

QPSK Demodulator & Bit Synchronizer Model No: JC-SC-DB12



The QPSK Demodulator and Bit Sync Unit has been designed to meet the Data Reception requirements for the Remote Sensing Satellite Ground Stations. This system receives a QPSK Modulated IF signal of 720 MHz as its input and output the Demodulated I and Q base-band signals for the baseband data-rate upto 105 Mbps. The Bit Synchronizer receives the Demodulated I & Q base-band as it's input and outputs the Clock and Synchronized Data for both I & Q with Parallel Clock (52.5 MHz) and the serial data at 105 Mbps along with Serial Clock.

Applications

- In-Radio communication for demodulation
- Orbiting satellite tracking for remote sensing

Features

- High Data rate demodulators for ground checkout / Earth stations
- Digital Costas loop & DSP based processing
- QPSK Demodulation
- Data rate 10 Mbps to 105 Mbps (Upgradable to 320 Mbps)
- 60 dB dynamic range
- Configurable for different differential decoding algorithms
- Digital Bit-synchronizer (160Mbps- I & Q), Clock & Data Outputs





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Technical Specifications

Input Frequency 720 MHz AGC Dynamic range -10 to -50 dBm (40dB) Demodulation Scheme QPSK Data Rate Upto 105 Mbps (Upgradable to 320 Mbps) Acquisition Time -250msec Acquisition Range ± 500 KHz Doppler Rate Capability up to 8 KHz/sec BER Performance Within 2.0dB of the theoretical Eb/No for a BER of 1x10-6 Input Data Format PCM NRZ-M Differential Decoding 4 state gray coded (1 RS Specific) Programmable Clock Acquisition ± 0.3% of Symbol rate Outputs I channel -Data, Clock, Inverted Clock, Inverted data, O channel -Data, Clock, Inverted Data & Clock Output Logic NRZ-L ECL Single ended (Un-terminated) Clock Duty Cycle 50% ± 10% Continuous Clock Stability Better than ± 10 PPM Front Panel Indication Carrier, Clock & Local / Remote Front Panel Display Frequency, RSSI, Data rate & Decoding Front Panel Selections Decoding, Phase adjust, IP Configure Input/Output Connectors BNC(F) Remote Interface 50 ohms Input/Output Connectors BNC(F) Remote Interface 230V AC, 50 Hz, Single Phase Mechanical U Mounting 19-inch 3U Rack mountable Size	Functional	
Demodulation SchemeQPSKData RateUpto 105 Mbps (Upgradable to 320 Mbps)Acquisition Time<250msec	Input Frequency	720 MHz
Data RateUpto 105 Mbps (Upgradable to 320 Mbps)Acquisition Time<250msec	AGC Dynamic range	-10 to -50 dBm (40dB)
Acquisition Time<250msecAcquisition Range± 500 KHzDoppler Rate Capabilityup to 8 KHz/secBER PerformanceWithin 2.0dB of the theoretical Eb/No for a BER of 1x10-6Input Data FormatPCM NR2-MDifferential Decoding4 state gray coded (I RS Specific) ProgrammableClock Acquisition±0.3% of Symbol rateOutputsI channel -Data, Clock, Inverted Clock, Inverted data, Q channel -Data, Clock, Inverted Clock & Inverted Data I+Q (Merged) Data & ClockOutput LogicNR2-L ECL Single ended (Un-terminated)Clock Duty Cycle50% ±10%Continuous Clock StabilityBetter than ± 10 PPMFront Panel IndicationCarrier, Clock lock & Local / RemoteFront Panel DisplayFrequency, RSSI, Data rate & DecodingFront Panel SelectionsDecoding, Phase adjust, IP ConfigureInput/Output ConnectorsBNC(F)Remote InterfaceS00 vAC, 50 Hz, Single Phase Betertical	Demodulation Scheme	QPSK
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Doppler Rate Capabilityup to 8 KHz/secBER PerformanceWithin 2.0dB of the theoretical Eb/No for a BER of 1x10-6Input Data FormatPCM NRZ-MDifferential Decoding4 state gray coded (I RS Specific) ProgrammableClock Acquisition±0.3% of Symbol rateOutputsI channel -Data, Clock, Inverted Clock, Inverted data, Q channel -Data, Clock, Inverted Clock & Inverted Data I+Q (Merged) Data & ClockOutput LogicNRZ-L ECL Single ended (Un-terminated)Clock Duty Cycle50% ±10%Continuous Clock StabilityBetter than ± 10 PPMFront Panel IndicationCarrier, Clock lock & Local / RemoteFront Panel DisplayFrequency, RSSI, Data rate & DecodingFront Panel SelectionsDecoding, Phase adjust, IP ConfigureInput/Output Impedance50 ohmsInput/Output ConnectorsBNC(F)Remote InterfaceRS232 / TCP-IP (Selectable)ElectricalVoutput Sult Ack mountableSize485 L X 485 D X 88 H in mmWeight<6 Kgs	Acquisition Time	<250msec
