

**LG 3803**  
**8VSB/QAM SIGNAL GENERATOR**  
**INSTRUCTION MANUAL**

**LEADER ELECTRONICS CORP.**

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# GENERAL SAFETY SUMMARY

## ■ To Avoid Personal Injury

It is recommended that only qualified personnel with technical knowledge use this instrument only after reading and fully understanding all functions of the instrument described in this instruction manual.

This instrument is not designed and manufactured for consumers.




If you do not have enough knowledge on electricity, to avoid personal injury and prevent damage to this product, please be sure to use this product only under the supervision of an engineer who has sufficient knowledge about electronics.

## ■ Precautions on Contents

Should you find the contents in this manual and any of its technical terms confusing, please feel free to contact your local Leader agent.

## ■ Symbols and Terms

Following terms and symbols indicate necessary warnings and cautions used in this manual and on the product are there for safe operation.

<p>&lt;Symbol&gt;</p> 	<p>The sections where this symbol is marked in this manual or instrument, if not correctly performed or practiced, could result in personal injury or cause serious danger to the instrument. Misuse could also produce unintentional movement to create an operational impediment on the instrument or other products that might be connected to it.</p> <p>Be sure to refer to the safety precautions in this manual to safely use the part of the instrument where the symbol is marked.</p>
<p>&lt;Term&gt;</p>  <b>WARNING</b>	<p>Warning statements identify warning conditions that if disregarded or not correctly performed or adhered to, could result in serious personal injury or even loss of life.</p>
<p>&lt;Term&gt;</p>  <b>CAUTION</b>	<p>Caution statements identify warning conditions if disregarded or not correctly performed or adhered to, could result in personal injury or damage to the instrument.</p>

## GENERAL SAFETY SUMMARY

Review the following safety precautions to avoid operator's injury and loss of life and prevent damage and deterioration to this instrument. To avoid potential hazards, use this product as specified.



### WARNING

#### ■ Warnings on the Cases and Panels of the Instrument

Operator should not remove any cases or panel for any reasons. If you touch inside the instrument it could result personal shock or fire hazard. Refrain from spilling any liquid on or inserting anything flammables or piece of metal into the ventilation of the instrument. Such actions could cause fire, shock, malfunction and be an accident hazard while the power is on.

#### ■ Warnings on Power Line

- **Make sure to connect only to the rated power line voltage. Excess voltage may cause fire.**

Confirm the voltage of the commercial power line before connecting the AC power cord. The power frequency of the power line should be 50/60 Hz.

- **Warning on the Power Cord**

Use only the optional power cord that is attached to this instrument. The use of the power cord other than that attached could cause fire hazard.

If the attached cord is damaged stop using it and contact your local Leader agent. Should you use a damaged cord, it could cause a shock or create a fire hazard. When you pull out the cord be sure to hold it by plug and pull from the socket not by holding the cord wire.

#### ■ Warning on Fuse

When the fuse is melted the instrument stops operation. If the fuse melted, turn off the power switch and disconnect the power plug from the socket. If you change the fuse while the cord is connected to the socket, it could cause a shock hazard. Only use the specified type and rated current and voltage fuses.

If the cause for melting fuse is unclear or if you suspect there is damage to the instrument or if you have no proper fuse at hand please contact your local Leader agent.

## GENERAL SAFETY SUMMARY



### WARNING

#### ■ Warning on Installation Environments

##### ● About the Guaranteed Operating Temperature Range

Operate the instrument between the temperature range of 0 to 40 °C. Operating the instrument at higher temperatures could cause a fire hazard.

Rapid changes of temperatures from cold to warm can create internal moisture or condensation and could damage the instrument. If there is a possibility of moisture condensation allow the instrument to sit for 30 minutes without the power on.

##### ● About the Guaranteed Operating Humidity Range

Operating humidity range is  $\leq 85$  % RH.

Do not operate the instrument with wet hands, This could cause a shock and fire hazard.

##### ● About the Operation in the Presence of Gasses

Operating the instrument in and near the presence or storage locations of flammable, explosive gasses or fumes could create an explosion and fire hazard. Do not operate the instrument anywhere near such environments.

##### ● Avoid Insertions

Do not insert metals or flammable objects or drop liquid on or into the instrument. To do so could cause fire, shock, malfunction and create a dangerous accident hazard.

#### ■ Warning while Operating

While operating the instrument in smoke, fire, or a bad smell, occurs, turn off the instrument at once for it could cause a fire hazard. When such a case occurs, turn off the power switch and pull the plug of the cord from the plug socket. Contact your local Leader agent after confirming there is no fire.

#### ■ Warning about Ground

The instrument has a ground terminal to avoid electric shock hazard and to protect the instrument from damage. Ensure that the product is properly grounded for safe operation.

## GENERAL SAFETY SUMMARY



### CAUTION

#### ■ Caution on Input/Output Terminals

Input Terminals are rated with a maximum input. Do not supply an input over the specified rating in the standard section of the instruction manual. Also, do not supply external power to Output terminal, this could cause the instrument to malfunction.

#### ■ Caution when Not to Using Instrument the for a Long Time

Make sure to disconnect the power cord from the socket when you do not use the instrument for a long time.

#### ■ Calibration

This instrument is produced under the strictest quality controls at the factory, but accuracy may gradually deteriorate due to worn components.

Therefore, periodic calibration should be performed.

When service or calibration is required, contact your local Leader agent.

#### ■ Routine Maintenance

Remove the power cord plug from the socket when cleaning the instrument.

Avoid the use of thinner or benzene solvents for cleaning cases, panels and knobs since this might remove the paint or damage plastic surfaces.

Wipe cases, panels, and knobs lightly with a soft cloth dampened with neutral detergent.

Do not allow water, detergent, or other foreign objects to enter the instrument while cleaning.

If a liquid or metal object enters the instrument, it can cause electric shock or fire.

---

Please conform to the above warnings and cautions for safe operation. There are cautions in each area of in this instruction manual, so please conform to each caution. If you have any questions about this manual, please feel free to contact your local Leader agent.

# 1. INTRODUCTION

Thank you for purchasing Leader's measuring instruments.

Please read this instruction manual carefully to ensure correct and safe operation.

If you have any difficulties or questions on how to use the instrument after you have read this manual, please feel free to contact your local Leader agent.

After you have read the manual, keep the manual in a safe place for quick reference.

## 1.1 Scope of Warranty

This Leader instrument has been manufactured under the strictest quality control guidelines. Leader shall not be obligated to furnish free service during the warranty period under the following conditions.

1. Repair of malfunction or damages resulting from fire, natural calamity, or improper voltage applied by the user.
2. Repair of an instrument that has been improperly repaired, adjusted, or modified by personnel other than a factory-trained Leader representative.
3. Repair of malfunctions or damages resulting from improper use.
4. Repair of malfunctions caused by devices other than this instrument.
5. Repair of malfunctions or damages without the presentation of a proof of purchase or receipt bill for the instrument.

## 1.2 Operating Precautions



### WARNING

### 1.2.1 Line Voltage and Fuse

Confirm that the power line voltage is correct before connecting the power cord.

The voltage range and fuse rating are indicated on the rear panel.

The instrument must be connected to the rated line voltage and line frequency of 50 Hz to 60 Hz.

When replacing the fuse, turn the power switch off and disconnect the power cord from the outlet.

When replacing the fuse, use the correct fuse that matches the line voltage.

Voltage Range	Fuse Rating	Leader Parts Number
90 to 250 V	2 A, time-lag	436 3580 013




 **CAUTION**

**1.2.2 Maximum Input Voltage**

There is restriction when applying input signals.  
Applying excessive voltage to the connector may result instrument damage.

Connector	Allowable Input Voltage
REMOTE CONTROL INC, DEC, RESET Pins	-0.5 V/+5.5 V
FREQ STD 10 MHz INPUT	2.5 Vp-p
SYNC, VALID, CLOCK, DATA	-0.5 V/+5.5 V

 **CAUTION**

**1.2.3 Reverse Voltage, Excessive Voltage**

Do not apply external voltage to the output connectors.  
If the cable touches such as DC power source, internal attenuator may be burned-out.  
Do not apply 5 Vp-p or greater signal to the output connector.  
If  $\pm 2V$  or greater DC component is superimposed, block it using a capacitor.

**1.2.4 Backup of Control Settings**

This instrument retains the panel settings even when the power is turned off. The setting can be recalled when the power is turned on.  
When the instrument is left for five years without supplying power, the stored data may be lost.

Notes on Backup Data
Data must be backed up properly since stored data may be lost or changed caused by incorrect operation, malfunction, or maintenance. A notepad may be helpful in some cases.

### **1.2.5 Installation**

Do not use the instrument in the following environments.

- High temperature environments

Do not place the instrument under direct sunlight or near a heater (e.g., stove). Do not move the instrument from cold to warm environment abruptly, it may cause condensation.

Operating temperature range: 0 to 40 °C

5 to 40 °C (When Option 70 is installed.)

- High humidity environments

Do not place the instrument in the high humidity environment (e.g., bathroom, near a humidifier).

Operating humidity range: ≤85 % RH (without condensation)

- Dusty environments

### **1.2.6 Mechanical Shock**

To prevent damage to the precise components used in this instrument, be careful not to expose the instrument to other forms of severe mechanical shock.

### **1.2.7 About Network**

The remote control capability operation via the Ethernet is confirmed only under the local network environments; it is not guaranteed under other environments.

## 2. SPECIFICATIONS

### 2.1 Description

The LG 3803 8VSB/QAM Signal Generator, conforms to 8VSB (digital terrestrial TV in USA System) and 64QAM/256QAM (CATV) standards, features a channel coding, modulation, C/N generator, and up converter in a single package. Consequently, the modulated signal covering VHF and UHF channels can be output.

Providing pseudo random signal (PN) and BER counter can perform BER measurement of receivers and tuners with a signal unit.

~~In addition~~ In addition to the internal TS signal, the external MPEG-2 TS can be used to evaluate video, and sound quality. Such powerful features are ideal for total evaluation of a reception system.

### 2.2 Features

- All-in-one

This instrument features the signal generator capability and BER measurement capability in a single package.

