LYNX

TECHNIK AG

Reference Manual

P TG 3010 D

SDI & AES Testgenerator

Series 3000 MiniModules
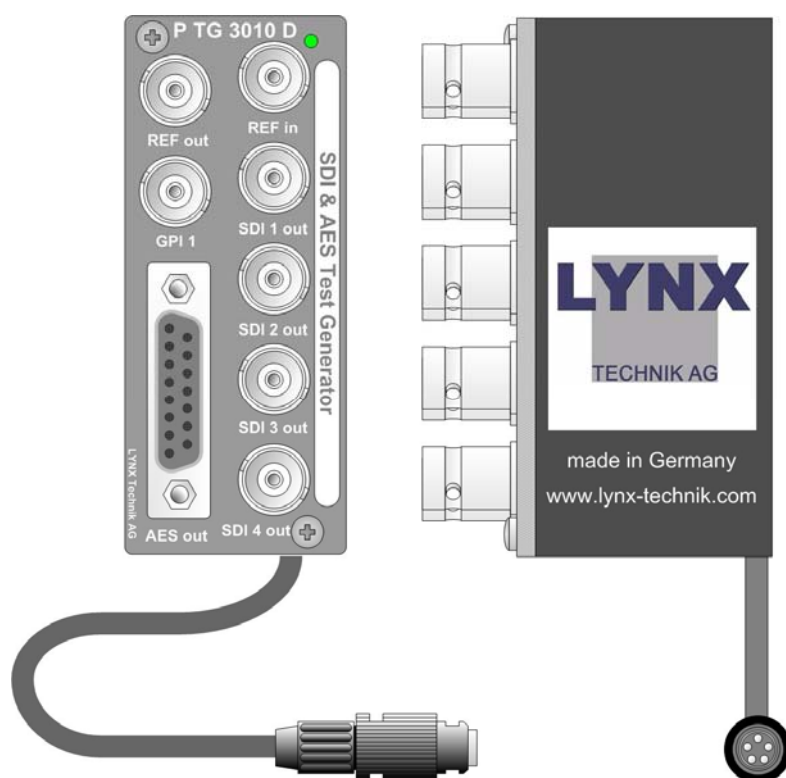
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Warranty

LYNX Technik AG warrants that the product will be free from defects in materials and workmanship for a period of two (2) year from the date of shipment. If this product proves defective during the warranty period, LYNX Technik AG at its option will either repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, customer must notify LYNX Technik of the defect before expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by LYNX Technik, with shipping charges prepaid. LYNX Technik shall pay for the return of the product to the customer if the shipment is within the country in which the LYNX Technik service center is located. Customer shall be responsible for payment of all shipping charges, duties, taxes and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure, or damage caused by improper use or improper or inadequate maintenance and care. LYNX Technik shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than LYNX Technik representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non LYNX Technik supplies; or d) to service a product which has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty servicing the product.

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Regulatory information

Europe

Declaration of Conformity

We   LYNX Technik AG
Brunnenweg 3
D-64331 Weiterstadt
Germany

Declare under our sole responsibility that the product

TYPE: P TG 3010 D

To which this declaration relates is in conformity with the following standards (environments E1-E3):
EN 55103-1   /1996
EN 55103-2   /1996
EN 60950   /2001
Following the provisions of 89/336/EEC and 73/23/EEC directives.

Winfried Deckelmann

Weiterstadt, September 2004

Place and date of issue   *Legal Signature*

USA

FCC 47 Part 15

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense

Contents

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Getting Started

Packaging

The shipping carton and packaging materials provide protection for the module during transit. Please retain the shipping cartons in case subsequent shipping of the product becomes necessary.

Product Description

The P TG 3010 D is a high quality SDI & AES Testgenerator designed primarily for broadcast and professional applications.

Multiple different test patterns can be selected on four independent SDI outputs including moving test patterns, e.g. moving zone plate.

Two AES test tone generators with gain control are provided on two separate outputs. The audio test tones can also be embedded into the SDI outputs.

On all four SDI outputs an 8 character text box can be activated with independent text input.

The unit has a Reference input (loop through, analog video) for synchronization to studio. If a Reference signal is applied, the outputs can be delayed vs. studio up to 1 frame in 37ns steps.

The modules can be used either stand alone using the optional power supply brick, or as part of a tightly integrated space saving system where up to 10 MiniModules can be mounted utilizing the optional LYNX R FR 3005 / 3010 rack housing. This includes integrated power supply and optional remote control interfaces.

We recommend the use of the optional LYNX Service Adapter and control software for stand-alone configuration using a PC.

