



**PARTSNIC CO., Ltd.**

# SPECIFICATION

FOR ELECTRONIC TUNER

**MODEL : DT5-BF18D N  
DT5-BF18P N**

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PREPARED	CHECKED	APPROVED	ISSUED DATE :
			2001. 07. 26
			PAGE :
			16 (including this cover)

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## 1. General

No.	Item	Specifications
1-1	Tuning system	Varactor-Tuned (with PLL)
1-2	Receiving channel	CCIR+CATV+HYPER Channel UHF : E69~S37 VHF High : S36~S8 VHF Low : S7~NZ1
1-3	IF frequency	PIF : 38.90 MHz CIF : 34.47 MHz SIF : 33.40 MHz
1-4	Receiving system	Upper heterodyne
1-5	Input Impedance	75Ω Unbalanced (Common VHF/UHF input)
1-6	Output Impedance	75Ω Unbalanced
1-7	Load Impedance	75Ω Min.
1-8	Application standard	Comply with CENELEC

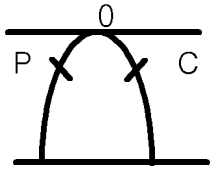
## 2. Electrical Rating and Condition

No.	Item	Specifications														
2-1	Test & Environment condition	Supply voltage : standard Temperature : 25±2°C Humidity : 65±5% RH The condition of 5~35°C, 45~85% RH is applicable, if necessary														
	Supply voltage	<table border="1"> <thead> <tr> <th>Terminal</th> <th>Supply voltage</th> <th>Tolerance</th> </tr> </thead> <tbody> <tr> <td>B+ (PB&amp;MB)</td> <td>D.C. +5.0V</td> <td>±0.1V</td> </tr> <tr> <td>AGC</td> <td>D.C. +4.5V</td> <td>±0.1V</td> </tr> <tr> <td>TU2</td> <td>D.C. +32.0V</td> <td>±0.1V</td> </tr> </tbody> </table>				Terminal	Supply voltage	Tolerance	B+ (PB&MB)	D.C. +5.0V	±0.1V	AGC	D.C. +4.5V	±0.1V	TU2	D.C. +32.0V
Terminal	Supply voltage	Tolerance														
B+ (PB&MB)	D.C. +5.0V	±0.1V														
AGC	D.C. +4.5V	±0.1V														
TU2	D.C. +32.0V	±0.1V														
2-2	Terminal current B+=+5.0±0.1(V)	B+ (PB&MB)	UHF	typ. 79mA	max 85mA											
			VHF High	typ. 85mA	max 90mA											
			VHF Low	typ. 76mA	max 80mA											
		TU2	ALL CH	typ. 1mA	max 3mA											
2-3	Guarantee operation condition	No "parasitic oscillation", or "oscillation stop" on the following condition														
2-4	Guarantee Voltage for operation	B+	+5.0V±5%													
		AGC	0.0 ~ 4.5V													
		TU2	+32.0V±2V													
	Temperature	-10°C ~ +60°C														
2-5	Absolute maximum rating	B+	B+ should be within shaded area.	+5.5V												
			Temp. Tol. : ± 2°C													
		AGC	+5.0V													
		TU2	+35.0V													
		SCL, SDA, AS		Less than or "B+" supply voltage												

