

# *PRODUCTS*

# *CATALOG*

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**Professional Audio/Video  
Instruments**

**2020**

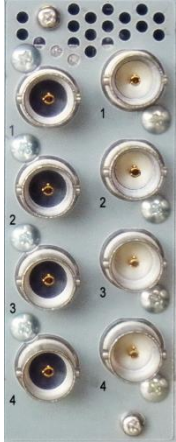
**ASACA**

**ShibaSoku**

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# DUX-200 Series 4K Product lineup



## ■ Overview

12G-SDI compatible, various modules with bypass function etc. are built in the DUX chassis. The chassis is selected from the following 3 types according to the application and the number of lines.

## ■ DUX chassis

- FRX22F 2U full chassis 10 modules installable
- FRX12F 1U full chassis 3 modules installable
- FRX12H 1U half-chassis 1 module installable



■ DUX-20 12G and 3G-SDI Interconverter

■ DUX-21 12G/6G/3G/HD/SD-SDI Distributor

■ DUX-205 4K Down converter 12G-SDI compatible

■ DUX-206 4K Up converter 12G-SDI compatible

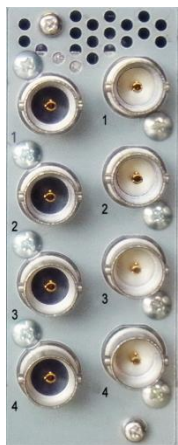
■ DUX-210 4K SDR / HDR converter 12G-SDI compatible

■ DUX-214 4K Logo · Test signal generator 12G-SDI compatible

■ DUX-217 4K Audio Embedder 12G-SDI compatible

■ DUX-218 4K Audio De-Embedder 12G-SDI compatible

# DUX-20 12G and 3G-SDI Interconverter



## ■ Overview

DUX-20 unit is 4K 12G and 3G-SDI interconverter.

DUX-20 has MUX mode, DEMUX mode, Single link distribution, Quad link bypass mode 4 modes.



## ■ MUX mode

- 4K 3G-SDI quad 1 input to 4K 12G-SDI single 4 distribution outpts
- 4K HD-SDI quad 1 input to 4K 6G-SDI single 4 distribution outpts
- 3G-SDI quad 1 input to 6G-SDI dual 1 output

## ■ DEMUX mode

- 4K 12G--SDI single 1 input to 4K 3G-SDI quad 1 outpt
- 4K 6G--SDI single 1 input to 4K HD-SDI quad 1 outpt

## ■ Single link distribution mode

- 12G/6G/3G/HD/SD-SDI single input to 12G/6G/3G/HD/SD-SDI 4 distribution outputs

## ■ Quad link bypass mode

- SD-SDI single 4 inputs to SD-SDI 4 outputs bypass
- 3G/HD-SDI quad 1 input to 3G/HD-SDI 1 output bypass

# DUX-21 12G/6G/3G/HD/SD-SDI Distributor



## ■ Overview

DUX-21 unit is 12G/6G/3G/HD/SD-SDI single 1 input to 4 distribution outputs.



## ■ DISTRIBUTION mode

- 12G/6G/3G/HD/SD-SDI single 1 input to 4 distribution outputs

# DUX-205

# 4K Down converter unit

4K

# DUX-206

# 4K Up converter unit

HDR

12G



### ■ Over view

These units are 4K down converter and 4K up converter units to mount on DUX chassis. The DUX chassis is available from three kinds of follows by customers use.

### ■ DUX chassis

- FRX22F 2U full chassis 10 modules installable
- FRX12F 1U full chassis 3 modules installable
- FRX12H 1U half-chassis 1 module installable



### ■ DUX-205 4K Down converter

- 3840×2160 to 1920×1080, 4096×2160 to 1920×1080 down converted 4 distribution output
- 3840×2160 to 3840×2160, 4096×2160 to 4096×2160 Data structure conversion (Square division and 2-Sample interleave division interconversion, Level A and Level B interconversion)

### ■ DUX-206 4K Up converter

- 1920×1080 to 3840×2160 up conversion
- 1920×1080 to 1920×1080 4 distribution output

### ■ Features

- Video Frame frequency corresponding to 59.94Hz, 50Hz, 29.97Hz and 23.98Hz
- Corresponding to 4K:3G-SDI×4, 12G-SDI×1, SQD/2SI, Level A/B and 4:2:2 10bit
- Converted video quality parameter adjustable
- Video enhancer, Video level adjustable
- Rec. ITU-R BT.709/BT.2020 Color space conversion
- SDR · HDR video conversion function

DUX-205 : HDR to SDR conversion, DUX-206 : SDR to HDR conversion.

The HDR transfer function is HLG, S-Log 3. Corresponds to user-specified setting data (option)

- Delay time between input and output is FAST/SLOW mode selectable (FAST mode is the shortest delay time)
- GENLOCK within external 525BB, 525BB(10 field ID), Tri-sync 2 line inputs
- Output phase adjustable for external reference input
- LTC/VITC ATC-Timecode supports
- 16 channel Embedded audio supports
- 2U full chassis and 1U full chassis supports redundant power supply(Hot swapping)
- DUX-205 and DUX-206 can do mix mount(Hot swapping)
- Remote control by Web-CGI is possible
- Alarm output, SNMP supports

# DUX-205/206 Major Specifications

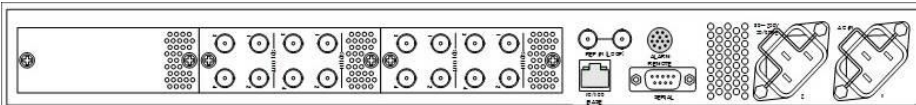
| DUX-205 4K Down converter |  |
|---------------------------|--|
| Input                     | 3G-SDI×4 or 12G-SDI×1 1 line BNC 75Ω   |
| Output                    | 1.5G-SDI×4 or 3G-SDI×4 1 line BNC 75Ω  |
| Input format              | 3840/4096×2160 59.94p/50p/29.97p/23.98p  |
| Output format             | 1920×1080 59.94i/50i/29.97p(PsF) /23.98p(PsF) (59.94p / 50p will be supported) |
| Sampling structure        | Square/2-Sample interleave division, Level A/B, 4:2:2 10bit                    |
| DUX-206 4K Up converter   |  |
| Input                     | 1.5G-SDI 1 line BNC 75Ω  |
| Output                    | 3G-SDI×4 or 12G-SDI×1 1 line, 1.5G-SDI×4 BNC 75Ω                               |
| Input format              | 1920×1080 59.94i/50i/29.97p(PsF) /23.98p(PsF) (59.94p / 50p will be supported) |
| Output format             | 3840×2160 59.94p/50p/29.97p/23.98p   |
| Sampling structure        | Square/2-Sample interleave division, Level A/B, 4:2:2 10bit                    |
| Common specifications     |  |
| Video quality parameter   | Converted video quality parameter adjustable                                   |
| Reference input           | 525BB/525BB (10 field ID)/Tri-sync 2 input BNC 75Ω loop through                |
| Timecode                  | ATC-timecode (LTC/VITC)  |
| Embedded Audio            | 16 channel (with mapping)  |
| Color space               | Rec. ITU-R BT709/BT2020 color space conversion                                 |
| at 2U full chassis        |  |
| Structure                 | 2U peripheral  |
| Size                      | 430mm(W)×88mm(H)×450mm(D)  |
| Constitution              | FRX22F 2U Full chassis ×1 (Redundant power supply)                             |
|                           | UXC001 Control module×1  |
|                           | Upconverter, downconverter, optional module shared slot × 10                   |
| Power supply              | AC100V~240V±10% (50Hz/60Hz)  |
| Power consumption         | Max 300VA  |
| Operating condition       | 5°C to 40°C  |

< Rear view image >

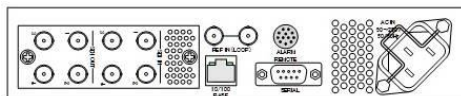
- FRX22F 2U full chassis 10 modules installable



- FRX12F 1U full chassis 3 modules installable



- FRX12H 1U half-chassis 1 module installable





# VC7

# Multi Format Standards Converter

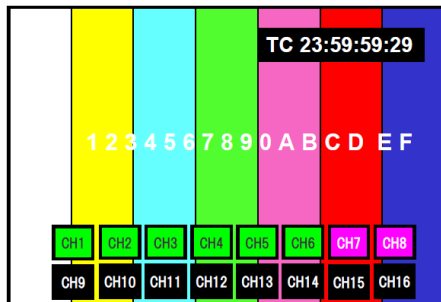


Real-time TV Standards Conversion with integrated motion compensation algorithm  
Wide variety of conversions to high quality video formats

## ■ Features

- Audio Channel Mapping
- Remote Control with SNMP and HTTP
- Auto Output Format Mapping
- AFD (Aspect Ratio)
- Closed Caption Standard Conversion
- Time-code/Superimpose
- Dual Conversion (Option)
- Dolby-E Audio (Option)
- Dual Power Supply (Option)

## ■ Time-code / Superimpose



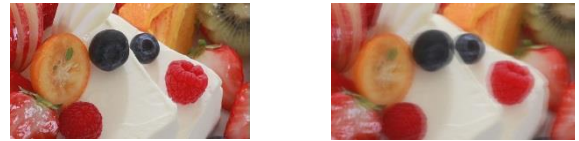
## ■ Option

- VC7000001 Dolby-E ( Decode, Encode ) unit
  - VC7000002 Redundant power supply
  - VC7000003 Dual conversion unit
  - VC7ASYS\*\* Additional Option for Conversion Format
- \*Refer to format table below

## ■ General Specifications

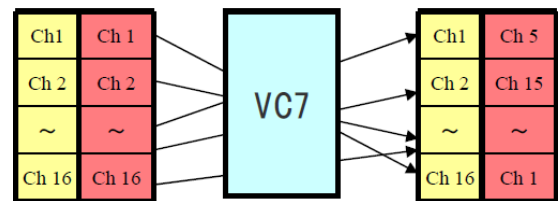
- Operating Temperature: 5°C- 35°C, 5% - 90%RH (non dewing)
- Power Supply: AC100 - 240V, 50/60Hz
- Power Consumption: 200VA max
- Dimensions: 426(W) x 88(H) x 520(D) mm
- Weight: aprx. 10kg

## ■ Motion Compensation



With Motion Compensation      Without Motion Compensation

## ■ Audio Channel Mapping



## ■ Conversion Format Mapping

Input signal formats are automatically recognized and a pre-selected conversion type is automatically selected..

