SIGMA
STAND ALONE NTSC BLACK SIGNAL GENERATOR

BSG26N
OPERATOR'S MANUAL

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SIGMA ELECTRONICS, INC.
BSG-26 SERIES

IMPORTANT SAFETY INSTRUCTIONS

Explanation of symbols used. The following symbols appear on the product.

DANGER
High Voltage

ATTENTION
Refer to Manual

Protective Ground
(earth) Terminal

Fuse Replacement
RISK OF FIRE
REPLACE FUSE
AS MARKED

AC
Power

Read these instructions.
Keep these instructions.
Heed all warnings.
Follow all instructions.
Do not use this apparatus near water.
Clean only with a damp cloth.
Do not block any of the ventilation openings. Install in accordance with the manufactures instructions.
Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
Protect the power cord form being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exist from the apparatus.
Only use attachments/accessories specified by the manufacture.
Unplug this apparatus during lightning storms or when unused for long periods of time.
Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Interference Information:

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to 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.

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.

SIGMA ELECTRONICS, INC.
BSG-26 SERIES

INSTRUCTION MANUAL

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

GENERAL:

The BSG-26N and BSG-26P are Black Signal Generators which provide six (6) blackburst signal outputs. The outputs are driven from the same internal source to ensure system synchronization. The design of the units provides suitable operation for applications from complex total system timing to laying black on tape. The blackburst signal is digitally derived from a temperature compensated oscillator. These units provide a stable output and do not require any adjustments during operation. The outputs are present when power is applied.

Superblack operation is selective via J1. With J1 jumper shorted across pins 1 and 2, the module will produce superblack on all outputs. Superblack can be used when building a Multi-Pass special effect. The superblack signal, approximately -7.5 IRE, provides a noiseless background that can be laid down on the tape for this application.

The BSG-26N, NTSC version, provides outputs per RS-170A / SMPTE 170M standards. The BSG-26P, PAL version, provides outputs per CCIR 624-4 standards. Specifications are provided in the SPECIFICATIONS section.

POWER:

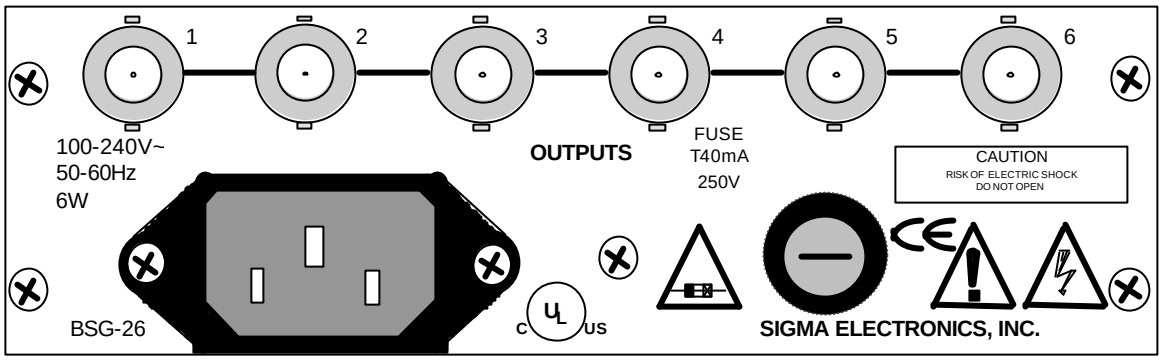
The BSG-26 Series accommodates a wide range of line voltage from 90 VAC minimum to 255 VAC maximum. The line frequency range is 50 to 60 Hz. The units utilize an IEC 320 inlet to accommodate the proper power cord set for the line voltage connectors used in any geographical area. The combination of the wide voltage range and universal inlet contributes to the diversity of applications where the BSG-26 will supply a dependable source of black signal. The module internally regulates the bus voltage to +5 VDC (U8) and -5 VDC (U9). Circuit protection is provided by an externally accessible fuse (Figure 1).

FRAMES:

The BSG-26 units are assembled in a stand-alone box. The metal enclosure provides desirable shielding from external EMI / RFI noise sources. See the section on SPECIFICATIONS for recommended operational conditions. The units are capable of rack mounting with the optional RMK-26 Rack Mount Kit. This 1RU rack mount does not require blank panels for unused portions. A total of three (3) Series 26 units may be mounted with a single RMK-26.

CONNECTIONS:

The connectors are located on the rear panel. BNC connectors are used for the six outputs. Each of the outputs are designed to drive a 75 Ohm load. The outputs must be terminated by a single end of line 75 Ohm termination to ensure proper signal level. Unused outputs do not require a 75 Ohm terminating resistor.



REAR PANEL
Figure 1

JUMPERS:

Jumpers are provided for custom configuration. No jumper changes for normal Black Signal operation. See the Service Manual for jumper details. Note: Jumpers selection to be performed by qualified personnel only.

ADJUSTMENTS:

Adjustments are provided for custom configuration. No adjustments are required for normal Black Signal operation. Note: Adjustments to be performed by qualified personnel only.