Key Features

- o   4 independent SDI outputs

- o   Multiple testpattens including moving patterns

- o   2 AES outputs

- o   Audio frequency adjustable in 1 Hz steps

- o   Gain control for Audio signals

- o   Audio can be embedded into the SDI outputs

- o   Dual standard operation (525/625)

- o   Reference input (loop through)

- o   Delay range up to 1 frame max in 37ns increments

- o   Text box with 8 characters per SDI output

- o   Local DIP-switch, push buttons and LED's for local control and status monitoring

- o   Microprocessor controlled

- o   Flash Ram storage for settings

- o   Remote control interface

Functional Diagram

Figure 1 below is the basic functional diagram for the P TG 3010 D MiniModule.
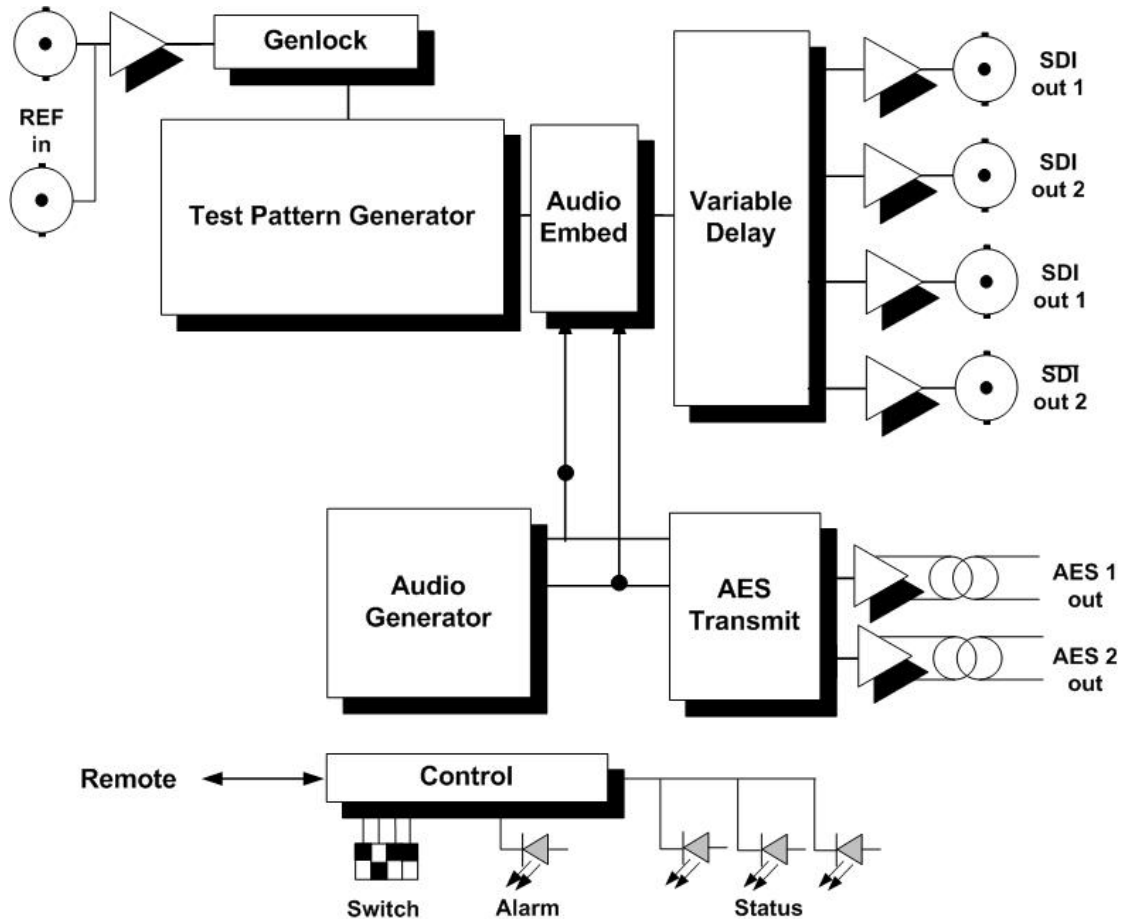

Figure 1- P TG 3010 D Functional Diagram

Module Layout

Figure 2 shows the physical layout of the P TG 3010 D MiniModule. This module uses BNC connectors for digital video and AES audio outputs.

