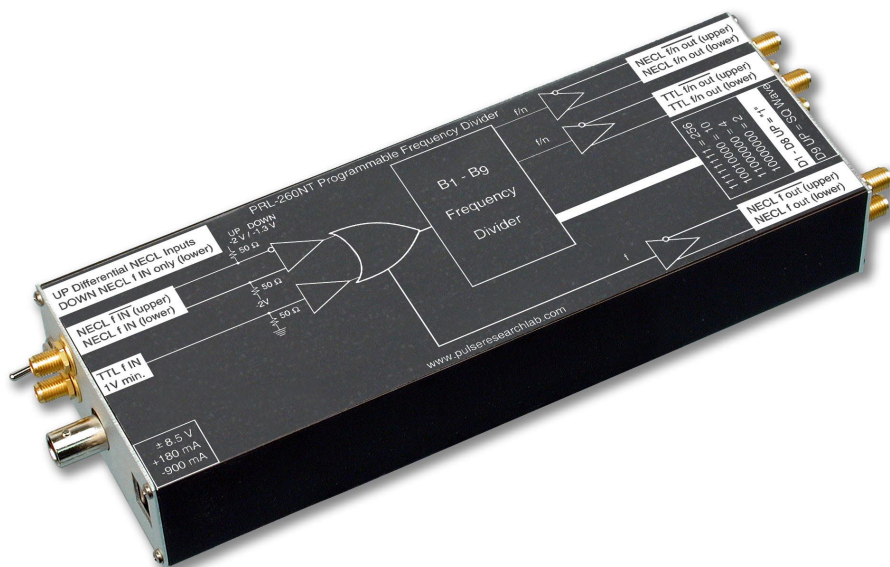


PRL-260NT PROGRAMMABLE FREQUENCY DIVIDER

APPLICATIONS

- Systems Clock Simulation
- Low Jitter ECL/TTL Clock Source
- SONET Clock Generator
- An Essential Lab Tool for Working with ECL and TTL Circuits



FEATURES

- $f/2$ to $f/256$, 8-bit resolution
- Square wave outputs to $f/512$
- Single-ended ECL, differential ECL, or Sinewave Inputs with internal $50\Omega/V_{TT}$ terminations
- Additional Logically ORed TTL Input
- $f, \bar{f}$, NECL Outputs
- f/n and $\bar{f}/n$ NECL and TTL Outputs
- 20ps typical Edge Jitter
- 50ps typical skew between f/n & $\bar{f}/n$ NECL outputs
- 200ps typical skew between f/n & $\bar{f}/n$ TTL outputs

FEATURES (cont'd)

- 1.15GHz typical maximum External Clock Input frequency
- Complementary NECL Outputs drive 50Ω loads terminated to V_{TT} , AC coupled or floating 50Ω loads
- Complementary TTL Outputs drive Long Lines with or without 50Ω load Terminations
- DC coupled I/O's
- BNC TTL Input and SMA I/O Connectors for others
- Ready-to-Use 1.3 x 2.9 x 8-in. Module includes a $\pm 8.5V$ AC/DC Adapter

DESCRIPTION

The PRL-260NT is an 8-Bit, manually programmable frequency divider capable of running at input clock frequencies in excess of 1 GHz. A NECL input is logically ORed with a secondary TTL input. Complementary NECL and TTL f/n outputs are provided, as well as complementary NECL $f/1$ output. A signal applied to either the NECL or TTL input is divisible by any number between 2 and 256 using D1 through D8 of the DIP switch. D9 divides the f/n outputs further by 2 for $f/2n$ square outputs. A logic Hi applied to either input disables the divider function.

The NECL input can accept either single-ended NECL, differential NECL, or sinewave signals, selectable by a switch, and has internal $50\Omega/V_{TT}$ terminations, where V_{TT} is $-2V$ for NECL. The TTL input has a ground-referenced 50Ω termination and the minimum signal required is only 1 V.

