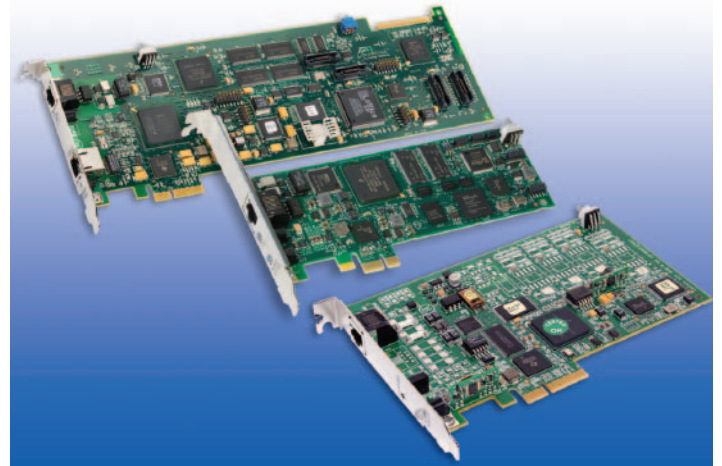


Dialogic® Brooktrout® TR1034 Fax Boards

The Dialogic® Brooktrout® TR1034 Fax Boards are high-performance, intelligent fax boards that offer TDM- (analog, DID, BRI, T1/PRI, E1/PRI) and IP-based fax capabilities. Inbound fax routing makes the Brooktrout TR1034 suitable for many computer-based fax applications, including document management, business process automation, and regulatory compliance with Sarbanes Oxley, HIPAA, and Basel II.

With support for both TDM and IP, the Brooktrout TR1034 digital fax boards can provide a migration path from traditional fax to IP fax as companies move to VoIP networks. Dialogic has also successfully completed interoperability testing for the Brooktrout TR1034 with Dialogic® Media Gateways as well as with IP-PBXs and gateways from vendors such as Cisco, Avaya, Nortel, and Alcatel-Lucent.



Available in both PCI and PCI Express (PCIe) formats, the Brooktrout TR1034 boards deliver unparalleled call completion at fast connection rates across a wide variety of fax machines and line conditions.

Dialogic delivers time-tested industry-leading fax technology, offering a broad range of fax and Fax over IP (FoIP) products, which are supported by more than 60 software partners and approved for use in more than 40 countries (as of 2012). The Dialogic® Brooktrout® T.30 Stack has been deployed for more than 20 years.

Features	Benefits
Powerful DSPs dedicated to media processing	Provides real-time processing of complex operations (such as V.34 fax receiver and transmitter, voice compression, and echo cancellation) without reducing overall system performance, which lowers implementation costs
Analog, DID, BRI, T1/PRI, E1/PRI, and IP interfaces	Supports a broad range of configurations
Dual-purpose boards that provide connectivity to both PSTN (T1/E1/PRI) and VoIP (SIP/H.323) networks	Offers a migration path from traditional fax to IP fax, allowing investment protection
Based on V.34 fax standard for mission-critical fax deployments	Can process faxes at twice the speed of V.17 fax boards
Patented inbound fax routing	Supports fax servers, fax-to-email, unified messaging, fax document management, workflow and document delivery, and systems that comply with government regulations
Field-proven T.30 and T.38 implementation	Helps to deliver faxes consistently and with high reliability
Continued attention to interoperability testing with leading PSTN and VoIP gateways and IP-PBXs	Allows a broad choice of compatible devices for use with the Brooktrout TR1034



The Brooktrout TR1034 features sophisticated hardware that operates with low power consumption. Onboard fax protocol processing can reduce a fax server's CPU utilization and improve overall system performance. Up to four TR1034 fax boards can operate concurrently in a single server, providing scalability to address changing communications needs.

The Brooktrout TR1034 sends and receives TDM or IP faxes (where supported) up to 33.6 kbps, based on the V.34 fax standard (the DID/Combo model receives faxes up to V.17 and sends up to 33.6 kbps). Not only can the TR1034 process fax at twice the speed of 14.4 kbps fax boards, it also supports V.8 fast handshaking and advanced compression, which can cut call setup and session-management time by one third. A document that can be faxed in one minute with a 14.4 kbps intelligent fax board can be sent in less than 30 seconds with the Brooktrout TR1034. This can translate into significant savings on long distance toll charges.