If the module is being used in a stand alone application then the optional power supply (R PS 3001 E, R PS 3001U or R PS 3001-3) is required to power the module (not shown)

CAUTION

Do not obstruct the ventilation holes
on the top and bottom of the module

Alarm LED

Front

P TG 3010 B

REF out

REF in

SDI 2 out

SDI 1 out

GPI 2

GPI 1

AES 2 out

AES 1 out

SDI 4 out

SDI 3 out

LYNX Technik AG

SDI & AES Testgenerator

Side

LYNX

TECHNIK AG

made in Germany

www.lynx-technik.com

Power / Data Connection

Bottom

Push Buttons

DIP Switch

OFF

ON

LED 1

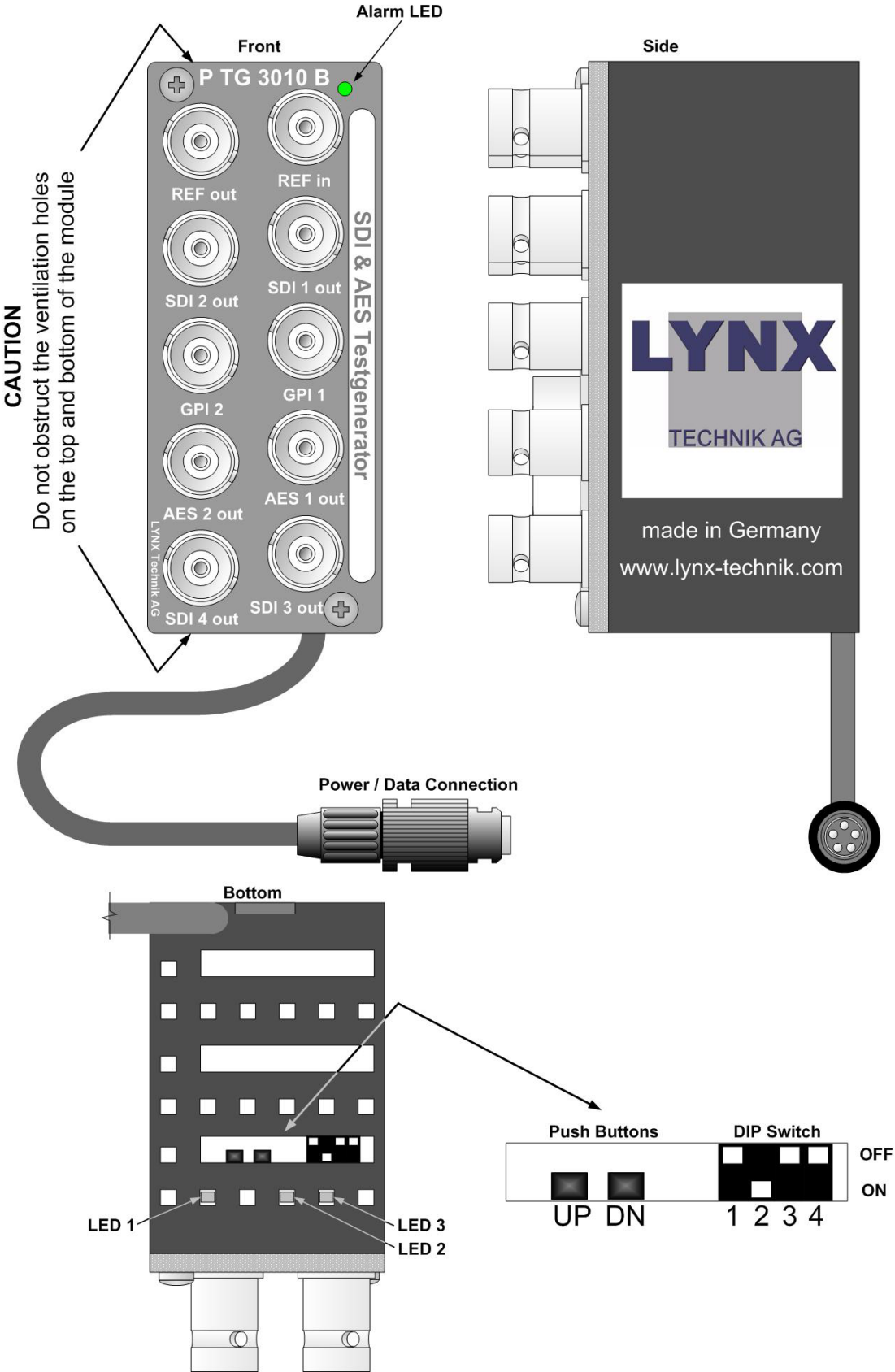LED 3

LED 2

UP   DN

1 2 3 4

Fig.2: Physical Layout P TG 3010 D

Connections

Video Connections

The P TG 3010 D MiniModule is configured with standard 75 Ohm BNC connectors. Connection is self-explanatory. We recommend the use of high quality video cable to reduce the risk of interference or errors due to excessive cable attenuation.