The BER function is used to measure the front-end section, the broadcasting MPEG-2 TS function is used to visually check entire system

## 2.3 Specifications

### 2.3.1 Channel Coding Section

- |                         |   |
|-------------------------|---|
| (1) Broadcasting system | Digital Terrestrial (ATSC A/53B)<br>CATV (ITU-T J.83 annex B) |
| (2) Modulation system   | 8VSB/64QAM/256 QAM  |

### 2.3.2 RF Signal Generator

- |                  |                                     |
|------------------|-------------------------------------|
| (1) Frequency    |                                     |
| Range            | 50 to 900 MHz                       |
| Resolution       | 1 kHz, set in frequency             |
| Channel          | USA, KOREA                          |
| Accuracy         | $\pm 0.4 \times 10^{-6}$            |
| (2) Output       |                                     |
| Range            | -100 to +13 dBm (into 50 $\Omega$ ) |
| Resolution       | 0.1 dB                              |
| Impedance        | 50 $\Omega$                         |
| Level Accuracy   | $\pm 1$ dB (at 0 dBm, C/N off)      |
| Output Connector | N type                              |
| Harmonics        | -30 dBc                             |
| Spurious         | -50 dBc                             |

### 2.3.3 Input/Output Signal Sources

- |                       |   |
|-----------------------|---|
| (1) Internal Signal   |   |
| Pseudo Random Signal  | PN23  |
| Still Picture Pattern | Color bar, ramp, monoscope (* 1)                      |
| Screen Size           |   |
| 16:9                  | 1920 x 1080i, 1280 x 720p, 704 x 480i (* 1)           |
| 4:3                   | 704 x 480i (* 1)                                      |
| Sound (Tone)          | 1 kHz (LR), 400 Hz (LR), 1 kHz (L) + 400 Hz (R) (* 1) |
- \* 1: Specifications are subject to change

(4) ASI, SPI Input Specifications

Input Packet Format	188 bytes
Applicable Stream	MPEG-2 TS (ISO/IEC 13818-1)
Input Data Rate	25 Mbps max.

(5) FREQ STD Input

Input Connector	BNC
Input Impedance	50 $\Omega$
Input Level	0.8 Vp-p
Input Frequency	10 MHz

(6) FREQ STD Output

Output Connector	BNC
Output Impedance	50 $\Omega$
Output Level	+4 dBm
Output Frequency	10 MHz

(7) 4-Wire Serial BER Input

Input Connector	BNC
Input Level	LVTTL 3.3 V
Input Signal	SYNC, VALID, CLOCK, DATA

(8) TS Clock Output

Output Connector	BNC
Output Impedance	50 $\Omega$
Output Level	TTL
Output Frequency	8VSB 2.424083 MHz
	64QAM 3.371294 MHz
	256QAM 4.851338 MHz

### 2.3.4 C/N Generator Section

C/N Variable Range	0 to 31 dB
Setting Resolution	0.1 dB
On/Off	Selectable

### 2.3.5 BER Counter Section

(1) Input Section

Packet Length	188 bytes
Input Connector	DVB-SPI connector, serial input

(2) GO/NO-GO Function

Threshold Settings	Upper and lower limits of BER
GO/NO-GO Indication	Displays GO/NO-GO on the screen.

### 2.3.6 External Interface

(1) Memory Card Interface

Memory Card Compact flash card (CFA TYPE-I)  
Function Updating firmware, changing internal TS-ROM

(2) ETHER Interface

Specifications 10BASE-T or 100BASE-TX  
Function Setting this instrument, reading status

(3) GPIB

Specifications ANSI/IEEE Std 488.1-1987.  
Function SH1, AH1, T8, L4, SR0, RL2, PP0, DC1, DT0, C0, E1

(4) USB Interface

### 3. PANEL DESCRIPTIONS

#### 3.1 Front Panel

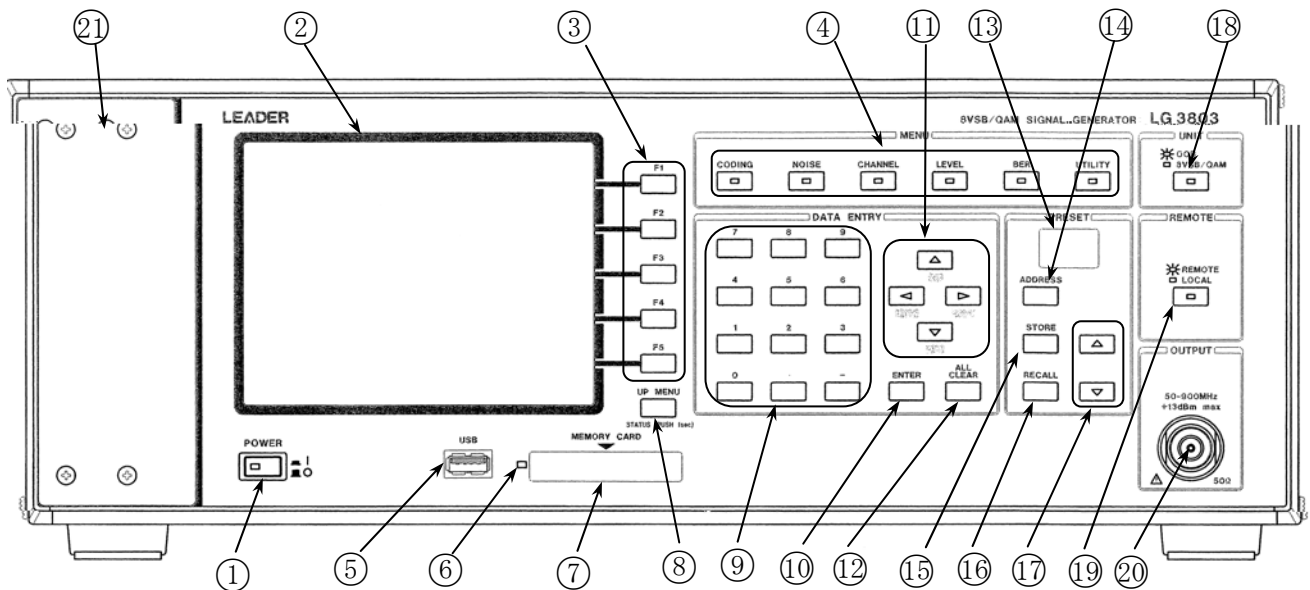


Figure 3-1 LG 3803 front panel

- ① POWER switch  
Push this switch in to apply power. Release this switch for turning power off. The setting conditions immediately before turning power off can be recalled.
- ② LCD panel  
Indicates the setting conditions in Graphical User Interface (GUI).
- ③ Function keys (F1 to F5)  
Set functions. The functions are displayed on the LCD panel.
- ④ MENU keys  
Set functions. Six keys are provided.
 

CODING	Selects broadcasting system, input source, modulation parameter, etc.
NOISE	Selects noise signal on/off. Sets the CN value.
CHANNEL	Sets the RF output channel. The channel can also be set in frequency.
LEVEL	Sets the output level.
BER	Controls and sets the Bit Error Rate (BER).
UTILITY	Sets the various setting.
- ⑤ USB connector  
USB 1.1 connector  
Connects an external equipment such as keyboards. (Future support)
- ⑥ Access lamp  
Lights when this instrument is accessing the memory card ⑦.


- ⑦ MEMORY CARD slot  
Only used when the memory card contents are upgraded or updated.
- ⑧ UP MENU key  
While displaying the setting screen, pressing this key enters the current data, then returns to the upper level by one.  
Holding down this key for at least one second enters the current setting, then returns to the top screen.
- ⑨ Ten key (0 to 9 . -)  
Directly enter such numeric data as level, channel (frequency), CN. Press ENTER ⑩ key to enter data.
- ⑩ ENTER key  
Enters numeric data set.
- ⑪ Arrow keys { ↑ (INC), ↓ (DEC), ← (BACK), → (NEXT)}  
< ↑, ↓ keys >
  - Increments and decrements numeric data {i.e., level, channel (frequency), CN}.
  - Moves the arrow to the PID number to be selected in external input mode.
  - Increments and decrements the PID value between 0 and F when data is input in hexadecimal numbers.

**Difference between Up (F2)/Down (F4) keys and ↑/↓ keys**

F2, F4 keys	Increments and decrements the value by preset step size.
↑, ↓ keys	Increments and decrements the value by preset step size. Holding down this key continuously changes the value.

- < ←, → keys >
  - Moves the arrow to the PID number to be selected in external input mode.
  - When entering PID value (hexadecimal numbers):  
 pressing the → key enters the value at the current digit, then moves to the next digit.  
 pressing the ← key cancels the value at the current digit, then returns to the previous digit.
- ⑫ ALL CLEAR key  
Clears input data (i.e., numeric data, hexadecimal data).
- ⑬ PRESET display  
Displays the last selected preset number.
- ⑭ ADDRESS key  
Specifies the address to be stored or recalled.
- ⑮ STORE key  
Stores the current setting in the address.



- ⑩ RECALL key  
Recalls the setting conditions in the specified address.
- ⑪ ↑, ↓ key  
Increments and decrements the specified address.
- ⑫ UNIT key (UNIT)  
Selects either this instrument or OOB when the LG 3803-01 unit is connected.
- ⑬ REMOTE key (REMOTE)  
Switches the remote control mode to local control mode. This key is disabled in local control mode.
- ⑭ RF OUTPUT connector  CAUTION  
Outputs RF signal. Refer to Section 2.3.2, "RF Signal Generator" for specifications.
- ⑮ Option compartment  
Compartment to install the Moving Picture Option (OP70).

