



Compact and Versatile Controller for SCADA & Telemetry Solutions

SCADAPack Smart RTUs
and I/O Expansion Modules



Unique Features

SCADAPack™ Smart RTUs combine the monitoring and communications capabilities of remote terminal units (RTU) with the processing and data-logging power of programmable logic controllers (PLC), providing superior functionality wherever remote processes require automatic supervision and autonomous control.

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DEXYI[®]

Life Is On

Schneider
Electric™

Enhanced performance in oil/gas and water/wastewater applications

SCADAPack Smart RTUs are the foundation for a range of solutions offering specific software and configuration tools tailored to your needs in:

Digital Oil Field Solutions:

- Electronic Flow Measurement
- Well Production Optimisation



Water/Wastewater Solutions:

- Optimised for Remote Pumping Networks
- Lift Station Control



Oil & Gas Applications - SCADAPack 100, 3xx, 32

- Modbus™ core database, DNP3 level 2 layer, optional DF1 support
- Programming and configuration: TelePACE™ Studio, IEC61131-3, C/C++
- O&G-focused app: Realflo™

SCADAPack RTU	Analog Input ¹	Analog Output ¹	Digital Input ¹	Digital Output ¹	Frequency Input ¹	Counter Input ¹	Serial Port	Ethernet Port	USB Device Port	USB Host Port
314	8	2 (optional)	16	10	1	2	2	0	1	0
330	0	0	0	0	1	2	3	1	1	1
334	8	2 (optional)	16	10	1	2	3	1	1	1
350	6	2 (optional)	8 (shared with digital outputs)	8 (shared with digital inputs)	1	2	3	1	1	1
357	14	2 or 4 (optional)	8 (shared with digital outputs) + 32	8 (shared with digital inputs) + 16	1	2	3	1	1	1
32P	0	0	3 (shared with counters)	1	1	3 (shared with digital inputs)	3	1	0	0
32P4	8	2 (optional)	3 (shared with counters) + 16	13	1	3 (shared with digital inputs)	4	1	0	0
32P4A	8	2 (optional)	3 (shared with counters) + 32 (shared with digital outputs)	1 + 32 (shared with digital inputs)	1	3 (shared with digital inputs)	4	1	0	0
32P4B	8	2 (optional)	3 (shared with counters) + 32	3 (shared with counters) + 16	1	3 (shared with digital inputs)	3	1	0	0
100	4	0	6 (shared with digital outputs)	6 (shared with digital inputs)	0	1	2	0	0	0

Footnotes:

¹ Number of on-board I/O may be further expanded for any SCADAPack using Expansion I/O Modules. Refer to individual product data sheets for detailed specifications.

Water Applications - SCADAPack 3xxE & 53xE

- DNP3 Level 4 core database, Modbus layer, IEC 60870-5-101/103/104, optional DF1 support
- Programming: IEC61131-3, configuration: E Configurator
- DNP3 Secure Authentication & IEEE 1711 (AGA12) support

SCADAPack RTU	Analog Input ¹	Analog Output ¹	Digital Input ¹	Digital Output ¹	Frequency Input ¹	Counter Input ¹	Serial Port	Ethernet Port	USB Device Port	USB Host Port
312E	4	0	12	6	1	2	2	0	1	0
313E	4	2 (optional)	16	10	1	2	2	0	1	0
314E	8	2 (optional)	16	10	1	2	2	0	1	0
330E	0	0	0	0	1	2	3	1	1	1 ²
333E	4	2 (optional)	16	10	1	2	3	1	1	1 ²
334E	8	2 (optional)	16	10	1	2	3	1	1	1 ²
337E	8	2 (optional)	32	16	1	2	3	1	1	1 ²
350E	6	2 (optional)	8 (shared with digital outputs)	8 (shared with digital inputs)	1	2	3	1	1	1 ²
357E	14	2 or 4 (optional)	8 (shared with digital outputs) + 32	8 (shared with digital inputs) + 16	1	2	3	1	1	1 ²
530E	0	0	2	1	0	0	4	3	1	1
535E	6	2 (optional)	8 (shared with counter inputs) + 10	9	0	8 (shared with digital inputs)	4	3	1	1

Footnotes:

¹ Number of on-board I/O may be further expanded for any SCADAPack using Expansion I/O Modules. Refer to individual product data sheets for detailed specifications.

² Component present but not supported.

Multiple Applications - SCADAPack 57x

Oil and Gas:

- Tank monitoring & automation
- Well test automation
- Well production and optimization
- Measurement

Water & Wastewater

- Leakage detection
- Equipment monitoring & control
- Water quality monitoring
- Irrigation
- DMAs (District Metering Areas), PMAs (Press. Monitoring Areas)
- Monitoring flow / level / pressure and temperature, etc.
- and many others...

SCADAPack RTU	Analog Input ¹	Analog Output ¹	Digital Input ¹	Digital Output ¹	Frequency Input ¹	Serial Port ¹	Ethernet Port	USB Device Port	USB Host Port
570	0	0	2	1	0	4	3	1	1
575	6	2 (option)	18	9	8 (shared)	4	3	1	1
574	8	2 (option)	18	11	0	4	3	1	1

Footnote:

¹ Number of on-board I/O may be further expanded for any SCADAPack using Expansion I/O Modules. Refer to individual product data sheets for detailed specifications.

Selection Guide

Standard SCADAPack



SCADAPack 100 Specifications

Controller	
Processors	<ul style="list-style-type: none"> 16-bit CMOS micro-controller, 14.74 MHz clock, integrated watchdog timer Micro-controller co-processor: 14.74 MHz clock
Memory	<ul style="list-style-type: none"> 256 KBytes CMOS RAM (controller ID number A182921 or less) 1024 KBytes CMOS RAM (controller ID number A182922 or greater) 512 KBytes flash ROM, 1 kBytes EEPROM
Non-volatile RAM	CMOS RAM with lithium battery retains contents for 2 years with no power
I/O	
Analog Inputs	<ul style="list-style-type: none"> 3 at 5 Vdc/20 mA: 250 W resistance user configurable with jumper link 1 at 32.768 Vdc
Resolution	12-bit over the 5 Vdc and 32.768 Vdc measurement range
Digital I/O	6 points, each point is an input and an output, dry contact input, 1.0 A max output rating
Counter Inputs	1, maximum frequency 5 kHz, dry contact input, wetting current typically 5 mA with 24 Vdc input power
Communications	
Communication Port COM1	RS-485 serial port, 2-pole removable terminal block, 2-wire half duplex, bias resistors installed
Communication Port COM1	RS-232 compatible serial port (CMOS), Data Terminal Equipment (DTE), 8 -pin modular jack, full or half duplex, implemented Td, Rd, +5 Vdc
Communication Port COM2	RS-232 compatible serial port (CMOS), Data Terminal Equipment (DTE), 8 -pin modular jack, full or half duplex, implemented Td, Rd, +5 Vdc
Baud Rates COM1 & COM2	RS-232 compatible serial port (CMOS), Data Terminal Equipment (DTE), 8 -pin modular jack, full or half duplex with RTS/CTS control, implemented Td, Rd, CTS, RTS, DCD, DTR, +5 Vdc
Serial Protocols	Modbus RTU, Modbus ASCII, DNP3, DF1
Serial Protocol Modes	Slave, Master, Master/Slave, Store and Forward
Wireless ¹	Spread spectrum radio at 900 MHz ² and 2.4 GHz ²
General	
I/O Terminations	5 and 12-pole, removable terminal blocks. 12...22 AWG 15 A contacts screw termination 6 lb.-in. (0.68 Nm) torque
Dimensions	144 mm W. x 127 mm H. x 45 mm D. (5.65 in. x 5.00 in. x 1.80 in.)
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...70 °C (-40...158 °F)
DC Power Input	30 Vdc maximum, 10.0...11.5 Vdc turn on, 9.5 Vdc typical turn off, UL508 rated 13.75...28 Vdc. Class 2, less than 500 mW (at 12 Vdc) LEDs off, 2.9 W maximum
Output Capacity	5 Vdc at 0.425 A capacity, 5 Vdc at 0.060 A required by 5208 controller, 5 Vdc at 0.365 A available on COM1 and COM2
Warranty	3 years parts and labor

Selection Guide

Standard SCADAPack



SCADAPack 100 Specifications cont'd

Certifications	
Hazardous Locations	Suitable for use in Class I, Division 2, Groups A, B, C and D Hazardous Locations
North America	Temperature Code T4 per CSA Std C22.2 No. 213-M1987 / UL1604 UL listed and CSA certified to the following standards: <ul style="list-style-type: none"> • CSA Std. C22.2 No. 213-M1987 - Hazardous Locations • UL Std. No. 1604 - Hazardous (Classified) Locations
Hazardous Locations	ATEX II 3G, Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2) Does not include wireless versions
Safety	CSA (cCSAus) certified to the requirements of: CSA C22.2 No. 142-M1987 and UL508. (Process Control Equipment, Industrial Control Equipment) UL (cULus) listed: UL508 (Industrial Control Equipment)

SCADAPack 100 Model Code

SCADAPack 100: TBUP100-1A20-AA00 represents a sample code for a TBUP100 with DNP, 0...5 Vdc inputs

Code	Select: Controller
TBUP100	SCADAPack 100, comes with 3 Analog Inputs, 6 configurable Digital I/O, 1 Accumulator
TBUP110	SCADAPack 100, Gas Flow Controller with 1 Gas Flow Run (I/O as above)
Code	Select: Communication Serial Ports
1	2 Communication Ports (RJ45 Type): 1 RS-232 and 1 RS232/485
Code	Select: Memory Configuration
A	1 MB CMOS RAM (512 K OS, 512 K APP), 512 K FLASH ROM
Code	Select: Protocol Option
2	Modbus and DNP 3.0 (Level 2) protocol emulation (512 K OS, 512 K APP), 512 K FLASH ROM
Code	Select: Programming Environment
0	Telepace Ladder Logic and C Language firmware loaded - IEC enabled (Programming Tools sold separately)
1	IEC 61131-3 and C Language firmware loaded - Telepace enabled (Programming Tools sold separately)
Code	Select: Analog Inputs
A	3 Analog Inputs, individually selectable as 0...20 mA or 0...5 Vdc
Code	Select: Digital Inputs/Outputs
A	6 configurable Digital I/O, individually selectable as Digital Input (Dry Contact) or Digital Output (Open Drain)
Code	Select: Analog Outputs
0	None

Selection Guide

Standard SCADAPack



SCADAPack 100 Model Code cont'd

SCADAPack 100: TBUP100-1A20-AA00 represents a sample code for a TBUP100 with DNP, 0...5 Vdc inputs

Code	Select: Integrated Communication Interfaces
0	None
	FreeWave™ & MDS™ Radios (requires one RS232 port)
1	900 Mhz FreeWave Spread Spectrum Radio - consult factory for availability in your market area (not RoHS-compliant)
A	900 Mhz MDS Spread Spectrum Radio - consult factory for availability in your market area (not RoHS-compliant)
	Trio™ Radios - 900 MHz (requires one RS232 port)
B	900 MHz Trio Spread Spectrum Radio with encryption, 902...928 MHz (FCC / IC)
C	900 MHz Trio Spread Spectrum Radio with encryption, 915...928 MHz (AUS)
D	900 MHz Trio Spread Spectrum Radio, 915...928 MHz (BRAZIL)
E	900 MHz Trio Spread Spectrum Radio, 921...928 MHz (NZ)
	Trio Data Radios - 2.4 GHz (requires one RS232 port)
J	2.4 GHz Trio Spread Spectrum Radio, ETSI/100 mW, ATEX (EUROPE)
K	2.4 GHz Trio Spread Spectrum Radio with Encryption, 500 mW (CANADA, USA & AUSTRALIA)
L	2.4 GHz Trio Spread Spectrum Radio, 500 mW (OUTSIDE OF EUROPE, CANADA, USA & AUSTRALIA)

Footnotes:

1. Available only with optional integrated wireless modules or with stand-alone wireless modules.
2. Not applicable in all countries.

Note: This product is not RoHS-compliant.

Selection Guide

Standard SCADAPack



SCADAPack 32: P4A | P4 | P4B Specifications



P4A, integrated 5604 I/O board

Controller	
Processor	Hitachi™ SH-3 32-bit CMOS microcontroller, 120 MHz clock, integrated watchdog timer
Memory	8 Mb SDRAM, 4 Mb FLASH, 1 Mb CMOS RAM
Non-volatile RAM	CMOS RAM with lithium battery retains contents for 2 years with no power
I/O	
Analog Inputs	<ul style="list-style-type: none"> 8, user selectable 0...10 Vdc (15-bit) or 0...20 mA (14-bit) 1, 0...32.768 Vdc (10-bit)
Analog Outputs	2 with optional 5305 analog output module, output range 0...20 mA
Digital Inputs	4 on controller board - 3 Digital Input/Counter, 1 Interrupt with optical isolation
Digital Outputs	1, 30 Vdc / 60 mA (used as status output)
Digital I/O 5604 I/O	32 configurable as input or output (1 A DC max output / dry contact input)
Additional I/O	
I/O Expansion	Supported modules: 5302, 5304, 5401, 5402, 5403, 5404, 5405, 5406A, 5407, 5408, 5409, 5410, 5411, 5414, 5415, 5421, 5502, 5504, 5505, 5506, 5521, 5606, 5607, 5904, 5915
Communications	
Serial Port COM1	Configurable RS-232 or RS-485, 2-wire half duplex or 4-wire full/half duplex
Serial Port COM2, COM4	<ul style="list-style-type: none"> RS-232, DTE, 8-pin modular jack, full or half duplex with RTS/CTS control Implemented Td, Rd, CTS, RTS, DCD, DTR, +5 V
Serial Port COM3	Located on 5604 I/O module. Same specifications as COM2 and COM4
Baud Rates COM1, COM2 & COM4	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200
Baud Rate COM3	1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200
Serial Protocols	Modbus RTU, Modbus ASCII, DNP3, DF1, PPP
Ethernet Port	RJ45, 10BaseT
Network Protocols	IP: ARP, TCP, TFTP, UDP, ICMP
Ethernet Port Protocols	Modbus TCP, Modbus RTU in UDP, Modbus ASCII in UDP, DNP in TCP, DNP in UDP
Wireless ¹	Spread spectrum radio at 900 MHz ² and 2.4 GHz ²

Selection Guide

Standard SCADAPack



SCADAPack 32: P4A | P4 | P4B Specifications cont'd



P4A, integrated 5604 I/O board cont'd

General	
I/O Terminations	6, 8, 9 and 10-pole, removable terminal blocks, 12 to 22 AWG, 15 A contacts
Dimensions	213 mm W. x 155 mm H. x 72 mm D. (8.40 in. x 6.13 in. x 2.80 in.)
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...70 °C (-40...158 °F)
Power Input	11...30 Vdc, 4.3 W typical (10.8 W full I/O capacity in use)
Warranty	3 years parts and labor
Certifications	
Hazardous Locations	Suitable for use in Class I, Division 2, Groups A, B, C and D Hazardous Locations
North America	Temperature Code T4 per CSA Std C22.2 No. 213-M1987 / UL1604 UL listed and CSA certified to the following standards: <ul style="list-style-type: none"> • CSA Std. C22.2 No. 213-M1987 - Hazardous Locations • UL Std. No. 1604 - Hazardous (Classified) Locations
Safety	CSA (cCSAus) certified to the requirements of: CSA C22.2 No. 142-M1987 and UL508. (Process Control Equipment, Industrial Control Equipment) UL (cULus) listed: UL508 (Industrial Control Equipment)

Selection Guide

Standard SCADAPack



SCADAPack 32: P4A | P4 | P4B Specifications cont'd



P4, integrated 5601A I/O board

Controller

Processor	Hitachi SH-3 32-bit CMOS microcontroller, 120 MHz clock, integrated watchdog timer
Memory	8 Mb SDRAM, 4 Mb FLASH, 1 Mb CMOS RAM
Non-volatile RAM	CMOS RAM with lithium battery retains contents for 2 years with no power

I/O

Analog Inputs	8, user selectable 0...5 Vdc (15-bit) or 0...20 mA (14-bit)
Analog Outputs	2 with optional 5303 analog output module, output range 0...20 mA
Digital Inputs	<ul style="list-style-type: none"> 4 on controller board - 3 Digital Input/Counter, 1 Interrupt with optical isolation 16 on 5601A I/O module - 6.5 mA typical at 24 Vdc and 3.5 mA typical at 115 V 1 on controller board , 30 Vdc, 60 mA (used as status output) 12 on 5601A I/O module - Sealed mechanical relay: <ul style="list-style-type: none"> 0.4 A at 125 Vrms, 2 A at 30 Vdc resistive loads 1.0 A at 30 Vdc, 0.2 A at 125 Vrms inductive load with pf=0.4, L/R=7 ms 250 Vrms, 220 Vdc maximum operating voltage
Digital Outputs	

Additional I/O

I/O Expansion	Supported modules: 5302, 5304, 5401, 5402, 5403, 5404, 5405, 5406A, 5407, 5408, 5409, 5410, 5411, 5414, 5415, 5421, 5502, 5504, 5505, 5506, 5521, 5606, 5607, 5904, 5915
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Communications

Serial Port COM1	Configurable RS-232 or RS-485, 2 wire half duplex or 4 wire full/half duplex
Serial Ports COM2, COM4	RS-232, DTE, 8 -pin modular jack, full or half duplex with RTS/CTS control. Implemented Td, Rd, CTS, RTS, DCD, DTR, +5 Vdc
Serial Port COM3	Located on 5601A I/O module. Same specifications as COM2 and COM4
Baud Rates COM1, COM2 & COM4	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200
Baud Rate COM3	1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200
Serial Protocols	Modbus RTU, Modbus ASCII, DNP3, DF1, PPP
Ethernet Port	10BaseT, RJ45
Network Protocols	IP: ARP, TCP, TFTP, UDP, ICMP
Ethernet Port Protocols	Modbus TCP, Modbus RTU in UDP, Modbus ASCII in UDP, DNP in TCP, DNP in UDP
Wireless ¹	Spread spectrum radio at 900 MHz ² and 2.4 GHz ²

Selection Guide

Standard SCADAPack



SCADAPack 32: P4A | P4 | P4B Specifications cont'd



P4, integrated 5601A I/O board cont'd

General	
I/O Terminations	6, 8, 9 and 10-pole, removable terminal blocks, 12 to 22 AWG, 15 A contacts
Dimensions	213 mm W. x 155 mm H. x 72 mm D. (8.40 in. x 6.13 in. x 2.80 in.)
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...70 °C (-40...158 °F)
Power Input	11...30 Vdc, 3.5 W typical all relays off, 6.5 W typical all relays on
Warranty	3 years parts and labor
Certifications	
Hazardous Locations	Suitable for use in Class I, Division 2, Groups A, B, C and D Hazardous Locations
North America	Temperature Code T4 per CSA Std C22.2 No. 213-M1987 / UL1604 UL listed and CSA certified to the following standards: <ul style="list-style-type: none"> • CSA Std. C22.2 No. 213-M1987 - Hazardous Locations • UL Std. No. 1604 - Hazardous (Classified) Locations
Safety	CSA (cCSAus) certified to the requirements of: CSA C22.2 No. 142-M1987 and UL508. (Process Control Equipment, Industrial Control Equipment) UL (cULus) listed: UL508 (Industrial Control Equipment)

Selection Guide

Standard SCADAPack



SCADAPack 32: P4A | P4 | P4B Specifications cont'd



P4B, integrated 5606 I/O board

Controller

Processor	Hitachi SH-3 32-bit CMOS microcontroller, 120 MHz clock, integrated watchdog timer
Memory	8 Mb SDRAM, 4 Mb FLASH, 1 Mb CMOS RAM
Non-volatile RAM	CMOS RAM with lithium battery retains contents for 2 years with no power

I/O

Analog Inputs	8, single-ended, software selectable 0...5 Vdc / 0...10 Vdc or 0...20 mA / 4...20 mA (15-bit resolution)
Analog Outputs	2 with optional 5305 analog output module, output range 0...20 mA
Digital Inputs	4 on controller board - 3 Digital Input/Counter, 1 Interrupt with optical isolation 32 on 5606 I/O module <ul style="list-style-type: none"> 0.67 mA typical at 24 Vdc on the 12/24 Vdc range 0.37 mA typical at 48 Vdc on the 48 Vdc range 0.35 mA typical at 120 Vdc on the 115/125 Vdc range 0.35 mA typical at 240 Vdc on the 240 Vdc range
Digital Outputs	1 on controller board , 30 Vdc, 60 mA (used as status output) 16 relay outputs on 5606 I/O module - dry contact or DC solid state: <ul style="list-style-type: none"> Dry contact rating: 3 A, 30 Vdc or 240 Vac (Resistive) DC solid state rating: 3 A, 60 Vdc

Additional I/O

I/O Expansion	Supported modules: 5302, 5304, 5401, 5402, 5403, 5404, 5405, 5406A, 5407, 5408, 5409, 5410, 5411, 5414, 5415, 5421, 5502, 5504, 5505, 5506, 5521, 5606, 5607, 5904, 5915
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Communications

Serial Port COM1	Configurable RS-232 or RS-485, 2 wire half duplex or 4 wire full/half duplex
Serial Ports COM2, COM4	RS-232, DTE, 8-pin modular jack, full or half duplex with RTS/CTS control. Implemented Td, Rd, CTS, RTS, DCD, DTR, +5 Vdc
Baud Rates COM1, COM2 & COM4	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200
Serial Protocols	Modbus RTU, Modbus ASCII, DNP3, DF1, PPP
Ethernet Port	10BaseT, RJ45
Network Protocols	IP: ARP, TCP, TFTP, UDP, ICMP
Ethernet Port Protocols	Modbus TCP, Modbus RTU in UDP, Modbus ASCII in UDP, DNP in TCP, DNP in UDP
Wireless ¹	Spread spectrum radio at 900 MHz ² and 2.4 GHz ²

Selection Guide

Standard SCADAPack



SCADAPack 32: P4A | P4 | P4B Specifications cont'd



P4B, integrated 5606 I/O board cont'd

General	
I/O Terminations	5, 6, 8, 9 and 10-pole, removable terminal blocks, 12 to 22 AWG, 15 A contacts
Dimensions	213 mm W. x 164 mm H. x 72 mm D. (8.40 in. x 6.48 in. x 2.80 in.)
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...70 °C (-40...158 °F)
Power Input	11...30 Vdc, 4.3 W typical (10.8 W full I/O capacity in use)
Warranty	3 years parts and labor
Certifications	
Hazardous Locations	Suitable for use in Class I, Division 2, Groups A, B, C and D Hazardous Locations
North America	Temperature Code T4 per CSA Std C22.2 No. 213-M1987 / UL1604 UL listed and CSA certified to the following standards: <ul style="list-style-type: none"> • CSA Std. C22.2 No. 213-M1987 - Hazardous Locations • UL Std. No. 1604 - Hazardous (Classified) Locations
Hazardous Locations Europe	Model "5606 SSR, 24DI version only" ATEX II 3G, Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2). Does not include Wireless versions
Hazardous Locations	Model "5606 SSR version only" IECEx, Ex nA IIC T4 per IEC 60079-15, protection type n (Zone 2) Does not include Wireless versions
Safety	CSA (cCSAus) certified to the requirements of: CSA C22.2 No. 142-M1987 and UL508. (Process Control Equipment, Industrial Control Equipment) UL (cULus) listed: UL508 (Industrial Control Equipment)

