

### S-band Downconverters

INPUT SPECIFICATION		Options
1. Frequency range:	Check model table	
2. Connector:	N-type	SMA
3. Impedance:	50Ω	
4. Return loss:	≥15dB	
OUTPUT SPECIFICATION		
5. Frequency range:	Check model table	
6. Connector:	BNC	
7. Impedance:	50Ω	
8. Return loss:	≥15dB	
9. 1dB compression point:	+10dBm	
10. Third order intercept:	+20dBm	
TRANSFER CHARACTERISTICS		
11. Gain:	20 to 40dB, adjustable in 0.1dB steps	
12. Gain ripple:	over ±20MHz: ≤1dB p.t.p. over input band, 400MHz: ≤2dB p.t.p. (1)	
13. Group delay distortion:	ripple, ±20MHz <2ns ptp linear, ±20MHz <0.03ns/MHz parabolic, ±20MHz <0.01ns/MHz <sup>2</sup>	
14. Gain stability, 0°C to 50°C:	±1dB 24hr. at constant temperature: ±0.2dB	
15. Frequency stability	0°C to +50°C: 1x10 <sup>-7</sup> At constant temperature over 24 hr: 1x10 <sup>-8</sup>	
16. External reference:	10MHz, 0dBm	5MHz, 0dBm
17. Synthesiser step size:	1kHz	
18. Noise figure (full gain):	<17dB	
Spurii		
19. Image rejection:	>50dB (2)	
20. In-band spurii (at 0dBm output):	<-60dBc (2)	
PHASE NOISE		
21. 10Hz:	<-50dBc/Hz	
22. 100Hz:	<-70dBc/Hz	
23. 1kHz:	<-80dBc/Hz	
24. 10kHz:	<-85dBc/Hz	
25. 100kHz:	<-95dBc/Hz	
26. 1MHz:	<-110dBc/Hz	
27. Mains related:	<-50dBc	
MISCELLANEOUS		
28. Power supply:	115V/230V ±10% 50/60Hz ±10%, 30VA	
29. Mechanical:	1U 19" frame, 400, 500 or 520mm deep (depends on model)	
30. Temperature:	Operating: 0° to 50°C Storage: -40° to 85°C	
31. Relative humidity:	Operating: 0 to 90% Storage: 0 to 95%	
32. Summary alarm:	NO and NC dry relay contacts via rear mounted connector	
33. Summary alarm indication:	Front panel LED	
34. Remote control:	<ul style="list-style-type: none"> <li>• RS232 or RS422/RS485, connector D-type 9P F</li> <li>• SNMP and HTTP over TCP/IP Ethernet, connector RJ45</li> </ul>	

(1) Ripple spec measurement does not include 40MHz segment below the lowest limit and above the highest.

(2) Spurious levels only guaranteed at maximum gain.

Model	Input	Output (c)
D491	2.4 - 2.5GHz (b)	70 ± 20MHz
D492	2.0 - 2.4GHz (b)	70 ± 20MHz
D492 - 2	2.0 - 2.6GHz (b)	70 ± 20MHz
D492 - 3	2.2 - 2.29GHz (b)	70 ± 20MHz
D493	2.5 - 2.7GHz (b)	70 ± 20MHz
D495	2.5 - 2.7GHz (b)	140 ± 40MHz
D496	2.4 - 2.5GHz (b)	140 ± 40MHz
D497	2.0 - 2.4GHz (b)	140 ± 40MHz
D498	2.0 - 2.4GHz (b)	70 ± 20MHz plus 140 ± 40MHz (d)
D499	2.4 - 2.5GHz (b)	70 ± 20MHz plus 140 ± 40MHz (d)
D494	2.5 - 2.7GHz (b)	70 ± 20MHz plus 140 ± 40MHz (d)
D492-4S	2.0 - 2.4GHz (b)	70 ± 20MHz (e) (f)

- (a) This specification covers ALL frequency agile downconverters with 70MHz and/or 140MHz IF and RF input from 1.9GHz to 2.9GHz. **This table lists ONLY more common models.** Consult our office for other models configurations.
- (b) Input frequencies are an illustrative sample. Any other values from 1.9GHz to 2.9GHz, in 10MHz steps, are possible. RF coverage different from 400MHz, wider or narrower, is possible.
- (c) Other output IF and bandwidths possible.
- (d) IF output selectable via front panel and remote interface.
- (e) Three identical IF outputs, BNC, through 3-way power divider. All RF, IF and 10MHz reference connectors are square flange with 4 screw fitting



N-type square flange



BNC

- (f) Gain and compression point at each output will be reduced by 6dB when compared with a standard unit (14 to 34dB, +4dBm). Also, output return loss will be significantly reduced and cannot be guaranteed to be better than 12dB at all frequencies.

**NOTE**

All Novella's frequency converter synthesisers are of the conventional phase-locked type. No DDS techniques or ICs are used. DDS synthesisers suffer from an inherent phase uncertainty (due to the inevitable residual frequency error) rendering them unsuitable for differential phase measurements used typically in satellite ranging and monopulse tracking systems which rely on differential phase measurements between two coherent signals processed by two downlink chains.