The Brooktrout TR1034 is available in a variety of interface types and channel densities as shown in Table 1. In addition, the Dialogic® Technology Expansion Capability (TEC) upgrade allows increased density on Brooktrout TR1034 T1/E1 models. See the [Expansion Capability Allows Increased Feature Set for Dialogic® Brooktrout® TR1034 Fax Board](#) technology brief for more information.

Interface	Channels
Analog	2, 4, and 8
DID/Combo	2 and 4
BRI	2 and 4
T1/PRI/FoIP	4, 8, 16, and 24
E1/PRI/FoIP	8, 10, 16, 20, and 30
Software-selectable T1/E1	4, 8, 16, 24, and 30
High Density T1/PRI/FoIP	48 (IP and TDM V.17, V.34) and 96 (TDM V.17 only)
High Density E1/PRI/FoIP	60 (IP and TDM V.17, V.34) and 90 (TDM V.17 only)

Table 1. Board Types and Channel Densities for the Dialogic® Brooktrout® TR1034 Fax Boards

To enable highly reliable faxing over VoIP networks, the Brooktrout TR1034 retains the field-proven Dialogic® Brooktrout® T.30 fax data stream within a T.38-based fax over IP transmission. The T.38 stack has also undergone significant interoperability testing with other IP vendors. This successfully tested interoperability provides flexibility and reliability when the Brooktrout TR1034 is deployed into VoIP networks.

For TDM, the Brooktrout TR1034 implements multinational ISDN protocols, as well as most supplementary services and many signaling protocols. These features provide application compatibility with most PBXs from major vendors and allow worldwide deployment of fax servers with Brooktrout TR1034.

Technical Specifications

Hardware

Software-Selectable T1/ E1, Low Profile

CPU speed	PCIe: 300 MHz
Digital signal processors	PCIe: 1 multi-core (532 MIPS)
Telephony interface	One T1/E1 interface (RJ-48C)
Signaling	ISDN PRI: North America, Euro ISDN T1 CAS: RBS E&M (wink and immediate) E1 CAS: Configurable MFC R2 support
Media channels	Up to 30 V.34 fax and speech
Physical	Low-profile; 6.6 in. long x 2.53 in. wide
Server bus	PCIe: x1 lane PCIe 2.0
Power	PCIe: 5 W

T1 or E1 with IP Ethernet, Full Size

CPU speed	PCI: 200 MHz PCIe: 300 MHz
Digital signal processors	PCI: Up to 6 (600 MIPS) PCIe: 1 multi-core (532 MIPS)
Ethernet interface	One 10/100Base-T interface
Telephony interface	One T1/E1 interface (RJ-48C)
Signaling	ISDN PRI: North America, Euro ISDN T1 CAS: RBS E&M (wink and immediate) E1 CAS: Configurable MFC R2 support SIP (RFC 3261) H.323 (version 4)
Media channels	PSTN: Up to 30 V.34 fax and speech IP: Up to 30 V.34 fax and speech (V.17 for G.711 fax)
Telephony bus	PCI: ECTF H.100; MVIP-90, (via bus adapter) PCIe: ECTF H.100
Physical	Full-size; 12.283 in. long x 4.2 in. wide
Server bus	PCI: 33 MHz PCI 2.2 (3.3/5 V signaling) PCIe: x4 lane PCIe 1.0a
Power	PCI: 17 W max, +5 V power supply required PCIe: 8 W

High Density T1 or E1 with IP Ethernet, Full Size

CPU speed	450 MHz
Digital signal processors	Up to 3 multi-core (532 MIPS each)
Ethernet interface	One 10/100Base-T interface
Telephony interface	Up to 4 T1/3 E1 interfaces (RJ-48C)

Signaling	ISDN PRI: North America, Euro ISDN T1 CAS: RBS E&M (wink and immediate) E1 CAS: Configurable MFC R2 support SIP (RFC 3261) H.323 (version 4)
Media channels	PSTN: Up to 60 V.34 fax and speech, 96 V.17 fax and speech IP: Up to 60 V.34 fax and speech (V.17 for G.711 fax)
Telephony bus	ECTF H.100
Physical	Full-size; 12.283 in. long x 4.2 in. wide
Server bus	33 MHz PCI 2.2 (3.3/5 V signaling)
Power	PCI: 9.7 W max, +5 V power supply required

