The Model Series xx/xxS1G18 are portable, self-contained, air-cooled, dual-band, broadband, completely solid-state amplifiers designed for applications where instantaneous bandwidth, high gain and linearity are required.

The models are equipped with a Digital Control Panel (DCP) which provides both local and remote control of the amplifier. The digital display on the front panel indicates control status and reports of internal amplifier status. All amplifier control functions and status indications are available remotely in GPIB/IEEE-488 format, RS-232 hardwire and fiber optic, USB, and Ethernet.

These models are designed to have low spurious signals, exhibit very good linearity, and are extremely load tolerant which enables them to be used in many RF applications such as: RF susceptibility testing, antenna/component testing, and communication technology testing. They can be used as test instruments covering multiple frequency bands and are suitable for a variety of communication technologies such as CDMA, W-CDMA, TDMA, GSM, UWB, WiMAX etc.

These models have the ability to be upgraded at a later date to the highest power levels listed in the model configurations.

The export classification for these amplifiers is 3A001. These commodities, technology or software are controlled for export in accordance with the U.S. Export Administration Regulations. Diversion contrary to U.S. law is prohibited.

### Available Model Configurations

<table>
<thead>
<tr>
<th>Power Level</th>
<th>Frequency Range</th>
<th>Model Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 watts, 0.7-18.0GHz</td>
<td>20/10S1G18</td>
<td>40/10S1G18</td>
</tr>
<tr>
<td>20 watts, 0.7-18.0GHz</td>
<td>20/20S1G18</td>
<td>40/20S1G18</td>
</tr>
<tr>
<td>40 watts, 0.7-18.0GHz</td>
<td>20/40S1G18</td>
<td>40/40S1G18</td>
</tr>
<tr>
<td>15 watts, 0.7-6.0GHz</td>
<td>15/10S1G18</td>
<td>25/10S1G18</td>
</tr>
<tr>
<td>20 watts, 0.7-6.0GHz</td>
<td>15/20S1G18</td>
<td>25/20S1G18</td>
</tr>
<tr>
<td>40 watts, 0.7-6.0GHz</td>
<td>15/40S1G18</td>
<td>25/40S1G18</td>
</tr>
</tbody>
</table>
SPECIFICATIONS COMMON TO ALL MODELS IN THE SERIES

INPUT FOR RATED OUTPUT .................................................. 1.0 milliwatt maximum, 0 dBm
INPUT IMPEDANCE .............................................................. 50 ohms, VSWR 2.5:1 maximum
OUTPUT IMPEDANCE ........................................................... 50 ohms, nominal
MISMATCH TOLERANCE * .................................................. 100% of rated power without foldback. Will operate without damage or oscillation with any magnitude and phase of source and load impedance.
*See Application Note #27.
MODULATION CAPABILITY ................................................ Will faithfully reproduce AM, FM, or pulse modulation appearing on the input signal
SPURIOUS ................................................................. Minus 73 dBc typical

CONNECTORS
RF INPUT ................................................................. TYPE N (front panel)
RF OUTPUT (2) RF OUTPUTS (1 for each band) ........ TYPE N (front panel)

REMOTE INTERFACES
IEEE-488 ................................................................. 24 pin female
RS-232 ................................................................. 9 pin subminiature D (female)
RS-232 (Fiber-optic) ........................................ Type ST
USB 2.0 ................................................................. Type B
Ethernet ................................................................. RJ-45

SAFETY INTERLOCK ....................................................... 15 pin subminiature D

COOLING ................................................................. Forced air (self-contained fans)

SIZE (W x H x D) (Cabinet) ........................................... 50.3 x 34.3 x 61 cm (19.8 x 13.5 x 24 in)
48.3 x 31.1 x 61 cm (19.0 x 12.25 x 24 in)

