

TRuepoint[®] 5000

Data Sheet

A new generation of point-to-point SDH / PDH / Ethernet digital radios



The TRuepoint 5000 series of point-to-point digital radios delivers highly flexible, highly reliable solutions for Nx E1 up to STM-1 and data communication links over a broad range of frequency bands from 6 to 38 GHz. This data sheet provides technical information about the TRuepoint 5000, including specifications, characteristics and applications.

Technical Specifications

Bit Rate Capacity: 2, 4, 8, 16 E1, E3 +1 E1, 21 E1+1 E1, 32 E1, STM-1+1 E1, STM-1p+1 E1, Nx E1+2x100BASE-T (2 through 75 E1 equivalent capacity, ~4-155 Mbps)

Modulation: QPSK, 16, 32, 64, 128 QAM

FEC: Low/medium capacity: Reed-Solomon
High capacity: Reed-Solomon concatenated with 2D or 4D (dimensional) TCM (Trellis Code Modulation) depending on bandwidth and system gain requirement

Digital Interfaces: E1 (75 or 120 Ohms), E3 (75 Ohms), STM-1 (OMM [optical multimode], OSM [optical single mode], 75 Ohms), 10BASE-T, 100BASE-T

Frequency Source: All transceivers are tunable within full frequency range of each transceiver

Frequency Stability: 6 to 38 GHz: ± 5 ppm including aging

Auxiliary Channels:

Standard: Service Channel 1: 19.2 kbps asynchronous (RS-232)

Optional: Service Channels 2 and 3: Orderwire or Data Channel 64 kbps synchronous co- or contradirectional V.11 or G.703

Installation: SPU: indoors only; RFU: indoors or outdoors

Configurations:

TRuepoint 5200: 1+0, 1+1 (MHSB, FD, SD), 2+0, 3+0, 4+0, 2+2, 3+3, 4+4

TRuepoint 5100: 1+0, 1+1 (MHSB, SD), 2+0

Network Management: NetBoss[®], StarView™, FarScan™, SNMP Manager

Radio Control, Monitoring and Maintenance Tools: Web-CIT, VT-100, Harris handheld terminal, NMS, PCR

Alarms: Programmable relay alarms, 4 basic relays, 2 inputs (controller)

Optional: 12 relays/12 inputs or 6 relays/30 inputs, or a combination using two Relay & Alarm modules

Power Source: 21 to 60 Vdc negative or positive ground (auto-detection)

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Technical Specifications

- **Power Consumption:** (SPU+RFU for high-capacity typical configuration)

	Unprotected	Protected
TRuepoint 5100:	59 Watts	111 Watts
TRuepoint 5200:	84 Watts	161 Watts

- **Operating Temperature Range:**

	Indoor	Outdoor
Guaranteed Performance:	-5° to +50° C	-33° to +55° C
Operational:	-10° to +55° C	-40° to +55° C
Humidity:	95% max, non-condensing	

Regulatory Information

- **Frequency Plans:** According to each relevant ITU-R and CEPT recommendation
- **Digital Interface:** Rec. G.703 (E1, E3, STM-1p, STM-1)
- **Electromagnetic Compatibility:** EN 301 489-4, EN 301 489-1
Complies with the latest harmonized ETSI EN 302 217-2-2 and R&TTE directive for Class 2 type equipment operating in non-harmonized frequency bands.

Mechanical Characteristics

- **Connections:** SPU to RFU, coaxial cable with N-Type connectors

Dimensions:	Height	Width	Depth	Weight
SPU 1+0	45 mm (1 RMS)	483 mm	258 mm	3.3 kg
SPU 1+1	90 mm (2 RMS)	483 mm	258 mm	5.2 kg
TRuepoint 5100	358 mm (8 RMS)	245 mm	122 mm	6.0 kg
TRuepoint 5200	442 mm (10 RMS)	216 mm	300 mm	18.0 kg (2 TRs)

Antenna Characteristics

- **Detachable Configuration:** Uses high- or standard-performance parabolic antenna from qualified vendors. Dimension varies from 30 cm to 1.8 m diameter depending on frequency band. Uses latches for the antenna connection.
- **Separate Configuration:** Standard parabolic antenna. Uses waveguide or Flex Twist to interconnect radio and antenna. Radio flange interfaces are specified in the table below.

