5000 Series
Expansion & Communication Modules

Expansion:
- Analog input module: 4 variations
- Analog output module: 5 variations
- Digital input/output relay module: 2 variations
- Digital input module: 17 variations
- Digital output module: 7 variations
- Combination IO module: 8 variations
- External UPS module

Communication:
- Spread Spectrum radio transceiver module: 2 variations
- Bluetooth local communications interface: 2 variations
- Dial-up modem module
- Bell 202 radio/leased line modem module
- HART protocol interface module
- Ethernet Switch module
- SDI-12 interface module

With the addition of Control Microsystems’ 5000 Series I/O Expansion and Communication modules, the series of powerful SCADAPack controllers become even more powerful. Any* SCADAPack controller is easily expandable from its base I/O configuration to more than 700 process I/O points, and regardless of what communication format is required, there is a communication module to fit the need.

Overview
Flexible I/O – The Control Microsystems 5000 Series I/O Expansion modules are available for a wide range of process I/O requirements, from digital and analog I/O to I/O-simulators and a UPS module. A maximum of twenty I/O modules may be connected for an expansion of up to 512 digital outputs, 512 digital inputs, 128 analog inputs, 64 counters and 64 analog outputs, on some models.

Flexible Communications
Already a SCADAPack strong point, communication flexibility is further increased with a selection of connectivity modules. From the traditional leased line, phone line and radio-transceiver formats to the latest Ethernet, SDI-12 and Bluetooth technologies, Control Microsystems 5000 Series communication modules make data-transfer easy and cost-effective.

Applications and Benefits
Whether being specified for a new SCADAPack installation or incorporated into an existing one, the I/O Expansion and Communication modules are specifically designed for use with SCADAPack controllers, are DIN rail-mountable, and are powered either by the SCADAPack itself or by an external power supply. The 5103 UPS module provides additional power where required.

With a wide selection of I/O expansion modules available, many diverse industries, including water and wastewater, oil and gas, and industrial process control, will benefit from SCADAPack process control and SCADA applications.

A variety of communication modules ensures that SCADAPack controllers can be integrated into existing corporate LANs and WANs, and industrial plant-based networks such as leased-line and RS-485.

3 year warranty on parts and labor for all Expansion and Communication Modules.

* SCADAPack 100 and SCADAPack ER controllers do not support 5000 Series I/O Expansion modules.

www.controlmicrosystems.com
### Analog Input Modules

#### Module 5502
**Differential Analog Input Module**

**Features:**
- 8 Differential Isolated Inputs for high versatility
- Integrated transient protection with fusing
- Bipolar 13 bit resolution
- High common mode voltage rejection and tolerance

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5502</td>
<td>29721</td>
<td>8 channel isolated, differential, bipolar analog input module, +/-10V or +/-20mA</td>
</tr>
</tbody>
</table>

#### Module 5506
**Analog Input Module**

**Features:**
- 0 to 20mA / 4 to 20mA inputs
- 0 to 5V / 1 to 5V inputs
- Individual input configuration
- 5501 emulation mode for Legacy systems
- ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2)

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5506</td>
<td>297319</td>
<td>8 channel analog input module, each input individually configured</td>
</tr>
</tbody>
</table>

### Analog Output Modules

#### Module 5302
**Analog Output Module**

**Features:**
- 20mA Current
- Low Power
- Class 1, Division 2 for use in hazardous locations

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5302</td>
<td>297176</td>
<td>4 channel isolated analog output module, 0-20/4-20mA (only two channels supported with SmartWIRE)</td>
</tr>
<tr>
<td>5304-20*</td>
<td>297248</td>
<td>4 channel analog output module, 0-20mA</td>
</tr>
<tr>
<td>5304-10*</td>
<td>297252</td>
<td>4 channel analog output module, 0-10volts</td>
</tr>
<tr>
<td>5304-5*</td>
<td>297253</td>
<td>4 channel analog output module, 0-5volts</td>
</tr>
<tr>
<td>5304-C*</td>
<td>297254</td>
<td>4 channel analog output module, Custom [specify range of each input]</td>
</tr>
</tbody>
</table>

#### Module 5304
**Analog Output Module**

**Features:**
- 4 isolated analog outputs
- Selectable voltage and current modes
- 5V and 10V selectable voltage modes
- Low Power
- Class 1, Division 2 for use in hazardous locations
- ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2)

