

'Instant RF' Building Blocks Generate, Receive, Attenuate from 100 KHz to 1 GHz

Each module comprises a complete, stand alone function such as RF generator, FM receiver or programmable attenuator. All modules operate over the range of 100 KHz to 1 GHz, making them ideal for application in OEM signal generators, test sources and receivers, signal level meters, frequency hopping systems, transmitter simulators and other situations where a wide range, stable RF platform is needed.

Fast time to market for your product - with proven RF performance !

Bring wide bandwidth RF capability to virtually any product without any time consuming RF expertise. Imagine the speed at which new products can be developed!

The usual critical and problematic RF portion of your next product is now as simple as a small fully shielded module. These compact units package this RF capability into simple, small low cost building block modules that are very easy to use. Customers around the world are using these modules in a number of products, from communications test equipment to built-in test sources to broadband frequency hopping communications links. What's your application?

Design in exceptional RF capabilities - in an afternoon!

These RF modules are easy to use! The SGM-1000 RF generator module's output frequency is programmed via a high speed 8 bit port to within 1 Hz from 100 KHz to 1 GHz and is capable of digitally controlled FM, analog direct FM and AM modulation. Level flatness is within +/- 2 dB and maximum output level is +10 dBm. Typical phase noise performance of -95 dBc at 10 kHz offset, harmonics typically -30 dBc. Direct digital FM can be performed via direct mapping of the instantaneous output frequency at rates of up to 50 KHz, which is ideal for precise FM signalling formats such as paging and FSK as well as frequency hopping systems. Analog direct FM utilizes two point modulation for rates from 50 Hz to over 50 KHz. Amplitude control over a typical 30 dB range is available, allowing AM modulation or level flattening within the system installed.

The FRM-1000 FM receiver's frequency is programmed via an SPI port to within 1.5 Hz from 100 KHz to 1 GHz. Rapid frequency changes can be performed via the SPI port, directly mapping the instantaneous received frequency at rates of up to 50 KHz, which is ideal for precise FM frequency hopping systems. Typical sensitivity is -110 dbm with a 15 KHz IF bandwidth. Triple conversion design utilizes IFs at 1030, 45 and 0.45 MHz. Outputs available are both filtered and raw audio, RSSI from -110 to -70 dbm, squelch, and synthesizer lock detect.

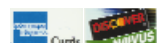
Both the FRM-1000 and SGM-1000 utilize a 50 MHz frequency reference. The SGM-1000 also has the capability of using an on-board 50 MHz frequency standard in either 0.1 or 1.0 ppm frequency stability.

The ATN-1000 attenuator module is programmed serially with the desired attenuation from 0 to 135 db in 1 db steps. Power levels of up to +20 dbm can be handled, insertion loss is 8 db and flatness is within +/- 1 db.

To allow easy test and evaluation of these modules, a stand alone 'exerciser' board with integral keyboard and LCD display is available, allowing most major features of the modules to be conveniently evaluated. Demonstration software is also available to allow quick 'in product' integration of these building blocks.



