KINGFISHER

Semaphore Kingfisher LP-3 RTU

Low-power operations provide effective monitoring and control functionality for remote locations.

A powerful solution for low-power monitoring, control, and data logging applications.

The LP-3 cost effectively opens up the world of high-tech communications and SCADA (supervisory control and data acquisition) functionality to practically all remote locations.

The Kingfisher LP-3 low-power RTU suits a wide range of applications that include agriculture operations, environmental monitoring, gas metering, power metering and data logging. These smart, easy-to-use RTUs have ladder logic capability and highly flexible I/O and communication ports.

Very low power consumption is achieved using three modes — communication, scanning, and sleeping. The RTU is packaged in a two-part, rugged plastic enclosure that houses the electronics and communication interfaces.

The LP-3 low-power RTU is compatible with the entire family of Kingfisher RTU products and is configured using the same Toolbox software. The LP-3 is further compatible with virtually any other SCADA system through the use of a broad variety of communications protocols.

Kingfisher LP-3 Low-Power Operations

Intelligent management of power consumption allows the LP-3 RTU to be used with battery or solar power sources. Sleep mode current draw of less than 1 mA minimizes the size and cost of the power systems.

Especially low power consumption is achieved using three modes — communication, scanning, and sleeping. In sleep mode, all I/O and communication devices are powered down and consumption is less than 10mW. In scanning mode, the RTU has its I/O active and consumption is approximately 450mW. In communication mode, the RTU has all communications and I/O devices powered and the power consumption is dependent on the activity and type of communication device.

In low-power applications, the LP-3 RTU is configured to spend most of its time in sleep mode, moderate time in scanning mode, and minimal time in communicating mode. All sleep mode functions are programmable by the user via Toolbox Windows software.

I/O Adaptability

The LP-3 RTU provides 15 I/O points in an adaptable configuration, which is suitable for practically all remote locations:

- Four analog inputs operate over a range of 0 to 5 V DC for use with low-power transducers or 0 to 20 mA for compatibility with current loop devices.

- Eight digital inputs are compatible across a broad voltage range of 3.5 to 30 V DC. Inputs 1 and 2 can be configured to wake up the RTU and can also operate as high-speed counter inputs. For added flexibility, inputs 5 to 8 are configurable as digital outputs.

- Two digital outputs use magnetic latch relays, which can switch 2 amps. When inputs 5 to 8 are configured as outputs, they are open drain outputs operating up to 300 mA.

- One analog output, which operates over 0 to 5 V DC or 0 to 20 mA in sink mode.

Communications Configurability

Up to four ports provide versatility to suit most remote application:

- Port 1: RS-232 or RS-485

- Port 2: RS-232 or RS-485

- Port 3: KF Series II option card including serial, Ethernet, spread spectrum, radio, PSTN modem, dial-up modem, or fiber optic interface

- Port 4: KF Series II option card, including serial, Ethernet, spread spectrum, radio, PSTN modem, dial-up modem, or fiber optic interface

SMS Control Using a Mobile Phone

Not only can the LP-3 RTU send messages to mobile phone and PDA users to provide live updates, it also allows SMS control of operating parameters and outputs.

Toolbox software provides easy-to-understand displays, which streamline programming, testing, and startup.

Communication Protocols

For compatibility with a broad range of SCADA networks and intelligent devices, the LP-3 supports communications protocols including Kingfisher, DNP3, Modbus (Master/Slave), ASCII, and many more.
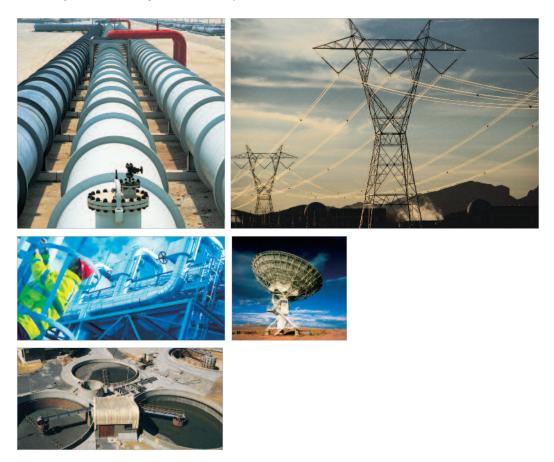
Toolbox Software

