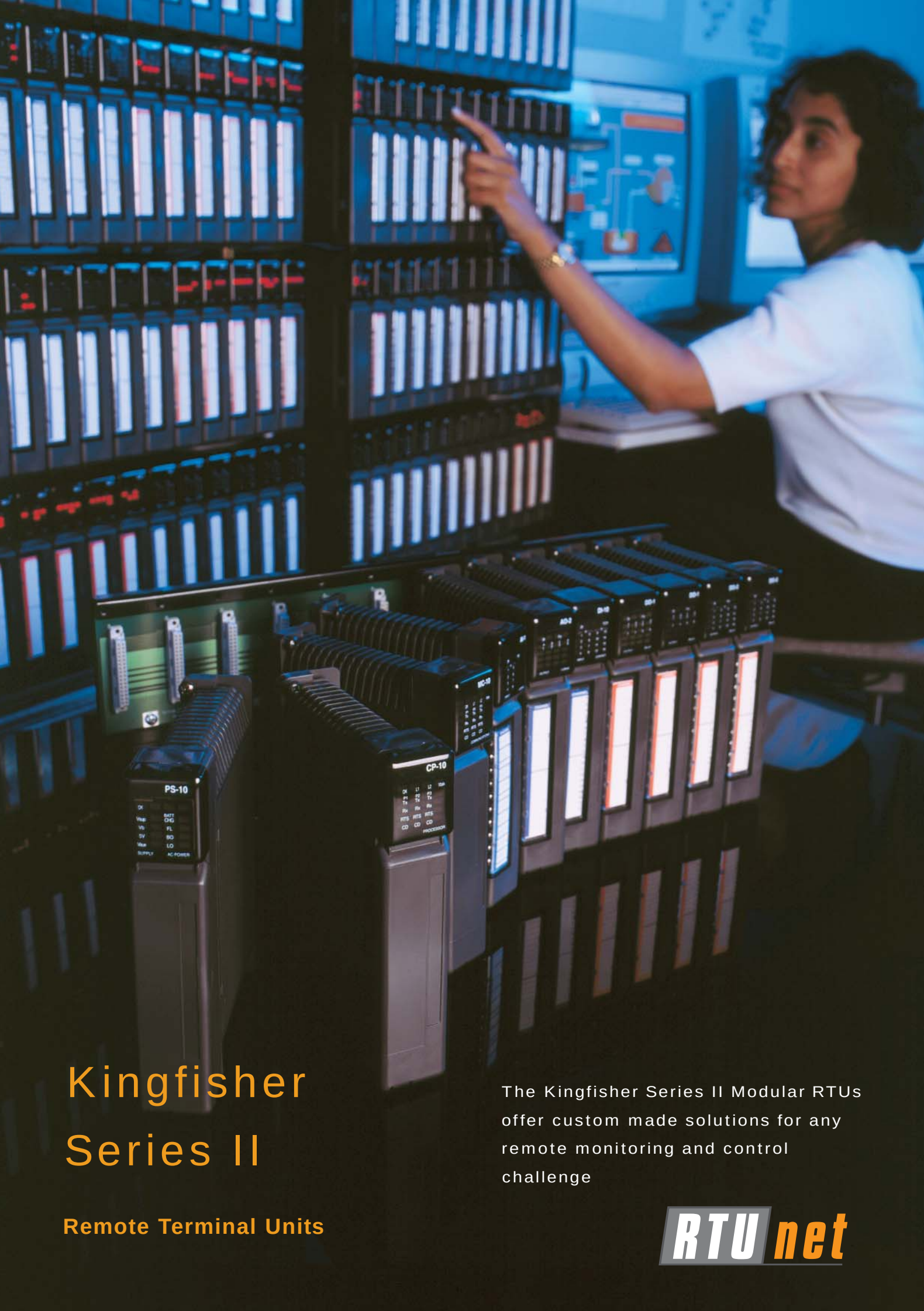

Kingfisher Series II

Remote Terminal Units

The Kingfisher Series II Modular RTUs offer custom made solutions for any remote monitoring and control challenge

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Features of Kingfisher Series II RTUs

The Kingfisher Series II Remote Terminal Unit design allows the user to create custom solutions by plugging a wide range of modules onto a backplane. This flexibility allows RTUs to be constructed to meet the exact needs of each site.

Each RTU can have as few as four I/O and one communication port, to thousands of I/O and sixteen communication ports.

Once your requirements are established, simply customise a Kingfisher Series II RTU to meet your needs. Should your requirements grow in the future, just upgrade your existing RTU by plugging in new modules or downloading new firmware.

Now that's true flexibility and future proofing!