### 3. PLL characteristics

No.	Specification																																																																																																																																																	
3-1	Input signal level (SCL, SDA, AS) VIH (High - level input voltage) min : 3.0V max : 5.5V VIL (Low - level input voltage) max : 1.5V																																																																																																																																																	
	<p><b>I<sup>2</sup>C Bus Timing Diagram</b></p> <p><b>Note:</b> SDA — SCL —</p> <p>Telegram examples:                      Start-Addr-DR1-DR2-CW1-CW2-Stop      Start = start condition                      Start-Addr-CW1-CW2-DR1-DR2-Stop      Addr = address byte                      Start-Addr-DR1-DR2-Stop              DR1 = prog. divider byte 1                      Start-Addr-CW1-CW2-Stop              DR2 = prog. divider byte 2                         CW1 = control byte 1                         CW2 = control byte 2                         Stop = stop conditionMA1</p>																																																																																																																																																	
3-2	<p>(1) Bit Allocation Read / Write</p> <table border="1"> <thead> <tr> <th>Byte</th> <th>MSB</th> <th>bit6</th> <th>bit5</th> <th>bit4</th> <th>bit3</th> <th>bit2</th> <th>bit1</th> <th>LSB</th> <th>Ack</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td colspan="11"><b>Write Data</b></td> </tr> <tr> <td>Address Byte</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>MA1</td> <td>MA0</td> <td>0</td> <td>A</td> <td></td> </tr> <tr> <td>Progr. Divider Byte 1</td> <td>0</td> <td>n14</td> <td>n13</td> <td>n12</td> <td>n11</td> <td>n10</td> <td>n9</td> <td>n8</td> <td>A</td> <td></td> </tr> <tr> <td>Progr. Divider Byte 2</td> <td>n7</td> <td>n6</td> <td>n5</td> <td>n4</td> <td>n3</td> <td>n2</td> <td>n1</td> <td>n0</td> <td>A</td> <td></td> </tr> <tr> <td>Control Byte 1</td> <td>1</td> <td>5I</td> <td>T1</td> <td>T0</td> <td>1</td> <td>RSA</td> <td>RSB</td> <td>OS</td> <td>A</td> <td></td> </tr> <tr> <td>Control Byte 2</td> <td>×</td> <td>×</td> <td>×</td> <td>×</td> <td>P3</td> <td>P2</td> <td>P1</td> <td>P0</td> <td>A</td> <td></td> </tr> <tr> <td colspan="11"><b>Read Data</b></td> </tr> <tr> <td>Address Byte</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>MA1</td> <td>MA0</td> <td>1</td> <td>A</td> <td></td> </tr> <tr> <td>Status Byte</td> <td>POR</td> <td>FL</td> <td>×</td> <td>I1</td> <td>I0</td> <td></td> <td>A1</td> <td>A0</td> <td>A</td> <td></td> </tr> </tbody> </table> <p>(2) Tuning Frequency                      Locked frequency is calculated as follows  <math>f_{osc} = f_r \times 8 \times N</math>                      fosc : Locked frequency                      fr : Reference Frequency                      N : 14bit binary code  <math>N = 2^{14} \times n_{14} + 2^{13} \times n_{13} + \dots + 2^3 \times n_3 + 2^2 \times n_2 + 2^1 \times n_1 + n_0</math></p> <p>(3) Band buffers output</p> <table border="1"> <thead> <tr> <th>BAND</th> <th>BS4</th> <th>BS3</th> <th>BS2</th> <th>BS1</th> </tr> </thead> <tbody> <tr> <td>UHF</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>VHF HIGH</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td>VHF LOW</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> </tr> </tbody> </table> <p>(4) Address selection</p> <table border="1"> <thead> <tr> <th>MA1</th> <th>MA0</th> <th>Voltage at CAS</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>(0 ~ 0.1)×Vcc</td> </tr> <tr> <td>0</td> <td>1</td> <td>open circuit</td> </tr> <tr> <td>1</td> <td>0</td> <td>(0.4 ~ 0.6)×Vcc</td> </tr> <tr> <td>1</td> <td>1</td> <td>(0.9 ~ 0.1)×Vcc</td> </tr> </tbody> </table>	Byte	MSB	bit6	bit5	bit4	bit3	bit2	bit1	LSB	Ack	Remarks	<b>Write Data</b>											Address Byte	1	1	0	0	0	MA1	MA0	0	A		Progr. Divider Byte 1	0	n14	n13	n12	n11	n10	n9	n8	A		Progr. Divider Byte 2	n7	n6	n5	n4	n3	n2	n1	n0	A		Control Byte 1	1	5I	T1	T0	1	RSA	RSB	OS	A		Control Byte 2	×	×	×	×	P3	P2	P1	P0	A		<b>Read Data</b>											Address Byte	1	1	0	0	0	MA1	MA0	1	A		Status Byte	POR	FL	×	I1	I0		A1	A0	A		BAND	BS4	BS3	BS2	BS1	UHF	1	0	0	0	VHF HIGH	0	0	1	0	VHF LOW	0	0	0	1	MA1	MA0	Voltage at CAS	0	0	(0 ~ 0.1)×Vcc	0	1	open circuit	1	0	(0.4 ~ 0.6)×Vcc	1	1	(0.9 ~ 0.1)×Vcc
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4. Electrical characteristics