### 3.2 Rear Panel

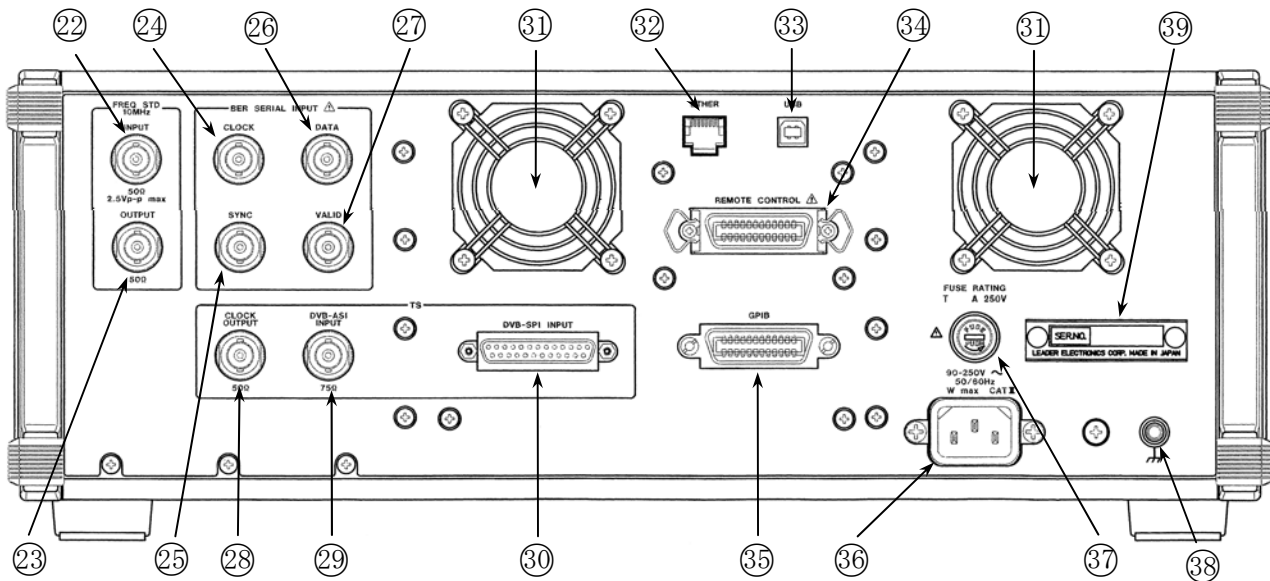




Figure 3-2 LG 3803 rear panel

- ②② FREQ STD 10 MHz INPUT connector  
Accepts the external reference signal. Apply 10 MHz reference signal when operating this instrument in synchronized with the equipment connected.
- ②③ FREQ STD 10 MHz OUTPUT connector  
Synchronizes other equipment.
- ②④ Serial BER CLOCK signal input connector (BER SERIAL INPUT CLOCK)  
Used for BER measurement in serial connection.
- ②⑤ Serial BER SYNC signal input connector (BER SERIAL INPUT SYNC)  
Used for BER measurement in serial connection.  
\* This connector is only used when the "Serial (4 Wire)" is selected on the screen.
- ②⑥ Serial BER DATA signal input connector (BER SERIAL INPUT DATA)  
Used for BER measurement in serial connection.
- ②⑦ Serial BER VALID signal input connector (BER SERIAL INPUT VALID)  
Used for BER measurement in serial connection.  
\* This connector is only used when the "Serial (4 Wire)" is selected on the screen.
- ②⑧ TS clock output connector  
Outputs the TS clock to synchronize the external TS input.
- ②⑨ TS INPUT DVB-ASI connector  
Accepts the external TS signal. Apply the TS in DVB-ASI format.
- ③⑩ TS INPUT DVB-SPI connector  
Accepts the external TS signal. Apply the TS in DVB-SPI format.

- ③① Cooling fans (Two places)  
To prevent instrument damage due to overheating, do not block airflow through the ventilation holes.  
If the fan stops, the LCD panel displays alarm message.  
Turn the instrument power off immediately, then contact your local Leader agent in this case.
- ③② ETHER connector  
Control connector for 10BASE-T or 100BASE-TX.
- ③③ USB connector  
Factory use only. Leave this connector open.
- ③④ REMOTE CONTROL connector  CAUTION  
Used to up/down and return operations for the preset value.  
Refer to Chapter 7 "REMOTE CONTROL."
- ③⑤ GPIB connector  
GPIB interface connector.
- ③⑥ AC INPUT  
AC power inlet. The accessory power cord should be used. The AC voltage range is 90 to 250 V.  
Refer to Section 1.2.1, "Line Voltage and Fuse" for detail.
- ③⑦ FUSE  CAUTION  
The mains fuse is installed. Use only the fuse of correct type and rating for replacement.  
Refer to Section 1.2.1, "Line Voltage and Fuse" for detail.
- ③⑧ GND terminal  
Grounding terminal connected to the chassis of this instrument
- ③⑨ Serial number plate  
Instrument serial number. Provide this number when contacting us.

## 4. LCD PANEL DESCRIPTION

### 4.1 Turning Power On and Starting Instrument

Connect the accessory power cord between the AC inlet on the rear panel and the mains. Press the POWER switch to turn power on for starting the system. Wait for about 45 seconds until the top screen (Status screen) is displayed. The setting conditions immediately before turning power off will be recalled.

### 4.2 Screen Description

The screen display consists of the top screen and various setting screens. The followings describe the typical screens.

<Top Screen>

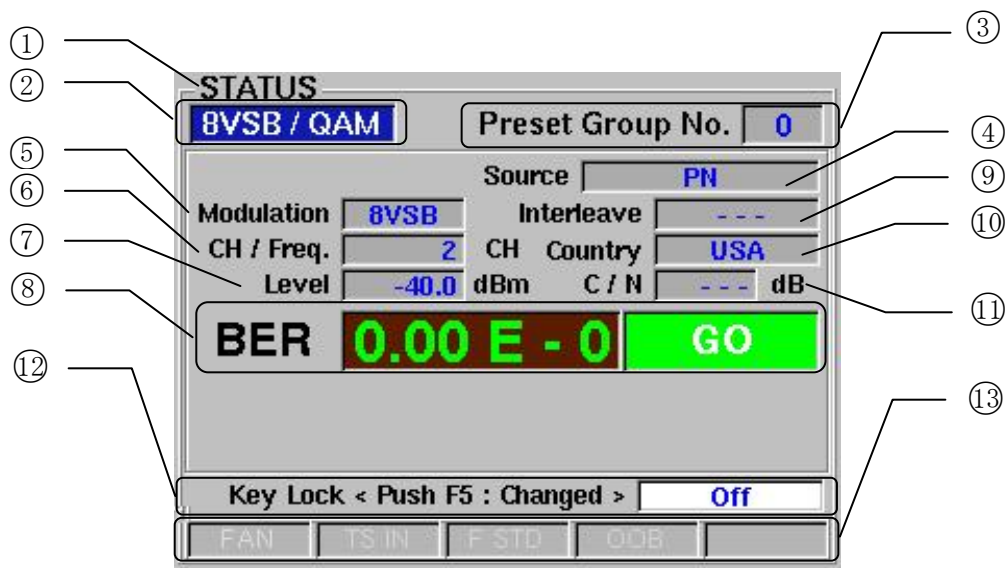


Figure 4-1 Top screen

- |                                |   |
|--------------------------------|---|
| ① Screen title                 | Indicate the top (Status) screen.   |
| ② Unit information             | Indicate the setting parameter of this instrument or OOB.   |
| ③ Group                        | Displays the preset group number.   |
| ④ TS signal selection          | Selects the TS to be used.  |
| ⑤ Carrier modulation (Current) | Displays the carrier modulation setting status.   |
| ⑥ Channel, frequency           | Displays the channel number when the RF signal is set in channel.<br>Displays the frequency in units of MHz when the RF signal is set in frequency. |
| ⑦ Output level                 | Displays the output level.  |

- |                      |   |
|----------------------|---|
| ⑧ BER result display | Displays the Bit Error Rate (BER) measurement value and GO/NO-GO results based on the threshold values.                     |
| ⑨ Interleave         | Displays "- -" when the carrier modulation is 8VSB.<br>Displays the interleave length when the 64QAM or 256QAM is selected. |
| ⑩ Country            | Displays the channel table: USA or KOREA.   |
| ⑪ C/N level          | Display the C/N level. "- -" is displayed when the C/N is set off.  |
| ⑫ Key lock           | Displays the panel key lock status.   |
| ⑬ Alarm display      | Display alarm status for cooling fan, TS input, reference signal and OOB.   |

#### << Key lock >>

Restricts the front panel key operations.

- |      |  |
|------|--|
| Off  | Enables all keys.  |
| Part | Disables all keys except the Address, ↑ / ↓ (PRESET), and RECALL keys. |
| All  | Disables all keys.   |

#### <<About top screen>>

- The top screen displays the titles.  
See each setting screen for detail.
- The top screen is displayed when one of the following operations are performed:
  - (1) Immediately after the power is turned on.
  - (2) UP MENU key is held down for at least one second.
  - (3) ADDRESS key is pressed.
  - (4) Preset status is recalled by using the RECALL key, or ↑ or ↓ key in the PRESET group.

#### << Setting/controlling on the top screen >>

- The following operations can be performed on the top screen.  
Pressing the F5 key enables key lock mode.  
Pressing the F4 key can playback/stop the TS when the Moving Picture Option (OP70) is installed.  
For other items, press the menu key, then set as required on the appropriate setting screen.

<<Alarm display on the top screen>>

- The following alarm message is displayed on the top screen. Message is displayed in red.

[FAN] Indicates cooling fan trouble. If this alarm is displayed, turn the instrument power off, then contact your local Leader agent.

[TS IN] Monitors each input signal when SPI/ASI is selected as TS input. The SPI input in BER measurement mode is also monitored.  
The alarm is displayed in the following status:  
(1) No signal is input.  
(2) When the signal other than transport stream (MPEG-2 TS) is input.  
(3) When five packets or more packets except 0x47 are continuously received at the header byte position.

[F STD] Monitors the reference signal. The alarm is displayed in the following status:  
(1) No signal is applied.  
(2) Input signal frequency exceeds the PLL lock range.  
(3) Input signal level is lower than the acceptable level range.

[OOB] In case of the LG 3803-01 is incorrectly connected.

<Setting screen example "CODING">

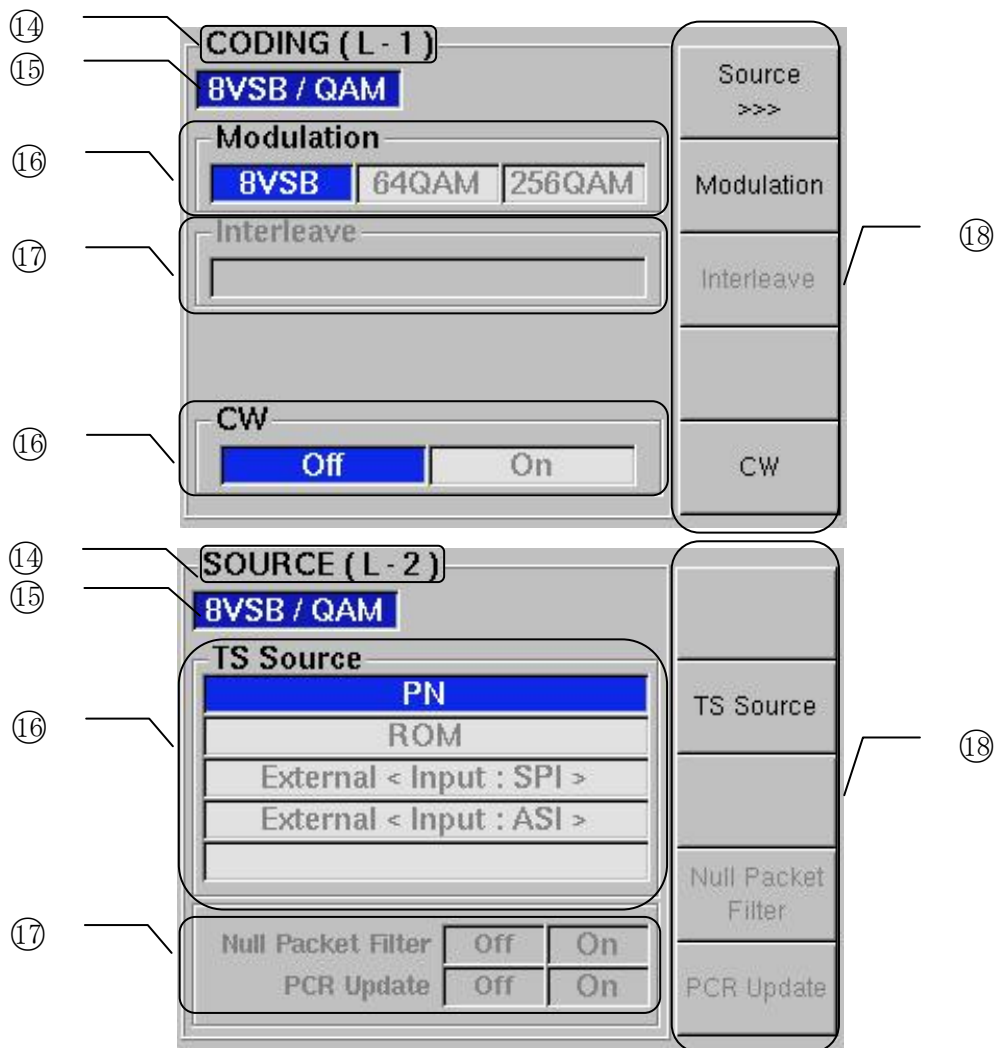


Figure 4-2 Setting screen example (1)

- ⑭
Screen title, hierarchical layer display
Displays the screen title and hierarchical layer from the top menu.
- ⑮
Unit information
Indicate the setting parameter of this instrument or OOB.
- ⑯
Selection status
Use the corresponding key when changing the settings. The selected item is displayed in white character on the blue background. Pressing the key sequentially selects the item.
- ⑰
Disabled function
Items displayed in gray title is currently disabled or optional functions.
- ⑱
Function
Displays the functions assigned to the F1 to F5 keys. When ">>>" is displayed on the bottom of the function display, use the next hierarchical layer for settings.