Selection Guide

Standard SCADAPack



SCADAPack 32: P4A | P4 | P4B Model Code

Code	Select: Controller
TBUP100 TBUP4	SCADAPack 32, 32-Bit controller with Integrated Ethernet Port
Code	Select: Lower I/O Module
	5601A lower I/O module, includes 16 Digital Inputs, 12 Digital Outputs and 8 Analog Inputs (see options below)
A	5604 lower I/O module, includes 32 configurable Digital I/O and 8 selectable Analog Inputs (0...10 Vdc or 0...20 mA)
B	5606 lower I/O module, includes 32 D/I, 16 Dry Contact D/O and 8 software configurable A/I
C	5606-A lower I/O module, includes 32 D/I, 16 Solid State Relay D/O and 8 software configurable A/I
N	No lower I/O module (provides controller module only)
Code	Select: Communication Serial Ports
1	TBUP4/P4A/P4N: 3 RS232, 1 RS232/485, 1 Ethernet TBUP4B/P4C: 2 RS232, 1 RS232/485, 1 Ethernet
	Integrated FreeWave & MDS Radios (requires one RS232 port)
A	900 Mhz FreeWave Spread Spectrum Radio. Consult factory for availability in your market area (not RoHS-compliant)
3	900 MHz MDS Spread Spectrum Radio. Consult factory for availability in your market area (not RoHS-compliant)
	Trio Data Radios - 900 MHz (requires one RS232 port)
B	900 MHz Trio Spread Spectrum Radio with encryption, 902...928 MHz (FCC / IC)
C	900 MHz Trio Spread Spectrum Radio with encryption, 915...928 MHz (AUS)
D	900 MHz Trio Spread Spectrum Radio, 915...928 MHz (BRAZIL)
E	900 MHz Trio Spread Spectrum Radio, 921...928 MHz (NZ)
	Trio Data Radios - 2.4 GHz (requires one RS232 port)
J	2.4 GHz Trio Spread Spectrum Radio, ETSI/100 mW, ATEX (EUROPE)
K	2.4 GHz Trio Spread Spectrum Radio with Encryption, 500 mW (CANADA, USA & AUSTRALIA)
L	2.4 GHz Trio Spread Spectrum Radio, 500 mW (OUTSIDE OF EUROPE, CANADA, USA & AUSTRALIA)
Code	Select: Gas Flow Run-time Option
0	None
	Flow Computer Runs
G	2 Run Gas Flow
F	4 Run Gas Flow
T	10 Run Gas Flow
	Flow Computer Runs - Gas Transmission Version (Requires Realflo 6.72+)
V	2 Run Gas Flow
W	4 Run Gas Flow

Selection Guide

Standard SCADAPack



SCADAPack 32: P4A | P4 | P4B Model Code cont'd

Code	Select: Protocol Option/Programming Environment
2	Modbus and DNP 3.0 (Level 2) protocol with Telepace Ladder Logic and C Language firmware loaded - IEC enabled
5	Modbus and DNP 3.0 (Level 2) protocol with IEC 61131-3 and C Language firmware loaded - Telepace enabled
Code	Select: Analog Inputs
01	0...20 mA, Single-ended (On TBUP4 & TBUP4A, Default on TBUP4B which is software configurable to 0...5 Vdc or 0...10 Vdc)
02	0...5 Vdc, Single-ended (TBUP4 Only)
03	0...10 Vdc, Single-ended (TBUP4A Only)
Code	Select: Digital Inputs/Outputs
0	Dry Contact Digital Inputs, Open Drain Digital Outputs, Individually configurable (TBUP4A Only)
0	24 Vdc D/I TBUP4 & TBUP4B: Dry Contact D/O TBUP4C: Solid State Relay D/O (Not for TBUP4A or TBUP4N)
1	120 Vac D/I TBUP4 & TBUP4B: Dry Contact D/O TBUP4C: Solid State Relay D/O (Not for TBUP4A or TBUP4N)
Code	Select: Analog Outputs
0	None (required for TBUP4N)
1	2 channel Analog Output option, 0...20 mA

Footnotes:

1. Available only with optional integrated wireless modules or with stand-alone wireless modules.
2. Not applicable in all countries.

Note: This product is RoHS-compliant. FreeWave & MDS radios are not RoHS compliant.

Selection Guide

Standard SCADAPack



SCADAPack 314 | 330 | 334 Specifications

Controller

Processor	<ul style="list-style-type: none"> 32-bit ARM7 microcontroller, 32 MHz clock, integrated watchdog timer Microcontroller, co-processor, 20 MHz clock
Memory	<ul style="list-style-type: none"> 16 MB FLASH ROM, 4 MB CMOS RAM, 4 kB EEPROM CMOS SRAM with lithium battery retains contents for 2 years with no power
Datalog Capacity	465,000 words
File System Typical Storage	Internal: 6 MB, external : up to 32 GB on USB memory stick

Communications

Serial Port: COM1, COM2	RS-232 port, 8-pin modular RJ45 jack, full or half duplex, or RS-485 port, 2-wire, half-duplex, supports baud rates up to 115,200 bps in RS-232 mode
Serial Port : COM3	P330/P334 only, RS-232 port, 8-pin modular RJ45 jack, full or half duplex with RTS/CTS control and operator interface power control, supports baud rates up to 115,200 bps
Embedded Wireless	The controller may be equipped with an embedded license-free radio module (different options in 900 Mhz or 2.4 Ghz) that uses one of the serial ports
Serial Protocols	Modbus slave/master, DF1 master/slave, DNP3 level 2 slave
Ethernet port (330/334 only)	8-pin modular RJ45 jack, 10/100 Mbps UTP (10/100Base-T), transformer-isolated
IP Protocols (330/334 only)	<ul style="list-style-type: none"> Modbus/TCP Server, Modbus/TCP Client, Modbus RTU in TCP Client , DNP3 level 2 in TCP Slave FTP Server
Store & Forward	Stores & forwards frames between upstream and downstream SCADAPack 300 Smart RTUs
USB Device	USB 2.0-compliant "B"-type receptacle, for local configuration
USB Host	330/334 only: USB 2.0-compliant "A"-type receptacle, supports USB devices up to 32 GB (specific memory sticks supported)

General

Logic Control	SCADAPack Telepace Studio ladder logic or IEC 61131-3 SCADAPack Workbench programming suite (LD, ST, FBD & SFC)
I/O Terminations	<ul style="list-style-type: none"> SCADAPack 330: 6-pole connector, 0.0810...3.31 mm² (28...12 AWG), solid or stranded SCADAPack 314/334: 5, 6, 7, 9-pole connectors, 0.0810...3.31 mm² (28...12 AWG), solid or stranded
Dimensions	<ul style="list-style-type: none"> SCADAPack 330: 144.0 mm x 140.04 mm x 46.5 mm (5.65 in. wide x 5.53 in. high x 1.83 in. deep) SCADAPack 314/334: 144.0 mm x 181.0 mm x 66.0 mm (5.65 in. wide x 7.13 in. high x 2.60 in. deep)
Enclosure	Corrosion-resistant zinc-plated steel with black enamel paint
Environment	<ul style="list-style-type: none"> Conformally-coated; 5% RH to 95% RH, non-condensing -40...+70 °C (-40...+158 °F) operating, -40...+85 °C (-40...+185 °F) storage
Shock & Vibration	IEC 60068-2-27 (tested up to 15 g), IEC 60068-2-6
Warranty	3 years on parts and labor

Selection Guide

Standard SCADAPack



SCADAPack 314 | 330 | 334 Specifications cont'd

Power Supply

Rated Voltage 12...30 Vdc. Limit voltage: 11.5...32 Vdc; turn on voltage: 10...11.5 Vdc; turn off voltage: 9...10 Vdc

Maximum Power 7 W at 24 Vdc (internal 5 Vdc supply fully loaded)

SCADAPack 330, 314 and 334 support 3 power modes: sleep, normal clock speed and reduced clock speed

• Typical power consumption (at 20 °C/ 68 °F):

SCADAPack Model	Ethernet/USB	DO Relays	At normal clock speed		At reduced clock speed	
			12 V dc	24 V dc	12 V dc	24 V dc
Sleep Mode	-	-	80 mW	240 mW	80 mW	240 mW
330	OFF	-	0.7 W	0.9 W	0.5 W	0.7 W
	ON	-	1.8 W	2.0 W	1.6 W	1.8 W
314	-	OFF	0.9 W	1.2 W	0.7 W	1.0 W
	-	ON	2.9 W	3.4 W	2.7 W	3.2 W
334	OFF	OFF	0.9 W	1.2 W	0.7 W	1.0 W
	OFF	ON	2.9 W	3.4 W	2.7 W	3.2 W
	ON	OFF	2.4 W	2.8 W	2.3 W	2.6 W
	ON	ON	4.0 W	4.5 W	3.8 W	4.3 W

Certifications

EMC and Radio Frequency

- ICES-003 Issue 5 August 2012
- CE and RCM markings

General Safety UL 508

Hazardous Locations cCSAus Non-incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D IECEx/ATEX Class I, Zone 2 (does not include embedded wireless versions)

Selection Guide

Standard SCADAPack



SCADAPack 314 | 330 | 334 Specifications cont'd

Controller Board

Counter Inputs	<ul style="list-style-type: none"> 1, 0...10 Hz (dry contact) 2, 0...10 kHz (turbine or dry contact)
Internal Power Monitor	Power input - analog input and low indication, onboard lithium battery - low indication
Internal Temperature Monitor	Controller temperature range -40...+75 °C (-40...+167 °F)

I/O board (314/334 only)

Analog Inputs	<p>8, software-configurable to 0...20, 4...20 mA , 0...5 or 0...10 V, plus over range</p> <ul style="list-style-type: none"> Resolution: 15-bit ADC (15-bit over the measurement range in 10 V, 14-bit in 20 mA) Accuracy: $\pm 0.1\%$ of full scale at 25 °C (77 °F), $\pm 0.2\%$ over temperature range Input Resistance: 250 Ω or 20 kΩ in 20 mA or 10 V configurations (60 kΩ for 32.768 V) Normal rejection mode: 27 dB at 60 Hz Sampling rate: 170 ms Isolation: 500 Vac from logic and chassis
Analog Outputs	<ul style="list-style-type: none"> 2 (optional), 0...20/4...20 mA, voltage output may be accomplished with external precision resistor Same features as the analog outputs located on the controller board
Digital Inputs	<p>16, 12...24 Vdc</p> <ul style="list-style-type: none"> Turn on voltage: 9 Vdc (minimum), Turn off voltage: 4 Vdc (maximum) Over-voltage tolerance: 150% sustained over-voltage without foreseeable damage DC input current: 0.67 mA at 24 Vdc Time stamping : 170 ms Isolation: in group of 8, 1500 Vac from logic supply and chassis
Digital Outputs	<p>10, dry-contact relays or solid-state relays (Form A - normally open)</p> <ul style="list-style-type: none"> 5 contacts share one common Isolation: Chassis or logic to contact 1500 Vac (1 min.) <p>Dry-contact relays:</p> <ul style="list-style-type: none"> Contact rating 3 A, 30 Vdc (resistive), 12 A maximum per common <p>Solid state relays:</p> <ul style="list-style-type: none"> Load voltage 60 Vdc maximum Load current 3 A continuous max at 50 °C (122 °F) or 2 A at 70 °C (158 °F)

Additional IO

I/O Expansion	<p>Supported modules:</p> <ul style="list-style-type: none"> 5302, 5304, 5401, 5402, 5403, 5404, 5405, 5406A, 5407, 5408, 5409, 5410, 5411, 5414, 5415, 5421, 5502, 5504, 5505, 5506, 5521, 5606, 5607, 5904, 5915 <p>Maximum number of modules per unit:</p> <ul style="list-style-type: none"> SCADAPack 330: 8* SCADAPack 314/334: 7* <p>Footnote: * To reach this limit, additional power supply modules (reference: 5103) are required</p>
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Selection Guide

Standard SCADAPack



SCADAPack 314 | 330 | 334 Model Code

Code	Select: Controller
TBUP314	SCADAPack 314, Controller 32-bit, 8 Analog Inputs, 2 Analog Outputs, 26 Digital I/O, 3 High Speed Counter Inputs
TBUP330	SCADAPack 330, Controller 32-bit, comes with 3 high speed CTRs
TBUP334	SCADAPack 334, Controller 32-bit, comes with the above plus additional inputs/outputs
Code	Select: Future Option
1	None
Code	Select: Gas & Liquids Flow Run-Time Option
A	None
	Gas Only Flow Computer Options
G	2 Run Gas Flow
F	4 Run Gas Flow
V	2 Run Gas Flow - Gas Transmission Version (Requires Reaflo 6.72+)
W	4 Run Gas Flow - Gas Transmission Version (Requires Reaflo 6.72+)
X	Gas Flow Controller with 3 Pemex Gas Transmission flow runs (requires Reaflo 6.82+)
	Gas & Liquids Flow Computer Options
L	Gas & Liq 1: Supports 1 Gas run, 1 Liquid run, and 1 Water run
M	Gas & Liq. 2: Supports 2 Gas runs, 2 Liquid runs, and 2 Water runs
N	Gas & Liq. 3: Supports 3 Gas runs, 3 Liquid runs, and 3 Water runs
P	Liq. 4: Supports 4 Liquid runs and 4 Water runs
Code	Select: Protocol Option
2	Modbus and DNP3 level 2 protocol emulation
Code	Select: Programming Environment
0	Telepace Ladder logic and C language firmware loaded - IEC 61131-3-enabled (Programming tools sold separately)
1	IEC 61131-3 and C language firmware loaded - Telepace-enabled (Programming tools sold separately)
Code	Select: Analog Inputs
A	P330: none. P314/334 : 8 selectable as 0...20 mA, 4...20 mA, 0...5 Vdc or 0...10 Vdc
Code	Select: Digital Inputs/Outputs
A	P330 only: none
B	P314/334 only: adds 32 16 digital inputs (12...24 Vdc), 10 digital outputs (Dry Contact relay for Class I Div 2, Solid State relay for IECEx/ATEX)
Code	Select: Analog Outputs
0	None
1	P314/334 only: 2 channel Analog Output, 0...20 mA, external DC supply

SCADAPack Smart RTU

Selection Guide

Standard SCADAPack



SCADAPack 314 | 330 | 334 Model Code cont'd

Code	Select: Integrated Communications Interfaces
0	None
	FreeWave & MDS Radios (requires one RS232 port)
1	900 Mhz FreeWave Spread Spectrum Radio (not RoHS-compliant)
A	900 MHz MDS Spread Spectrum Radio (not RoHS-compliant)
	Trio Radios - 900 MHz (requires one RS232 port)
B	900 MHz Trio Spread Spectrum Radio with encryption, 902-928 MHz (FCC / IC)
C	900 MHz Trio Spread Spectrum Radio with encryption, 915-928 MHz (AUS)
D	900 MHz Trio Spread Spectrum Radio, 915-928 MHz (BRAZIL)
E	900 MHz Trio Spread Spectrum Radio, 921-928 MHz (NZ)
	Trio Radios - 2.4 GHz (requires one RS232 port)
J	2.4 GHz Trio Spread Spectrum Radio, ETSI/100 mW, ATEX (EUROPE)
K	2.4 GHz Trio Spread Spectrum Radio with Encryption, 500 mW (CANADA, USA & AUSTRALIA)
L	2.4 GHz Trio Spread Spectrum Radio, 500 mW (OUTSIDE OF EUROPE, CANADA, USA & AUSTRALIA)
Code	Select: Certifications
S	With FCC, UL508, CE marking and RCM
X	Adds IECEx/ATEX Class I, Zone 2
U	Adds cCSAus Nonincendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D

Selection Guide

Standard SCADAPack



SCADAPack 350 | 357 Specifications

Controller	
Processor	<ul style="list-style-type: none"> 32-bit ARM7 microcontroller, 32 MHz clock, integrated watchdog timer Microcontroller, co-processor, 20 MHz clock
Memory	<ul style="list-style-type: none"> 16 MB FLASH ROM, 4 MB CMOS RAM, 4 kB EEPROM CMOS SRAM with lithium battery retains contents for 2 years with no power
Datalog Capacity	465,000 words
File System Typical Storage	Internal: 6 MB, external : up to 32 GB on USB memory stick
Communications	
Serial Port: COM1, COM2	<ul style="list-style-type: none"> RS-485, 2-pole removable terminal block, 2-wire, half duplex, supports baud rates up to 115,200 bps RS-232 port, 8-pin modular RJ45 jack, full or half duplex, or RS-485 port, 2-wire, half-duplex, supports baud rates up to 115,200 bps in RS-232 mode
Serial Port : COM3	RS-232 port, 8-pin modular RJ45 jack, full or half duplex with RTS/CTS control and operator interface power control, supports baud rates up to 115,200 bps
Embedded Wireless	The controller may be equipped with an embedded license-free radio module (different options in 900 Mhz or 2.4 Ghz) that uses one of the serial ports
Serial Protocols	Modbus slave/master, DF1 master/slave, DNP3 level 2 slave
Ethernet Port	8-pin modular RJ45 jack, 10/100 Mbps UTP (10/100 Base-T), transformer-isolated
IP Protocols	<ul style="list-style-type: none"> Modbus/TCP Server, Modbus/TCP Client, Modbus RTU in TCP Client , DNP3 level 2 in TCP Slave FTP Server
Store & Forward	Stores & forwards frames between upstream and downstream SCADAPack 300 Smart RTUs
USB Device	USB 2.0-compliant "B"-type receptacle, for local configuration
USB Host	USB 2.0-compliant "A"-type receptacle, supports USB devices up to 32 GB (specific memory sticks supported)
General	
Logic Control	SCADAPack Telepace Studio ladder logic or IEC 61131-3 SCADAPack Workbench programming suite: (LD, ST, FBD & SFC)
I/O Terminations	<ul style="list-style-type: none"> SCADAPack 350: 6, 12-pole connector, 0.0810...3.31 mm² (28...12 AWG), solid or stranded SCADAPack 357: 5, 6, 7, 9, 10, 12-pole connectors, 0.0810...3.31 mm² (28...12 AWG), solid or stranded
Dimensions	<ul style="list-style-type: none"> SCADAPack 350: 211.8 mm x 140.4 mm x 46.5 mm (8.34 in. wide x 5.53 in. high x 1.83 in. deep) SCADAPack 357: 211.8 mm x 181.0 mm x 66.0 mm (8.34 in. wide x 7.13 in. high x 2.60 in. deep)
Enclosure	Corrosion-resistant zinc-plated steel with black enamel paint
Environment	<ul style="list-style-type: none"> Conformal coated -40...+70 °C (-40...+158 °F) operating, -40...+85 °C (-40...185 °F) storage 5% RH to 95% RH, non-condensing
Shock & Vibration	IEC 60068-2-27 (tested up to 15 g), IEC 60068-2-6
Warranty	3 years on parts and labor

Selection Guide

Standard SCADAPack



SCADAPack 350 | 357 Specifications cont'd

Power Supply

Rated Voltage 12...30 Vdc. Limit voltage: 11.5...32 Vdc; turn on voltage: 10...11.5 Vdc; turn off voltage: 9...10 Vdc

Maximum Power 12 W at 24 Vdc (internal 5 Vdc supply fully loaded and Vloop on and boosted, fully loaded)

SCADAPack 350/357 support 3 power modes: sleep, normal clock speed and reduced clock speed

- SCADAPack 350 typical power consumption (at 20 °C/ 68 °F):

Power Requirements	SCADAPack 350			At normal clock speed		At reduced clock speed	
	Ethernet	Controller LEDs	Vloop fully loaded	12 V dc	24 V dc	12 V dc	24 V dc
	Sleep Mode	-			15 mW	27 mW	15 mW
Use case 1		OFF		0.7 W	0.6 W	0.5 W	0.4 W
Use case 2	ON	OFF	OFF	1.6 W	1.5 W	1.4 W	1.3 W
Use case 3	OFF	OFF	ON	4.3 W	4.1 W	4.1 W	3.9 W
Use case 4		ON		5.2 W	5.0 W	5.0 W	4.8 W

- SCADAPack 357 typical power consumption: from 15 mW at 12 Vdc in sleep mode to 8.9 W (with up to 7 analog input/output loops powered from Vloop supply)

Power outputs Vloop
 • Maximum 140 mA at 12 V (booster turned off) or 24 Vdc (booster turned on); can power up to 7 analog input/output loops

Certifications

EMC and Radio Frequency

- ICES-003 Issue 5 August 2012
- CE and RCM markings

General Safety UL 508

Hazardous Locations cCSAus Non-incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D IECEx/ATEX Class I, Zone 2 (does not include embedded wireless versions)

Selection Guide

Standard SCADAPack



SCADAPack 350 | 357 Specifications cont'd

Controller Board	
Analog Inputs	5, user selectable 0...10 V or 0...20 mA plus over range <ul style="list-style-type: none"> • 1, 0...32.7 Vdc (15-bit) for DC supply monitoring • Resolution: 15-bit ADC (15-bit over the measurement range in 10 V, 14-bit in 20 mA) • Accuracy: $\pm 0.1\%$ of full scale at 25 °C (+77 °F), $\pm 0.2\%$ over temperature range • Input Resistance: 250 Ω or 20 kΩ in 20 mA or 10 V configurations (60 kΩ for 32.768 V) • Normal rejection mode: 27 dB at 60 Hz
Analog Outputs	2 (optional), 0...20 mA, 4...20 mA, voltage output may be accomplished with external precision resistor <ul style="list-style-type: none"> • Resolution: 12-bit over 0...20 mA range • Accuracy: $\pm 0.15\%$ at 25 °C (+77 °F), $\pm 0.35\%$ of full scale over temperature range • Response Time: less than 10 μs for 10% to 90% signal change • Power Supply: 12...30 Vdc, external • Power (Current) Requirements: 10 mA plus up to 20 mA per output • Isolation: isolated from RTU logic and chassis • Load Range: 12 Vdc: 0...375 Ω, 24 Vdc: 0...925 Ω, • Logic End-Of- Scan to Signal Update Latency: typically 18... 27 ms
Digital Inputs/Outputs	8, user-selectable as inputs or outputs (open drain) <p>As Digital Inputs</p> <ul style="list-style-type: none"> • Dry contact <p>As Digital Outputs</p> <ul style="list-style-type: none"> • Sinking MOSFET output, rated 30 V, 0.5 A, ground return connected to Chassis Ground
Counter Inputs	<ul style="list-style-type: none"> • 1, 0...10 Hz (dry contact) • 2, 0...10 kHz (turbine or dry contact)
Internal Power monitor	Power input - analog input and low indication, onboard lithium battery - low indication
Internal Temperature Monitor	Controller temperature range -40 °C...+75 °C (-40...+167 °F)
I/O board (357 only)	
Analog Inputs	8, software-configurable to 0...20, 4...20 mA , 0...5 or 0...10 V <p>Same features as for the 5 analog inputs located on the controller board (see above) except the following:</p> <ul style="list-style-type: none"> • Isolation: 500 Vac from logic and chassis
Analog Outputs	2 (optional), 0...20/4...20 mA, voltage output may be accomplished with external precision resistor. <p>Same features as for the analog outputs located on the controller board</p>
Digital Inputs	32, 12...24 Vdc <ul style="list-style-type: none"> • Turn on voltage: 9 Vdc (minimum), Turn off voltage: 4 Vdc (maximum) • Over-voltage tolerance: 150% sustained over-voltage without foreseeable damage • DC input current: 0.67 mA at 24 Vdc • Time stamping : 170 ms • Isolation : in group of 8, 1500 Vac from logic supply and chassis
Digital Outputs	16, relays (Form A) <ul style="list-style-type: none"> • 4 contacts share one common • Isolation : isolated in groups of 4. Isolated from RTU logic, RTU chassis and other groups to 1500 Vac • Contact Rating: 3 A, 30 Vdc

