



Semaphore Kingfisher G30



The Kingfisher G30 is a compact RTU that brings IP connectivity, advanced I/O capabilities, and open programming to remote measurement and control applications that require up to 32 I/O points.

The most compact RTU in the Kingfisher Plus+ family, the G30 features a powerful, 32-bit processor; large memory model; and the Toolbox Plus+ open software configuration environment. Toolbox Plus+ embeds ISaGRAF, which is compliant with IEC 61131-3 and IEC 61499 — the distributed processing and interoperability extension to 61131-3.

A broad offering of communications protocols ensures compatibility with practically any system and includes Kingfisher, Modbus master/slave (ASCII, RTU, and TCP), SNMP, and DNP3 slave. Also available is an API development kit that allows third parties to write their own custom protocols.

Unlike competitive “brick” RTU products, the G30 features configurable communications, I/O, and power supply modules that allow flexibility in configuration and provide the opportunity to upgrade the user’s investment.

Kingfisher G30 at a glance

The Kingfisher G30 RTU is designed to remove the complexity from any application. It provides rapid startup plus ease in configuration and programming, as well as highly flexible, IP-enabled communications in a single, integrated package.



The Kingfisher G30 RTU includes:

Award-winning, compact package

Very-small-footprint, rugged enclosure is readily accommodated in instrument cabinets.

32-Bit processor and memory system

Running at 166 MHz, the ARM9 processor provides high performance. A memory model that includes 32 MB SDRAM and 16 MB Flash ensures plenty of storage space for alarms, events, live data, historical reports, and other files.

Color OLED display

Color organic light-emitting diode (OLED) screen shows important system parameters and status information such as address, date/time, power status, and I/O status in real time and in easy-to-read, high-contrast, 16-bit color.

10/100 Ethernet port

The integral, 10/100 Ethernet interface provides IP networking and functions as a high-speed programming port.

USB 2.0 host port

An onboard USB 2.0 host port is included for use with industrial USB devices and USB-to-serial converters.

Serial/wireless expansion port

The Kingfisher G30 RTU is fitted with an expansion port that provides flexible communications options.

Power supplies

Kingfisher G30 power supply modules provide intelligent conditioning and filtering as well as integral, temperature-compensated battery charging. Users can select either an ac or dc module:

- PSO-ACR 90~260 V ac, 96~340 V dc regulated
- PSO-DCU 10~30 V dc unregulated

Input/output cards

Kingfisher G30 intelligent I/O cards have been designed for applications that require high accuracy and performance. Advanced capabilities include input counting up to 10 KHz, quadrature counting (by pairing digital inputs), sequence-of-events (SOE) monitoring on a 1 ms interval, and configurable, fail-safe output settings. To most effectively meet a broad range of applications, users can select one of three I/O models:

- MX2
 - 14 digital inputs
 - 8 digital outputs
 - 6 analog inputs
- MX3
 - 14 digital inputs
 - 8 digital outputs
 - 6 analog inputs
 - 2 analog outputs
- MX4
 - 16 digital inputs
 - 16 digital outputs



Users can quickly become familiar with the Outlook-style displays Toolbox Plus+ provides for advanced configuration and diagnostics.

Toolbox Plus+ software

Semaphore's Toolbox Plus+ integrated operating environment combines configuration, program development, and maintenance in one simple-to-use package. Systems integrators and end users alike can view, edit, and diagnose a Kingfisher G30 solution with a highly intuitive, Outlook-style user interface.

Toolbox Plus+ eliminates the need to open — and switch between — multiple software packages, or engage in complicated programming. The software embeds the ISaGRAF IEC-61131-compliant environment and supports all five of the languages it offers. This is also the first IEC 61499-compliant configuration environment that is intended for RTU products. In addition, the Kingfisher library of preprogrammed function blocks, which includes operations such as AGA flow calculations, simplifies applications development and makes it easy to add new capabilities to a Kingfisher G30 RTU solution.

Applications

The Kingfisher G30 RTU brings IP connectivity, advanced I/O capabilities, and open programming, all in a compact platform, to small applications in Semaphore's traditional end-use industries. Customers in the broadcast/telecom, oil and gas, power, transportation, and water/wastewater industries will find the G30 cost-effective for installations that require up to 32 I/O points.