Example.  
Mapping registration

| Input    | Output      |
|----------|-------------|
| 1080i/50 | 1080i/59.94 |
| 720P/50  | 720P/59.94  |
| 625i/50  | 525i/59.94  |

## Format table for Input/Output Standards & Options

| Input \ Output | 1080/59.94i | 1080/50i | 1080/29.97PsF | 1080/25PsF | 1080/24PsF | 1080/23.98PsF | 720/59.94p | 720/50p | 625i | 525i |
|----------------|-------------|----------|---------------|------------|------------|---------------|------------|---------|------|------|
| 1080/59.94i    | ○           | ○        | ○             | ○          | ○          | ○             | ○          | ○       | ○    | ○    |
| 1080/50i       | ○           | ○        | ○             | ○          | ○          | ○             | ○          | ○       | ○    | ○    |
| 1080/29.97PsF  | ○           | ○        | -             | -          | -          | -             | ○          | ○       | ○    | ○    |
| 1080/25PsF     | ○           | ○        | -             | -          | -          | -             | ○          | ○       | ○    | ○    |
| 1080/24PsF     | ○           | ○        | -             | -          | -          | -             | ○          | ○       | ○    | ○    |
| 1080/23.98PsF  | ○           | ○        | -             | -          | -          | -             | ○          | ○       | ○    | ○    |
| 720/59.94p     | ○           | ○        | -             | -          | -          | -             | ○          | ○       | ○    | ○    |
| 720/50p        | ○           | ○        | -             | -          | -          | -             | ○          | ○       | ○    | ○    |
| 625i           | ○           | ○        | ○             | ○          | ○          | ○             | ○          | ○       | ○    | ○    |
| 525i           | ○           | ○        | ○             | ○          | ○          | ○             | ○          | ○       | ○    | ○    |

## ■ VC7 Specifications

|                                 |  |
|---------------------------------|--|
| Input                           | HD-SDI/SDI, 1 BNC active through, 75 Ω   |
| Output                          | HD-SDI/SDI, 2 BNC, 75 Ω  |
|                                 | 2 Confirms with SMPTE 292M, SMPTE 259M   |
| External Reference Sync         | BB (Black Burst) sync level 286mVp-p ± 6 dB 75 Ω   |
| synchronized with output signal | HDTV Tri-level sync ±300 mVp-p ± 6 dB 75 Ω   |
|                                 | BNC, Auto Termination, Loop Through Output   |
| In-Out Delay                    | 65 msec (Typ.)   |
| VideoProcess                    | Level (Y/C), Setup level, Enhancer   |
| Phase                           | Internal, External   |
| AFD                             | Supports auto aspect changing  |
| Aspect ratio                    | 4:3, 13:9, 14:9, 15:9, 16:9 ※When converting up / down   |
| Embedded Audio                  | 24 bit, 48 kHz, 16ch Confirms with SMPTE 299M, SMPTE272M   |
| AES/EBU Audio                   | 24 bit, 48 kHz, 8 ch BNC 75 Ω  |
| Dolby-E Audio                   | 24 bit, 48 kHz, DE timing conversion supports  |
| Audio Delay                     | -66ms~+350ms(1ms step) Individual channel  |
| Superimpose Function            | Character, Time code, Audio status   |
| Time Code                       | ATC LTC, ATC VITC Input dependent/Local  |
| Non input action                | Freeze/Black   |
| Remote Control                  | SNMP, HTTP (Web browser)   |
| Test signals                    | Video: Color bar, Scroll Audio: 1kHz -20dB, Channel sequential<br>Closed caption: CEA608, CEA708   |
| Input watching                  | Video CRC, Audio CRC, Dolby-E DE Timing, Dolby-E Bit stream,<br>Audio channel status, Timecode packet, Closed caption packet,<br>352M Payload  |
| Motion compensation parameter   | Motion detection, Motion compensation  |
| Alarm                           | Signal, Fan, Power   |
| Closed Caption                  | CEA608, CEA708   |
| Options                         | VC7000001 : Dolby-E (Encode Decode Conversion)<br>VC7000002 : Redundant power supply unit<br>VC7000003 : Dual conversion unit<br>VC7ASYS** : Additional option of a conversion system. |
| Power Supply                    | AC 90-240V, 50Hz/60Hz  |
| Power consumption               | 150 VA, Redundant power supply   |
| Operating environment           | +5°C~+35°C/5%~90%RH (non-dewing)<br>( Temperature/Humidity range in performance is guaranteed. )   |
| Dimensions                      | 426 (W) x 88 (H) x 520 (D) mm 2U (mountable 19 inch rack)  |

## ■ Back View (Dual Conversion mounted)



\* Attn: Back View is changed depending on Options



# TG4000A

# 4K Test Signal Generator

4K  
HDR

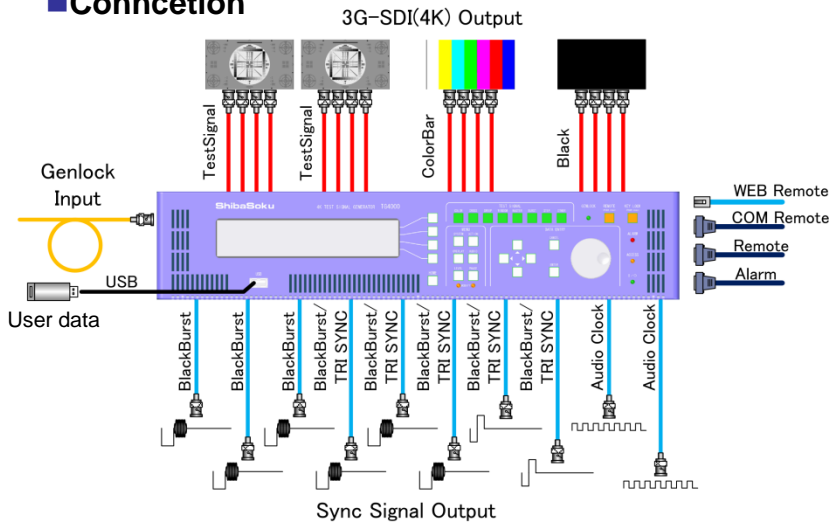


3840pixel, 4096pixel  
4 Outputs 4K Test signal  
Analog Sync output  
Genlock function  
Video scroll, Video bounce  
HDR chart (option)

## Features

- 4K(3840x2160p and 4096x2160p) 4 3G-SDI interface
- 4K Test signal 4 outputs (2 Main, 1 Color Bar, 1 Black output)
- Sync Signal outputs (BB/Tri-SYNC/Audio word clock)
- Genlock function (External BB/Tri-Sync/10MHz)
- Square division / 2-sample interleave division support
- Level A / Level B structures support
- 3G-SDI 4 Link timing adjustable
- HDR chart (option)
- Video and Logo random scroll, Video bounce
- User Video and Logo (BMP) output
- 4K Mono-scope Chart, CZP, and Natural picture
- Y Cb Cr video level adjustable
- Overlay Logo and Marker signal on video
- Embedded Audio 16 ch (at level A) and 32 ch (at level B)
- Lipsync check with video bounce function
- Colorimetric for Rec. ITU-R BT.2020/BT.709 support
- Remote control by Web remote, Serial remote, make contact
- 2U compact size for 19 inch Rack mount
- XYZ Color bar (3840/4096, BT.709/2020, DCDM)
- 3G-SDI Payload ID editing
- Memory of operation setting, Memory sequence function