The NECL output is designed for driving 50Ω loads terminated into V_{TT} , and can also drive AC coupled or floating 50Ω loads. The complementary 50Ω back terminated TTL outputs can drive long 50Ω lines with or without terminations.

Applications of the PRL-260 frequency divider includes precision clocks for high speed digital systems, low jitter clock source for testing A/D's, SONET clock generator, general purpose frequency division and Basic Lab Tool for working with NECL and TTL circuits. Each model is housed in a 1.3 x 2.9 x 8-in. extruded aluminum enclosure and is supplied with a $\pm 8.5V$ AC/DC adapter.



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*SPECIFICATIONS (0° C ≤ T_A ≤ 35°C)

SYMBOL	PARAMETER	Min	Typ	Max	UNIT	Comments
R _{in}	External Clock Input Resistance	49.5	50	50.5	Ω	Except $\bar{f}$ input in single-ended mode
V _{TT}	External Clock Input Termination Voltage	-2.2	-2 0	-1.8	V	ECL input TTL input
I _{DC}	DC Input Current		+175/-520	+185-550	mA	
V _{DC}	DC Input Voltage	±7.5	±8.5	±12	V	
V _{AC}	AC/DC Adapter Input Voltage	103	115	127	V	
V _{IH}	External Clock Input Hi Level (R _{in} terminated to V _{TT})	-1.13 1	-0.9 0.85	-0.81 4	V	NECL (V _{TT} =2V) TTL (V _{TT} =0V)
V _{IL}	External Clock Input Lo Level (R _{in} terminated to V _{TT})	-1.95 -0.5	-1.6 0	-1.48 0.5	V	NECL (V _{TT} =2V) TTL (V _{TT} =0V)
V _{OH}	Output Hi Level @ 100MHz (R _L terminated to V _{TT})	-1.13 2	-0.9 2.2	-0.81	V	NECL (V _{TT} =2V) TTL (V _{TT} =0V)
V _{OL}	Output Lo Level @ 100MHz (R _L terminated to V _{TT})	-1.95 -0.5	-1.6 0	-1.48 0.5	V	NECL (V _{TT} =2V) TTL (V _{TT} =0V)
t _{PLH1}	Propagation Delay to f output ↑		3500		ps	From Ext Clk input
t _{PLH2}	Propagation Delay to NECL f/n output ↑		3750		ps	From Ext Clk input
t _{PLH3}	Propagation Delay to TTL f/n output ↑		5200		ps	From Ext Clk input
t _{r/tf1}	Rise/Fall Times (20%-80%), NECL outputs		400	600	ps	Note (1)
t _{r/tf2}	Rise/Fall Times (10%-90%), TTL outputs		1100	1350	ps	
t _{SKEW1}	Skew f ↔ $\bar{f}$ outputs		50	120	ps	
t _{SKEW2}	Skew f/n ↔ $\bar{f}/n$ ECL outputs		50	120	ps	
t _{SKEW3}	Skew f/n ↔ f/n TTL outputs		200	500	ps	
T _{SKEW4}	Skew f/n ECL ↔ f/n TTL outputs		1200	1500	ps	n≠1
f _{MAX In}	Max Input clock frequency	1000	1150		MHz	
f _{MAX Out}	Max Output frequency	1000 500 300	1150 575 350		MHz	f and $\bar{f}$ Outputs only NECL Outputs TTL Outputs
	Size		1.3 x 2.9 x 8		in.	
	Weight		10		Oz	