Audio Connector (balanced)

SubD 15-pin female connector

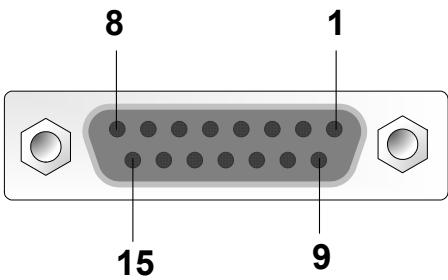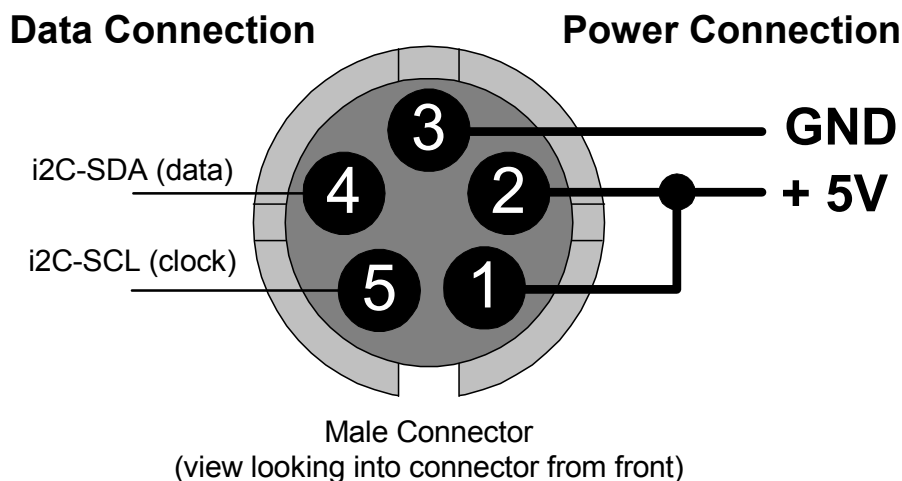| Pin Number	Connection	Pin Number	Connection
1	+ AES OUT 2	9	- AES OUT 2
2	GND AES OUT 2	10	
3		11	
4	+ AES OUT 1	12	- AES OUT 1
5	GND AES OUT 1	13	
6		14	
7		15	
8			

Figure 3 - Audio connection detail

Power Connections

If using the module in a stand-alone application use the separate R PS 3001 E (for Europe, R PS 3001 U (USA) power brick option or the desk power supply R PS 3001-3.

DC Power Connector

The MiniModule has a captive power lead fitted to the module, with a male 5 pin locking bayonet connector. This connection provides DC power and also data connectivity to the module. Connector wiring is shown below.

Data Connection **Power Connection**

i2C-SDA (data)

i2C-SCL (clock)

3 — GND

2 — + 5V

4

5   1

Male Connector
(view looking into connector from front)

!

Caution
Only use the optional LYNX R PS power modules. Ensure the 5-pin power connector is locked securely in place.

Installation

Mechanical

Stand Alone Operation

The P TG 3010 D MiniModule can be used in a stand-alone application. There are two options for the use of the module in this way.

a) Using the R FR 3005 Rack Frame 1 option. This allows up to any 10 of the MiniModules to be secured onto a rack frame assembly for 19 inch rack mounting. This keeps the modules secured, organized and out of the way. The R PS 3001 power brick option or the R FR 3010 option is required to power each module. Please refer to the R FR 3005 Reference Manual supplied with this option for more details.

b) Single Use. The MiniModule can be powered independently with the R PS 3001 option and used in any location where this functionality is required.

Caution. Care needs to be taken when using the module in this way, as it is not physically secured. Keep the module away from the floor to avoid the risk of someone stepping or tripping on the unit, and locate the unit away from excessive sources of heat and any sources or moisture.

If using more than one MiniModule in any installation, the R FR 3005/3010 Rack frame combination is highly recommended.

Multiple Units

Most applications will require more than one MiniModule, which can include any of the available Series 3000 MiniModule product range. There are two options for mounting multiple units.

a) Using the R FR 3005 Rack Frame option. This allows up to any 10 of the MiniModules to be secured onto a rack frame assembly for 19 inch rack mounting. The R PS 3001 power brick option or the R FR 3010 option is required to power each module. Please refer to the R FR 3005 Reference Manual for more details.

b) Using the R FR 3010 Rack frame extension option. Can be combined with the R FR 3005 Rack frame option. Each module plugs into a connection bus, which provides common power for all modules. (No R PS external power supplies are needed). Remote control and status monitoring of all modules is possible with the addition of the R CT 5020 rack controller and R CT 5030 master controller options. Please refer to the respective reference manuals for these options for details of mechanical installation.