No.	Item	Specifications					Notes
		CH/BAND	min	typ	max	unit	
4-1	VSWR	UHF		3.0			Measured at worst point on or between picture and sound carriers
		VHF		3.0			
4-2	Noise figure	UHF		6.0	11.0	dB	
		VHF CATV		7.0	11.0		
		VHF AIR		6.0	9.0		
4-3	Power gain	UHF	30.0	35.0		dB	
		VHF High	30.0	35.0			
		VHF Low	31.0	36.0			
4-4	Gain taper	UHF		6.0	10.0	dB	
		VHF High		6.0	10.0		
		VHF Low		6.0	10.0		
4-5	Gain reduction	UHF	40.0	50.0		dB	AGC : 1.0V
		VHF	45.0	55.0			
4-6	Input/Output Characteristics	ALL BANDS	104	109		dB $\mu$ V	75 $\Omega$ Terminate
4-7	IF output characteristics	E9					From ANT to IF IF cable : 3C-5V 20cm Scope sensitivity : 2mVp-p/cm Detector : 75 $\Omega$
4-8	IF rejection	UHF	75.0	85.0		dB	max gain : Worst point at 33.4MHz to 38.9MHz
		VHF High	75.0	85.0			
		VHF Low	50.0	70.0			
4-9	Image rejection	UHF	50.0	60.0		dB	max gain : Worst point at Image band
		VHF High	60.0	65.0			
		VHF Low	60.0	65.0			

No.	Item	Specifications					Notes												
		CH	min	typ	max	unit													
4-10	1070kHz color beat rejection	UHF	50.0			dB	75Ω Terminate Max. Gain P : 60dB $\mu$ V C : 44dB $\mu$ V S : 54dB $\mu$ V												
		VHF	55.0																
4-11	1% Cross modulation	<table border="1"> <thead> <tr> <th>CH</th> <th>A (dB<math>\mu</math>V)</th> <th>B (dB<math>\mu</math>V)</th> </tr> </thead> <tbody> <tr> <td>UHF</td> <td>69</td> <td>84</td> </tr> <tr> <td>VHF CATV</td> <td>69</td> <td>84</td> </tr> <tr> <td>VHF AIR</td> <td>74</td> <td>89</td> </tr> </tbody> </table> <p>* 75Ω Terminate</p> <p>Cross modulation value should be within shaded area. Tuner should be measured for 1% cross modulation with <math>\pm 2</math> channel undesired signal.</p>					CH	A (dB $\mu$ V)	B (dB $\mu$ V)	UHF	69	84	VHF CATV	69	84	VHF AIR	74	89	
CH	A (dB $\mu$ V)	B (dB $\mu$ V)																	
UHF	69	84																	
VHF CATV	69	84																	
VHF AIR	74	89																	
4-12	Margin frequency	CH/BAND		min	typ	max	unit												
		UHF	High-end	2.0			MHz												
			Low-end	2.0															
		VHF High	High-end	1.0															
			Low-end	2.0															
		VHF Low	High-end	1.0															
Low-end	0.5																		
4-13	OSC Instability	UHF			90	kHz	+B $\pm$ 5% Temp -30 to +60°C												
VHF			90																
4-14	OSC stop voltage	UHF			4.5	V	+B voltage												
		VHF			4.5														
4-15	ANT leakage	30~ 950MHz				46	dB $\mu$ V	75Ω Terminate											
		950~ 1750MHz				54													
4-16	IF leakage	UHF			80	dB $\mu$ V	75Ω Terminate												
		VHF			95														