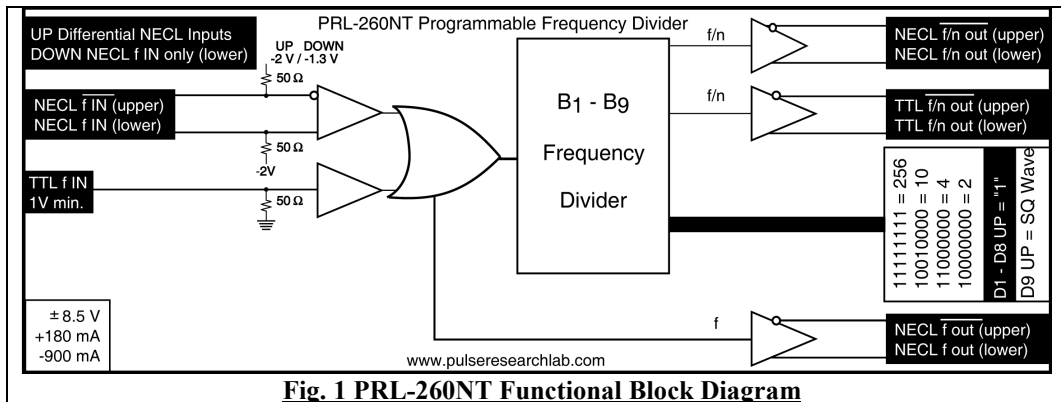


Fig. 1 PRL-260NT Functional Block Diagram

*All dynamic NECL measurements are made with outputs terminated into 50 Ω/V_{TT}, using the PRL-550NQ4X, four channel NECL Terminator, connected to a 50 Ω input sampling oscilloscope. TTL outputs are terminated to 50 Ω.

Notes:

(1). The output rise and fall times of each NECL channel are measured with its complementary output terminated into 50 Ω/V_{TT}. An unused complementary 50 Ω output must be either terminated into 50 Ω/V_{TT} or AC coupled into a 50 Ω load; otherwise, output waveform distortion and rise time degradation will occur. Use the PRL-ACT-50, Dual Ch. AC-Coupled 50 Ω Termination, for the 50 Ω/V_{TT} termination. Use the PRL-SC-104 or PRL-ACX-12dB (0.1 μf DC block and 12 dB AC-coupled attenuator, respectively) for connection of NECL signals to 50 Ω input oscilloscopes.