KINGFISHER G30 SPECIFICATIONS

Designation	Industrial-grade remote terminal unit (RTU)
Processor	Cirrus ARM9 EP9301, 166 MHz maximum (internal)
Clock	Real-time clock with supercapacitor backup
Memory	Flash 16 MB/SDRAM 32 MB/SRAM 32 KB
Communication port 1:	Ethernet (10/100Base-T)
Port 2:	USB 2.0 host, full speed 12 Mbps maximum
Port 3:	Communication option card (isolated serial, spread spectrum, or PSTN modem)
Ethernet protocols supported	TCP/IP, UDP, TCP, ARP, and ICMP TCP/UDP
OLED display	Color 96 x 64 pixel OLED (organic light emitting diode). Displays 8 lines of 19 characters.
Auxiliary output	24 V dc @ 250 mA (6 W) isolated (for powering I/O). Protected against continuous short circuit. Isolated to 1500 V (for up to 60 seconds). Maximum capacitive load 100 µF.
I/O connector	40 pin IDC male
Accessories	1, 2, or 5 meter interface cable, 40 pin IDC female to female Terminal interface block (DIN rail mountable)
Programming	Via Toolbox Plus+; IEC 61131-3, implemented using ISaGRAF version 5.1
Input voltage range	PSO-ACR 90-260 V ac, 96-340 V dc — 35 W total PSO-DCU 10-30 V dc. 2.5 A @ supply voltage.
Power consumption	G30: 2.5 W maximum MX2: 3 W/9 W maximum with auxiliary output OFF/ON respectively MX3: 4 W/10 W maximum with auxiliary output OFF/ON respectively MX4: 2 W/8 W maximum with auxiliary output OFF/ON
Port isolation	Ethernet port: 150 V ac maximum (dielectric withstanding voltage 1000 V ac, RMS)
I/O isolation	500 V RMS channel to logic 100 V RMS channel to channel between input groups 250 V RMS channel to field power 250 V RMS channel to other types of I/O channels

Digital inputs

Rated input voltage	12 to 24 V dc (supports reverse polarity)
Input type	Current sinking
Input characteristics	Impedance: 4.7 kΩ On-state voltage: +9.0 to 30 V dc Off-state voltage: +0 to 5.0 V dc On-state current: 1.4 mA minimum. Current=(Vin-1.2)/5.7 mA. Off-state current: 0.5 mA maximum
Input scan time	1 ms (for all channels)
Debounce	0 (default) to 16000 ms configurable on any channel(s)
Channel inversion	Yes. Selectable on any channel(s).
Sequence of events	Yes. Selectable on any channel(s).
Edge counting	Yes. Selectable on any channel(s). Rising or falling edge.
Frequency counting	10 kHz maximum on channels 1-4. 500 Hz maximum on all other channels.
Quadrature counting	Selectable by pairing input channels: 1&2, 3&4, etc.

Digital outputs

Rated switched voltage	12 to 24 V dc
Output type	Transistor, open collector, current sinking
Maximum switched voltage	60 V dc
Maximum switched current	100 mA per channel, self limited
Output protection	Yes. Reverse polarity, transient overvoltage and current.
Output update time	1 ms (for all channels)
Failsafe	Yes. Software configurable on any channel.
Pulse/frequency generation	High speed: 10 kHz maximum, 1 Hz minimum @ 50% nominal duty cycle Configurable on channels 1 to 4 Accurate to 0.01% Low speed: 500 Hz maximum @ 50% nominal duty cycle Configurable on channels 5 and higher. Accurate to 2% @ 500 Hz, 0.5% @ 100 Hz, 0.1% @ 1 Hz. Configurable pulse ON or OFF time: 1 to 16,000 ms

Analog inputs

Input ranges	4-20 mA, 0-20 mA, 1-5 V, 0-5 V (software selectable for each channel)
Input scan time	1 ms (for all channels)
Input impedance	250 Ω for current input. 1 MΩ for voltage input.
Accuracy	±0.05% @ 20°C/±0.15% @ -40 to 70°C
Resolution	16-bit

Analog outputs

Output ranges	4-20 mA, 0-20 mA, 1-5 V, 0-5 V (software selectable for each channel)
Resolution	16-bit
Accuracy	± 0.1% @ 20°C/± 0.2% @ -40 to 70°C
Output update time	1 ms (for both channels)
Settling time	20 ms maximum per channel
User load	850 Ω maximum for current output. 1 kΩ minimum for voltage output.
Output protection	Protected against continuous short circuit
Failsafe	Yes. Software configurable on any channel.

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