



## Broadband Voice Enhancement Platform

**BVP Flex****BVP Flex Shelf****ECR Flex and  
Telco Flex Cards**

Ditech's Broadband Voice Processor (BVP) Flex adds a new dimension in voice quality improvement for telecommunications service providers. Supporting "any-to-any" OC-3, DS-3, and STS-1 connectivity as well as STM-1 to STM-1 connectivity, BVP Flex allows operators to mix and match multiple interface types on the same platform, without the need for external multiplexing equipment.

With a series of processing power options, the BVP Flex platform supports a wide range of Ditech's Hybrid Echo Cancellation (HEC), Voice Quality Assurance (VQA™), and Experience Intelligence™ (EXI) solutions for multiple network topologies, all of which are manageable from a single, easy-to-use, local and remote management system.

**Performance and Cost Optimization**

Ditech's BVP Flex enables carriers to optimize performance and to reduce the cost of their voice networks by eliminating low-density echo cancellation equipment and expensive multiplexing gear. With the BVP Flex's "any-to-any" connectivity, carriers can reclaim central office space and preserve their investment in electrical DSX/DACS ports while migrating to OC-3 at no additional cost.

**Range of Platform Options**

Ditech's Voice Quality software suite for the BVP Flex offers a range of application-specific packages to meet the needs of any network. The BVP Flex hardware and software are matched to application requirements, providing a "custom tailored" solution for specific carrier needs.

**Future-Proof Platform**

As voice technologies and central office connectivity requirements change, the BVP Flex can be reconfigured or upgraded while in-service to adapt to new requirements. Simplified remote management eliminates the time and expense of performing costly onsite configuration, maintenance, and upgrades. The BVP Flex is backed by a dedicated Ditech support team providing 24 x 7 service.

**Narrowband Connectivity Options**

For added flexibility and easy retrofit of outdated narrowband echo cancellation equipment, Ditech's BVP Flex platform can be installed with DS-1 interface options that interconnect with existing DSX/DACS equipment and cabling.

**PRODUCT FEATURES**

- Any-to-any OC-3, DS-3, and STS-1, or STM-1 to STM-1 connectivity
- Optional DS-1 connectivity
- Up to 12 OC-3/STM-1 or 36 DS-3/STS-1 per rack
- Full redundancy: Telco Flex Card 1:1, and Echo Cancellation Resource (ECR) Flex Card 1:3
- Easy-to-use local and remote management

**APPLICATIONS**

- Capacity Enhancement
  - GSM
  - CDMA
- Voice Enhancement and Monitoring
  - GSM
  - CDMA
  - Wireline
  - Conferencing
  - VoIP-PSTN Gateway
- Advanced Echo Cancellation



## Platform Options

**BVP Flex f600 System**  
2 Telco Flex cards  
4 ECR Flex cards with  
6 DSP modules

**Power Consumption**  
Per Telco Flex card: 22W  
Per ECR Flex card: 38W  
Full shelf of 3 systems, fans:  
660W (13.8A @ -48VDC)

**BVP Flex f400 System**  
2 Telco Flex cards  
4 ECR Flex cards with  
4 DSP modules

**Power Consumption**  
Per Telco Flex card: 22W  
Per ECR Flex card: 29W  
Full shelf of 3 systems, fans:  
555W (11.6A @ -48VDC)

**BVP Flex f300 System**  
2 Telco Flex cards  
4 ECR Flex cards with  
3 DSP modules

**Power Consumption**  
Per Telco Flex card: 22W  
Per ECR Flex card: 24W  
Full shelf of 3 systems, fans:  
500W (10.4A @ -48VDC)

**BVP Flex f200 System**  
2 Telco Flex cards  
4 ECR Flex cards with  
2 DSP modules

**Power Consumption**  
Per Telco Flex card: 22W  
Per ECR Flex card: 20W  
Full shelf of 3 systems, fans:  
450W (9.4A @ -48VDC)

**BVP Flex f100 System**  
2 Telco Flex cards  
4 ECR Flex cards with  
1 DSP module

**Power Consumption**  
Per Telco Flex card: 22W  
Per ECR Flex card: 16W  
Full shelf of 3 systems, fans:  
400W (8.3A @ -48VDC)

## TECHNICAL SPECIFICATIONS

## DS-3 Interface

**Line Rate**  
DS-3 at 44.736 Mbps

**DS-3 Framing**  
M13 or C-Bit

**DS-1 Payload Framing**  
SF (D3/D4) per G.733, ESF per AT&T CB142, per ITU-T G.704 with CRC-6

## STS-1 Interface

**Line Rate**  
STS-1 at 51.84 Mbps

**SPE Mappings**  
28 DS-1s, 1 DS-3

**STS-1 Framing**  
Per Telcordia GR-253-CORE

**DS-1 Payload Framing**  
SF (D3/D4) per G.733, ESF per AT&T CB142, per ITU-T G.704 with CRC-6

## OC-3 Interface

**Line Rate**  
OC-3 at 155.52 Mbps

**SPE Mappings**  
28 DS-1s, 1 DS-3

**OC-3 Framing**  
Per Telcordia GR-253-CORE

**DS-1 Payload Framing**  
SF (D3/D4) per G.733, ESF per AT&T CB142, per ITU-T G.704 with CRC-6

**Optical Interface**  
1310nm single mode fiber, LC style connectors  
Short/Intermediate Reach

## STM-1 Interface

**Line Rate**  
STM-1 at 155.52 Mbps

**STM-1 Framing**  
Per ITU-T G.707

**E1 Payload Framing**  
CAS, CAS + CRC4, per ITU-T G.704

**Optical Interface**  
1310nm single mode fiber, LC style connectors  
Short/Intermediate Reach

## Synchronization

Dual BITS clock inputs  
Line timing from any input  
Local oscillator (ST3/TNC clock)