The LP-3 RTU is configured using the same Kingfisher Toolbox software that is used for the Kingfisher Series II RTU family. Toolbox is a Windows-based environment that provides menu-driven configuration, data definition, logic, and diagnostics. It is supported by screen displays and easy-to-understand interactive graphical representations, which are designed to streamline programming, testing, and start-up efforts.

In addition to programmable logic, Toolbox provides configuration of all communications, power operations, and data logging.

Applications

The Kingfisher LP-3 RTU brings wide-area networking connectivity, remote monitoring, data logging, and programmable control to applications over a broad range of industries. Users in the agriculture, environmental monitoring, mining, oil and gas, power, transportation, and water/wastewater industries will find a Kingfisher LP-3 configuration to be very cost effective in all installations.

KINGFISHER LP-3 SPECIFICATIONS

General

Designation	Industrial grade remote terminal unit (RTU)
Input supply	11.5-13.8 V DC
Power consumption, I/O scan	<45 mA (option ports 3 & 4 not loaded)
Power consumption, sleeping	<1 mA via DC supply
Battery	External 7-17AH recommended
Operating temperature range	-20°C to +70°C (excluding battery)
Operating humidity	5% to 98% R.H. non condensing
CPU	Hitachi H8S/2144 operating at 32 KHz or 7.38 MHz
FLASH RAM	4 MB Flash RAM
Static CMOS RAM	4 K internal, 512 K external (battery backed)
Real-time clock	Yes
Back-up battery for RAM, RTC	Yes, Lithium
Back-up battery lifetime	7 Years at 25ºC
Watchdog timer	Yes
Dimensions	185 mm (H) x 130 mm (W) x 50 mm (D)
COM Port 1	RS-232, 300 to 38400 bps
COM Port 2	RS-232/RS-485, 300 to 38,400 bps
COM Port 3	Communications option card (select from list below)
COM Port 4	Communications option card (select from list below)

Communications Options

A3	Ethernet MTRJ Fiber Optic 100 Mbps
D	PSTN Modem 38.4 Kbps
F	Fiber Serial
I	Isolated Serial RS-232/422/485
L	Private Line FSK 1200 Baud
R2	Spread Spectrum Radio 900 MHz Australia
R3	Spread Spectrum Radio 2.4 GHz International
R4	Spread Spectrum Radio 900 MHz USA
T3	Ethernet RJ45 10/100 Mbps

Digital Inputs

Number of inputs	4 to 8* (channels 1 & 2 can wake the RTU)
Input voltage range	3.5 to 30 V DC = ON; 0 to 1.5 V DC = OFF
Isolation	None

Digital Outputs

Number of outputs	2 to 6* 2 latching, SPST-NO relay, 4 open drain
Maximum switching voltage	30 V AC, 30 V DC
Maximum switching current	2 A
Isolation	500 V (relay)
Operating power	300 mW at 12 V
Optional Dig. Out (DI Ch's 5 to 8)	Open drain 300 mA total

Analog Inputs

Number of inputs	4 plus internal (including batt. V, RTU current, RTU temp., and ADC V Ref)
Input voltage range	0-5 V (0-20 mA with ext. 250 Ohm resistance)
A/D converter resolution	12 bit
Isolation	None
Binary input range	0 to 32760

Analog Output

Number of inputs	1
Output range	0-5 V or 0-20 mA sink
D/A converter resolution	15 bit
Isolation	500 V RMS

Certifications

A-Tick	Comms options D, R1 and R2
C-Tick	Main module plus comms options A3, D, I, L, R2, R3, T3

*Digital inputs 5 to 8 can be selected as digital outputs.

semaphore