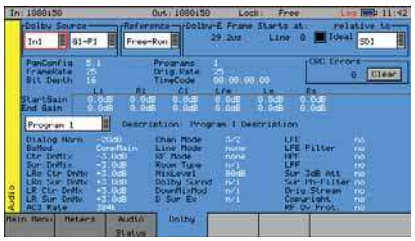


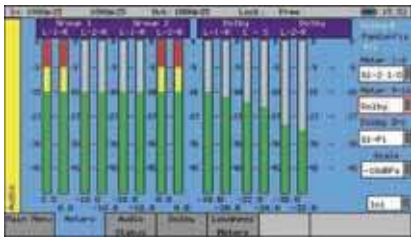
Enhanced remote control PHSXOR

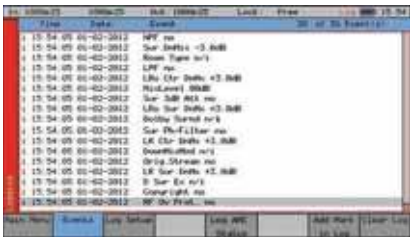
Using this option allows complex applications to be created on a PC to perform test and measurement functions such as automated testing of routers and other broadcast equipment. PHABRIX instruments act as a server and listen on a port waiting for incoming requests from clients such as a PC. All visual controls on the product have an associated command. The control structure can be selected as Passive or Active.

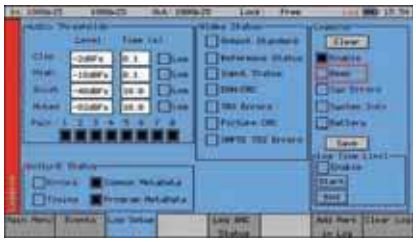
The option also provides a provides a programming guide with command information and examples on a CD. A Windows™ application for testing the interface is also available.











Dolby Bitstream Generator and Analyzer PHSXO-DAG

This combination option of 5 screens provides both Dolby generation and Dolby analysis toolsets. All Dolby parameters can be set up and logged. With a selection of Dolby E, Dolby Digital and Dolby Digital Plus streams to choose from, engineers can quickly enter and adjust parameters to check broadcast infrastructure. This allows the display of Dolby metadata present in a selected audio stream and determines whether the Dolby E packet is timed correctly on the SDI video stream.

In use, the new start menu window displays both the V Bit information and PCM va;ues along with a snapshot of the Dolby metadata. The Dolby metadata screen carries primary information including signal source, Dolby E 'guard band' timing, CRC errors, program channel and metadata detail. Peak audio levels included in the Dolby E metadata packet are displayed allowing ,the user to select the appropriate set of meters to display Dolby levels which will follow the selected Dolby source. Logging for Dolby errors, Timing, Common metadata and Program metadata can also be controlled. Dolby metadata is displayed with audio levels, however the audio is not decoded.

Command scripts with print report PHSXOS

This extremely useful option allows an engineer to create a stack of commands for repeat testing of systems using the toolsets within the Sx series. By ordering the commands, simple or complex tests can be configured and saved for recall by a user defined operator name. Command scripts can be created on the interface within the Sx series or created offline on a PC.

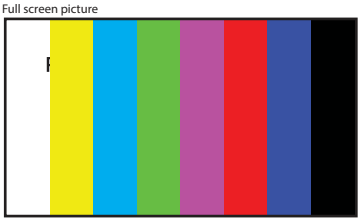
When 'run' reports are generated, they auto fill an on-board html file which can then be downloaded via the remote control facility and printed as a hard paper copy. The report also collects screen dumps of the instruments to accompany the report if required.

Additionally, users can add their own logo to personalise the reports.

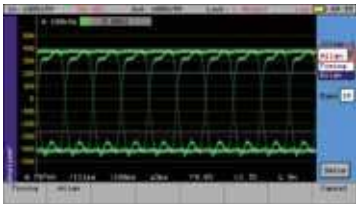
The savings in time and the ability to send an engineer to run a command script in a facility to check equipment and return with a report is invaluable.

