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SCADAPack



Features:

- Up to 9 analog inputs and 32 digital I/O on-board
- 3 digital/counter inputs, interrupt input, status output
- 3 RS-232 or 2 RS-232 and 1 RS-485 serial port
- Optional integrated spread spectrum radio
- cULus Class 1, Division 2 Hazardous Area Rating
- RealFLO 6 dual run custody transfer flow computer
- 3 year warranty on parts and labor

The Control Microsystems SCADAPack PLC is the flagship of the SCADAPack series of programmable logic controllers. The SCADAPack model is a flexible controller complete with integrated power supply, analog and digital I/O and serial communications. The product uses Modbus RTU, Modbus ASCII and DNP3 as native protocols and is remotely programmable through a choice of flexible programming languages. As with all SCADAPack products the SCADAPack is based on a multiprocessor architecture with a co-processor used for handling on-board input/output channels.

Overview:

Compact and Powerful - The Control Microsystems SCADAPack controller provides Remote Terminal Unit (RTU) functionality with flexible programming options. The programming options include Relay Ladder Logic, IEC 61131-3 and multitasking C languages. The unit can provide a large number of PID controllers for use in feedback control applications. The central processing unit includes a 16-bit CMOS microprocessor with up to 1 MB of CMOS RAM, up to 512K of Flash ROM for use in firmware and application programming. The unit also includes 1kB of EEPROM for storing configuration parameters. With 9 analog inputs, 32 digital I/Os and optional analog outputs, the SCADAPack provides for a wide variety of process control and metering applications.

Flexible Communications - The SCADAPack provides 3 RS-232 or 2 RS-232 and 1 RS-485 serial communication ports offering Modbus RTU, Modbus ASCII and DNP3 communication protocols. For those challenging remote applications a fully integrated, license-free spread spectrum wireless module is available at 900 MHz and 2.4 GHz. The SCADAPack also supports external radios and modems using Hayes AT commands, and can be programmed using powerful C tools for application specific protocols.

Applications and Benefits:

As the flagship of Control Microsystems' series of controllers the SCADAPack offers flexible options for those applications which require a mix of analog and digital I/O coupled with multiple communication ports. With real time communications using industry-standard Modbus protocols, the SCADAPack integrates easily with a wide range of SCADA software, MMIs, DCS systems, intelligent instrumentation, and remote I/O control applications.

The SCADAPack is a flexible controller with use in both master and slave configurations. Special functions include report-by-exception and store and forward capabilities. The unit can be used in applications ranging from large installations with multiple control loops, to remote installations with power conservation requirements. Examples include the control and monitoring of process elements in sewage pumping stations and waste water purification plants. For the Oil and Gas industry this product is ideal for use in gas well optimization, automatic well testing, and tank battery facilities. With the optional on-board Ethernet module and two standard serial ports the SCADAPack can also be used in data concentration and network traffic managment applications.

For low power applications the SCADAPack offers sleep mode functions which keep only counter inputs, interrupt inputs and real time clock alarms active. These features work well in installations using solar power allowing the use of smaller solar panels and batteries.

Similar in design to all other SCADAPack products, the SCADAPack is fabricated with conformal coatings, gold-plated machined sockets and zinc plated steel system components. Regardless of the specific need, the SCADAPack can provide reliable and compact stand-alone performance in the hazardous environments so often found in SCADA applications.

Specifications (P1, integrated 5601A I/O board)

Controller	
Processors	CPU: 16-bit CMOS, 14.74MHz clock, integrated watchdog timer CPU co-processor: 14.74MHz clock (used for I/O processing)
Memory	128 kB to 1MBytes CMOS RAM, 512K flash ROM, 1kB EEPROM
Non Volatile	CMOS RAM with lithium battery retains contents for 2 years with no power
I/O	
Analog Inputs	8, user selectable 0 - 5V (15 bit resolution) or 0 - 20mA (14 bit resolution)
Analog Outputs	2 with optional 5305 analog output module, output range 0-20mA
Digital Inputs	4 On controller board - 3 Digital Input/Counter, 1 Interrupt with optical isolation 16 On 5601A I/O module - 6.5mA typical at 24V and 3.5mA typical at 115V
Digital Outputs	1 On controller board , 30V, 60mA (used as status output) 12 On 5601A I/O module - Sealed mechanical relay: ■ 0.4A at 125 Vrms, 2A at 30V resistive loads ■ 1.0A at 30V, 0.2A at 125Vrms inductive load with pf=0.4, L/R=7ms ■ 250Vrms, 220V maximum operating voltage
Communications	
Serial Ports (5203 controller) **or** **Serial Ports (5204 controller)**	2 RS-232 (COM1 & COM2), DTE, DE-9P connector 1 RS-232 (COM2), DTE, DE-9P connector 1 RS-485 (COM1), 2 wire half duplex and 4 wire half or full duplex
Serial Port (5601 I/O module)	1 RS-232 (COM3), DTE, DE-9P connector
Baud rates (COM1, COM2)	300, 600, 1200, 2400, 4800, 9600, 19200, 38400
Baud rates (COM3)	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Serial Protocols	Modbus RTU, Modbus ASCII, DNP3, DF1
Serial Protocol Modes	Slave, Master, Master/Slave, Store and Forward
Wireless [1]	Spread spectrum radio at 900MHz [2] or 2.4 GHz [2]
General	
I/O Terminations	2, 3, 5, 8 and 10 pole, removable terminal blocks, 12 to 22 AWG, 15A contacts
Dimensions	8.40 inch (213mm) wide, 6.13 inch (155mm) high, 2.80 inch (72mm) deep
Packaging	Corrosion resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing – 40°F (– 40°C) to 158°F (70°C)
Power (5203 controller) **(5204 controller)**	11 - 30 VDC, 1.6W typical all relays off, 5.1W typical all relays on 11 - 30 VDC, 2.2W typical all relays off, 5.6W typical all relays on
Warranty	3 years on parts and labor