PRL-260NT Divisor/Switch Settings with Sample Frequencies

f/n	D1	D2	D3	D4	D5	D6	D7	D8	f=500.0000	f=622.0800	f=644.53125
2	1	0	0	0	0	0	0	0	250.0000	311.0400	322.26563
3	0	1	0	0	0	0	0	0	166.6667	207.3600	214.84375
4	1	1	0	0	0	0	0	0	125.0000	155.5200	161.13281
5	0	0	1	0	0	0	0	0	100.0000	124.4160	128.90625
6	1	0	1	0	0	0	0	0	83.3333	103.6800	107.42188
7	0	1	1	0	0	0	0	0	71.4286	88.8686	92.07589
8	1	1	1	0	0	0	0	0	62.5000	77.7600	80.56641
9	0	0	0	1	0	0	0	0	55.5556	69.1200	71.61458
10	1	0	0	1	0	0	0	0	50.0000	62.2080	64.45313
11	0	1	0	1	0	0	0	0	45.4545	56.5527	58.59375
12	1	1	0	1	0	0	0	0	41.6667	51.8400	53.71094
13	0	0	1	1	0	0	0	0	38.4615	47.8523	49.57933
14	1	0	1	1	0	0	0	0	35.7143	44.4343	46.03795
15	0	1	1	1	0	0	0	0	33.3333	41.4720	42.96875
16	1	1	1	1	0	0	0	0	31.2500	38.8800	40.28320
17	0	0	0	0	1	0	0	0	29.4118	36.5929	37.91360
18	1	0	0	0	1	0	0	0	27.7778	34.5600	35.80729
19	0	1	0	0	1	0	0	0	26.3158	32.7411	33.92270
20	1	1	0	0	1	0	0	0	25.0000	31.1040	32.22656
21	0	0	1	0	1	0	0	0	23.8095	29.6229	30.69196
22	1	0	1	0	1	0	0	0	22.7273	28.2764	29.29688
23	0	1	1	0	1	0	0	0	21.7391	27.0470	28.02310
24	1	1	1	0	1	0	0	0	20.8333	25.9200	26.85547
25	0	0	0	1	1	0	0	0	20.0000	24.8832	25.78125
26	1	0	0	1	1	0	0	0	19.2308	23.9262	24.78966
27	0	1	0	1	1	0	0	0	18.5185	23.0400	23.87153
28	1	1	0	1	1	0	0	0	17.8571	22.2171	23.01897
29	0	0	1	1	1	0	0	0	17.2414	21.4510	22.22522
30	1	0	1	1	1	0	0	0	16.6667	20.7360	21.48438
31	0	1	1	1	1	0	0	0	16.1290	20.0671	20.79133
32	1	1	1	1	1	0	0	0	15.6250	19.4400	20.14160
33	0	0	0	0	0	1	0	0	15.1515	18.8509	19.53125
34	1	0	0	0	0	1	0	0	14.7059	18.2965	18.95680
35	0	1	0	0	0	1	0	0	14.2857	17.7737	18.41518
36	1	1	0	0	0	1	0	0	13.8889	17.2800	17.90365
37	0	0	1	0	0	1	0	0	13.5135	16.8130	17.41976
38	1	0	1	0	0	1	0	0	13.1579	16.3705	16.96135
39	0	1	1	0	0	1	0	0	12.8205	15.9508	16.52644
40	1	1	1	0	0	1	0	0	12.5000	15.5520	16.11328
41	0	0	0	1	0	1	0	0	12.1951	15.1727	15.72027
42	1	0	0	1	0	1	0	0	11.9048	14.8114	15.34598
43	0	1	0	1	0	1	0	0	11.6279	14.4670	14.98910
44	1	1	0	1	0	1	0	0	11.3636	14.1382	14.64844
45	0	0	1	1	0	1	0	0	11.1111	13.8240	14.32292
46	1	0	1	1	0	1	0	0	10.8696	13.5235	14.01155
47	0	1	1	1	0	1	0	0	10.6383	13.2357	13.71343
48	1	1	1	1	0	1	0	0	10.4167	12.9600	13.42773
49	0	0	0	0	1	1	0	0	10.2041	12.6955	13.15370
50	1	0	0	0	1	1	0	0	10.0000	12.4416	12.89063
51	0	1	0	0	1	1	0	0	9.8039	12.1976	12.63787
52	1	1	0	0	1	1	0	0	9.6154	11.9631	12.39483
53	0	0	1	0	1	1	0	0	9.4340	11.7374	12.16097
54	1	0	1	0	1	1	0	0	9.2593	11.5200	11.93576
55	0	1	1	0	1	1	0	0	9.0909	11.3105	11.71875
56	1	1	1	0	1	1	0	0	8.9286	11.1086	11.50949
57	0	0	0	1	1	1	0	0	8.7719	10.9137	11.30757
58	1	0	0	1	1	1	0	0	8.6207	10.7255	11.11261
59	0	1	0	1	1	1	0	0	8.4746	10.5437	10.92426
60	1	1	0	1	1	1	0	0	8.3333	10.3680	10.74219
61	0	0	1	1	1	1	0	0	8.1967	10.1980	10.56609
62	1	0	1	1	1	1	0	0	8.0645	10.0335	10.39567
63	0	1	1	1	1	1	0	0	7.9365	9.8743	10.23065
64	1	1	1	1	1	1	0	0	7.8125	9.7200	10.07080