Scripting Report: SystemTest -5
10.19 - February 9th 2018

Full screen picture



Full screen picture



Checking SDI Errors: 1s
OK

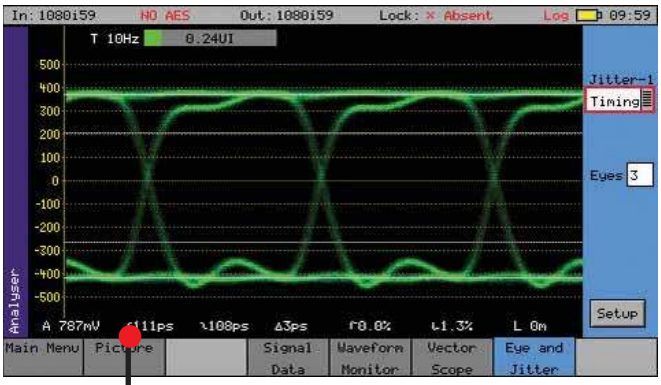
Checking Input AP CRC Changes: 1s
OK

Save status

Generator Std	3GA-1080p50
Generator Pattern-1	100% Bars
Generator Audio Groups	1 2 3 4
Generator AES Out	On
Generator Ref Source	Free-Run
Generator Ref Std	Free
Generator Offset Samples	0
Generator Offset us1	0.000
Generator IdentOn-1	0
Generator Ident 1	Text: PHABRIX Sx
Analyser Running Time	00:01:48
Analyser InputStd-1	3GA-1080p50
Analyser ActPic-1	1920 x 1080

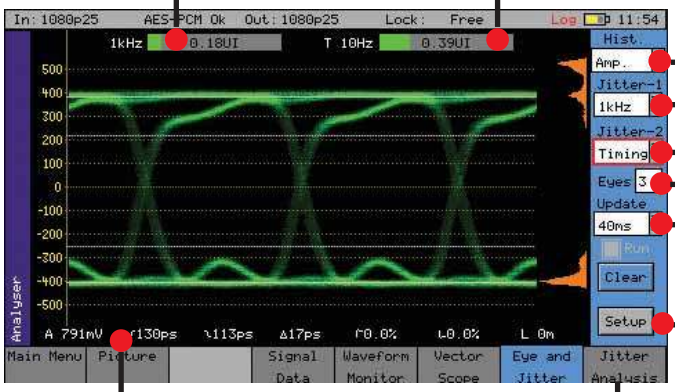
SxE only tools

The PHABRIX SxE comes complete with a sophisticated eye and jitter toolset as standard. This includes automated SMPTE compliance measurements for rise time, fall time, delta, overshoot, undershoot and cable length. The instrument also allows eye display up to a maximum of 10 eyes. Alignment and timing thermometers can be selected individually.



