

## General Information

The Farran Technology Ltd (FTL) FEV-10 frequency extension modules are optional equipment to extend frequency range of customer owned Vector Network Analyzers. Together with FTL frequency extension controller FEC-01/FEC-02 allow measurements in range from 75 GHz to 110 GHz (W - band) using Agilent PNA/PNA-X or Anritsu 37XXXD/Vector Star VNAs.

The FEV-10-TR frequency extension heads consist of a dual-directional coupler, a frequency multiplier for upconversion and two harmonic mixers for reference and test signal probing. The FEV-10-TR-ATT is equipped with a precision manual variable attenuator allowing output power regulation from 0 – 30 dB.

As a basic set up the FTL frequency extension solution comes with the following:

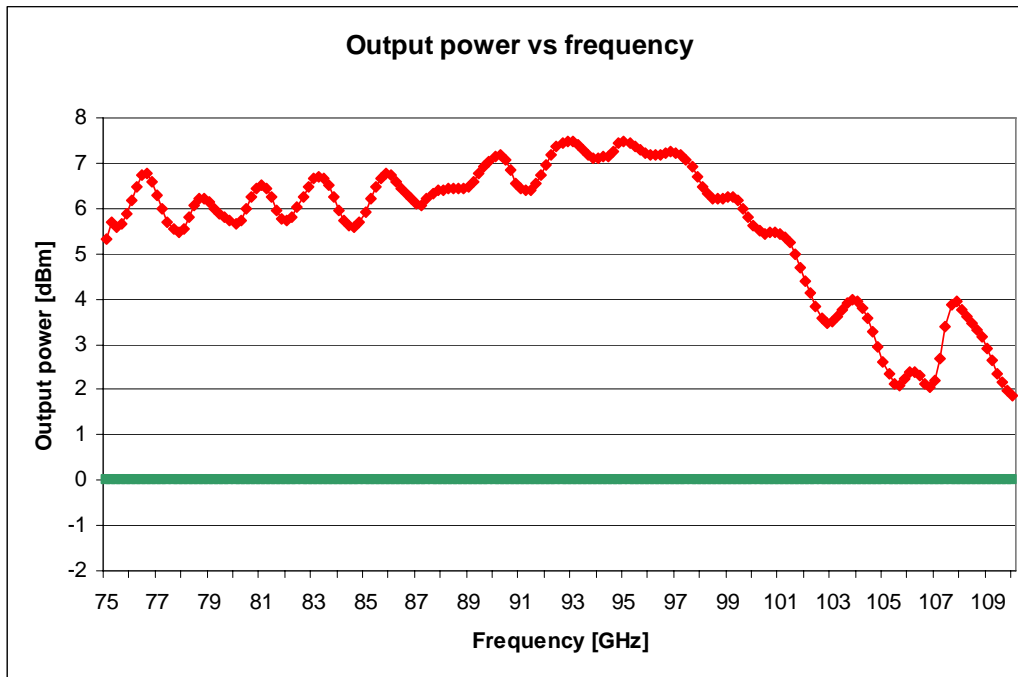
- 1 off FEV-10-TR-ATT
- 1 off FEV-10-TR
- 1 off FEC-01 (for Anritsu VNA) or FEC-02 for (Agilent VNA)
- 1 set of RF and IF coaxial cables for interfacing FEVs with FEC
- 1 set of RF and IF coaxial cables for interfacing FEC with the VNA
- 1 off WR-10 calibration kit including dowel pins, hex ball torque driver and two precision waveguide sections with anti-cocking flanges

## Electrical Specification

Waveguide designation	WR-10, WG 27, R900
Port flange type	Anti-cocking precision flange UG387/U-M
Frequency range	75 GHz to 110 GHz
Output power	+2 dBm
Output power level control	0 – 30 dB, manual
Damage level	+10 dBm
System dynamic range *	> 90 dB min, >100 dB typ.
RF input connector	3.5 mm, female
RF input frequency range	12.5 – 18.4 GHz
RF input power range	0 – 10 dBm
LO input connector	3.5 mm, female
LO input frequency range	9.375 GHz to 13.75 GHz
LO input power range	5 – 10 dBm
IF Test output connector	3.5 mm, female
IF Test frequency range	5 – 300 MHz
IF Ref output connector	SMA, female
IF Ref frequency range	5 – 300 MHz

