



Fredenstein
Professional Audio

U70F
Peak Programme Meter

Operating Manual



Important Safety Instructions

1. Do Not try to service this product yourself! It may expose you to dangerous high voltage and other risks.
2. Do Not operate this product near water.
3. Do Not place or operate near or over radiator or heat register.
4. Do Not expose this product to dampness, dust or corrosive liquids.
5. Do Not connect this product and Disconnect from wall socket during a lightning or thunderstorm
6. Do Not obstruct this product ventilation slots, as insufficient airflow may harm this product.
7. Do Not insert any objects into the openings of the equipment.
8. Plug directly into wall socket (100Vac~240Vac). Do Not use an extension cord between this product and the AC power source.
9. When plugging this product into wall socket, make sure that electrical socket are not damaged, and no leakage for gas or water pipes to begin with.
10. Place the connecting cables carefully so people won't stumble or walk on it.
11. The equipment should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult the qualified technician.
12. Unplug the equipment from the mains and refer the product to qualified service personnel for the following conditions:
 - If liquid has been spilled on the product
 - If the product has been exposed to rain or water
13. Unplug from the wall socket before cleaning. Use a damp cloth for cleaning. Do not use liquid cleaners or aerosol cleaners

CAUTION!

The Federal Communication Commission warns the user that changes or modifications to the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Introduction

Congratulations to your new U70F 2-channel Peak Programme Meter (PPM). The name is the homage to the first PPM meter called U70, a tube based system developed and manufactured in Germany in the early 50s. Our new design uses advanced DSP technologies for improved performance and offers the following features:

- **XLR balanced inputs and outputs**
- **The audio pass through feature simplifies the connection of the U70F**
- **Independent 60 LED scales with five illuminated scale markers per channel.
(Non-multiplexed for flicker-free operation)**
- **dB linear scales for improved readability**
- **Switchable scales: -39 dB to +20 dB with a linear resolution of 1 dB per step or
-19.5 dB to +10 dB with a linear resolution of 0.5 dB per step**
- **Selectable Dot or Bar display characteristics**
- **Selectable Peak-Hold functions with hold times of 2.5s or indefinitely with
manual reset**
- **Display modes:
PPM Bar Mode,
PPM Dot Mode,
RMS Bar Mode,
PPM Dot and RMS Bar Mode (default) operated simultaneously
Every mode supports the additional Peak Hold feature.**
- **Integrated universal power-supply (90 – 240 VAC, 50 – 60 Hz) with IEC connector**
- **Rack-mount or table-top operation**
- **Standard 19 inch 1U enclosure**

PPM metering is more important than ever in modern digital recording since A/D converters do not clip gracefully at all. VU metering is too slow and unable to correctly display transients and other complex waveforms. Monitoring the recording levels after the A/D conversion in the digital domain cannot show any “overs” and will give false readings. The U70F offers a high quality solution to these problems, latency free true over-sampled peak metering. In addition, the simultaneous true RMS feature allows the recording/mastering engineer to judge the “loudness” of the program. This especially important to insure the program will be on par with others when playing on radio/ TV stations, internet streams or portable music players. The peak hold feature with manual reset allows users to read the maximum peak value of a complete program.

Operating Instructions:

The On/Off switch is located on the back-panel close to the AC inlet. After turning the U70F on, the instrument will go through a test and calibration cycle. First a single dot will ascend and then invert and descend. The illumination of the 10 green LEDs will indicate the successful completion of this cycle and the instrument is then ready for normal operation. A failure of the self-test and/or the calibration will be light the 10 red LEDs. In this case the instrument will need to be repaired by **Fredenstein** or an authorized service representative. Do not open yourself the U70F, high voltage is present inside and can lead to a potentially fatal electric shock.

Audio I/O Connection

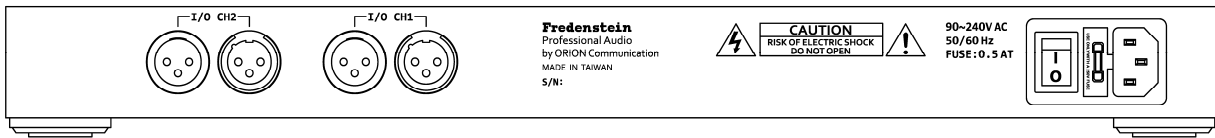


Fig. 1 Back view of U70F

There are two audio I/O channels of U70F. Each channel features an XLR balanced input and output to simplify the insertion of the U70F between the source and the destination equipment.

Standard calibration is +4 dBu (1.23V sine-wave at 1 kHz) for a 0 dB meter reading. The U70F is a PPM calibrated in RMS values. Other calibration levels are available at the time of ordering.