Automated measurements

Simultaneous display of timing thermometers



Automated measurements

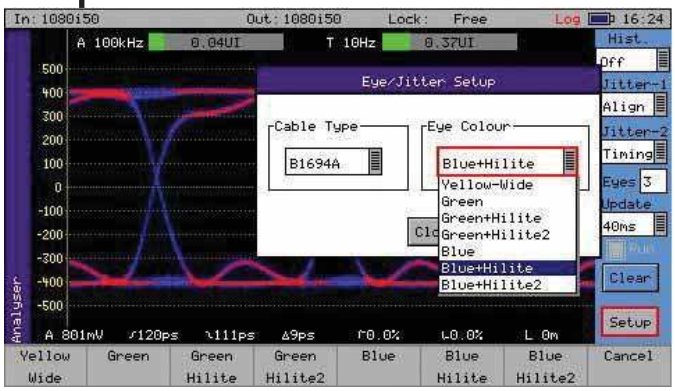
Histograms
Amplitude
Timing
Both

Jitter-1
Timing
Align
10Hz
100Hz
1kHz
10kHz
100kHz

Jitter-2
Timing
Align
10Hz
100Hz
1kHz
10kHz
100kHz

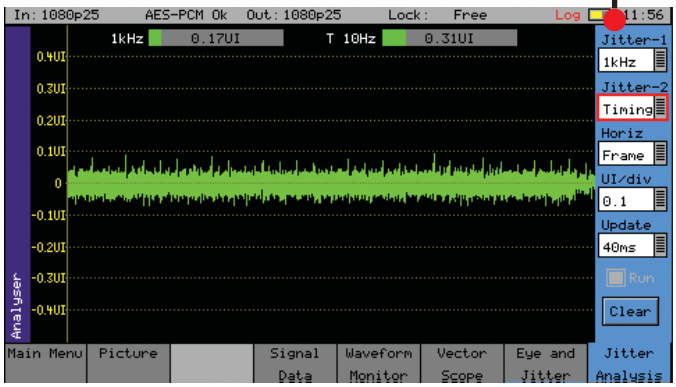
Eye
1-20

Update
Inf
40ms



Key physical layer tools include:

- Histograms
- Decade filters
- Multiple eye patterns
- Simultaneous timing thermometers
- Eye colour for 'hot spot' view
- Persistence
- Cable type
- Additional jitter instrument

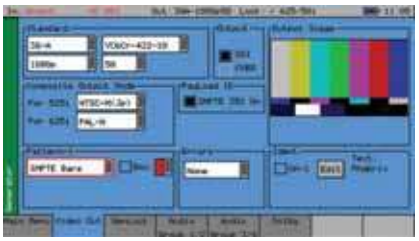


The eye can be coloured to show 'hot spots' and the cable type can be selected.

The separate jitter analysis screen enables the engineer to analyse the nature of jitter present using a graph of jitter versus time.

The decade filters are present and the time base can be adjusted from 1 line through to 1 frame. By analysing jitter in this detailed way, an engineer can determine if a signal is in or out of specification and also get a feel for where any problems lie. A spiky waveform could indicate power supply noise and these visual clues aid the diagnosos. Vertical gain and horizontal magnify controls are provided to help further identify problems.

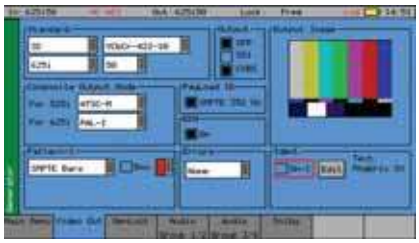
TAG only options

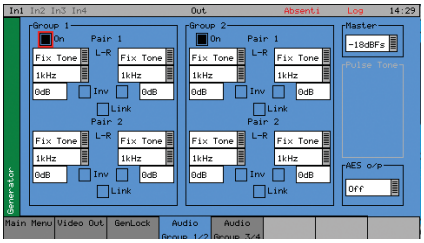


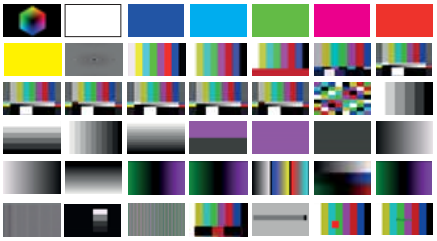
3G-SDI including advanced formats PHSXT-3GADV

This TAG-only option supports the broadcast standards for 3G Level and Level B signal transfer and provides advanced formats including 4:2:2 YUV, 4:4:4 RGB and 4:4:4 YUV at 10/12 bit. For broadcast manufacturers, this option allows rigorous testing of many more formats beyond the standard signals used in traditional broadcasting.

Among the support for 3G level B is the ability to analyse signals such as SMPTE 425-B carrying 1 x SMPTE 372M Dual-Link payload. (Generation of these signals is activated if the generator PHSXT-GEN is present).







Audio break out cable PHSXC-1

A break-out cable is available to provide AES input and output as well as calibrated balanced analogue audio input and output to broadcast levels. It is connected to the TAG via the D-way connector. With both BNC and XLR connectors, this cable is a very useful addition to the TAG instrument.

MSA and non-MSA SFP Support

The Sx TAG supports a range of SFPs (small form factor plugable) to allow them to be connected directly into fibre optic video installations that use LC connectors.

