

FH 40GL/GX

Advanced Digital
Survey Meter



Thermo Eberline

FH 40GL/GX Advanced Digital Survey Meter

FEATURES

- VERSATILE MULTIPURPOSE METER
- LCD WITH DIGITAL READOUT AND A 3 DECADE LOGARITHMIC ANALOG BAR GRAPH
- BACKLIT LCD WITH LOW BATTERY INDICATOR
- SETUP AND CALIBRATION VIA WINDOWS PC PROGRAMS
- DATA LOGGING UP TO 256 DATA RECORDS
- AUTOMATICALLY ADJUSTING RESPONSE TIME
- LIGHTWEIGHT, RUGGED AND SPLASH PROOF
- LARGE KEY SWITCHES FACILITATE EASY OPERATION
- BUILT-IN SPEAKER WITH ADJUSTABLE CLICK RATE
- SIMULTANEOUSLY OPERATES AN INTERNAL AND EXTERNAL DETECTOR
- DOSE AND DOSE RATE ALARMS
- AUDIBLE AND VISUAL ALARM INDICATORS
- LONG BATTERY LIFE WITH STANDARD "AA" ALKALINE BATTERIES

GENERAL DESCRIPTION

The FH 40G series advanced digital survey meter is ideal for nearly all radiation protection measurements. This highly integrated design forwards a very versatile and user-friendly radiation measurement system which may be operated independantly or as part of a larger system or network.

Two basic models of the instrument are available. The Model FH 40GL is a complete self-contained unit with an internal proportional detector that can also function with external detectors to accomplish a variety of measurements. The Model FH 40GX is similar but without the internal proportional detector. The external probes utilized with either FH 40G model are "smart" with the calibration parameters retained in the probe itself facilitating the addition or change of probes.

USER-FRIENDLY

The measured values are displayed on a high contrast, backlit LCD type display. Measurements are presented in digital form and are accompanied with a 3 decade loga-rithmic analog bar graph for visual reference. This large format type user-interface keeps you informed with easily understood text messages to avoid any misinterpretation. This design also permits a large variety of measurement types and duties in a convenient fashion.

An intelligent ratemeter algorithm (ADF mode) is employed which guarantees immediate detection of even the smallest changes in dose rate while effectively suppressing random noise. Additional information such as alarm setting(s), audio speaker, battery voltage, external probe parameters, date and time and a host of user-selectable functions are included.

The FH 40G is light weight, fits snugly in the palm of your hand and is easy to operate thanks to its large size keys which facilitate users who must wear protective gloves while operating the instrument.

AUTOMATIC CONTROL

Internal diagnostics ensures proper functioning of the detector(s) and the electronics. If the battery voltage falls below a pre-defined value, the

corresponding icon on the display starts flashing giving the user 20 hours of remaining time before replacing the batteries.

ALARMS

It is possible to freely define one alarm threshold each for the dose rate and the dose. If any alarm threshold is surpassed, a permanent signal is emitted. In parallel to the measured value display, an audible speaker can be activated to signal detector pulses.

FLEXIBLE DATA STORAGE FOR FH40G SERIES AND EXTERNAL PROBE

The memory capacity of the FH 40G models are designed to take up 256 data records containing:

Measurement number, date, time dose rate of internal detector and external detector, status, and barcode information.

The stored measured values can be read directly from the LCD and accessed at any time.

For further processing and archiving purposes, it is possible to transfer all stored data to a PC via the FH 40G serial interface.



FH 40GL employed in the NBR-Mobile Detection System

SPECIFICATIONS: FH 40GL/GX

FH 40GL INTERNAL DETECTOR

Dose equivalent Hx: 10 nSv/h...1 Sv/h
Exposure: 1 μR/h ... 10R/h
Air Kerma: 10 nGy/h ... 1 Gy/h
 Energy Range: 30keV - 1.3MeV
Exposure: 1uR/h - 10R/h
 Polar Response: -90 to +90 (±20% for energy >65 keV)
 General
Overrange: at 100 Sv/h no display decrease
 Alarm Thresholds: dose rate 0 .. 99R/h (0 ... 999 mSv/h) dose 0 ...1000 R (0..10 Sv)
 Audible: 80db at 30cm
Interface: RS-232, infrared
Interference: Electromagnetic/RF shielded

case EN50 081-1, EN50 082-2
Batteries: 2 standard "AA", 250 hours with Alkaline, 500 hours with Lithium
Audible Signal: 80 dB (A) at 30 cm distance
Operating Temperature: - 22°F to 131°F (-30°C to 55°C)
Storage Temperature: -40° F to 158° F (-40°C to 70°C)
Size: 7.7" x 2.9" x 1.7" (195 x 73 x 42 mm)
Weight: 1.0 lbs. (453g) FH 40GL, with batteries

INSTRUMENT CONFIGURATION OPTIONS

FH40GL Includes internal proportional detector
FH40GX Without internal detector

OPTIONAL EXTERNAL PROBES

TeleProbe: A lightweight telescoping probe for gamma. Extends to 13 feet (4m) 10 μR/h -1000 R/h (100 nSv - 10 Sv/h)
UWDS: FHZ312 Energy compensated GM underwater probe, with 65' watertight cable, 10 mR/h to 10,000 R/h
FHZ512: 1" x 1" NaI probe
FHZ752S: BF³ Neutron probe, provides simultaneous gamma and neutron measurements when used with the FH 40GL
FHZ752SH: He³ Neutron probe, provides simultaneous gamma and neutron measurements when used with the FH 40GL

FHZ632L: Proportional probe, 100 μR/h -10R/h
FHZ672E: Highly sensitive Organic Scintillator and Proportional tube in one portable unit for NBR applications.
FHZ732GM GM Pancake, 1.75" Dia 1700 cpm/mR/h sensitivity

INSTRUMENT OPTIONS

FH40GOPT1 PC IR Interface cable,
FH40GOPT2 Windows PC Software,
FH40GOPT3 Windows PC Calibration Software,
FH40GOPT4 Coiled Cable, 1.2 m, FH 40G to external TeleProbe





FH 40G coupled together with FHZ-672E

Natural Background Reduction FH-40G with FHZ-672E probe

The FH40G/FHZ-672E combination of survey meter and probe provide an additional capability of Natural Background Reduction. This patented technology separates natural radioactivity from any artificial (man-made or enhanced) materials.

Unlike more complicated spectroscopy-based systems, the NBR designs employ standard plastic scintillation detectors and simple electronics which enhance the user-friendliness when deployed into the field. A key advantage of this technology is its ability to detect very small amounts of contamination while in the presence of fluctuating backgrounds.

Natural background fluctuations are the result of many different variables such as elevation, self-shielding (*ie water*), building materials, soil types, time of day, solar activity, and weather patterns that create varying radon levels due to changing ambient atmospheric pressure. The NBR technique removes the background component allowing the accurate measurement of sources.

This instrument combination has a measurement range between 0.1 μ R/h to 10 mR/h using the organic scintillator and can also be used in the dose rate range between 1- μ R/h to 2.5 R/h at energies from 48 keV to 1.3 MeV using the proportional tube in the FH40G.

At ambient background levels, this instrument is able to detect as little a 3 μ R/h of ^{137}Cs as artificial even in widely fluctuating backgrounds.

TeleProbe

The TeleProbe is a useful tool designed to enhance use-safety by placing distance between them and the potentially hot radioactive sources being measured. A detector mounted at the tip of the pole can be extended up to 13 feet to provide an accurate doserate measurement while limiting the user's exposure.



TeleProbe

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