Order on-line at www.ramseytest.com or call our Order Line at 800-446-2295



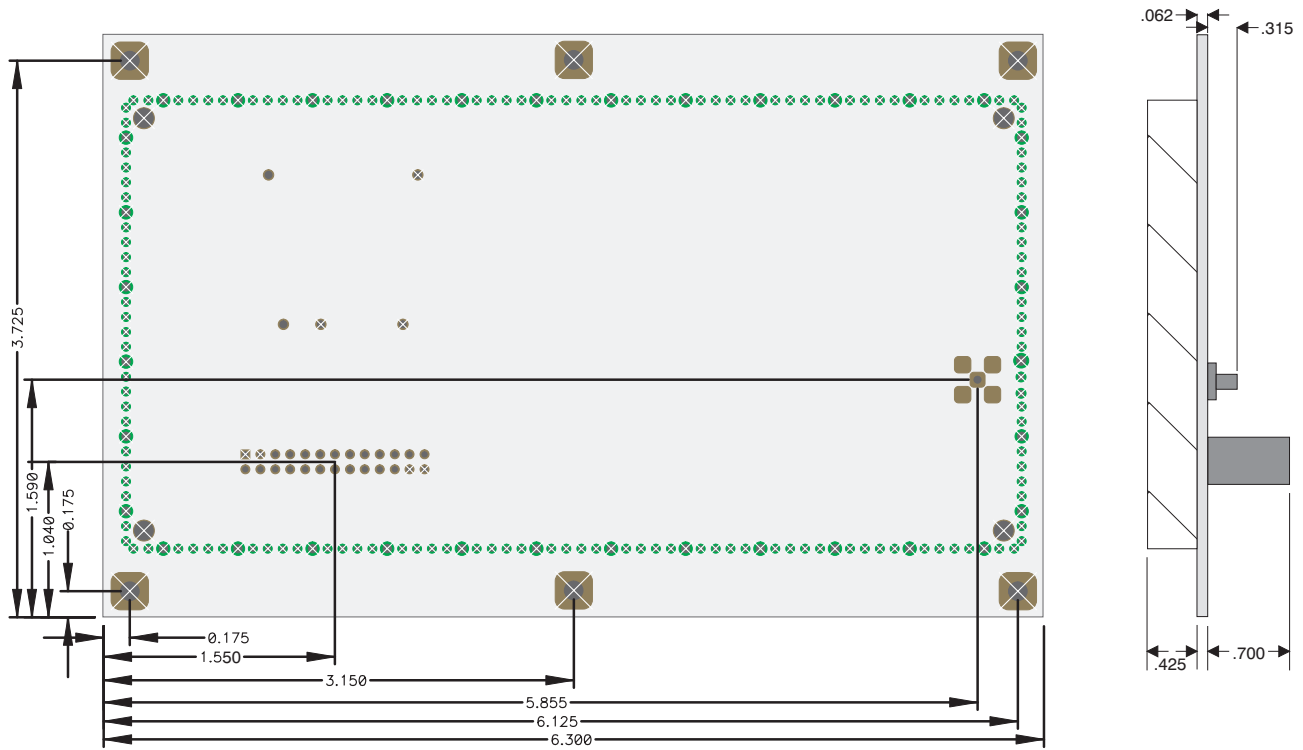
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SGM SERIES MODULES