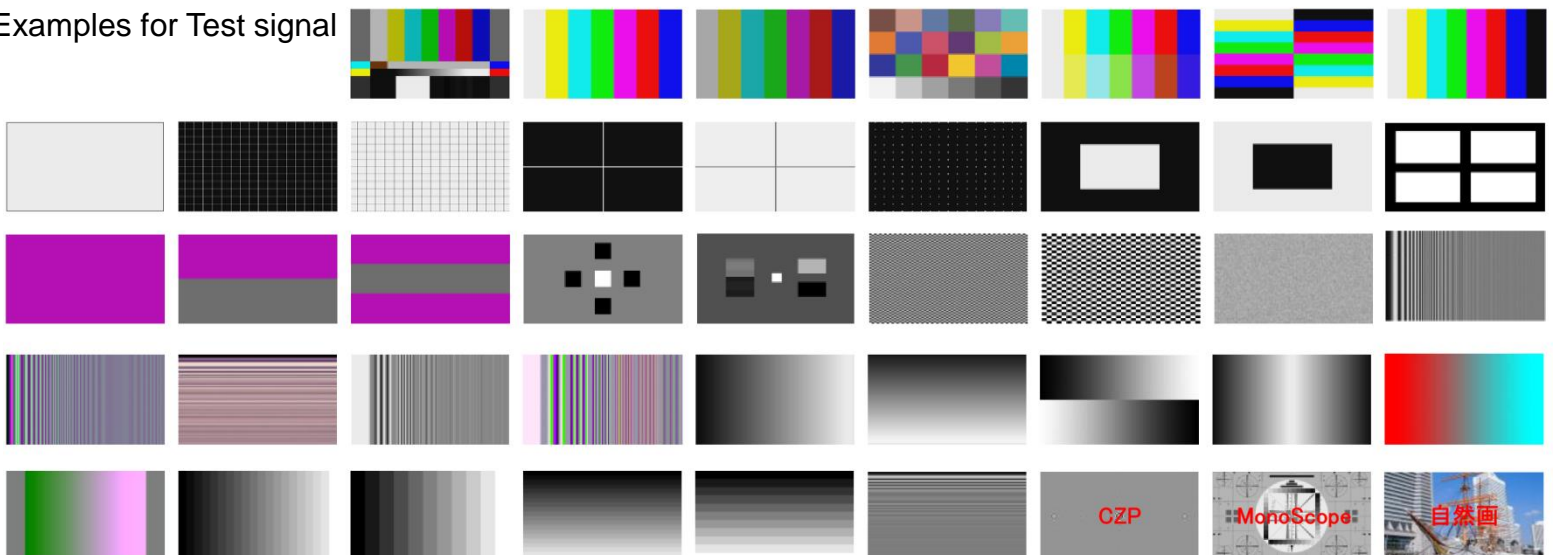
## Connction



## Overlay image



## Examples for Test signal

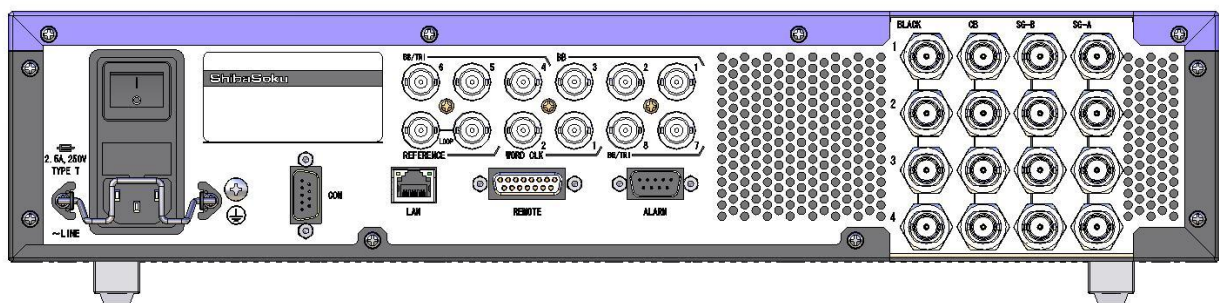


※Image is sample

## ■TG4000A Specifications

| Item  | Specification   |
|---|---|
| <b>1. Input Specification</b>                 |   |
| Reference                                     | BB/Tri-SYNC/CW 10MHz BNC 1 Loop through 75Ω   |
| <b>2. Output Specifications</b>               |   |
| SG-A/SG-B(main)                               | 3G-SDIx4 outputs BNC 2 Distributions 75Ω  |
| CB(Color Bar)                                 | 3G-SDIx4 outputs BNC 1 Distribution 75Ω   |
| BLACK   | 3G-SDIx4 outputs BNC 1 Distribution 75Ω, No Audio   |
| Sample Structures                             | Square division, 2-sample interleave division   |
| Sync Signal Output                            | 10 BNC Outputs 75Ω Output phase is variable<br>Out1 - 3 BB fixed, Out4 - 6 BB/Tri-Sync selectable<br>Out7 - 8 BB/Tri-Sync Selectable<br>Out9 - 10 Audio word clock  |
| <b>3. Video Specifications</b>                |   |
| Valid pixel number, Frame frequency, Sampling | 3840x2160, 4096x2160 60/59.94/50/30/29.97/25/24/23.98 Hz<br>YCbCr/RGB 4:2:2/4:4:4 10bit/12bit   |
| Colorimetric                                  | Rec. ITU-R BT.2020/BT.709 selectable, or 2020/709 Split Color Bar   |
| Superimposed signals                          | Logo (BMP), Marker signal   |
| Test Signals                                  | COLOR BAR, CROSS, SWEEP, WINDOW, RASTER, PATHOLOGICAL, STEP, RAMP, Mono-scope, CZP, NOISE, Natural Pictures, User Pictures  |
| <b>4. Embedded Audio Specifications</b>       |   |
| Sampling, Quantization                        | 48kHz (Synchronized with Video Clock) 20bit, 24bit  |
| Channel Number                                | 16ch (at Level A), 32ch (at Level B) Each Link(3G-SDI) individual audio   |
| Audio Test Signals                            | 400Hz, 1kHz, 3kHz, Sweep, Variable, -18dBFS, -20dBFS, Mute  |
| <b>5. Functions</b>                           | Gen Lock phase adjustment *1, Each 3G-SDI output timing adjustment, Video Level adjustment, Video Scroll, Video Bounce, Lip Sync signal output, Customer's original video output, Logo/Marker superimpose |
| <b>6. Remote</b>                              | Contact (D-sub 15pin), LAN(10/100Base-T), RS232C(D-sub 9pin)  |
| <b>7. Alarm Output</b>                        | Contact (D-sub 9pin)  |
| <b>8. Power Supply, Dimensions, Weight</b>    | AC100~240V 50/60Hz 150VA max<br>426(W) x 88(H) x 540(D) mm approx 12kg  |
| <b>9. Option</b>                              | TG4000401 4K Natural Pictures set (Rec. ITU-R BT.2020/BT.709 )<br>TG4000402 4K 3D Natural Pictures set (LBL, SBS, T&B)  |

## ■TG4000A Rear view



■TG4000A support formats

● : support

| Image Format                    | Frame Rate | Picture | Signal Format | Sampling Structure | Bit Depth | Level Format |         | Image Division |                     | Transmit Format |              |              |   |   |
|---------------------------------|------------|---------|---------------|--------------------|-----------|--------------|---------|----------------|---------------------|-----------------|--------------|--------------|---|---|
|                                 |            |         |               |                    |           | Level A      | Level B | Square         | 2-Sample Interleave | 3G Quad Link    | 3G Dual Link | HD Quad Link |   |   |
| 3840 x 2160<br>·<br>4096 x 2160 | 59.94/60   | P       | 4:2:2         | YCbCr              | 10        | ●            | ●       | ●              | ●                   | ●               |              |              |   |   |
|                                 | 50         | P       | 4:2:2         | YCbCr              | 10        | ●            | ●       | ●              | ●                   | ●               |              |              |   |   |
|                                 | 29.97/30   | P       | 4:2:2         | YCbCr              | 10        |              |         | ●              |                     |                 |              |              | ● |   |
|                                 |            |         |               |                    | 12        |              | ●       | ●              | ●                   | ●               |              | ●            |   |   |
|                                 |            |         | 4:4:4         | YCbCr              | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         | 4:4:4         | RGB                | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            | PsF     | 4:2:2         | YCbCr              | 10        |              |         | ●              |                     |                 |              |              |   | ● |
|                                 |            |         |               |                    | 12        |              | ●       | ●              | ●                   | ●               |              | ●            |   |   |
|                                 |            |         | 4:4:4         | YCbCr              | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         | 4:4:4         | RGB                | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 | 25         | P       | 4:2:2         | YCbCr              | 10        |              |         | ●              |                     |                 |              |              | ● |   |
|                                 |            |         |               |                    | 12        |              | ●       | ●              | ●                   | ●               |              | ●            |   |   |
|                                 |            |         | 4:4:4         | YCbCr              | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         | 4:4:4         | RGB                | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            | PsF     | 4:2:2         | YCbCr              | 10        |              |         | ●              |                     |                 |              |              |   | ● |
|                                 |            |         |               |                    | 12        |              | ●       | ●              | ●                   | ●               |              | ●            |   |   |
|                                 |            |         | 4:4:4         | YCbCr              | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         | 4:4:4         | RGB                | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 | 24         | P       | 4:2:2         | YCbCr              | 10        |              |         | ●              |                     |                 |              |              | ● |   |
|                                 |            |         |               |                    | 12        |              | ●       | ●              | ●                   | ●               |              | ●            |   |   |
|                                 |            |         | 4:4:4         | YCbCr              | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         | 4:4:4         | RGB                | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            | PsF     | 4:2:2         | YCbCr              | 10        |              |         | ●              |                     |                 |              |              |   | ● |
|                                 |            |         |               |                    | 12        |              | ●       | ●              | ●                   | ●               |              | ●            |   |   |
|                                 |            |         | 4:4:4         | YCbCr              | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         | 4:4:4         | RGB                | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 | 23.98      | P       | 4:2:2         | YCbCr              | 10        |              |         | ●              |                     |                 |              |              | ● |   |
|                                 |            |         |               |                    | 12        |              | ●       | ●              | ●                   | ●               |              | ●            |   |   |
|                                 |            |         | 4:4:4         | YCbCr              | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         | 4:4:4         | RGB                | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            | PsF     | 4:2:2         | YCbCr              | 10        |              |         | ●              |                     |                 |              |              |   | ● |
|                                 |            |         |               |                    | 12        |              | ●       | ●              | ●                   | ●               |              | ●            |   |   |
|                                 |            |         | 4:4:4         | YCbCr              | 10        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
|                                 |            |         |               |                    | 12        | ●            | ●       | ●              | ●                   | ●               | ●            |              |   |   |
| 4:4:4                           |            |         | RGB           | 10                 | ●         | ●            | ●       | ●              | ●                   | ●               |              |              |   |   |
|                                 |            |         |               | 12                 | ●         | ●            | ●       | ●              | ●                   | ●               |              |              |   |   |

