



Imecom White Paper

T1/PRI Configuration for the Imecom DM Fax Server
with Brooktrout TR1034 Digital Fax Board(s)

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Overview

This whitepaper provides information on ordering robbed-bit T1 service and PRI ISDN service for Imecom DM Fax Server configurations that use Brooktrout TR1034 series digital fax board hardware. The T1/PRI parameters and wiring configurations follow.

This whitepaper applies to the following Brooktrout TR1034 series fax boards:

- TR1034+P4H-T1-1N or TR1034+P4H-T1-0N
- TR1034+P8H-T1-1N or TR1034+P8H-T1-0N
- TR1034+P16H-T1-1N or TR1034+P16H-T1-0N
- TR1034+P24H-T1-1N or TR1034+P24H-T1-0N

Ordering T1-PRI (Primary Rate ISDN) Service for Brooktrout TR1034 board(s)

Items in **bold** are recommended by Imecom Group and Cantata (Brooktrout).

Manufacturer:	Cantata Technology (Brooktrout)
Product Name:	TR1034+PxH-T1 (where 'x' denotes 4, 8, 16, or 24 channel enabled card)
T1 Service Type:	T1 PRI (Primary rate ISDN)
Signal Protocol:	Common Channel Switching
Line Coding:	B8ZS
Clock Master:	The switching device providing the PRI line to the Brooktrout TR1034 card must act as NETWORK / Clock Master, or pass master clock signal seamlessly from PSTN. The Brooktrout TR1034 card(s) must act as TERMINAL end / User Side.
Frame Mode:	Extended Super Frame(ESF)
Channels:	24 (23 "B" channels plus one "D" channel)
B Channel Provisioning:	Circuit-switched Voice and Data
B Channel Service:	Voice – fax is considered voice so the line would be configured as though voice calls were being placed over it.
D Channel Service:	Signaling only with the D-channel on channel 24 of the T1-PRI line
Packet Handlers:	No packet handlers other than the D-channel
Channel Service:	64 Kbps clear channel service end-to-end for every call
Compatible Switch Types:	Your Telco provider needs to communicate what type of switch is providing the PRI line to the TR1034 board.

Compatible Variant Types:	Your Telco provider needs to communicate the type of program variant programmed on the PRI line.
Called Party Number:	This is what the ISDN world calls 'DID' or 'DNIS'. Normally the last 4 digits of the number dialed; required for inbound routing. Please confirm with your Telco service provider the number of CPN digits they will be providing to you on inbound calls.
CSU:	NONE ON BOARD <i>Special note: The FCC requires an external CSU/DSU device to be installed on any T1 digital line supplied directly from your local telephone service provider.</i>
Wall Jack Required:	USOC-RJ-48C
Connector on TR1034 board:	See page 3 of this whitepaper

Ordering T1 RBS (Robbed-bit Signaling) Service for Brooktrout TR1034 board(s)

Items in **bold** are recommended by Imecom Group and Cantata (Brooktrout).

Manufacturer:	Cantata Technology (Brooktrout)
Product Name:	TR1034+PxH-T1 (where 'x' denotes 4, 8, 16, or 24 channel enabled card)
T1 Service Type:	Robbed-Bit Signaling (RBS), four-wire (more info here)
Signal Protocol:	E&M Wink (recommended) or E&M Immediate
Line Coding:	B8ZS (recommended) or AMI
Frame Mode:	Extended Super Frame(ESF)(recommended) or Super Frame (SF) / D4
Channels:	1-24
Dial Tone:	Optional
CSU:	NONE <i>Special note: The FCC requires an external CSU/DSU device to be installed on any T1 digital line supplied directly from your local telephone service provider.</i>
DNIS Digits:	DTMF (recommended) or Pulse
Wall Jack Required:	USOC-RJ-48C
Connector on TR1034 board:	See page 3 of this whitepaper

Additional info on 'T1 Service Type'

When using a Brooktrout TR1034 series board(s), the type of T1 line that **must** be supplied is a **Robbed-Bit Signaling (RBS) T1 line**, which also may be described as an **A/B signaling T1 line**, or an **E&M tie trunk**. This type of signaling is **in-band**, meaning the signaling info is carried on the same channel as the traffic. The physical connection **must be a 4-wire connection**, no other type of physical connection is supported by the TR1000/TR1034 board.