MODEL CONFIGURATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th># of RF Outputs</th>
<th>RF Input &amp; Output Connector Location</th>
<th>Cabinet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Std</td>
<td>x</td>
<td>x</td>
<td>Yes</td>
</tr>
<tr>
<td>M1</td>
<td>x</td>
<td>x</td>
<td>Yes</td>
</tr>
<tr>
<td>M2</td>
<td>x</td>
<td>x</td>
<td>Yes</td>
</tr>
<tr>
<td>M3</td>
<td>x</td>
<td>x</td>
<td>Yes</td>
</tr>
<tr>
<td>M4</td>
<td>x</td>
<td>x</td>
<td>No</td>
</tr>
<tr>
<td>M5</td>
<td>x</td>
<td>x</td>
<td>No</td>
</tr>
<tr>
<td>M6</td>
<td>x</td>
<td>x</td>
<td>No</td>
</tr>
<tr>
<td>M7</td>
<td>x</td>
<td>x</td>
<td>No</td>
</tr>
</tbody>
</table>
SPECIFICATIONS, MODEL 20/xxS1G18, 0.7–4.2 GHz BAND

RATED POWER OUTPUT .................................................. 20 watts minimum

POWER OUTPUT @ 3dB COMPRESSION
  Nominal ................................................................. 25 watts
  Minimum ............................................................... 20 watts

POWER OUTPUT @ 1dB COMPRESSION
  Nominal ................................................................. 22 watts
  Minimum ............................................................... 18 watts

FLATNESS ...................................................................... ±1.5 dB typical
  ±2.0 dB maximum

FREQUENCY RESPONSE ........................................... 0.7–4.2 GHz instantaneously

GAIN (at maximum setting) ......................................... 43 dB minimum

HARMONIC DISTORTION ........................................... Minus 20 dBc maximum at 20 watts

THIRD ORDER INTERCEPT POINT .............................. 52 dBm typical

NOISE FIGURE .......................................................... 10 dB typical

PRIMARY POWER (selected automatically) ............... 90-264 VAC
  50/60 Hz, single phase
  150 watts maximum

20/xxS1G18 TYPICAL POWER OUTPUT WITH 0.7-4.2GHz BAND SELECTED
SPECIFICATIONS, MODEL 40/XXS1G18, 0.7–4.2 GHz BAND SELECTED

RATED POWER OUTPUT ............................................ 40 watts minimum

POWER OUTPUT @ 3dB COMPRESSSION
  Nominal ............................................................... 50 watts
  Minimum ............................................................. 40 watts

POWER OUTPUT @ 1dB COMPRESSION
  Nominal ............................................................... 44 watts
  Minimum ............................................................. 35 watts

FLATNESS .................................................................. ±1.5 dB typical
                                                      ±2.0 dB maximum

FREQUENCY RESPONSE ........................................ 0.7–4.2 GHz instantaneously

GAIN (at maximum setting) ..................................... 46 dB minimum

THIRD ORDER INTERCEPT ....................................... 55 dBm typical

NOISE FIGURE .......................................................... 10 dB typical

HARMONIC DISTORTION .......................................... Minus 20 dbc, max at 40 watts

PRIMARY POWER ....................................................... (Selected Automatically)
  90-264 VAC
  50/60 Hz, single phase
  280 watts maximum

40/xxS1G18 TYPICAL POWER OUTPUT WITH 0.7-4.2GHz BAND SELECTED

Freq. (GHz)

- P1dB
- P3dB
- Psat
SPECIFICATIONS, MODEL 60/XXS1G18, 0.7–4.2 GHz BAND SELECTED

RATED POWER OUTPUT ............................................. 60 watts minimum

POWER OUTPUT @ 3dB COMPRESSION
  Nominal .................................................. 70 watts
  Minimum .................................................. 60 watts

POWER OUTPUT @ 1dB COMPRESSION
  Nominal .................................................. 65 watts
  Minimum .................................................. 50 watts

FLATNESS ...................................................... ±1.5 dB typical
  ±2.0 dB maximum

FREQUENCY RESPONSE ........................................ 0.7–4.2 GHz instantaneously

GAIN (at maximum setting) ...................................... 47.8 dB minimum

THIRD ORDER INTERCEPT ..................................... 57 dBm typical

NOISE FIGURE ................................................ 10 dB typical

HARMONIC DISTORTION ..................................... Minus 20 dBc max at 60 watts

PRIMARY POWER (Selected Automatically) ............. 90–264 VAC
  50/60 Hz, single phase
  415 watts maximum

---

60/xxS1G18 TYPICAL POWER OUTPUT WITH 0.7-4.2GHz BAND SELECTED
SPECIFICATIONS, MODEL 80/XXS1G18, 0.7–4.2 GHz BAND SELECTED

RATED POWER OUTPUT ............................................. 80 watts minimum