## ■TG4000401 4K Natural picture video option

Resolution : 3840x2160pixel / 4096x2160pixel

Colorimetric : Rec.ITU-R BT.2020/BT.709

21 images

## ■TG4000402 4K 3D Natural picture video option

Resolution : 3840x2160pixel / 4096x2160pixel

Colorimetric : Rec.ITU-R BT.709

3D data format : Side-By-Side Half、Top and Bottom、Line-By-Line

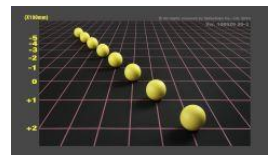
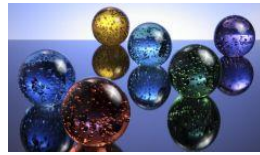
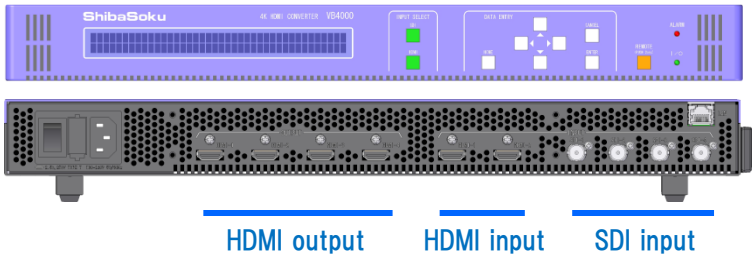


Image is sample





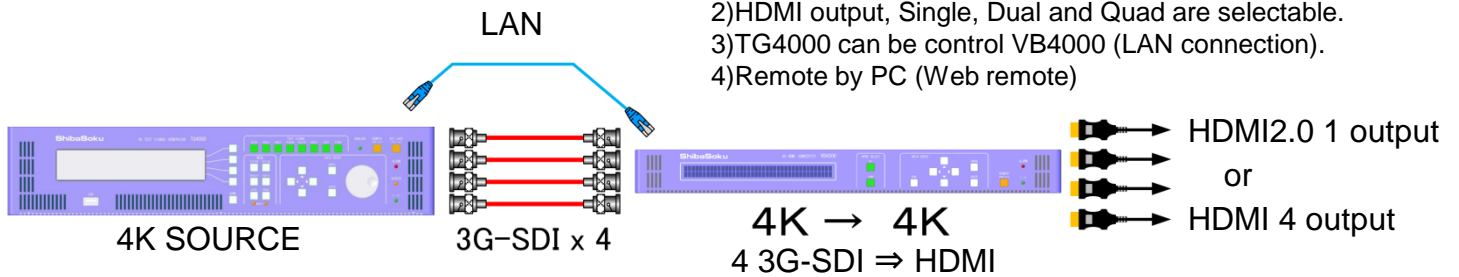
**HDMI2.0, HDCP2.2**  
**Convert 4K SDI into 4K HDMI**  
**Upconvert 1080p into 4K HDMI**

HDMI output    HDMI input    SDI input

## ■ Features

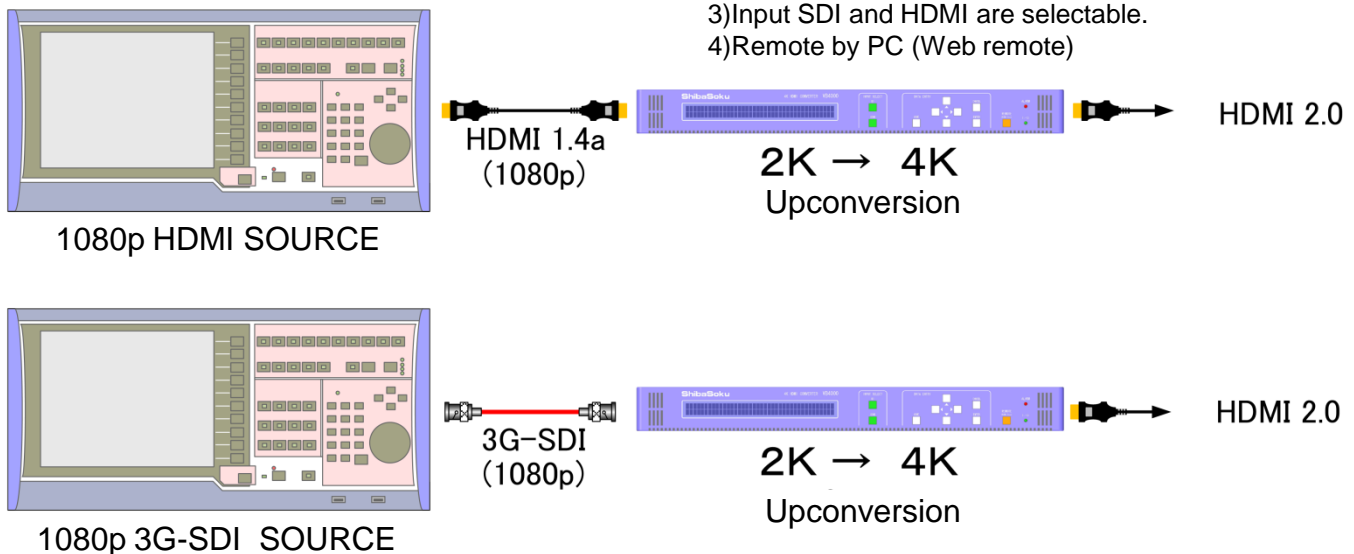
- HDMI output support 4K/60Hz, 6Gbps/ch.
- HDMI2.0, HDCP2.2 support
- 4K 3G-SDI(Dual/Quad) signal convert to 4K HDMI2.0 signal.
- 4K HD-SDI(Quad) signal convert to 4K HDMI2.0 signal.
- 1920 x 1080p SDI signal up convert to 4K HDMI2.0 signal.
- 1920 x 1080p HDMI 1.4 signal up convert to 4K HDMI2.0 signal.
- HDMI output is selectable (Single/Quad Link)
- YCbCr/RGB, 4:2:0/4:2:2/4:4:4, 8bit/10bit/12bit sampling conversion function.
- Rec. ITU-R BT.2020/BT.709 color space conversion.
- Audio 8ch
- Packet data editing into Informa. over packet data generation
- Remote by PC (Web remote)
- TG4000 can be control VB4000 (LAN connection).
- 1U compact size

## ■ For sample TG4000 and VB4000 connection



- 1)TG4000 (3G-SDI x 4) 4K signal convert to HDMI2.0 4K signal.
- 2)HDMI output, Single, Dual and Quad are selectable.
- 3)TG4000 can be control VB4000 (LAN connection).
- 4)Remote by PC (Web remote)

## ■ For sample TG45 and VB4000 connection



- 1)TG45 SDI 1080p signal up convert to 4K HDMI signal.
- 2)TG45 HDMI 1080p signal up convert to 4K HDMI2.0 signal.
- 3)Input SDI and HDMI are selectable.
- 4)Remote by PC (Web remote)