System Characteristics

Band (GHz)	Product Frequency Range (GHz)	Channel Spacing (MHz) (specify type at time of order)	Transmit/Receive Frequency Spacing (MHz)	Flange (IEC/EIA) Specifications ¹		Waveguide ²	
				IEC	EIA or US Mil		
TRuepoint 5200	L6	5.925 - 6.425	3.5, 7, 14, 28, 29.65, 40	240, 252.04	PDR 70	CPR 137G	WR 137
	U6	6.425 - 7.125	3.5, 7, 14, 20, 28, 30, 40	340, 345, 400 to 500	PDR 70	CPR 137G	WR 137
	7	7.110 - 7.750	3.5, 7, 14, 27, 28	154, 161, 168,182, 196, 245, 276	PDR 84	CPR 112G	WR 112
	8	7.725 - 8.500	3.5, 7, 14,14.825, 28, 29.65	119, 126, 208, 213.5, 266, 310, 311.32	PDR 84	CPR 112G	WR 112
	10	10.0 - 10.68	3.5, 7, 14, 28, 30	98 to 602	PDR 100	CPR 90G	WR 90
	10.5/11	10.5 - 10.68	3.5, 7, 14, 28	84, 91	PDR 100	CPR 90G	WR 90
	10.5/11	10.696 - 11.71	20, 40	490, 520, 530	PDR 100	CPR 90G	WR 90
	13	12.70 - 13.25	3.5, 7, 14, 28	266	PBR 120	UG Choke	WR 75
	15	14.4 - 15.35	3.5, 7, 14, 28, 56	315, 322, 420, 490, 644, 728, 840	PBR 140	UG 541A/U	WR 62
	18	17.700 - 19.700	3.5, 7, 13.75, 27.5, 40, 55	1000, 1006,1008, 1010,1092.5, 1120,1560, 1615	PBR 220	UG 596A/U	WR 42
TRuepoint 5100	23	21.2 - 23.6	3.5, 5, 14, 28, 56	252, 1008, 1232	PBR 220	UG 596A/U	WR 42
	26	24.5 - 26.5	3.5, 7, 14, 28, 56	1008	PBR 220	UG 596A/U	WR 42
	38	36.0 - 39.5	3.5, 7, 14, 28, 56	462, 700, 1260	PBR 320	UG 600A/U	WR 28
	38	37.0 - 40.0	3.5, 7, 14, 28, 56	700, 1260	PBR 320	UG 600A/U	WR 28

NOTE: Per ITU-R standards, as applied to the respective parts thereto. For specific regulatory information, refer to manual IMN-903000-Exx, or call your Harris representative.

⁽¹⁾ The flanges shown refer to the radio flanges. They have flange through-holes to mate with the waveguide or flex twist flange through-holes.

⁽²⁾ Waveguide for separate or indoor RFU.

RF Characteristics

Unless otherwise indicated, typical performance specifications are listed and apply to transmitters/receivers connected back-to-back. Specifications must be confirmed before they become applicable to any specific system, contract or order.