No.	Item	Specifications							Notes
		CH	P Freq.	OSC Freq.	min	typ	max	unit	
4-17	Tuning Voltage	UHF	E69	855.25	894.15		25.0		V
			E60	783.25	822.15				
			E46	671.25	710.15				
			E38	607.25	646.15				
			E26	511.25	550.15				
			E21	471.25	510.15				
			S37	431.25	470.15		1.0		
		VHF High	S36	423.25	462.15		26.0		
			S29	367.25	406.15				
			S23	319.25	358.15				
			S17	273.25	312.15				
			S11	231.25	270.15				
			E9	203.25	242.15				
			E5	175.25	214.15				
		VHF Low	S8	154.25	193.15		3.7		
			S7	147.25	186.15		25.0		
			S2	112.25	151.15				
			Z	83.25	122.15				
			E4	62.25	101.15				
			E2	48.25	87.15				
			NZ1	45.25	84.15		1.7		

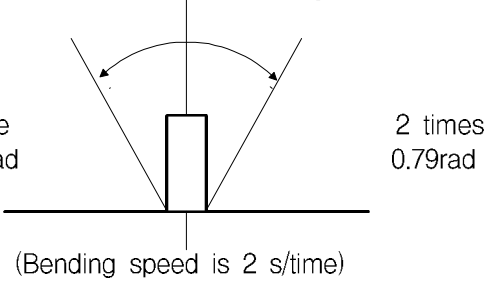
## 5. Environmental Test (Testing Condition)

No.	Item	Testing Condition
5-1	Heat Load Test	<ol style="list-style-type: none"> <li>1. Initial values measurement at standard testing condition.</li> <li>2. Leave samples in <math>70^{\circ}\text{C} \pm 2^{\circ}\text{C}</math> for <math>96 \pm 5</math> hours, and in standard testing condition for 30 minutes, then take measurements within 1 hour.</li> <li>3. Supply voltage : Standard + 10%</li> <li>4. Supply voltage cycle : 1.5H ON, 0.5H OFF</li> </ol>
5-2	Humidity Load Test	<ol style="list-style-type: none"> <li>1. Leave samples in <math>40^{\circ}\text{C} \pm 5^{\circ}\text{C}</math> for <math>24 \pm 2</math> hours, and in standard testing condition for 30 minutes, then take measurements.</li> <li>2. Leave samples in <math>40^{\circ}\text{C} \pm 2^{\circ}\text{C}</math> for 90~95% RH, for <math>96 \pm 5</math> hours, and in standard testing condition for 30 minutes, then take measurements within 1 hour.</li> <li>3. Supply voltage : Standard + 10%</li> <li>4. Supply voltage cycle : 1.5H ON, 0.5H OFF</li> </ol>
5-3	Cold Test	<ol style="list-style-type: none"> <li>1. Initial values measurement at standard testing condition.</li> <li>2. Leave samples in <math>-20^{\circ}\text{C} \pm 2^{\circ}\text{C}</math> for <math>96 \pm 5</math> hours, and in standard testing condition for 2 hours, then take measurements within 1 hour.</li> </ol>
5-4	Operating Life Test	<ol style="list-style-type: none"> <li>1. Take measurements in standard testing condition.</li> <li>2. Leave samples for 1000 hours, then take measurements.</li> <li>3. Supply voltage : standard</li> </ol>
5-5	High Voltage Test	Ant terminal : 4kV, 10 times (1000pF charged, 100 $\Omega$ Series resistance)
5-6	Vibration Test	Vibration test fixture is used to vibrate the tuner with a total amplitude of 1mm and frequency ranging from 10 to 55Hz, once per minute consecutively, for 40 minutes in each of three directions, X, Y and Z.
5-7	Impact Test	<ol style="list-style-type: none"> <li>1. Impact acceleration : <math>490\text{m/s}^2</math></li> <li>2. Impact duration : 11ms</li> <li>3 Impact number of times : 3 times per each 6 sides</li> </ol>

### 6. Environmental Test(Specification)

No.	Item	Specifications
6-1	Heat Load Test	Compared with initial values . Response : ±2dB max. . N. F : ±3dB max. . Power Gain : ±3dB max. . Osc. Shift UHF : ±2.5MHz max. VHF : ±2.5MHz max. . Insulation resistance : ±10M min. (Tuning terminal)
6-2	Humidity Load Test	Same as above
6-3	Cold Test	Same as above
6-4	Operating Life Test	Same as above
6-5	High Voltage Test	Same as above
6-5	Vibration Test	Same as above
6-6	Impact Test	Same as above