POWER OUTPUT @ 3dB COMPRESSION
  Nominal ................................................................. 95 watts
  Minimum ................................................................. 80 watts

POWER OUTPUT @ 1dB COMPRESSION
  Nominal ................................................................. 85 watts
  Minimum ................................................................. 70 watts

FLATNESS .................................................................. ±1.5 dB typical
  ±2.0 dB maximum

FREQUENCY RESPONSE ........................................... 0.7–4.2 GHz instantaneously

GAIN (at maximum setting) .......................................... 49 dB minimum

THIRD ORDER INTERCEPT .......................................... 58 dBm typical

NOISE FIGURE ................................................................. 10 dB typical

HARMONIC DISTORTION ........................................... Minus 20 dBc max at 80 watts

PRIMARY POWER (Selected Automatically) .................. 90-264 VAC
  50/60 Hz, single phase
  450 watts maximum

80/xxS1G18 TYPICAL POWER OUTPUT WITH 0.7-4.2GHz BAND SELECTED
SPECIFICATIONS, MODEL xx/10S1G18, 4.0–18.0 GHz BAND

RATED POWER OUTPUT .................................................. 10 watts minimum (5-18 GHz)
7 watts minimum (4-5 GHz)

POWER OUTPUT @ 3dB COMPRESSION
Nominal ................................................................. 13 watts
Minimum ............................................................... 10 watts (5-18 GHz); 7 watts (4-5 GHz)

POWER OUTPUT @ 1dB COMPRESSION
Nominal ................................................................. 12 watts
Minimum ............................................................... 9 watts (5-18 GHz); 6 watts (4-5 GHz)

FLATNESS ..................................................................... ±3.0 dB typical
                                                      ±4.0 dB maximum

FREQUENCY RESPONSE .................................................. 4.0–18.0 GHz instantaneously

GAIN (at maximum setting) ........................................... 40 dB minimum

HARMONIC DISTORTION ............................................... Minus 20 dBc max at 10 watts (5-18 GHz) and 7 watts (4-5 GHz)

THIRD ORDER INTERCEPT POINT ......................... 47 dBm typical

PRIMARY POWER (selected automatically) ................. 90-264 VAC
50/60 Hz, single phase
550 watts maximum

xx/10S1G18 TYPICAL POWER OUTPUT WITH 4.0–18.0GHz BAND SELECTED
SPECIFICATIONS, MODEL xx/20S1G18, 4.0–18.0 GHz BAND

RATED POWER OUTPUT .............................................. 20 watts minimum (5-18 GHz)
12 watts minimum (4-5 GHz)

POWER OUTPUT @ 3dB COMPRESSION
  Nominal ................................................................. 25 watts
  Minimum ............................................................ 20 watts (5-18 GHz), 12 watts (4-5 GHz)

POWER OUTPUT @ 1dB COMPRESSION
  Nominal ................................................................. 22 watts
  Minimum ............................................................ 18 watts (5-18 GHz), 10 watts (4-5 GHz)

FLATNESS
  @ 1 dB COMPRESSION ........................................... ±3.0 dB typical, ±4.0 dB maximum
  RFIN=–20 dBm .................................................. ±4.0 dB typical, ±5.0 dB maximum

FREQUENCY RESPONSE ........................................... 4.0–18.0 GHz instantaneously

GAIN (at maximum setting) ........................................... 44 dB minimum

HARMONIC DISTORTION ........................................... Minus 20 dBc max (5-18 GHz), minus 12 dBc max at 20 watts (4-5 GHz)

THIRD ORDER INTERCEPT POINT ................................. 49 dBm typical

PRIMARY POWER (selected automatically) .................. 90-264 VAC
50/60 Hz, single phase
600 watts maximum

XX/20S1G18 TYPICAL POWER OUTPUT WITH 4.0–18.0GHz BAND SELECTED

![Graph showing power output vs. frequency]

PSAT
P1dB
SPECIFICATIONS, MODEL xx/40S1G18, 4.2–18.0 GHz BAND

RATED POWER OUTPUT .............................................. 35 watts minimum, 45 watts typical

POWER OUTPUT @ 3dB COMPRESSION
- Nominal .............................................. 46 watts
- Minimum .............................................. 37 watts (5-18 GHz), 20 watts (4.2 GHz)