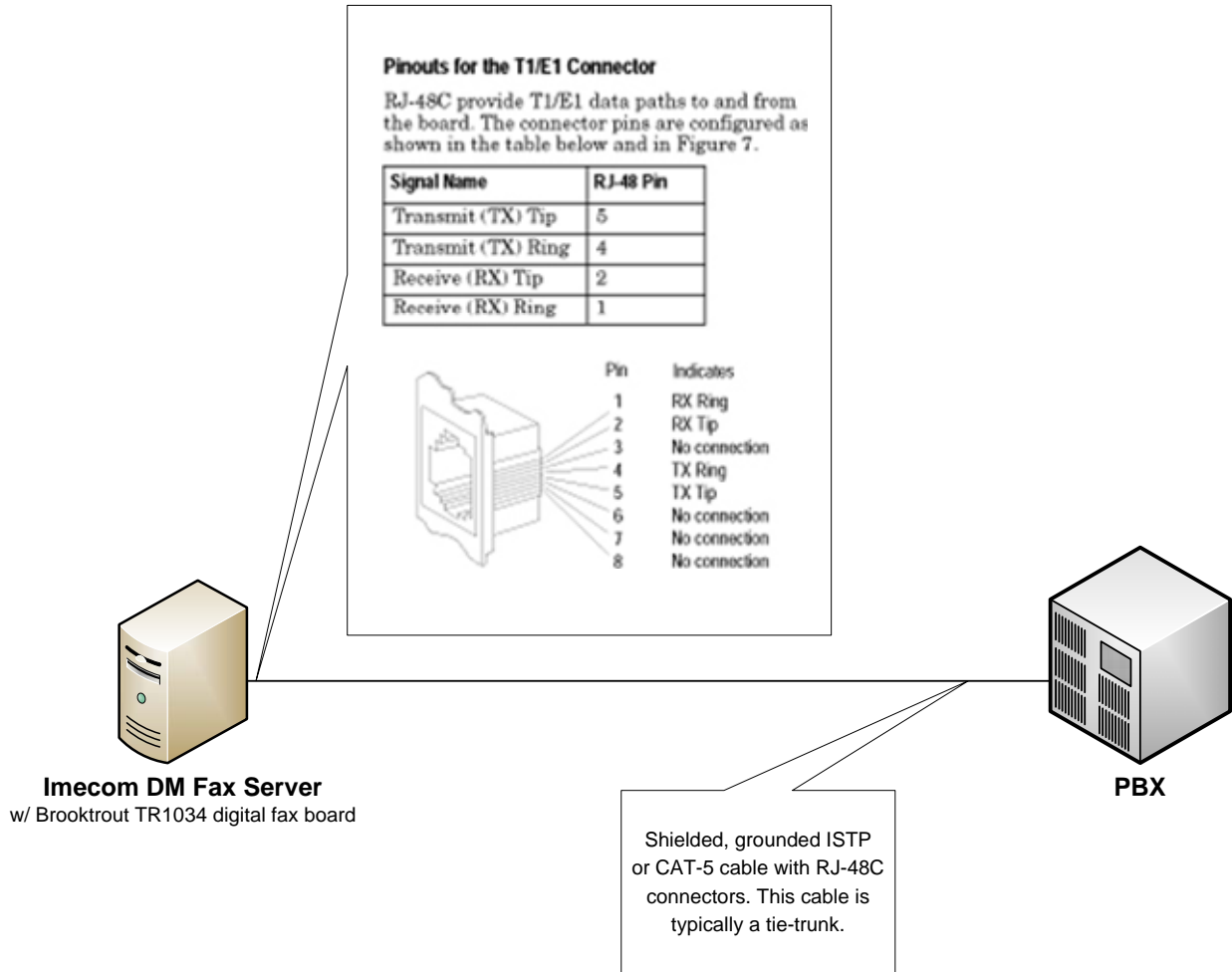
Additional info on 'Signal Protocol'

