DB4/DB4X Digital 2Mbits/s Multiplexer

The DB4 and DB4X are the primary multiplexer units of Avara's DynaFlex Multiservice Access platform. These units provide 4 x 2Mbit/s network interface ports that connect to a powerful, integrated, non-blocking cross connect switch fabric with timeslot interchange capabilities. Supports extensive circuit protection functions and has the capacity to perform digital and analogue summing functions for point to multipoint applications.

Together with the extensive Ethernet switching functionality supported, the DB4 is an ideal solution for mission critical networks where deterministic timing, low jitter and predictable switching times are necessary and efficient use of available bandwidth is mandatory.

The DB4 supports linear chain, tree, mesh and protected ring network topologies.

The DB4 multiplexer provides complete and nearly limitless cross connect functionality. Connecting individual E1 timeslots to any other timeslot on any E1 port or to a comprehensive choice of channel types available via modular DynaFlex Channel Cards. This extends the multiplexing capabilities to voice with E&M, data, Ethernet and teleprotection services.

The DB4 has extensive circuit and Management channel protection features providing operators with flexible mechanisms for delivering fault tolerant connections for high availability applications.

The DB4 is well suited for broadcast and point-to-multipoint applications due to its integrated voice and serial data summing features. Radio based transmission infrastructure and SCADA systems are examples of applications that are enhanced by the DB4's Multicast/Broadcast capabilities.

The DB4 is fully interoperable with a number of multiplexer products including the Nokia Dynanet family of products (DN2, DB2 and DM2) and Siemen's FMX.

The DB4X version features high performance layer 2 Ethernet switching capabilities. Tag based VLANs (802.1q) with up to 4 WAN directions can be configured allowing network segmentation without being restricted by physical connections.

VLAN tagging and stripping functionality together with advanced features such as rate limiting are supported. Four levels of QoS, based on four VLAN priority queues as per 802.1p, are available providing operators with the flexibility to create predictable networks.

The DB4 can be managed using the Q1 protocol via the physical V.11 ports or remotely using timeslot 0 overhead bits or over any dedicated timeslot. Alternately, where an Ethernet based Management DCC is available, the node can be managed using Telnet and SNMP. Additionally,

Avara's ASPeCT Element Manager can be used to manage the DB4 over an encrypted TCP connection for secure access.

Standards compliant performance monitoring, numerous loopbacks, statistics and diagnostics on E1 and Ethernet interfaces are available to facilitate fault management and isolation.

Remote software download and unit configuration using TFTP is available as is a comprehensive set of SNMP traps and alarms for fault management.

Technical Highlights

DB4 Interfaces (Single Slot)
- 4 x G.704/2M Balanced (120 Ω) or Unbalanced (75 Ω)
- Q1 MI/DI with Data Hybrid (V.11)
- RS-232 console RJ45
- 2 x 10/100 Ethernet on single RJ45 for management
- 4 x Ethernet WAN directions
- Measurement port or Sync In/Out via SMB

DB4X Interfaces (Double Slot)
- 4 x 10/100 Ethernet ports
- 4 x V.11 ports and hybrid function
- Tag based VLAN
- 802.1p priority
- Rate limiting on Ethernet ports
- Dedicated Sync In / Out port

Key Features

- Extensive Nx64K/8K cross connect and branching capabilities
- Extensive protection features
- Serial Data and Voice Summing
- Pluggable into Dynanet Mechanics
- Interoperable with third party multiplexer products including Nokia Dynanet DB2/ DB2LP/DN2/DM2/DM2+ and FMX
- Manageable via Q1, Telnet, SNMP & ASPeCT
- -20 to +65 °C operation

DB4X -75 Ω

Technical Specifications

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Model Order Code P61011.01 DB4-120 P61011.02 DB4-75 P61012.01 DB4X-120 P61012.02 DB4X-75	Single slot card 120Ω Single slot card 75Ω Double slot card 120Ω Double slot card 75Ω	**Security** Data Interfaces Management	Dedicated VLAN Password Protection, Dedicated VLAN
Mechanical Height-Depth-Width DB4 Height-Depth-Width DB4X	(Excluding handle) 233 x 160 x 25mm 233 x 160 x 45mm	**Power** Power Supply Power Consumption	-20 to -72 VDC 12 W (Max.) 9 W Typical
Interfaces DB4 4 x E1 ports Ethernet (management) Measurement Out or Sync In or Sync Out	G.703/G.704 2M 75/120Ω 2 x 10/100BASE-T (single RJ45 connector - switched) 1 x SMB connector 75Ω	**Alarm Reporting** Front panel LED	Major (red) Minor (yellow) A, B and D alarms reported to bus for relay contact activation on PIU
		MTBF	65 Years
Additional Interfaces DB4X 4 x Switched Ethernet 4 x Serial 1 x Sync In / Out	10/100 BASE-T (RJ45) V.11 / Async up to 9600bps SMB 75Ω	**Environmental** Operating Temperature Relative Humidity	-20 °C to +65 °C 5-90% (Non-condensing)
TDM Features Cross Connect Granularity Summing	Nx64K / Nx8K Voice & Serial Data	**Circuit Protection** Data Path Conditional Tables	Y-Branching 10
Network Timing Node Synchronisation Sync out	Sync In/E1/Internal G.703 2.048MHz	**Standards**	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.1p VLAN Tagging IEEE 802.1q Priority Queuing IEEE 802.3x Flow Control RFC1157 SNMP RFC1213 MIB II RFC854 Telnet RFC783 TFTP EN55022 Class A Emissions EN60950 Safety AS/ACIF S016 EN55024 Immunity EN50082-2 Generic Immunity IEC 61850-3 Immunity ETS 300 019 -1-1 Operational ETS 300 019 -1-2 Storage ETS 300 019 -1-3 Transport A-tick / C-tick / CE Mark
DB4X Switch Parameters Speed Auto negotiation Duplex MDI/MDIX Support IEEE 802.1p/q MAC Address Size Max Frame Size VLANs Supported Rate Limiting Traffic Shaping Priority Queues Per Output	10/100Base-T Yes Full/Half Yes Yes 8K 1632 Bytes 4096 128K, 256K, 512K, 1M, 2M, 4M, 8M Strict & Weighted Round Robin 4		
Management Local Remote Q1	CLI via Console (RS-232) Telnet, SNMP, ASPeCT V.11 MI/DI TS0/TSx		ITU-T V.11 ITU-T G.732 ITU-T G.703 ITU-T G.796 ITU-T G.704 ITU-T G.797 ITU-T G.823

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