All specifications are typical, at 23 °C ± 2 °C unless otherwise specified.

SPECIFICATIONS

BA-4000	x-28-NRZ	x-28-PAM	x-56-PAM	x-56-PAM-FGC
Number of channels	4 (x = 4) 8 (x = 8)	4 (x = 4) 8 (x = 8)	4 (x = 4) 8 (x = 8)	4 (x = 4) 8 (x = 8)
Modulation	NRZ	NRZ/PAM4	NRZ/PAM4	NRZ/PAM4
Data rate per lane [a] (GBd)	9.95328, 10, 10.3125, 10.709, 11.3176, 12.5, 14.025, 24.33024, 25, 25.78125, 26.5625, 27.95, 28.05, 28.125	25.78125, 26.5625, 27.95, 28.05, 28.125, 28.9	25.78125, 26.5625, 27.95, 28.05, 28.125, 28.9, 49.765, 53.125, 57.8	25.78125, 26.5625, 27.95, 28.05, 28.125, 28.9, 49.765, 53.125, 57.8
Data rate adjustment (ppm)	0 to ±300	0 to ±300	0 to ±300	0 to ±300
PAM4 coding	n/a	Linear code / Gray code	Linear code / Gray code	Linear code / Gray code
Pattern supported by PPG and ED	PRBS 7/9/15/23/31	PRBS 7/9/11/13/15/23/31 PRBS 7Q/9Q/11Q/13Q/15Q/23Q/31Q Only PPG supports PRBS16Q, SSPRQ, and user-defined pattern	PRBS 7/9/11/13/15/23/31 PRBS 7Q/9Q/11Q/13Q/15Q/23Q/31Q Only PPG supports PRBS16Q, SSPRQ, and user-defined pattern	PRBS 7/9/11/13/15/23/31 PRBS 7Q/9Q/11Q/13Q/15Q/23Q/31Q Only PPG supports PRBS16Q, SSPRQ, and user-defined pattern Scrambled Idle at FGC mode (with option FGCx)
Maximum amplitude (mV_{ppd})	800 [b, c] (typical)	800 [c, e] (typical)	800 [f] (typical)	800 [f] (typical)
Rise time/fall time (20% to 80%) (ps)	15/15 [c] (typical)	11/11 [c] (typical)	9.5/9.5 [d] (53.125G) 10/10 [d] (25.78125G)	9.5/9.5 [d] (53.125G) 10/10 [d] (25.78125G)
PAM4 eye width (zero hit) (ps)	n/a	23 [e] (typical)	5.5 [f] (53.125G) 23 [f] (26.5625G)	5.5 [f] (53.125G) 23 [f] (26.5625G)
Jitter RMS (fs)	750 [c] (typical)	450 [c] (typical)	400 [c] (53.125G) 450 [c] (25.78125G)	400 [c] (53.125G) 450 [c] (25.78125G)
Sensitivity [g] (mV_{ppd})	100 (NRZ 25.78125G)	200 (PAM4 26.5625G) 150 (NRZ 25.78125G)	200 [h] (PAM4 53.125G) 200 (PAM4 26.5625G) 150 (NRZ 25.78125G)	200 [i] (PAM4 53.125G) 200 (PAM4 26.5625G) 150 (NRZ 25.78125G)
CTLE (dB)	0 to 7	0 to 8	n/a	n/a
Clock output amplitude (mV_{ppd})	300	400	400	400
Clock ratio	/8, /16 (Clock frequency / Symbol rate)	/2, /4, /8, /16, /32, /64 (Clock frequency / Symbol rate)	/2, /4, /8, /16, /32, /64 (Clock frequency / Symbol rate)	/2, /4, /8, /16, /32, /64 (Clock frequency / Symbol rate)
Connector type	O-SMPM connector (up to 67 GHz bandwidth)	O-SMPM connector (up to 67 GHz bandwidth)	O-SMPM connector (up to 67 GHz bandwidth)	O-SMPM connector (up to 67 GHz bandwidth)

GENERAL SPECIFICATIONS

Size (H x W x D)		103 mm x 442 mm x 300 mm (4.1 in x 17.4 in x 11.8 in)
Weight		≤ 10 kg (22 lb)
Temperature	Operating Storage	5 °C to 40 °C (41 °F to 104 °F) –20 °C to 70 °C (–4 °F to 158 °F)
Relative humidity		20% to 80%
Power [i]		100/120 Vac (50/60/400 Hz) 220/240 Vac (50/60 Hz) 60 W typical/80 W max.

a. Fixed rate.

b. Amplitude step is 200 mV_{ppd}

c. NRZ 25.78125 GBd signal measured by 50 GHz bandwidth scope with 40 GHz 2.92 mm, 15 cm RF cable.