MSA and non-MSA SFPs are both supported for optimum performance with SDI video.

The supported SFP range also includes a mini BNC SDI video transceiver for use with the PHABRIX TAG hand-held instrument mto allow closed loop testing in SDI environments. Optical to SDI and back is a powerful feature of the TAG.

A simple two screw removeable panel gives access should there be a need to replace the SFP cage.

BNC cable adapators for coaxial SFP's are provided if purchased from PHABRIX.

TAG only options

SFP: HDMI Input & Output

The PHSFP-HDMI-IN is an SFP module designed to convert HDMI signals to SDI for subsequent analysis within the TAG analyser.

The PHSFP-HDMI-OUT is an SFP module designed to convert the TAG output to HDMI without scaling artefacts.

They provide SDI to HDMI gateway conversion of SD/HD and 3G-SDI signals with support for up to 8 channels of audio.

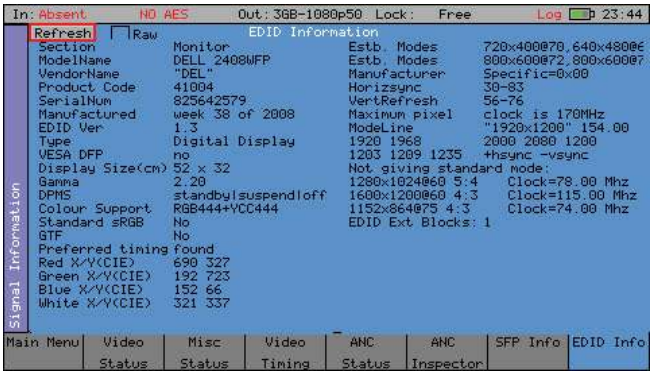
These options are ideal for testing professional A/V infrastructure and manufacturing applications that use SDI and HDMI.

SFP: HDMI EDID Viewer

The EDID viewer option (PHSXO-EDID) displays both RAW ancillary data and decoded EDID information in a tabular display. It obtains the EDID information using a dedicated SFP and cable which much be purchased separately.

Key applications for the EDID viewer include testing video walls in MCR installations, OB applications, professional AV infrastructure and manufacturing companies.

This works with the PHSFP-HDMI-OUT.



SFP: IP 2110 & 2022-6

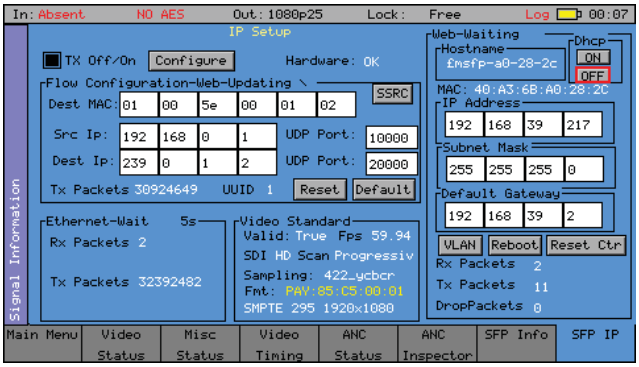
By inserting the PHABRIX 10GE IP SFP+ module, Sx TAG can be used for generation, analysis and monitoring of SMPTE 2110* and 2022-6 IP video.

This has been developed in conjunction with Embrionix.

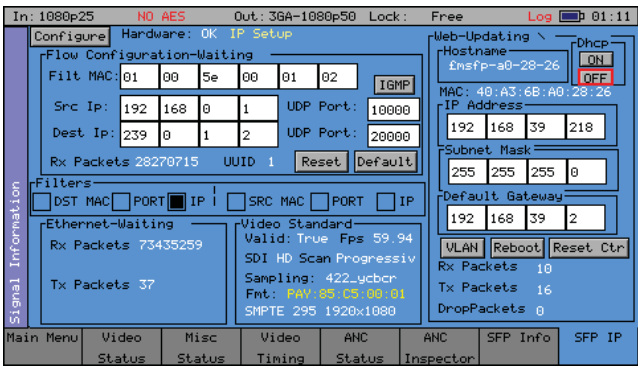
The IP status is presented within the Sx TAG's monitoring toolsets, and new Tx/Rx instrument windows are provided for network configuration and monitoring.