## ■VB4000 Specifications

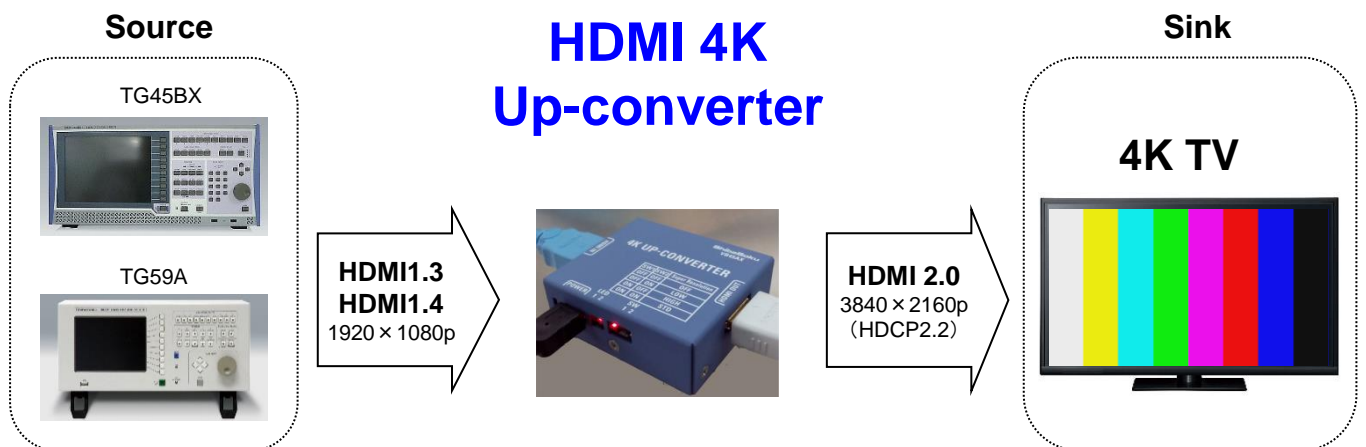
|                        |  |
|------------------------|--|
| <b>1. Input</b>        |  |
| SDI input              | 3G-SDI/HD-SDI x 4 BNC 75Ω  |
| HDMI input             | HDMI 1.4 x 2 Type A  |
| Active pixel           | 3840 x 2160, 1920 x 1080   |
| Frame frequency        | 60Hz/59.94Hz/50Hz/30Hz/29.97Hz/25Hz/24Hz/23.98Hz   |
| Scan mode              | progressive  |
| <b>2. Output</b>       |  |
| HDMI output            | HDMI 2.0 x 4 Type A Single/Dual/Quad selectable  |
| Active pixel           | 3840 x 2160  |
| Frame frequency        | 60Hz/59.94Hz/50Hz/30Hz/29.97Hz/25Hz/24Hz/23.98Hz   |
| Scan mode              | progressive  |
| <b>3. Video signal</b> |  |
| 4K up conversion       | Input : SDI or HDMI (1920 x 1080p) / Output 4K HDMI  |
| Sampling               | YCbCr/RGB, 4:2:0/4:2:2/4:4:4, 8bit/10bit/12bit (Sampling can be convert)                         |
| Color space            | Rec. ITU-R BT.2020 and BT.709 are selectable.  |
| <b>4. Audio signal</b> |  |
| Audio format           | L-PCM *HDMI (Depend on the input form)   |
| Audio channel          | 8ch  |
| Sampling               | 16bit/20bit/24bit  |
| Sampling frequency     | SDI input : 48kHz<br>HDMI input : 32kHz/44.1kHz/48kHz/88.2kHz/96kHz/192kHz (Depend on the input) |
| <b>5. Remote</b>       | LAN(10/100BASE-T)  |
| <b>6. General</b>      | AC90~240V 50/60Hz 150VAmax<br>426(W) × 44(H) × 500(D)mm Approx 10kg                              |
| <b>7. Options</b>      | Rack mount adapter, HDMI cable clamp attachment  |



*Easily converted to 4K signal at attractive price*



- ◇ Supports HDMI2.0 4K/60p (6Gbps) YCbCr 4:2:2 10bit
- ◇ High quality up converts 1920x1080p to 3840x2160p
- ◇ Effective utilization of HDMI1.4 equipments
- ◇ Supports HDCP 1.4
- ◇ Audio and DCEC inherited the input signal.
- ◇ Attractive price, light weight and compact size



## ■VB45AX Conversion format

| Input Signal |              |               |            | Output Signal |              |               |                 |
|--------------|--------------|---------------|------------|---------------|--------------|---------------|-----------------|
| Formats      | Frame Rate   | Color         | Bit length | Formats       | Frame Rate   | Color         | Bit length      |
| 1920x1080p   | 59.94Hz/60Hz | RGB (4:4:4)   | 8, 10, 12  | 3840x2160p    | 59.94Hz/60Hz | RGB (4:4:4)   | 8               |
|              |              | YCbCr (4:4:4) | 8, 10, 12  |               |              | YCbCr (4:4:4) | 8               |
|              |              | YCbCr (4:2:2) | 8, 10, 12  |               |              | YCbCr (4:2:2) | Same as input*1 |
| 1920x1080p   | 50Hz         | RGB (4:4:4)   | 8, 10, 12  | 3840x2160p    | 50Hz         | RGB (4:4:4)   | 8               |
|              |              | YCbCr (4:4:4) | 8, 10, 12  |               |              | YCbCr (4:4:4) | 8               |
|              |              | YCbCr (4:2:2) | 8, 10, 12  |               |              | YCbCr (4:2:2) | Same as input*1 |
| 1920x1080p   | 29.97Hz/30Hz | RGB (4:4:4)   | 8, 10, 12  | 3840x2160p    | 29.97Hz/30Hz | RGB (4:4:4)   | 8               |
|              |              | YCbCr (4:4:4) | 8, 10, 12  |               |              | YCbCr (4:4:4) | 8               |
|              |              | YCbCr (4:2:2) | 8, 10, 12  |               |              | YCbCr (4:2:2) | Same as input*1 |
| 1920x1080p   | 25Hz         | RGB (4:4:4)   | 8, 10, 12  | 3840x2160p    | 25Hz         | RGB (4:4:4)   | 8               |
|              |              | YCbCr (4:4:4) | 8, 10, 12  |               |              | YCbCr (4:4:4) | 8               |
|              |              | YCbCr (4:2:2) | 8, 10, 12  |               |              | YCbCr (4:2:2) | Same as input*1 |
| 1920x1080p   | 23.98Hz/24Hz | RGB (4:4:4)   | 8, 10, 12  | 3840x2160p    | 23.98Hz/24Hz | RGB (4:4:4)   | 8               |
|              |              | YCbCr (4:4:4) | 8, 10, 12  |               |              | YCbCr (4:4:4) | 8               |
|              |              | YCbCr (4:2:2) | 8, 10, 12  |               |              | YCbCr (4:2:2) | Same as input*1 |

The format other than the above, the input signal will be bypassed to output signal.  
Also, The input signal will be bypassed to output signal when Sink devices is not support to 4K.

\*1 : Bit rete will be 12bit.

SINK devices HDMI1.4 (YCbCr 4: 2: 0 8bit) In the case of, VB45AX the YCbCr 4: 2: 0 outputs the 8bit.

## ■VB45AX HDCP propagation

HDCP of support will be as in the table on the right.

| Input signal |               | Output signal |
|--------------|---------------|---------------|
| HDCP free    |               | HDCP free     |
| HDCP1.4      | Bypass        | HDCP1.4       |
|              | 4K Up-convert | HDCP2.2       |
| HDCP2.2      |               | HDCP2.2       |

## ■Specifications

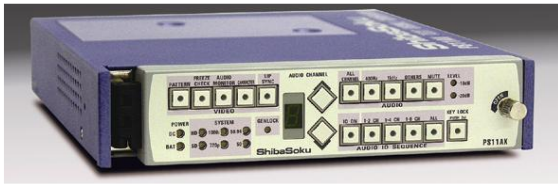
|                      |                                       |
|----------------------|---------------------------------------|
| Operate temperature  | 0 to 40 degrees C                     |
| Relative humidity    | 25 to 90% RH during (no condensation) |
| Power supply voltage | DC+5V MiniUSB (Power consumption 3VA) |
| Dimensions           | 64(W) × 26 (H) × 57 (D) mm            |

## ■Accessories

|            |     |
|------------|-----|
| AC adapter | 1pc |
| USB cable  | 1pc |

# PS11AX

## Broadcasting Network Checker



**HDTV/SDTV Portable Test Signal Generator whose measuring functions for entire broadcastings and video source transmissions are mounted in a compact unit**

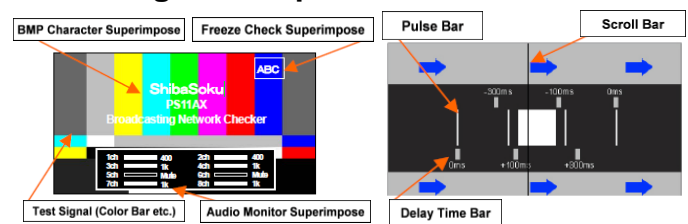
### ■Features

- Compact, light weight, easy to carry, and good for outside usage by DC-power battery operation (option)
- Electrical voice output for audio channel ID with rotate output setting, easy for checking audio channels at the both side of sender/receiver
- Lip-sync test pattern output for checking the difference of receiver's video/audio phases
- EBU Tech 3304 Multichannel Audio Line-up Tone output
- 525i/59.94, 625i/50, 1080i/59.94, 1080i/50, 720p/59.94, 720p/50 supported
- Gen-lock function by HDTV Tri-sync, SDTV Composite sync or BB signal input
- HDTV SDI 2 channel, SDTV SDI 2 channel, Embedded audio 8 channel and AES/EBU 4 channel outputs
- Many test and audio signals installed  
100Hz, 400Hz, 1Hz - 15kHz sweep etc.
- Freeze check, Audio ID superimpose, Logo superimpose
- Simple telop function

### ■Options

- PS11AX001 Battery adapter
- PS11AX002 Memory board  
(for Resolution chart, Natural picture)
- PS11AX003 CF Card memory
- PS11AX004 Carrying case
- PS11AX005 Rack kit

### ■Test Signal Samples



PS11AX Back View

# TG45BX

# Test Signal Generator



High quality, high performance and the best Signal Generator for evaluating various displays from monitor to TV set and video engines

