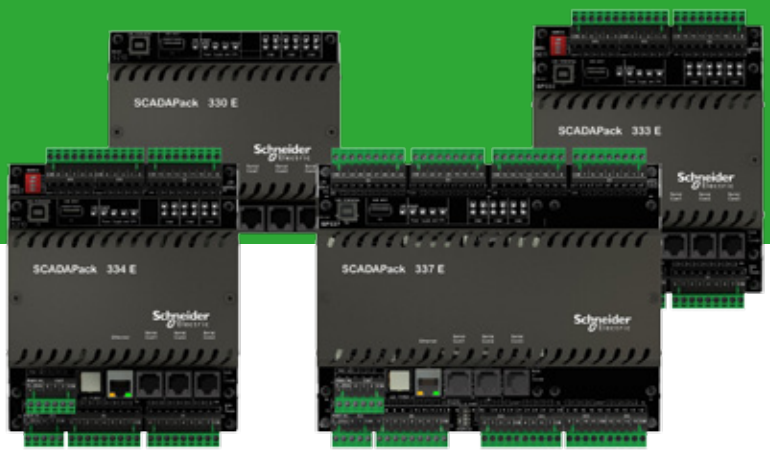
Life Is On | Schneider Electric

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

Smart Remote Terminal Units



The SCADAPack™ 300E Smart RTU is a platform built on a 32-bit processor and fitted with a 12...30 Vdc supply, various communication links and a wide range of analog and digital I/O that adheres to open standards and can operate in the harsh demands of a remote environment.

The SCADAPack 300E may be configured and programmed locally or remotely and is optionally configurable directly from StruxureWare™ SCADA Expert ClearSCADA™ host software. It can play multiple roles simultaneously: end point, automation point, data concentrator, protocol converter, peer-to-peer device and a telemetry router, and use Secure Authentication.

The SCADAPack 330E/333E/334E/337E provide the following features:

- Open-standard telemetry protocols IEC 60870-5-101/-104 and DNP3 level 4 with Security Suite (Secure Authentication and/or Data Encryption)
- Open-standard industrial protocols Modbus™ RTU/TCP and DF1 master
- Open-standard IEC 61131-3 programming environment
- Data concentrator for DNP3, Modbus and DF1 devices
- Communication with up to 13 active SCADA masters, 10 remote/local slave devices and 100 remote DNP3 devices in peer-to-peer mode
- Remote management suite (amend configuration, modify programs and update firmware remotely, using open standard DNP3)
- Up to 33 integrated digital/analog inputs/outputs, and more with I/O expansion modules
- 1 Ethernet, 3 Serial, 1 USB configuration port
- Tool-less DIN rail mounting system
- IP2x terminal blocks
- Operation from –40 to +70°C (–40 to +158°F)
- Cost-effective, compact form factor

SCADAPack

330E | 333E | 334E | 337E
Smart Remote Terminal Units

Specifications – General characteristics

Controller

Processor	• 32-bit ARM7 microcontroller, 32 MHz clock, integrated watchdog timer. • Two microcontroller IO co-processors, 20 MHz clock
Memory	• 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
Data Concentrator Capacity (points)	Up to 500 in DNP3
Data Concentrator Capacity (devices)	Up to 10 in DNP3 and up to 10 in Modbus or DF1
File System Typical Storage	Internal : 6MB

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
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 embed an unlicensed 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 (10/100Base-T), transformer-isolated
IP Protocol	• 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	• Can simultaneously report to up 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

General

Logic Control	IEC 61131-3 SCADAPack Workbench programming suite (LD, ST, FBD & SFC)			
I/O Terminations	**SCADAPack model**	**330E**	**333E and 334E**	**337E**
	connectors, 0.0810...3.31mm2 (28...12 AWG), solid or stranded	6-pole	5, 6, 9, 12-pole	5, 6, 9, 10-pole
Dimensions	**SCADAPack model**	**330E**	**333E and 334E**	**337E**
	Width (mm)	144 (5.65”)	144 (5.65”)	211.8 (8”34)
	Height (mm)	140.4 (5.53”)	181.0 (7.13”)	181.0 (7.13”)
	Depth (mm)	46.5 (1.83”)	66.0 (2.60”)	66.0 (2.60”)

SCADAPack

330E | 333E | 334E | 337E
Smart Remote Terminal Units

Specifications – General characteristics

General (continued)

Enclosure	Corrosion resistant zinc-plated steel with black enamel paint
Environment	• Conformally coated • -40°C (-40°F) to 70°C (158°F) operating, -40°C (- 40°F) to 85°C (185°F) storage • 5% RH to 95% RH, non-condensing
Shock & Vibration	IEC 60068-2-27 (tested up to 15g), 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)
Power Requirements	Typical power consumption (at 20°C/ 68°F)