Selection Guide

Standard SCADAPack



SCADAPack 350 | 357 Specifications cont'd

Additional IO	
I/O Expansion	<p>Supported modules:</p> <ul style="list-style-type: none"> 5302, 5304, 5401, 5402, 5403, 5404, 5405, 5406A, 5407, 5408, 5409, 5410, 5411, 5414, 5415, 5421, 5502, 5504, 5505, 5506, 5521, 5606, 5607, 5904, 5915 <p>Maximum number of modules per unit:</p> <ul style="list-style-type: none"> SCADAPack 350: 8* SCADAPack 357: 7* <p>Footnote: * To reach this limit, additional power supply modules (reference: 5103) are required</p>

SCADAPack 350 | 357 Model Code

Code	Select: Controller
TBUP350	SCADAPack 350, Controller 32-bits, 5 Analog Inputs, 8 Digital I/O, 3 High Speed Counter Inputs
TBUP357	SCADAPack 357, Controller 32-bits, comes with the above plus additional I/Os
Code	Select: Future Option
1	None
Code	Select: Gas & Liquids Flow Run-Time Option
A	None
Gas Only Flow Computer Options	
G	2 Run Gas Flow
F	4 Run Gas Flow
V	2 Run Gas Flow - Gas Transmission Version (Requires Reaflo 6.72+)
W	4 Run Gas Flow - Gas Transmission Version (Requires Reaflo 6.72+)
X	Gas Flow Controller with 3 Pemex Gas Transmission flow runs (requires Reaflo 6.82+)
Gas & Liquids Flow Computer Options	
L	Gas & Liq 1: Supports 1 Gas run, 1 Liquid run, and 1 Water run
M	Gas & Liq. 2: Supports 2 Gas runs, 2 Liquid runs, and 2 Water runs
N	Gas & Liq. 3: Supports 3 Gas runs, 3 Liquid runs, and 3 Water runs
P	Liq. 4: Supports 4 Liquid runs and 4 Water runs
Code	Select: Protocol Option
2	Modbus and DNP3 level 2 protocol emulation
Code	Select: Programming Environment
0	Telepace Ladder logic and C language firmware loaded - IEC 61131-3-enabled (Programming tools sold separately)
1	IEC 61131-3 and C language firmware loaded - Telepace-enabled (Programming tools sold separately)

Selection Guide

Standard SCADAPack



SCADAPack 350 | 357 Model Code cont'd

Code	Select: Analog Inputs
A	P350 : 5 selectable as 0...10 V or 0...20 mA *P357 : adds 8 selectable as 0...20 mA, 4...20 mA, 0...5 V or 0...10 V
Code	Select: Digital Inputs/Outputs
A	P350: 8 Digital I/O, individually selectable as digital input (Dry Contact) or digital output (Open Drain)
B	P357: adds 32 digital inputs (12...24 Vdc), 16 digital outputs (Dry Contact relay for Class I Div 2, Solid State relay for IECEx/ATEX)
Code	Select: Analog Outputs
0	None
1	2 channel Analog Output, 0..20 mA, external DC supply
2	P357 only : 4 channel Analog Output, 0..20 mA, external DC supply
Code	Select: Integrated Communications Interfaces
0	None
	FreeWave & MDS Radios (requires one RS232 port)
1	900 Mhz FreeWave Spread Spectrum Radio (not RoHS compliant)
A	900 MHz MDS Spread Spectrum Radio (not RoHS compliant)
	Trio Radios - 900 MHz (requires one RS232 port)
B	900 MHz Trio Spread Spectrum Radio with encryption, 902-928 MHz (FCC / IC)
C	900 MHz Trio Spread Spectrum Radio with encryption, 915-928 MHz (AUS)
D	900 MHz Trio Spread Spectrum Radio, 915-928 MHz (BRAZIL)
E	900 MHz Trio Spread Spectrum Radio, 921-928 MHz (NZ)
	Trio Radios - 2.4 GHz (requires one RS232 port)
J	2.4 GHz Trio Spread Spectrum Radio, ETSI/100 mW, ATEX (EUROPE)
K	2.4 GHz Trio Spread Spectrum Radio with Encryption, 500 mW (CANADA, USA & AUSTRALIA)
L	2.4 GHz Trio Spread Spectrum Radio, 500 mW (OUTSIDE OF EUROPE, CANADA, USA & AUSTRALIA)
Code	Select: Certifications
S	With FCC, UL508, CE marking and RCM
X	Adds IECEx/ATEX Class I, Zone 2
U	Adds cCSAus Nonincendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D

Selection Guide

Standard SCADAPack



SCADAPack 570 | 575 Specifications

Architecture

Processor	SPEAr 1380 32-bit dual-core Cortex™ A9 microcontroller, 500 MHz
Memory	<ul style="list-style-type: none"> 128 MB NAND FLASH, 128 MB DDR3 RAM Non-Volatile RAM CMOS SRAM with lithium battery retains contents for 2 years with no power
Event Logging Capacity	Up to 40,000 time-stamped DNP3 events (reduced if database exceeds 10,000 objects)
Database Capacity	Typical maximum 15,000 objects, max. number of logic connected objects is 6000 (subset of 15,000 total objects)
DNP3 Data Concentrator Master	(Optional) Manages up to 100* DNP3 peer (slave) devices for collection of DNP3 data and events from other DNP3 outstations
DNP3 Master Stations	Up to 3
DNP3 Peer Devices	Up to 90
Modbus Master (client)	Up to 80* simultaneous Modbus TCP client (outgoing master) connections
Modbus Slave (server)	Up to 20* Modbus TCP server (incoming slave) connections
File System Storage	Internal: 70 MB usable; External: 32 GB (using optional memory stick)

* Shared resources - Total combined maximum number of simultaneous TCP connections is 80; additional connections such as FTP, Telnet, and logic debug utilize some of these total combined resources when they are active.

Communications

Serial Ports: Serial1, Serial2	<ul style="list-style-type: none"> RS-232 port, 8-pin modular RJ45 jack, +5 Vdc power control, hardware handshaking, maximum baud rate 115,200 bps Rated to ±15 kV (IEC 61000-4-2, Air Discharge) static protection
Serial Ports: Serial3, Serial4	Configurable as: <ul style="list-style-type: none"> RS-232 or RS-485 two wire, half duplex, maximum baud rate 115,200 bps 8-pin modular RJ45 jack, rated to ±15 kV (IEC 61000-4-2, Air Discharge) static protection
Serial Protocols	DNP3 level 4 slave/master and peer-to-peer, Modbus RTU slave/master
Ethernet Ports: Eth1, Eth2, Eth3	8-pin modular RJ45 jack, 10/100 Mbps UTP (10/100 Base-T), transformer isolated
IP Protocols	<ul style="list-style-type: none"> DNP3 level 4 in TCP or in UDP Master/Slave and peer-to-peer, Modbus/TCP Server, Modbus/TCP Client Telnet Server, FTP Server HART® pass through over TCP when connected to SCADAPack 6602 modules
USB Device Port	USB 2.0-compliant "B"-type receptacle, for local configuration
USB Host Port	USB 2.0-compliant "A"-type receptacle, supports USB devices up to 32 GB

Selection Guide

Standard SCADAPack



SCADAPack 570 | 575 Specifications cont'd

General

Logic Control	RemoteConnect software (five IEC 61131-3 languages)
I/O Terminations	<ul style="list-style-type: none"> SCADAPack 570: plug-in terminal blocks 0.0810...3.31 mm² (28...12 AWG), solid or stranded SCADAPack 575: 5, 6, 7, 9, 11-pole connectors, 0.0810...3.31 mm² (28...12 AWG), solid or stranded
Dimensions	<ul style="list-style-type: none"> SCADAPack 570: 150.5 mm x 134.8 mm x 74.9 mm (5.93 in. wide x 5.31 in. high x 2.95 in. deep) SCADAPack 575: 150.5 mm x 182.3 mm x 86.5 mm (5.93 in. wide x 7.18 in. high x 3.41 in. deep)
Packaging	<ul style="list-style-type: none"> Corrosion-resistant zinc-plated steel with black enamel paint Conformal coated circuit boards
Environment	<ul style="list-style-type: none"> Operating temperature -40...70 °C (-40...158 °F), storage temperature, -40...85 °C (-40...185 °F) 5% RH to 95% RH, non-condensing
Shock & Vibration	IEC 61131-2 mechanical shock (tested up to 15 g shock), IEC 61131-2 vibration
Warranty	3 years on parts and labor

Power Supply

Rated Voltage and Power	12...30 Vdc, SCADAPack 570 typical 4.3 W, SCADAPack 575 typical 5.4 W, Max. 9.1 W, Class 2 power supply required
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Certifications

EMC & Radio Frequency	<ul style="list-style-type: none"> FCC 47 CFR Part 15, Subpart B ICES-003 CE and RCM markings
General Safety	UL 508
Hazardous locations (option)	<ul style="list-style-type: none"> cCSAus Non-Incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D and Class I, Zone 2 IECEX/ATEX Ex nA IIC T4 Gc -40 °C ≤ Ta ≤ +70 °C

This product is RoHS-compliant

Digital and Analog Inputs/Outputs

	Digital Inputs		Digital Outputs		Counter Inputs		Analog Inputs AI 1...6	Analog Outputs (option) AO 1...2
	Din 1...2 10 ms SOE	Din 1...16 1 ms SOE	Dout	DO 1...8	DI 1...4 1.5 KHz (shared)	DI 5...8 150 Hz (shared)		
SCADAPack 570	2	-	1	-	-	-	-	-
SCADAPack 575	2	16	1	8	4	4	6	2

Selection Guide

Standard SCADAPack



SCADAPack 570 | 575 Specifications cont'd

Digital and Analog Inputs/Outputs cont'd

Digital Inputs	Din 1...2 <ul style="list-style-type: none"> • 12...24 Vdc • DC input current: 0.4 mA at 12 Vdc, 0.8 mA at 24 Vdc • Ground return connected to Chassis Ground Din 1...16 <ul style="list-style-type: none"> • 12...24 Vdc • DC input current: 1.2 mA at 12 Vdc, 2.4 mA at 24 Vdc • Isolation: in 2 groups of 8. Isolation from RTU logic and chassis: 1000 Vac/ 1500 Vdc
Counter Inputs	Shared with first 8 digital input channels on lower I/O board <ul style="list-style-type: none"> • DI 1 to 4: 0...1.5 kHz • DI 5 to 8: 0...150 Hz
Digital Outputs	Dout: <ul style="list-style-type: none"> • Sinking MOSFET output, rated 30 Vdc, 0.5 A, ground return connected to Chassis Ground DO 1...8: <ul style="list-style-type: none"> • 2 Form C relays: SPDT, separate Normally Open/Normally Closed/Common) • 6 Form A relays: Normally Open, one shared common • Isolation: 500 Vac minimum to RTU logic • Maximum Switching Voltage: 30 Vdc or 25 Vac • Maximum Switching Load: 60 W or 50 VA (2 A) • Status & Reporting: Individual relay status feedback to software for quality indication • Controls (DNP3 Protocol): Direct Operate, Select Before Operate, Trip/Close, Latch, Pulse
Analog Inputs	Dipswitch-configurable to current or voltage input <ul style="list-style-type: none"> • Input ranges: 0...20 mA, 4...20 mA, 0...5 Vdc, 1...5 Vdc • Uni-polar, differential • Resolution: 24-bit ADC (19-bit over the measurement range) • Accuracy: $\pm 0.1\%$ of full scale at 25 °C (77 °F), $\pm 0.2\%$ over temperature range • Isolation: 250 Vac isolation from channel to channel and from logic and chassis • Input Resistance: 250 Ω or 800 kΩ in current/voltage configurations • Under range: 4...20 mA measures to 0 mA • Common Mode Rejection: -80 dB @ 50/60 Hz • Sampling rate: software-selectable to 30 ms (unfiltered) or 500 ms (filtered)
Analog Outputs	<ul style="list-style-type: none"> • Optional • Output ranges: 0...20 mA, 4...20 mA, voltage output may be accomplished with external precision resistor • Uni-polar • Resolution: 12-bit over 0...20 mA range • Accuracy: $\pm 0.15\%$ at 25 °C, $\pm 0.35\%$ of full scale over temperature range • Power Supply: 12...30 Vdc, external, Current: 50 mA • Isolation: transformer, 500 Vdc maximum to RTU logic and chassis • Load Range: 12 Vdc: 0...475 Ω, 24 Vdc: 0...1075 Ω • Status & Reporting: Individual Open Loop status to software for quality indication • Controls DNP3 Protocol: Direct Operate, Select Before Operate
Internal Power Monitor	<ul style="list-style-type: none"> • Input voltage monitor with low voltage indication • Memory/RTC battery voltage monitor with low voltage indication
Internal Temperature Monitor	Measurement range -40...75 °C (-40...167 °F)

Selection Guide

Standard SCADAPack



SCADAPack 570 | 575 Specifications cont'd

Additional I/O

Supported Modules	<p>Supported modules: 5304, 5405, 5414, 5415, 5506, 5606, 5607, 6601, 6602</p> <p>When SCADAPack 57x controller is used with 5000 series modules, order one adaptor cable ref. TBUM297138 to adapt from 20 conductors to 16 conductors).</p> <p>Maximum number of external expansion modules per unit:</p> <ul style="list-style-type: none">• SCADAPack 570: 16*• SCADAPack 575: 15* Max # of 6601s is 4 including the lower I/O on 575 <p>Footnote: * Additional power supply modules (model 5103) may be required for additional bus power, depending on how many expansion modules are included on the bus.</p>
I/O Expansion Limits	<ul style="list-style-type: none">• Refer to the SCADAPack x70 Documentation Set > Hardware Manuals for further details.• Maximum intermodule cable length (not including the short cables that come with each module) is 1.82 m (75 in.)

Selection Guide

Standard SCADAPack



SCADAPack 570 | 575 Model Code

Code	Select: Hardware Platform
TBUP570	SCADAPack 570, 32-bit controller, Dual Core
TBUP575	SCADAPack 575, 32-bit controller, Dual Core comes with additional I/O
Code	Select: Firmware Platform
U	SCADAPack x70 Firmware (RemoteConnect Configuration & IEC 61131-3 programming software, included)
Code	Select: SCADA Security
A	None
C	DNP3 Secure Authentication SAV2 (Security Administrator application required)
Code	Select: Protocol Option
5	DNP3 Serial/IP master/slave/peer-to-peer, Modbus RTU/TCP master/slave, TCP/IP
Code	Select: License Option
6	None
7	DNP3 Data Concentrator Master License - allows collection of DNP3 events and data from multiple outstations
Code	Select: Analog Inputs
A	P570: None, P575: adds 6, shipped selectable as 0...20 mA or 4...20 mA
B	P575 only: adds 6, shipped selectable as 0...5 Vdc or 1...5 Vdc
Code	Select: Digital Inputs/Outputs
A	P570: 2 Digital Inputs (12...24 Vdc), 1 Digital Output (open collector)
B	P575 only: adds 16 Digital Inputs (12...24 Vdc) and 8 Dry Contact Relay outputs (6 Form A, 2 Form C)
Code	Select: Analog Outputs
0	None
1	P575 only: 2 channel Analog Output option, shipped selectable as 0...20 mA or 4...20 mA, external DC supply required
Code	Select: Integrated Communication Interfaces
0	None
Code	Select: Certifications
S	EMC and radio frequency; FCC 47 CFR Part 15, Subpart B; ICES-003; CE and RCM markings
X	Adds IECEx/ATEX: Ex nA IIC T4 Gc -40 °C ≤ Ta ≤ +70 °C
U	Adds cCSAus Non-Incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D and Class I, Zone 2

Selection Guide

Standard SCADAPack



SCADAPack 570 | 575 - I/O Expansion Modules (6xxx)

Part No.	Expansion Modules (complete the following part numbers with an S, U, or X suffix depending on certification required)
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Models supported by SCADAPack 530E/535E/570/575 models only

TBUX297583	Model 6601-20 mA, 16 D/I 12...24 Vdc, 8 Dry Contact Relay O/P, 6 config. A/I (0/4...20 mA)
TBUX297584	Model 6601-5V, 16 D/I 12...24 Vdc, 8 Dry Contact Relay O/P, 6 config. A/I (0/1...5 Vdc)
TBUX297585	Model 6601-20 mA, 16 D/I 12...24 Vdc, 8 Dry Contact Relay O/P, 6 config. A/I (0/4...20 mA), 2 A/O (external DC supply)
TBUX297586	Model 6601-5V, 16 D/I 12...24 Vdc, 8 Dry Contact Relay O/P, 6 config. A/I (0/1...5 Vdc), 2 A/O (external DC supply)
TBUX297590	Model 6602, Analog I/O, HART, 8 A/I, 4 A/O, 4...20 mA (requires external DC supply)
TBUX297591	Model 6602, Analog I/O, HART, 8 A/I, 4...20 mA

Footnotes: Additional power supply modules (model 5103) may be required for additional bus power, depending on how many expansion modules are included on the bus.

Refer to the SCADAPack x70 Documentation Set for further details.

Note: This product is RoHS-compliant.

SCADAPack Smart RTU

Selection Guide

Standard SCADAPack



SCADAPack 574 Specifications

Architecture

Processor	SPEAr 1380 32-bit dual-core Cortex™ A9 microcontroller, 500 MHz
Memory	<ul style="list-style-type: none"> 128 MB NAND FLASH, 128 MB DDR3 RAM Non-Volatile RAM CMOS SRAM with lithium battery retains contents for 2 years with no power
Event Logging Capacity	Up to 40,000 time-stamped DNP3 events (reduced if database exceeds 10,000 objects)
Database Capacity	Typical maximum 15,000 objects, max. number of logic connected objects is 6000 (subset of 15,000 total objects)
DNP3 Data Concentrator Master	(Optional) Manages up to 100* DNP3 peer (slave) devices for collection of DNP3 data and events from other DNP3 outstations
DNP3 Master Stations	Up to 3
DNP3 Peer Devices	Up to 90
Modbus Master (client)	Up to 80* simultaneous Modbus TCP client (outgoing master) connections
Modbus Slave (server)	Up to 20* Modbus TCP server (incoming slave) connections
File System Storage	Internal: 70 MB usable; External: 32 GB (using optional memory stick)

* Shared resources - Total combined maximum number of simultaneous TCP connections is 80; additional connections such as FTP, Telnet, and logic debug utilize some of these total combined resources when they are active.

Communications

Serial Ports: Serial1, Serial2	<ul style="list-style-type: none"> RS-232 port, 8-pin modular RJ45 jack, +5 Vdc power control, hardware handshaking, maximum baud rate 115,200 bps Rated to ±15 kV (IEC 61000-4-2, Air Discharge) static protection
Serial Ports: Serial3, Serial4	Configurable as: <ul style="list-style-type: none"> RS-232 or RS-485 two wire, half duplex, maximum baud rate 115,200 bps 8-pin modular RJ45 jack, rated to ±15 kV (IEC 61000-4-2, Air Discharge) static protection
Serial Protocols	DNP3 level 4 slave/master and peer-to-peer, Modbus RTU slave/master
Ethernet Ports: Eth1, Eth2, Eth3	8-pin modular RJ45 jack, 10/100 Mbps UTP (10/100 Base-T), transformer isolated
IP Protocols	<ul style="list-style-type: none"> DNP3 level 4 in TCP or in UDP Master/Slave and peer-to-peer, Modbus/TCP Server, Modbus/TCP Client Telnet Server, FTP Server HART pass through over TCP when connected to SCADAPack 6602 modules
USB Device Port	USB 2.0-compliant "B"-type receptacle, for local configuration
USB Host Port	USB 2.0-compliant "A"-type receptacle, supports USB devices up to 32 GB

Selection Guide

Standard SCADAPack



SCADAPack 574 Specifications cont'd

General

Logic Control	RemoteConnect software (five IEC 61131-3 languages)
I/O Terminations	Plug-in terminal blocks 0.0810...3.31 mm ² (28...12 AWG), solid or stranded
Dimensions	150.5 mm x 181.7 mm x 91.0 mm (5.93 in. wide x 7.15 in. high x 3.58 in. deep)
Packaging	<ul style="list-style-type: none"> Corrosion-resistant zinc-plated steel with black enamel paint Conformal coated circuit boards
Environment	<ul style="list-style-type: none"> Operating temperature -40...70 °C (-40...158 °F), storage temperature, -40...85 °C (-40...185 °F) 5% RH to 95% RH, non-condensing
Shock & Vibration	IEC 61131-2 mechanical shock (tested up to 15 g shock), IEC 61131-2 vibration
Warranty	3 years on parts and labor

Power Supply

Rated Voltage and Power	12...30 Vdc, SCADAPack 574 typical 6.5 W, Max. 9.2 W, Class 2 power supply required
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Certifications

EMC & Radio Frequency	<ul style="list-style-type: none"> FCC 47 CFR Part 15, Subpart B ICES-003 CE and RCM markings
General Safety	IEC 61010-2-201; UL; CSA
Hazardous locations (option)	<ul style="list-style-type: none"> cCSAus: Non-Incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D; and Class I, Zone 2 IECEX/ATEX: Ex ec IIC T4 Gc -40°C ≤ Ta ≤ +70°C (pending December 2018)

This product is RoHS-compliant

Selection Guide

Standard SCADAPack



SCADAPack 574 Specifications cont'd

Digital and Analog Inputs/Outputs - Controller Board (574)

	2, Din 1...2
Digital Inputs	<ul style="list-style-type: none"> 12...24 Vdc Turn on voltage: 8 Vdc (minimum), Turn off voltage: 4 Vdc (maximum) Over-voltage tolerance: 150% sustained over-voltage without foreseeable damage DC input current: 0.4 mA at 12 Vdc, 0.8 mA at 24 Vdc Ground return connected to Chassis Ground
Digital Output	1, Dout: <ul style="list-style-type: none"> Sinking MOSFET output, rated 30 Vdc, 0.5 A, ground return connected to Chassis Ground
Internal Power Monitor	<ul style="list-style-type: none"> Power supply Input voltage monitor with low voltage indication Memory/RTC battery voltage monitor with low voltage indication
Internal Temperature Monitor	Measurement range -40...75 °C (-40...167 °F)
Lower I/O board (5607 module)	
Analog Inputs	8, AI 0...7 <ul style="list-style-type: none"> Software-configurable: 0...20 mA, 4...20 mA, 0...5 Vdc or 0...10 Vdc, plus over range Resolution: 15-bit ADC (15-bit in measurement range 0...10 Vdc, and 14-bit in 5 Vdc or 20 mA input ranges) Accuracy: $\pm 0.1\%$ of full scale at 25 °C (77 °F), $\pm 0.2\%$ over temperature range Input Resistance: 250 Ω in current ranges, 20 kΩ in voltage ranges Normal mode rejection: 27 dB at 60 Hz Sampling rate: 170 ms Isolation: 500 Vac from logic and chassis
Analog Outputs	2 (optional), AO 0...1 <ul style="list-style-type: none"> 0...20 mA or 4...20 mA, voltage output may be accomplished with external precision resistor.
Digital Inputs	16, DI 0...15 <ul style="list-style-type: none"> 12...24 Vdc, Turn-on voltage: 9 Vdc (minimum), Turn off voltage: 4 Vdc (maximum) Over-voltage tolerance: 150% sustained over-voltage without foreseeable damage DC input current: 0.67 mA typical at 24 Vdc Isolation: in groups of 8, 1500 Vac from logic supply and chassis
Digital Outputs	10, dry-contact or solid-state relays (Form A - normally open) <ul style="list-style-type: none"> 5 contacts share one common Isolation: Chassis or logic to contact 1500 Vac (1 min.) Controls: (DNP3 protocol) Direct Operate, Select Before Operate, Trip/Close, Latch, Pulse Dry-contact relays: <ul style="list-style-type: none"> Contact rating 3 A, 30 Vdc (resistive), 12 A maximum per common Solid-state relays: <ul style="list-style-type: none"> Load voltage 30 Vdc maximum Load current 2 A continuous max at 50 °C (122 °F), or 1.33 A at 70 °C (158 °F) ambient

Selection Guide

Standard SCADAPack



SCADAPack 574 Specifications cont'd

Additional I/O

Supported I/O expansion module summary:

6000 series

- 6601, combination I/O, 16 digital inputs, 8 Digital outputs (relays), 6 analog inputs, 2 analog outputs (optional)
- 6602 (HART), available in two versions; with 8 analog inputs, or combination of 8 analog inputs and 4 analog outputs.