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

Specifications (P1A, integrated 5604 I/O board)

Controller	
Processor	CPU: 16-bit CMOS, 14.74MHz clock, integrated watchdog timer CPU co-processor: 14.74MHz clock (used for I/O processing)
Memory	128 kB to 1MBytes CMOS RAM, 512K flash ROM, 1kB EEPROM
Non Volatile	CMOS RAM with lithium battery retains contents for 2 years with no power
I/O	
Analog Inputs	8, user selectable 0 - 10V (15 bit resolution) or 0 - 20mA (14 bit resolution) 1, 0 - 32.678V (15 bit resolution)
Analog Outputs	2 with optional 5305 analog output module, output range 0-20mA
Digital Inputs	4 on controller board - 3 Digital Input/Counter, 1 Interrupt with optical isolation
Digital Outputs	1, 30V / 60mA (used as status output)
Digital I/O (5604 I/O board)	32 configurable as input or output (1 Amp DC max output / dry contact input)
Communications	
Serial Ports (5203 controller) **or** **Serial Ports (5204 controller)**	2 RS-232 (COM1 & COM2), DTE, DE-9P connector 1 RS-232 (COM2), DTE, DE-9P connector 1 RS-485 (COM1), 2 wire half duplex and 4 wire half or full
Serial Port (5604 I/O module)	1 RS-232 (COM3), DTE, DE-9P connector
Baud rates (COM1, COM2)	300, 600, 1200, 2400, 4800, 9600, 19200, 38400
Baud rates (COM3)	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Serial Protocols	Modbus RTU, Modbus ASCII, DNP3
Serial Protocol Modes	Slave, Master, Master/Slave, Store and Forward
Wireless [1]	Spread spectrum radio at 900MHz [2] or 2.4 GHz [2]
General	
I/O Termination	2, 3, 5, 8 and 10 pole, removable terminal blocks, 12 to 22 AWG, 15A contacts
Dimensions	8.40 inch (213mm) wide, 6.13 inch (155mm) high, 2.80 inch (72mm) deep
Packaging	Corrosion resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, – 40°C to 70°C (– 40°F to 158°F)
Power: (5203 Controller) **(5204 Controller)**	11 - 30 VDC, 2.6W typical (6.5W all I/O capacity in use) 11 - 30 VDC, 3.1W typical (6.5W all I/O capacity in use)
Warranty:	3 years on parts and labour

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

Specifications (P1B, integrated 5606 I/O Board)