The very small size and density of the MiniModules combined with the available rack frame options allows the addition of a complex and custom signal distribution system without taking any additional front rack space. The rack frames are designed for installation in the back of 19-inch racks where there is normally plenty of available space. Ideal for mobile truck installations and facility expansions where space is at a premium.

Electrical Installation.

Stand Alone Operation

The MiniModule requires the R PS 3001 power brick option for stand-alone operation. Three versions are available: R PS 3001 E for European markets, R PS 3001 U for the US markets and the desk power supply R PS 3001-3. Please ensure you have the correct power option for your region. The connection to the module is made with a small 5-pin connector, which has a twist bayonet securing system. Please make sure the connection is solid and locked in place. A strain relief is included within the module to prevent excessive strain on the connection.

Signal connections should be made with care, please ensure connections are correct and compatible equipment is feeding / receiving the signals from the module or damage can result.

Caution. Only use the optional LYNX R PS 3001 power modules. Ensure the 5-pin power connector is locked securely in place.

Caution. Care needs to be taken when using the module in this way, if it is not physically secured. Keep the module away from the floor to avoid the risk of someone stepping or tripping on the unit, and locate the unit away from excessive sources of heat and any sources or moisture.

Multiple Units

When installing multiple MiniModule units it is recommended you use the R FR 3005 Rack Frame 1 and / or R FR 3010 Rack Frame 2 options. Please refer to the documentation supplied with these options for details on electrical installation.

Settings and Control

The P TG 3010 D has an integrated micro-controller, which enables the module to be configured and controlled locally via the integral dip-switch and push buttons, or from remote when using the optional R CT 3000 Service Adapter or R FR 3010 Rack Frame and control system.

Once set, (either locally or via remote) all settings are automatically saved in internal flash ram. The module will always recall the stored settings when powered up.

The module local configuration is performed from a 4-position dip-switch and up/down adjustment buttons which are accessible through an access space in the bottom of the module.

Please refer to Figure 2 for the location of these adjustments.

Switch Settings

Below the switch settings for the 4-position dip-switch are defined. Located next to the switch are two push buttons [UP/DN] these are for delay adjustments. Refer to figure 2

Switch functions are explained in more detail following the table.

Switch	Setting	Function
1	ON	Enable Local Adjustment
	OFF	Disable Local Adjustment
2	ON	Standard Select 625
	OFF	Standard Select 525
3	ON	Embedding ON for selected channel
	OFF	Embedding OFF for selected channel
4	ON	Select SDI output channel with up/down buttons
	OFF	Select test pattern with up/down buttons

Up / Down Buttons

The push buttons are used to select a test pattern (DIP Switch 4: OFF) or to select the SDI output channel (DIP Switch 4: ON)

Selection of SDI output channels

To select a SDI output channel DIP switch 4 has to be in **ON** position. With the up/down buttons you can select one of the SDI output channels for control.
LEDs 2&3 indicate the selected channel:
Both LEDs **OFF**:   Channel 1
LED 3: **GREEN**, LED 2: **OFF**:   Channel 2
LED 3: **OFF**, LED 2: **GREEN**:   Channel 3
Both LEDs **GREEN**:   Channel 4

Selection of Test Patterns

To cycle through the test patterns, DIP Switch 4 has to be in **OFF** position.

With the up/down buttons you can then cycle through the test patterns in the following order:

- Full Field BLACK
- Full Field RED
- Full Field GREEN
- Full Field BLUE
- Full Field CYAN
- Full Field Magenta
- Full Field Yellow
- Full Field White
- Pathological EQ
- Pathological PLL
- Pathological EQ/PLL
- Color Bar 75%
- Color Bar 75% over Red
- Y Ramp up
- Y Ramp down
- CB Ramp up
- CR Ramp up
- Y CB CR Ramp up
- Staircase
- Color Bar 100%
- Multi Burst
- Frequency Swep
- SMPTE Bars
- Zoneplate (static)
- Center Sweep
- EIA 1956
- Convergence Grille
- Transmitter ID1
- Transmitter ID2
- White Flash
- Black Flash
- IRT
- Moving Zoneplate

-

Factory Preset Condition

The P TG 3010 D is delivered with stored presets for the following functionality.

