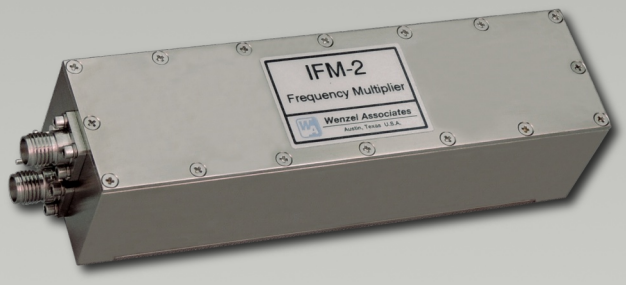
# Blue Tops RF Modules > Integrated Frequency Multiplier (IFM-2)

## Features:

- Input Frequency: 5 MHz to 4 GHz
- Multiplication Factors: x4 to x81
- Output Frequency to 16 GHz
- Low Conversion Loss
- Intrinsic Phase Noise to -176 dBc/Hz
- Integral Filters and Amplifiers

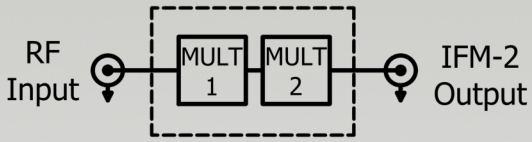
## Applications:

- Synthesizer Building Block
- Communication Systems
- Radar Systems
- Electronic Warfare Systems



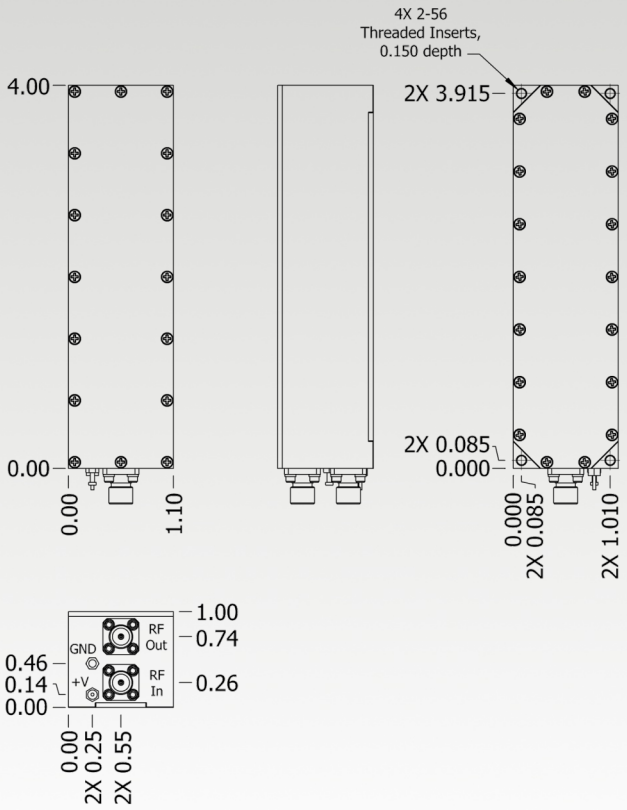

## Description:

The IFM-2 is a low noise multiplier module, which combines low noise multipliers, bandpass filters and amplifiers to achieve exceptionally low phase noise, excellent spectral purity and good conversion efficiency. Multiplication factors of x4 to x81 are available using a combination of two (2) standard multipliers (2, 3, 4, 5, 7, 9 and 11) with an output frequency to 16 GHz. The IFM-2 provides input referred phase noise floors to -176 dBc/Hz. Please consult Wenzel technical staff for assistance in configuring a multiplier to suit specific requirements.




| Electrical Specifications | | | |
|---|---|---|---|
| **Input Frequency Range** | 5 MHz to 4 GHz, fixed | | |
| **Multiplication Factor** (Fixed)<br>Consists of a combination of two (2) standard multipliers. Input frequency limitations apply. See "Ordering Information" for more details. | x4 | to | x81 |
| Max Input Frequency: | 4 GHz | | 5 MHz |
| **Input Level** | +12 dBm to +15 dBm, fixed (±1 dB) | | |
| **Output Frequency** | to 16 GHz | | |
| **Output Level** | to +20 dBm (±2 dB) | | |
| **Phase Noise Floor** (Intrinsic, Input Referred) | to -176 dBc/Hz | | |
| **Conversion Loss** | -3 dB to +5 dB | | |
| **Harmonics** | ≤ -25 dBc | | |
| **Sub-Harmonics** | ≤ -60 dBc | | |
| **Spurious** (Excluding Supply Line Related Spurs) | ≤ -80 dBc | | |
| **Supply Voltage** | +15 VDC ±2% | | |
| **Current Draw** (Configuration Dependent) | 150 to 350 mA | | |
| **Operating Temperature** | +25 ±5°C ** | | |
| **Storage Temperature** | -40 to +85°C | | |
| **Mechanical** | | | |
| **Dimensions** | 1.1" x 4" x 1" | | |
| **DC Supply** | Feed Thru Capacitor Solder Pin | | |
| **Ground** | Turret Terminal Solder Pin | | |
| **RF Input / Output** | SMA female * | | |