<Setting screen example "LEVEL">

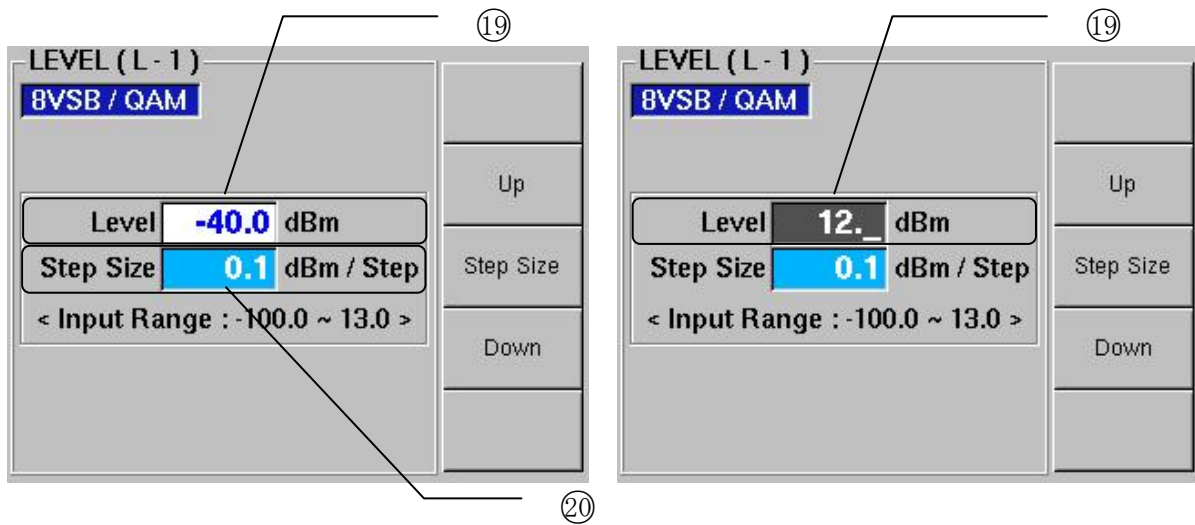


Figure 4-3 Setting screen example (2)

- ①⑨ Numeric value display column    Displays the current setting value.  
 When data is set by using the numeric keypad, the value is displayed in white on the black background.  
 Press the ENTER key to enter data. The value is only entered when the value is within the acceptable range.
- ②⑩ Step display    The numeric value can be sequentially updated in preset steps displayed in the step size column.  
 Pressing the F2 (Up) or F4 (Down) key increments/decrements the value preset by using the F3 key. The ↑ or ↓ key in the DATA ENTRY can also be used as well.

<Operation procedure>

- (1) Pressing either key in the MENU group enters the setting screen.
- (2) To return to the upper hierarchical layer, press the UP MENU key. Press this key repeatedly to return to the uppermost hierarchical layer.
- (3) Holding down the UP MENU key for at least one second any hierarchical layer returns to the top menu.
- (4) There are two setting methods:
  - For the items set on the CODING menu, data is entered when the UP MENU key is pressed to return to upper hierarchical layer or to the top menu.
  - For other items {level, channel (frequency), C/N, etc.}, data is directly entered when the value or settings are changed.



### 4.3 Menu

The top screen only displays the current setting status; there is no setting items. When changing the setting status, press the MENU key to display the setting screen. The MENU key function is listed below:

CODING	Selects the broadcasting system and modulation mode. Selects the TS input source. Sets the Interleave. Selects the CW on/off. (Refer to Section 5.1.)
NOISE	Sets the CN level value. Sets the CN addition on/off. (Refer to Section 5.2.)
CHANNEL	Sets the RF output channel (or RF frequency). (Refer to Section 5.3.)
LEVEL	Sets the output level. (Refer to Section 5.4.)
BER	Controls the BER measurement function. Sets the threshold level for GO/NO-GO judgement. (Refer to Section 5.5.)
UTILITY	Sets the various setting (Refer to Section 5.6.)

\* To return to the top menu, hold down the UP MENU key for at least one second.

## 5. USING MENU

### 5.1 CODING

Pressing the CODING key in the MENU group enters setting screen.

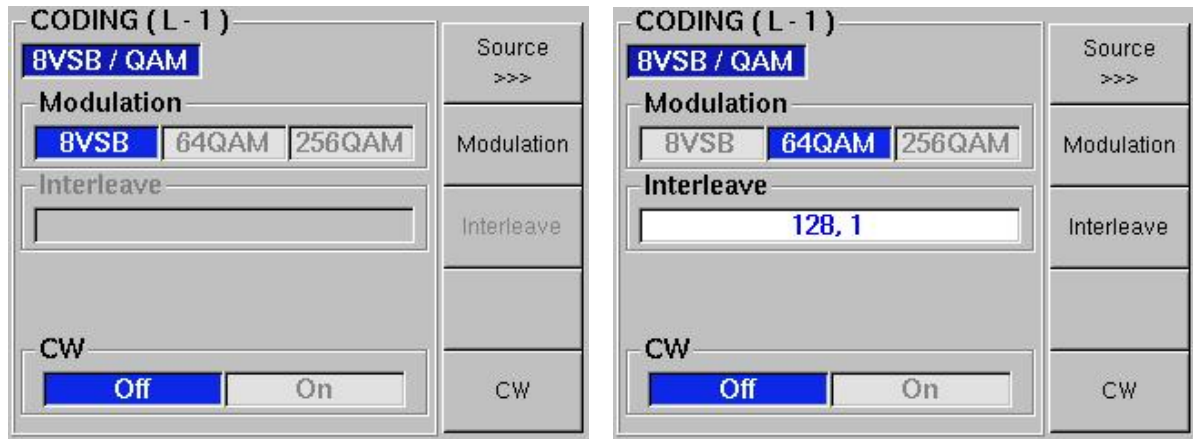


Figure 5-1 Coding screen

This screen is used to select the modulation mode and TS signal, and to set items related to channel coding.

To exit settings, press other key in the MENU, or hold down the UP MENU key to return to the top screen (status display).

- Source (F1) Selects the input source. (Refer to Section 5.1.1.)
- Modulation (F2) Selects the broadcasting sy52245927o(dulation mod).

### 5.1.1 Source

The TS source can be selected by pressing the Source (F1) key on the Coding (L-1) screen.

#### Notes on selecting TS\_source

- The receiver is temporary unlocked when TS source (each pattern stored in the ROM, PN, SPI, ASI) is switched since the coding circuit is reset.
- When the external TS (SPI, ASI) is selected, reception capability is disabled if TS INPUT alarm lights on the top screen or TS exceeding allowable rate is input.

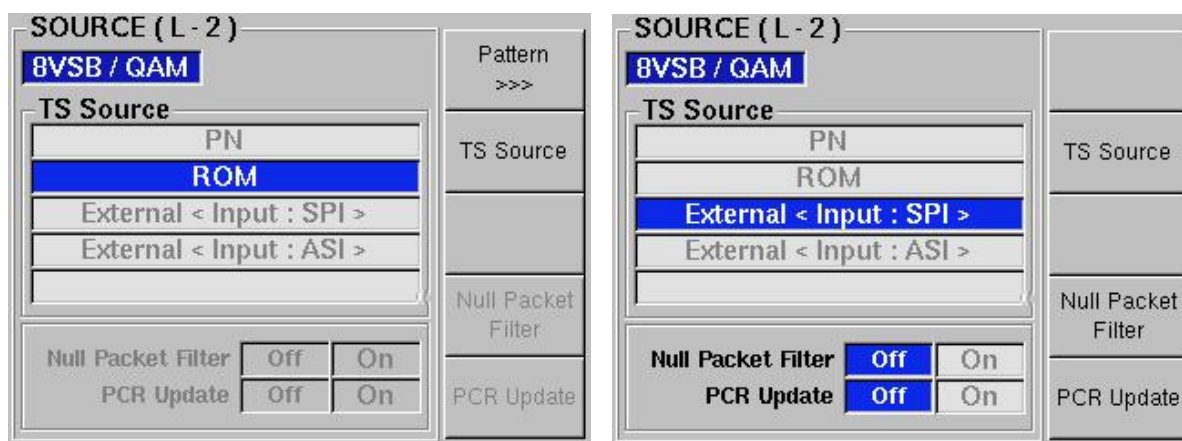


Figure 5-2 TS source selection screen

- TS Source (F2)
  - Selects the TS input to be used.
  - PN Pseudo random signal in PN23
  - ROM Modulates and outputs the video and sound signals stored in the ROM.
  - External <SPI> TS input to the SPI connector on the rear panel is used.
  - External <ASI> TS input to the ASI connector on the rear panel is used.
  - Internal TS of HDD on DVD is used when the Moving Picture Option (OP70) is installed.
- Null Packet Filter (F4)
  - This key is only enabled when the External (i.e., SPI, ASI) is selected. The packet with 0x1FFF PID is filtered off from the TS applied to the input connector. Various carrier modulation capabilities can be increased by removing surplus null packet.
- PCR Update (F5)
  - Channel coding is performed for the external TS applied.
  - The PCR should be rewritten to convert the rate. Set this function on in general. Up to eight PCRs are rewritable for the external TS.