Limit of one 6602 module per controller

5000 series

- 5304 AO, 4 analog outputs
- 5405 DI, 32 digital inputs
- 5414 DI, 16 digital inputs
- 5415 DO, 12 digital outputs (relays)
- 5506 AI, 8 analog inputs
- 5606, combination I/O, 32 digital inputs, 16 digital outputs (relays), 8 analog inputs, 2 analog outputs (optional)
- 5607, combination I/O, 16 digital inputs, 10 digital outputs (relays), 8 analog inputs, 2 analog outputs (optional)
- 5103 power supply, input nominal 12...24 Vdc, bus power output 5 Vdc @ 2 A, uses 16-pin bus connectors

Supported Modules

When SCADAPack 57x controller is used with 5000 series modules, order one adaptor cable ref. TBUM297138 to adapt from 20 conductors to 16 conductors).

Maximum number of external expansion modules per unit:

- SCADAPack 574: 15 (*) Max # of 6601s is 4

(*): Additional power supply modules (model 5103) may be required for additional bus power, depending on how many expansion modules are included on the bus.

I/O Expansion Limits

- Refer to the SCADAPack x70 Documentation Set > Hardware Manuals for further details.
- Maximum intermodule cable length (not including the short cables that come with each module) is 1.82 m (75 in.)

Selection Guide

Standard SCADAPack



SCADAPack 574 Model Code

Code	Select: Hardware Platform
TBUP574	SCADAPack 574, 32-bit controller, Dual Core
Code	Select: Firmware Platform
U	SCADAPack x70 Firmware (RemoteConnect Configuration & IEC 61131-3 programming software, included)
Code	Select: SCADA Security
A	None
C	DNP3 Secure Authentication SAv2 (Security Administrator application required)
Code	Select: Protocol Option
5	DNP3 Serial/IP master/slave/peer-to-peer, Modbus RTU/TCP master/slave, TCP/IP
Code	Select: License Option
6	None
7	DNP3 Data Concentrator Master License - allows collection of DNP3 events and data from multiple outstations
Code	Select: Analog Inputs
A	8: selectable as 0...20 mA, 4...20 mA, 0...5 Vdc, 1...5 Vdc, or 0...10 Vdc
Code	Select: Digital Inputs/Outputs
B	<ul style="list-style-type: none"> Upper I/O: 2 Digital Inputs & 1 Digital Output Lower I/O: 16 Digital Inputs (12...24 Vdc) & 10 DO (Dry Contact relays)
C	<ul style="list-style-type: none"> Upper I/O: 2 Digital Inputs & 1 Digital Output Lower I/O: 16 Digital Inputs (12...24 Vdc) & 10 DO (Solid State relays)
Code	Select: Analog Outputs
0	None
1	2-channel Analog Output option, shipped selectable as 0...20 mA or 4...20 mA, external DC supply required
Code	Select: Future Option
0	None
Code	Select: Certifications
S	IEC 61010-2-201; UL; CSA, EMC and radio frequency; FCC 47 CFR Part 15, Subpart B; ICES-003; CE and RCM markings
X	Adds IECEx/ATEX: Ex ec IIC T4 Gc -40°C ≤ Ta ≤ +70°C (pending December 2018)
U	Adds cCSAus Non-Incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D and Class I, Zone 2

Selection Guide

SCADAPack E



SCADAPack 312E | 312E | 314E Specifications

Controller	
Processors	<ul style="list-style-type: none"> 32-bit ARM7 microcontroller, 32 MHz clock, integrated watchdog timer. Two microcontroller IO co-processors, 20 MHz clock
Memory	<ul style="list-style-type: none"> 16 MB FLASH ROM, 4MB CMOS RAM, 4kB EEPROM CMOS SRAM with lithium battery retains contents for 2 years with no power
Event Logging Capacity (events)	20,000 events
Database Capacity	Up to 1,000 points
Resolution Data Concentrator Capacity (points)	Up to 500 in DNP3 or Modbus
Data Concentrator Capacity (devices)	Up to 10 in DNP3 and up to 10 in Modbus or DF1
File System Typical Storage	Internal: 6 MB
Communications	
Serial Ports : COM1, COM2	RS-232 port, 8-pin modular RJ45 jack, full or half duplex, or RS-485 port, 2-wire, half-duplex, supports baud rates up to 115,200 bps in RS-232 mode
Embedded Wireless	<p>The controller may be equipped with an embedded license-free radio module (different options in 900 Mhz or 2.4 Ghz) that uses one of the serial ports</p> <ul style="list-style-type: none"> This option is available for SCADAPack 314E model only Terminal Equipment (DTE), 8 -pin modular jack, full or half duplex, implemented Td, Rd, +5 Vdc
Serial Protocols	DNP3 level 4 slave/master and peer-to-peer, IEC 60870-5-101 slave, Modbus slave/master, DF1 master
IP Protocols	<p>IP protocols are available on a serial link using PPP</p> <ul style="list-style-type: none"> DNP3 level 4 in TCP Master/Slave, UDP Master/Slave and peer-to-peer, IEC 60870-5-104 Slave, Modbus/TCP Server, Modbus/TCP Client, Modbus RTU in TCP Client NTP Client/Server, Telnet Server, FTP Server, BOOTP Server
Master - Slave Capability	<ul style="list-style-type: none"> Can simultaneously report to up to multiple independent active masters (3 in DNP3, 2 in IEC 60870-5-101/-104 and 1 in Modbus RTU), and connect to up to 100 remote devices in DNP3 peer-to-peer As a data concentrator it can manage up to 10 local or remote DNP3 slaves, and up to 10 local slaves communicating with Modbus RTU, Modbus TCP or DF1 serial
Serial Protocol Modes	Slave, Master, Master/Slave, Store and Forward
USB Device	USB 2.0-compliant "B"-type receptacle, for local configuration
General	
Logic Control	IEC 61131-3 SCADAPack Workbench programming suite (LD, ST, FBD & SFC)
I/O Terminations	5, 6, 9, 12-pole connectors, 3.31 mm ² (28...12 AWG), solid or stranded
Dimensions	144.0 mm wide x 181.0 mm high x 66.0 mm deep (5.65 in. x 7.13 in. x 2.60 in.)

Selection Guide

SCADAPack E



SCADAPack 312E | 313E | 314E Specifications cont'd

General cont'd

Environment Corrosion-resistant zinc-plated steel with black enamel paint

Enclosure

- Conformal coated
- -40...+70 °C (-40...+158 °F) operating, -40...+85 °C (-40...+185 °F) storage
- 5% RH to 95% RH, non-condensing

Shock & Vibration IEC 60068-2-27 (tested up to 15 g), IEC 60068-2-6

Warranty 3 years on parts and labor

Power Supply

Rated Voltage 12...30 Vdc. Limit voltage: 11.5...32 Vdc; turn on voltage: 10...11.5 Vdc; turn off voltage: 9...10 Vdc

Maximum Power 7 W at 24 Vdc (internal 5 Vdc supply fully loaded)

Typical power consumption (at 20 °C / 68 °F)

Power Requirements	SCADAPack Model	DO Relays	12 V dc	24 V dc
		312E	OFF	1.3 W
ON			2.2 W	2.6 W
313E/314E		OFF	1.4 W	1.7 W
		ON	2.9 W	3.4 W

SCADAPack internal 5 Vdc supply may be used to power SCADAPack options, such as I/O expansion modules through the I/O expansion bus connector

Certifications

EMC and Radio Frequency

- ICES-003 Issue 5 August 2012
- CE and RCM markings

General Safety UL 508

Hazardous Locations

- cCSAus Non-incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D
- IECEx/ATEX Class I, Zone 2 (does not include embedded wireless versions)

Controller Board

Counter Inputs

- 1, 0...10 Hz (dry contact)
- 2, 0...10 kHz (turbine or dry contact)

Internal Power Monitor Power input - analog input and low indication, onboard lithium battery - low indication

Internal Temperature Monitor Controller temperature range -40...+75 °C (-40...+167 °F)

Selection Guide

SCADAPack E



SCADAPack 312E | 313E | 314E Specifications cont'd

I/O Board				
	SCADAPack Model	312E	313E	314E
	Analog Inputs	4	4	8
	Analog Outputs	-	2 (option)	2 (option)
	Digital Inputs	12	16	16
	Digital Outputs	6	10	10
Analog Inputs	<ul style="list-style-type: none"> • Software-configurable to 0...20, 4...20 mA , 0...5 or 0...10 V, plus over range • Resolution: 15-bit ADC (15-bit over the measurement range in 10 V, 14-bit in 20 mA) • Accuracy: $\pm 0.1\%$ of full scale at 25 °C (77 °F), $\pm 0.2\%$ over temperature range • Input Resistance: 250 Ω or 20 kΩ in 20 mA or 10 V configurations (60 kΩ for 32.768 V) • Normal rejection mode: 27 dB at 60 Hz • Sampling rate: 170 ms • Isolation: 500 Vac from logic and chassis 			
Analog Outputs	<ul style="list-style-type: none"> • 0...20/4...20 mA, voltage output may be accomplished with external precision resistor • Resolution: 12-bit over 0...20 mA range • Accuracy: $\pm 0.15\%$ at 25 °C (77 °F), $\pm 0.35\%$ of full scale over temperature range • Response Time: less than 10 μs for 10% to 90% signal change • Power Supply: 12...30 Vdc, external • Power (Current) Requirements: 10 mA plus up to 20 mA per output • Isolation: isolated from RTU logic and chassis • Load Range: 12 Vdc: 0...375 Ω, 24 Vdc: 0...925 Ω • Logic End-Of- Scan to Signal Update Latency: typically 18... 27 ms • Status & Reporting: output value • Controls: Direct Operate, Select Before Operate 			
Digital Inputs	<ul style="list-style-type: none"> • 12...24 Vdc • Turn on voltage: 9 Vdc (minimum), Turn off voltage: 4 Vdc (maximum) • Over-voltage tolerance: 150% sustained over-voltage without foreseeable damage • DC input current: 0.67 mA at 24 Vdc • Time stamping : 170 ms • Isolation : in group of 8, 1500 Vac from logic supply and chassis 			
Digital Outputs	<ul style="list-style-type: none"> • Relays (Form A) • 4 contacts share one common • Isolation : isolated in groups of 4 (P337E) or 5 (P333E and 334E). Isolated from RTU logic, RTU chassis and other groups to 1500 Vac • Maximum Switching Voltage: 30 Vdc or 250 Vac (resistive) • Maximum Switching Load: 150 W or 1250 VA (5 A) • Controls: Direct Operate, Select Before Operate, Trip/Close, Latch, Pulse 			
Additional I/O				
	Supported modules:			
	<ul style="list-style-type: none"> • 5304, 5405, 5414, 5415, 5506, 5606, 5607, 5608, 5610 			
I/O Expansion	Maximum number of modules per unit: 7*			
	Footnote: * To reach this limit, additional power supply modules are required			

Selection Guide

SCADAPack E



SCADAPack 312E | 313E | 314E Model Code

Code	Select: Controller
TBUP312	SSCADAPack 312E, Controller 32-bit, 3 High Speed Counter Inputs
TBUP313	SCADAPack 313E, Controller 32-bit, comes with the above plus additional I/Os
TBUP314	SCADAPack 314E, Controller 32-bit, comes with the above plus additional I/Os
Code	Select: Firmware Platform
E	SCADAPack E Firmware (Configuration Software included)
Code	Select: SCADA Security
A	None
B	AGA-12 Encryption for DNP3 (Security Administrator application required)
C	DNP3 Secure Authentication SAV2 (Security Administrator application required)
D	DNP3 Secure Authentication with AGA-12 (Security Administrator application required)
Code	Select: Protocol Option
5	DNP3 Serial/IP master/slave/peer-to-peer, IEC 60870-5-101/104 Slave, Modbus RTU/TCP master/slave, TCP/IP
7	Adds WITS* protocol (available for SCADA Security Code C and Certification Code S only)
Code	Select: License Option**
4	P312/P313 only: none
5	IEC61131 (executes two kernels, SCADAPack workbench required) and DF1 master
Code	Select: Analog Inputs
A	P312/P313 (4) and P314 (8): selectable as 0...20 mA, 4...20 mA, 0...5 Vdc or 0...10 Vdc
Code	Select: Digital Inputs/Outputs
A	P312: 12 inputs, 6 outputs; P313/P314: 16 inputs, 10 outputs Inputs: 12/24 V; Outputs: either Dry Contact relay (for Class I Div 2) or Solid State relay (for IECEx/ATEX)
Code	Select: Analog Outputs
0	None
1	P313/P314 only: 2 channel Analog Output, 0...20 mA, external DC supply

Footnotes:

* WITS protocol (Water Industry Telemetry Standard)

** Includes DNP3 Data Concentrator License (limit of 500 points from 10 IEDs)
Multiple DNP3
Master License (up to 3 Masters)

Selection Guide

SCADAPack E



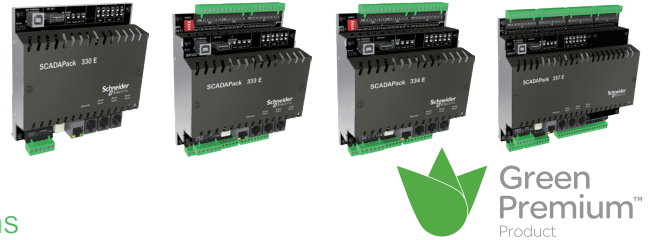
SCADAPack 312E | 313E | 314E Model Code cont'd

Code	Select: Integrated Communications Interfaces
0	None - only valid option for P312/313 (P314 available with any combination)
	FreeWave & MDS Radios (requires one RS232 port)
1	900 Mhz FreeWave Spread Spectrum Radio (not RoHS compliant)
A	900 MHz MDS Spread Spectrum Radio (not RoHS compliant)
	Trio Radios - 900 MHz (requires one RS232 port)
B	900 MHz Trio Spread Spectrum Radio with encryption, 902-928 MHz (FCC / IC)
C	900 MHz Trio Spread Spectrum Radio with encryption, 915-928 MHz (AUS)
D	900 MHz Trio Spread Spectrum Radio, 915-928 MHz (BRAZIL)
E	900 MHz Trio Spread Spectrum Radio, 921-928 MHz (NZ)
	Trio Radios - 2.4 GHz (requires one RS232 port)
J	2.4 GHz Trio Spread Spectrum Radio, ETSI/100 mW, ATEX (EUROPE)
K	2.4 GHz Trio Spread Spectrum Radio with Encryption, 500 mW (CANADA, USA & AUSTRALIA)
L	2.4 GHz Trio Spread Spectrum Radio, 500 mW (OUTSIDE OF EUROPE, CANADA, USA & AUSTRALIA)
Code	Select: Certifications
S	UL508, CE marking and RCM
X	P314 only: adds IECEx/ATEX Class I, Zone 2
U	P314 only: adds cCSAus Nonincendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D

Notes: Accessories sold separately. This product is RoHS-compliant. FreeWave & MDS radios are not RoHS-compliant.

Selection Guide

SCADAPack E

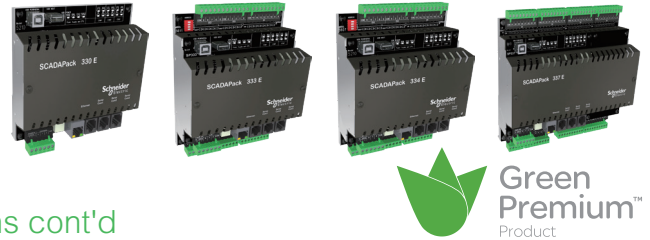


SCADAPack 330E | 333E | 334E | 337E Specifications

Controller				
Processors	<ul style="list-style-type: none"> 32-bit ARM7 microcontroller, 32 MHz clock, integrated watchdog timer. Two microcontroller IO co-processors, 20 MHz clock 			
Memory	<ul style="list-style-type: none"> 16 MB FLASH ROM, 4MB CMOS RAM, 4kB EEPROM CMOS SRAM with lithium battery retains contents for 2 years with no power 			
Event Logging Capacity (events)	20,000 events			
Database Capacity	Up to 1,000 points			
Resolution Data Concentrator Capacity (points)	Up to 500 in DNP3 or Modbus			
Data Concentrator Capacity (devices)	Up to 10 in DNP3 and up to 10 in Modbus or DF1			
File System Typical Storage	Internal: 6 MB			
Communications				
Serial Ports : COM1, COM2	RS-232 port, 8-pin modular RJ45 jack, full or half duplex, or RS-485 port, 2-wire, half-duplex, supports baud rates up to 115,200 bps in RS-232 mode			
Embedded Wireless	<p>The controller may be equipped with an embedded license-free radio module (different options in 900 Mhz or 2.4 Ghz) that uses one of the serial ports</p> <ul style="list-style-type: none"> This option is available for SCADAPack 314E model only Terminal Equipment (DTE), 8 -pin modular jack, full or half duplex, implemented Td, Rd, +5 Vdc 			
Serial Protocols	DNP3 level 4 slave/master and peer-to-peer, IEC 60870-5-101 slave, Modbus slave/master, DF1 master			
IP Protocols	<p>IP protocols are available on a serial link using PPP</p> <ul style="list-style-type: none"> DNP3 level 4 in TCP Master/Slave, UDP Master/Slave and peer-to-peer, IEC 60870-5-104 Slave, Modbus/TCP Server, Modbus/TCP Client, Modbus RTU in TCP Client NTP Client/Server, Telnet Server, FTP Server, BOOTP Server 			
Master - Slave Capability	<ul style="list-style-type: none"> Can simultaneously report to up to multiple independent active masters (3 in DNP3, 2 in IEC 60870-5-101/-104 and 1 in Modbus RTU), and connect to up to 100 remote devices in DNP3 peer-to-peer As a data concentrator it can manage up to 10 local or remote DNP3 slaves, and up to 10 local slaves communicating with Modbus RTU, Modbus TCP or DF1 serial 			
Serial Protocol Modes	Slave, Master, Master/Slave, Store and Forward			
USB Device	USB 2.0-compliant "B"-type receptacle, for local configuration			
General				
Logic Control	IEC 61131-3 SCADAPack Workbench programming suite (LD, ST, FBD & SFC)			
I/O Terminations	SCADAPack Model	330E	333E & 334E	337E
	Connectors, 0.0810...3.31 mm ² (28...12 AWG), solid or stranded	6-pole	5, 6, 9, 12-pole	5, 6, 9, 10-pole

Selection Guide

SCADAPack E



SCADAPack 330E | 333E | 334E | 337E Specifications cont'd

General cont'd

	SCADAPack Model	330E	333E & 334E	337E
Dimensions	Width mm (in.)	144 (5.65)	144 (5.65)	211.8 (8.34)
	Height mm (in.)	140.4 (5.53)	181.0 (7.13)	181.0 (7.13)
	Depth mm (in.)	46.5 (1.83)	66.0 (2.60)	66.0 (2.60)
	Enclosure	Corrosion-resistant zinc-plated steel with black enamel paint		
Environment	<ul style="list-style-type: none"> Conformal coated -40...+70 °C (-40...+158 °F) operating, -40...+85 °C (-40...+185 °F) storage 5% RH to 95% RH, non-condensing 			
Shock & Vibration	IEC 60068-2-27 (tested up to 15 g), IEC 60068-2-6			
Warranty	3 years on parts and labor			

Power Supply

Rated Voltage	12...30 Vdc. Limit voltage: 11.5...32 Vdc; turn on voltage: 10...11.5 Vdc; turn off voltage: 9...10 Vdc
Maximum Power	7 W at 24 Vdc (internal 5 Vdc supply fully loaded and Vloop on and boosted, fully loaded)

Typical power consumption (at 20 °C/ 68 °F)

	SCADAPack Model	DO Relays	12 Vdc	24 Vdc
Power Requirements	330E	-	1.8 W	2.0 W
	333E & 334 E	OFF	2.4 W	2.8 W
		ON	4.0 W	4.5 W
	337E	OFF	2.8 W	3.1 W
		ON	5.3 W	5.8 W

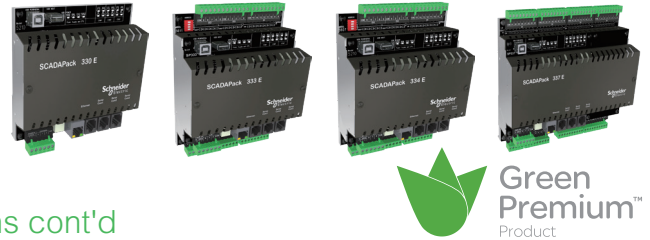
SCADAPack internal 5 Vdc supply may be used to power SCADAPack options, such as I/O expansion modules through the I/O expansion bus connector

Certifications

EMC and Radio Frequency	<ul style="list-style-type: none"> ICES-003 Issue 5 August 2012 CE and RCM markings
General Safety	UL 508
Hazardous Locations	<p>330E, 334E and 337E only</p> <ul style="list-style-type: none"> cCSAus Non-incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D IECEX/ATEX Class I, Zone 2 (does not include embedded wireless versions)

Selection Guide

SCADAPack E



SCADAPack 330E | 333E | 334E | 337E Specifications cont'd

Controller Board

Counter Inputs	<ul style="list-style-type: none"> 1, 0...10 Hz (dry contact) 2, 0...10 kHz (turbine or dry contact)
Internal Power Monitor	Power input - analog input and low indication, onboard lithium battery - low indication
Internal Temperature Monitor	Controller temperature range -40...+75 °C (-40...+167 °F)

I/O board (333E, 334E and 337E only)

Rated Voltage	12...30 Vdc. Limit voltage: 11.5...32 Vdc; turn on voltage: 10...11.5 Vdc; turn off voltage: 9...10 Vdc
Maximum Power	7 W at 24 Vdc (internal 5 Vdc supply fully loaded and Vloop on and boosted, fully loaded)

Certifications

SCADAPack Model	333E	334E	337E
Analog Inputs	4	8	8
Analog Outputs (option)	2	2	2
Digital Inputs	16	16	32
Digital Outputs	10	10	16

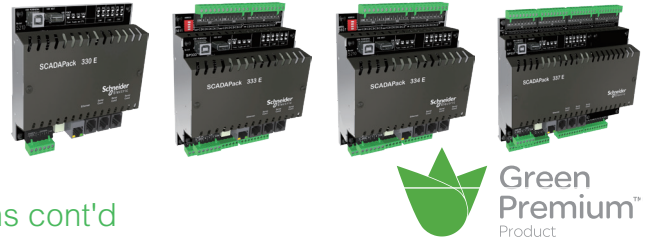
Analog Inputs	<ul style="list-style-type: none"> Software-configurable to 0...20, 4...20 mA , 0...5 or 0...10 Vdc, plus over range Software-configurable to 0...20, 4...20 mA , 0...5 or 0...10 Vdc, plus over range Resolution: 15-bit ADC (15-bit over the measurement range in 10 Vdc, 14-bit in 20 mA) Accuracy: $\pm 0.1\%$ of full scale at 25 °C (77 °F), $\pm 0.2\%$ over temperature range Input Resistance: 250 Ω or 20 kΩ in 20 mA or 10 V configurations (60 kΩ for 32.768 Vdc) Normal rejection mode: 27 dB at 60 Hz Sampling rate: 170 ms Isolation: 500 Vac from logic and chassis
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Analog Outputs	<ul style="list-style-type: none"> 0...20/4...20 mA, voltage output may be accomplished with external precision resistor Resolution: 12-bit over 0...20 mA range Accuracy: $\pm 0.15\%$ at 25 °C (77 °F), $\pm 0.35\%$ of full scale over temperature range Response Time: less than 10 μs for 10% to 90% signal change Power Supply: 12...30 Vdc, external Power (Current) Requirements: 10 mA plus up to 20 mA per output Isolation: isolated from RTU logic and chassis Load Range: 12 Vdc: 0...375 Ω, 24 Vdc: 0...925 Ω Logic End-Of- Scan to Signal Update Latency: typically 18... 27 ms Status & Reporting: output value Controls: Direct Operate, Select Before Operate
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Digital Inputs	<ul style="list-style-type: none"> 12...24 Vdc Turn on voltage: 9 Vdc (minimum), Turn off voltage: 4 Vdc (maximum) Over-voltage tolerance: 150% sustained over-voltage without foreseeable damage DC input current: 0.67 mA at 24 Vdc Time stamping : 170 ms Isolation : in group of 8, 1500 Vac from logic supply and chassis
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Selection Guide