f/n	D1	D2	D3	D4	D5	D6	D7	D8	f=500.0000	f=622.0800	f=644.53125
65	0	0	0	0	0	0	1	0	7.6923	9.5705	9.91587
66	1	0	0	0	0	0	1	0	7.5758	9.4255	9.76563
67	0	1	0	0	0	0	1	0	7.4627	9.2848	9.61987
68	1	1	0	0	0	0	1	0	7.3529	9.1482	9.47840
69	0	0	1	0	0	0	1	0	7.2464	9.0157	9.34103
70	1	0	1	0	0	0	1	0	7.1429	8.8869	9.20759
71	0	1	1	0	0	0	1	0	7.0423	8.7617	9.07790
72	1	1	1	0	0	0	1	0	6.9444	8.6400	8.95182
73	0	0	0	1	0	0	1	0	6.8493	8.5216	8.82920
74	1	0	0	1	0	0	1	0	6.7568	8.4065	8.70988
75	0	1	0	1	0	0	1	0	6.6667	8.2944	8.59375
76	1	1	0	1	0	0	1	0	6.5789	8.1853	8.48067
77	0	0	1	1	0	0	1	0	6.4935	8.0790	8.37054
78	1	0	1	1	0	0	1	0	6.4103	7.9754	8.26322
79	0	1	1	1	0	0	1	0	6.3291	7.8744	8.15862
80	1	1	1	1	0	0	1	0	6.2500	7.7760	8.05664
81	0	0	0	0	1	0	1	0	6.1728	7.6800	7.95718
82	1	0	0	0	1	0	1	0	6.0976	7.5863	7.86014
83	0	1	0	0	1	0	1	0	6.0241	7.4949	7.76544
84	1	1	0	0	1	0	1	0	5.9524	7.4057	7.67299
85	0	0	1	0	1	0	1	0	5.8824	7.3186	7.58272
86	1	0	1	0	1	0	1	0	5.8140	7.2335	7.49455
87	0	1	1	0	1	0	1	0	5.7471	7.1503	7.40841
88	1	1	1	0	1	0	1	0	5.6818	7.0691	7.32422
89	0	0	0	1	1	0	1	0	5.6180	6.9897	7.24192
90	1	0	0	1	1	0	1	0	5.5556	6.9120	7.16146
91	0	1	0	1	1	0	1	0	5.4945	6.8360	7.08276
92	1	1	0	1	1	0	1	0	5.4348	6.7617	7.00577
93	0	0	1	1	1	0	1	0	5.3763	6.6890	6.93044
94	1	0	1	1	1	0	1	0	5.3191	6.6179	6.85672
95	0	1	1	1	1	0	1	0	5.2632	6.5482	6.78454
96	1	1	1	1	1	0	1	0	5.2083	6.4800	6.71387
97	0	0	0	0	0	1	1	0	5.1546	6.4132	6.64465
98	1	0	0	0	0	1	1	0	5.1020	6.3478	6.57685
99	0	1	0	0	0	1	1	0	5.0505	6.2836	6.51042
100	1	1	0	0	0	1	1	0	5.0000	6.2208	6.44531
101	0	0	1	0	0	1	1	0	4.9505	6.1592	6.38150
102	1	0	1	0	0	1	1	0	4.9020	6.0988	6.31893
103	0	1	1	0	0	1	1	0	4.8544	6.0396	6.25758
104	1	1	1	0	0	1	1	0	4.8077	5.9815	6.19742
105	0	0	0	1	0	1	1	0	4.7619	5.9246	6.13839
106	1	0	0	1	0	1	1	0	4.7170	5.8687	6.08048
107	0	1	0	1	0	1	1	0	4.6729	5.8138	6.02366
108	1	1	0	1	0	1	1	0	4.6296	5.7600	5.96788
109	0	0	1	1	0	1	1	0	4.5872	5.7072	5.91313
110	1	0	1	1	0	1	1	0	4.5455	5.6553	5.85938
111	0	1	1	1	0	1	1	0	4.5045	5.6043	5.80659
112	1	1	1	1	0	1	1	0	4.4643	5.5543	5.75474
113	0	0	0	0	1	1	1	0	4.4248	5.5051	5.70382
114	1	0	0	0	1	1	1	0	4.3860	5.4568	5.65378
115	0	1	0	0	1	1	1	0	4.3478	5.4094	5.60462
116	1	1	0	0	1	1	1	0	4.3103	5.3628	5.55630
117	0	0	1	0	1	1	1	0	4.2735	5.3169	5.50881
118	1	0	1	0	1	1	1	0	4.2373	5.2719	5.46213
119	0	1	1	0	1	1	1	0	4.2017	5.2276	5.41623
120	1	1	1	0	1	1	1	0	4.1667	5.1840	5.37109
121	0	0	0	1	1	1	1	0	4.1322	5.1412	5.32670
122	1	0	0	1	1	1	1	0	4.0984	5.0990	5.28304
123	0	1	0	1	1	1	1	0	4.0650	5.0576	5.24009
124	1	1	0	1	1	1	1	0	4.0323	5.0168	5.19783
125	0	0	1	1	1	1	1	0	4.0000	4.9766	5.15625
126	1	0	1	1	1	1	1	0	3.9683	4.9371	5.11533
127	0	1	1	1	1	1	1	0	3.9370	4.8983	5.07505
128	1	1	1	1	1</						