Flexibility to create the perfect RTU solution

Kingfisher Series II individual modules can be assembled in almost any configuration to achieve the best solution.

- 4 to >1000 I/O
- 1 to 16 communication ports
- Backplanes may be daisy chained to expand I/O and communication ports capacity
- Multi I/O modules combine analog and digital I/Os (eg. 2xAI, 8xDI, 2xDO) in one module.

Easy upgrade path

The modular design of Kingfisher Series II RTUs allows its capacity to be expanded by plugging in new modules and its capabilities increased by downloading new firmware and software.

Connects to a range of communication equipment

The Kingfisher Series II RTUs can connect to a wide range of media that include:

- dedicated radio
- packet radio
- satellite
- PSTN dial-up
- cellular (voice grade and dedicated data)
- two-wire and four-wire leased lines
- ISDN
- RS232/RS485/RS422
- Ethernet
- fibre optic

Kingfisher Series II RTUs can also initiate alphanumeric messages to pager receivers and mobile phones (SMS).

Processing power

Powerful Intel 32 bit processors, large memory capacity and a real-time operating system provide the power for quick logic processing, communications and data storage. Kingfisher Series II RTUs provide control capabilities that were previously only available in PLCs.

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Industries

water wastewater **power** mining **oil** gas

broadcasting transportation **irrigation management**

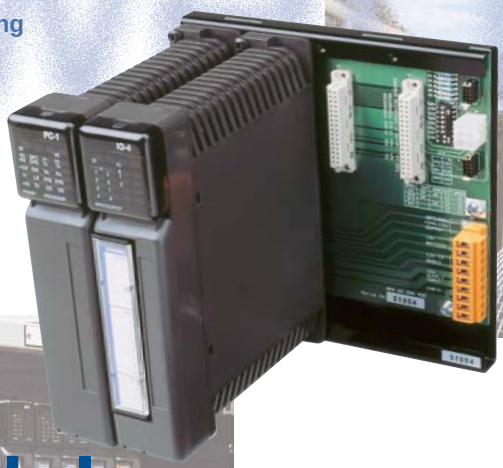
chemical **telecommunications** emergency services

construction substation monitoring

Series II RTUs can be customised to suit

any industry

powerful



flexible

able

fisher Series II

RTUs

Compatible with many devices and networks

Kingfisher Series II RTUs communicate using a wide range of protocols that provide connection to local devices such as PLCs, flow computers, shaft encoders, smart transducers, circuit breakers and pager radios. Connection to communication networks is also provided, including support of the Hayes AT command set, DNP3 protocol, MODBUS protocol, TCP/IP and emulation of other RTU and PLC manufacturers' protocols.

Easy configuration

TOOLBOX, a Microsoft Windows based RTU configuration and diagnostic program offers on-line help, configuration examples, and drag and drop capabilities. TOOLKIT features IEC 61131-3 compliant editing and allows you to configure RTUs remotely or locally, on-line or off-line, and from RTU to RTU, or PC to RTU.

Control is implemented using ladder logic which is compiled and downloaded into the RTU.

The use of databases for definition of I/O and system variables allows the importing and exporting of configuration data to and from other SCADA system databases.

Advanced power management features

Power consumption can be reduced by up to 90%. Kingfisher Series II RTUs can shut down field power between scans and maintain a low power idle state until woken by an event.

RTU self-configuration

The Series II RTU auto-detects the presence of modules plugged in the backplane(s), and will generate alarms if a module fails or is inserted in the wrong location.
Modules can be 'hot swapped' or added while the RTU is running.

Plug it in and GO!

Kingfisher Series II RTUs are designed to plug in and go to work for you with a minimum of fuss. Our systems engineering experts can also assist with a packaged or boxed solution which is customised to your particular site, application and communication requirements.

General Specifications

Inputs & Outputs

Maximum I/O	1024
Racks	up to 4
Total Modules	up to 64
I/O Per Rack	up to 256
I/O Configuration	Automatic/Manual
Slots Per Rack/Backplane	4 / 6 / 12
Removable Connectors	Yes
Digital Modules	max. of 16 inputs or 16 outputs / module
Analog Modules	max. of 16 inputs or 16 outputs / module

Processor Unit

Type	80C188 / 80C386
Flash RAM	128 to 1024 kBytes
RAM	128 to 2048 kBytes
Real Time Clock	Yes
Battery Backup	RAM / RTC
Serial Ports	1 (optional up to 3)
RTU Address	1 to 255
Radio Interface	Yes
Private Line Interface	Yes
PSTN (Dial-up / Answer)	Yes