## Network Interface

**Line Encoding**  
AMI-B7, B8ZS, Bipolar AMI  
HDB3 per ITU-T G.703, G.704

**PCM Encoding**  
A-law or  $\mu$ -law  
Segmented  $\mu$ -255, A-law per ITU-T G.711

**Jitter Tolerance**  
Per AT&T 62411, GR-499-CORE, GR-253-CORE

**Signaling**  
E1: CAS, CCS, Q.50 (AB/CD)  
T1: CCS (C6, C7), RBS (E&M, PLR, FXS-GS, FXO-GS, FXS-LS, FXO-LS)

**Connectors/Cabling**  
BNC unbalanced 75 Ohm connectors  
450 feet (138m) 75 Ohm coaxial cable  
Balanced 100/120 Ohm BITS clocks  
AT&T 728, 734, or equivalent

## Redundancy

A & B power: -39 to -60 VDC  
Electrical per GR-499-CORE  
Optical APS per GR-253-CORE  
Fans alarmed; no single fan critical  
Telco Flex cards 1:1 spared  
ECR Flex cards 1:3 spared  
Auto-switching to standby cards  
Hot-swappable

## Monitoring

**Alarm Monitoring**  
Per GR-499-CORE, GR-253-CORE, ITU-T G.707  
Dry contacts for Alarms and E2A Interface

**Performance Monitoring**  
Referencing ANSI T1.231-1997

## Front Panel Control

Push button for alarm cutoff (ACO)  
LEDs indicate power, major, minor, facility, maintenance, and equipment alarms

## Terminal Control

**Serial Interface**  
RS-232/V.24 port for each Telco Flex card  
Data transfer selectable to 38400 baud

**LAN 10/100Base-T**  
Backplane port for each BVP Flex system  
TCP/IP address per BVP Flex system

**Local and Remote Provisioning**  
Local: CLI, NetConsul™ CST GUI  
Multisite: NetConsul EMS

## Physical Attributes

**Dimensions (H x W x D)**  
Shelf (10 RU): 17.5 x 17.3 x 13.3 inches  
(445 x 440 x 340 mm)  
Mounts for 19" or 23" ANSI/EIA,  
600 mm ETSI racks

**Weight**  
Empty shelf (with fans): 45 lbs (20 kg)  
Shelf with 1 BVP Flex system: 53 lbs (24 kg)  
Fully loaded shelf: 72 lbs (33 kg)  
Telco Flex card: 1.4 lbs (0.6 kg)  
ECR Flex card, 1 DSP module: 1.5 lbs (0.7 kg)

## Capacity

1 OC-3/STM-1, 3 DS-3/STS-1 per BVP Flex system  
3 BVP Flex systems per shelf  
(3 OC-3 equivalents or up to 6,048 DS0s)  
4 BVP Flex systems per 7-foot rack  
(12 OC-3 equivalents or up to 24,192 DS0s)

## Environmental

**Operational**  
Temperature: 5° to 40°C  
Short Term: -5° to 55°C  
Humidity: 5 to 90%, non-condensing

**Non Operational**  
Temperature: -40° to 70°C  
Humidity: 5 to 95%, non-condensing

**Heat Output**  
Full f600 shelf: 2100 BTU/hour  
Full f400 shelf: 1800 BTU/hour  
Full f300 shelf: 1650 BTU/hour  
Full f200 shelf: 1500 BTU/hour  
Full f100 shelf: 1300 BTU/hour

## Reliability

**MTBF Per Telcordia SR-332 Issue 1 May 2001**  
Telco Flex card: 33 years at 40°C  
ECR Flex f600 card: 25 years at 40°C  
ECR Flex f400 card: 29 years at 40°C  
ECR Flex f300 card: 32 years at 40°C  
ECR Flex f200 card: 34 years at 40°C  
ECR Flex f100 card: 37 years at 40°C

## Regulatory Information

UL 60950 / EN 60950  
CAN/CSA-C22.2  
EN 300 386-1 and -2  
EN 55022 (CISPR 22) Class B  
EN 55024  
FCC part 15 Class A  
CE Mark  
Telcordia GR-1089-CORE



**Ditech Networks**  
825 East Middlefield Road  
Mountain View, CA 94043  
USA

800 234 0884 toll free  
800 770 0117 support  
650 623 1300 direct  
650 564 9599 fax

[ditech@ditechnetworks.com](mailto:ditech@ditechnetworks.com)  
[www.ditechnetworks.com](http://www.ditechnetworks.com)