		Channel Spacing (MHz)											
		Frequency Band (GHz)											
Airlink Capacity	Modulation QPSK/QAM	L6	U6	7	8	10	11	13	15	18	23	26	38
2 E1	QPSK	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
4 E1	QPSK	7	7	7	7	7	7	7	7	7	7	7	7
	16	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
8 E1	QPSK	14	14	14	14	14	14	14	14	13.75	14	14	14
	16	7	7	7	7	7	7	7	7	7	7	7	7
16 E1	QPSK	28/29.65	28/29.65	27/28	28/29.65	28	28	28	27/28	27.5	28	28	28
	16	14	14	14	14	14	14	14	14	13.75	14	14	14
E3 + E1	QPSK	28/29.65	28/29.65	27/28	28/29.65	28	28	28	27/28	27.5	28	28	28
	16		14	14	14	14	14	14	14	13.75	14	14	14
21 E1	QPSK			14	14	14	40	14	14	13.75	14	40	14
32 E1	16	28/29.65		27/28	28/29.65	28	28	28	27/28	27.5	28	28	28
35 E1	16	28/29.65		27/28	28/29.65	28	28	28	27/28	27.5	28	28	28
	128			14	14	14	14	14	14	13.75	14	14	14
50 E1	32	28/29.65		27/28	28/29.65	28	28	28	27/28	27.5	28	28	28
100BT+4 E1 (109 Mb/s)	32	28/29.65		27/28	28/29.65	28	28	28	27/28	27.5	28	28	28
75 E1	32									55	56	56	56
	64	40	40				40					40	
	128	28/29.65	30	28	28/29.65	28	28	28	27/28	27.5	28	28	28
STM-1 + E1	32									55	56	56	56
	64	40	40				40					40	
	128	28/29.65	30	28	28/29.65	28	28	28	28	27.5	28	28	28

Note: Other configurations are also available. Contact Harris for more information.

RF Characteristics

Typical Receiver Threshold dBm (BER 10⁻⁶)
With the 5100 RFU (13 to 23 GHz), values are enhanced by .5 dB.

		Frequency Band (GHz)											
Airlink Capacity	Modulation QPSK/QAM	L6	U6	7	8	10	11	13	15	18	23	26	38
2 E1	QPSK	-95.5	-95.5	-95.5	-95.0	-95.0	-95.0	-93.0	-93.0	-93.0	-93.0	-93.0	-92.0
4 E1	QPSK	-92.5	-92.5	-92.5	-92.0	-92.0	-92.0	-90.0	-90.0	-90.0	-90.5	-90.5	-89.5
	16	-88.5	-88.5	-88.5	-88.0	-88.0	-88.0	-86.5	-86.5	-86.5	-86.5	-86.5	-85.5
8 E1	QPSK	-89.5	-89.5	-89.5	-89.0	-89.0	-89.0	-87.5	-87.5	-87.5	-87.5	-87.5	-86.5
	16	-86.5	-86.5	-86.5	-86.0	-86.0	-86.0	-84.0	-84.0	-84.0	-84.0	-84.0	-83.0
16 E1	QPSK	-87.0	-87.0	-87.0	-86.5	-86.5	-86.5	-84.5	-84.5	-84.5	-84.5	-84.5	-83.5
	16	-84.0	-84.0	-84.0	-83.5	-83.5	-83.5	-81.5	-81.5	-81.5	-81.5	-81.5	-80.5
E3 + E1	QPSK	-86.5	-86.5	-86.5	-86.0	-86.0	-86.0	-84.0	-84.0	-84.0	-84.0	-84.0	-83.0
	16		-83.5	-83.5	-83.0	-83.0	-83.0	-81.0	-81.0	-81.0	-81.0	-81.0	-80.0
21 E1	QPSK			-78.5	-78.0	-78.0	-78.0	-76.0	-76.0	-76.0	-76.5	-76.5	-75.5
	32			-80.5	-80.0	-80.0	-80.0	-78.0	-78.0	-78.0	-78.0	-78.0	-77.0
35 E1	16	-80.5		-80.5	-80.0	-80.0	-80.0	-78.0	-78.0	-78.0	-78.0	-78.0	-77.0
	128			-75.0	-74.5	-74.5	-74.5	-72.5	-72.5	-72.5	-72.5	-72.5	-71.5
50 E1	32	-76.0		-76.0	-75.5	-75.5	-75.5	-73.5	-73.5	-73.5	-73.5	-73.5	-72.5
100BT+4 E1 (109 Mb/s)	32	-75.0		-75.0	-74.5	-74.5	-74.5	-73.0	-73.0	-73.0	-73.0	-73.0	-72.0
75 E1	32									-76.0	-76.0	-76.0	-75.0
	64	-75.5	-75.5				-74.5					-73.5	
	128	-70.5	-70.5	-70.5	-70.0	-70.0	-70.0	-68.5	-68.5	-67.0	-68.5	-68.5	-67.5
STM-1 + E1	32									-76.0	-76.0	-76.0	-75.0
	64	-75.5	-75.5				-74.5					-73.5	
	128	-70.5	-70.5	-70.5	-70.0	-70.0	-70.0	-68.5	-68.5	-67.0	-68.5	-68.5	-67.5

Typical receiver threshold and nominal output power are given for unprotected (1+0) configuration.