Analog, Full Size

CPU speed	200 MHz
Digital signal processors	Up to 2 (122 MIPS each)
Telephony interface	RJ-11, RJ-45-to-RJ-11 interface cable(s) supplied
Signaling	Loop start
Media channels	Up to 8 V.34 fax and speech
Physical	Full-size: 12.283 in. long x 4.2 in. wide
Server bus	PCI: 33 MHz PCI 2.2 (3.3/5 V signaling) PCIe: x4 lane PCIe 1.0a
Power	PCI: 6 W, +5 V power supply required PCIe: 2 channel, 5.1 W 4 channel, 5.5 W 8 channel, 6.3 W

DID/Combo/Analog Loop Start, Half Size

CPU speed	200 MHz
Digital signal processors	One (61 MIPS)
Telephony interface	RJ-11 (RJ-45 to RJ-11 interface cable supplied)
Signaling	DID, Loop start
Media channels	Up to 4 V.34 fax and speech DID: V.17 inbound and V.34 outbound Loop start: V.34 inbound and V.34 outbound
Physical	Half-size; 6.6 in. long x 4.376 in. wide
Server bus	PCI: 33 MHz PCI 2.2 (3.3/5 V signaling) PCIe: x4 lane PCIe 1.0a
Power	PCI: 15 W, both +3.3 V and 5 V power supply required PCIe: Combination 2 ALS and 2 DID channels, 15 W 2 ALS channels 12 W 4 DID channels, 17 W No external power supply required

BRI, Half Size

CPU speed	200 MHz
Digital signal processors	One (61 MIPS)
Telephony interface	1 or 2 BRI
Signaling	ISDN BRI, Euro, Japan
Media channels	Up to 4 V.34 fax and speech
Physical	Half-size; 6.875 in. long x 4.2 in. wide
Server bus	PCI: 33 MHz PCI 2.2 (3.3/5 V signaling) PCIe: x4 lane PCIe 1.0a
Power	PCI: 5 W, +5 V power supply required PCIe: 2 channel, 5.1 W; 4 channel, 5.5 W

Fax Processing

Fax modems	ITU T.30 Group 3 V.34, V.17, V.29, V.27ter, V.21
Fax transport mode	PSTN: ITU T.30 IP: ITU T.38; G.711 pass-through (no V.34 support)
Speed	Up to 33.6 kbps with auto fallback (up to 14.4 kbps for G.711)
Resolution	Normal and fine resolution: 100x200, 200x200
Additional resolutions	Black and White: 200x400, 300x300 (super fine), 300x600, 400x800, 400x400, 600x600, 600x1200, 1200x1200 Color: 100x100, 300x300, 400x400, 600x600, 1200x1200
Image format compression	MH, MR, MMR
Image pass-through	Color fax T.42 (JPEG), JBIG T.85 (B/W), T.43 (color)
Page sizes	A4, A3, and B4 with scaling; on-board image conversion
Format conversion	Enhanced ASCII conversion support with headers and footers
Transmission rate enhancements	Error Correction Mode (ECM) Line error detection with repeat good line

Voice Processing

Voice codecs	G.711 (PCM, 64 kbps, μ -law and A-law) OKI ADPCM (6 kHz and 8 kHz sample rates) WAV (11 kHz 8/16 bit .WAV; 8 kHz 16 bit .WAV)
DTMF/MF/Special Information Tone (SIT) detection	
Playback volume control, pitch corrected speed control	
Silence compression	

Call Progress and Call Control

International call progress and tone detection
Programmable tone and cadence detection/generation
CED, CNG, v.21 modem detection
ANI/DNIS, DID, DTMF, and MF detection
Human detection
Answer machine detection

IP-PBX and VoIP Gateway Interoperability

Dialogic's FoIP products interoperate with industry-leading IP PBXs and VoIP gateways. See [Dialogic Brooktrout Tested FoIP Interoperability](#) for a current list.

Operating System Support

Windows®, Linux, and Solaris. Details are in the [Guide to Dialogic® System Software, Operating Systems, and Dialogic® Products](#) application note.