SCADAPack E



SCADAPack 330E | 333E | 334E | 337E Specifications cont'd

Certifications cont'd

Digital Outputs	<ul style="list-style-type: none"> Relays (Form A) 4 contacts share one common Isolation : isolated in groups of 4 (P337E) or 5 (P333E and 334E). Isolated from RTU logic, RTU chassis and other groups to 1500 Vac Maximum Switching Voltage: 30 Vdc or 250 Vac (resistive) Maximum Switching Load: 150 W or 1250 VA (5 A) Controls: Direct Operate, Select Before Operate, Trip/Close, Latch, Pulse
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Additional I/O

I/O Expansion	<ul style="list-style-type: none"> 5304, 5405, 5414, 5415, 5506, 5606, 5607, 5608, 5610 <p>Maximum number of modules per unit:</p> <ul style="list-style-type: none"> SCADAPack 330E: 8* SCADAPack 333E, 334E and 337E: 7* <p>Footnote: * To reach this limit, additional power supply modules are required</p>
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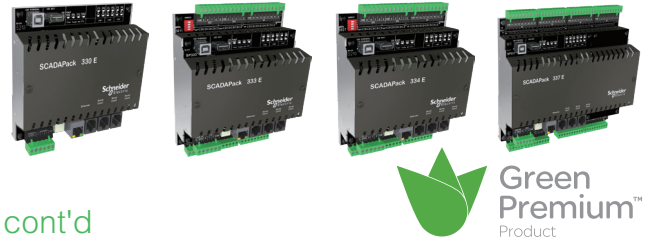
SCADAPack 330E | 333E | 334E | 337E Model Code

Code	Select: Controller
TBUP330	SCADAPack 330E, Controller 32-bit, 3 High Speed Counter Inputs
TBUP333	SCADAPack 333E, Controller 32-bit, comes with the above plus additional I/Os
TBUP334	SCADAPack 334E, Controller 32-bit, comes with the above plus additional I/Os
TBUP337	SCADAPack 337E, Controller 32-bit, comes with the above plus additional I/Os
Code	Select: Firmware Platform
E	SCADAPack E Firmware (Configuration Software included), executes two IEC 61131 kernels, Workbench required
Code	Select: SCADA Security
A	None
B	AGA-12 Encryption for DNP3 (Security Administrator application required)
C	DNP3 Secure Authentication SA2 (Security Administrator application required)
D	DNP3 Secure Authentication with AGA-12 (Security Administrator application required) Code Select: Protocol Option
Code	Select: Protocol Option
5	DNP3 Serial/IP master/slave/peer-to-peer, IEC 60870-5-101/104 Slave, Modbus RTU/TCP master/slave, TCP/IP
7	Adds WITS* protocol (available for SCADA Security Code C and Certification Code S only) Code Select: License Option **
Code	Select: License Option **
4	P333 only: none
5	IEC61131 (executes two kernels, SCADAPack Workbench required), and DF1 master

Footnotes: * WITS protocol (Water Industry Telemetry Standard). ** Includes DNP3 Data Concentrator License (limit of 500 points from 10 IEDs) Multiple DNP3 Master License (up to 3 Masters)

Selection Guide

SCADAPack E



SCADAPack 330E | 333E | 334E | 337E Model Code cont'd

Code	Select: Analog Inputs
A	P333 (4), P334 (8) and P337 (8): selectable as 0...20 mA, 4...20 mA, 0...5 Vdc or 0...10 Vdc Code Select: Digital Inputs/Outputs
Code	Select: Digital Inputs/Outputs
A	P330 only: None
B	P333/P334 only: 16 inputs, 10 outputs; P337: 32 inputs, 16 outputs Inputs: 12/24 Vdc; Outputs: either Dry Contact relay (for Class I Div 2) or Solid State relay (for IECEx/ATEX)
Code	Select: Analog Outputs
0	None
1	P333/P334/P337 only: 2 channel Analog Output, 0...20 mA, external DC supply
Code	Select: Integrated Communication Interfaces
0	None - only valid option for P333/P337 (P330/P334 available with any option)
FreeWave & MDS Radios (requires one RS-232 port)	
1	900 Mhz FreeWave Spread Spectrum Radio (not RoHS compliant)
A	900 MHz MDS Spread Spectrum Radio (not RoHS compliant)
Trio Radios - 900 MHz (requires one RS-232 port)	
B	900 MHz Trio Spread Spectrum Radio with encryption, 902-928 MHz (FCC / IC)
C	900 MHz Trio Spread Spectrum Radio with encryption, 915-928 MHz (AUS)
D	900 MHz Trio Spread Spectrum Radio, 915-928 MHz (BRAZIL)
E	900 MHz Trio Spread Spectrum Radio, 921-928 MHz (NZ)
Trio Radios - 2.4 GHz (requires one RS-232 port)	
J	2.4 GHz Trio Spread Spectrum Radio, ETSI/100 mW, ATEX (EUROPE)
K	2.4 GHz Trio Spread Spectrum Radio with Encryption, 500 mW (CANADA, USA & AUSTRALIA)
L	2.4 GHz Trio Spread Spectrum Radio, 500 mW (OUTSIDE OF EUROPE, CANADA, USA & AUSTRALIA)
Code	Select: Certifications
S	FCC, UL508, CE marking and RCM
X	P330/P334/337 only: adds IECEx/ATEX Class I, Zone 2
U	P330/P334/337 only: adds cCSAus Non-incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D

Notes: Accessories sold separately. This product is RoHS-compliant. FreeWave & MDS radios are not RoHS-compliant.

Selection Guide

SCADAPack E



SCADAPack 350E | 357E Specifications

Controller	
Processors	<ul style="list-style-type: none"> 32-bit ARM7 microcontroller, 32 MHz clock, integrated watchdog timer. Two microcontroller IO co-processors, 20 MHz clock
Memory	<ul style="list-style-type: none"> 16 MB FLASH ROM, 4 MB CMOS RAM, 4 kB EEPROM CMOS SRAM with lithium battery retains contents for 2 years with no power
Event Logging Capacity (events)	20,000 events
Database Capacity	Up to 1,000 points
Data Concentrator Capacity (points)	Up to 500 in DNP3 or Modbus
Data Concentrator Capacity (devices)	Up to 10 in DNP3 and up to 10 in Modbus or DF1
File System Typical Storage	Internal: 6 MB
Communications	
Serial Port : COM1	<ul style="list-style-type: none"> RS-485, 2-pole removable terminal block, 2-wire, half duplex, supports baud rates up to 115,200 bps
Serial Port : COM2	<ul style="list-style-type: none"> RS-232 port, 8-pin modular RJ45 jack, full or half duplex, or RS-485 port, 2-wire, half-duplex, supports baud rates up to 115,200 bps in RS-232 mode
Serial Port : COM3	RS-232 port, 8-pin modular RJ45 jack, full or half duplex with RTS/CTS control and operator interface power control, supports baud rates up to 115,200 bps
Embedded Wireless	The controller may be equipped with an embedded license-free radio module (different options in 900 Mhz or 2.4 Ghz) that uses one of the serial ports
Serial Protocols	DNP3 level 4 slave/master and peer-to-peer, IEC 60870-5-101 slave, Modbus slave/master, DF1 master
Ethernet Port	8-pin modular RJ45 jack, 10/100 Mbps UTP (10/100 Base-T), transformer-isolated
IP Protocol	<ul style="list-style-type: none"> DNP3 level 4 in TCP Master/Slave, UDP Master/Slave and peer-to-peer, IEC 60870-5-104 Slave, Modbus/TCP Server, Modbus/ TCP Client, Modbus RTU in TCP Client NTP Client/Server, Telnet Server, FTP Server, BOOTP Server
Master - Slave Capability	<ul style="list-style-type: none"> Can simultaneously report to multiple independent active masters: 3 in DNP3, 2 in IEC 60870-5- 101/-104, 5 in Modbus TCP and 3 in Modbus RTU, and connect to up to 100 remote devices in DNP3 peer-to-peer As a data concentrator it can manage up to 10 local or remote DNP3 slaves, and up to 10 local slaves communicating with Modbus RTU, Modbus TCP or DF1 serial
USB Device	USB 2.0-compliant "B"-type receptacle, for local configuration

Selection Guide

SCADAPack E



SCADAPack 350E | 357E Specifications cont'd

General																					
Logic Control	IEC 61131-3 SCADAPack Workbench programming suite (LD, ST, FBD & SFC)																				
I/O Terminations	<ul style="list-style-type: none"> SCADAPack 350E: 6, 12-pole connector, 0.0810...3.31 mm² (28...12 AWG), solid or stranded SCADAPack 357E: 5, 6, 7, 9, 10, 12-pole connectors, 0.0810...3.31 mm² (28...12 AWG), solid or stranded 																				
Dimensions	<ul style="list-style-type: none"> SCADAPack 350E: 211.8 mm wide x 140.4 mm high x 46.5 mm deep (8.34 in. x 5.53 in. x 1.83 in.) SCADAPack 357E: 211.8 mm wide x 181.0 mm high x 66.0 mm deep (8.34 in. x 7.13 in. x 2.60 in.) 																				
Enclosure	Corrosion-resistant zinc-plated steel with black enamel paint																				
Environment	<ul style="list-style-type: none"> Conformal coated -40...+70 °C (-40...+158 °F) operating, -40...+85 °C (-40...+185 °F) storage 5% RH to 95% RH, non-condensing 																				
Shock & Vibration	IEC 60068-2-27 (tested up to 15 g), IEC 60068-2-6																				
Warranty	3 years on parts and labor																				
Power																					
Rated Voltage	12...30 Vdc. Limit voltage: 11.5...32 Vdc; turn on voltage: 10...11.5 Vdc; turn off voltage: 9...10 Vdc																				
Maximum Power	12 W at 24 Vdc (internal 5 Vdc supply fully loaded and Vloop on and boosted, fully loaded) <ul style="list-style-type: none"> SCADAPack 350E typical power consumption (at 20 °C/ 68 °F) 																				
Power Requirements	<table border="1"> <thead> <tr> <th></th> <th>Controller LEDs</th> <th>Vloop Fully Loaded</th> <th>12 Vdc</th> <th>24 Vdc</th> </tr> </thead> <tbody> <tr> <td>Use Case 1</td> <td></td> <td>OFF</td> <td>1.6 W</td> <td>1.5 W</td> </tr> <tr> <td>Use Case 2</td> <td>OFF</td> <td>ON</td> <td>5.1 W</td> <td>4.9 W</td> </tr> <tr> <td>Use Case 3</td> <td></td> <td>ON</td> <td>5.2 W</td> <td>5.0 W</td> </tr> </tbody> </table>		Controller LEDs	Vloop Fully Loaded	12 Vdc	24 Vdc	Use Case 1		OFF	1.6 W	1.5 W	Use Case 2	OFF	ON	5.1 W	4.9 W	Use Case 3		ON	5.2 W	5.0 W
		Controller LEDs	Vloop Fully Loaded	12 Vdc	24 Vdc																
	Use Case 1		OFF	1.6 W	1.5 W																
	Use Case 2	OFF	ON	5.1 W	4.9 W																
Use Case 3		ON	5.2 W	5.0 W																	
	<ul style="list-style-type: none"> SCADAPack 357E typical power consumption: up to 8.9 W (with up to 7 analog input/output loops powered from Vloop supply) 																				
Power Outputs	Vloop <ul style="list-style-type: none"> Maximum 140 mA at 12 Vdc (booster turned off) or 24 Vdc (booster turned on); can power up to 7 analog input/output loops 																				
Controller Board																					
Analog Inputs	5, user-selectable 0...10 Vdc or 0...20 mA plus over range 1, 0...32.7 Vdc (15-bit) for DC supply monitoring <ul style="list-style-type: none"> Resolution: 15-bit ADC (15-bit over the measurement range in 10 Vdc, 14-bit in 20 mA) Accuracy: ±0.1% of full scale at 25 °C (77 °F), ±0.2% over temperature range Input Resistance: 250 Ω or 20 kΩ in 20 mA or 10 Vdc configurations (60 kΩ for 32.768 V) Normal rejection mode: 27 dB at 60 Hz Sampling rate: 170 ms 																				

Selection Guide

SCADAPack E

SCADAPack 350E | 357E Specifications cont'd



Controller Board cont'd

Analog Outputs	<p>2 (optional), 0...20 mA, 4...20 mA, voltage output may be accomplished with external precision resistor</p> <ul style="list-style-type: none"> Resolution: 12-bit over 0...20 mA range Accuracy: $\pm 0.15\%$ at 25 °C (77 °F), $\pm 0.35\%$ of full scale over temperature range Response Time: less than 10 μs for 10% to 90% signal change Power Supply: 12...30 Vdc, external Power (Current) Requirements: 10 mA plus up to 20 mA per output Isolation: isolated from RTU logic and chassis Load Range: 12 Vdc: 0...375Ω, 24 Vdc: 0...925 Ω Logic End-Of- Scan to Signal Update Latency: typically 18... 27 ms Status & Reporting: output value Controls: Direct Operate, Select Before Operate
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Digital Inputs/Outputs	<p>8, user-selectable as inputs or outputs (open drain)</p> <p>As Digital Inputs</p> <ul style="list-style-type: none"> Dry contact Time stamping: 170 ms <p>As Digital Outputs</p> <ul style="list-style-type: none"> Sinking MOSFET output, rated 30 V, 0.5 A, ground return connected to Chassis Ground
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Counter Inputs	<ul style="list-style-type: none"> 1, 0...10 Hz (dry contact)
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Internal Power Monitor	<ul style="list-style-type: none"> 2, 0...10 kHz (turbine or dry contact)
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Internal Temperature Monitor	Controller temperature range -40...+75 °C (-40...+167 °F)
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I/O Board (357E only)

Analog Inputs	<p>8, software-configurable to 0...20, 4...20 mA , 0...5 or 0...10 Vdc</p> <p>Same features as for the 5 analog inputs located on the controller board (see above) except isolation:</p> <ul style="list-style-type: none"> Isolation: 500 Vac from logic and chassis
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Analog Outputs	<p>2 (optional), 0...20/4...20 mA, voltage output may be accomplished with external precision resistor, same features as for the analog outputs located on the controller board</p>
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Digital Inputs	<p>32, 12...24 Vdc</p> <ul style="list-style-type: none"> Turn on voltage: 9 Vdc (minimum), Turn off voltage: 4 Vdc (maximum) Over-voltage tolerance: 150% sustained over-voltage without foreseeable damage DC input current: 0.67 mA at 24 Vdc Time-stamping : 170 ms Isolation: in group of 8, 1500 Vac from logic supply and chassis
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Digital Outputs	<p>16, relays (Form A)</p> <ul style="list-style-type: none"> 4 contacts share one common Isolation : isolated in groups of 4. Isolated from RTU logic, RTU chassis and other groups to 1500 Vac Maximum Switching Voltage: 30 Vdc or 250 Vac (resistive) Maximum Switching Load: 150 W or 1250 VA (5 A) Controls: Direct Operate, Select Before Operate, Trip/Close, Latch, Pulse
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Additional I/O

I/O Expansion	<p>Supported modules :</p> <ul style="list-style-type: none"> 5304, 5405, 5414, 5415, 5506, 5606, 5607, 5608, 5610 <p>Maximum number of modules per unit:</p> <ul style="list-style-type: none"> SCADAPack 350E: 8 (*) SCADAPack 357E: 7 (*) <p>(*): to reach this limit, additional power supply modules are required</p>
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Selection Guide

SCADAPack E



SCADAPack 350E | 357E Model Code

Code	Select: Controller
TBUP350	350E, Controller 32-bit, 5 Analog Inputs, 8 Digital I/O, 3 High Speed Counter Inputs
TBUP357	357E, Controller 32-bit, comes with the above plus additional I/Os
Code	Select: Firmware Platform
E	E SCADAPack E Firmware (Configuration Software included), executes two IEC 61131 kernels, Workbench required
Code	Select: SCADA Security
A	None
B	AGA-12 Encryption for DNP3 (Security Administrator application required)
C	DNP3 Secure Authentication SAV2 (Security Administrator application required)
D	DNP3 Secure Authentication with AGA-12 (Security Administrator application required)
Code	Select: Protocol Option
5	DNP3 Serial/IP mstr/slave/peer-to-peer, IEC 60870-5-101/104 Slave, Modbus RTU/TCP mstr/slave, TCP/IP, DF1 mstr
Code	Select: License Option
5	DNP3 Data Concentrator License (limit of 500 points from 10 IEDs), supports multiple DNP3 Masters (up to 3)
7	Adds WITS* protocol (available for SCADA Security Code C and Certification Code S only) Code Select : Analog Inputs
Code	Select: Analog Inputs
A	P350 : 5 selectable as 0...10 Vdc or 0...20 mA *P357 : adds 8 selectable as 0...20 mA, 4...20 mA, 0...5 Vdc or 0...10
Code	Select: Digital Inputs/Outputs
A	P350 only: 8 Digital I/O, individually selectable as digital input (Dry Contact) or digital output (Open Drain)
B	P357 only: adds 32 digital inputs (12...24 Vdc), 16 digital outputs (Dry Contact relay for Class I Div 2, Solid State relay for IECEx/ATEX)
Code	Select: Analog Outputs
0	None
1	2 channel Analog Output, 0..20 mA, external DC supply
2	P357 only: 4 channel Analog Output, 0..20 mA, external DC supply

Footnote: * WITS protocol (Water Industry Telemetry Standard)

Selection Guide

SCADAPack E



SCADAPack 350E | 357E Model Code cont'd

Code	Select : Integrated Communications Interfaces
0	None
	FreeWave & MDS Radios (requires one RS232 port)
1	900 Mhz FreeWave Spread Spectrum Radio (not RoHS compliant)
A	900 MHz MDS Spread Spectrum Radio (not RoHS compliant)
	Trio Radios - 900 MHz (requires one RS232 port)
B	900 MHz Trio Spread Spectrum Radio with encryption, 902-928 MHz (FCC / IC)
C	900 MHz Trio Spread Spectrum Radio with encryption, 915-928 MHz (AUS)
D	900 MHz Trio Spread Spectrum Radio, 915-928 MHz (BRAZIL)
E	900 MHz Trio Spread Spectrum Radio, 921-928 MHz (NZ)
	Trio Radios - 2.4 GHz (requires one RS232 port)
J	2.4 GHz Trio Spread Spectrum Radio, ETSI/100 mW, ATEX (EUROPE)
K	2.4 GHz Trio Spread Spectrum Radio with Encryption, 500 mW (CANADA, USA & AUSTRALIA)
L	2.4 GHz Trio Spread Spectrum Radio, 500 mW (OUTSIDE OF EUROPE, CANADA, USA & AUSTRALIA)
Code	Select: Certifications
S	With FCC, UL508, CE marking and RCM
X	Adds IECEx/ATEX Class I, Zone 2
U	Adds cCSAus Nonincendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D

Notes: Accessories sold separately. This product is RoHS-compliant. FreeWave & MDS radios are not RoHS-compliant.

Selection Guide

SCADAPack E



SCADAPack 530E | 535E Specifications

Controller	
Processor	SPEAr 1380 32-bit dual-core Cortex A9 microcontroller, up to 600 MHz
Memory	<ul style="list-style-type: none"> 128 MB NAND FLASH, 128 MB DDR3 RAM Non-Volatile RAM CMOS SRAM with lithium battery retains contents for 2 years with no power
Event Logging Capacity (events)	40,000 (this number decreases if the database is greater than 10,000 points)
Database Capacity (points)	Up to 20,000 (this number decreases if the event pool is above 7,000 events)
Data Concentrator Capacity (points)	Approximately 15,000
Data Concentrator Capacity (devices)	Approximately 100
File System Typical Storage	Internal: 10 MB; External: 32 GB (on optional memory stick)
Communications	
Serial Ports: Serial1, Serial2	RS-232 port, 8-pin modular RJ45 jack, full or half duplex with RTS/CTS control and operator interface power control, supports baud rates up to 115,200 bps. Rated to ±15 kV (IEC 61000-4-2, Air Discharge) static protection
Serial Ports: Serial3, Serial4	<ul style="list-style-type: none"> RS-232 port, 8-pin modular RJ45 jack, full or half duplex, or RS-485 port, 2-wire, half-duplex, supports baud rates up to 115,200 bps In RS-232 mode, rated to ±15 kV (IEC 61000-4-2, Air Discharge) static protection
Embedded Wireless	<ul style="list-style-type: none"> The controller board is fitted with Socket Modem support, for future use
Serial Protocols	DNP3 level 4 slave/master and peer-to-peer, IEC 60870-5-101 slave, Modbus slave/master, DF1 master
Ethernet Ports: Eth1, Eth2, Eth3	8-pin modular RJ45 jack, 10/100 Mbps UTP (10/100 Base-T), transformer-isolated
IP Protocols	<ul style="list-style-type: none"> DNP3 level 4 in TCP Master/Slave, UDP Master/Slave and peer-to-peer, IEC 60870-5-104 Slave, Modbus/TCP Server, Modbus/ TCP Client, Modbus RTU in TCP Client NTP Client/Server, Telnet Server, FTP Server, BOOTP Serve Can simultaneously report to up to 29 independent masters (3 in DNP3, 2 in IEC 60870-5-5-101/104, 20 in Modbus TCP and 4 in Modbus RTU) and connect to up to 100 remote devices in DNP3 peer-to-peer
Master - Slave Capability	<ul style="list-style-type: none"> As a data concentrator it can manage up to 100 local or remote DNP3 slaves, and up to 100 local slaves communicating with Modbus RTU, Modbus TCP or DF1 serial
USB Device	USB 2.0-compliant "B"-type receptacle, for local configuration
USB Host	USB 2.0-compliant "A"-type receptacle, supports USB devices up to 32GB (specific memory sticks supported)

Selection Guide

SCADAPack E



SCADAPack 530E | 535E Specifications cont'd

General	
Logic Control	IEC 61131-3 SCADAPack Workbench programming suite (LD, ST, FBD & SFC)
I/O Terminations	<ul style="list-style-type: none"> SCADAPack 530E: 11-pole connector, 0.0810...3.31 mm² (28...12 AWG), solid or stranded SCADAPack 535E: 5, 6, 7, 9, 11-pole connectors, 0.0810...3.31 mm² (28...12 AWG), solid or stranded
Dimensions	<ul style="list-style-type: none"> SCADAPack 530E: 150.5 mm wide x 134.8 mm high x 74.9 mm deep (5.93 in. x 5.31 in. x 2.95 in.) SCADAPack 535E: 150.5 mm wide x 182.3 mm high x 86.5 mm deep (5.93 in. x 7.18 in. x 3.41 in.)
Packaging	Corrosion-resistant zinc-plated steel with black enamel paint
Environment	<ul style="list-style-type: none"> -40...+70 °C (-40...+158 °F) operating, -40...+85 °C (-40...+185 °F) storage 5% RH to 95% RH, non-condensing
Shock & Vibration	IEC 60068-2-27 (tested up to 15 g), IEC 60068-2-6
Warranty	3 years on parts and labor