POWER OUTPUT @ 1dB COMPRESSION
- Nominal .............................................. 40 watts
- Minimum .............................................. 30 watts (5-18 GHz), 18 watts (4.2 GHz)

FLATNESS
- @ 1 dB COMPRESSION .............................................. ±2.0 dB typical, ±4.0 dB maximum
- RFIN=-20 dBm.................................................. ±4.0 dB typical, ±5.0 dB maximum

FREQUENCY RESPONSE ............................................. 4.2–18.0 GHz instantaneously

GAIN (at maximum setting) ........................................ 48 dB minimum

HARMONIC DISTORTION ........................................... Minus 20 dBc max at 35 watts (5-18 GHz), at 20 watts (4.2 GHz)

THIRD ORDER INTERCEPT POINT .............................. 52 dBm typical

PRIMARY POWER (selected automatically) .............. 90-264 VAC
- 50/60 Hz, single phase
- <1000 watts maximum

XX/40S1G18 TYPICAL POWER OUTPUT WITH 4.2–18.0GHz BAND SELECTED

![Graph showing Power Output vs. Frequency for 4.2-18.0 GHz Band]
SPECIFICATIONS, MODEL 15/xxS1G18, 0.7–6.0 GHz BAND

RATED POWER OUTPUT ................................................. 15 watts minimum

POWER OUTPUT @ 3dB COMPRESSION
  Nominal ................................................................. 20 watts
  Minimum ................................................................. 15 watts

POWER OUTPUT @ 1dB COMPRESSION
  Nominal ................................................................. 15 watts
  Minimum ................................................................. 12 watts

FLATNESS ................................................................
  ±1.5 dB typical
  ±2.0 dB maximum

FREQUENCY RESPONSE .............................................. 0.7–6.0GHz instantaneously

GAIN (at maximum setting) ........................................ 43 dB minimum

HARMONIC DISTORTION ..............................................
  Minus 20 dBc maximum at 15 watts (1.0-6.0 GHz)
  Minus 15 dBc typical at 15 watts (0.7-1.0 GHz)

THIRD ORDER INTERCEPT POINT ................................. 48 dBm typical

NOISE FIGURE ............................................................. 10 dB typical

PRIMARY POWER (selected automatically) .................... 90-264 VAC
  50/60 Hz, single phase
  210 watts maximum

15/xxS1G18 TYPICAL POWER OUTPUT WITH 0.7-6.0GHz BAND SELECTED
SPECIFICATIONS, MODEL 25/XXS1G18, 0.7–6.0 GHz BAND SELECTED

RATED POWER OUTPUT ........................................... 25 watts minimum

POWER OUTPUT @ 3dB COMPRESSION
Nominal .............................................................. 30 watts
Minimum ............................................................ 25 watts

POWER OUTPUT @ 1dB COMPRESSION
Nominal .............................................................. 25 watts
Minimum ............................................................ 20 watts

FLATNESS ........................................................... ±1.5 dB typical
............................................................... ±2.0 dB maximum

FREQUENCY RESPONSE ........................................... 0.7–6.0 GHz instantaneously

GAIN (at maximum setting) ........................................ 46 dB minimum

THIRD ORDER INTERCEPT ........................................ 51 dBm typical

NOISE FIGURE ........................................................ 10 dB typical

HARMONIC DISTORTION ........................................... Minus 20 dbc, max at 25 watts (1.0-6.0 GHz)
-placement....................................................... Minus 15 dBc typical at 25 watts (0.7-1.0 GHz)

PRIMARY POWER .................................................. (Selected Automatically)
................................................................. 90-264 VAC
................................................................. 50/60 Hz, single phase
................................................................. 300 watts maximum

25/xxS1G18 TYPICAL POWER OUTPUT WITH 0.7-6.0GHz BAND SELECTED

[Graph showing power output vs frequency]
SPECIFICATIONS, MODEL 50/XXS1G18, 0.7–6.0 GHz BAND SELECTED

RATED POWER OUTPUT ........................................... 50 watts minimum

POWER OUTPUT @ 3dB COMPRESSSION
  Nominal ........................................... 65 watts
  Minimum ........................................... 50 watts

POWER OUTPUT @ 1dB COMPRESSION
  Nominal ........................................... 50 watts
  Minimum ........................................... 40 watts