Installation and Configuration

Windows® Plug and Play

Graphical Configuration Tool under Windows®

Application Programming Interface

Dialogic® Brooktrout® Bfv API

Environmental

Operating temperature 0°C to 50°C

Humidity 10% to 95% non-condensing

Reliability (Estimated MTBF Per Telcordia Method 1)

T1/E1	PCI: 502,000 hours PCIe: 731,000 hours (full-size board); 810,000 hours (low-profile board)
Analog	PCI: 402,500 hours PCIe: 397,500 hours
DID/Combo	PCI: 671,750 hours PCIe: 671,750 hours
BRI	PCI: 857,300 hours PCIe: 815,600 hours

Approvals, Compliance, Warranty

Hazardous substances — RoHS compliance information at <http://www.dialogic.com/rohs>

Country-specific safety and telecom approvals at <http://www.dialogic.com/declarations>

Warranty information at <http://www.dialogic.com/warranties>

Ordering Information

The following table provides ordering information for Dialogic® Brooktrout® TR1034 Fax Boards.

Product Code	Order Code	Description
T1/E1, Low Profile		
TR1034+ELP4-TE	901-016-01	4 Channel Fractional T1/E1, V.34, PCI Express
TR1034+ELP8-TE	901-016-02	8 Channel Fractional T1/E1, V.34, PCI Express
TR1034+ELP16-TE	901-016-03	16 Channel Fractional T1/E1, V.34, PCI Express
TR1034+ELP24-TE	901-016-04	24 Channel Fractional T1/E1, V.34, PCI Express
TR1034+ELP30-TE	901-016-05	30 Channel Fractional T1/E1, V.34, PCI Express
T1/FoIP		
TR1034+E4H-T1-1N	901-006-14	4 Channel Fractional T1, V.34, PCI Express, H.100; or 4 channel, T.38 V.34, SIP, H.323
TR1034+P4H-T1-1N-R	901-001-14	4 Channel Fractional T1, V.34, Universal PCI, H.100; or 4 channel, T.38 V.34, SIP, H.323
TR1034+E8H-T1-1N	901-006-16	8 Channel Fractional T1, V.34, PCI Express, H.100; or 8 channel, T.38 V.34, SIP, H.323
TR1034+P8H-T1-1N-R	901-001-16	8 Channel Fractional T1, V.34, Universal PCI, H.100; or 8 channel, T.38 V.34, SIP, H.323
TR1034+E16H-T1-1N	901-006-09	16 Channel Fractional T1, V.34, PCI Express, H.100; or 16 channel, T.38 V.34, SIP, H.323
TR1034+P16H-T1-1N-R	901-001-09	16 Channel Fractional T1, V.34; Universal PCI, H.100; or 16 channel, T.38 V.34, SIP, H.323
TR1034+E24H-T1-1N	901-006-11	24 Channel T1, V.34, PCI Express, H.100; or 24 channel, T.38 V.34, SIP, H.323
TR1034+P24H-T1-1N-R	901-001-11	24 Channel T1, V.34, Universal PCI, H.100; or 24 channel, T.38 V.34, SIP, H.323
High Density — T1		
TR1034+P48H-2T1-1N-R	901-000-31	48 Channel T1, V.34, Universal PCI, H.100; or 48 channel, T.38 V.34, SIP, H.323 — RoHS compliant
TR1034+P96H-4T1-V17-R	901-000-34	96 Channel T1, (V.17), Universal PCI, H.100 — RoHS compliant
E1/FoIP		
TR1034+P4H-E1-1N-R	901-001-13	4 Channel Fractional E1, V.34, Universal PCI, H.100; or 4 channel, T.38 V.34, SIP, H.323
TR1034+E4H-E1-1N	901-006-13	4 Channel Fractional E1, V.34, PCI Express, H.100; or 4 channel, T.38 V.34, SIP, H.323
TR1034+P8H-E1-1N-R	901-001-15	8 Channel Fractional E1, V.34, Universal PCI, H.100; or 8 channel, T.38 V.34, SIP, H.323
TR1034+E8H-E1-1N	901-006-15	8 Channel Fractional E1, V.34, PCI Express, H.100; or 8 channel, T.38 V.34, SIP, H.323
TR1034+P10H-E1-1N-R	901-001-07	10 Channel Fractional E1, V.34, Universal PCI, H.100; or 10 channel, T.38 V.34, SIP, H.323
TR1034+E10H-E1-1N	901-006-07	10 Channel Fractional E1, V.34, PCI Express, H.100; or 10 channel, T.38 V.34, SIP, H.323
TR1034+P16H-E1-1N-R	901-001-08	16 Channel Fractional E1, V.34, Universal PCI, H.100; or 16 channel, T.38 V.34, SIP, H.323
TR1034+E16H-E1-1N	901-006-08	16 Channel Fractional E1, V.34, PCI Express, H.100; or 16 channel, T.38 V.34, SIP, H.323
TR1034+P20H-E1-1N-R	901-001-10	20 Channel Fractional E1, V.34, Universal PCI, H.100; or 20 channel, T.38 V.34, SIP, H.323
TR1034+E20H-E1-1N	901-006-10	20 Channel Fractional E1, V.34, PCI Express, H.100; or 20 channel, T.38 V.34, SIP, H.323
TR1034+P30H-E1-1N-R	901-001-12	30 Channel E1, V.34, Universal PCI, H.100; or 30 channel, T.38 V.34, SIP, H.323
TR1034+E30H-E1-1N	901-006-12	30 Channel E1, V.34, PCI Express, H.100; or 30 channel, T.38 V.34, SIP, H.323
High Density – E1		
TR1034+P60H-2E1-1N-R	901-000-30	60 Channel E1, V.34, Universal PCI, H.100; or 60 channel, T.38 V.34, SIP, H.323 — RoHS compliant
TR1034+P90H-3E1-V17-R	901-000-33	90 Channel E1, (V.17), Universal PCI, H.100 — RoHS compliant