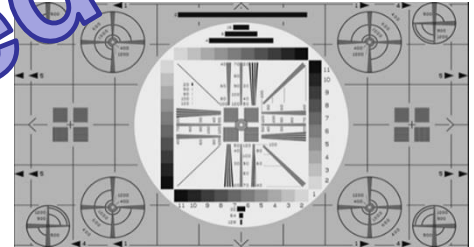
## ■ Features

### • Supports multi-format for HDTV, SDTV and PC Display

- HDTV : 1035i/720p/1080i/1080p etc. Total 26 formats with multi-sync
- SDTV : NTSC/NTSC-4.43MHz/PAL/PAL-M/PAL-CA 6.0MHz/525p/625p
- VESA : Ver.1.0, Rev.0.8 Conformed

### • Output Variety

- Analog Output : Y, Pb/Pr, G/B/R, Y+S/C, Composite (VBS)
- Analog PC Display Signal Output : 15-pin Dsub
- Parallel Digital Output : G/B/R Each 12-bit  
1 phase mode 10MHz-100MHz, 2 phase mode 20MHz-200MHz
- Drive Signal : SYNC/BB, HD, VD, FPC.FRAME
- Output equipped as standard : HDMI1.4a (3D Conformed)
- Optional Output : TG45BX001 3G-SDI/HD-SDI/SDI Output  
TG45AX002 LVDS Output



### • Variable Function for various parameters using Jog Dial

- Level Adjustment : Analog output 0% - 200%, level adjustment for each output channel
- Frequency Adjustment : Line frequency, Field frequency, Line number, Dot clock frequency etc.
- Phase Adjustment : Width and Phase of Sync signal, PC Sync Horizontal Dot No. and line No. etc.
- Position/Width Adjustment for Burst signal (SDTV) and Various parameters Adjustment (width, phase and level of Window signal)

### • Video Composition, Action Scroll and Bounce Function etc.

- Main signal/Floating/Plane/Character can be compounded on one video output
- Main signal/Floating/Character can be scrolled independently (direction and speed are variable)
- Horizontal scroll speed can be set with 0.5 dot, and it is useful for moving picture resolution measurement
- Main and Floating signals have 4 field memories, and can be bounced by interval setting



Horizontal Scroll



Vertical Scroll

### • Various Pull Down Function

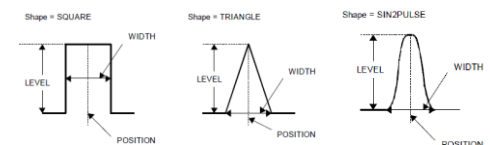
- 2-2 and 2-3 Pull Down Output in the HDTV/SDTV 60/50Hz Systems
- Various Pull Down formats like 3-2-3-2-2, 2-3-3-2, 5-5, 6-4, 7-8 can be output by setting

Pull Down Menu



### • Noise superimpose & Adding Sag functions

- Spike Noise can be added by setting of level, width and location on the output test signal
- Pseudo H or V sag can be added on the output signals



### • Customer's Video Data can be output

- Bmp or Tiff Data can be output through the transferring to TG45 original format by attached Video Conversion Software

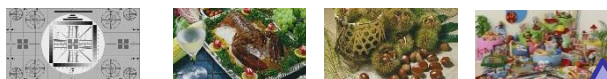
## ■ General Specifications

- Operating Temperature: 5 - 40°C/30 - 90%RH (non-dewing)
- Power Supply: AC90 - 135/180 - 264 V, 47 - 63 Hz
- Power Consumption: 500 VA max
- Dimensions: 426 (W) x 199 (H) x 510 (D) mm
- Weight: appr. 20kg



## TG45BX Standard equipments List

|           |  |
|-----------|--|
| TG45CX003 | HDMI 1.4a (3D Conformed)                         |
| TG45AX201 | Pull Down Output Function                        |
| TG45BX211 | HDMI 3D Output Function                          |
| TG45AXK21 | HDMI Simple EDID Monitoring View Function        |
| TG45AXK22 | HDMI Audio Frequency and Level Variable Function |
| TG45AXK23 | RGB Level Set Variable Function                  |
| TG45AX036 | High Resolution TG91E Chart                      |
| TG45AX028 | Natural Picture (Omar & Fruits)                  |
| TG45AX029 | Natural Picture (Chest Nuts)                     |
| TG45AX032 | Natural Picture (New Year's Gift)                |