### 7. Mechanical Characteristics

	Item	Specifications
7-1	Outline view Assembly Appearance	No defects of wiring, soldering and assembling. No dirt, rust, corrosion or foreign material.
7-2	Appearance Structure  Dimension Terminal strength	As assembly drawing. Vertical direction : More than 19.6N Folding strength : It should not be possible to remove or damage the terminal when bent left and right up to 0.79rad 4times.
		
	ANT Jack insertion Mass	3.9~44.1N  Approximately 35g

## 8. Production Factory and Outgoing Quality Assurance

Production Factory.

PARTSNIC Co. , Ltd

## 1) OVERSEAS SALES &amp; MKTG. DEPT :

543 DANGJUNG-DONG, KUNPO-SI, KYUNGKI-DO, KOREA, 435-030

TEL : 82-31-4281-611

FAX : 82-31-453-1566

## 2) OFFICE &amp; FACTORY :

19, MANGJEADONG, JUNGEUP-SI, JEOLLABUK-DO, KOREA

TEL : 82-63-530-8411~5

FAX : 82-63-530-8416

## 3) PNCU OFFICE &amp; FACTORY

TROOPER'S LANE INDUSTRIAL ESTATE CARRICKFERGUS, CO ANTRIM, U.K.

TEL : 44-2893-357-205

FAX : 44-2893-382-223

## 4) PNCS OFFICE &amp; FACTORY

WEST OF MUPING, BEIGUAN STREET, MUPING DISTRICT, SHANDONG

THE PEOPLE'S REPUBLIC OF CHINA

TEL : 86-535-422-4372~5

FAX : 86-535-422-4382

## 9. Channel Frequency Table(CCIR+CATV+HYPER)

NO.	CH	FREQ	LO	IMG	NO.	CH	FREQ	LO	IMG
1		43.25	82.15	121.05	55	S37 U27	431.25	470.15	509.05
2	NZ1	45.25	84.15	123.05	56	S38 U28	439.25	478.15	517.05
3	E2	48.25	87.15	126.05	57	S39 U29	447.25	486.15	525.05
4	E3	55.25	94.15	133.05	58	S40 U30	455.25	494.15	533.05
5	E4	62.25	101.15	140.05	59	S41 U31	463.25	502.15	541.05
6	X S1	69.25	108.15	147.05	60	E21	471.25	510.15	549.05
7	Y S2	76.25	115.15	154.05	61	E22	479.25	518.15	557.05
8	Z S3	83.25	122.15	161.05	62	E23	487.25	526.15	565.05
9	Z+1	90.25	129.15	168.05	63	E24	495.25	534.15	573.05
10	Z+2	97.25	136.15	175.05	64	E25	503.25	542.15	581.05
11	S1 M1	105.25	144.15	183.05	65	E26	511.25	550.15	589.05
12	S2 M2	112.25	151.15	190.05	66	E27	519.25	558.15	597.05
13	S3 M3	119.25	158.15	197.05	67	E28	527.25	566.15	605.05
14	S4 M4	126.25	165.15	204.05	68	E29	535.25	574.15	613.05
15	S5 M5	133.25	172.15	211.05	69	E30	543.25	582.15	621.05
16	S6 M6	140.25	179.15	218.05	70	E31	551.25	590.15	629.05
17	S7 M7	147.25	186.15	225.05	71	E32	559.25	598.15	637.05
18	S8 M8	154.25	193.15	232.05	72	E33	567.25	606.15	645.05
19	S9 M9	161.25	200.15	239.05	73	E34	575.25	614.15	653.05
20	S10 M10	168.25	207.15	246.05	74	E35	583.25	622.15	661.05