Controller	
Processor	CPU: 16-bit CMOS, 14.74MHz clock, integrated watchdog timer CPU co-processor: 14.74MHz clock (used for I/O processing)
Memory	128 kB to 1MBytes CMOS RAM, 512K flash ROM, 1kB EEPROM
Non Volatile	CMOS RAM with lithium battery retains contents for 2 years with no power
I/O	
Analog Inputs	8, single-ended, software-selectable 0-5V / 0-10 V or 0-20mA / 4-20mA (16 bit resolution)
Analog Outputs	2 with optional 5305 analog output module, output range 0-20mA
Digital Inputs	4 on controller board - 3 Digital Input/Counter, 1 Interrupt with optical isolation 32 on 5606 I/O module: ■ 0.67 mA typical at 24V on the 12/24V range, ■ 0.37 mA typical at 48V on the 48V range, ■ 0.35 mA typical at 120V on the 115/125V range, ■ 0.35 mA typical at 240V on the 240V range
Digital Outputs	1 on controller board, 30V, 60mA (used as status output) 16 on 5606 I/O module - Sealed mechanical relay: ■ 3A, 30VDC or 240VAC (Resistive) ■ 1000VAC between open contacts
Digital I/O (5604 I/O board)	32 configurable as input or output (1 Amp DC max output / dry contact input)
Communications	
Serial Ports (5203 controller) **or** **Serial Ports (5204 controller)**	2 RS-232 (COM1 & COM2), DTE, DE-9P connector 1 RS-232 (COM2), DTE, DE-9P connector 1 RS-485 (COM1), 2 wire half duplex and 4 wire half or full
Baud rates (COM1, COM2)	300, 600, 1200, 2400, 4800, 9600, 19200, 38400
Serial Protocols	Modbus RTU, Modbus ASCII, DNP3
Serial Protocol Modes	Slave, Master, Master/Slave, Store and Forward
Wireless [1]	Spread spectrum radio at 900MHz [2] or 2.4 GHz [2]
General	
I/O Termination	5, 6, 8, 9, and 10 pole, removable terminal blocks, 12 to 22 AWG, 15A contacts
Dimensions	8.40 inch (213mm) wide, 6.48 inch (164mm) high, 2.80 inch (72mm) deep
Packaging	Corrosion resistant zinc plated steel with black enamel paint
Environment	5% RH to 95% RH, non-condensing, – 40°C to 70°C (– 40°F to 158°F)
Power: (5203 Controller)	11 - 30 VDC, 2.6W typical (6.5W all I/O capacity in use)
(5204 Controller)	11 - 30 VDC, 3.1W typical (6.5W all I/O capacity in use)
Warranty:	3 years on parts and labour

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

Model Code

P1-132-02-0-0 represents a sample code for a P1 with DNP, 0-5V inputs, 12-24V outputs

Model	Select: Controller
P1	SCADAPack, 16 Bit controller
V1	Above SCADAPack with an integrated 2.4GHz FreeWave Spread Spectrum Radio - requires one RS-232 port
W1	Above SCADAPack with an integrated 900MHz Spread Spectrum Radio – requires one RS-232 communication port

Code	Select: Lower I/O Module
	5601 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 (0-10v or 0-20mA)
B	5606 lower I/O module, includes 32 Digital Inputs, 16 Digital Outputs and 8 software configurable Analog Inputs

Code	Select: Communications Serial Ports
1	With 5601 or 5604: 3 RS232 Communication Ports, DE9P, RTS/CTS With 5606: 2 RS232 Communication Ports
2	With 5601 or 5604: 2 RS232 (DE9P) and 1 RS-485 (TB), RTS/CTS With 5606: 1 RS232 and 1 RS-485
3	W1 only - replace integrated FreeWave SS Radio with MDS SS Radio - with Code 1 Comm. Serial Ports Option
4	W1 only - replace FreeWave SS Radio with MDS SS Radio - with Code 1 Comm. Serial Ports Option

Code	Select: Memory Configuration
3	512K OS RAM (U10), 512K APP RAM (U15)

Code	Select: Protocol Option/ Programming Environment
0	Modbus protocol with TelePACE Ladder Logic and C Language firmware loaded - IEC enabled
1	Modbus and DF1 protocol with TelePACE Ladder Logic and C Language firmware loaded - IEC enabled
2	Modbus and DNP 3.0 (Level 2) protocol with TelePACE Ladder Logic and C Language firmware loaded - IEC enabled
3	Modbus protocol with IEC 61131-3 and C Language firmware loaded - TelePACE Ladders enabled
4	Modbus and DF1 protocol with IEC 61131-3 and C Language firmware loaded - TelePACE Ladders 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	0-20mA, single ended (On 5601 and 5604, default on 5606 which is also software configurable to 0-5v or 0-10v)
02	0-5 volt, single ended (5601 lower I/O Module only)
03	0-10 volt, single ended (5604 lower I/O Module only)
04	Pre-selected range for each A/I, must specify each A/I as being 0-20mA or 0-10v (5604 lower I/O Module only)

Code	Select: Digital Inputs/Outputs
0	Dry Contact Digital Inputs, Open Drain Digital Outputs, Individually configurable (5604 lower I/O Module only)
0	12-24 volt Digital Inputs, Dry Contact Digital Outputs (5601 and 5606 lower I/O Modules only)
1	120 volt Digital Inputs, Dry Contact Digital Outputs (5601 and 5606 lower I/O Modules only)
2	220 volt Digital Inputs, Dry Contact Digital Outputs (5601 and 5606 lower I/O Modules only)

Code	Select: Analog Outputs
0	None
1	2 channel Analog Output option, 0-20 mA

Control Microsystems reserves the right to change product specifications without notice.

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