



Networked Telemetry Acquisition and Processing



NetAcquire® F20-SIO

Introduction

The NetAcquire F20-SIO Serial Telemetry I/O system offers a new level of price-performance in COTS network-based telemetry/command gateway products. This system combines the power of real-time intelligent serial input/output hardware with the flexibility of high-speed network communications technology.

The NetAcquire F20-SIO performs as a low-cost real-time communications gateway between Ethernet networks and high-speed PCM serial devices. Network clients such as engineering workstations can now receive and send telemetry as well as command data directly from and to range, satellite and avionics communications equipment. The NetAcquire F20-SIO also supports data format conversion operations, frame synchronization, time tagging, header generation, and optional decommutation, all with best-of-class low latency real-time performance.

The NetAcquire F20-SIO industry-standard TCP/IP & UDP network interfaces provide communication access for a wide variety of computers and operating systems on any Ethernet network. The NetAcquire F20-SIO also provides integrated support for the FI 2010 TENA network protocols.

NetAcquire offers several companion software toolkits for use with these systems. The NetAcquire Server Extensions Toolkit allows easy creation of custom data processing operations for execution in real-time on the NetAcquire F20-SIO.

NetAcquire F20-SIO supports advanced real-time processing extensions by allowing local execution of user-supplied custom code. Extensions include command generation, limit processing, and custom data headers.

Applications

- Ground station telemetry processing
- Remote and wide-area monitoring
- IP migration of range infrastructure
- Protocol conversion, gateways
- Aerospace manufacturing and test

Key Features

- Complete 'network-ready' intelligent telemetry processing system
- Two PCM serial input channels and two PCM serial output channels with expansion to 8 channels
- 20 megabit/second per channel Input and Output speeds, with 30 and 100 Mbps option
- Software-selectable word width, bit rate, clock recovery, NRZ-L/M/S/R and Biphase-L/M/S bit encoding, MSB/LSB data alignment, and data/clock polarity
- Clock Recovery capability for use cases where only a data input is available
- Optional telemetry decommutation with support for subcommutation, CCSDS, and engineering unit conversion
- Optional internal Data Recording, with support for the IRIG 106 Chapter 10 format
- Optional removable system disk with spares for classified and un-classified mission requirements
- High-speed network communications with advanced network error checking and recovery
- Optional IRIG-B precision time reference for time-tagging
- Optional copper or fiber Gigabit Ethernet interfaces
- Software Toolkits available for building customized local data processing capabilities
- TTL, RS-422, ECL, or LVDS signal levels

Specifications

Typical Serial (PCM) Input/Output

- Channels: Up to 8 bidirectional serial channels
- Data rates: 0-20 Mbps, with 30 and 100 Mbps option
- Electrical: RS-422, RS-232, TTL, ECL, or LVDS
- Parameters: Software-selectable word width, bit rate, clock recovery, NRZ-L/M/S, R-NRZ and Biphas-L/M/S bit encoding, MSB/LSB data alignment, data/clock polarity and frame synchronization
- Clocking: Internal and external transmit timing and adaptive or fixed receive timing
- Diagnostics: Selectable loopback and loopout options and integrated bit error rate tester
- Data Decommulation: Advanced frame support with subcommutation, embedded formats, and CCSDS support

Network

- Interface: Ethernet, twisted pair (100BASE-T), with Gigabit and fiber optic options
- Protocol Support: TCP, UDP, HTTP, FTP, SNMP, CORBA, IIOP, DNS, RARP, DHCP, BOOTP, NTP
- Space Links: Integrated SCPS-TP and Reed-Solomon error correction support
- Quality of Service: User-selectable using DSCP (Differentiated Services Codepoint)
- Negotiation: Automatic or manual link speed and duplex negotiation
- ATM support: Available through external router

Timing

- IRIG Timing: IRIG B with both AM and DC level shift signal formats; input level from 1 to 10 Vpp and programmable termination and programmable output level from 1 to 8 Vpp

Other Input/Output Interfaces

- Analog signals: Up to 512 channel and 750,000 conversions/second
- Digital signals: TTL, RS-422, ECL, LVDS, high voltage, relay, contact closure
- Avionics bus support: MIL-STD-1553, ARINC-429, Firewire (1394)
- Application-specific interfaces: 250,000 Gate field-programmable digital gate array

Processor/Memory

- Main Processor: Pentium® 4
- RAM: 512 MB with expansion
- Coprocessors: DSP in some I/O subsystems

Data Storage Option

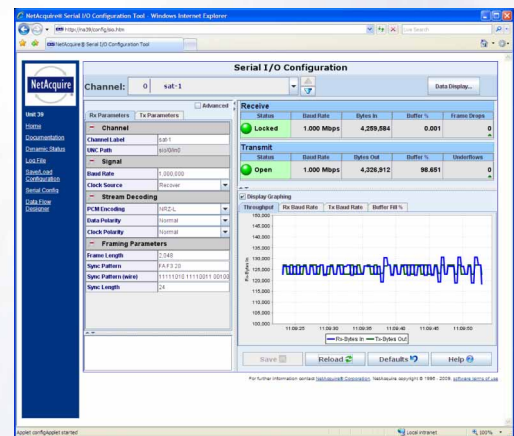
- Capacity: Up to 1 Tbyte
- Speed: <100 Mbps, continuous
- Storage Management: Automatic detection and wraparound

NetAcquire Server Software

- Operating System: Hard real-time with latency guarantees
- Diagnostics: Selectable power-up, continuous, and remotely initiated
- Backup: One-step configuration save/restore
- Open Programming Architecture: Available with NetAcquire Server Extension Toolkit

Client Software

- User Interface: Web-based with Java GUI and SNMP
- Third-party software support: LabVIEW™, DataViews, Satellite Tool Kit, IADS, MATLAB®, .NET, C, C++, Java, CORBA, Visual BASIC



Physical

- Frame: Heavy-duty steel
- Operating temperature 32 to 122°F (0 to 50°C)
- Power Requirements: 90-132 VAC or 180-264 VAC with automatic range switching, 250 watts (DC power optional)
- Rackmount: 1U, 2U, 4U, and 6U available

Solutions that Fit

NetAcquire Corporation specializes in real-time distributed systems. We can configure NetAcquire solutions that are customized to your network, input/output, and processing needs.



NetAcquire Corporation

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