SPECIFICATIONS

OUTPUTS:

BSG-26N: ..... (6) Blackburst, per RS-170A (NTSC), SMPTE 170M
BSG-26P: ..... (6) Blackburst, per CCIR 624-4 (PAL)
LEVELS: ..... In accordance with standards specified.
SCH PHASE: ..... 0° ±5°
SCH JITTER: ..... < 2° p-p
SETUP & SUPERBLACK: ..... Jumper Selection, +7.5, 0, -7.5 IRE
MASTER CRYSTAL STABILITY: ..... 14.318180 MHz TCXO (NTSC)
17.734475 MHz TCXO (PAL)
Initial ..... 1 PPM
vs. Time ..... 1 PPM/Year
vs. Temperature ... 1 PPM, 0° C to +50° C
CONNECTORS: ..... BNC

POWER:

VOLTAGE RANGE: ..... 100 to 240 VAC (-10%,+6%) (90 to 255 VAC)
LINE FREQUENCY: ..... 50 to 60 (±5%, 47 to 63 Hz)
POWER CONSUMPTION: ..... 6 Watts nominal (9 Watts max.)
CONNECTOR: ..... Power; IEC 320

ENVIRONMENTAL:

OPERATIONAL TEMPERATURE: ... +32° to +131° F (0° to +50° C)

MECHANICAL:

DIMENSIONS: ..... 1.75” H x 5.5” W x 8.5” D (44.5 x 140 x 216 mm)
SHIPPING WEIGHT: ..... 4 lb. (1.8 kg)

TECHNICAL MANUAL:

Technical Manual is available upon request. See the Service Manual

WARRANTY:

Sigma Electronics, Inc. warrants that it’s products are free from defective material and workmanship at the time of shipment from Sigma Electronics. The products will possess the electrical characteristics as set forth in the specifications for a warranty period of five years. This warranty does not include any Sigma Electronics product or part thereof which have been subjected to misuse, neglect, improper installation, use in violation of instructions furnished, or accident. It does not extend to products that have been modified from original design outside the factory. Nor does it extend to units from which the serial number has been removed, defaced, or changed. Nor does it extend to accessories not of Sigma Electronics, Inc. manufacture.

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REV6 DEC98 BSG-26

SIGMA ELECTRONICS, INC.
BSG-26 SERIES

SERVICE MANUAL

CAUTION

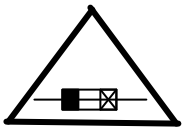
These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

Explanation of symbols used. The following symbols appear on the product.

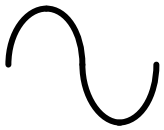
DANGER
High Voltage

ATTENTION
Refer to Manual

Protective Ground
(earth) Terminal



Fuse Replacement
RISK OF FIRE REPLACE
FUSE AS MARKED



AC
Power

Read the IMPORTANT SAFETY INSTRUCTIONS before installing or operating this equipment. Keep this information in an accessible location for reference by all users. Follow all instructions in this manual for safe operation.

JUMPERS:

The following jumpers are located on the PCB inside the enclosure. They are provided for custom configuration of the BSG-26N and BSG-26P. The modules should not require any adjustments for normal Black Signal operation.

J1 Superblack/Black Select, Default position, Pins 2-3 (Black), Optional position, Pins 1-2 (Superblack).
J2 Setup On/Off, Default position 1-2 (Setup On, NTSC, BSG-26N), Position 2-3 (Setup Off, PAL, BSG-26P)
J3 Subcarrier Phase Select, 0° or 180°, Default position is 0°, Opposite position is 180°

ADJUSTMENTS:

The following adjustments are located on the PCB inside the enclosure. They are provided for custom configuration of the BSG-26N and BSG-26P. The modules should not require any adjustments for normal Black Signal operation.

C31 Subcarrier center frequency.
R7 Sync./Setup Gain, Set per standards specified.
R14 Subcarrier Null, Minimizes residual subcarrier on output signal.
R20 Burst Gain, Set per standards specified.
R22 Variable Subcarrier Phase Adjust, 180° SCH Phase adjust, See “JUMPER” section, jumper 3 options.
R25 Subcarrier Symmetry, Provides minimum difference in duty cycle between 0° and 180° setting of J3

DISASSEMBLY:

NOTE: REMOVE THE POWER BEFORE DISASSEMBLY OF THE UNIT.

Disassembly is not necessary for normal Black Signal operation**.**

Tools needed: #1 Phillips head screw driver.

Procedure: 1st, remove the four rear panel Phillips head machine screws, one per corner. 2nd, remove the electrical assembly by pulling the rear panel from the enclosure; the PCB is attached to the rear panel.

TECHNICAL MANUAL:

A manual including schematics, circuit description, parts list and setup guide is available upon request. This information is intended for the service of the unit. The units should be serviced by qualified personnel only. Sigma Electronics, Inc. recommends service to be performed by the Factory Service Center.