d. NRZ 53.125 GBd signal measured by 50 GHz bandwidth scope with 50 GHz 2.4 mm, 15 cm RF cable. Post-cursor is –2%.

e. PAM4 26.5625 GBd signal measured by 50 GHz bandwidth scope with 40 GHz 2.92 mm, 15 cm RF cable.

f. PAM4 53.125 GBd signal measured by 50 GHz bandwidth scope with 50 GHz 2.4 mm, 15 cm RF cable. Post-cursor is –2%.

g. Measured by direct loopback from PPG to ED with 40 GHz O-SMPM, 20 cm RF cable.

h. BER ≤ 10^{-10}

i. BER ≤ 10^{-9}

OPTION AVAILABLE

BA-4000	FEC4	FEC8	FGC4	FGC8
4-28-NRZ				
8-28-NRZ				
4-28-PAM	✓			
8-28-PAM		✓		
4-56-PAM	✓		✓	
8-56-PAM		✓		✓

ORDERING INFORMATION

BA-4000-XX-XX-XX

Models
4-28-NRZ = 4x28 GBd NRZ BERT with O-SMPM connector
8-28-NRZ = 8x28 GBd NRZ BERT with O-SMPM connector
4-28-PAM = 4x28 GBd NRZ/PAM4 BERT with O-SMPM connector
8-28-PAM = 8x28 GBd NRZ/PAM4 BERT with O-SMPM connector
4-56-PAM = 4x56 GBd NRZ/PAM4 BERT with O-SMPM connector
8-56-PAM = 8x56 GBd NRZ/PAM4 BERT with O-SMPM connector

Options
FEC4 = 26G PAM4 FEC simulator software 4CH [a]
FEC8 = 26G PAM4 FEC simulator software 8CH [b]
FGC4 = FEC pattern generator and checker 4CH [c]
FGC8 = FEC pattern generator and checker 8CH [d]

Exemple: BA-4000-8-56-PAM-FGC8-FEC8

Accessories
ICBOS-KM-7 = 40 GHz, 1x8 O-SMPM to K(male) cable, 7 cm
ICBOS-KM-15 = 40 GHz, 1x8 O-SMPM to K(male) cable, 15 cm
ICBOS-KM-30 = 40 GHz, 1x8 O-SMPM to K(male) cable, 30 cm
ICBOS-KM-60 = 40 GHz, 1x8 O-SMPM to K(male) cable, 60 cm

ICBOS-QM-7 = 50 GHz, 1x8 O-SMPM to 2.4 mm (male) cable, 7 cm
ICBOS-QM-15 = 50 GHz, 1x8 O-SMPM to 2.4 mm (male) cable, 15 cm
ICBOS-QM-30 = 50 GHz, 1x8 O-SMPM to 2.4 mm (male) cable, 30 cm
ICBOS-QM-60 = 50 GHz, 1x8 O-SMPM to 2.4 mm (male) cable, 60 cm

ICBOS-SMPM-7 = 50 GHz, 1x8 O-SMPM to SMPM (female) cable, 7 cm
ICBOS-SMPM-15 = 50 GHz, 1x8 O-SMPM to SMPM (female) cable, 15 cm
ICBOS-SMPM-30 = 50 GHz, 1x8 O-SMPM to SMPM (female) cable, 30 cm
ICBOS-SMPM-60 = 50 GHz, 1x8 O-SMPM to SMPM (female) cable, 60 cm

ICBOS-OS-20 = 50 GHz, 1x8 O-SMPM to O-SMPM cable, 20 cm
ICBOS-OS-30 = 50 GHz, 1x8 O-SMPM to O-SMPM cable, 30 cm
ICBOS-OS-60 = 50 GHz, 1x8 O-SMPM to O-SMPM cable, 60 cm

ICBOS-VM-15 = 67 GHz, 1x8 O-SMPM to 1.85 mm (male) cable, 15 cm
ICBOS-VM-30 = 67 GHz, 1x8 O-SMPM to 1.85 mm (male) cable, 30 cm
ICBOS-VM-60 = 67 GHz, 1x8 O-SMPM to 1.85 mm (male) cable, 60 cm

ICBOS-VF-15 = 67 GHz, 1x8 O-SMPM to 1.85 mm (female) cable, 15 cm
ICBOS-VF-30 = 67 GHz, 1x8 O-SMPM to 1.85 mm (female) cable, 30 cm
ICBOS-VF-60 = 67 GHz, 1x8 O-SMPM to 1.85 mm (female) cable, 60 cm

a. Available for BA-4000-4-28-PAM and BA-4000-4-56-PAM.
b. Available for BA-4000-8-28-PAM and BA-4000-8-56-PAM.
c. Available for BA-4000-4-56-PAM. Must be ordered with FEC4 software option.
d. Available for BA-4000-8-56-PAM. Must be ordered with FEC8 software option.

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