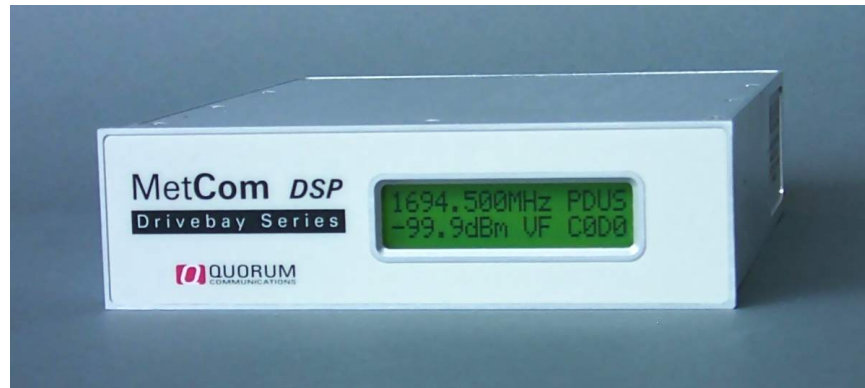




## DSP Data Receiver in a Drivebay Format



### Features

- BPSK / PSK demodulation up to 2.7 MSPS
- BPSK performance within 1 dB of theoretical
- Direct 70 MHz IF conversion at 50 MSPS and 10 bit resolution
- Selectable RF inputs and IF bandwidths for multimode flexibility
- -90 dBm to -50 dBm input range
- RS-422 and 50 / 93 ohm TTL clock and NRZ data outputs
- Flexible 5 1/4" Drivebay format fits easily in most PC and Workstation enclosures
- RS-232 serial control for setup, tuning, mode selection and status
- 2 line 16 character LCD display for status and signal level readout

### Description

The MetCom DSP Drivebay Series Receiver is a versatile digital receiver for all current weather satellite formats. The 5 1/4" drivebay format provides easy installation in most PC and workstation enclosures. The

MetCom DSP can also be mounted in a standard external enclosure designed to support a CDROM or hard disk.

The MetCom DSP converts the incoming RF signal to a bandwidth limited and AGCed 70 MHz IF which is then directly digitized at 50 million samples per second with 10 bit resolution. Digital Signal Processing techniques are used to implement tuning, AGC, carrier tracking and symbol recovery. The demodulated data is then processed in a gate array to convert the varied signal formats to NRZ data and clock. BER performance is within 1 dB of theoretical. DSP advantages include repeatable performance

and long term operation without component drift.

The Metcom DSP currently supports all operating weather satellite digital downlinks and will be upgraded for future QPSK and convolutional coded downlinks.

The MetCom DSP is controlled by a PC compatible RS-232 connection. The user can setup downconverter offsets, tune frequencies, select demodulator modes (which may internally select IF SAW filters), select RF inputs, supply power to downconverters, control clock and data polarities and read signal levels, lock status and other receiver status by means of this serial link.

Multiple demodulator modes can be supported by the MetCom DSP. Data and clock outputs include RS-422 and 50 / 93 ohm TTL on IDC and SMA connectors to facilitate connection to decryption units and frame formatters.



## Specifications *(subject to change without notice)*

### RF Specifications

Input Frequency.....	126 to 154 MHz
Input Dynamic Range.....	-90 to -50 dBm nominal
Image Rejection .....	>60 dB
Input Impedance.....	50 ohms
Input Return Loss .....	>20 dB selected input >10 dB unselected input
Input To Input Isolation .....	>60 dB
IF Frequency .....	70 MHz
IF Band width .....	0.5 to 5.0 MHz, 0.5 MHz increments SAW filter(s) depends on mode(s)
IF Filters .....	1 standard, 2nd optional
LO Frequency .....	196 to 224 MHz in 25 KHz steps
Signal Strength Output .....	0 to 4 VDC, 29 mV/dB nominal
Demodulator Modes .....	BPSK, PSK
Demodulator Implementation Loss....	< 1 dB at 10E-6 BER (BPSK)
Supported Data Encoding.....	NRZ, NRZ-S, NRZ-M, Biphase-L
Supported Symbol Rates .....	0.1 to 2.7 MSPS

### Electrical / Mechanical

Supply Voltage .....	5 V @ 0.75 A, 12 V @ 0.6 A, 1.6 A max if powering 2 downconverters
Downconverter Power Output .....	2 x 12V at 500 ma (thermal fuse)
Power Connector .....	4 pin PC power connector
RF Input Connectors .....	SMA female
Signal Strength Output Connector .....	BNC female
Size.....	1/2 high, 5 1/4" drivebay 5.85" W x 8.5" D x 1.7"H (14.7cm W x 21.6cm D x 4.32cm H)
Weight.....	3.1 lbs (1.41 Kg)
Operating Temperature.....	32 to 122 °F (0 to 50 °C), non-condensing

### Interface

Control Interface .....	RS-232 serial at 9600 baud
Control Interface Connector.....	10 pin IDC
Data / Clock Interface .....	RS-422 and 50 / 93 ohm TTL
Data / Clock Interface Connector .....	RS-422 and TTL 16 pin IDC 50 / 93 ohm TTL - SMA female

## Supported Modes

- **GOES GVAR** (USA)  
2.11 MBPS, BPSK, NRZ-S  
3 MHz IF BW
- **GMS S-VISSR** (Japan)  
Fengyun 2 S-VISSR (China)  
MTSAT HiRID (Japan)  
660 KBPS, BPSK, NRZ-M  
1.5 MHz IF BW
- **Meteosat PDUS** (Europe)  
166.66 KBPS, PSK, Biphase-L  
1 MHz IF BW
- **NOAA HRPT** (USA)  
665.4 KBPS, PSK, Biphase-L  
2.5 MHz IF BW
- **DOD DMSP RTD** (USA)  
1.024 MBPS, BPSK, NRZ  
2.5 MHz IF BW
- **Fengyun 1 CHRPT** (China)  
1.3308 MBPS, PSK, Biphase-L  
4.5 MHz IF BW
- **MTSAT LRIT** (Japan)  
150 KBPS, BPSK, NRZ  
0.5 MHz IF BW

### Planned Future Mode

#### Support (not upgradable)

- MSG (Euro - Launch 2001)  
HRIT, LRIT
- METOP (Euro - Launch 2003)  
HRPT, LRPT
- MTSAT (Japan - Launch 2003)  
LRIT with viterbi