(1) Selecting PN

The random signal (PN23) can be output by setting the Source to PN on the TS Source (L-2) screen.

(2) Selecting ROM Pattern

The pattern stored in the ROM (called ROM pattern) can be selected by setting the Source to ROM on the TS Source (L-2) screen, then press the Pattern (F1) key.

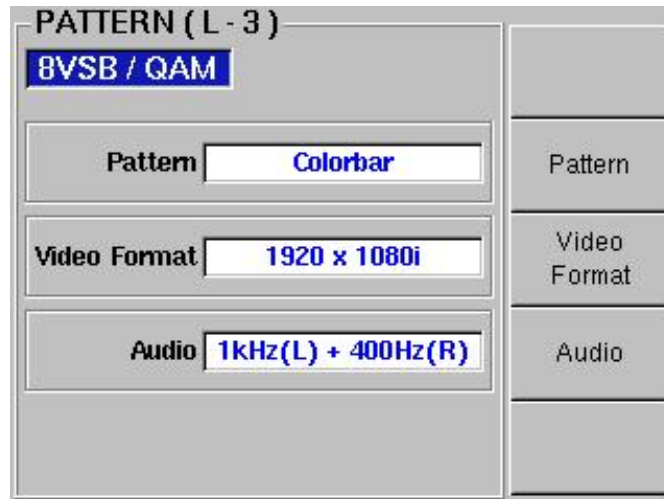


Figure 5-3 ROM pattern selection screen

- Pattern (F3)

Selects the video pattern.

- |           |  |
|-----------|--|
| Color Bar | Eight-color full field color bar pattern |
| Ramp      | Full field ramp pattern                  |
| Monoscope | Monoscope pattern                        |

- Video Format (F4)

Selects the size of patterns listed above.

- 1920 x 1080 (16:9)
- 1280 x 720p (16:9)
- 704 x 480i (16:9)
- 704 x 480i (4:3)

- Audio (F5)

Selects the sound pattern.

- |                        |  |
|------------------------|--|
| 1 kHz (L, R)           | Tone signal (1 kHz for both left and right)    |
| 400 Hz (L, R)          | Tone signal (400 Hz for both left and right)   |
| 1 kHz (L) + 400 Hz (R) | Tone signal (1 kHz for left, 400 Hz for right) |

The pattern, pattern size, and sound can arbitrary be combined.

(3) Selecting External <ASI or SPI>

The TS applied to the ASI or SPI connector is used by setting the TS Source to External on the Source (L-2) screen.

## 5.2 NOISE

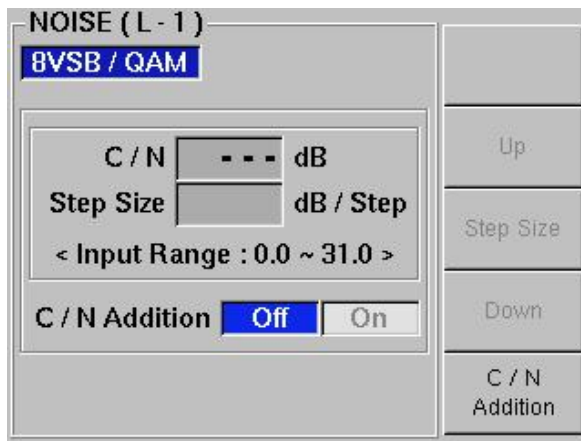


Figure 5-4 C/N setting screen

- Up (F2) Increments the C/N value by preset step size within the acceptable range.
- Step Size (F3) Sets the step size for Up and Down operations.
- Down (F4) Decrements the C/N value by preset step size within the acceptable range.
- C/N Addition (F5) Sets C/N on/off.

The C/N value can be directly entered by using the numeric keypad, or changed by using the  $\uparrow$ ,  $\downarrow$ , Up (F2) and Down (F4) keys.

### 5.3 CHANNEL

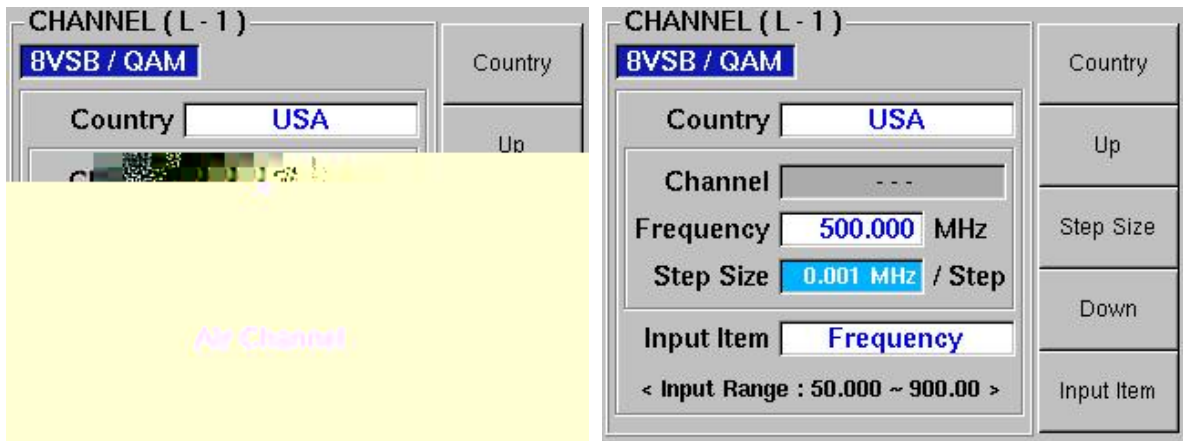


Figure 5-5 Channel or Frequency setting screen

- Country (F1)           Selects the channel tables of USA or KOREA.
- Up (F2)                Increments the channel or frequency by preset step size within the acceptable range.
- Step Size (F3)        Sets the steps for Up and Down operations.  
( \* Selectable only when frequency is set.)
- Down (F4)             Decrements the channel or frequency by preset step size within the acceptable range.
- Input Item (F5)        Selects setting range and method of the RF frequency.
  - Air Channel            Use to set channel directly.  
USA: [2 to 83 ch], KOREA: [2 to 12, 21 to 83 ch]
  - CATV Channel         Use to set CATV channel directly.
  - USA STD:             [C2 to C135 ch]
  - USA IRC:             [C1 to C135 ch]
  - USA HRC:            [C1 to C135 ch]
  - KOREA:              [C1 to C41 ch]
  - Frequency            Sets the CHANNEL in frequency.

The CHANNEL or FREQUENCY can be directly entered by using the numeric keypad, or changed by using the ↑ , ↓ , Up (F2) and Down (F4) keys.

## 5.4 LEVEL

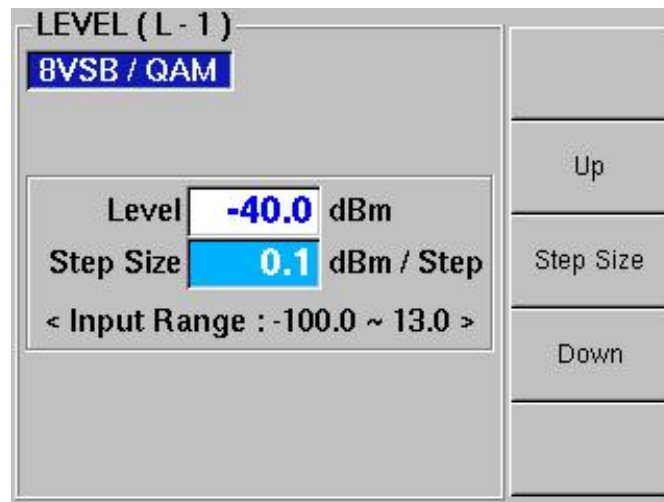


Figure 5-6 Level setting

- Up (F2)                      Increments the level value by preset step size within the acceptable range.
- Step Size (F3)              Sets the steps for Up and Down operations.
- Down (F4)                    Decrements the level value by preset step size within the acceptable range.

The LEVEL can be directly entered by using the numeric keypad, or changed by using the ↑, ↓, Up (F2) and Down (F4) keys.

## 5.5 BER

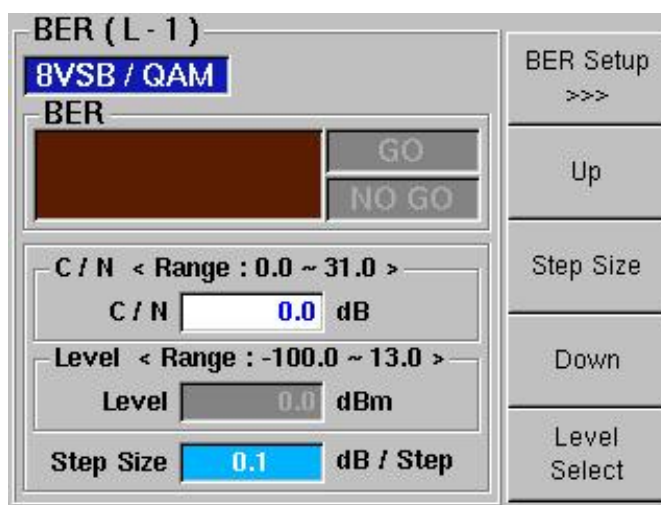


Figure 5-7 BER setting and measurement

- BER Setup (F1) Sets the BER measurement conditions. Refer to Section 5.5.1.
- Up (F2) Increments the C/N or output level value by preset step size within the acceptable range.
- Step Size (F3) Selects the steps for C/N or output level.
- Down (F4) Decrements the C/N or output level value by preset step size within the acceptable range.
- Select (F5) Selects the item by pressing the  $\uparrow$ ,  $\downarrow$ , up (F2) or Down (F4) keys in the DATA ENTRY group. This function enables only when the C/N is set on.

The setting value can be directly entered by using the numeric keypad, or changed by using the  $\uparrow$ ,  $\downarrow$ , Up (F2) and Down (F4) keys.

### Notes on using BER function

- \* The BER measurement mode is only enabled under the following conditions:  
PN is selected for TS Source.