Test Pattern:	**Color Bars**
Text box:	**Not active**
Video Delay:	**0**
Audio Embedding:	**active**
Audio level:	**-9 dBFS**
Audio Frequency:	**1kHz**
Audio Pause left:	**OFF**

No further adjustments are needed if this is the functionality desired.

We recommend the use of the R CT 3000 service adapter to have access to all parameters of the P TG 3010.

Alarm/LED Status Indicators

The P TG 3010 D module has built in LED indicators that serve as alarm and status indication for the module. Function is described below.

The Indicators are found on the bottom of the module and can be seen through the access holes provided. (Figure 2)

Channel Condition Indicators

Three multicolor LED's are provided to indicate the module status and the following conditions:

LED #	Color	Indication
1	Green	Local Control enabled
	OFF	Local Control disabled
2		Indication of selected SDI channel:
		Both OFF: Channel 1
3		LED 3: Green: Channel 2
		LED 2 Green: Channel 3
		Both LEDs Green: Channel 4

Front Panel Alarm Indicator

There is also a single alarm LED on the front side of the module, (figure2) which is designed for quick and easy indication of a problem condition in installations where visible access to the bottom of the module is not convenient.

LED Color	Indication
Green	Normal operation
Red	Critical temperature – Module switched off
Off	*Power Supply Fault*

In case of critical temperature the module has to be reset by disconnecting from power

Locate Function

For larger systems which may have multiple modules of the same type mounted in a single rack frame, or multiple rack frames on a large central control system we have added a useful utility which will help to visually locate a suspect module quickly (When used in conjunction with the optional control system and software)

Once the specific module has been selected on the control system there is a locate button on the top of the GUI:

Locate Function in Control System

When Locate is selected the status indicator on the GUI and the module LED's will flash yellow in the following continuous sequence.

3 short flashes…. Pause…. 3 short flashes …

This uses the alarm LED located on the front of the module and in some cases any channel or status LED's that may also be used in the module.

Use of the locate function will not interfere with the normal operation of the module.

For more details on this feature please check the documentation supplied with the controller software.
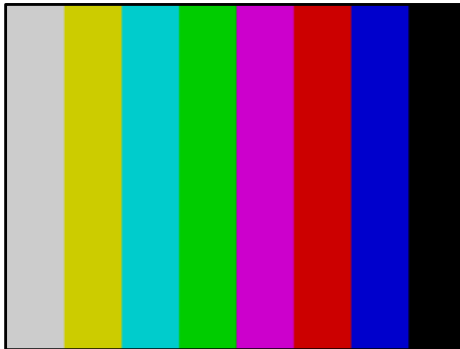
Test Patterns

Full Frames: Red, Green, Blue, Yellow, Magenta, Cyan
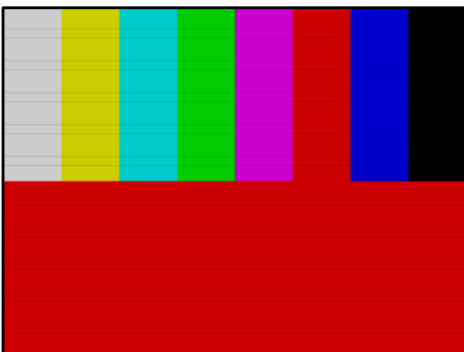White, Black
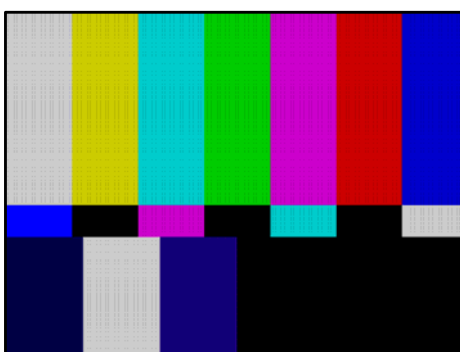**Ramp Signals**: Y up, Y down, Y-Cr-Cb, Cr, Cb
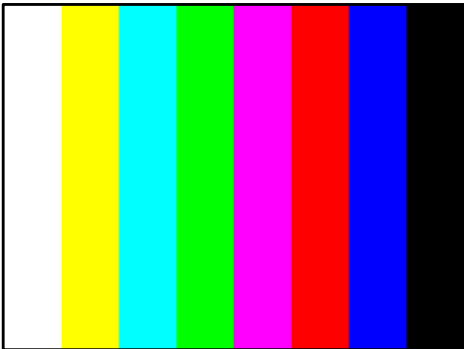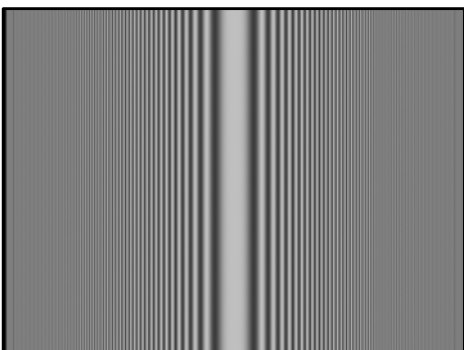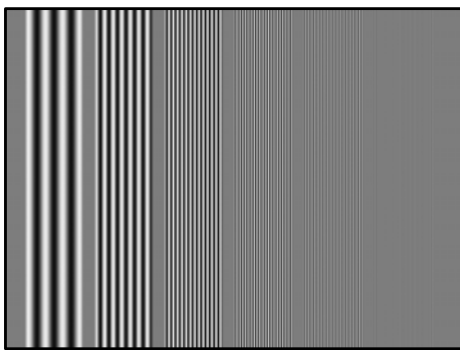