* SMA female connectors are used unless otherwise specifed. Contact factory for custom configurations.
** Please consult factory for custom Operating Temperature range options and capability.



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## Ordering Information:

**IFM-2 - F - M - I - O**

- Model
- Input Frequency (MHz, 5 to 4000) **
- Multiplication Factor (fixed, x4 to x81) **
- Input Level (dBm, +12 to +15)
- Output Level (dBm, to +20 dBm)

** The multiplication factor selected will be a combination of two (2) standard multipliers (x2, x3, x4, x5, x7, x9 and x11), which are cascaded together. Please note that each of the multiplier stages have minimum and maximum input frequency limitations, which must be considered when selecting an input frequency and overall multiplication factor. See the "Standard Multiplier Frequency Limits" table for details. Consult factory to verify that the selected input frequency and multiplication factor is a valid configuration before ordering.

| Standard Multiplier Frequency Limits | | |
|---|---|---|
| Multiplier | Minimum Input Frequency | Maximum Input Frequency |
| **x2** | 5 MHz | 8 GHz |
| **x3** | 5 MHz | 5 GHz |
| **x4** | 5 MHz | 250 MHz |
| **x5** | 5 MHz | 700 MHz |
| **x7** | 5 MHz | 550 MHz |
| **x9** | 5 MHz | 50 MHz |
| **x11** | 5 MHz | 10 MHz |

| Standard P/N | Input Frequency | Multiplication Factor | Input Level | Output Level | Output Frequency | Input Referred Residual Phase Noise (100 kHz offset) | Supply Voltage |
|---|---|---|---|---|---|---|---|
| **IFM-2-1000-4-13-13** | 1000 MHz | **x4** (2 x 2) | +13 dBm | +13 dBm | 4000 MHz | ≤ -170 dBc/Hz | +15 VDC |
| **IFM-2-100-6-13-13** | 100 MHz | **x6** (3 x 2) | +13 dBm | +13 dBm | 600 MHz | ≤ -176 dBc/Hz | +15 VDC |
| **IFM-2-500-9-13-13** | 500 MHz | **x9** (3 x 3) | +13 dBm | +13 dBm | 4500 MHz | ≤ -170 dBc/Hz | +15 VDC |
| **IFM-2-100-10-13-13** | 100 MHz | **x10** (5 x 2) | +13 dBm | +13 dBm | 1000 MHz | ≤ -176 dBc/Hz | +15 VDC |
| **IFM-2-100-12-13-13** | 100 MHz | **x12** (4 x 3) | +13 dBm | +13 dBm | 1200 MHz | ≤ -170 dBc/Hz | +15 VDC |
| **IFM-2-100-14-13-13** | 100 MHz | **x14** (7 x 2) | +13 dBm | +13 dBm | 1400 MHz | ≤ -174 dBc/Hz | +15 VDC |
| **IFM-2-100-15-13-13** | 100 MHz | **x15** (5 x 3) | +13 dBm | +13 dBm | 1500 MHz | ≤ -176 dBc/Hz | +15 VDC |
| **IFM-2-100-21-13-13** | 100 MHz | **x21** (7 x 3) | +13 dBm | +13 dBm | 2100 MHz | ≤ -174 dBc/Hz | +15 VDC |
| **IFM-2-80-25-13-13** | 80 MHz | **x25** (5 x 5 ) | +13 dBm | +13 dBm | 2000 MHz | ≤ -176 dBc/Hz | +15 VDC |
| **IFM-2-10-35-13-13** | 10 MHz | **x35** (7 x 5) | +13 dBm | +13 dBm | 350 MHz | ≤ -174 dBc/Hz | +15 VDC |



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