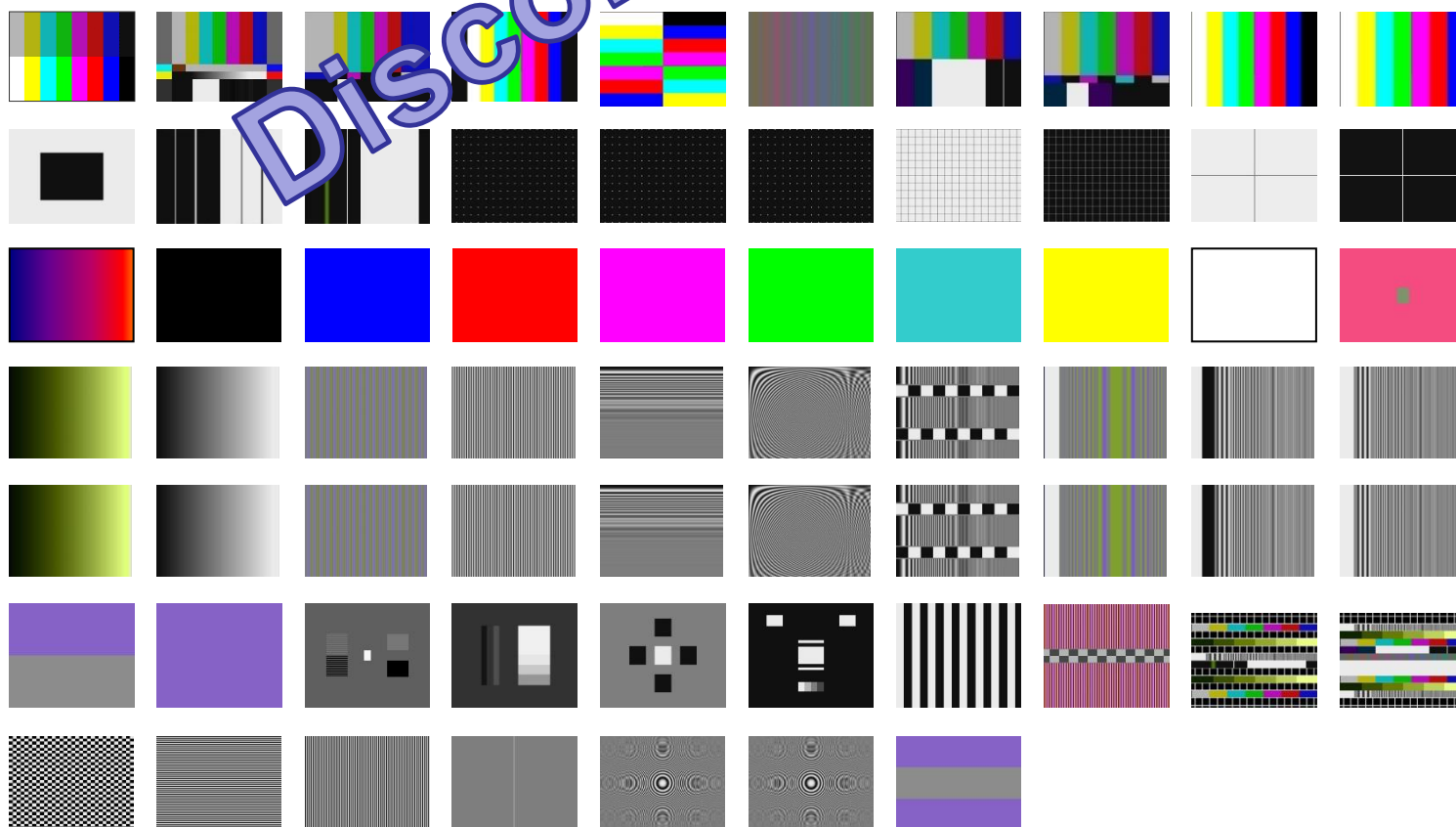


## TG45BX Option List

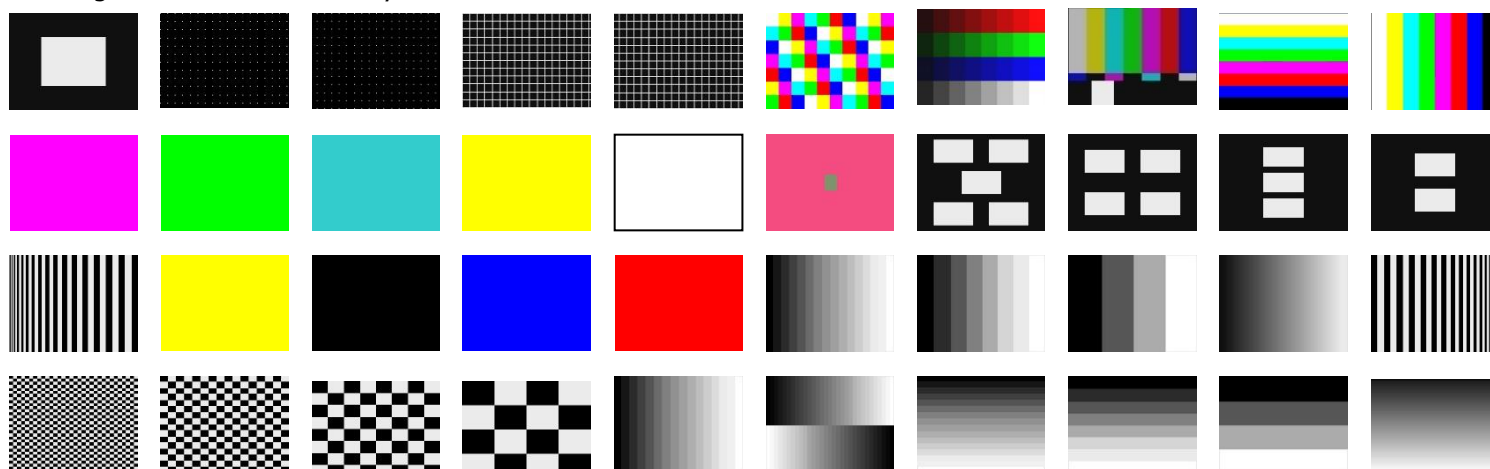
|               |   |
|---------------|---|
| TG45BX001     | 3G/HD/SDI Output Unit   |
| TG45BX212     | 3D SDI Output Function  |
| TG45AX002     | LVDS Output Unit  |
| TG45AX401/402 | 12bit Natural Pictures (10 pieces/21 pieces)  |
| TG45AX403     | xvYCC Natural Pictures  |
| TG45AX404     | 3D Natural Pictures   |
| TG45AX501     | SAC (Standardization Administration of China)<br>SJ/T11344 to 11348-2006 Test Patterns<br>GB24850-2010 Energy Efficient Standard Pattern Signal |
| TG45AX502     | SAC (Standardization Administration of China)<br>GB 309.1-1998 Test Pattern   |
| TG45AX503     | SJ/T11348-2006 The TIANJIN UNIV. Original Patterns  |
| TG45AX504     | SECAM Encoder   |

## TG45BX Standard Test Patterns

Test Signal Patterns for TV Synchronization



Test Signal Patterns for VESA Synchronization





■ **TG45BX001 3G/HD-SDI/SDI Output Unit (Option)**

“TG45BX001 3G/HD/SD-SDI Output Unit” is the SDI Switchable Output Unit among 3G-SDI (SMPTE425M), (Dual Link), HD-SDI(SMPTE424M) and SD-SDI (D1). In addition to the Video Signals it can output Embedded Audio 16 or 32 channels, Time Code (LTC, VITC) and Closed Caption (CEA-608, CEA-708). All Test Signal Outputs and Level Variable Function installed into TG45AX can be used through this Unit, furthermore Embedded Audio Level is also adjustable. This option is the best unit for evaluation of the Broadcast and professional video equipment.



■ **TG45AX002 LVDS Output Unit (Option)**

“TG45AX002 LVDS Output Unit” is the Output Unit for max 12 bits LVDS signals. All Test Signals, Natural Pictures and Floating Object Superimpose of TG45AX can be output, and each variable function (level, frequency, phase) also can work through it. Dot clock frequency is adjustable from 20 to 135 MHz for 1 phase mode, from 40 to 270MHz for 2 phase mode and from 80 to 400MHz for 4 phase mode. Bit assignment in each RGB channel differed on the devices can be set freely.

\* Bit length for output over 200MHz dot clock will be 8 bits.



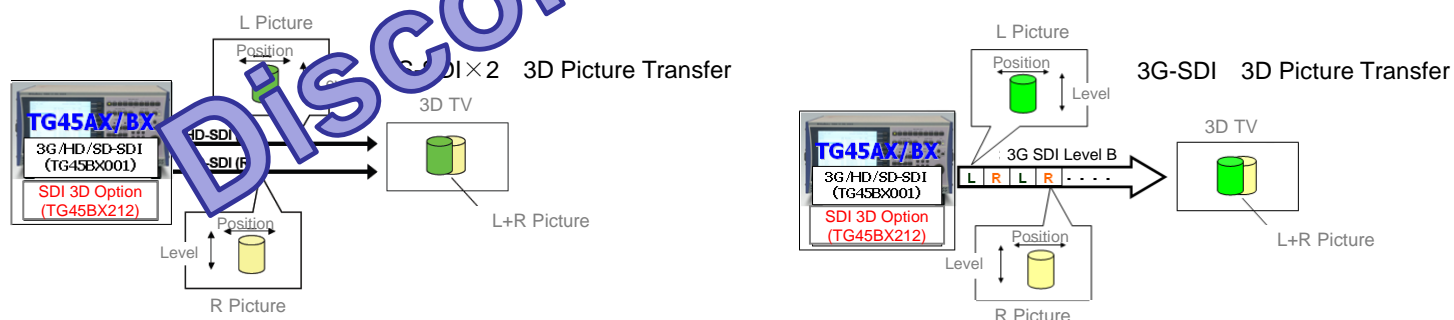
■ **TG45BX212 SDI 3D Output Option**

“TG45BX212 SDI 3D Output Option” is the Software Option with TG45AX001 for 3D L/R Signal Output through the HD-SDI, SD-SDI or 3G-SDI interface.

Because L/R picture position and video level are changeable in real time, Crosstalk for Video Engines and Panels can be observed easily.

And using 3D Natural Picture Option (TG45AX404), 3D Videos can be evaluated easily.

Furthermore original 3D evaluation pictures from manufacturers can be transferred to TG45 using the picture tool, and can be output with variable function.



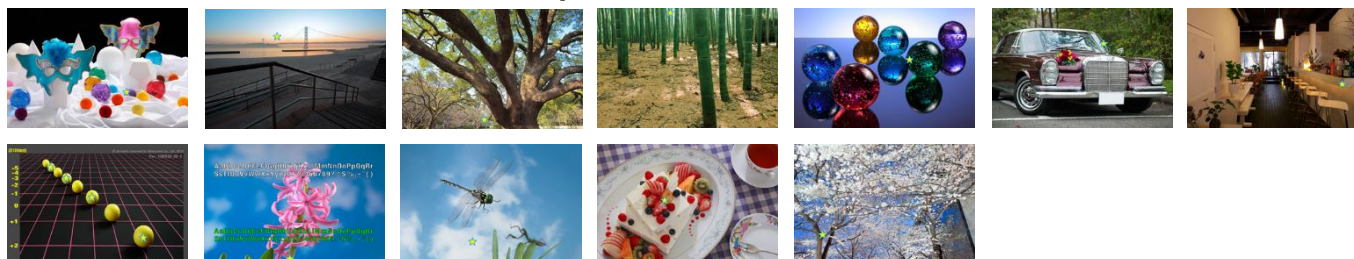
■ **TG45AX401/402 12 bit Natural Pictures Option**

- TG45AX401 10 images
- TG45AX402 21 images

■ **TG45AX403 xvYCC 12 bit Natural Pictures Option**

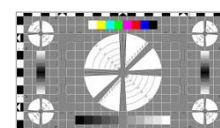


■ **TG45AX404 3D Natural Pictures Option**

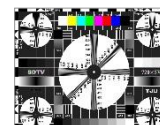
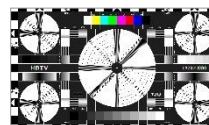


■ **TG45AX501 Standardization Administration of China SJ/T11344 to 11348 - 2006 Test Patterns Energy Efficient Standard Pattern Signal GB24850-2010**

■ **TG45AX502 Standardization Administration of China GB17309.1-1998 Test Pattern**



■ **TG45AX503 SJ/T11348-2006 The TIANJIN UNIV. Original Patterns**





# TG39BC

## Multi Test Signal Generator



Revolutionary Test Signal Generator for covering from analog TV baseband to RF signals in the world in one unit

### ■ Features

- Covered 8 Formats  
NTSC, NTSC-4.43MHz, NTSC-50Hz, PAL, PAL-M, PAL-N  
PAL-60Hz, SECAM
- SCART Connector Output equipped as standard (for Europe)
- WSS (Wide Screen Signaling) superimpose
- RF frequency set from 30MHz to 955MHz (wide range)
- Channel and frequency info displayed on RF signal
- Video scroll function  
Scroll speed (10 steps) and Direction changeable randomly
- Two(2) video inputs equipped (BNC, RCA each 1)
- Moving picture imported from Input-port output through RF out
- Internal Audio signal output  
400Hz/1kHz/sweep(50Hz~30kHz), Sign Wave(50Hz-30kHz, 10Hz step) switchable
- Many option pictures prepared for evaluation of video quality

### ■ Options

| Model name | Items or Content  |
|------------|---|
| TG39AA001  | GP-IB unit  |
| TG39AA011  | Natural picture (Dining table)                              |
| TG39AA012  | Natural picture (Stationery)                                |
| TG39AA013  | Natural picture (Toys)                                      |
| TG39AA014  | Natural picture (Presidential residence)                    |
| TG39AA015  | Natural picture (Lobster and fruits)                        |
| TG39AA016  | Natural picture (Chestnuts)                                 |
| TG39AA017  | Natural picture (New year's gift)                           |
| TG39AA018  | CZP (525 systems/4.2 MHz Max., 625 systems/4.8 MHz Max.)    |
| TG39AA019  | VSWEAP (525 systems/4.2 MHz Max., 625 systems/4.8 MHz Max.) |
| TG39AA020  | Natural picture (Skin color chart)                          |
| TG39AA021  | RETOMA pattern  |
| TG39AA022  | Multi pattern (composite color pattern)                     |