## 5.5.1 BER SETUP

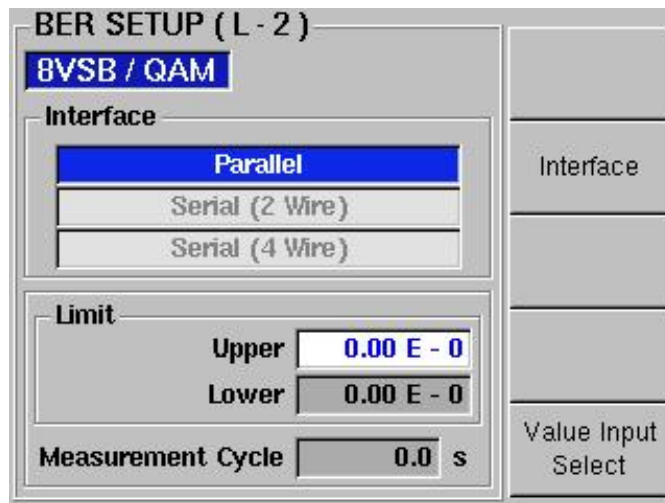


Figure 5-8 BER SETUP screen

- Interface (F2)  
Selects the TS input for BER measurement.
  - Parallel Use the SPI connector.
  - Serial (2 Wire) Use both [CLOCK] and [DATA] connectors in the SERIAL INPUT group.
  - Serial (4 Wire) Use all of four connectors in the SERIAL INPUT group.
- Value Input Select (F5)  
Selects the item to be set.
  - Upper Sets the upper threshold value (close to 0) in GO/NO-GO judgement mode.
  - Lower Sets the lower threshold value (close to 1) in GO/NO-GO judgement mode.  
(Settable range: 0.00E-0, 1.00E-9 to 9.99E-1)
  - Measurement Cycle The measurement cycle can be set in 0.1 second steps.

The values can be directly entered by using the numeric keypad.

- (1) When no signal is input to the SPI connector or there is asynchronous error on the TS, the alarm lights on the top screen.
- (2) When measurement starts, the top screen and BER screen display the measurement value. "GO" is displayed when measurement value is with the threshold value; "NO-GO" is displayed for outside the threshold.

## 5.6 UTILITY

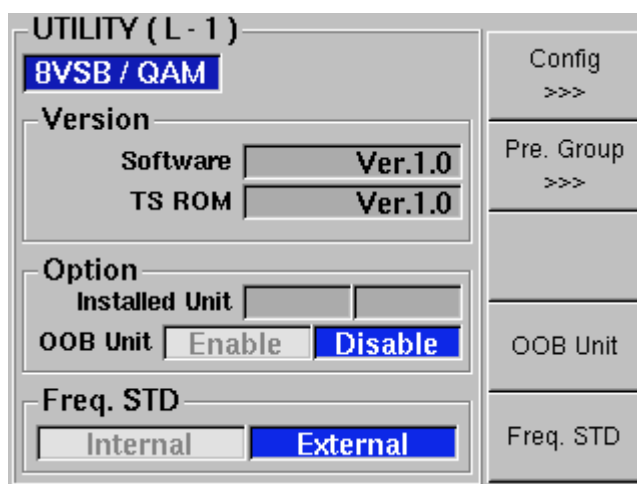


Figure 5-9 Utility screen

Software Version	Displays the control software version. Provide the serial number indicated on the rear panel and software number when contacting us.
TS ROM Version	Displays the ROM pattern version.
Installed Unit	Displays the option installed.

- Config (F1)  
Address of TCP/IP and GPIB is displayed. (Refer to Section 5.6.1)
- Pre. Group (F2)  
There are 100 preset conditions (i.e., consisting of 10 groups, 10 conditions per group). The range can independently be incremented and decremented for each group. (Refer to Section 5.6.4)
- OOB Unit (F4)  
Sets the LG 3803-01 unit (OOB) to enable or disable.
- Freq. STD (F5)  
Selects the reference signal.

## 5.6.1 CONFIG

The screenshot shows a configuration screen titled "CONFIG (L-2)". At the top left, "BVS / QAM" is highlighted in a blue box. Below this, the "TCP / IP" section contains three rows of input fields: "IP Address" with values 192, 168, 0, 1; "Subnet Mask" with values 255, 255, 255, 0; and "Default Gateway" with values 192, 168, 0, 1. Below the TCP/IP section is the "GPIB" section with an "Address" field containing the value 1. To the right of the main configuration area is a vertical sidebar with two buttons: "TCP / IP >>>" and "GPIB Adr. >>>".

Figure 5-10 CONFIG screen

- TCP/IP (F1)  
Sets the IP-Address, Subnet Mask and Default Gateway.  
(Refer to Section 6.5.2)
- GPIB Adr. (F2)  
Sets the GPIB Address. (Refer to Section 6.5.3)

## 5.6.2 TCP/IP

TCP / IP ( L - 3 )

**BVS / QAM**

TCP / IP

IP Address

192 . 168 . 0 . 1

Subnet Mask

255 . 255 . 255 . 0

Default Gateway

192 . 168 . 0 . 1

Item Select

Figure 5-11 TCP/IP screen

- Item Select (F5)  
Selects the item that inputs the numeric value.  
The values can be directly entered by using the numeric keypad.

### Notes on TCP/IP setting

\* The setting conditions will be recalled when the power is turned on.

### 5.6.3 GPIB ADDRESS

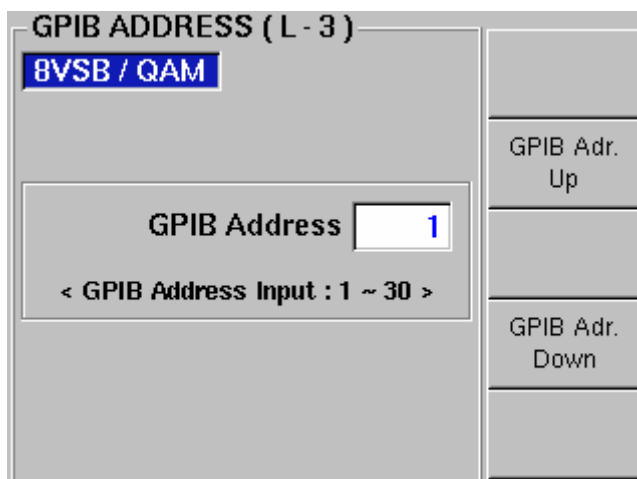


Figure 5-12 GPIB ADDRESS screen

- GPIB Adr. Up (F2) Increments the GPIB ADDRESS within the acceptable range.
- GPIB Adr. Down (F4) Decrements the GPIB ADDRESS within the acceptable range.

The setting value can be directly entered by using the numeric keypad, or changed by using the ↑, ↓, Up (F2) and Down (F4) keys.

#### Notes on GPIB ADDRESS setting

\* The setting conditions will be recalled when the power is turned on.

## 5.6.4 PRESET GROUP

PRESET GROUP (L-2)

BVS / QAM

Group No. 0

Begin No. 0

End No. 99

CF Access >>>

Group No. Up

Group No. Down

Begin / End Select

Figure 5-13 PRESET GROUP screen

- CF Access (F1) Save the PRESET DATA to the memory card and load it from the memory card. (Refer to Section 5.6.5)
- Group No. Up (F2)

## 5.6.5 CF ACCESS

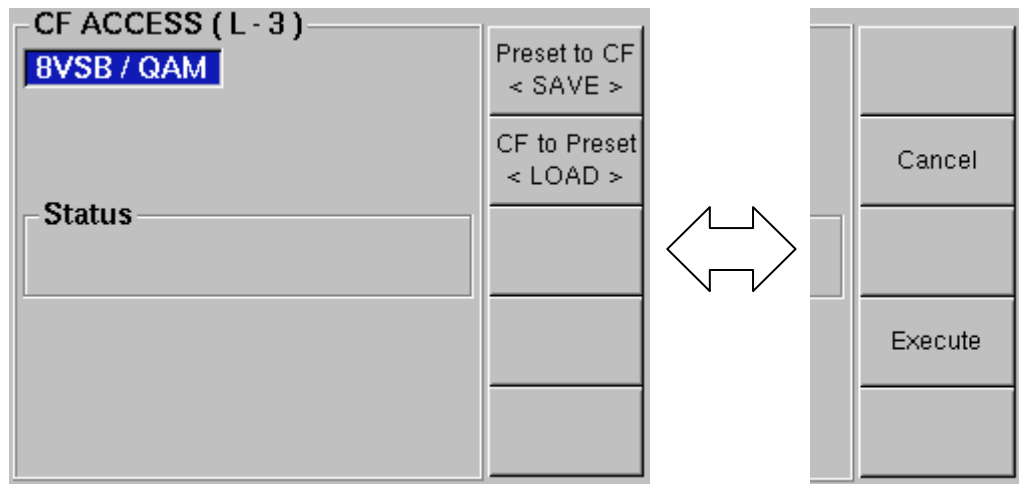


Figure 5-14 CF ACCESS screen

Status                      The operation status of SAVE/LOAD to the memory card is displayed.

- Preset to CF (F1)              Save the PRESET DATA to the memory card.
- CF to Preset (F2)              Load the PRESET DATA from the memory card to internal memory.

## 5.7 Internal Settings

### 5.7.1 Setting Calendar

Change to the super user, then login with telnet. The ID and password are lg3803. (Lowercase letters can only be used.)

data    Enter month, date, hour, minute, and second as follows.

Example to set 2005/1/31 14:00:28

```
su (enter)
root (enter)
/work/script/hwdate 013114002005.28 (enter)
hwclock -- systohc -- localtime (enter)
```

## 6. PRESET, GROUP

### 6.1 Preset

Up to 100 setting conditions can be stored and recalled by using the front panel key.

- Storing Data
  - (1) Set the CODING, CHANNEL, LEVEL, etc.
  - (2) Press the ADDRESS key. The PRESET number LED brinks.
  - (3) Specify the address to store data by pressing the ↑ or ↓ key in the PRESET column, or enter address by using the numeric keypad.
  - (4) When the address is directly set by using the numeric keypad, press the ENTER key.
  - (5) Pressing the STORE key stores data.

There are two methods to recall the setting conditions:

- Direct recall  
To recall the desired memory number, press the ↑ or ↓ key in the PRESET group.
- Specifying address
  - (1) Press the ADDRESS key. The PRESET number indicator LED brinks.
  - (2) Specify the address to store data by pressing the ↑ or ↓ key in the PRESET column, or enter address by using the numeric keypad.
  - (3) Press the ENTER key to enter data.
  - (4) Pressing the RECALL key recalls data.

### 6.2 GROUP

Up to ten groups can be set. Preset data can easily be used by incrementing or decrementing the preset range for each group.

- Setting group to be used
  - (1) Press the Pre. Group (F1) key on the UTILITY screen to enter group setting screen.
  - (2) Press the Preset Group (F5) key to select the desired group number.
- Setting preset range
  - (1) Select the group number on the group setting screen.
  - (2) Press the No. Input (F2) key to enter preset number setting screen, then set the Begin and End numbers.
    - \* The End number must be larger than the Begin number.
- Recalling preset data
  - (1) Press the ↑ or ↓ key, or the numeric keypad to specify the number to recall data. Refer to Section 4.5.
    - \* Use the preset number within the specified range in the group being set. Otherwise, the preset number is canceled.



## 7. REMOTE CONTROL

This instrument can be remotely controlled (e.g., increments or decrements preset data) via the REMOTE CONTROL connector.

