MODEL 50386
Real-Time Data Transmitter
SCADA Two-Way Transmitter

General Description

The Model 50386 Real-time Data Transmitter collects, processes, and transmits analog, digital, and serial sensor data on events and timed intervals. The collection, processing, and transmission of sensor data is controlled by parameters that are programmed using the 50386 Toolbox software. The sensor data can be transmitted using multiple communication paths with mixed formats and protocols.

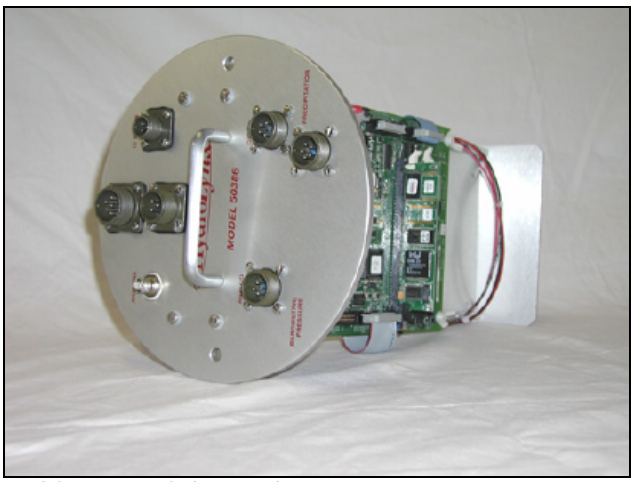
The HydroLynx Model 50386 ScadaLynx uses dual processor architecture and the latest in embedded processor technology to minimize power usage when idle and maximize computational power and performance when awake. The main processor is an Intel 386EX microprocessor that runs the main data collection, data telemetry, and control processes. The second processor is a low power PIC I/O processor that collects digital status and counter data. When the main processor is idle, it is put to sleep to conserve power. The PIC I/O processor wakes up the main processor on timed intervals, when digital event thresholds are met, radio carrier is detected, or data is entered on the console communication port.

Standard memory on the Model 50386 consists of FLASH, Battery backed SRAM, EEPROM, and a battery-backed Real-time Clock (RTC). 4 MB of nonvolatile FLASH is provided for program and configuration file storage and data logging. Although stored in FLASH, the program is copied into battery backed SRAM (1 MB) for faster execution. Current sensor readings are saved in nonvolatile EEPROM (8KB) and the RTC stores the time in its own battery-backed SRAM. The contents of nonvolatile and battery-backed memory are not lost when power is removed.

The Model 50386 Data Transmitter is programmed using a Windows based Toolbox software package. Transmitter programming can be done directly using either one of the two onboard RS232 serial ports or remotely through telemetry equipment connected to these ports. The programming parameters include station identification; sensor I/O identification, scaling, sampling, computations, logging threshold, reporting threshold; alarm or control actions; communication parameters; power down settings; clock time and time zone; and data logging format and limit.

The Model 50386 Data Transmitter supports up to 16 analog inputs, 16 bit Analog to Digital converter, 12 digital status inputs, 4 low speed up/down counter inputs, 4 high speed up only counter inputs, 6 digital outputs, and 1 SDI-12 serial interface. Serial data collection is possible through one or more RS232 serial ports.

Virtual sensor data can be computed from sensor inputs to compute sensor averages, maximums, minimums and runtimes. Virtual sensor data can then be tested, alarmed, logged and transmitted just like actual sensor inputs.



Model 50386 Real-Time ScadaLynx System

Six digital outputs allow the 50386 Data Transmitter to perform local controls based on sensor upper, lower and change limits. Control resets are based on reset value and time interval limits.

Two RS232 serial ports in the standard package can be expanded to six ports to increase the number of communication paths. Communication formats include ALERT/IFLOWS, ScadaLynx, ASCII, and MODBUS. Communication paths can be through ALERT radio transceivers; SCADA radio transceivers; telephone, leased-line or microwave modems; GOES transmitter; direct serial connections.

Packaging for the Model 50386 includes the standard ALERT style canister and NEMA-4X fiberglass enclosure.

Ordering Information

50386-54	Transmitter in Round Canister, 1 Precipitation Input, 1 SDI-12 Input
50386-90	Same as 50386-54 with 1 Precipitation Input, 1 Up/Down Counter Input, 2 Analog Inputs, 1 SDI-12 Input
50386-81	Same as 50386-54 with 1 Precipitation Input, 1 Up/Down Counter Input, 7 Analog Inputs, 1 Wind Input, 1 SDI-12 Input
50386N	Transmitter in NEMA 4X Enclosure with 2 Up/Down Counter Inputs, 7 Analog Inputs, 2 Wind Inputs, 8 Digital Inputs, 2 Digital Outputs, 1 SDI-12 Input
50386NZ	Transmitter in NEMA 4X Enclosure with 4 Up/Down Counter Inputs, 14 Analog Inputs, 4 Wind Inputs, 12 Digital Inputs, 6 Digital Outputs, 1 SDI-12 Input
50386N-CP	Same as 50386N with MS connector package
50386-UG	5096 to 50386 Transmitter upgrade

Specifications

PCOS
Processor: ..... Intel 80386EX
Clock Speed: ..... 33 MHz
Bus size: ..... 16 bits
Serial bus: ..... I^2C
FLASH memory: ..... 4 MB
EEROM memory: ..... 8 kB
RAM memory: ..... 1 MB