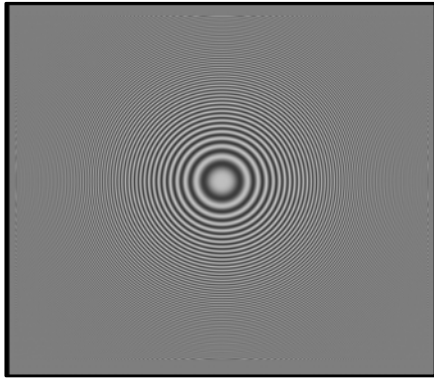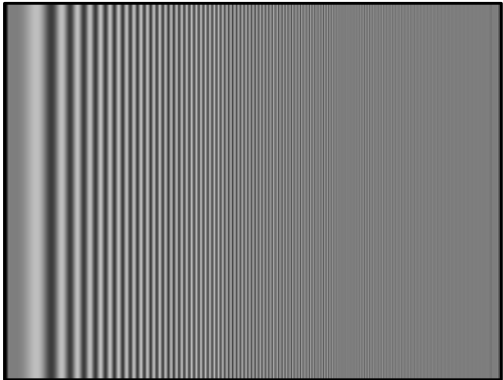Color Bars 100%

Color Bars 75%

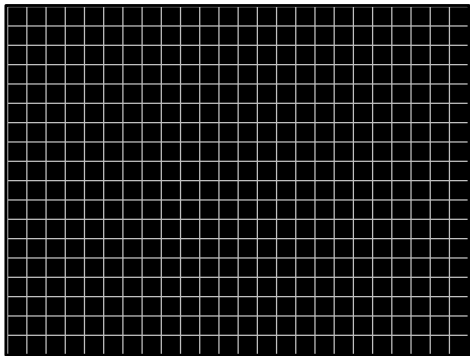Color Bars 75% over Red

SMPTE Bars
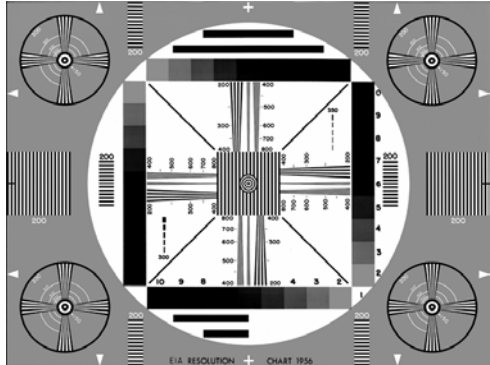

Center Sweep

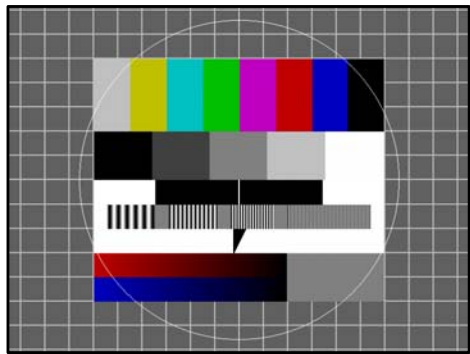
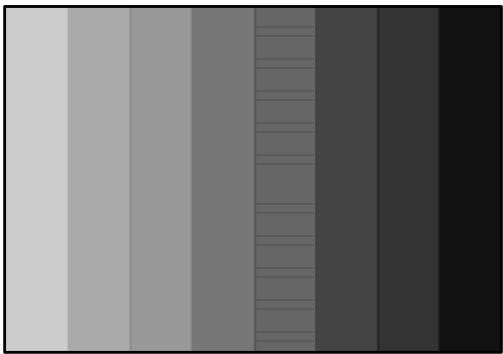
Multi Burst