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Clock Duty Cycle50% ±10%Continuous Clock StabilityBetter than ± 10 PPMFront Panel IndicationCarrier, Clock lock & Local / RemoteFront Panel DisplayFrequency, RSSI, Data rate & DecodingFront Panel SelectionsDecoding, Phase adjust, IP ConfigureInput/Output Impedance50 ohmsInput/Output ConnectorsBNC(F)Remote InterfaceRS232 / TCP-IP (Selectable)ElectricalPower230V AC, 50 Hz, Single PhaseMechanicalMounting19-inch 3U Rack mountableSize485 L X 485 D X 88 H in mmWeight<6 Kgs	Outputs	
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Front Panel IndicationCarrier, Clock lock & Local / RemoteFront Panel DisplayFrequency, RSSI, Data rate & DecodingFront Panel SelectionsDecoding, Phase adjust, IP ConfigureInput/Output Impedance50 ohmsInput/Output ConnectorsBNC(F)Remote InterfaceRS232 / TCP-IP (Selectable)Electrical230V AC, 50 Hz, Single PhaseMechanical19-inch 3U Rack mountableSize485 L X 485 D X 88 H in mmWeight<6 Kgs	Clock Duty Cycle	50% ±10%
Front Panel DisplayFrequency, RSSI, Data rate & DecodingFront Panel SelectionsDecoding, Phase adjust, IP ConfigureInput/Output Impedance50 ohmsInput/Output ConnectorsBNC(F)Remote InterfaceRS232 / TCP-IP (Selectable)Electrical230V AC, 50 Hz, Single PhaseMechanical19-inch 3U Rack mountableSize485 L X 485 D X 88 H in mmWeight<6 Kgs	Continuous Clock Stability	Better than ± 10 PPM
Front Panel SelectionsDecoding, Phase adjust, IP ConfigureInput/Output Impedance50 ohmsInput/Output ConnectorsBNC(F)Remote InterfaceRS232 / TCP-IP (Selectable)Electrical230V AC, 50 Hz, Single PhasePower230V AC, 50 Hz, Single PhaseMechanical19-inch 3U Rack mountableSize485 L X 485 D X 88 H in mmWeight<6 Kgs	Front Panel Indication	Carrier, Clock lock & Local / Remote
Input/Output Impedance50 ohmsInput/Output ConnectorsBNC(F)Remote InterfaceRS232 / TCP-IP (Selectable)Electrical230V AC, 50 Hz, Single PhasePower230V AC, 50 Hz, Single PhaseMechanical19-inch 3U Rack mountableSize485 L X 485 D X 88 H in mmWeight<6 Kgs	Front Panel Display	Frequency, RSSI, Data rate & Decoding
Input/Output ConnectorsBNC(F)Remote InterfaceRS232 / TCP-IP (Selectable)ElectricalPower230V AC, 50 Hz, Single PhaseMechanicalMounting19-inch 3U Rack mountableSize485 L X 485 D X 88 H in mmWeight<6 Kgs	Front Panel Selections	Decoding, Phase adjust, IP Configure
Remote InterfaceRS232 / TCP-IP (Selectable)ElectricalPower230V AC, 50 Hz, Single PhaseMechanicalMounting19-inch 3U Rack mountableSize485 L X 485 D X 88 H in mmWeight<6 KgsEnvironmental	Input/Output Impedance	50 ohms
ElectricalPower230V AC, 50 Hz, Single PhaseMechanicalMounting19-inch 3U Rack mountableSize485 L X 485 D X 88 H in mmWeight<6 Kgs	Input/Output Connectors	BNC(F)
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Mechanical Mounting 19-inch 3U Rack mountable Size 485 L X 485 D X 88 H in mm Weight <6 Kgs	Electrical	
Mounting 19-inch 3U Rack mountable Size 485 L X 485 D X 88 H in mm Weight <6 Kgs	Power	230V AC, 50 Hz, Single Phase
Size 485 L X 485 D X 88 H in mm Weight <6 Kgs	Mechanical	
Weight <6 Kgs Environmental	Mounting	19-inch 3U Rack mountable
Environmental	Size	485 L X 485 D X 88 H in mm
	Weight	<6 Kgs
Temperature - Operating 0° C to +50° C	Environmental	
	Temperature - Operating	0° C to +50° C
Temperature - Storage-10° C to +60° C	Temperature - Storage	-10° C to +60° C
Humidity 90% RH Non-Condensing	Humidity	90% RH Non-Condensing



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