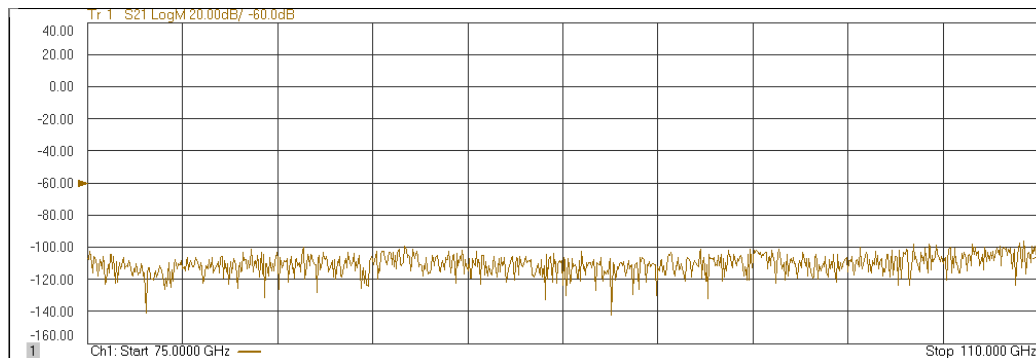
*Note: The “System Dynamic Range” is defined as the ratio of the maximum power available at the port to the Noise Floor at this port. The “Noise Floor” is defined as the minimum detectable signal at the port for a 10 Hz of IF bandwidth.*

## Typical RF output power plot



Test port output power versus frequency

## Typical dynamic range plot



System dynamic range versus frequency

Datasheet

**Power supply**

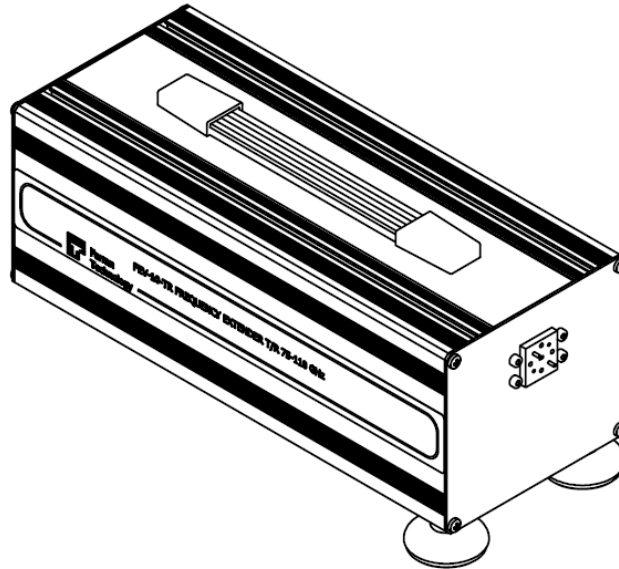
Connector type	LEMO 4 pin socket
Voltage	+6 V
Current	< 1300 mA

**General specifications**

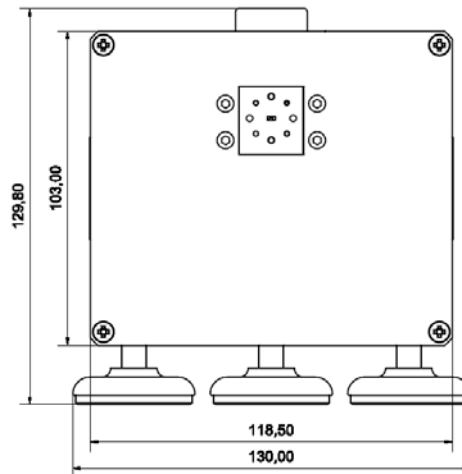
Operating temperature range	+0 °C to +30°C
Storage temperature	-20 °C to +50 °C
Dimensions (W x H x D)	290 mm x 130 mm x 130 mm
Number of feet	3
Feet height	0 to 40 mm
Weight	3.5 kg

Specifications apply under the following conditions:

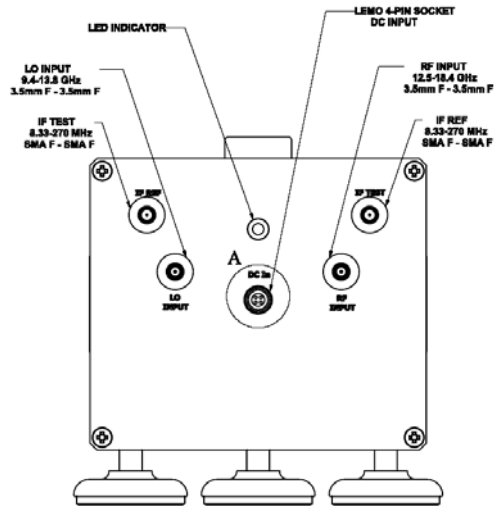
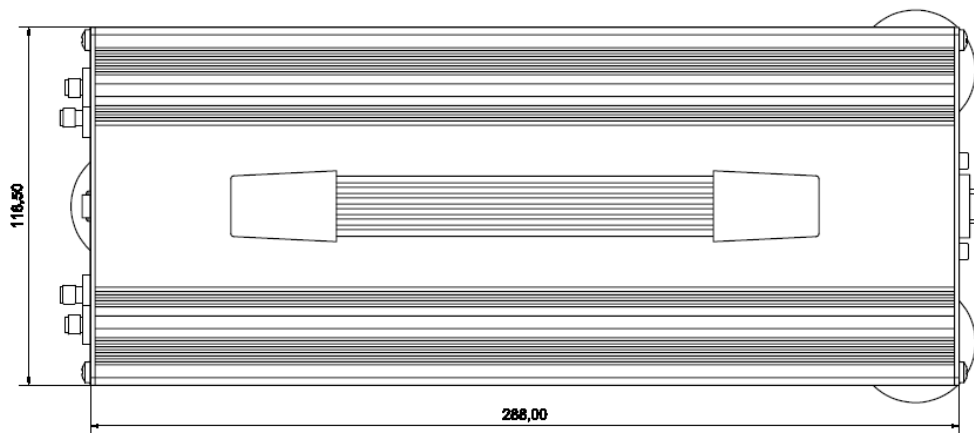
- 2h warm-up time under ambient temperature for FEV-10
- 2h warm-up time under ambient temperature for Agilent or Anritsu VNAs and signal sources if used in the system
- Calibration performed