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<tr>
<th>Model</th>
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</tr>
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<tbody>
<tr>
<td>5304-20*</td>
<td>297248</td>
<td>4 channel analog output module, 0-20mA</td>
</tr>
<tr>
<td>5304-10*</td>
<td>297252</td>
<td>4 channel analog output module, 0-10volts</td>
</tr>
<tr>
<td>5304-5*</td>
<td>297253</td>
<td>4 channel analog output module, 0-5volts</td>
</tr>
<tr>
<td>5304-C*</td>
<td>297254</td>
<td>4 channel analog output module, Custom [specify range of each input]</td>
</tr>
</tbody>
</table>

### Analog Input Modules

#### Module 5505
**RTD Input Module**

**Features:**
- Input values scaled and linearized
- Data returned as 32-bit floating-point number
- Lower power consumption
- Automatic 3-wire RTD compensation
- 5503 emulation mode for Legacy systems
- ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2)

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5505</td>
<td>297318</td>
<td>4 channel 3 or 4 wire RTD input module, 100ohm platinum</td>
</tr>
</tbody>
</table>

#### Module 5504
**Thermocouple Input Module**

**Features:**
- 8 type J, K, T, E or ±80 mV inputs
- Optical isolation for high reliability
- Integrated transient protection
- Linearized and cold junction compensated

<table>
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<tr>
<th>Model</th>
<th>Part No.</th>
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</tr>
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<tbody>
<tr>
<td>5504</td>
<td>297166</td>
<td>8 channel isolated thermocouple input module, J,K,T,E</td>
</tr>
</tbody>
</table>

#### Module 5504
**Thermocouple Input Module**

**Features:**
- 8 type J, K, T, E or ±80 mV inputs
- Optical isolation for high reliability
- Integrated transient protection
- Linearized and cold junction compensated

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<td>297166</td>
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</table>

#### Module 5504
**Thermocouple Input Module**

**Features:**
- 8 type J, K, T, E or ±80 mV inputs
- Optical isolation for high reliability
- Integrated transient protection
- Linearized and cold junction compensated

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<tr>
<td>5504</td>
<td>297166</td>
<td>8 channel isolated thermocouple input module, J,K,T,E</td>
</tr>
</tbody>
</table>
**Module 5403**

**High Level Digital Input Module**

Features:
- 8 digital inputs
- Reliable optical isolation
- Isolated in groups of 4 for ease of wiring
- Very low power requirements
- Universal AC or CD

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5403-240</td>
<td>297106</td>
<td>8 point discrete input module, 240V</td>
</tr>
<tr>
<td>5403-120</td>
<td>297107</td>
<td>8 point discrete input module, 120V</td>
</tr>
<tr>
<td>5403-48</td>
<td>297108</td>
<td>8 point discrete input module, 48V</td>
</tr>
<tr>
<td>5403-24</td>
<td>297109</td>
<td>8 point discrete input module, 24V</td>
</tr>
<tr>
<td>5403-12</td>
<td>297110</td>
<td>8 point discrete input module, 12V</td>
</tr>
</tbody>
</table>

**Module 5404**

**High Level Digital Input Module**

Features:
- 16 digital inputs
- 16 optically isolated digital inputs
- Isolated in groups of 4 for ease of wiring
- Very low power requirements
- 12 to 240 volts

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5404-240*</td>
<td>297154</td>
<td>16 point discrete input module, 240V</td>
</tr>
<tr>
<td>5404-120*</td>
<td>297155</td>
<td>16 point discrete input module, 120V</td>
</tr>
<tr>
<td>5404-48*</td>
<td>297156</td>
<td>16 point discrete input module, 48V</td>
</tr>
<tr>
<td>5404-24*</td>
<td>297157</td>
<td>16 point discrete input module, 24V</td>
</tr>
<tr>
<td>5404-12*</td>
<td>297158</td>
<td>16 point discrete input module, 12V</td>
</tr>
</tbody>
</table>

**Module 5405**

**Digital Input Module**

Features:
- High density, 32 digital inputs
- 12 to 120 volts
- Low Power
- Class 1, Division 2 for use in hazardous locations
- ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2)

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5405-120*</td>
<td>297249</td>
<td>32 point discrete input module, 120V</td>
</tr>
<tr>
<td>5405-24*</td>
<td>297247</td>
<td>32 point discrete input module, 12-24V</td>
</tr>
</tbody>
</table>

**Module 5410**

**High Speed Counter/Accumulator**

Features:
- 4 counter inputs
- Optically isolated
- 32 bit count range
- Wide input range 3 VDC - 28 VDC
- Guaranteed no missed counts to 10KHz
- Count retained during power outage
- Self clearing or accumulating
- Accepts quadrature phase inputs