*Upcoming software release

Sx TAG IP with Encap (Tx)



Sx TAG IP with Decap (Rx)



Sx Handheld Range

• standard O option

Description	TAG	SxA	SxD	SxE
Analyser/Generator/Monitor combined	O	•	•	•
Display 480 x 272 pixels auto scaling 16:9 24 bit TFT 95 x 54mm display	•	•	•	•
3G-SDI, HD-SDI, SD-SDI as standard. (3G-SDI available as an option on the TAG)	O	•	•	•
Video				
SDI Output 1 x 75 Ohm BNC		•	•	•
SDI Input 1 x 75 Ohm BNC		•	•	•
SDI Input/output selectable 1 x 75 Ohm BNC	•			
Composite analogue in (PAL/NTSC) 1 x 75 Ohm BNC	•			
Composite analogue out (PAL/NTSC) 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	•	•	•	•
Reference generator	•			
Reference view	•			
Text ident / 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, RGB 4:4:4	O	O	•	O
Static test patterns 35 - Bouncing Box - Moving zone plate - A/V delay - User defined DPX, YUV, TGA, BMP	•	•	•	•
SMPTE formats supported. Full list www.phabrix.com/formats	•	•	•	•
SDI bit rates 3Gbps, 1.485Gbps, 270Mbps. (3Gbps optional on TAG)	O	•	•	•
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/3G-SDI)	•	•	•	•
Stereo balanced analogue audio I/O (via 26 pin high density 'D' type socket)	•			
16 channel embedded audio	•	•	•	•
AES output 1x75 Ohm BNC		•		•
AES input 1x75 Ohm BNC		•		•
AES/GPI input/output (via 26 pin high density 'D' type socket)	•			
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/D/D plus 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	•	•		•
SFP				
Optical / Copper / HDMI - Tx/Rx	O			
IP SMPTE 2110* & 2022-6 Tx/Rx	O			
General				
Internal battery supply - Lithium polymer	Up to 2 hours	Up to 2 hours	Up to 2 hours	Up to 2 hours
Internal storage 4 GB	•	•	•	•
Remote control - Web browser interface - Ethernet 10/100 BASE T	•	•	•	•
AC power supply Included (universal) + Carry Case	•	•	•	•
1 year manufacturers warranty - 3 & 5 year extended warranty options available	•	•	•	•
Size H: 92mm W:225mm D: 42mm Weight 0.98 kgs including integral battery	•	•	•	•

A G M
SD HD 3G
V AU EY
AES

DC 5V power & recharge Ethernet Headphone

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

SxE eye and jitter

Combined generator-analyser-monitor
Automated physical layer measurements
16 channel embedded audio

A G M
SD HD 3G
V AU
AES

DC 5V power & recharge Ethernet Headphone

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

SxA aes

Combined generator-analyser-monitor
16 channel embedded audio

A G M
SD HD 3G
V AU
DL

DC 5V power & recharge Ethernet Headphone

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

SxD dual link

Combined generator-analyser-monitor
over 350 formats supported as standard
16 channel embedded audio

A G M
SD HD 3G OPTION
V AU IP OPTION
SFP AN
AES

DC 5V power & recharge Ethernet Headphone D AES

Composite In/Out, HD, SD SDI In or Out Bi/Tri-level Reference In/Out SFP cage

Sx TAG

Combined analyser-monitor
IP, Analogue, SDI, Optical - SFP support
16 channel embedded audio

A Analyser
G Generator
M Monitor
AN Analogue
SD SD-SDI
HD HD-SDI
3G 3G-SDI
V Video
AU Audio
EY Eye/Jitter
AES AES audio
SFP SFP
IP IP
Speaker

Notes:

For more information about portable
test and measurement contact:

www.phabrix.com

PHABRIX products are continuosly being updated.
Please visit www.phabrix.com for latest product information
Version a2