PRL-260NT Divisor/Switch Settings with Sample Frequencies

f/n	D1	D2	D3	D4	D5	D6	D7	D8	f=500.0000	f=622.0800	f=644.53125
129	0	0	0	0	0	0	0	1	3.8760	4.8223	4.99637
130	1	0	0	0	0	0	0	1	3.8462	4.7852	4.95793
131	0	1	0	0	0	0	0	1	3.8168	4.7487	4.92009
132	1	1	0	0	0	0	0	1	3.7879	4.7127	4.88281
133	0	0	1	0	0	0	0	1	3.7594	4.6773	4.84610
134	1	0	1	0	0	0	0	1	3.7313	4.6424	4.80993
135	0	1	1	0	0	0	0	1	3.7037	4.6080	4.77431
136	1	1	1	0	0	0	0	1	3.6765	4.5741	4.73920
137	0	0	0	1	0	0	0	1	3.6496	4.5407	4.70461
138	1	0	0	1	0	0	0	1	3.6232	4.5078	4.67052
139	0	1	0	1	0	0	0	1	3.5971	4.4754	4.63692
140	1	1	0	1	0	0	0	1	3.5714	4.4434	4.60379
141	0	0	1	1	0	0	0	1	3.5461	4.4119	4.57114
142	1	0	1	1	0	0	0	1	3.5211	4.3808	4.53895
143	0	1	1	1	0	0	0	1	3.4965	4.3502	4.50721
144	1	1	1	1	0	0	0	1	3.4722	4.3200	4.47591
145	0	0	0	0	1	0	0	1	3.4483	4.2902	4.44504
146	1	0	0	0	1	0	0	1	3.4247	4.2608	4.41460
147	0	1	0	0	1	0	0	1	3.4014	4.2318	4.38457
148	1	1	0	0	1	0	0	1	3.3784	4.2032	4.35494
149	0	0	1	0	1	0	0	1	3.3557	4.1750	4.32571
150	1	0	1	0	1	0	0	1	3.3333	4.1472	4.29688
151	0	1	1	0	1	0	0	1	3.3113	4.1197	4.26842
152	1	1	1	0	1	0	0	1	3.2895	4.0926	4.24034
153	0	0	0	1	1	0	0	1	3.2680	4.0659	4.21262
154	1	0	0	1	1	0	0	1	3.2468	4.0395	4.18527
155	0	1	0	1	1	0	0	1	3.2258	4.0134	4.15827
156	1	1	0	1	1	0	0	1	3.2051	3.9877	4.13161
157	0	0	1	1	1	0	0	1	3.1847	3.9623	4.10529
158	1	0	1	1	1	0	0	1	3.1646	3.9372	4.07931
159	0	1	1	1	1	0	0	1	3.1447	3.9125	4.05366