Notes: For guaranteed value, remove 1 dB from the typical value.
Other configurations are also available. Contact Harris for more information.
Values for wide T/R spacing. Additional loss must be added for narrower T/R spacing. Contact Harris for details.

RF Characteristics

		Nominal Output Power dBm											
		With the 5100 RFU (13 to 23 GHz), values are enhanced by .5 dB.											
Airlink Capacity		Modulation QPSK/QAM	Frequency Band (GHz)										
			L6	U6	7	8	10	11	13	15	18	23	26
2 E1	QPSK	32.0	32.0	31.0	30.5	28.5	28.5	26.0	26.0	26.0	24.0	24.5	22.0
4 E1	QPSK	32.0	32.0	31.0	30.5	28.5	28.5	26.0	26.0	26.0	24.0	24.5	22.0
	16	28.0	28.0	27.0	26.5	24.5	24.5	23.0	23.0	23.0	21.0	21.5	19.0
8 E1	QPSK	32.0	32.0	31.0	30.5	28.5	28.5	26.0	26.0	26.0	24.0	24.5	22.0
	16	28.0	28.0	31.0	26.5	24.5	24.5	23.0	23.0	23.0	21.0	21.5	19.0
16 E1	QPSK	32.0	32.0	31.0	30.5	28.5	28.5	26.0	26.0	26.0	24.0	24.5	22.0
	16	28.0	28.0	27.0	26.5	24.5	24.5	23.0	23.0	23.0	21.0	21.5	19.0
E3 + E1	QPSK	32.0	32.0	31.0	30.5	28.5	28.5	26.0	26.0	26.0	24.0	24.5	22.0
	16		28.0	27.0	26.5	24.5	24.5	23.0	23.0	23.0	21.0	21.5	19.0
21 E1	QPSK			26.0	25.5	23.5	23.5	22.0	21.0	22.0	20.0	24.5	18.0
	32											20.5	
32 E1	16	28.0		26.0	26.5	24.5	24.5	23.0	23.0	23.0	21.0	21.5	19.0
35 E1	16	28.0		27.0	26.5	24.5	24.5	23.0	23.0	23.0	21.0	21.5	19.0
	128			23.5	23.0	21.0	21.0	19.0	19.0	19.0	17.0	17.5	14.5
50 E1	32	27.0		26.0	25.5	23.5	23.5	21.0	22.0	22.0	20.0	20.5	18.0
100BT+4 E1 (109 Mb/s)	32	27.0		26.0	25.5	23.5	23.5	21.0	22.0	22.0	20.0	20.5	18.0
75 E1	32									22.0	20.0	20.5	18.0
	64	25.5	25.5				22.0					19.5	
	128	24.5	24.5	23.5	23.0	21.0	21.0	19.0	19.0	19.0	17.5	18.0	14.5
STM-1 + E1	32									22.0	20.0	20.5	18.0
	64	25.5	25.5				22.0					19.5	
	128	24.5	24.5	23.5	23.0	21.0	21.0	19.0	19.0	19.0	17.5	18.0	14.5

Notes: For guaranteed value TRuepoint 5100/5200: 2 dB below nominal value
 Values for wide T/R spacing. Additional loss must be added for narrower T/R spacing. Contact Harris for details.

Unless otherwise indicated, typical performance specifications are listed and apply to transmitters/receivers connected back-to-back. Specifications must be confirmed before they become applicable to any specific system, contract or order.

Typical receiver threshold and nominal output power are given for unprotected (1+0) configuration.