Operating Modes

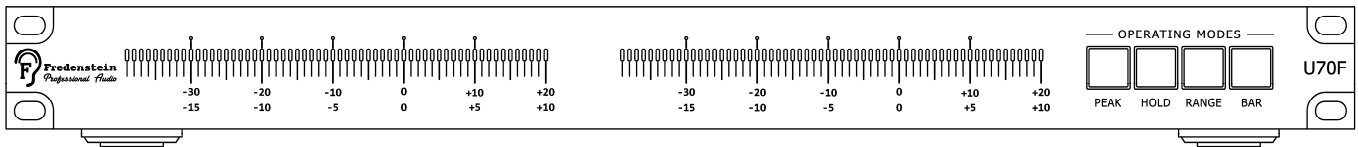


Fig. 2 Front view of U70F

The four illuminated push button switches on the right side of the front-panel determine the operating modes (labeled **PEAK**, **HOLD**, **RANGE**, and **BAR**)

- PEAK :** Engages the Peak Hold mode with a 2.5s hold time
- HOLD:** Engages the Peak Hold mode with manual reset. To reset the peak value simply release the switch and engage it again.
- RANGE:** Engages: the high resolution meter range of -19.5 to +10 dB (0.5 dB/step), if not engaged the range is -39 dB to +20 dB (1 dB/step).
- BAR:** Engages the bar display mode, if not engaged the dot mode is selected (like a traditional U70)

If the **BAR** switch is engaged and then disengaged within three seconds, there are three different modes can be sequentially selected:

a) Simultaneous PPM Dot and RMS Bar Mode (Default mode after power-up)

b) PPM Dot Mode

c) RMS Bar Mode

Normally, if engage for more than 3 seconds, the **BAR** switch toggles between the Bar Mode and the selected Dot Mode.

The U70F is only designed to work properly with balanced audio signals. Unbalanced signals will not be able to drive the meter above +4 dB on the scale.

If mounting in a standard 19" audio rack is desired, please release the four feet by removing their center screws.

Technical Data:

Inputs and outputs	balanced XLR connectors with audio pass-through
Insertion loss	0 dB
Frequency response	20 Hz to 20 kHz -0.25 dB
Peak Attack time	< 10ms
RMS Integration time	330ms
Sampling frequency	200 kHz
Release time	1.5s/20dB in 1dB/step, 2.25s/20dB in 0.5dB/step
Maximum input level	+28dBu
Input impedance	> 5 k Ω
Standard calibration level	+4 dBu (1.23V sine-wave at 1kHz) for 0 dB reading
Mains	90 – 240VAC, 50 – 60 Hz with IEC power-cord
Power consumption	Max. 15W
Fuse	0.5AT (5x20 Type)
Dimensions(LxHxD)	482mmX50mmX140mm
Weight	1.6Kg

Packaging content:

U70F PPM Meter	x 1
Country specific power cord	x 1
Operating Manual (English)	x 1

Appendix A:

Calibration mode:

Warning: Only trained qualified personnel may open covers and performs this procedure.

To calibrate the U70F a precision, balanced output, amplitude jitter-free sine-wave generator, a small Philips screwdriver, and a very small flat-head screwdriver are necessary.

- Step 1: Turn-off the power switch located on the back-panel. Disconnect the mains cord.
- Step 2: Open the top-cover after removing all screws with a small Philips driver.
- Step 3: Engage all four switches on the front-panel (labeled PEAK, HOLD, RANGE, and BAR)
- Step 4: Re-connect the mains cable and turn power back on
- Step 5: Disengage the two switches in the middle (labeled HOLD and RANGE) during the self-test and calibration cycle. The U70F will enter calibration mode after the completion of the self-test.
- Step 6: Apply the desired balanced input signal (1 kHz sine-wave), 1.23V for +4dBu or any other level between +2dBu and +20dBu. The display will either show all yellow LEDs [-39 dB to +20 dB] illuminated if the level is too low, all green LEDs [-9 dB to 0 dB] if the level is correct, or all red LEDs [+1 dB to +10 dB] if the level is too high.
- Step 7: Adjust the Level controls located on the meter PCBs counter-clockwise if the level is too low or clockwise if the level is too high. The level adjustment control takes 10 turn from maximum to minimum, so please be patient and keep turning. The procedure allows a calibration accuracy of less than a +-0.1% (+-1dB is about +-10%).
- Step 8: Press any button to return to the normal operating mode.
- Step 9: Turn the instrument off, disconnect power and put the top-cover back on.