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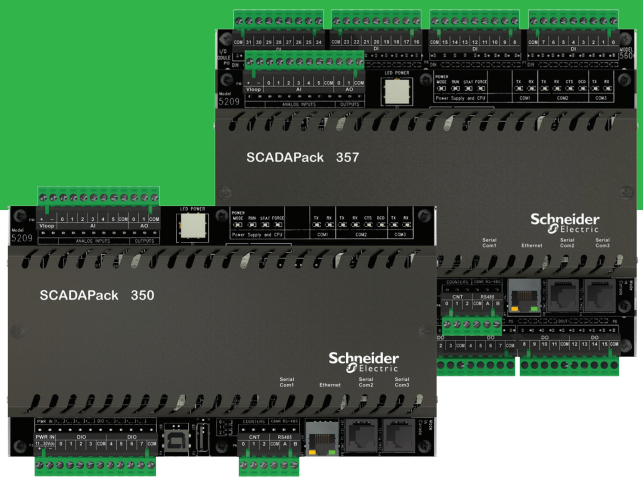
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Find the *Schneider Electric / Control Microsystems TBUP357-1A20-AB00* at our website: *Click HERE*

Life Is On | Schneider Electric

SCADAPack 350 | 357

Smart Remote Terminal Units



Built on the proven SCADAPack™ 300 controller platform that adheres to open standards and can operate in the harsh demands of a remote environment, the SCADAPack 350/357 Smart RTUs feature various communication links, a wide range of analog and digital I/O and a 12-30 Vdc supply.

The SCADAPack 350/357 Smart RTU helps to ease operations with:

- Simple ladder logic option (Telepace™ Studio)
- 28,192 permanent Modbus™ registers for use with logic and C++ applications
- USB host port for data logging to USB memory stick
- Up to 76 integrated digital/analog inputs/outputs, and more with I/O expansion modules
- Advanced power management
- Auxiliary supply for up to 7 analog loops
- Tool-less DIN rail mounting system
- IP2x terminal blocks
- Operation from -40...+70 °C (-40...+158 °F)
- Cost-effective, compact form factor

And provides powerful software tools and firmware features:

- ClearSCADA™ driver for Realflo™ software remote configuration and data acquisition
- Optional open-standard IEC 61131-3 programming environment
- C/C++ programming support
- Open-standard industrial protocols Modbus RTU/TCP/UDP and DF1 master/slave, and open-standard telemetry protocol DNP3 level 2
- Store & forward mechanism between upstream and downstream SCADAPack 300 controllers
- Realflo flow computer for gas and liquids (including specific protocols used for Flow Measurement: Realflo Modbus and Enron Modbus)

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SCADAPack

350 | 357
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, 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 Serial Port : COM2	• 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	• 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	SCADAPack 350: 6, 12-pole connector, 0.0810...3.31 mm^2 (28...12 AWG), solid or stranded SCADAPack 357: 5, 6, 7, 9, 10, 12-pole connectors, 0.0810...3.31 mm^2 (28...12 AWG), solid or stranded
Dimensions	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	• Conformally 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

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Smart Remote Terminal Units

Specifications – General characteristics

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)
Power Requirements	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):

SCADAPack 350				At normal clock speed		At reduced clock speed	
	Ethernet	Controller LEDs	Vloop fully loaded	12 Vdc	24 Vdc	12 Vdc	24 Vdc
Sleep mode				15 mW	27 mW	15 mW	27 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	• $_{c}CSA_{us}$ 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)

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SCADAPack

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Specifications – Digital and Analog Inputs/Outputs

Controller board (350 and 357)

Analog Inputs	5, user selectable 0...10 V or 0...20 mA plus over range 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: ±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 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 • 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…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) **As Digital Inputs** • Dry contact **As Digital Outputs** • Sinking MOSFET output, rated 30 V, 0.5 A, ground return connected to Chassis Ground
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 °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 Same features as for the 5 analog inputs located on the controller board (see above) except the following: • 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 Same features as for the analog outputs located on the controller board
Digital Inputs	32, 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	16, relays (Form A) • 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

Additional I/O

I/O Expansion	Supported modules : • Current 5000 modules (except 5608 and 5610 models) Maximum number of modules per unit: • SCADAPack 350: 8 (*) • SCADAPack 357: 7 (*) (*): to reach this limit, additional power supply modules (reference: 5103) are required

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SCADAPack

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Model Code

	SCADAPack 350/357
Model	**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 Realflo 6.72+)
W	4 Run Gas Flow - Gas Transmission Version (Requires Realflo 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)

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Model Code - continued

	SCADAPack 350/357
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 V), 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)

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SCADAPack

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Smart Remote Terminal Units

Model Code - continued

	SCADAPack 350/357
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

Note: Accessories sold separately. FreeWave & MDS radios are not RoHS compliant.
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