PIC I/O Processor
Clock Speed: ..... 20 MHz
Communication bus: ..... I^2C

Communications
Serial ports: ..... 2 RS232 standard
Serial port expansion: ..... 4 RS232 additional
ALERT radio: ..... Transmit/receive
ScadaLynx radio: ..... Transmit/receive
Protocols: ..... ALERT, ScadaLynx, MODBUS, GOES, other protocols available
Internal telephone modem: ..... Option

Analog Inputs
Number of external inputs: ..... 16 (14 available, 2 reserved for on board voltage measurement)
Resolution: 16-bits
Input Ranges: ..... 0 to 5 Vdc or 4 to 20 mA with resistor
Absolute error: 0.0015%
Linearity error: 0.003%
Ref. temperature stability: ..... 5 ppm/°C

Up/Down Counter Inputs
Number of inputs: 4
Low speed input types: ..... Form C, contact closure, direction line
Maximum input rate: ..... 100 Hz
Input noise filtering: ..... 200 kHz (-3 dB)

High Speed Counter Inputs
Number of inputs: 4
High speed input types: ..... AC, 5 Vdc
Maximum input rate: ..... 2 kHz
Input noise filtering: ..... 5 kHz (-3 dB)

Digital Inputs
Number of inputs: 12
I/O types: ..... Contact closure and 5 Vdc
Input noise filtering: ..... 15 Hz (-3 dB)

Digital Outputs
Number of outputs: 6
I/O types: ..... Low side, Open drain
Output capacity: ..... 50 Vdc and 150 mA DC continuous sink current

SDI-12 Input
Input pins: ..... Signal, Gnd, 12 Vdc

Power Required (not including optional hardware and/or boards)
Fully asleep: ..... 10 to 16 Vdc, < 3 mA
Fully awake: ..... 10 to 16 Vdc, < 150 mA

Switched Power Supply
5 Vdc sensor power: ..... 30 mA, maximum
12 Vdc sensor power: ..... 500 mA, maximum
12 Vdc radio power: ..... 6 A maximum
12 Vdc radio power amplifier: ..... 5 A maximum

General
Operating temperature: ..... -40 to 85 °C
Humidity: ..... 0 to 95%, non-condensing

Models 50386-54, 90, 81
Enclosure: ..... Aluminum canister
Size: ..... 8 in. diameter x 23 in. high
Weight: ..... 19 lbs with battery
Shipping weight: ..... 12 lbs (battery shipped separately)
Sensor inputs: ..... Keyed MS male connectors
- 50396-54 ..... 1 Precipitation Input, 1 SDI-12 Input
- 50386-90 ..... 1 Precipitation Input, 1 Up/Down Counter Input, 2 Analog Inputs, 1 SDI-12 Input
- 50386-81 ..... 1 Precipitation Input, 1 Up/Down Counter Input, 7 Analog Inputs, 2 Wind Inputs, 1 SDI-12 Input

Battery: ..... 12 Vdc, 18 Amp-hour rechargeable gel cell
External 12 Vdc connector: ..... 3 pin MS male connector for solar panel or optional AC charger
Antenna: ..... BNC female bulkhead
Serial ports (2): ..... 7 pin MS male external connector, 9 pin DB9 male connector on board

Models 50386N, N-2, NZ, and N-CP
Enclosure: ..... NEMA-4X fiberglass
Size: ..... 15.5 in. x 13.5 in. x 6.5 in.
Weight: ..... 16 lbs with battery
Shipping weight: ..... 12 lbs (battery shipped separately)
Sensor inputs: ..... Enclosure with 7 cable strain reliefs
Connections:
- 50386N: ..... Screw terminal interconnect PCB for 2 Up/Down Counter Inputs, 7 Analog Inputs, 2 High Speed Counter (wind) Inputs, 8 Digital Inputs, 2 Digital Outputs, 1 SDI-12 connector onboard
- 50386N-2: ..... Same as 50386N with 2 Antenna Connectors
- 50386NZ: ..... Screw terminal interconnect PCB for 4 Up/Down Counter Inputs, 14 Analog Inputs, 4 High Speed Counter (wind) Inputs, 12 Digital Inputs, 6 Digital Outputs, 1 SDI-12 connector onboard
- 50386N-CP: ..... Keyed MS male connectors for 2 Up/Down Counter Inputs, 7 Analog Inputs, 2 Wind Inputs, 8 Digital Inputs, 1 SDI-12 MS connector

Battery: ..... 12 Vdc, 18 Amp-hour rechargeable gel cell
External 12 Vdc connector: ..... 3 pin MS male connector for solar panel or optional AC charger
Antenna: ..... N-type female lightning arrestor
Serial ports (2): ..... 9 pin DB9 male connector on board

Options

RTR ..... Radio Link (Specify frequency)
5073TBX ..... 50386 Toolbox Software
50386-OP1 ..... 7 Pin MS Male RS232 Connector
50386-OP2 ..... 10 Pin MS Female Digital Status Connector
50386-OP3 ..... 3 Pin MS Male SDI-12 Connector
50386-OP4 ..... 6 Serial Port Expansion
50386-OP5 ..... Leased Line Modem
50386-OP6 ..... Internal Power Supply
50386-OP7 ..... GOES Radio
50386-OP8 ..... ScadaLynx Radio
50386-OP9 ..... Microwave Interface
50386-OP10 ..... GOES Antenna
50386-OP11 ..... Industrial Dial-up Modem
50386-OP12 ..... Digital Input Expansion
50386-OP13 ..... Analog/Digital Output
50386-OP14 ..... Network Connector