- |                     |  |
|---------------------|--|
| (1) Major Function  | Increment, decrement, returning group top                        |
| (2) Connector       | 57LE-40240-7700 (DDK Ltd.) or equivalent                         |
| (3) Input Level     | TTL (Pull up to +3.3 V)  |
| (4) Input Logic     | Negative logic   |
| (5) Output Level    | TTL (GO/NO-GO), open collector (Alarm)                           |
| (6) Fan Out         | 1 each   |
| (7) Output Voltage  | +12 V (Alarm)  |
| (8) Output Logic    | Positive logic/negative logic (GO/NO-GO), negative logic (Alarm) |
| (9) Pin Assignments | See Table 7-1  |

Table 7-1 Pin assignments

No.	Name	Input/Output	No.	Name	Input/Output
1	INC	Input	13	GO (Positive logic)	Output
2	DEC	Input	14	GO (Negative logic)	Output
3	RETURN	Input	15	NO-GO (Positive logic)	Output
4	Reserve		16	NO-GO (Negative logic)	Output
5	Reserve		17	Alarm	Output
6	Reserve		18	N. C.	
7	Reserve		19	N. C.	
8	Reserve		20	N. C.	
9	N. C.		21	N. C.	
10	N. C.		22	N. C.	
11	GND	GND	23	GND	GND
12	GND	GND	24	GND	GND

\* About REMOTE CONTROL connector

- Do not apply external voltage to the output pins except Alarm pin.
- All pins are pulled up to +3.3 V. When externally control this instrument, do not apply voltage exceeding +5.0 V or negative voltages.

\* Recalling preset conditions via the REMOTE CONTROL connector

- The preset conditions between the Begin and End address can be recalled by using the INC/DEC pins. The INC, DEC, and RETURN pins are Low active. Assert for at least one second.
- After setting is performed, wait for at least one second for the next setting.

\* GO/NO-GO output pins

- Outputs TTL High or Low for GO/NO-GO judgement.

\* Alarm output pin

- Outputs OR of three types of alarms displayed on the top screen in negative logic. Since the open collector output is used, pull up the circuit for connection.

\* Operation while using GPIB and Ethernet

- The REMOTE CONTROL connector is enabled even when operating the instrument via the GPIB (in remote control mode) and Ethernet. When the REMOTE CONTROL connector is not used, disconnect any equipment from the connector.

## 8. GPIB

Since this instrument provides the GPIB (IEEE 488) connector as standard, major functions can be remotely controlled via the GPIB interface.

### Note

The GPIB capability of this instrument is confirmed by using the GPIB board (PCI-GPIB, PCMCIA-GPIB) manufactured by National Instruments Corporation (NI). If other than the board mentioned above is used, operation may differ from the instructions in this manual. Therefore, the board mentioned above should be used when controlling this instrument.

### 8.1 Specifications

Standard      Conforms to ANSI/IEEE Std 488.1-1978  
LSI Used      TMS9914A or equivalent  
Code          ASCII

### 8.2 Interface Function

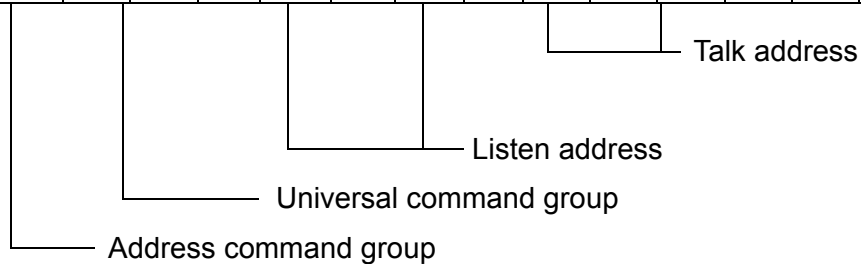
Table 8-1 Interface function

Function	Subset	Description
Source Handshake	SH1	All functions
Acceptor Handshake	AH1	All functions
Talker	T8	Basic talker function, canceling talker specified by listener
Listener	L4	Basic listener function, canceling listener specified by MTA
Service Request	SR0	No function
Remote/Local	RL2	No LLO function
Parallel Poll	PP0	No function
Device clear	DC1	All function
Device trigger	DT0	No function
Control	C0	No function
	E1	Open collector driver is used. State driver is used for EOI and DAV, however.

### 8.3 Interface Message Function

Table 8-2 Interface message and ASCII code

	Upper 4 bits	0		1		2		3		4		5		6		7	
Lower 4 bits		ASC	MSG	ASC	MSG	ASC	MSG	ASC	MSG	ASC	MSG	ASC	MSG	ASC	MSG	ASC	MSG
0		NUL				SPC		0		@		P		`		p	
1			GTL			!		1		A		Q		a		q	
2						"		2		B		R		b		r	
3						#		3		C		S		c		s	
4			SDC		DCL	\$		4		D		T		d		t	
5						%		5		E		U		e		u	
6						&		6		F		V		f		v	
7						'		7		G		W		g		w	
8						(		8		H		X		h		x	
9						)		9		I		Y		i		y	
A		LF				*		:		J		Z		j		z	
B						+		;		K		[		k		{	
C						,		<		L		¥		l			
D		CR				-		=		M		]		m		}	
E						.		>		N		^		n		~	
F						/		?	UNL	O		_	UNT	o			



### 8.4 GPIB Address

Settable Range      1 to 30  
 Setting Procedure    (Refer to Section 5.6.3)

## 8.5 Clear, Reset

The Clear and Reset modes can be controlled by using the commands. The followings describe the reply for the clear and reset operations.

### (1) IFC (Interface clear)

Reply of the universal command (IFC) is listed below.

- Cancels specified talker and listener.
- GPIB buffer and waiting command remain as is.
- Remote control conditions remain as is.
- Front panel control settings remain as is.

### (2) DCL, SDC (Device clear)

Reply of the universal command (DCL) and address command (SDC) are listed below.

- Clears the GPIB buffer and waiting command.
- Interface conditions (specified talker and listener conditions) is remained.
- Enables the remote control mode.
- Front panel control settings remain as is.

### (3) Returning power on

When the power is turned on again, the following operation is performed.

- Cancels specified talker and listener.
- Clears the GPIB buffer and waiting command.
- Enables the local control mode.
- Displays the top screen regardless of the display before turning power off.

## 8.6 REMOTE/LOCAL

The remote or local control mode can be selected by using the system controller and REMOTE key. Either remote or local control mode is always selected. Each status is described below.

### (1) Local control mode

The local control mode is selected under the following conditions:

- (a) Power is turned on. (Immediately after the instrument starts.)
- (b) The REMOTE LED is turned off by pressing the REMOTE key.
- (c) When GTL command is received.
- (d) Remote control mode is canceled.

### (2) Remote control mode

The remote control mode is enabled when the REN is in the truth state and this instrument is set to the listener. The REMOTE LED lights. In remote control mode, all front panel keys except the POWER switch and REMOTE key are disabled.

The instrument can be controlled via the ETHER connector. The REMOTE CONTROL connector can also be used to control this instrument. When the GPIB capability is enabled, do not connect the equipment (e.g., personal computer) to the ETHER or REMOTE CONTROL connector.

## 8.7 Multiline Message Command

Table 8-3 lists the multiline message command types and a reply to each command.

Table 8-3 Reply of multiline message command

Type	Name	Description	Reply
	CC	Clearing GPB buffer	Yes
	SPE	Setting serial polling to State	No
Universal	SPD	Clearing serial polling	No

- (3) Program message unit separator  
Use a semicolon ";" (3Bh in ASCII code) when transfers multiple messages simultaneously.
- (4) Program data separator  
Use a comma "," (2Ch in ASCII code) to delimit multiple parameters.

## 8.11 Program Code List

Table 8-4 Setting code list

	Header	Data		Description	Unit
1	SY	n	0 to 2	Selecting modulation mode	
2	TS	n	0 to 5	Selecting TS input	
		p	0 to 2	Type of TS input, or ROM video pattern	
		q	0 to 3	ROM screen size	
		r	0 to 2	ROM sound pattern	
3	CO	n	0 to 1	CN on (1), off (0)	
4	CN	i	0.0 to 30.0	Setting C/N value	dB
5	CU			CN value UP	
6	CD			CN value DOWN	
7	CL	n	0 to 2	Selecting digit of the C/N value to be set	
8	BO	n	0 to 1	Setting BER measurement on (1), off (0)	
9	BU	ne	0.00E-0 to 9.99E-1	Setting upper limit of BER threshold value	
10	BL	ne	0.00E-0 to 9.99E-1	Setting lower limit of BER threshold value	
11	BI	p	0.1 to 3600.0	Setting BER measurement interval	0.1 sec
12	CH	n		Setting channel	CH
13	RF	i	50.000 to 900.000	Setting RF frequency	MHz
14	FU			Frequency UP	
15	FD			Frequency DOWN	
16	DF	n	0 to 5	Selecting digit of the frequency to be set	
17	LM	i	-100.0 to 13.0	Setting output level	dBm
18	DU			Output level UP	
19	DD			Output level DOWN	
20	DL	n	0 to 2	Selecting digit of the output to be set	
21	CK	n	0 to 1	Selecting reference signal	
22	ST	n	0 to 99	Setting address to store data	
23	RC	n	0 to 99	Setting address to recall data	
24	RU			Address increment	
25	RD			Address decrement	
26	RR			Returning to begin address	
27	GR	n	0 to 9	Selecting group	
28	GS	n	0 to 9	Setting begin and end addresses in each group	
		p	0 to 98	Setting begin address	
		q	1 to 99	Setting end address	
29	CW	n	0 to 1	Setting modulation on (1), off (0)	

Table 8-5 Query code list

	Header	Data		Description	Reply
1	SY		?	Reading modulation mode selected	n
2	TS		?	Reading signal selected to TS input	n, p, q, r
3	CO		?	Reading setting status of CN on (1), off (0)	n
4	CN		?	Reading setting status of C/N value	i
5	CL		?	Reading setting status of step to be set	n
6	BO		?	Reading setting status of BER measurement on (1), off (0)	n
7	BR		?	Reading BER value	ne
8	BJ		?	Reading judgement results	ne, n
9	BU		?	Reading setting status of upper limit for BER threshold value	ne
10	BL		?	Reading setting status of lower limit for BER threshold value	ne
11	BI		?	Reading setting status of BER measurement interval	n, p
12	CH		?	Reading setting status of channel	n
13	RF		?	Reading setting status of RF frequency	i
14	DF		?	Reading setting status of digit to be set	n
15	LM		?	Reading setting status of output level	i
16	DL		?	Reading setting status of digit to be set	n
17	CK		?	Reading selection status of reference signal	n
18	GR		?	Reading selection status of group	n
19	GS	n	?	Reading setting status of begin and end addresses in each group	n, p
20	CW		?	Reading setting status of modulation	n

Refer to each Option instruction manual for specified program code of option.

## 8.12 Detail Program Code

This section describes the detail program codes listed in Section 8.11.