SGM-1000 Mechanical dimensions and connector pinout



SGM-1000 Connector pinout

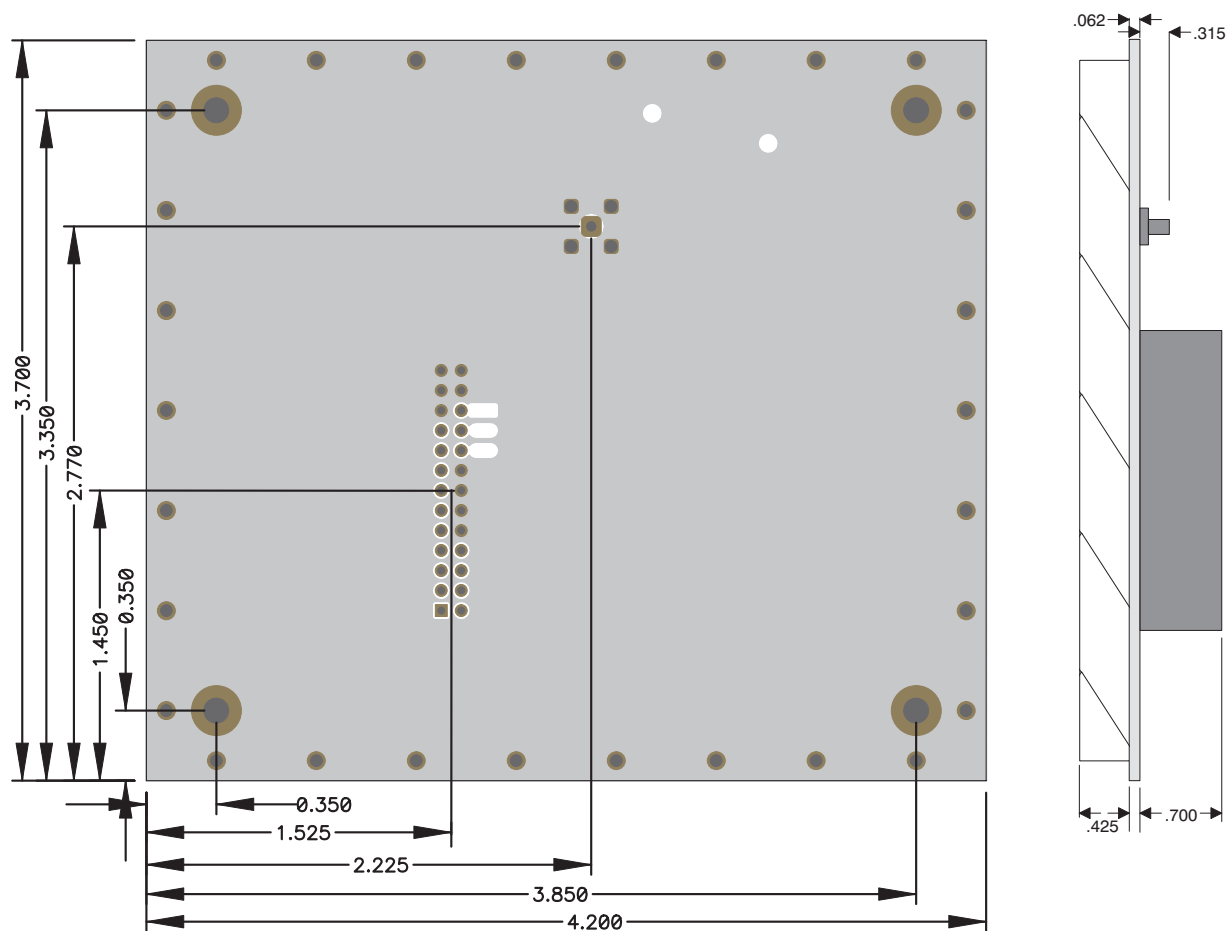
- | | | | | |
|----|--|---|---|------------------------|
| 1 | Gnd | | | |
| 2 | FM mod in, typical 1 V p-p for 17 KHz deviation | | | |
| 3 | Gnd | | | |
| 4 | +24 V @ 10 mA | | | |
| 5 | +12 V @ 250 mA | | | |
| 6 | +5 V @ 250 mA | | | |
| 7 | +5 V (tied to pin 6) | | | |
| 8 | DDS reset | | | |
| 9 | DDS D7 | | | |
| 10 | DDS D6 | | | |
| 11 | DDS D5 | | | |
| 12 | DDS D4 | | | |
| 13 | DDS load | | | |
| 14 | DDS write | | | |
| 15 | DDS D0 | | | |
| 16 | DDS D1 | | | |
| 17 | DDS D2 | | | Bandswitch |
| 18 | DDS D3 | A | B | Freq - MHz |
| 19 | Bandswitch B | 0 | 1 | 0- 250 |
| 20 | -12 V @ 10 mA | 1 | 0 | 250 - 500 |
| 21 | Bandswitch A | 0 | 0 | 500 - 1000 |
| 22 | Power control | | | 1 = 0 dBm, 0 = +10 dBm |
| 23 | AM mod in, typical 600 mV p-p for 50% modulation | | | |
| 24 | Gnd | | | |
| 25 | 50 MHz clock, 100 mV - 1 V p-p | | | |
| 26 | Gnd | | | |

SGM-1000 Specifications

- Frequency Range: 100 KHz to 1000 MHz
- Resolution: 0.75 Hz, continuous tuning
- Reference Frequency: 50 MHz
- Reference freq level: 100 mV - 1 V p-p
- Harmonics: -30 dBc typical
- Non-harmonics: -50 dBc typical
- Residual FM: 5 Hz typical, 0.3 to 3 KHz detection BW
- Residual AM: -60 dBc (>10 KHz from carrier)
- 0.3 to 3 KHz detection BW
- Output level: +10 dBm
- Output impedance: 50 Ohms
- Level flatness: ± 2.0 dB (1 - 1000 MHz)
- FM mod flatness: at 50 KHz deviation, +/- 2 KHz from 500 - 1000 MHz
- FM mod sensitivity: typical 1 V p-p for 17 KHz deviation
- Max deviation: 250 KHz; except 250 - 500 MHz, 125 KHz
- Amplitude modulation depth: 0 - 90%
- AM mod sensitivity: typical 600 mV p-p for 50%
- AM Distortion: 5% (>70%), 3% (<70%)