Power

Rated Voltage	12...30 Vdc, 5 W typical. Limit voltage: 11.5...32 Vdc; turn on voltage: 10...11.5 Vdc; turn off voltage: 9...10 Vdc
Maximum Power	SP530E + 4 x 6601 expansion IO modules + USB: 8.7 W
	SP530E (Controller) 3.7 W SP535E (Controller with integrated IO) 4.8 W 6601 (Expansion IO) 1.1 W USB (5 Vdc at 100mA) 0.6 W Serial port (5 V at 250mA) 1.5 W For analog output power requirements see the Analog Output specifications

Power Consumption (W)

Power Requirements	Voltage Input Vdc	530E	535E	535E + 6601	535E + 2 x 6601	535E + 3 x 6601
		11.5	3.0	4.1	5.2	6.3
	13.8	3.0	4.1	5.2	6.3	7.4
	24	3.4	4.5	5.6	6.7	7.8
	30	3.7	4.8	5.9	7.0	8.1

Certifications

EMC & Radio Frequency	<ul style="list-style-type: none"> FCC 47 CFR Part 15, Subpart B ICES-003 Issue 5 August 2012 CE and RCM markings
General Safety	UL 508
Hazardous Locations	<ul style="list-style-type: none"> cCSAus Non incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D IECEX/ATEX Class I, Zone 2

Selection Guide

SCADAPack E



SCADAPack 530E | 535E Specifications cont'd

Controller board (530E and 535E)	
Digital Inputs	2, 12...24 Vdc <ul style="list-style-type: none"> • Turn on voltage: 8 Vdc (minimum), Turn off voltage: 4 Vdc (maximum) • Over-voltage tolerance: 150% sustained over-voltage without foreseeable damage • DC input current: 0.4 mA at 12 Vdc, 0.8 mA at 24 Vdc • Time stamping: 10 ms • Ground return connected to Chassis Ground
Digital Output	1, Sinking MOSFET output, rated 30 V, 0.5 A, ground return connected to Chassis Ground
Internal Power Monitor	Power input - analog input and low indication, onboard lithium battery -
Internal Temperature Monitor	Controller temperature range -40...+75 °C (-40...+167 °F)
I/O board (535E and 6601 standalone module)	
Analog Inputs	6, dipswitch-configurable to 4...20 mA, 0...20 mA, 1...5 V, or 0...5 V <ul style="list-style-type: none"> • Uni-polar, differential, voltage or current • Resolution: 24-bit ADC (16-bit over the measurement range) • Accuracy: $\pm 0.1\%$ of full scale at 25 °C (77 °F), $\pm 0.2\%$ over temperature range • Isolation: 250 Vac isolation from channel to channel and from rPAC logic and chassis • Input Resistance: 250 Ω or 800 kΩ in current/voltage configurations • Under range: 4...20 mA measures to 0 mA • Common Mode Rejection: -80 dB (50/60 Hz) • 30 ms sampling rate
Analog Outputs	2 (optional), 0...20 mA, 4...20 mA, voltage output may be accomplished with external precision resistor <ul style="list-style-type: none"> • Uni-polar • Resolution: 12-bit over 0...20 mA range • Accuracy: $\pm 0.15\%$ at 25 °C, $\pm 0.35\%$ of full scale over temperature range • Response Time: less than 10 μs for 10% to 90% signal change • Power Supply: 12...30 Vdc, external • Power (Current) Requirements: 10 mA plus up to 20 mA per output • Isolation: transformer, 500 Vdc maximum to RTU logic and chassis • Load Range: 12 Vdc: 0...475Ω, 24 Vdc: 0...1075 Ω, 30 Vdc: 250...1375 Ω • Logic End-Of- Scan to Signal Update Latency: less than 10 ms (typically 5...8 ms) • Status & Reporting: Open Loop status, output value poll • Controls: Direct Operate, Select Before Operate
Digital Inputs	16, 12...24 Vdc <ul style="list-style-type: none"> • Turn on voltage: 9 Vdc (minimum), Turn off voltage: 4 Vdc (maximum) • Over-voltage tolerance: 150% sustained over-voltage without foreseeable damage • DC input current: 0.9...1.2 mA at 12 Vdc, 2.1...2.4 mA at 24 Vdc • Time stamping: 1 ms Sequence of Event • Isolation: in 2 groups of 8. Isolation from RTU logic and chassis: 1000 Vac/1500 Vdc

Selection Guide

SCADAPack E



SCADAPack 530E | 535E Specifications cont'd

I/O board (535E and 6601 standalone module) cont'd

Digital Outputs	8, relays (2 Form C, 6 Form A) <ul style="list-style-type: none"> • Form C: SPDT, separate Normally Open/Normally Closed/Common • Form A: Normally open, one common • Isolation: 500 Vac minimum to RTU logic • Maximum Switching Voltage: 30 Vdc or 25 Vac • Maximum Switching Load: 60 W or 50 VA (2A) • Status & Reporting: Individual relay pole feedback to software, output state poll • Controls: Direct Operate, Select Before Operate, Trip/Close, Latch, Pulse
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Counter Inputs	8, shared with digital input channels 1 to 4: 0...1.5 kHz, 5 to 8: 0...150 Hz
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Additional I/O

I/O Expansion	Supported modules: <ul style="list-style-type: none"> • 5304, 5405, 5414, 5415, 5506, 5606, 5607, 5608, 5610, 6601 Maximum number of modules per unit: <ul style="list-style-type: none"> • SCADAPack 530E: 16* • SCADAPack 535E: 15* Footnote: * to reach this limit, additional power supply modules are required
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Selection Guide

SCADAPack E



SCADAPack 530E | 535E Model Code

Code	Select: Controller
TBUP530	SCADAPack 530E, 32-bit controller, Dual Core
TBUP535	SCADAPack 535E, 32-bit controller, Dual Core, comes with additional I/O
Code	Select: Firmware Platform
E	E SCADAPack E Firmware (Configuration Software included), executes two IEC 61131 kernels, Workbench required
Code	Select: SCADA Security
A	None
B	AGA-12 Encryption for DNP3 (Security Administrator application required)
C	DNP3 Secure Authentication SAV2 (Security Administrator application required)
D	DNP3 Secure Authentication with AGA-12 (Security Administrator application required)
Code	Select: Protocol Option
5	DNP3 Serial/IP mstr/slave/peer-to-peer, IEC 60870-5-101/104 Slave, Modbus RTU/TCP mstr/slave, TCP/IP, DF1 mstr
Code	Select: License Option
6	Full DNP3 Data Concentrator License, Multiple DNP3 Master License (up to 3 Masters)
Code	Select: Analog Inputs
A	P530: None P535: adds 6, shipped selectable as 0...20 mA or 4...20 mA
B	P535 only: adds 6, shipped selectable as 0...5 Vdc or 1...5 Vdc
Code	Select: Digital Inputs/Outputs
A	P530: 2 Digital Inputs (12/24 Vdc), 1 Digital Output (open collector)
B	P535: 16 Digital Inputs (12/24 Vdc) and 8 Dry Contact Relay outputs (6 Form A, 2 Form C)
Code	Select: Analog Outputs
0	None
1	P535 only: 2 channel Analog Output option, shipped selectable as 0...20 mA or 4...20 mA, external DC supply
Code	Select : Integrated Communications Interfaces
0	None
Code	Selection: Certifications
S	With FCC, UL508, CE marking and RCM
X	Adds IECEx/ATEX Class I, Zone 2
U	Adds cCSAus Nonincendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D

Selection Guide

SCADAPack E



I/O Expansion Modules (Supported by SCADAPack 530E & 535E Controllers only) Model Codes

Part No.	I/O Expansion Modules (complete the following part numbers with S, U or X depending on certification required)
TBUX297583____	Model 6601-20 mA, 16 D/I 12...24 Vdc, 8 Dry Contact relay O/P, 6 config. A/I (0/4...20 mA)
TBUX297584____	Model 6601-5 V, 16 D/I 12...24 Vdc, 8 Dry Contact relay O/P, 6 config. A/I (0/1...5 Vdc)
TBUX297585____	Model 6601-20 mA, 16 D/I 12...24 Vdc, 8 Dry Contact relay O/P, 6 config. A/I (0/4...20 mA), 2 A/O (external DC supply)
TBUX297586____	Model 6601-5 V, 16 D/I 12...24 Vdc, 8 Dry Contact relay O/P, 6 config. A/I (0/1...5 Vdc), 2 A/O (external DC supply)

I/O expansion and distributed architecture

1. Depending on the options chosen (with or without the future socket modem), SCADAPack 535E embedded DC supply can power either two (2) or four (4) 6601 IO expansion modules. When more 6601 IO expansion modules are required in any of these two configurations, then it is necessary to use one of our power supply extensions (one unit can power up to 8x 6601 modules).

2. SCADAPack 535E can be used as a Remote I/O master, managing up to 15 SCADAPack ES slave units: SCADAPack 535E automatically downloads the corresponding configuration into these slave devices (which is very useful when replacing devices, as the operator does not have to do any firmware setting).

Notes: Accessories sold separately. This product is RoHS-compliant.

Selection Guide

I/O Expansion Modules



5103 Uninterruptible Power Supply Specifications

General	
AC/DC Input	<ul style="list-style-type: none"> 16...24 Vac for 5/24 Vdc outputs operational, 24 Vac required for battery charging 14.5+/-0.5 Vdc for 5/24 Vdc outputs operational, 20 Vdc required for battery charging
DC/Battery Input	Turn on at 11.5 Vdc ± 0.3 Vdc, Turn off at 10.5 Vdc ± 0.5 Vdc, Maximum input is 36 Vdc
Input Power	35 VA maximum at 24 Vac, 1.9 A at 13.5 Vdc
Outputs	5 Vdc at 2.0 A, 24 Vdc at 0.5 A, 17 W total available from the two outputs 11...14 Vdc battery charger at 200 mA (factory adjusted to 13.5 Vdc for gelled electrolyte lead/acid battery)
Mode	Isolated switch-mode, 30 KHz switch frequency
Line Regulation	< 1% over operating range
Load Regulation	<ul style="list-style-type: none"> 5 Vdc output: 5.15 Vdc ±1% over operating range 24 Vdc output: ±17%
Output Ripple	<ul style="list-style-type: none"> 5 Vdc output: < 10 mV at 20 °C (68 °F) 24 Vdc output: < 50 mV at 20 °C (68 °F)
Visual Indicators	5 Vdc and 24 Vdc green LEDs show power status
Power Requirements	35 VA maximum @ 24 Vac, 1.9 A @ 13.5 Vdc
Terminations	10-pole, removable terminal block, 12...22 AWG, 15 amp contacts
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	<ul style="list-style-type: none"> 5% RH to 95% RH, non-condensing -40...+60 °C (-40...+140 °F)
Safety	<p>Non-Incendive Electrical Equipment for Use in Class I, Division 2 Groups A, B, C and D Hazardous Locations.</p> <p>Temperature Code T4 at 60 °C ambient. UL Listed to the following standards:</p> <ul style="list-style-type: none"> CSA Std. C22.2 No. 213-M1987 - Hazardous Locations CSA Std. C22.2 No. 142-M1987 - Process Control Equipment UL Std. No. 1604 - Hazardous (Classified) Locations UL Std. No. 508 - Industrial Control Equipment

5103 Uninterruptible Power Supply Model Code

Part Number	Model	Description
TBUX297102	5103	SCADAPack Uninterruptible power supply

Accessories

Part Number	Model	Description
TBUX294034	1206	12 Vdc 6 AH gelled electrolyte battery
TBUX294000	ACX-24	120/24 Vac, 40 VA transformer
TBUX294167	ACX-24E	220/24 Vac, 40 VA transformer

Notes: Accessories sold separately. This product is RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules



5201 RS-485 Communication Controller Specifications

General	
Memory	64 kBytes total, 32 kBytes CMOS RAM, 64 kBytes EPROM
Communication Port	RS-485, 2-wire half duplex, 4-wire full/half duplex, optional termination resistors
Baud Rates	9600, 19200, 38400, 115200
Parity	None
Word Length & Stop Bits	8 bits, 1 stop bit
Cable Length	Maximum 1200 m (4000 feet)
Protocol	TeleBUS™ (compatible with Modbus RTU and Modbus ASCII)
Protocol Modes	Slave or master
Slave Addresses	Switch-configurable from 1...255
Physical I/O Capacity	64 digital I/O, 64 analog inputs, 32 analog outputs, maximum 40 I/O modules
Visual Indicators	<ul style="list-style-type: none"> RS-485 received data LED , RS-485 transmitted data LED I/O module LED power status LED, Status LED (shows functional status)
Push-button	I/O Module LED Power toggle
Status Output	Opto coupler open collector transistor, 30 Vdc, 60 mA, opens on fault
Power Requirements	5 Vdc @ 130 mA
Terminations	8-pole, removable terminal block, 12...22 AWG, 15 A contacts
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing; -40...60 °C (-40...140 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5201 RS-485 Communication Controller Model Code

Part Number	Model	Description
TBUX297101	5201	RS-485 Communication controller

Notes: Accessories sold separately. This product is not RoHS-compliant.

Selection Guide

I/O Expansion Modules



5202 RS-232 Communication Controller Specifications

General

Processor	M37702 16-bit CMOS microcontroller, 14.7546 MHz, clock integrated watchdog timer
Memory	64 kBytes total, 32 kBytes CMOS RAM, 64 kBytes EPROM
Communication Port	RS-232, Data Terminal Equipment (DTE), DE-9P male connector
Baud Rates	300, 600, 1200, 2400, 4800, 9600, 19200, 38400
Parity	None
Word Length & Stop Bits	8 bits, 1 stop bit
Duplex	Full or half with RTS/CTS control
Cable Length	Maximum 15.2 m (50 feet)
Protocol	TeleBUS™ (compatible with Modbus RTU and Modbus ASCII)
Protocol Modes	Slave or master
Slave Addresses	Switch-configurable from 1...255
Physical I/O Capacity	64 digital I/O, 64 analog inputs, 32 analog outputs, maximum 40 I/O modules
Visual Indicators	<ul style="list-style-type: none"> • RS-232 received data (RxD) LED, RS-232 transmitted data (TxD) LED • RS-232 clear to send (CTS) LED, RS-232 request to send (RTS) LED • RS-232 data carrier detect (DCD) LED, I/O module LED power status LED • Status LED (shows functional status)
Push-button	I/O Module LED Power toggle
Status Output	Opto coupler open collector transistor, 30 Vdc, 60 mA, opens on fault
Power Requirements	5 Vdc @ 60 mA
Terminations	2-pole, removable terminal block, 12 to 22 AWG, 15 A contacts
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing; -40...60 °C (-40...140 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5202 RS-232 Communication Controller Model Code

Part Number	Model	Description
TBUX297111	5202	RS-232 Communication controller

Notes: Accessories sold separately. This product is not RoHS-compliant.

Selection Guide

I/O Expansion Modules



5302 Analog Output Module Specifications

General

Output Points	4: (2 when used with 5201 and 5202 controllers)
Output Signal Ranges	0...20 mA or 4...20 mA, switch configurable
Output Type	Single-ended regulation on positive side with common negative return
Maximum Load Resistance	1000 Ω with 24 Vdc loop power, 400 Ω with 12 Vdc loop power, 250 Ω with 9 Vdc loop power
Isolation	1500 Vac field to logic
D/A Resolution	12-bit over the 0...20 mA ranges
Absolute Accuracy	+/- 0.05% of full scale at 25 °C (77 °F), +/- 0.2% of full scale over temperature range
Noise and Ripple	0.04% maximum
Transient Protection	2.5 kV surge withstand capability as per ANSI/IEEE C37.90.1-1989
Response Time	250 ms typical for 10% to 90% signal change
Addressing	DIP switch-configurable
Power Requirements	5 Vdc @ 45 mA, 9...30 Vdc @ 15 mA quiescent plus 80 mA max.
Terminations	10-pole, removable terminal block, 12 to 22 AWG, 15 A contacts
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing; -40...70 °C (-40...158 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5302 Analog Output Module Model Code

Part Number	Model	Description
TBUX297176	5302	4-Channel Analog Output Module

Notes: Accessories sold separately. This product is RoHS-compliant. Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules

5304 Analog Output Module Specifications



General

Output Points	4
Output Modes	<ul style="list-style-type: none"> Current mode, jumper link selectable Voltage mode, 5 Vdc full scale, jumper link selectable Voltage mode, 10 Vdc full scale, jumper link selectable
Output Signal Ranges	<ul style="list-style-type: none"> 0...20 mA or 4...20 mA, switch configurable 0...5 Vdc or 1...5 Vdc, switch configurable, 0...10 Vdc or 2...10 Vdc, switch configurable
Output Type	Single-ended regulation on positive side with common negative return
Maximum Load Resistance	1000 Ω with 24 Vdc loop power, 400 Ω with 12 Vdc loop power, 250 Ω with 9 Vdc loop power
Minimum Load Resistance in Voltage Mode	<ul style="list-style-type: none"> 2 kΩ for 10 Vdc full scale, with min 20 Vdc power applied 1 kΩ for 5 Vdc full scale, with min 15 Vdc power applied
Isolation	500 Vac field to logic
D/A Resolution	12-bit over the 0...20 mA / 0...5 Vdc/ 0...10 Vdc ranges
Absolute Accuracy	+/- 0.05% of full scale at 25 °C (77 °F), +/- 0.2% of full scale over temperature range
Noise and Ripple	0.04% maximum
Transient Protection	<ul style="list-style-type: none"> 2.5 kV surge withstand capability as per ANSI/IEEE C37.90.1-1989 Inductive load protection diodes included
Response Time	2 ms typical to 90% signal change
Addressing	DIP switch-configurable
12-24 Vdc Operating Voltage Limits	<ul style="list-style-type: none"> 9 Vdc or (20 mA x load resistance) +4 Vdc (whichever is greater) in current mode (1.5 x Range / load resistance) + Range + 2.5 Vdc in voltage mode, 30 Vdc maximum 6 mA min., 25 mA maximum
Power Requirements	<ul style="list-style-type: none"> 15 mA quiescent plus 80 mA max. in current mode 15 mA quiescent plus 20 mA max. in voltage mode
Terminations	10-pole, removable terminal block, 12 to 22 AWG, 15 A contacts
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing; -40...70 °C (-40...158 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5304 Analog Output Module Model Code

Part Number	Model	Description
TBUX297248	5304-20	4-channel isolated analog output module, 0.20 mA
TBUX297252	5304-10	4-channel isolated analog output module, 0...10 Vdc
TBUX297253	5304-5	4-channel isolated analog output module, 0...5 Vdc
TBUX297254	5304-C	4-channel isolated analog output module, Custom (specify range of each input)

Notes: Accessories sold separately. This product is RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules

5401 Configurable Digital I/O Module Specifications



General

Number of Inputs or Outputs	8
Voltage Range	See relay specifications below
Load Current	See relay specifications below
Surge Current	See relay specifications below
Off-State Leakage	See relay specifications below
Transient Protection	Integral to the solid-state relay
Response Time	See relay specifications below
Isolation	1500 Vac
Addressing	DIP switch-configurable
Input/Output Assignment	DIP switch selection for each I/O point
Power Requirements	5 Vdc @ 90 mA
Visual Indicators	8: LEDs
Field Terminations	2: 8-pole, removable terminal block, 12...22 AWG, 15 A contacts
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C or (-40...140 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5401 Configurable Digital I/O Module Model Code

Part Number	Model	Solid-State Relays for use with Model 5401
TBUM297122	IACM-5	90...140 Vac/Vdc input relay
TBUM297132	IACM-5A	180...280 Vac/Vdc input relay
TBUM297133	IACM-5E	10...32 Vdc, 15...32 Vac, no polarity
TBUM297124	IDCM-5	3...32 Vdc input relay
TBUM297123	OACM-5	24...140 Vac output relay, 3 A
TBUM297134	OACM-5H	24...280 Vac output relay, 5 A
TBUM297125	ODCM-5	3...60 Vdc output relay, 3 A
TBUM297135	ODCM-5A	10...200 Vdc, 1 A
Part Number	Model	Description
TBUX297121	5401	8-point input or output module (requires solid-state relays)

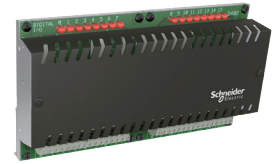
Notes: Accessories sold separately. This product is not RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules

5402 Configurable Digital I/O Module Specifications



General

Number of Inputs or Outputs	16
Voltage Range	See relay specifications below
Load Current	See relay specifications below
Surge Current	See relay specifications below
Off-State Leakage	See relay specifications below
Transient Protection	Integral to the solid-state relay
Response Time	See relay specifications below
Isolation	1500 Vac
Addressing	DIP switch-configurable
Input/Output Assignment	DIP switch selection for each I/O point
Power Requirements	5 Vdc @ 150 mA
Visual Indicators	16: LEDs
Field Terminations	4: 8-pole, removable terminal block, 12...22 AWG, 15 A contacts
Dimensions	215 mm wide x 118 mm high x 44 mm deep (8.37 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C or (-40...140 °F)
Safety	Class 1, Division 2 for use in hazardous locations

5402 Configurable Digital I/O Module Model Code

Part Number	Model	Solid-State Relays for use with Model 5402
TBUM297122	IACM-5	90...140 Vac/Vdc input relay
TBUM297132	IACM-5A	180...280 Vac/Vdc input relay
TBUM297133	IACM-5E	10...32 Vdc, 15...32 Vac, no polarity
TBUM297124	IDCM-5	3...32 Vdc input relay
TBUM297123	OACM-5	24...140 Vac output relay, 3 A
TBUM297134	OACM-5H	24...280 Vac output relay, 5 A
TBUM297125	ODCM-5	3...60 Vdc output relay, 3 A
TBUM297135	ODCM-5A	10...200 Vdc, 1 A
Part Number	Model	Description
TBUX297153	5402	16-point input or output module (requires solid-state relays)

Notes: Accessories sold separately. This product is not RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules



5403 High Level Digital Input Module Specifications

General	
Number of Inputs or Outputs	8
Voltage Range	OFF to ON transition threshold is typically 50% of full scale signal range
Over-Voltage Tolerance	150% sustained over-voltage without damage
Input Current	5 mA typical
Response Time	<ul style="list-style-type: none">OFF to ON: 7 ms typicalON to OFF: 24 ms typical
Isolation	1500 Vac in groups of 4 inputs
Addressing	DIP switch-configurable
Power Requirements	5 Vdc @ 45 mA all LEDs ON, 5 Vdc @ 25 mA with LEDs disabled
Visual Indicators	8: LEDs controlled for power reduction
Field Terminations	<ul style="list-style-type: none">1: 10-pole, removable terminal block12...2 AWG15 A contacts
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C or (-40...140 °F)
Safety	Class 1, Division 2 for use in hazardous locations

5403 High Level Digital Input Module Model Code

Part Number	Model	Signal Range
TBUX297110	5403-12	12 Vac, Vdc
TBUX297109	5403-24	24 Vac, Vdc
TBUX297107	5403-120	120 Vac, Vdc
TBUX297106	5403-240	240 Vac, Vdc

Notes: Accessories sold separately. This product is RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules



5404 High Level Digital Input Module Specifications

General	
Number of Inputs or Outputs	16
Voltage Range	OFF to ON transition threshold is typically 50% of full scale signal range
Over-Voltage Tolerance	150% sustained over-voltage without damage
Input Current	5 mA typical
Response Time	<ul style="list-style-type: none"> OFF to ON: 7 ms typical ON to OFF: 24 ms typical
Isolation	1500 Vac in groups of 4 inputs
Addressing	DIP switch-configurable
Power Requirements	5 Vdc @ 80 mA all LEDs ON, 5 Vdc @ 25 mA with LEDs disabled
Visual Indicators	16: LEDs controlled for power reduction
Field Terminations	<ul style="list-style-type: none"> 2: 10-pole, removable terminal block 12...2 AWG 15 A contacts
Dimensions	144 mm wide x 118 mm high x 44 mm deep (5.65 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C or (-40...140 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5404 High Level Digital Input Module Model Code