160	1	1	1	1	1	0	0	1	3.1250	3.8880	4.02832
161	0	0	0	0	0	1	0	1	3.1056	3.8639	4.00330
162	1	0	0	0	0	1	0	1	3.0864	3.8400	3.97859
163	0	1	0	0	0	1	0	1	3.0675	3.8164	3.95418
164	1	1	0	0	0	1	0	1	3.0488	3.7932	3.93007
165	0	0	1	0	0	1	0	1	3.0303	3.7702	3.90625
166	1	0	1	0	0	1	0	1	3.0120	3.7475	3.88272
167	0	1	1	0	0	1	0	1	2.9940	3.7250	3.85947
168	1	1	1	0	0	1	0	1	2.9762	3.7029	3.83650
169	0	0	0	1	0	1	0	1	2.9586	3.6809	3.81379
170	1	0	0	1	0	1	0	1	2.9412	3.6593	3.79136
171	0	1	0	1	0	1	0	1	2.9240	3.6379	3.76919
172	1	1	0	1	0	1	0	1	2.9070	3.6167	3.74727
173	0	0	1	1	0	1	0	1	2.8902	3.5958	3.72561
174	1	0	1	1	0	1	0	1	2.8736	3.5752	3.70420
175	0	1	1	1	0	1	0	1	2.8571	3.5547	3.68304
176	1	1	1	1	0	1	0	1	2.8409	3.5345	3.66211
177	0	0	0	0	1	1	0	1	2.8249	3.5146	3.64142
178	1	0	0	0	1	1	0	1	2.8090	3.4948	3.62096
179	0	1	0	0	1	1	0	1	2.7933	3.4753	3.60073
180	1	1	0	0	1	1	0	1	2.7778	3.4560	3.58073
181	0	0	1	0	1	1	0	1	2.7624	3.4369	3.56095
182	1	0	1	0	1	1	0	1	2.7473	3.4180	3.54138
183	0	1	1	0	1	1	0	1	2.7322	3.3993	3.52203
184	1	1	1	0	1	1	0	1	2.7174	3.3809	3.50289
185	0	0	0	1	1	1	0	1	2.7027	3.3626	3.48395
186	1	0	0	1	1	1	0	1	2.6882	3.3445	3.46522
187	0	1	0	1	1	1	0	1	2.6738	3.3266	3.44669
188	1	1	0	1	1	1	0	1	2.6596	3.3089	3.42836
189	0	0	1	1	1	1	0	1	2.6455	3.2914	3.41022
190	1	0	1	1	1	1	0	1	2.6316	3.2741	3.39227
191	0	1	1	1	1	1	0	1	2.6178	3.2570	3.37451
192	1	1	1	1	1	1	0	1	2.6042	3.2400	3.35693