21	E5	175.25	214.15	253.05	75	E36	591.25	630.15	669.05
22	E6	182.25	221.15	260.05	76	E37	599.25	638.15	677.05
23	E7	189.25	228.15	267.05	77	E38	607.25	646.15	685.05
24	E8	196.25	235.15	274.05	78	E39	615.25	654.15	693.05
25	E9	203.25	242.15	281.05	79	E40	623.25	662.15	701.05
26	E10	210.25	249.15	288.05	80	E41	631.25	670.15	709.05
27	E11	217.25	256.15	295.05	81	E42	639.25	678.15	717.05
28	E12	224.25	263.15	302.05	82	E43	647.25	686.15	725.05
29	S11 U1	231.25	270.15	309.05	83	E44	655.25	694.15	733.05
30	S12 U2	238.25	277.15	316.05	84	E45	663.25	702.15	741.05
31	S13 U3	245.25	284.15	323.05	85	E46	671.25	710.15	749.05
32	S14 U4	252.25	291.15	330.05	86	E47	679.25	718.15	757.05
33	S15 U5	259.25	298.15	337.05	87	E48	687.25	726.15	765.05
34	S16 U6	266.25	305.15	344.05	88	E49	695.25	734.15	773.05
35	S17 U7	273.25	312.15	351.05	89	E50	703.25	742.15	781.05
36	S18 U8	280.25	319.15	358.05	90	E51	711.25	750.15	789.05
37	S19 U9	287.25	326.15	365.05	91	E52	719.25	758.15	797.05
38	S20 U10	294.25	333.15	372.05	92	E53	727.25	766.15	805.05
39	S21 U11	303.25	342.15	381.05	93	E54	735.25	774.15	813.05
40	S22 U12	311.25	350.15	389.05	94	E55	743.25	782.15	821.05
41	S23 U13	319.25	358.15	397.05	95	E56	751.25	790.15	829.05
42	S24 U14	327.25	366.15	405.05	96	E57	759.25	798.15	837.05
43	S25 U15	335.25	374.15	413.05	97	E58	767.25	806.15	845.05
44	S26 U16	343.25	382.15	421.05	98	E59	775.25	814.15	853.05
45	S27 U17	351.25	390.15	429.05	99	E60	783.25	822.15	861.05
46	S28 U18	359.25	398.15	437.05	100	E61	791.25	830.15	869.05
47	S29 U19	367.25	406.15	445.05	101	E62	799.25	838.15	877.05
48	S30 U20	375.25	414.15	453.05	102	E63	807.25	846.15	885.05
49	S31 U21	383.25	422.15	461.05	103	E64	815.25	854.15	893.05
50	S32 U22	391.25	430.15	469.05	104	E65	823.25	862.15	901.05
51	S33 U23	399.25	438.15	477.05	105	E66	831.25	870.15	909.05
52	S34 U24	407.25	446.15	485.05	106	E67	839.25	878.15	917.05
53	S35 U25	415.25	454.15	493.05	107	E68	847.25	886.15	925.05
54	S36 U26	423.25	462.15	501.05	108	E69	855.25	894.15	933.05

### 10. Marking method

1) Label marking

2) Lot No. : DT5-BF18D/P N

--> ① : T(User : TV-T, VCR-V, The others - D)

--> ② : YEAR

--> ③ : MONTH(A ~ L <-- 1 ~ 12 Month)

--> ④⑤ : DAY

--> ⑥ : PRODUCT FACTORY

- U : PNCU (N/IRELAND)

- M : PNCM (MEXICO)

- S : PNCS (CHINA)

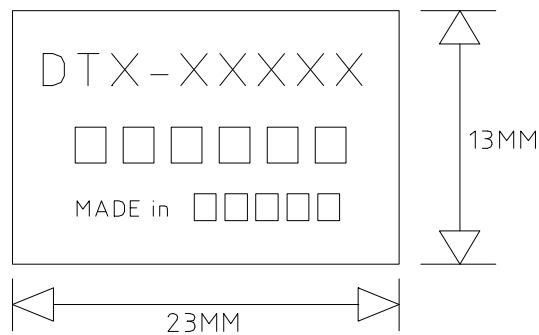
3) Producing district : Made in □ □ □ □ □

- N/IRELAND

- MEXICO

- CHINA

4) Label size



5) Label attach