Product Code	Order Code	Description
Analog		
TR1034+E2-2L HALF	901-013-01	2 Channel Analog, V.34, PCI Express half-size
TR1034+E2-2L UK HALF	901-013-02	2 Channel Analog, V.34, PCI Express half-size, for UK
TR1034-P2-2L-R HALF	901-004-05	2 Channel Analog, V.34, Universal PCI half-size
TR1034-P2-2L-R HALF UK	901-004-06	2 Channel Analog, V.34, Universal PCI half-size, for UK
TR1034+E4-4L	901-007-09	4 Channel Analog, V.34, PCI Express
TR1034+E4-4L UK	901-007-10	4 Channel Analog, V.34, PCI Express, for UK
TR1034+P4-4L-R	901-002-09	4 Channel Analog, V.34, Universal PCI
TR1034+P4-4L-R UK	901-002-10	4 Channel Analog, V.34, Universal PCI — UK cable
TR1034+E8-8L	901-007-12	8 Channel Analog, V.34, PCI Express
TR1034+E8-8L UK	901-007-14	8 Channel Analog, V.34, PCI Express, for UK
TR1034+P8-8L-R	901-002-12	8 Channel Analog, V.34, Universal PCI
TR1034+P8-8L-R UK	901-002-14	8 Channel Analog, V.34, Universal PCI, for UK
DID and Combo		
TR1034+E2C HALF	901-013-04	1 Channel Loop Start/1 Channel DID, PCI Express half-size
TR1034+E2D HALF	901-013-05	2 Channel DID, PCI Express half-size
TR1034+uP2C-R HALF	901-004-01	1 Channel Loop Start/1 Channel DID, Universal PCI
TR1034+uP2D-R HALF	901-004-02	2 Channel DID, Universal PCI
TR1034+E4C HALF	901-013-06	2 Channel Loop Start/2 Channel DID, PCI Express half-size
TR1034+E4D HALF	901-013-07	4 Channel DID, PCI Express half-size
TR1034+uP4C-R HALF	901-004-03	2 Channel Loop Start/2 Channel DID, Universal PCI
TR1034+uP4D-R HALF	901-004-04	4 Channel DID, Universal PCI
BRI		
TR1034+E2-1B	901-012-03	2 Channel, Single Euro BRI, V.34, PCI Express
TR1034+P2-1B-R	901-003-03	2 Channel, Single Euro BRI, V.34, Universal PCI
TR1034+E4-2B	901-012-05	4 Channel, Dual Euro BRI, V.34, PCI Express
TR1034+P4-2B-R	901-003-05	4 Channel, Dual Euro BRI, V.34, Universal PCI

Dialogic®

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The logo for Network Fuel, featuring the words "NETWORK FUEL" in a bold, sans-serif font. The text is white and set against a dark, rounded rectangular background. The background of the entire page is a complex network diagram with numerous nodes and connecting lines, rendered in a light gray color.