f/n	D1	D2	D3	D4	D5	D6	D7	D8	f=500.0000	f=622.0800	f=644.53125
193	0	0	0	0	0	0	1	1	2.5907	3.2232	3.33954
194	1	0	0	0	0	0	1	1	2.5773	3.2066	3.32233
195	0	1	0	0	0	0	1	1	2.5641	3.1902	3.30529
196	1	1	0	0	0	0	1	1	2.5510	3.1739	3.28842
197	0	0	1	0	0	0	1	1	2.5381	3.1578	3.27173
198	1	0	1	0	0	0	1	1	2.5253	3.1418	3.25521
199	0	1	1	0	0	0	1	1	2.5126	3.1260	3.23885
200	1	1	1	0	0	0	1	1	2.5000	3.1104	3.22266
201	0	0	0	1	0	0	1	1	2.4876	3.0949	3.20662
202	1	0	0	1	0	0	1	1	2.4752	3.0796	3.19075
203	0	1	0	1	0	0	1	1	2.4631	3.0644	3.17503
204	1	1	0	1	0	0	1	1	2.4510	3.0494	3.15947
205	0	0	1	1	0	0	1	1	2.4390	3.0345	3.14405
206	1	0	1	1	0	0	1	1	2.4272	3.0198	3.12879
207	0	1	1	1	0	0	1	1	2.4155	3.0052	3.11368
208	1	1	1	1	0	0	1	1	2.4038	2.9908	3.09871
209	0	0	0	0	1	0	1	1	2.3923	2.9765	3.08388
210	1	0	0	0	1	0	1	1	2.3810	2.9623	3.06920
211	0	1	0	0	1	0	1	1	2.3697	2.9482	3.05465
212	1	1	0	0	1	0	1	1	2.3585	2.9343	3.04024
213	0	0	1	0	1	0	1	1	2.3474	2.9206	3.02597
214	1	0	1	0	1	0	1	1	2.3364	2.9069	3.01183
215	0	1	1	0	1	0	1	1	2.3256	2.8934	2.99782
216	1	1	1	0	1	0	1	1	2.3148	2.8800	2.98394
217	0	0	0	1	1	0	1	1	2.3041	2.8667	2.97019
218	1	0	0	1	1	0	1	1	2.2936	2.8536	2.95657
219	0	1	0	1	1	0	1	1	2.2831	2.8405	2.94307
220	1	1	0	1	1	0	1	1	2.2727	2.8276	2.92969
221	0	0	1	1	1	0	1	1	2.2624	2.8148	2.91643
222	1	0	1	1	1	0	1	1	2.2523	2.8022	2.90329
223	0	1	1	1	1	0	1	1	2.2422	2.7896	2.89027
224	1	1	1	1	1	0	1	1	2.2321	2.7771	2.87737
225	0	0	0	0	0	1	1	1	2.2222	2.7648	2.86458
226	1	0	0	0	0	1	1	1	2.2124	2.7526	2.85191
227	0	1	0	0	0	1	1	1	2.2026	2.7404	2.83934
228	1	1	0	0	0	1	1	1	2.1930	2.7284	2.82689
229	0	0	1	0	0	1	1	1	2.1834	2.7165	2.81455
230	1	0	1	0	0	1	1	1	2.1739	2.7047	2.80231
231	0	1	1	0	0	1	1	1	2.1645	2.6930	2.79018
232	1	1	1	0	0	1	1	1	2.1552	2.6814	2.77815
233	0	0	0	1	0	1	1	1	2.1459	2.6699	2.76623
234	1	0	0	1	0	1	1	1	2.1368	2.6585	2.75441
235	0	1	0	1	0	1	1	1	2.1277	2.6471	2.74269
236	1	1	0	1	0	1	1	1	2.1186	2.6359	2.73106
237	0	0	1	1	0	1	1	1	2.1097	2.6248	2.71954
238	1	0	1	1	0	1	1	1	2.1008	2.6138	2.70811
239	0	1	1	1	0	1	1	1	2.0921	2.6028	2.69678
240	1	1	1	1	0	1	1	1	2.0833	2.5920	2.68555
241	0	0	0	0	1	1	1	1	2.0747	2.5812	2.67440
242	1	0	0	0	1	1	1	1	2.0661	2.5706	2.66335
243	0	1	0	0	1	1	1	1	2.0576	2.5600	2.65239
244	1	1	0	0	1	1	1	1	2.0492	2.5495	2.64152
245	0	0	1	0	1	1	1	1	2.0408	2.5391	2.63074
246	1	0	1	0	1	1	1	1	2.0325	2.5288	2.62005
247	0	1	1	0	1	1	1	1	2.0243	2.5185	2.60944
248	1	1	1	0	1	1	1	1	2.0161	2.5084	2.59892
249	0	0	0	1	1	1	1	1	2.0080	2.4983	2.58848
250	1	0	0	1	1	1	1	1	2.0000	2.4883	2.57813
251	0	1	0	1	1	1	1	1	1.9920	2.4784	2.56785
252	1	1	0	1	1	1	1	1	1.9841	2.4686	2.55766
253	0	0	1	1	1	1	1	1	1.9763	2.4588	2.54755
254	1	0	1	1	1	1	1	1	1.9685	2.4491	2.53752
255	0	1	1	1	1	1	1	1	1.9608	2.4395	2.52757
256	1	1									