SCADAPack model	DO relays	12 Vdc	24 Vdc
330E	–	1.8 W	2.0 W
333E and 334E	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 5V 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	330E, 334E and 337E only • 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)

SCADAPack

330E | 333E | 334E | 337E
Smart Remote Terminal Units

Specifications – Digital and Analog Inputs/Outputs

Controller board

Counter Inputs	• 1, 0…10Hz (dry contact) • 2, 0…10kHz (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°F...+167°F)

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

	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	• Software-configurable to 0...20, 4...20mA , 0...5 or 0...10V, plus over range • Resolution: 15-bit ADC (15-bit over the measurement range in 10V, 14-bit in 20mA) • Accuracy: ±0.1% of full scale at 25°C (77°F), ±0. 2% over temperature range • Input Resistance: 250 Ω or 20 kΩ in 20mA or 10V configurations (60 kΩ for 32.768V) • Normal rejection mode: 27 dB at 60 Hz • Sampling rate: 170ms • Isolation: 500 Vac from logic and chassis			
Analog Outputs	• 0...20/4...20mA, voltage output may be accomplished with external precision resistor • Resolution: 12-bit over 0...20 mA range • Accuracy: ±0.15% at 25°C (77°F), ±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…925Ω, • Logic End-Of- Scan to Signal Update Latency: typically 18... 27ms • Status & Reporting: output value • Controls: Direct Operate, Select Before Operate			
Digital Inputs	• 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 : 170ms • Isolation : in group of 8, 1500 Vac from logic supply and chassis			
Digital Outputs	• 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

I/O Expansion	• 5606, 5607, 5608 and 5610, and 5304, 5404, 5411, 5414, 5415, 5505 and 5506 Maximum number of modules per unit: • SCADAPack 330E: 8 (*) • SCADAPack 333E, 334E and 337E: 7 (*) (*): to reach this limit, additional power supply modules are required

SCADAPack

330E | 333E | 334E | 337E
Smart Remote Terminal Units

Model Code

	SCADAPack 330E/333E/334E/337E
Model	**Select: Controller**
TBUP330	SCADAPack330E, Controller 32 bits, 3 High Speed Counter Inputs
TBUP333	SCADAPack333E, Controller 32 bits, comes with the above plus additional I/Os
TBUP334	SCADAPack334E, Controller 32 bits, comes with the above plus additional I/Os
TBUP337	SCADAPack337E, Controller 32 bits, comes with the above plus additional I/Os

Code	**Select: 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 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	P333 only: none
5	IEC61131 (executes two kernels, SCADAPack Workbench required), and DF1 master

Code	**Select: Analog Inputs**
A	P333 (4), P334 (8) and P337 (8): selectable as 0...20mA, 4...20mA, 0...5V or 0...10V

Code	**Select: Digital Inputs/Outputs**
A	P330 only: None
B	P333/P334 only: 16 inputs, 10 outputs; P337: 32 inputs, 16 outputs Inputs: 12/24V; Outputs: either Dry Contact Relay (for Class I Div 2) or Solid State Relay (for IECEx/ATEX)

*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)

SCADAPack

330E | 333E | 334E | 337E
Smart Remote Terminal Units

Model Code

SCADAPack 330E/333E/334E/337E

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 RS232 port)
1	900Mhz FreeWave Spread Spectrum Radio
A	900MHz MDS Spread Spectrum Radio
	Trio™ Radios - 900MHz (requires one RS232 port)
B	900MHz Trio Spread Spectrum Radio with encryption, 902-928MHz (FCC / IC)
C	900MHz Trio Spread Spectrum Radio with encryption, 915-928MHz (AUS)
D	900MHz Trio Spread Spectrum Radio, 915-928MHz (BRAZIL)
E	900MHz Trio Spread Spectrum Radio, 921-928MHz (NZ)
	Trio Radios - 2.4GHz (requires one RS232 port)
J	2.4GHz Trio Spread Spectrum Radio, ETSI/100mW, ATEX (EUROPE)
K	2.4GHz Trio Spread Spectrum Radio with Encryption, 500mW (CANADA, USA & AUSTRALIA)
L	2.4GHz Trio Spread Spectrum Radio, 500mW (OUTSIDE OF EUROPE, CANADA, USA & AUSTRALIA)

Code	Selection : 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

Disclaimer: Schneider Electric reserves the right to change product specifications. For more information visit www.schneider-electric.com.

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