Definition:

n, p, q, r, s	0 and natural number
i	Integer including decimal point
ne	Real number including exponential number
_	Space (20h in ASCII code)

- Terminator is omitted for a syntax. Add the terminator at the end of the code (refer to Section 8.9).
- Header is not added for reply; the reply code consists of data only.

### (1) Selecting modulation mode..... "SY"

Function	Selecting and querying modulation mode.	
Syntax	SY_n	(Setting, reply)
	SY_?	(Query)

n	Modulation Mode Selection
0	8VSB
1	64QAM
2	256QAM

### (2) Selecting TS input..... "TS"

Function	Selecting and querying TS for channel coding.	
Syntax	TS_n (, p, q, r)	(Setting, reply)
	TS_?	(Query)

\* In this program code, the amount of consequent data depends on "n" selected.

n	TS Input Selection
0	PN
1	External ASI
2	External SPI
3	Internal (OP70)
4	Reserve (Not used)
5	ROM

\* "3" is only enabled when the Moving Picture Option (OP70) is installed.

For external ASI or external SPI

p	TS Type Selection
0	MPEG-2 TS
1	Reserve (Not used)



For Internal (OP70 installed. Reply only; no setting is required.)

p	Drive Used
0	HDD
1	DVD

For ROM

p	Pattern Selection
0	Color Bar
1	Ramp
2	Monoscope

q	Screen Size Selection
0	1920 x 1080i (16:9)
1	1280 x 720p (16:9)
2	704 x 480i (16:9)
3	704 x 480i (4:3)

r	Sound Pattern
0	L: 1 kHz, R: 400 Hz
1	L, R: 1 kHz
2	L, R: 400 Hz

- (1) For PN            TS\_0            (PN)  
 (2) For ASI, SPI    TS\_1, 0            (ASI, MPEG-2 TS)  
 (3) For ROM        TS\_5, 1, 0, 2      (Ramp, 1920x1080i, 400 Hz)  
 (4) For Internal    TS\_3 (At setting)  
                           Reply for TS\_?    3, 0

- \* Setting of "n" and following data are ignored when they are not matched.
- \* When playing back TS from HDD or DVD, setting the TS command forcibly stops playback operation.

- (3) Setting C/N on/off ..... "CO"  
 Function Setting and querying C/N set in Step (4) on/off.  
 Syntax CO\_n (Setting, reply)  
 CO\_? (Query)

n	C/N On/Off
0	Off
1	On

- (4) Setting and querying C/N value..... "CN"  
 Function Setting and querying C/N value added.  
 Syntax CN\_i (Setting, reply)  
 CN\_? (Query)

i C/N value: 0 to 31.0 (dB) Effective down to one digit after the decimal point

- (5) Incrementing C/N value..... "CU"  
 Function Incrementing C/N value in current steps.  
 Syntax CU (Setting)

- (6) Decrementing C/N value ..... "CD"  
 Function Decrementing C/N value in current steps.  
 Syntax CD (Setting)

- (7) Setting preset steps for C/N value..... "CL"  
 Function Setting preset steps for incrementing and decrementing C/N value.  
 Syntax CL\_n (Setting, reply)  
 CL\_? (Query)

n	C/N Value Steps
0	0.1
1	1.0
2	10.0

- (8) Setting BER measurement..... "BO"  
 Function Setting and querying BER measurement.  
 Syntax BO\_n (Setting, reply)  
 BO\_? (Query)

n	BER Measurement
0	Off
1	On

\* Only when Source on the TS Source screen is set to PN, this program code is turned on effectively and automatically.

(9) Reading BER measurement value ..... "BR"

Function Reading BER measurement value.

Syntax ne (Reply)  
BR\_? (Query)

BER value ne: Replied in exponential format of 0.00E-0

\* This program code can only be used when the Source on the TS Source screen is set to PN.

(10) Reading BER judgement results ..... "BJ"

Function Reading BER GO/NO-GO judgement results In accordance with measurement value.

Syntax ne\_n (Reply)  
BJ\_? (Query)

BER value ne: Replied in exponential format of 0.00E-0

n	BER Measurement
0	NO-GO
1	GO

\* This program code can only be used when the Source on the TS Source screen is set to PN.

(11) Setting upper limit of BER ..... "BU"

Function Setting and querying upper limit for GO/NO-GO judgement.

Syntax BU\_ne (Setting, reply)  
BU\_? (Query)

BER upper value ne: Exponential format of 0.00E-0

\* This program code can only be used when the Source onSource screen

(13) Setting BER measurement interval .... "BI"

Function    Setting and querying BER measurement interval.  
Syntax     BI\_p     (Setting, reply)  
            BI\_?     (Query)

BER measurement interval    p: 0.1 to 3600.0 sec.

Effective down to one digit after the decimal point.

\* The value set in second is converted into the number of packets ; it cannot be set in number of packets.

**Notes on program code for (8) to (13)**

When TS input is set other than the PN, both setting and querying operations are disabled.

(14) Setting RF channel..... "CH"

Function    Setting and querying RF channel (VHF, UHF, CATV).  
Syntax     CH\_n     (Setting, reply)  
            CH\_?     (Query)

n    RF channel     VHF, UHF, CATV channel  
n,    STD            STD setting of USA CATV channel  
n,    IRC            IRC setting of USA CATV channel  
n,    HRC            HRC setting of USA CATV channel

\* This program code is ignored when querying channel set in frequency.

(15) Setting RF frequency..... "RF"

Function    Setting and querying RF frequency.  
Syntax     RF\_i     (Setting, reply)  
            RF\_?     (Query)

i    RF frequency:    50.000 to 900.000 (MHz), effective down to three digits after decimal point

\* This program code is ignored when querying channel set in channel.

(16) Incrementing frequency or channel .... "FU"

Function    Incrementing frequency in current steps when RF is set in frequency.  
            Incrementing channel by one when RF is set in channel.  
Syntax     FU        (Setting)

(17) Decrementing frequency or channel .. "FD"

Function    Decrementing frequency in current steps when RF is set in frequency.  
            Decrementing channel by one when RF is set in channel.  
Syntax     FD        (Setting)

(18) Setting frequency in current steps "DF"

Function Setting and querying increment/decrement of frequency in current steps.

Syntax DF\_n (Setting, reply)  
DF\_? (Query)

n	Frequency Steps
0	0.001
1	0.01
2	0.1
3	1.0
4	10.0

\* This program code is ignored when frequency is set in channel.

(19) Setting output level....."LM"

Function Setting and querying output level.

Syntax LM\_i (Setting, reply)  
LM\_? (Query)

i Output level: 13.0 to -100.0 (dBm)  
Effective down to one digit after the decimal point

(20) Incrementing output level ..... "DU"

Function Incrementing output level in current steps.

Syntax DU (Setting)

(21) Decrementing output level....."DD"

Function Decrementing output level in current steps.

Syntax DD (Setting)

(22) Setting output level in current steps ... "DL"

Function Setting and querying increment/decrement of output level in current steps.

Syntax DL\_n (Setting, reply)  
DL\_? (Query)

n	Output Level Steps
0	0.1
1	1.0
2	10.0

- (23) Selecting reference clock "CK"  
 Function Setting and querying reference clock.  
 Syntax CK\_n (Setting, reply)  
           CK\_? (Query)

n	Reference Clock
0	Internal
1	External input

- (24) Writing preset memory ..... "ST"  
 Function Storing current setting conditions to specified number.  
 Syntax ST\_n (Setting)  
 n Preset number 0 to 99

- (25) Reading preset memory ..... "RC"  
 Function Reading preset values of specified number.  
 Syntax RC\_n (Setting)  
 n Preset number 0 to 99

- (26) Incrementing preset number ..... "RU"  
 Function Incrementing preset number.  
 Syntax RU (Setting)

- (27) Decrementing preset number ..... "RD"  
 Function Decrementing preset number.  
 Syntax RD (Setting)

- (28) Preset return..... "RR"  
 Function Returning preset number to top.  
 Syntax RR (Setting)

- (29) Selecting group ..... "GR"  
 Function Setting and querying group.  
 Syntax GR\_n (Setting, reply)  
           GR\_? (Query)  
 n Group number 0 to 9

- (30) Setting group "GS"  
 Function Setting and querying group.  
 Syntax GS\_n, p, q (Setting, reply)  
           GS\_n\_? (Query)
- n Group number 0 to 9  
 p Begin address 0 to 98  
 q End address 1 to 99

\* The address numbers should be: begin address < end address.

- (31) Setting modulation....."CW"  
 Function Setting and querying modulation.  
 Syntax CW\_n (Setting, reply)  
           CW\_? (Query)

n	Modulation
0	Modulation output
1	CW (carrier) output

## 9. ETHERNET

### 9.1 Connection

When constructing the network system via the ETHER connector, use a STP cable conforming to 100BASE-TX standards.

Use a straight cable when connecting the network via a hub. Use a cross cable when connecting a personal computer.

Network manager should set the TCP/IP of this instrument according to your local network environments.

### 9.2 Operating with Personal Computer

Use the TELNET when remotely controlling the LG 3803 by using a commuter. To startup the TELNET, refer to the personal computer instruction manual.

\* Starting TELNET with the Windows 2000

- ① Select TELNET from the START menu.
- ② When IP address assigned to the LG 3803 is "192.168.0.1," enter "TELNET 192.168.0.1."
- ③ The LG 3803 and TELNET is now connected.

When TELNET is started, "login:" is displayed. Enter "lg3803."

When "Password" is displayed, enter "lg3803."

The login name and password cannot be changed.

Prefix "rem" to the command listed in Tables 8-4 and 8-5 for run the system. Attach "?" after the command to read setting value.

Example 1: When setting the frequency to 500 MHz, output level to -60 dBm, proceed as follows:

rem  RF  500 ENTER

rem  LM  -60 ENTER

\*  is a space. Enter a space between header and data code.

Example 2: When reading the channel being set, proceed as follows:

rem  CH  ? ENTER

\* Enter a space between header, data code, and "?."

#### Notes on using Ethernet

This instrument can be controlled via the Ethernet even when operating via the GPIB interface, or REMOTE CONTROL mode is in operation. When Ethernet is only used, disconnect other cables.

\* Windows is a registered trademark of Microsoft Corporation.

Operation of this instrument is confirmed by using Windows 2000 (SP2), however, the system may operate incorrectly depending on the personal computer environments.



## 10. MAINTENANCE

The LG 3803 is designed to operate stably under normal handling. If you have questions regarding calibration and service, contact your local Leader agent.

### ■ Open Source

This instrument partially uses the open source distributed under the terms of the GNU General Public License. (<http://www.gnu.org/copyleft/gpl.html>)

When the source code is required, contact your local Leader agent.

### [ NOTE ]

1. We do not guarantee and support software distributed under the terms of the GNU General Public License.
2. We are not responsible for modifying and distributing this program on your side.
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