

ITS Data Multiplexers On-Vehicle (HOV) and On-Roadside Applications



The DM100 data line multiplexers have been designed for ITS applications and utilise design structures and components compatible with ITS specifications and standards. Models incorporate minor functional variations to provide a number of ITS Applications including SCATS data line multiplexing, on-vehicle HOV data consolidation, increasing functionality of variable message signs and consolidating data from several ITS applications into a single remote access line.

The DM series multiplexers incorporate from 4-8 serial data lines with RS422 or RS232 signal compatibility, digital I/O and special purpose circuit elements relevant to the clients application. Software partitioning between EROM and EEROM facilitates easy on-line upgrade via a fixed boot program and allocation of reprogram able space for application software. Specific versions also include a non-volatile memory allocation for data logging. The SCATS version is functionally a statistical line multiplexer but with firmware that facilitates data flexibility of 8 to 11 bit character packets.



The DM series data line multiplexers have incorporated additional functions unique to the application however general functionality has been extended by providing 4 digital inputs and 4 digital outputs in the basic configuration. In the HOV application, digital inputs are used for Odometer input, driver emergency actuation, engine overheating monitor and rear door status. In the VMS application digital inputs were used to monitor compartment and equipment tampering, physical re-location

Function Attributes:

- RS232 Signal level compliant channels
- RS422 Signal level compliant channels
- Primary data channel option for TCP/IP/Ethernet interface
- Optional Galvanic Isolation from local RS232 interface.
- Provides an isolated DC supply and a line connection that can sustain 1500 V for 30 seconds through a combination of transorbs and galvanic isolation circuitry.
- Optically isolated digital inputs and outputs
- PCB space allocation for special purpose applications i.e.,
- Odometer interface on HOVs.
- Internal high performance switching regulator power supply and supply line conditioner
- Robust application defined enclosures for mounting under vehicles, roadside cabinets or on roadside poles
- Jumper selection TX/RX Pin allocation on serial data ports
- Serial data channel parameters are user configurable





ITS Multiplexer Applications and Specifications

High Occupancy Vehicle (HOV) Multiplexer and Data Consolidator

- GPS-GPRS enabled – position identification and location reporting
- Transponder data carrier enabled for transmission of onboard vehicle data to roadside equipment
- Bus ETS Ticketing system enabled for journey management
- 128Mbyte Compact Flash data storage disk for GPS location lookup and data logging
- Four additional serial channels and 3 Digital I/O circuits available
- Dedicated Odometer interface circuit

VMS Multiplexer

- GPS-GPRS enabled for plant management and remote control and monitoring
- Data Logging - recording date, time and vehicle speeds
- Decatur and ETG Radar Speed detector module enabled
- ADDCO VMS Display control enabled
- Transfers a single VMS serial port into four serial ports

SCATS Multiplexer

- 1 Primary incoming high speed RS232 data link (with option for TCP/IP)
- 3 Local RS232 channels for connection to cabinet based equipment including; SCATS traffic controller, Roadside VMS displays, VID Bus priority uplink, other ITS Technology
- PCB Form: Card file (control centre) and individual enclosure (local intersection)

General Specifications:

Electrical:	External Power Supply connection 12VDC or 24VDC RS232 Electrical signal level compliant RS422 Electrical signal level compatible, 2 pair full duplex configuration operation
Isolation	1500V for 30 seconds (Galvanic isolation Optional)
Protocol:	Asynchronous
Speed:	Baud rate 300 to 19200 BAUD user configurable
Connectors:	RS-232: (1) DB9 Skt (1Amp@20Megohms/100milliamp) RS-422: (2) 4-screw assy terminal block (10Amp 300VDC).
Current:	Typically 0.4 Amps – dependent on data activity
Weight:	Enclosure dependent – card weight typically <0.25 kg
Size:	Typical card size: 200mm x 220mm

Environmental Specification:

Circuitry is rated to 65°C operation with a relative humidity of 90%. Circuit cards are conformal coated and will operate within Australian Standard Guidelines for Traffic Control Devices as per TSC/3 and TSC/4. The CONFORMAL coating material used to protect the circuit cards is labelled SCC3 CC from Electrolube. The conformal coating material has a dielectric strength of 90KV/mm and an operational temperature range of -70°C to +200°C and is self extinguishing when exposed to a flame.