

# ORION

## Radio Data Modem with On-Board Telemetry

Half-duplex  
19200bps over-air  
data rate

RS232/RS422/RS485  
interface

Synthesised VHF  
and UHF options

TX power options up  
to 5 watts

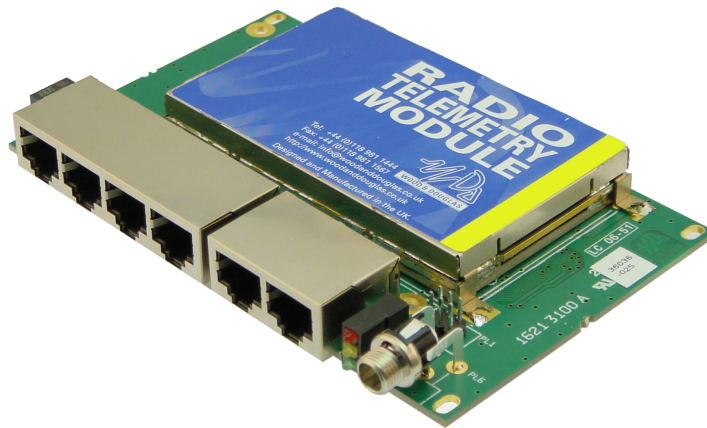
Store and forward  
repeater feature

4 Digital Inputs and  
Outputs

4 Analogue Inputs  
and Outputs

Over-air  
reconfiguration and  
output setting

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The ORION has a selectable RS232, RS422, RS485 user interface for serial data messaging allowing easy connection to Remote Telemetry Units, Pan Tilt Zoom camera controllers etc. Over-air data rate is 19200bps when a 25kHz bandwidth radio module is fitted (9600bps in a 12.5kHz channel).

The four digital inputs allow monitoring of on/off type signals such as PIR alarms, door contacts, control buttons etc.

The four analogue inputs allow monitoring of 4/20mA current loops and 0 to 10volts measurements. Examples are water levels, wind speed etc.

The Digital and Analogue outputs can be set to specified levels remotely over-air using another ORION giving a complete 'remote control' solution. The I/O signalling slots seamlessly into any serial data being sent or received by the ORION.

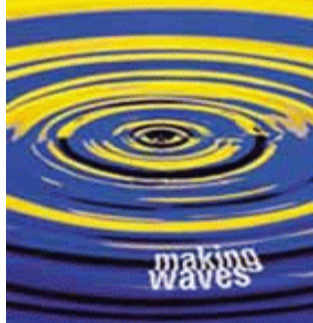
In addition to its four analogue inputs, the ORION monitors and signals its supply voltage. This function allows for long-term battery operation with early notification of battery performance drop.

The ORION can be built in various versions which use the SXn50 series, the G-MAX or the T series radios.

Please see the relevant radio data sheet for details. With the supplied Wood & Douglas GUI, a very capable, fully configurable, Master - Slave telemetry system is possible.

Using Store and Forward techniques, an intermediate ORION can act as a repeater thus greatly extending system operational range.

The option exists to specify a version of the ORION without the telemetry I/O functions where only a radio-modem is required.



# ORION I/O Modem System

Specification	
<b>Link</b>	
Frequency range	100 - 868 MHz (depending on RF module used)
Sensitivity	< -110 dBm for <1x10 <sup>-5</sup> BER ( <b>with</b> FEC at 19200 baud) < -105 dBm for <1x10 <sup>-3</sup> BER ( <b>without</b> FEC at 19200 baud)
Number of channels	199 software-selectable and frequency-programmable
Switching bandwidth	Dependent on RF module and Frequency Band
Channel spacing	25, 20 or 12.5 kHz
Output Power	5mW - 5W depending on RF module
Adjacent channel selectivity	Dependent on RF module and Frequency Band
RF Specifications	Complies with EN 300 220 and EN 300 489 (EMC)
Antenna	50Ω BNC Socket (cased version - OEM PCB versions as radio unit)
RF Baud rate	19200 baud for 20 and 25kHz, 9600 for 12.5kHz with FEC disabled 13000 baud for 20 and 25kHz, 6500 for 12.5kHz with FEC enabled
Addressing	Full Group and Unit addressing, up to 255 groups/units per group
<b>User Data</b>	
Baud Rate Data Input/Output	4800, 9600, 19200, 38400 baud
Data Interface	RS232, RS422, RS485 or sampled transparent mode
Number of data bits	7 or 8
Parity	Odd, Even or None
Flow Control	Hardware (CTS/RTS), Software (XON/XOFF) or None
Error Correction	None, FEC or Packet with retransmission
Store & Forward	Optional programmable re-broadcast of data packets
Receive/transmit switching	Automatic switching
<b>Telemetry</b>	
Supervision	Standalone operation (mimic) or external SCADA
Control inputs	2 serial ports. User Data port (Serial A) also supports AT commands. Serial B (RS232 only) supports AT commands and external SCADA/ configuration software.
Digital inputs	4 inputs, closing contact or logic level (nominal 5V, HCMOS compatible with protection for over-voltage up to ± 15V).
Pulse counter inputs	Digital inputs may be independently programmed as pulse counters
Digital outputs	4 outputs, open collector to 0V, 20V @ 200mA (500mA peak) rated
Analogue inputs	4 inputs, 0-2.5V, 0-5V, 0-10V or 0-20mA programmable
Analogue outputs	4 outputs, 0-2.5V, 0-5V, 0-10V or 0-20mA programmable
Alert output	Open collector to 0V, 20V @ 200mA (500mA peak) rated, optionally floating SPCO relay contacts, 24V @ 1A rated..
Alarms	Comprehensive alarms on all inputs. Supply monitor.
<b>General</b>	
Programmable Options	AT Command set, Graphical User Interface PC software
Operating temperature	-20°C to +55°C
Housing	Rugged diecast enclosure (OEM version: PCB, no enclosure)
Size	156 x 90 x 37mm (cased), 126 x 83 x 28mm (OEM PCB)
Weight	560g (cased), 140g (OEM PCB)
Connectors	Data: 2 off RJ45 socket, Power: 2.1mm locking power connector Telemetry I/O: 4 off RJ45 socket
Power Supply	9 - 15V DC non-isolated, <100mA RX, <1000mA TX (1W RF out)
Indicators	LEDs for Tx, Rx and Status

Wood & Douglas maintain a policy of continuous product improvement and enhancement. As a consequence, the above specification may change without notice.



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