The TR1034 board needs the signal protocol to be consistent across all T1 channels, in both directions. When we at Brooktrout say **E&M**, we mean that the signaling bits do whatever the A-bit does; your Telco representative should know what that means.

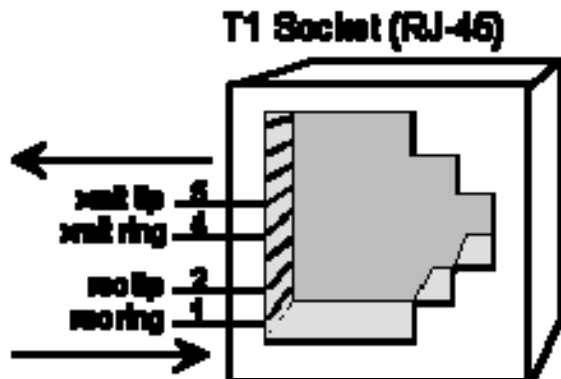
Connecting the Imecom DM Fax Server to your PBX or Service

Connecting the TR1034+PxH-T1 board to T1 Telephone Service

Hint: If your telephone service provider or PBX support people are not familiar with the TR1034 board(s), and thus are not sure how to treat it, you may tell them to view the TR1034 board as a PBX. Your Telco people should set up a "tie trunk", or "tie line", from their side to the TR1034 board, just as if they were setting up a line to a PBX. The service must be tie line/tie trunk. Off-premise extensions, or stations, are **not supported**.



Cable note: Although CAT-5 cable will suffice in many situations, please bear in mind that CAT-5 cables typically use an unshielded twisted pair, or UTP. If you want to safeguard as best you can against any electromagnetic interference, then ideally you'll have a cable that has the receive pair and the transmit pair shielded separately. This type of cable is frequently referred to as an **ISTP** cable, for Individually Shielded Twisted Pair.



Additional info on signal regeneration, and CSUs

The distance between the last signal regeneration point on the T1 circuit and its termination point (connector on the TR1034 board) determines whether you must connect TR1034 board to an external CSU (Channel Service Unit) or directly to a T1 circuit. When we say "distance", we mean *cable length*, not the straight-shot distance from the last point of signal regeneration to the TR1034 board.

If the last point of signal regeneration on the T1 circuit is less than 500 feet from the TR1034 board, you do not need to connect TR1034 board to a CSU. If the distance from the TR1034 board to the last point of signal regeneration exceeds 500 feet (even if installed behind an in-house PBX system), you must connect TR1034 board to an external CSU device and the CSU to the T1 circuit.

About Imecom Group, Inc.

Imecom Group is a leading provider of technology solutions and services that enable organizations to integrate and automate the flow of documents and data efficiently, and to secure and protect PCs, information, and applications across the enterprise. Imecom develops, sells, and supports network fax server and image conversion solutions that streamline electronic document processing, delivery, and receipt throughout entire organizations.

Imecom Group, Inc. was founded in 1989 and is headquartered in New Hampshire. Imecom is a member of the Prologue Software Group which is headquartered in France. Together, Imecom Group and Prologue Software Group have established a customer base that includes 2,100 development partners and 5,300 value added resellers, which in turn have established 650,000 installations across the globe. There are now more than 2,200,000 users of Prologue products worldwide.

For more information, please contact us at: <http://www.imecominc.com> or call 1.603.569.0600.