Part Number	Model	Signal Range
TBUX297158	5404-12	12 Vac, Vdc
TBUX297157	5404-24	24 Vac, Vdc
TBUX297156	5404-48	48 Vac, Vdc
TBUX297155	5404-120	120 Vac, Vdc
TBUX297154	5404-240	240 Vac, Vdc

Notes: Accessories sold separately. This product is RoHS-compliant. Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules



5405 Digital Input Module Specifications

General	
Number of Inputs or Outputs	32
Ranges	12...24 Vdc, 16...24 Vac, 120 Vac/Vdc
Over-Voltage Tolerance	150% sustained over-voltage without damage
Input Current	<ul style="list-style-type: none">6.0 mA typical @ 24 Vdc on the 24 Vdc range3.5 mA typical @ 24 Vac on the 24 Vac range2.5 mA typical @ 120 Vdc on the 120 Vdc range1.5 mA typical @ 120 Vac on the 120 Vac range
DC Input Logic Levels	<ul style="list-style-type: none">OFF to ON transition threshold is typically 7.5 Vdc on the 24 Vdc rangeOFF to ON transition threshold is typically 55 Vdc on the 120 Vdc range
AC Input Levels	<ul style="list-style-type: none">OFF to ON transition threshold is typically 6 Vac on the 24 Vac rangeOFF to ON transition threshold is typically 45 Vac on the 120 Vac range
Transient Protection	2.5 kV surge withstand capability as per ANSI/IEEE C37.90.1-1989
Isolation	<ul style="list-style-type: none">Isolated in 4 groups of 8. Inputs 0...15 are on the bottom edgeInputs 16...31 are on the top edge. Isolation 500 Vac/Vdc from chassis and logic ground
Power Requirements	5 Vdc @ 10 mA with all inputs ON
Terminations	4: 9-pole, removable terminal blocks, 12 to 22 AWG, 15 A contacts
Dimensions	144 mm wide x 127 mm high x 45 mm deep (5.65 in. x 5.00 in. x 1.88 in.)
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C or (-40...140 °F)
Addressing	Configurable with 4 DIP switches
AC/DC Operation	2: DIP switches determine AC/DC and 50/60 Hz operation
Visual Indicators	32: Red LED's, field powered. Cannot be disabled to conserve power
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5405 Digital Input Module Model Code

Part Number	Model	Description
TBUX297249	5405-120	32-point, 120 Vac discrete input module
TBUX297247	5405-24	32-point, 12...24 Vdc discrete input module

Notes: Accessories sold separately. This product is RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules



5406A Dry Contact Relay Output Module Specifications

General	
Number of Relay Outputs	16
Type	Sealed mechanical relay, Form A (normally open) contacts
Contact Ratings	<ul style="list-style-type: none"> 6A @ 250 Vac resistive loads, 6A @ 30 Vdc resistive loads 3.5 A at 30 Vdc/250 Vac inductive load (pf=0.4. L/R=7 ms), 1/4 HP 125 Vac 3 A maximum in Class 1, Division 2 hazardous locations
Operating Frequency	18,000 operations/hour mechanically, 1,800 electrically at rated load
Service Life	<ul style="list-style-type: none"> 1,500,000 operations at 0...250 mA loads, 600,000 operations at 1A resistive load 100,000 operations at 6 A resistive load, 300,000 operations at 1A inductive loads (pf=0.4) 100,000 operations at 3.5 A inductive loads (pf=0.4)
Operate Time	10 mS maximum, 5 mS typical
Release Time	10 mS maximum, 2 mS typical
Bounce Time	3 mS typical
Contact Isolation	1000 Vac
Logic Isolation	1500 Vac
Addressing	DIP switch-configurable
Power Requirements	<ul style="list-style-type: none"> 5 Vdc Bus Power - 5 Vdc @ 600 mA with all LEDs and all relays energized External Power - 5 Vdc @ 65 mA with all LEDs and all relays energized
Visual Indicators	16: LEDs, controlled for power reduction
Field Terminations	<ul style="list-style-type: none"> 4: 8-pole, removable terminal block, 12...22 AWG, 15 A contacts Additional three pins on connector P3 to support external power
Dimensions	215 mm wide x 118 mm high x 44 mm deep (8.37 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C or (-40...140 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5406A Dry Contact Relay Output Module Model Code

Part Number	Model	Description
TBUX297284	5406A	16-point dry contact relay output module

Notes: Accessories sold separately. This product is RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

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I/O Expansion Modules

5407 Dry Contact Relay Output Module Specifications



General

Number of Relay Outputs	8
Type	<ul style="list-style-type: none">Sealed mechanical relay, Form A (normally open) contactsCan be modified for Form B contacts
Contact Ratings	<ul style="list-style-type: none">6 A @ 250 Vac resistive loads, 6 A @ 30 Vdc resistive loads3.5 A at 30 Vdc/250 Vac inductive load (pf=0.4. L/R=7 ms), 1/4 HP 125 Vac3 A maximum in Class 1, Division 2 hazardous locations
Operating Frequency	18,000 operations/hour mechanically, 1,800 electrically at rated load
Service Life	<ul style="list-style-type: none">1,500,000 operations at 0...250 mA loads, 600,000 operations at 1A resistive load100,000 operations at 6 A resistive load, 300,000 operations at 1A inductive loads (pf=0.4)100,000 operations at 3.5 A inductive loads (pf=0.4)
Operate Time	10 mS maximum, 5 mS typical
Release Time	10 mS maximum, 2 mS typical
Bounce Time	3 mS typical
Contact Isolation	1000 Vac
Logic Isolation	1500 Vac
Addressing	DIP switch-configurable
Power Requirements	5 Vdc @ 300 mA all LEDs and all relays energized
Visual Indicators	8: LEDs, controlled for power reduction
Field Terminations	2: 8-pole, removable terminal block, 12...22 AWG, 15 A contacts
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C or (-40...140 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5407 Dry Contact Relay Output Module Model Code

Part Number	Model	Description
TBUX297126	5407	8-point dry contact relay output module

Notes: Accessories sold separately. This product is RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules



5408 Triac Digital Output Module Specifications

General	
Number of Triac Outputs	8
Output Voltage Range	24...240 Vac, 47...63 Hz
Load Current	0.75 A at 60 °C (140 °F), 1.0 A at 25 °C (77 °F)
Surge Current	55 A for 1 cycle @ 60 Hz
Triac Rating	600 Vac @ 8.0 A
Gate Control	Zero crossing turn ON/turn OFF
OFF-State Leakage	<ul style="list-style-type: none"> 0.5 mA typical, 0.75 mA maximum at 115 Vac 1.0 mA typical, 1.5 mA maximum at 240 Vac
Transient Protection	Integral 275 V MOV on each output
Snubber	RC snubber on each output allows inductive loads
Response Time	1/2 AC cycle maximum, 8.3 ms @ 60 Hz
Isolation	1500 Vac
Addressing	DIP switch-configurable
Power Requirements	<ul style="list-style-type: none"> 5 Vdc @ 120 mA with all LEDs and outputs turned on 5 Vdc @ 80 mA with LEDs disabled and all outputs turned on
Visual Indicators	<ul style="list-style-type: none"> 8: red LEDs controlled for power reduction 1: green field power LED
Field Terminations	10-pole, removable terminal block, 12...22 AWG, 15 A contacts
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C or (-40...140 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5408 Triac Digital Output Module Model Code

Part Number	Model	Description
TBUX297103	5408	8-point Triac digital output module

Notes: Accessories sold separately. This product is not RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

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I/O Expansion Modules

5409 FET Digital Output Module Specifications



General

Output Points	8
Output Voltage Range	12...24 Vdc
Load Current	2 A continuous per output, 10 A total
Surge Current	8 A for 2 ms
MOSFET Rating	50 Vc, 12 A
ON-State Voltage	Drop 0.5 Vdc maximum at 2 A
OFF-State Leakage	<1 uA at 24 Vdc, 25 °C
Transient Protection	Inductive load protection diodes included
Snubber	RC snubber on each output allows inductive loads
Transient Protection	1/2 AC cycle maximum, 8.3 ms @ 60 Hz
Isolation	1500 Vac
Addressing	DIP switch-configurable
Power Requirements	<ul style="list-style-type: none">• 5 Vdc @ 120 mA with all LEDs and outputs turned on• 5 Vdc @ 80 mA with LEDs disabled and all outputs turned on
Visual Indicators	<ul style="list-style-type: none">• 8: red LEDs controlled for power reduction• 1: green field power LED
Field Terminations	10-pole, removable terminal block, 12...22 AWG, 15 A contacts
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C or (-40...140 °F)
Safety	Class 1, Division 2 for use in hazardous locations

5409 FET Digital Output Module Model Code

Part Number	Model	Description
TBUX297117	5409	8-point FET digital output module

Notes: Accessories sold separately. This product is RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules

5410 High Speed Counter/Accumulator Module Specifications



General

Counter Input Points	4
Count Length	32-bit, range is 0...4,294,967,295
Over-Voltage Protection	Transient suppressor on each input
Input Voltage Range	Typical operating inputs 5...24 Vdc, 3 Vdc minimum, 28 Vdc maximum
Input Current	8 mA typical, 13 mA maximum
Input Logic Level	OFF to ON threshold is typically 2 Vdc
Maximum Input Frequency	10 kHz with filters off, 5 kHz with quadrature counters, 60 Hz with de-bounce filters on
Maximum Pulse High Width	<ul style="list-style-type: none"> 50 microseconds (μs), 100μs with quadrature counters 8.3 milliseconds with de-bounce filters
Maximum Pulse Low Width	<ul style="list-style-type: none"> 50 microseconds (μs), 100μs with quadrature counters 8.3 milliseconds with de-bounce filters
Isolation	1500 Vac input to input, 500 Vac input to logic circuit
Addressing	DIP switch-configurable
Power Requirements	<ul style="list-style-type: none"> 5 Vdc @ 120 mA with all LEDs and outputs turned on 5 Vdc @ 80 mA with LEDs disabled and all outputs turned on
Visual Indicators	<ul style="list-style-type: none"> 4: red LEDs LED on time stretched for easy viewing controlled for power reduction
Field Terminations	8-pole, removable terminal block, 12...22 AWG, 15 A contacts
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C or (-40...140 °F)
Safety	Class 1, Division 2 for use in hazardous locations

5410 High Speed Counter/Accumulator Module Model Code

Part Number	Model	Description
TBUX297149	5410	4-point high speed counter /accumulator module

Notes: Accessories sold separately. This product is not RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules



5411 Digital Output Module Specifications

General	
Output Points	32
Output Rating	<ul style="list-style-type: none"> 1.0 A maximum 0.35 Vdc maximum drop at 1.0 A 0.05 Vdc maximum drop at 0.1 A
Transient Protection	<ul style="list-style-type: none"> 2.5 kV surge withstand capability as per ANSI/IEEE C37.90.1-1989 Inductive load protection diodes included
Isolation	<ul style="list-style-type: none"> Isolated in 2 groups of 16 Isolation 500 Vac/Vdc from chassis and logic ground
Power Requirements	<ul style="list-style-type: none"> 5 Vdc @ 150 mA with all LEDs and outputs turned on 5 Vdc @ 40 mA with all LEDs disabled and all outputs turned on 24 Vdc @ 5 mA with all outputs ON 8 Vdc min., 30 Vdc max
Visual Indicators	32: Red LEDs, can be disabled to conserve power
Field Terminations	<ul style="list-style-type: none"> 2: 9 and two 10-pole, removable terminal blocks 12...22 AWG, 15 A contacts
Dimensions	144 mm wide x 127 mm high x 45 mm deep (5.65 in. x 5.00 in. x 1.80 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing; -40...70 °C (-40...158 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5411 Digital Output Module Model Code

Part Number	Model	Description
TBUX297246	5411	32-point digital output module

Notes: Accessories sold separately. This product is RoHS-compliant.
 Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules

5414 Compact Digital Output Module Specifications



General

Number of Digital Inputs	16
Ranges	<p>Factory configurable as:</p> <ul style="list-style-type: none"> • 12/24 Vdc • 48 Vdc • 115/125 Vac • 240 Vac
Input Current	<ul style="list-style-type: none"> • 0.6 – 0.9 mA at 24 Vdc on the 12/24 Vdc range • 0.3 – 0.4 mA at 48 Vdc on the 48 Vdc range • 0.3 – 0.4 mA at 120 Vac on the 115/125 Vac range • 0.3 – 0.4 mA at 240 Vac on the 240 Vac range
Over-voltage Tolerance	150% sustained over-voltage without damage
Power Requirements	<ul style="list-style-type: none"> • 5 Vdc @ 6 mA with LEDs off • 5 Vdc @ 40 mA with LEDs on
Visual Indicators	Logic-powered LEDs. Can be disabled to conserve power
Field Terminations	12...22 AWG, 15 A contacts
Dimensions	74 mm wide x 124 mm high x 45 mm deep (2.90 in. x 4.90 in. x 1.80 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	<ul style="list-style-type: none"> • 5% RH to 95% RH, non-condensing • –40...70 °C (–40...158 °F) operation • –40...85 °C (–40...185 °F) storage
Safety	<ul style="list-style-type: none"> • Class I, Division 2, Groups A, B, C and D and CSA certified to UL508 standards • ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2) (5414-24 only) • Maximum permitted voltage in Canada or North America is 240 Vac • Maximum permitted voltage outside of Canada or North America is 30 Vac/42.4PK/60 Vdc

5414 Compact Digital Output Module Model Code

Part Number	Model	Description
TBUX297378	5414-24	12/24 Vac/Vdc, ATEX and IECEx
TBUX297379	5414-48	48 Vac/Vdc (Not available outside of North America)
TBUX297380	5414-120	115/125 Vac/Vdc (Not available outside of North America)
TBUX297381	5414-240	240 Vac/Vdc (Not available outside of North America)

Notes: Accessories sold separately. This product is RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules



5415 Compact Digital Output Module Specifications

General

Number of Digital Outputs	12
Type	<ul style="list-style-type: none">Form A Contacts (Normally open), Dry Contact or Solid State Relay variants4 contacts per common12 A maximum per common
Contact Rating	<ul style="list-style-type: none">Dry Contact Version: 3 A, 30 Vdc or 250 Vac (Resistive)Solid State Relay Version: 60 Vdc max., 3 A max. at 50 °C (122 °F), 2 A max. at 70 °C (158 °F)
Switching Capacity (Dry Contact Version)	<ul style="list-style-type: none">5 A, 30 Vdc (150 W Resistive)5 A X 250 Vac (1250 VA Resistive)5 mA Quiescent
5 V Power Requirements	<ul style="list-style-type: none">Dry Contact version: 280 mA relays on, LEDs on 260 mA relays on, LEDs offSolid State Relay version: Relays on, LEDs on - 144 mA Relays on, LEDs off - 120 mA
10-30 Vdc Power Requirements	<ul style="list-style-type: none">Dry Contact version: 1.0 W maximum with 1.65 W peak for 15 ms durationsSolid State Relay version: 1.0 W maximum
Visual Indicators	Logic-powered LEDs. Can be disabled to conserve power
Field Terminations	12...22 AWG, 15 A contacts
Dimensions	74 mm wide x 124 mm high x 45 mm deep (2.90 in. x 4.90 in. x 1.80 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	<ul style="list-style-type: none">5% RH to 95% RH, non-condensing-40...70 °C (-40...158 °F) operation-40...85 °C (-40...185 °F) storageClass I, Division 2, Groups A, B, C and D and CSA certified to UL508 standardsATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2) (5415-A only)
Safety	<ul style="list-style-type: none">Maximum permitted voltage in Canada or North America is 240 VacMaximum permitted voltage outside of Canada or North America is 30 Vac/42.4 PK/60 Vdc

5415 Compact Digital Output Module Model Code

Part Number	Model	Description
TBUX297382	5415	12-Point Compact Mechanical Relay Output Module
TBUX297384	5415-A	12-Point Compact Solid-State Relay Output Module, ATEX and IECEx

Notes: Accessories sold separately. This product is RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

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I/O Expansion Modules

5421 Toggle Switch Digital Input Module Specifications



General

Input Points	8
Signal Range	N/A (toggle switch)
Addressing	DIP switch-configurable
Power Requirements	<ul style="list-style-type: none">5 Vdc @ 45 mA with all LEDs on5 Vdc @ 5 mA with LEDs disabled
Visual Indicators	8: red LEDs, controlled for power reduction
Dimensions	108 mm wide x 118 mm high x 44 mm deep (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C (-40...140 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5421 Toggle Switch Digital Input Module Model Code

Part Number	Model	Description
TBUX297104	5421	Toggle switch digital input module

Notes: Accessories sold separately. This product is not RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

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I/O Expansion Modules

5502 Differential Analog Input Module Specifications



General

Input Points	8: voltage or current inputs, each input is switch selectable as voltage or current
Ranges	Voltage -10 Vdc...+10 Vdc, Current -20 mA...+20 mA
Resolution	Voltage 1.22 mVdc, Current 4.88 μ A
Input Resistance	Voltage > 10 M Ω , Current 250 Ω
Converter Type	13-bit plus sign successive approximation
Accuracy	<ul style="list-style-type: none">+/- 0.1% of full scale at 25 °C (77 °F)+/- 0.2% of full scale over temperature range
Isolation	<ul style="list-style-type: none">550 Vac from any input to the chassis or the system power supplies.140 Vac/200 Vdc between inputs
Common Mode Rejection	<ul style="list-style-type: none">>96 dB at 50/60 Hz, >50 dB at 10 KHz. with 1 KΩ imbalance>50 dB at 1 KHz. with 10 KΩ imbalance
Normal Mode Rejection	>45 dB at 50/60 Hz
Transient Protection	<ul style="list-style-type: none">Transient suppressors and fuses on each input2.5 kV surge withstand capability as per ANSI/IEEE, C37.90.1-1989
Over-Scale Input Capacity	12 Vdc maximum. Exceeding 12 Vdc will cause the fuse to blow
Input Fuses	1/8 A
Reading Update Time	170 ms with 60 Hz. rejection selected. 185 mS with 50 Hz rejection selected
Power Requirements	5 Vdc @ 100 mA
Terminations	2: 8-pole, removable terminal blocks, 12...22 AWG, 15 A contacts
Dimensions	144 mm wide x 118 mm high x 44 mm deep (5.65 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C (-40...140 °F)
Safety	Class 1, Division 2 for use in hazardous locations

5502 Differential Analog Input Module Model Code

Part Number	Model	Description
TBUX297211	5502	Differential analog input module

Notes: Accessories sold separately. This product is not RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

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I/O Expansion Modules



5504 Thermocouple Input Module Specifications

General	
Input Points	8 thermocouples or millivolt signals
Thermocouple Types and Ranges	<ul style="list-style-type: none"> J: -200...760 °C (-328...1400 °F) K: -270...1370 °C (-454...2498 °F) E: -270...1000 °C (-454...1832 °F) T: -270...400 °C (-454...752 °F) mVdc ±80 mVdc
Resolution	0.004 mV, approximately 0.10 °C (0.18 °F)
Input Resistance	1 MΩ
Accuracy Over -40...60°C Operating Temperature Range	<ul style="list-style-type: none"> J: ±0.20% of full scale K: ±0.20% of full scale E: ±0.15% of full scale T: ±0.50% of full scale mV ±0.15% of full scale
Cold Junction Compensation	<ul style="list-style-type: none"> ±0.5 °C (0.9 °F) maximum error from 0°...60 °C (32...140 °F) ±1 °C (1.8 °F) maximum error from -40...0 °C (-40...32 °F)
Converter Type	±20000 count, integrating
Common Mode Voltage Range	±10 Vdc can be applied to the inputs, relative to the -24 Vdc power supply input
Isolation	500 Vac from the logic power
Transient Protection	MOVs on each input
Response Time	0.5 seconds
Power Requirements	<ul style="list-style-type: none"> > 5 Vdc @ 40 mA > 20...28 Vdc @ 45 mA
Terminations	10-pole and 8-pole, two fixed terminal blocks, 12...22 AWG, 15 A contacts
Power Requirements	5 Vdc @ 100 mA
Terminations	2: 8-pole, removable terminal blocks, 12...22 AWG, 15 A contacts
Dimensions	144 mm wide x 118 mm high x 44 mm deep (5.65 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...60 °C (-40...140 °F)
Safety	Class 1, Division 2 for use in hazardous locations

5504 Thermocouple Input Module Model Code

Part Number	Model	Description
TBUX297166	5504	Thermocouple input module

Notes: Accessories sold separately. This product is not RoHS-compliant. Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

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I/O Expansion Modules

5505 RTD Input Module Specifications



General	
Input Points	4, RTD
RTD Type	100 Ω platinum, 3 and 4-wire, auto-detection and compensation
Calibration	0.00385 Ω / $^{\circ}\text{C}$ standard based on ASTM E 1137/E 1137M-04, ITS-90
Ranges	<ul style="list-style-type: none">• 5505: Can be configured to return data in Ω, $^{\circ}\text{C}$, $^{\circ}\text{F}$ or $^{\circ}\text{K}$ -200...800 $^{\circ}\text{C}$ (-328...1472 $^{\circ}\text{F}$) 0 to 500 Ω• 5503 Emulation: Dipswitch selectable 0...200 $^{\circ}\text{C}$ (32...392 $^{\circ}\text{F}$) -100...100 $^{\circ}\text{C}$ (-148...212 $^{\circ}\text{F}$) -200...0 $^{\circ}\text{C}$ (-328...32 $^{\circ}\text{F}$) 0...800 $^{\circ}\text{C}$ (32...1472 $^{\circ}\text{F}$) 0...400 $^{\circ}\text{C}$ (32...752 $^{\circ}\text{F}$) 0 to 400 Ω
Data Format	<ul style="list-style-type: none">• 5505: 32-bit floating point and 12 status bits• 5503 Emulation: 16-bit signed integer
Resolution	<ul style="list-style-type: none">• 5505: > 17-bit effective• 5505 Emulation: 15-bit
RTD Status	<ul style="list-style-type: none">• RTD is good (not open)• RTD in range• RTD 3 or 4-wire• RTD status not available in 5503 Emulation
Accuracy on RTD Ranges	Percent of full scale over operational temperature range including linearization errors: +0.10%/-0.05%
Accuracy on 0...500 Ω	Percent of full scale over operational temperature range: $\pm 0.03\%$
Excitation Current	4 mA, 7.2% duty cycle in 4-wire mode, 14.4% in 3-wire mode, 250 ms scan interval
Line Resistance	100 Ω max., in each line
Converter Type	24-bit delta-sigma
Response Time	380 ms typical for 10% to 90% signal change at minimum filter setting
Transient Protection	2.5 kV surge-withstand capability as per ANSI/IEEE C37.90.1-1989
Isolation	Isolation from logic supply and chassis, voltage 500 Vrms
5 Vdc Power Requirements	6 mA
11 - 30 Vdc Power Requirements	<ul style="list-style-type: none">• 12 Vdc operation: 4 mA plus 0.6 mA per 4-wire RTD plus 1.2 mA per 3-wire RTD• 24 Vdc operation: 2.2 mA plus 0.3 mA per 4-wire RTD plus 0.6 mA per 3-wire RTD
11...30 Vdc - Connector	Removable. Shared with RTD inputs 0-1
11...30 Vdc - Isolation	Isolation from logic supply and chassis
Terminations	8 and 10-pole, removable terminal block, 12...22 AWG, 15 A contacts