Zone Plate

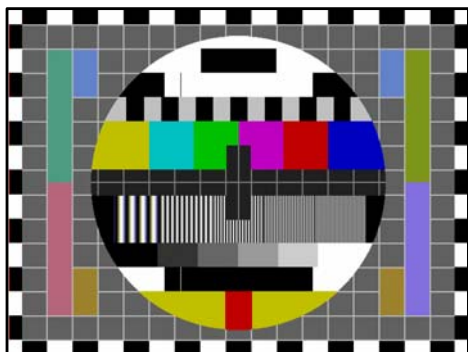Frequency Sweep

Convergence Grid

EIA 1956

Transmitter ID1

Staircase

Transmitter ID 2

Pathological EQ-PLL
(Pathological EQ,
Pathological PLL)

Moving Test patterns:
White Flash, Black Flash (every 8th frame)
Moving Zoneplate
IRT (with test tone for Lip synch)

Specifications *(P TG 3010 D)*

Reference Input	
Signal	Composite analog sync, 525/60Hz or 625/50Hz
Detection	Automatic
Connection	BNC loop through

Digital Video Outputs	
Signal	SDI (SMPTE 259M-C)
Connection	BNC
Impedance	75 Ohms
Return Loss	> 15dB (270 MHz)
Jitter	< 0.2 UI

Audio Outputs	
Signal	AES 3 (balanced)
Connection	Sub D 25, 110 Ohm

Electrical Specifications	
Operating Voltage	+ 5VDC
Power Consumption	Approx 6.0VA
Connection	DC input via 5 pin locking bayonet connector
Safety	IEC 60950/ EN 60950/VDE 0805

Mechanical	
Size	85.5mm x 35.3mm x 38.7mm + connectors
Weight	300g

Ambient	
Temperature	5°C to 35°C Maintaining specifications
Humidity	Max 90% non condensing

Supplied Accessories	
Documentation	P TG 3010 D Reference Manual

Available Options

Below is a list of available options for the P TG 3010 MiniModule. Please refer to product brochures or our web site for more detailed information.

Model	Description
R PS 3001 E	**External brick power supply module for Series 3000 MiniModules. European market version. 100-240 VAC input, +5V DC output.**
R PS 3001 U	**External brick power supply module for Series 3000 MiniModules. USA market version. 110-240 VAC input, +5V DC output.**
R PS 3001-3	**External desk power supply module for Series 3000 MiniModules. 110-240 VAC input, +5V DC output.**
R FR 3004	**Mounting support for 4 MiniModules.**
R FR 3005	**Rack Frame 1. This is a basic 19-inch rack mountable frame that can accommodate 10 MiniModules with power bricks R PS 3001 or can be extended with the R FR 3010.**
R FR 3010	**Rack Frame 2. This is a card cage with integrated central power supply, optional redundant power supply and optional controller, which can accommodate 10 MiniModules. Can be combined with R FR 3005**
R PS C15	**1.5m cable extension to connect one MiniModule to R FR 3010**
R PS 5010	**Redundant power supply for the R FR 3010 card cage**
R CT 5020	**Rack controller for the R FR 3010 rack frame**
R CT 5010	**Rack Bus Extension for R FR 3010 rack frame. In combination with R CT 5020**
R CT 3000	**Service Adapter for remote configuration of one MiniModule via PC or Palm**

Parts List

Due to the very dense design and high level of integration there are no user serviceable electronic assemblies within the P TG 3010 D module.

P TG 3010 D Mini Module (complete)
Description   SDI & AES test generator
Model Number   P TG 3010 D
Part Number   6.155.009.270

Service

If you are experiencing problems, or have questions concerning your P TG 3010 D MiniModule please contact your local distributor for assistance.

We offer a fixed cost service exchange program for defective Series 3000 MiniModules out of Warranty. Please contact your distributor or check our web site for details on this program.

More detailed information and product updates may be available on our web site:

www.lynx-technik.com

You will also find links to contact us directly for assistance.

Contact Information

Please contact your local distributor; this is your local and fastest method for obtaining support and sales information.

LYNX Technik can be contacted directly using the information below.

Address   LYNX Technik AG
                          Brunnenweg 3
                          64331 Weiterstadt
                          Germany.

Website   www.lynx-technik.com

E-Mail   info@lynx-technik.com

LYNX Technik manufactures a complete range of high quality modular products for broadcast and Professional markets, please contact your local representative or visit our web site for more product information.

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Notes