All logic levels are +5 V CMOS/TTL

FRM-1000 Mechanical dimensions and connector pinout



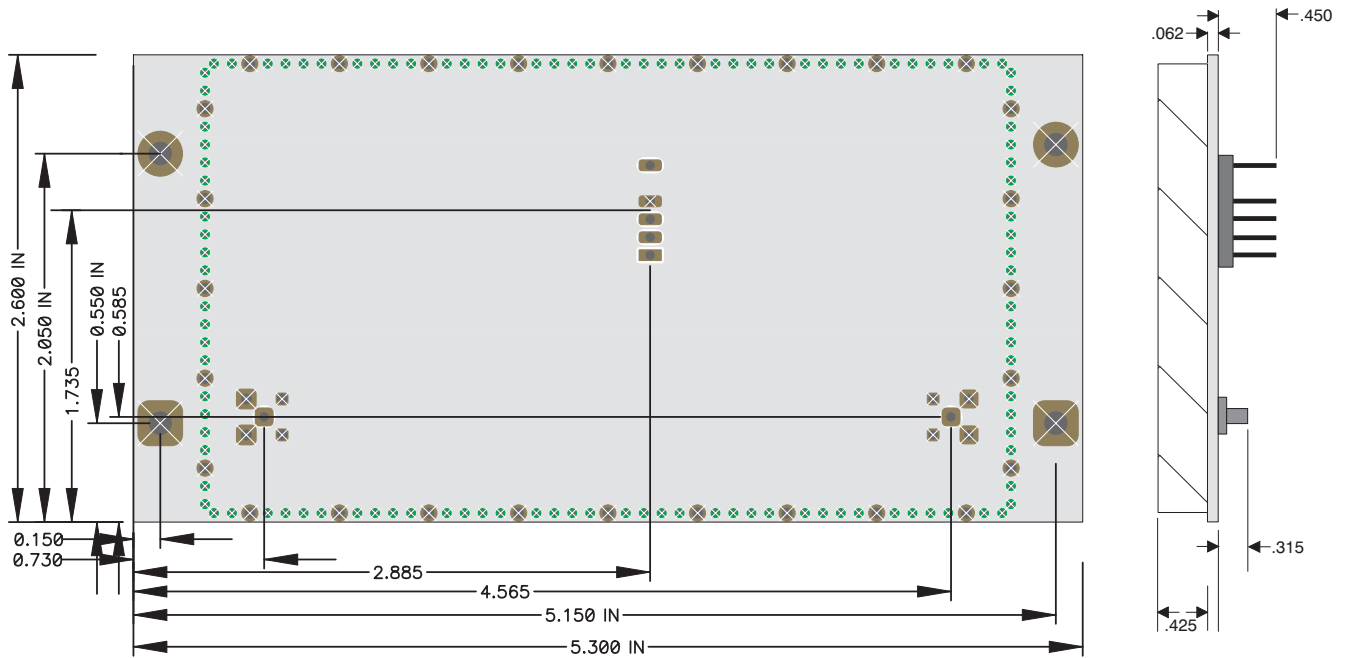
FRM-1000 Connector pinout

FRM-1000 Specifications

1	+12 V @ 100 mA
2	450 KHz IF output sample, 100 mV p-p
3	+24 V @ 10 mA
4	Receive data output
5	N/C
6	+5 V @ 50 mA, Receiver circuits
7	+5 V @ 50 mA, DDS circuits
8	DDS reset
9	DDS data
10	Gnd
11	DDS clock
12	Gnd
13	DDS load
14	Gnd
15	50 MHz clock, 100 mV - 1 V p-p
16	Gnd
17	Synthesizer lock detect, 1 = unlocked
18	Receive audio output, 100 mV p-p
19	RSSI output, 0.2 - 3 V typical
20	Squelch output, 0 when squelched
21	Gnd
22	N/C
23	Gnd
24	Gnd
25	Gnd
26	Gnd

Frequency Range: 100 KHz to 1000 MHz
 Resolution: 1.5 Hz, continuous tuning
 Reference Frequency: 50 MHz
 Reference freq level: 100 mV - 1 V p-p
 Conversions: triple at 1030 MHz, 45 MHz, 450 KHz
 Sensitivity: 2 uV for 12 dB sinad
 Image rejection: 60 dB
 Selectivity: 60 dB at 30 KHz
 Audio output level: 500 mV typical for 5 kHz peak FM
 Antenna input impedance: 50 Ohms
 RSSI level: 1 - 4 V, -110 to -70 dBm input
 Data output: unfiltered demod audio, 500 mV p-p
 IF output sample: 50 mV typical at 450 KHz
 IF bandwidth: 15 KHz
 Lock detect: CMOS logic 1 level at lock

ATN-1000 Mechanical dimensions and connector pinout



ATN-1000 Connector pinout

- 1 Clock
- 2 Data
- 3 Enable
- 4 Gnd
- 5 missing pin
- 6 +5 V @ 20 mA

ATN-1000 Specifications

Frequency range: DC - 2,500 MHz
Flatness: +/- 1 dB, DC - 1000 MHz
Maximum attenuation: 135 dB
Insertion loss: 10 dB
Maximum power: +30 dBm