Selection Guide

I/O Expansion Modules

5505 RTD Input Module Specifications cont'd



General

Dimensions	74 mm wide x 124 mm high x 45 mm deep (2.90 in. x 4.90 in. x 1.80 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...70 °C (-40...158 °F) operation, -40...85 °C (-40...185 °F) storage
Safety	<ul style="list-style-type: none">• Non-Incendive Electrical Equipment for Use in Class I, Division2• Groups A, B C and D Hazardous Locations• ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2)

5505 RTD Input Module Model Code

Part Number	Model	Description
TBUX297318	5505	RTD input module

Notes: Accessories sold separately. This product is RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules

5506 Analog Input Module Specifications



General

Input Points	8
Ranges	<ul style="list-style-type: none">• 0...20 mA• 4...20 mA• 0...5 Vdc• 1...5 Vdc
LED Indicators	8 red LEDs, indicating current input, voltage input and under or over-range signal applied
Input Configuration	Individual inputs configurable with 4 mA/1 Vdc (20%) offset and for voltage/current operation when configured as a 5506. All inputs dipswitch-selectable with 4 mA/1 Vdc (20%) offset and for voltage/current operation when configured to emulate a 5501 module.
Input Resistance	250 Ω - Current configuration ; 66 k Ω - Voltage configuration
Resolution	15-bits over the 0...5 V and 0...20 mA measurement range
Type	Single-ended
Accuracy	$\pm 0.1\%$ of full scale at 25 $^{\circ}\text{C}$ (77 $^{\circ}\text{F}$) ; $\pm 0.2\%$ over temperature range
Transient Protection	2.5 kV surge-withstand capability as per ANSI/IEEE C37.90.1-1989
Normal Mode Rejection At 60 Hz with 60 Hz Scanning	<ul style="list-style-type: none">• 53 dB with 3 Hz filter• 50 dB with 6 Hz filter• 49 dB with 11 Hz filter• 45 dB with 30 Hz filter
Normal Mode Rejection At 50 Hz with 50 Hz Scanning	<ul style="list-style-type: none">• 73 dB with 3 Hz filter• 56 dB with 6 Hz filter• 52 dB with 11 Hz filter• 49 dB with 30 Hz filter
Response Time for 10% to 90% Signal Change (60 Hz Scanning)	<ul style="list-style-type: none">• 250 ms with 3 Hz filter• 130 ms with 6 Hz filter• 60 ms with 11 Hz filter• 30 ms with 30 Hz filter
Response Time for 10% to 90% Signal Change (50Hz Scanning)	<ul style="list-style-type: none">• 300 ms with 3 Hz filter• 140 ms with 6 Hz filter• 80 ms with 11 Hz filter• 40 ms with 30 Hz filter
Over-Scale Input Capacity (without damage)	Continuous: 0.10 A/14 Vdc on the 20 mA inputs ; 0.05 A/14 Vdc on the 5 Vdc inputs
Isolation	500 Vac isolation from logic supply and chassis
5 Vdc Power Requirements	<ul style="list-style-type: none">• 22 mA, LEDs off• 45 mA, LEDs on
11...30 Vdc Power Requirements	11 mA
11...30 Vdc - Connector	Removable, 4 positions
11...30 Vdc - Isolation	Isolation from logic supply and chassis

Selection Guide

I/O Expansion Modules

5506 Analog Input Module Specifications



General

Terminations	10-pole, removable terminal block, 12...22 AWG, 15 A contacts
Dimensions	74 mm wide x 124 mm high x 45 mm deep (2.90 in. x 4.90 in. x 1.80 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, -40...70 °C (-40...158 °F) operation, -40...85 °C (-40...185 °F) storage
Safety	<ul style="list-style-type: none">• Non-Incendive Electrical Equipment for Use in Class I, Division 2• Groups A, B C and D Hazardous Locations• ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2)

5506 Analog Input Module Model Code

Part Number	Model	Description
TBUX297319	5506	Analog input module

Notes: Accessories sold separately. This product is RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules



5521 Potentiometer Input Module Specifications

General	
Input Points	8
Resolution	12-bit
Repeatability	0.1% over temperature range
Converter Type	Successive approximation
Signal Range	N/A (multi-turn potentiometer)
Power Requirements	5 Vdc @ 20 mA
Mounting	7.5 x 35 DIN rail
Dimensions	4.25 in. wide x 4.625 in. high x 1.75 in. deep (108 mm x 118 mm x 44 mm)
Packaging	Corrosion-resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing; -40...60 °C (-40...140 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5521 Potentiometer Input Module Model Code

Part Number	Model	Description
TBUX297119	5521	Potentiometer input module

Notes: Accessories sold separately. This product is not RoHS-compliant. Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

I/O Expansion Modules

5606 | 5607 | 5608 | 5610 Analog/Digital I/O Modules Specifications



Digital and Analog Inputs/Outputs

I/O Module	5606	5607	5608	5610
Analog Inputs	8	8	-	-
Analog Outputs	2 (option)	2 (option)	-	-
Digital Inputs	32	16	12	16
Digital Outputs	16	10	6	10

I/O

Analog Inputs	<p>Software configurable to 0...20 mA, 4...20 mA, 0...5 Vdc or 0...10 Vdc</p> <ul style="list-style-type: none"> Resolution: 15-bit ADC (15-bit over the measurement range in 10 Vdc, 14-bit in 20 mA) Accuracy: $\pm 0.1\%$ of full scale at 25 °C (77 °F), $\pm 0.2\%$ over temperature range Input Resistance: 250 Ω or 20 kΩ in 20 mA or 10 Vdc configurations Isolation: 500 Vac from logic and chassis Normal rejection mode: 27 dB at 60 Hz
Analog Outputs	<p>0...20 mA, 4...20 mA, voltage output may be accomplished with external precision resistor</p> <ul style="list-style-type: none"> Resolution: 12-bit over 0...20 mA range Accuracy: $\pm 0.15\%$ at 25 °C (77 °F), $\pm 0.35\%$ of full scale over temperature range Response Time: less than 10 μs for 10% to 90% signal change Power Supply: 12...30 Vdc, external Power (Current) Requirements: 10 mA plus up to 20 mA per output Isolation: isolated from RTU logic and chassis Load Range: 12 Vdc: 0...375 Ω, 24 Vdc: 0...925 Ω, Logic End-Of- Scan to Signal Update Latency: typically 18... 27 ms
Digital Inputs	<p>12...24 Vdc</p> <ul style="list-style-type: none"> Turn on voltage: 9 Vdc (minimum), Turn off voltage: 4 Vdc (maximum) Over-voltage tolerance: 150% sustained over-voltage without foreseeable damage DC input current: 0.67 mA at 24 Vdc Isolation : in group of 8, 1500 Vac from logic supply and chassis
Digital Outputs	<p>Relays (Form A)</p> <ul style="list-style-type: none"> 4 contacts share one common Isolation : isolated in groups of 4. Isolated from RTU logic, RTU chassis and other groups to 1500 Vac Maximum Switching Voltage: 30 Vdc or 250 Vac (resistive) Maximum Switching Load: 150 W or 1250 VA (5 A)
General	
Power Supply	<ul style="list-style-type: none"> Analog Inputs & Outputs: 12 mA at 12...30 Vdc, plus analog output requirements Digital Inputs & Outputs: 650 mA at 5 Vdc, fully loaded
I/O Terminations	<ul style="list-style-type: none"> 5606: 5, 9, 10-pole connectors, 0.0810...3.31mm² (28...12 AWG), solid or stranded. 5607, 5608 & 5610: 5, 9, 12-pole connectors, 0.0810...3.31mm² (28...12 AWG), solid or stranded

Selection Guide

I/O Expansion Modules



5606 | 5607 | 5608 | 5610 Analog/Digital I/O Modules Specifications cont'd

General cont'd

Dimensions	<ul style="list-style-type: none"> 5606: 211.8 mm (8.34 in.) wide, 181.0 mm (7.13 in.) high, 46.5 mm (1.83 in.) deep 5607, 5608, 5610: 144.0 mm (5.65 in.) wide, 181.0 mm (7.13 in.) high, 46.5 mm (1.83 in.) deep
Enclosure	Corrosion-resistant zinc-plated steel with black enamel paint
Environment	<ul style="list-style-type: none"> Conformal-coated -40...70 °C (-40...158 °F) operating, -40...85 °C (-40...185 °F) storage 5% RH to 95% RH, non-condensing
Warranty	3 year on parts and labor

Certifications (three versions available: S for standard, X for ATEX/IECEX and U for Class I Div 2)

S Version	<p>EMC and radio frequency</p> <ul style="list-style-type: none"> FCC 47 CFR Part 15, Subpart B ICES-003 Issue 5 August 2012 CE and RCM markings <p>General Safety</p> <p>UL 508</p>
X Version	5606 and 5607 - Adds: IECEX/ATEX Class I, Zone 2
U Version	5606 and 5607 - Adds: cCSAus Non incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D

5606 | 5607 | 5608 | 5610 Analog/Digital I/O Modules Model Code

Model	Part Number
5606	<ul style="list-style-type: none"> No AO: TBUX297328S, TBUX297328X, TBUX297328U With 2AO: TBUX297334S, TBUX297334X, TBUX297334U
5607	<ul style="list-style-type: none"> No AO: TBUX297478S, TBUX297478X, TBUX297478U With 2AO: TBUX297482S, TBUX297482X, TBUX297482U
5608*	TBUX297177S
5610*	TBUX297178S

Footnote: * 5608 and 5610 are supported by the SCADAPack 300E only

Notes: Accessories sold separately. These products are RoHS-compliant.

Some I/O Expansion modules are specific to SCADAPack 300 RTUs, others are specific to SCADAPack E RTUs. The SCADAPack 100 does not support any such module.

Selection Guide

Communication Modules



5902 Bell 202 Modem Module Specifications

General	
Data Rate	1200 baud
Transmit Carrier	Switched or constant
Duplex	Full or half. Half duplex requires DTE to implement hardware RTS/CTS handshake
Wires	Two or four
Transmit Level	-35...0 dBm into 600 Ω, potentiometer adjustable
Receive Sensitivity	-30...+3 dBm, potentiometer-adjustable to -40 dBm
Output and Input Impedance	600 Ω balanced, transformer-isolated
Anti-Streaming	None, 10 Sec, 30 Sec, 60 Sec
RTS/CTS Delay	<ul style="list-style-type: none"> Wire: 25 ms, 50 ms, 125 ms, 250 ms Radio: 67 ms, 133 ms, 266 ms, 1000 ms
CTS Hold Time	1 ms, 8 ms
Carrier Detect Delay	<ul style="list-style-type: none"> Wire: 19 ms, 30 ms, 51 ms, 92 ms Radio: 33 ms, 67 ms, 133 ms, 265 ms
Carrier Loss Delay	6 ms, 10 ms, 23 ms, 39 ms, constant carrier reception half duplex
Carrier Detect Level	-30 dBm, adjustable from -20 dBm to -40 dBm
Radio Transmit Key Output	Optical coupler open collector transistor, 5 to 15 Vdc, 25 mA
Visual Indicators	Transmitted Data LED, Received Data LED, Clear to Send LED, Request to Send LED, Carrier Detect LED, Radio Key Output LED
Power Requirements	<ul style="list-style-type: none"> 5902 - 5 Vdc @ 60 mA 5902SA - 115 Vac at 10 VA
Terminations	8-pole, removable terminal block, RJ45
Dimensions	108 mm W. x 118 mm H. x 44 mm H. (4.25 in. x 4.625 in. x 1.75 in.)
Packaging	Corrosion-resistant zinc-plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing; -40...60 °C (-40...140 °F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5902 Bell 202 Modem Module Model Code

Part Number	Model	Description
TBUX297120	5902	Bell 202 modem module, 1200 baud, FSK, 2/4 wire, with radio PTT key control & RF carrier detect
TBUX297194	5902SA	Same as 5902 but with a 115 Vac adapter for connection to other PCs or RS-232 devices
TBUX297195	5902SAF	Same as 5902SA but with a full duplex to half duplex converter - for devices without RTS/CTS support

Notes: Accessories sold separately. This product is not RoHS-compliant.

Selection Guide

Communication Modules



5904 HART Interface Module Specifications

General	
Modulation	<ul style="list-style-type: none"> Bell 202 Frequency Shift Key (FSK) Mark = 1200 Hz Space = 2200 Hz
Data Rate	1200 baud
Transmit Level	500 mVp-p into 250 Ω
Receive Sensitivity	<ul style="list-style-type: none"> 120 mVp-p guaranteed on 80 mVp-p guaranteed off
Output Impedance	<ul style="list-style-type: none"> 300 Ω Transformer-isolated
Input Impedance	<ul style="list-style-type: none"> 4000 Ω Transformer-isolated
Load Resistor	250 Ω , 1 Watt maximum
Visual Indicators	<ul style="list-style-type: none"> TX: Transmitted data LED RX: Received data LED
Power Requirements	5 Vdc @ 20 mA
Terminations	4-pole, removable terminal block, 12...22 AWG, 15 A contacts
Dimensions	108 mm W. x 118 mm H. x 44 mm D. (4.25 in. x 4.625 in. x 1.75 in.)
Mounting	7.5 x 35 DIN rail
Packaging	Corrosion-resistant zinc-plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing; -40...70 $^{\circ}$ C (-40...158 $^{\circ}$ F)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating, UL508 listed

5904 HART Interface Module Model Code

Part Number	Model	Description
TBUX297205	5904	HART interface module

Notes: Accessories sold separately. This product is not RoHS-compliant.

Selection Guide

Communication Modules



5908 Wireless Data Transceiver Module Specifications

General	
Frequency	902 to 928 MHz
Transmitter	
Output Power	1 mW to 1 W (+30 dBm)
Range	96 Km (60 miles) Line-of-sight with unity gain antenna
Modulation	Spread Spectrum GFSK, 120...170 kBs
Spreading Method	Frequency-hopping
Receiver	
Sensitivity	<ul style="list-style-type: none"> -108 dBm for 10-6 BER standard speed, -111 dBm for 10-6 BER low speed -110 dBm for 10-4 BER standard speed, -113 dBm for 10-4 BER low speed
Selectivity	20 dB at $f_c \pm 115$ kHz , 60 dB at $f_c \pm 145$ kHz
System Gain	140 dB
Data Transmission	
Error Detection	32-Bit CRC, resend on error
Forward Error Correction (low speed)	(24,12) Golay, retransmit on uncorrectable error
Data Encryption	Substitution, dynamic key
Max Link Throughput	115 kBd standard speed, 38.4 kBd low speed
Data Interface	RS-232/RS-485, 1200 baud...230.4 kBd, asynchronous, full duplex, RJ-45 connector
Power Requirements	
Supply Voltage	7...30 Vdc (900 MHz model) 5908 mA @ 12 Vdc
Transmit	500
Receive	86
Idle	21
Sleep	6
Operating Modes	Point-to-Point , Point-to-Multipoint, Peer-to-Peer, Store and Forward Repeater
Operating Environment	-40...75 °C (-40...167 °F), 0...95% humidity non-condensing

5908 Wireless Data Transceiver Module Model Code

Part Number	Model	Description
TBUX297270	5908	Radio Transceiver, FreeWave 900 MHz Spread Spectrum

Notes: Accessories sold separately. This product is not RoHS-compliant.

Selection Guide

Communication Modules

5908-W02 Wireless Data Transceiver Module Specifications



General

Frequency	Up to 128 frequencies within 902...928 MHz., configurable in 3.2 MHz zones
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Transmitter

Output Power	1.0 W (+30 dBm) maximum (at antenna connector)
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Modulation	CPFSK
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Spreading Method	Frequency-hopping based on network address
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Receiver

Type	Double conversion super heterodyne
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Sensitivity	-108 dBm @ 1 X 10 ⁻⁶ BER
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Network Addresses	65,000
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Data Transmission

Error Detection	CRC16; Resend on error
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Data Interface	RS-232/RS-485 (user selectable)
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Max Link Throughput	Continuous up to 115.2 kbps
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Baud Rates	1.2...115.2 kbps
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Power Requirements

Power	7.5 W max
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Supply Voltage	-9...30 Vdc
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Transmit Current	510 mA @ 13.8 Vdc
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Receive Current	115 mA @ 13.8 Vdc
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Sleep Mode Current	8 mA @ 13.8 Vdc
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Operating Modes	Point-to-Point, Point-to-Multipoint, Store-and-Forward Repeater
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Operating Environment	-40...70 °C (-40...158 °F), 0...95% non-condensing
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5908-W02 Wireless Data Transceiver Module Model Code

Part Number	Model	Description
TBUX297310	5908-W02	Radio Transceiver, MDS 900 MHz Spread Spectrum, powered by 9...30 Vdc

Notes: Accessories sold separately. This product is not RoHS-compliant.

Selection Guide

Communication Modules

5910 Ethernet Switch Module Specifications



General	
Ethernet Switch Type	5 ports, unmanaged, store & forward, 10/100BaseT
Ethernet Terminations	RJ45 ports (shielded)
Protocols	IEEE 802.3, IEEE 802.3u (TBC), IEEE802.3x
Spreading Method Speed and Connection	<ul style="list-style-type: none"> Auto-detecting 10/100 Mbps operation, Auto MDI/MDI-X operation (no need for cross-wired cables)
Memory Bandwidth	1.4 Gbps
Duplex Operation	Full duplex IEEE802.3x and half duplex back pressure flow control
MAC Addressing	Dedicated lookup engine with 1K MAC addresses. Learning, aging and migration
Ethernet Isolation	1500 Vrms
Visual Indicators	Each port has - ACT/LINK and 10/100 (Speed) indicators
Input Power	<ul style="list-style-type: none"> External Power: 11-30 Vdc 1.8 W at 12 Vdc 2.2 W at 30 Vdc Bus Power: 5 V at 375 mA
Input Power Terminations	4 pole terminal strip and removable terminal block, 12...22 AWG
Dimensions	144 mm W. x 118 mm H. x 51 mm D. (.25 in. x 4.625 in. x 2.00 in.)
Mounting	Desktop, rubber feet or 7.5 x 35 DIN rail
Packaging	Corrosion resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing -40...70 oC or (-40...158 oF)
Safety	cCSAus and cULus Class I, Division 2 Hazardous Area Rating

5910 Ethernet Switch Module Model Code

Part Number	Model	Description
TBUX297288	5910	Ethernet Switch, 5 port, 10/100 Mb autodetect, 12...24 Vdc power
TBUX297289	5910SA	Same as 5910, with the addition of a 115 Vac adapter

Notes: Accessories sold separately. This product is RoHS-compliant.

Selection Guide

Communication Modules

5915 SDI-12 Interface Module Specifications



General

Communications – Port P2

Port Type	SDI-12 port
Connector	4-way removable terminal block
Pins Used	<ul style="list-style-type: none">• 12 Vdc• Ground• SDI-12 data
Protocol	SDI-12 only
Protection	MOV and current-limit
Indicators	
Tx	Illuminates when transmitting data from Master Controller to a slave device on the bus
Rx	Illuminates when receiving data from a slave device AND when ever the Master Controller transmits

5915 SDI-12 Interface Module Model Code

Part Number	Model	Description
TBUX297475	5915	SDI-12 Module, serial to SDI-12 converter for SCADAPack 32 and SCADAPack 3xx-Series controllers, c/w configuration CD

Notes: Accessories sold separately. This product is not RoHS-compliant.

Selection Guide

Communication Modules

HART I/O Expansion Module for SCADAPack 57x RTU Specifications



IO

HART	<ul style="list-style-type: none"> • HART scan rate <10 seconds typical¹ • HART pass-through provided by SCADAPack 57x RTU supports HART protocol revisions 5, 6, and 7 • Each device communicates on a separate 4...20 mA analog channel
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Analog Inputs	<p>8 analog inputs:</p> <ul style="list-style-type: none"> • Software-configurable as 4...20 mA (HART enabled) or 0...20 mA (HART disabled) • Uni-polar, differential • Resolution: 24-bit ADC (effective: 14-bits over the measurement range) • Accuracy: $\pm 0.1\%$ of full scale at 25 °C (77 °F), $\pm 0.2\%$ over operating temperature range • Scan rate: typical 270 mSec for 8 channels with no filtering (Fast setting), 800 mSec with 50/60 Hz filtering • Isolation: 50 Vac/70 Vdc from channel to channel, and 250 Vac/350 Vdc to logic and chassis • Input Resistance: 280 Ω • Under-range: 4...20 mA measures to 0 mA • Common Mode Rejection: -80 dB (@60 Hz. when configured for 50/60Hz filtering)
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Analog Outputs	<p>4 analog outputs:</p> <ul style="list-style-type: none"> • Software-configurable as 4...20 mA (HART enabled) or 0...20 mA (HART disabled) • Uni-polar • Resolution: 16-bit DAC • Accuracy: $\pm 0.15\%$ of full scale at 25 °C (77 °F), $\pm 0.35\%$ over operating temperature range • Power Supply: 12...30 Vdc, external, shared by each channel • Power Requirement: 20 mA (internal supply) plus up to 20 mA per output (from external supply) • Isolation: 250 Vac/350 Vdc to RTU logic and chassis • Load Range: 12 Vdc: 0...450 Ω, 24 Vdc: 0...1050 Ω, 30 Vdc: 250...1350 Ω • Status & Reporting: Open Loop status, output value poll
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General

Power Supply	<ul style="list-style-type: none"> • Power consumption 1.3 W from internal 5 Vdc supply (source: SCADAPack 57x RTU) • One external 12...30 Vdc power supply for analog outputs, up to 20 mA per loop.
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I/O Terminations	Plug-in terminal blocks, 0.0810...3.31 mm ² (28...12 AWG), solid or stranded
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Dimensions	102.0 mm (4.02 in.) wide, 182.4 mm (7.18 in.) high, 47.1 mm (1.85 in.) deep
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Enclosure	Corrosion resistant zinc-plated steel with black enamel paint
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Environment	<ul style="list-style-type: none"> • Conformal coated • -40...70 °C (-40...158 °F) operating, -40...85 °C (-40...185 °F) storage • Cold start at -40 °C (-40 °F) • 5% RH to 95% RH, non-condensing
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Certifications	<ul style="list-style-type: none"> • EMC and radio frequency FCC 47 CFR Part 15, Subpart B • ICES-003 • CE and RCM markings • General safety UL/CSA 61010 • Hazardous locations cCSAus Non-Incendive Electrical Equipment for use in Class I, Division 2, • Groups A, B, C and D • IECEx/ATEX: Ex nA IIC T4 Gc -40 °C \leq Ta \leq +70 °C
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Selection Guide

Communication Modules



HART I/O Expansion Module for SCADAPack 57x RTU Specifications cont'd

General cont'd	
Shock & Vibration	IEC 60068-2-27 (tested up to 15 g), IEC 60068-2-6
Warranty	3 years on parts and labor
Certifications (three versions available: S for standard, X for IECEx/ATEX and U for Class I Div 2)	
S	EMC and radio frequency FCC 47 CFR Part 15, Subpart B ICES-003 CE and RCM markings General safety UL/CSA 61010
X	Adds: IECEx/ATEX: Ex nA IIC T4 Gc -40 °C ≤ Ta ≤ +70 °C
U	Adds: cCSAus Non-Incendive Electrical Equipment for use in Class I, Division 2, Groups A, B, C and D

HART I/O Expansion Module for SCADAPack 57x RTU Model Code

Part Number	Model	Description
TBUX297590S, TBUX297590X, TBUX297590U	6602	8AI and 4AO
TBUX297591S, TBUX297591X, TBUX297591U	6602	8AI

Notes: Accessories sold separately. This product is RoHS-compliant.

Footnote: ¹ HART scan rate is dependent on the number of connected HART devices, communication loading due to pass-through messaging, and HART device response times.

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