Scan Rate

Digital	0.5 mS / module
Analog	1.5 mS / module
PID	4 / second

Communications Supported

Total Ports / RTU	16
Line Modem Standards	V22, V22BIS, V23, V32, V34
Radio Modem Standards	V23, MSK, GMSK, BELL 202
Serial Standards	RS 232 / 485 / 422
Master / Slave	Yes
Peer-to-Peer	Yes
Fall Back Levels	Yes
PC Link	Yes
Protocol	Kingfisher, MODBUS, DNP3 Allen Bradley and many more
Protocol Emulation	Yes

Configuration

Auto	Yes
Local (Portable PC)	Yes
Network	Yes

Configuration Types

Analog Value Test	Yes
PID Control	Yes
Ladder Logic	Yes

Diagnostics

Pre-Programmed	Yes
I/O Modules	LEDs
CPU Modules	LEDs
Power Supply Modules	LEDs
Report Via Network	Yes
Software	Yes

Debug

Local Watch Dog Timer	Yes
Communication Status	Yes
Configuration Display	Yes
I/O Status	Yes
Debug	Yes

Power

AC Supply	90 to 260 V
DC Supply	20 to 60 V
Solar Supply	12 V DC
Power Down Modes	Yes
Battery Backup	Yes
Battery Size	Various
Battery Charging Option	Yes

Environmental

Ambient Temperature	-20^{o}C to 70^{o}C
Storage Temperature	-40^{o}C to 85^{o}C
Humidity	5% to 98% non-condensing
Dielectric Strength	3000 V, 1 min
Noise Immunity	IEEE 472

Redundancy Levels

CPUs / RTU	2
Power Supplies / Rack	2

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Kingfisher Series II
RTUs

Modules for the Series II RTU

Power Supply Modules

PS-11 AC Supply Input Module 90 to 260V AC

PS-21 DC Supply Input Module 20 to 60V DC

PS-11 / 21 Specifications:

Outputs: +5V, +12V, +24V (opt.), battery charging
Total 70W max.
Isolation: 3KV AC input / DC output
LED indicators: DC supply , Bat., Aux. converter
Connectors: Removable AC/DC connectors

Processor & Communication Modules

CP-11 Processor Module - Low memory
1MB RAM,1 x RS232, 2 x option ports

CP-21 Processor Module - High memory
2MB RAM, TCP/IP support, 1 x RS232, 2 x option ports

MC-11 Multi Communications Module
Additional ports, 1 x RS232, 2 x option ports

Communications Option Boards
(for ports 2 & 3 of CP-11, CP-21, MC-11 modules)

'S'	RS232 port
'I'	Isolated RS232 / 422 / 485 port
'D'	PSTN, V.34 33.6kbps dial up port
'L'	2/4 wire V.23 FSK port
'H'	HART interface port
'F'	Fibre optic port
'E'	Ethernet port (port 2 of CP-21 only)
'V'	2 channel video capture port

Backplanes

BA-40 4 slot backplane

BA-6 6 slot backplane

BA-12 12 slot backplane (19" rack mountable)

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I/O Modules

AI-10 High Performance Analog Input
8 channel (differential).
Voltage Ranges: ±10V, ±5V or ±2.5V
Current Ranges: ±40mA, ±20mA or ±10mA
Resolution: 16 bit
Accuracy: 0.1%, 0-50^{0}C
Scan Rate: >100 reading per second

AO-2 Analog Current Output
4 channel analog output
Output Range: 4 to 20mA and 0 to 20mA
Supply Voltage: +5V and 24VDC backplane
Resolution: 12 bit

DI-5 Digital Input - Dry Contact
16 channel digital input
Input Voltage: 10 to 28V DC
Contact Current: 4mA (typical)
Pulse Totalisation: (DI 1 to 4) 0-65535 pulses
Pulse Rates: 255Hz or 10kHz (channels 1-4)

DI-10 Intelligent Digital Input - AC or DC
16 channel digital input (pulse and SoE)
Input Voltage: 6 to 130V DC, 20 to 260V AC
Contact Current: 4mA (typical)
Pulse Totalisation: 0-65525 pulses
Pulse Rates: 1kHz or 10kHz

DO-1 Isolated Relay Output, NO/NC
8 channel digital output
Rated Voltage: 24 / 48V DC, 120 / 240V AC
Max. Load: 4A per output (20A max. per module)

DO-2 Relay Output, NO
16 channel open collector outputs
Rated Voltage: 24V DC, 120 / 240V AC
Max. Load: 2A per output (8A max. per common)

DO-5 Relay Driver Output
16 channel relay driver ouptut
Optional: External 16 point Double Pole Double Throw (DPDT) relay board (TEL/REL/001)