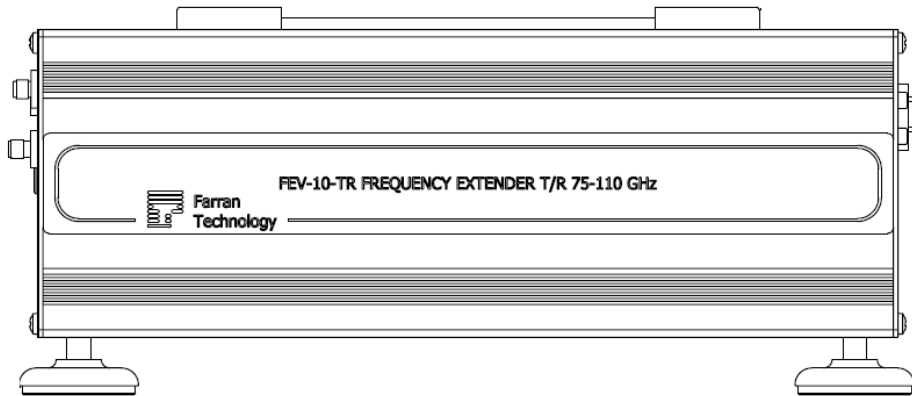
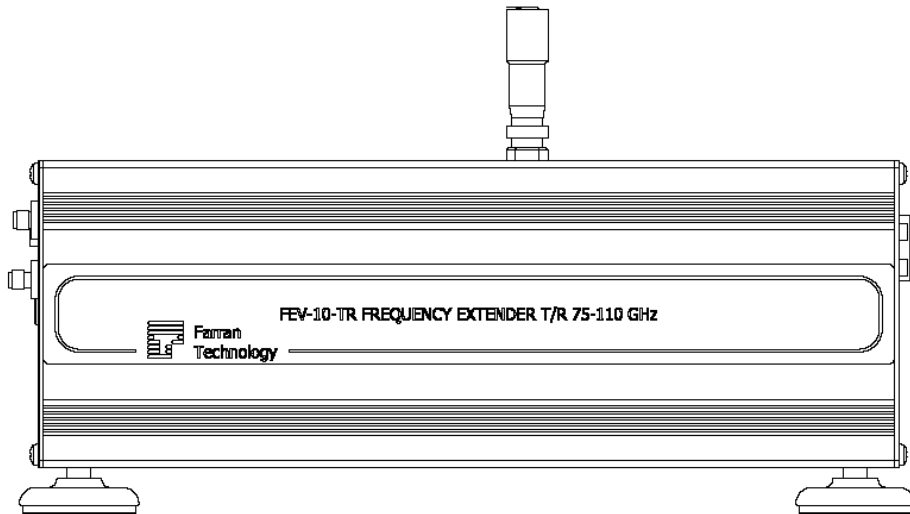


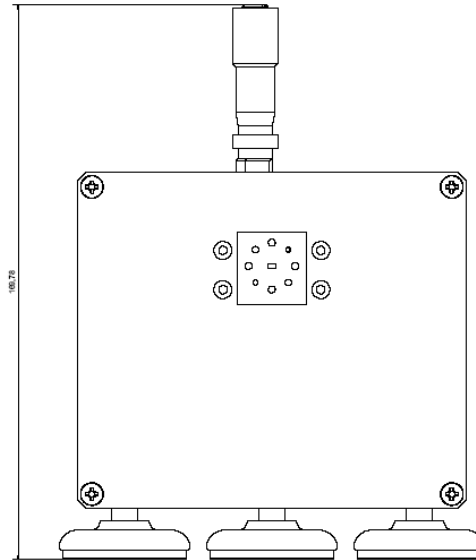
**FEV-10-TR angle view**



**FEV-10-TR front view**


**FEV-10-TR rear view**

**FEV-10-TR top view**

**FEV-10-TR side view****FEV-10-TR-ATT side view**



**FEV-10-TR-ATT front view**