### ■ General Specifications

- Ope. Temp/Humid: 0°C - 40°C, 25% - 90%RH (non-dewing)
- Power Supply: AC 85 - 264V/50, 60Hz
- Power Consumption: 100VA max
- Dimensions: 426 (W) x 149 (H) x 360 (D) mm  
(without projected portion)
- Weight: appr. 11kg



TG39BC Back View

# TX20CX

## Video Signal Analyzer



Functional Video Analyzer for measuring various characteristics of NTSC/PAL signals precisely

### ■ Features

- Composite, Component and Y/C Input
- Many video items measurable
- Measuring point set on the desired location
- Selectable measuring mode from Local, GP-IB Remote, Sequence
- Judgment of GO/NG, Upper/Lower limited NG displayed on the screen

### ■ Specifications

- Measuring System: NTSC/PAL
- Input Format: Composite (VBS)  
Component (Y,R-Y,B-Y) or (RGB)  
Y+S, C
- Sub-Carrier Frequency: 3.579545MHz ± 70Hz (NTSC)  
4.433618MHz ± 70Hz (PAL)
- External Signal: EXT SYNC 1Vp-p
- Luminance Level Measurement Range: 0 - 1200mVp-p
- Chrominance Level Measurement Range: 0 - 999mVp-p
- SYNC Level Measurement Range: 150mVp-p - 400mVp-p
- Burst Level Measurement Range: 150mVp-p - 500mVp-p
- Chroma Phase Range: 0° - 360° ± 1°

### ■ Measuring Items

- Luminance Level
- Chrominance Level
- SYNC Level
- Burst Level
- Luminance Level + SYNC Level
- Chroma Phase
- Burst Phase
- DG/DP
- Frequency Characteristics
- Video S/N
- Y/C Delay
- Rate for SYNC Level to Luminance Level
- Rate for Chrominance Level to Luminance Level
- Rate for Chrominance Level to Burst Level

### ■ General Specifications

- Memory Back Up Time: appr. 7000 hours after turn off
- Ope. Temp. & Humid: 0°C- 40°C, 25% -90%RH (non-dewing)
- Power Supply: AC 90 - 250V 50/60Hz
- Power Consumption: 110VA
- Dimensions: 426 (W) x 99 (H) x 460 (D) mm
- Weight: appr. 11kg



TX20CX Back View

# AM50C Audio Analyzer



The best Audio Analyzer for both professional and consumer audio equipments, equipped with Banana and #110 plugs

## ■ Features

- Input/Output Connectors with 19mm Banana and #110 Plugs
- Balance/Unbalance Switch for input/output useful for development/inspection/adjustment of both professional and consumer stereo equipments
- Level, distortion rate and phase difference measuring functions by low distortion oscillator with frequency range of 10Hz-109.9kHz
- Root-mean-square detection enable to measure noises precisely, and at the choice of CCIR468 filter, automatically changed to quasi-peak detection mode
- 5 installed filters of psophometric noise filter CCIR468, JIS-A etc. and one additional filter available as option
- Frequency range for level/voltage measurement covers the wide range from 10Hz to 330kHz
- Easy for building the Automatic Measuring System using 100 setting memories and external control through GP-IB

## ■ Measuring Items

- Level
- Level Difference
- Distortion Rate
- S/N
- Frequency
- Relative Level
- Phase Difference

## ■ Filter Choice

- 400Hz HPF
- 30kHz LPF
- 80kHz LPF
- "A"-WEIGHT
- CCIR468

## ■ General Specifications

- Operation Temp & Humid: 0-40°C/25-90%RH (non-dewing)
- Power Supply: AC100/120/220/240V ± 10% switchable 50/60Hz
- Power Consumption: 65 VA
- Dimensions: 426 (W) x 149 (H) x 460 (D) mm
- Weight: appr. 13.3 kg

# AH979H Distortion Meter/Oscillator



Longtime well sold Distortion Meter equipped with internal oscillator, and the best unit for adjustment/inspection/maintenance of audio equipments and transceivers

## ■ Features

- Measurement for Wide Range Distortion Rate (20Hz-200kHz)
- Wideband and stable Wien Bridge Filter is equipped as fundamental wave removal filter
- Oscillation frequency and Distortion measuring frequency together, it adjusts fundamental wave removal filter automatically
- Trans is equipped for balanced input/output
- Internal Oscillator (20Hz-200kHz) generates stable sign wave with less distortion
- Random Output level in the range of 0dBm - +20dBm

## ■ Measuring Items

- Level
- Distortion Rate
- Noise

## ■ Back View



## ■ General Specifications

- Ope. Temp. & Humidity: 0-40°C/25-90%RH (non-dewing)
- Power Supply: AC100/120/220/240V ± 10% changeable 50/60Hz
- Power Consumption: 15VA
- Dimensions: 426 (W) x 199 (H) x 360 (D) mm
- Weight: 12kg

Discontinued

# AG15C

## Programmable Low Distortion Oscillator



Ultimate high accurate Oscillator generates ultra low distortion sign wave with PPM level range

### ■Features

- Harmonic distortion between 10 Hz and 10 kHz is less than -120 dB (0.0001%)
- Oscillator frequency is manually set using three 10-position rotary switches, a  $\pm 1\%$  fine adjust dial, and a 4-range rotary switch.
- The output attenuator is adjustable from 0 to 99.99 dB in 0.01 dB increments and the  $\pm 1$  dB vernier dial.
- Quad output is continuously variable between 0 to 5 Vrms using the control knob on the rear panel.
- GP-IB interface allows setting to be made by remote control.
- Output frequency and attenuator settings are indicated on 4 digits displays.
- Main and quadrature output signals. (quad signal is phase advanced by  $90^\circ$  from the main signal output.)
- Output ON/OFF switch simplifies S/N measurements.
- Front / Rear output connector selection switch.
- Selectable chassis or floating ground output.

### ■Specifications

- Frequency range 5 Hz to 100.9 kHz, 3 digits / 4 range
- Frequency accuracy  $\pm 1\%$
- Frequency fine adjustment range  $\pm 1\%$  of the set frequency
- Output voltage
  - Main output Max. 5 Vrms (600 $\Omega$  balanced)
  - Max. 10 Vrms (unbalanced)
  - Quad output Max. 5 Vrms (unbalanced)
- Frequency response
  - Main output 5 Hz to 50 kHz,  $\pm 0.05$  dB
  - 50 kHz to 100.9 kHz,  $\pm 0.1$  dB
  - Quad output 5 Hz to 100.9 kHz,  $\pm 0.3$  dB
- Harmonic distortion
  - Main output 5 Hz to 10 Hz: <0.00032% (-110 dB)
  - 10 Hz to 10 kHz: <0.0001% (-120 dB)
  - 10 kHz to 20 kHz: <0.00032% (-110dB)
  - 20 kHz to 100 kHz: <0.001% (-100 dB)



# PA15B1

## Ultra Low Noise DC Power Source



Ultra Low Noise DC Power Supply with 250nVrms output noise level, and the best source for test ADC/DAC etc.

### ■Features

- Ultra Low Noise Output with 250nVrms Noise signal(50Hz-500Hz, 0-5Vrms) superimposed on CH2
- Output Volt -6.4V to +6.4V, Output Current -1000mA to +1000mA (CH1,3) and -100mA to +100mA(CH2)
- High speed response of the settling time 30msec
- Current limitation of all channels to avoid the device damage etc.
- GP-IB interface enables easily to integrate into automatic measuring system for electric device production
- Memory function for max 99 types of output setting

### ■General Features

- Ope. Temp. & Humid: 10°C-30°C, 15%-85%RH (non-dewing)
- Power Supply: AC100 V  $\pm 10\%$  50/60 Hz
- Dimensions: 430 (W) x 200 (H) x 460 (D) mm
- Weight: 23kg

### ■Back View



### ■Electrical Specifications

|   | Channel 1  | Channel 2                                 | Channel 3                             |
|---|--|---|---------------------------------------|
| Output Voltage<br>Setting Resolution<br>Tolerance                     | 0 - $\pm 6.4$ V  |   |                                       |
|   | 0.1mV<br>$\pm(2mV+0.05\%$ of Vout)   |   | 1.0mV<br>$\pm(2mV+0.1\%$ of Vout)     |
| Output Noise Tolerance<br>300Hz~3kHz<br>50Hz~20kHz                    | $\leq 0.5\mu$ Vrms<br>$\leq 1.0\mu$ Vrms   | $\leq 0.25\mu$ Vrms<br>$\leq 0.5\mu$ Vrms | -<br>$\leq 30\mu$ Vrms                |
| Response Time<br>Settling Time<br>Rising Time                         | 0.1% 30msec (TYP)<br>10% - 90% 10msec(TYP)   |   |                                       |
| Output Current Limitation<br>Setting Resolution<br>Tolerance          | 0 - $\pm 1000$ mA<br>0.1A<br>0% - +5%  | 0 - $\pm 100$ mA<br>10mA<br>0% - +5%      | 0 - $\pm 1000$ mA<br>0.1A<br>0% - +5% |
| Output Current Monitor<br>Measuring Resolution<br>Measuring Tolerance | 0 - $\pm 1.0$ A<br>0.5mA<br>$\pm(0.3\% \times \text{Iout} + 0.2\text{mA} \times \text{Vout/V} + 2\text{mA})$ |   |                                       |



<http://www.asaca.co.jp>

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