

## D600 series of X-band to 70MHz and/or 140MHz Downconverters

INPUT SPECIFICATION		Options
1. Frequency range:	7 to 9GHz in 50MHz steps in bands of 500MHz to 2GHz	(see model table)
2. Connector:	N-type	
3. Impedance:	50Ω	
4. Return loss:	≥18dB	
OUTPUT SPECIFICATION		
5. Frequency range:	70MHz, 140MHz or 70MHz plus 140MHz IF B/W: ±20MHz, ±40MHz (other values available)	(see 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:	30 to 50dB, adjustable in 0.1dB steps	
12. Gain ripple:	over ±20MHz:	≤1dB p.t.p.
	over ±40MHz:	≤1.5dB p.t.p.
	over input band, 1GHz:	≤3dB p.t.p.
	over input band, 2GHz:	≤4dB p.t.p.
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:	±0.1dB
15. Frequency stability, 0°C to 50°C:	5 x 10 <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:	>60dB	
20. In-band spurii (at 0dBm output):	<-60dBc <sup>(1)</sup>	
PHASE NOISE		
21. 10Hz:	<-45dBc/Hz	
22. 100Hz:	<-70dBc/Hz	
23. 1kHz:	<-80dBc/Hz	
24. 10kHz:	<-85dBc/Hz	
25. 100kHz:	<-95dBc/Hz	
26. 1MHz:	<-110dBc/Hz	
27. Mains related:	<-60dBc	
MISCELLANEOUS		
28. Power supply:	115V/230V ±10% 50/60Hz ±10%, 50VA	
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:	● RS232 or RS422/RS485, connector D-type 9P F	
	● Serial emulation over TCP/IP, connector RJ45	
	● SNMP and HTTP over TCP/IP Ethernet, connector RJ45	

<sup>(1)</sup> Spurious levels only guaranteed at all frequencies at maximum gain.

## MODEL TABLE (a)

Input Frequency (GHz)	Output frequency and bandwidth		
	70 ± 20MHz	140 ± 40MHz	70 ± 20MHz, 140 ± 40MHz
7.25 - 7.75	D651-1	D656-1	D671-1
7.10 - 7.30	D651-2	D656-2	D671-2
7.0 - 8.0	D690-1	D691-1	D692-1
8.0 - 9.0	D690-2	D691-2	D692-2
7.0 - 9.0	D690-3	D691-3	D692-3
7.5 - 8.0	D690-4	D691-4	D692-4
8.37 - 8.38	D690-5	D691-5	D692-5
7.9 - 8.9	D690-6	D691-6	D692-6

- (a) This specification covers ALL frequency agile downconverters with 70MHz and/or 140MHz IF and RF input from 7GHz to 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 7GHz to 9GHz, in 50MHz steps, are possible. RF coverage different from 500MHz or 1GHz is also possible.
- (c) Other input IF and bandwidths possible.
- (d) IF output selectable via front panel and remote interface.

### 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.