FLATNESS ................................................................ ±1.5 dB typical
  ................................................................ ±2.0 dB maximum

FREQUENCY RESPONSE ........................................... 0.7–6.0 GHz instantaneously

GAIN (at maximum setting) ........................................... 48 dB minimum

THIRD ORDER INTERCEPT ........................................... 56 dBm typical

NOISE FIGURE ............................................................ 10 dB typical

HARMONIC DISTORTION ...........................................
  Minus 20 dBc max at 40 watts (1.0–6.0 GHz)
  Minus 15 dBc typical at 40 watts (0.7–1.0 GHz)

PRIMARY POWER (Selected Automatically) .............. 90-264 VAC
  50/60 Hz, single phase
  525 watts maximum

50/xxS1G18 TYPICAL POWER OUTPUT WITH 0.7-6.0GHz BAND SELECTED
SPECIFICATIONS, MODEL xx/10S1G18, 6.0–18.0 GHz BAND

RATED POWER OUTPUT .............................................. 10 watts minimum

POWER OUTPUT @ 3dB COMPRESSION
   Nominal ......................................................... 13 watts
   Minimum ....................................................... 10 watts

POWER OUTPUT @ 1dB COMPRESSION
   Nominal ......................................................... 12 watts
   Minimum ....................................................... 9 watts

FLATNESS .................................................................. ±2.0 dB typical
   .................................................................. ±3.0 dB maximum

FREQUENCY RESPONSE ........................................... 6.0–18.0 GHz instantaneously

GAIN (at maximum setting) ...................................... 40 dB minimum

HARMONIC DISTORTION .......................................... Minus 20 dBc max at 10 watts

THIRD ORDER INTERCEPT POINT ............................. 47 dBm typical

PRIMARY POWER (selected automatically) ................... 90–264 VAC
   50/60 Hz, single phase
   550 watts maximum

xx/10S1G18 TYPICAL POWER OUTPUT WITH 6.0–18.0GHz BAND SELECTED
SPECIFICATIONS, MODEL xx/20S1G18, 6.0–18.0 GHz BAND

RATED POWER OUTPUT ........................................... 20 watts minimum

POWER OUTPUT @ 3dB COMPRESSION
   Nominal .................................................. 25 watts
   Minimum ............................................... 20 watts

POWER OUTPUT @ 1dB COMPRESSION
   Nominal .................................................. 22 watts
   Minimum ............................................... 18 watts

FLATNESS
   @ 1 dB COMPRESSION ............................... ±2.0 dB typical, ±3.0 dB maximum

FREQUENCY RESPONSE ....................................... 6.0–18.0 GHz instantaneously

GAIN (at maximum setting) .............................. 44 dB minimum

HARMONIC DISTORTION ................................. Minus 20 dBc max

THIRD ORDER INTERCEPT POINT .................... 49 dBm typical

PRIMARY POWER (selected automatically) ............ 90-264 VAC
   50/60 Hz, single phase
   600 watts maximum

XX/20S1G18 TYPICAL POWER OUTPUT WITH 6.0–18.0 GHz BAND SELECTED

[Graph showing typical power output across frequency]
SPECIFICATIONS, MODEL xx/40S1G18, 6.0–18.0 GHz BAND

RATED POWER OUTPUT ........................................... 40 watts minimum

POWER OUTPUT @ 3dB COMPRESSION
  Nominal ................................................. 46 watts
  Minimum ................................................ 37 watts

POWER OUTPUT @ 1dB COMPRESSION
  Nominal ................................................. 40 watts
  Minimum ................................................ 30 watts

FLATNESS
  @ 1 dB COMPRESSION ..................................... ±2.0 dB typical, ±3.0 dB maximum

FREQUENCY RESPONSE ...................................... 6.0–18.0 GHz instantaneously

GAIN (at maximum setting) .................................. 48 dB minimum

HARMONIC DISTORTION ..................................... Minus 20 dBc max at 40 watts

THIRD ORDER INTERCEPT POINT .......................... 52 dBm typical

PRIMARY POWER (selected automatically) .............. 90-264 VAC
  50/60 Hz, single phase
  <1000 watts maximum

XX/40S1G18 TYPICAL POWER OUTPUT WITH 6.0–18.0GHz BAND SELECTED