Mixed I/O Modules

IO-2 Combined Digital I/O Module
8 x DI + 8 x DO

IO-3 Combined Analog / Digital I/O Module
4 x AI + 1 x AO + 4 DI + 4 x DO

IO-4 Combined Analog /Digital I/O Module
2 x AI + 8 x DI + 2 x DO

IO-2 / 3 / 4 Specifications:

Analog Inputs (IO-3 & 4 only):
Voltage Ranges: 1 to 5V DC
Current Ranges: 4 to 20mA and 0 to 20mA
Resolution: 12 bit
Accuracy: 0.1%, 0-50^{0}C
Scan Rate: 2 mSec

Digital Inputs:
Input Voltage: 0 to 30V AC/DC
Contact Current: 4mA (typical)

Digital Outputs:
Rated Voltage: 24V DC, 120 / 240V AC
Max. Load: 2A per output (8A max. per common)

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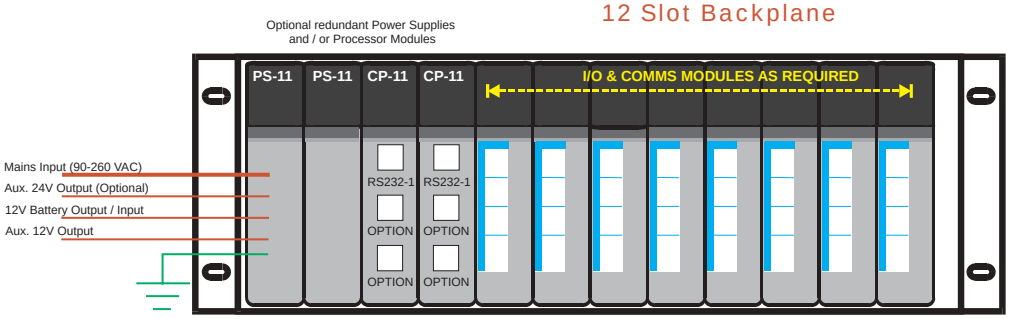
Creating an RTU Solution

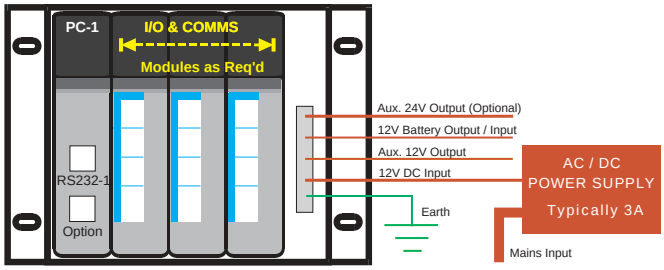
1. Determine the number of inputs and outputs required. Select any combination of I/O modules to provide the necessary inputs and outputs. Selecting the minimum amount of I/O modules will minimise the cost of the RTU.
2. Choose the communications media (eg radio).
3. Determine the number and type of communication ports required. A PC-1 has one RS232 port and one option port. A CP-11/21 or an MC-11 has one RS232 port and two option ports.
4. Choose a Power Supply/Processor solution. Every RTU must have one processor module and at least one power supply.
   - The PC-1 is a combined Power Supply/Processor Module and requires an external AC/DC power supply
   - A seperate Power Supply Module (PS-11 or PS-21) is used in conjunction with a Processor Module (CP-11 or CP-21).

   Notes: The PC-1 module is a simpler processor and does not have the same speed, memory and functionality of a CP-x processor.
   A PC-1 is only used on a four slot backplane.
5. According to the number of modules required, select one or more backplanes. Typical RTU layouts are shown below. Multiple backplanes can be linked together. Only one processor is required for the whole RTU, while one PS-x power supply is required for each backplane in the RTU to provide the necessary I/O power.
6. Consider physical and environmental factors when choosing enclosures as well as other needs such as surge protection.
7. Decide on a communication strategy to determine how and when the RTUs will communicate and which RTU(s) will initiate data transfers.
8. Outline the RTU configuration requirements. Configure the RTU using TOOLKIT software.

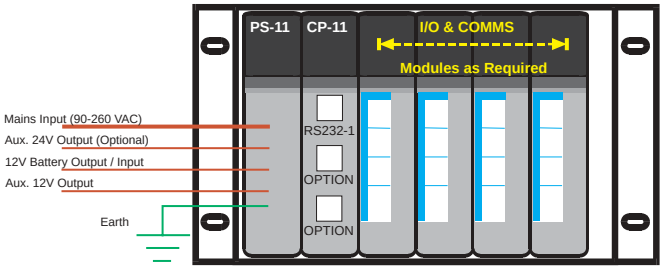
12 Slot Backplane



4 Slot Backplane



6 Slot Backplane



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