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5410</td>
<td>297149</td>
<td>4 channel, 10KHz counter input module (or 2 phase encoder inputs)</td>
</tr>
</tbody>
</table>

**Module 5414**

**Compact Digital Input Module**

Features:
- 16 optically-isolated digital inputs
- 12 to 240 volts
- Universal AC or DC
- Very low power requirements
- Compact module
- 3 year warranty on parts and labor
- ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2)

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5414-24</td>
<td>297378</td>
<td>16 point digital input module (12/24V AC/DC)</td>
</tr>
<tr>
<td>5414-48</td>
<td>297379</td>
<td>16 point digital input module (48V AC/DC)</td>
</tr>
<tr>
<td>5414-120</td>
<td>297380</td>
<td>16 point digital input module (115/125V AC/DC)</td>
</tr>
<tr>
<td>5414-240</td>
<td>297381</td>
<td>16 point digital input module (240V AC/DC)</td>
</tr>
</tbody>
</table>
5000 Series

Digital I/O Modules

Module 5401
Configurable Digital I/O Module

Features:
- MAX. 8 input/output points
- Each point can be input or output
- Most cost-effective for low point counts
- Mix of inputs and outputs supported
- Plug-in relays simplify maintenance
- High current outputs to 3A

Module Part No. Model
5401 297121 8 point input/output module (Relay choices listed on Module 5401 specification sheet)

Module 5402
Configurable Digital Input or Output Module

Features:
- 16 configurable digital inputs or outputs
- Each point can be AC or DC
- Plug-in relays simplify maintenance
- High current outputs to 3A

Module Part No. Model
5402* 29715 16 point input or output module (Relay choices listed on Module 5402 specification sheet)

Module 5406A
Dry Contact Relay Out Module

Features:
- 16 Form A mechanical relays
- Highest output load current
- Zero leakage current
- Individually isolated
- Modifiable for Form B (NC) operation
- External power input capability

Module Part No. Model
5406* 297284 16 point Form A relay output module, 6A contacts

Module 5407
Dry Contact Relay Out Module

Features:
- 8 Form A mechanical relays
- Highest output load current
- Zero leakage current
- Individually isolated
- Modifiable for Form B (NC) operation
- Relays sealed against corrosion

Module Part No. Model
5407 297126 8 point Form A relay output module, 6A contacts

Module 5408
Triac Digital Output Module

Features:
- 8 triac digital outputs
- Optical isolation
- Snubbers for inductive loads
- MOV transient suppression
- Zero-crossing turn on/off for low EMF

Module Part No. Model
5408 297103 8 point triac output module, 24-240VAC @ 1A

Typical Installation

All expansion modules can be powered by a SCADAPack controller or by a separate power supply. Typical installations have the expansion modules mounted adjacent to the controller on the DIN rail with inter-module cables.
Expansion & Communication Modules

Digital Output Modules

Module 5409
FET Digital Output Module

Features:
- 8 isolated DC outputs
- Optical isolation
- Diode protected for inductive loads
- Power source LED

Model Part No. Model
5409 29710 8 point DC output module, 12-24VDC @ 1A

Module 5411
Digital Output Module

Features:
- High density, 32 digital outputs
- Sinking output design
- Low Power
- Class 1, Division 2 for use in hazardous locations
- ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2)

Model Part No. Model
5411* 297246 32 point, 12-24V digital output module, open-drain type

Module 5415
Compact Relay Digital Output Module

Features:
- 12 digital outputs
- Dry Contact or Solid State Relay variants
- Isolated in 3 groups of 4
- LEDs can be disabled to conserve power
- Very low power requirements
- Compact module
- ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2), (5415-A only)
- 3 year warranty on parts and labor

Model Part No. Model
5415 297382 12 point compact mechanical relay output module
5415-A 297384 12 point compact solid state relay output module

* I/O modules not fully supported by the non-programmable 5201 and 5202 controller modules.

Combined I/O Modules

Module 5606
Analog/Digital I/O Module

Features:
- High density IO combination board
- 32 DIs
- 16 Relay DOs
- 8 Configurable AIs
- 2 Optional AOs
- ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2), (Solid State Relay types only)

Model Part No. Model
5606-24 297328 Combination 24V DI, DO and AI module
5606-48 297329 Combination 48V DI, DO and AI module
5606-120 297330 Combination 120V DI, DO and AI module
5606-240 297331 Combination 240V DI, DO and AI module
5606-24-AO 297334 Combination 24V DI, DO, AI and AO module
5606-48-AO 297335 Combination 48V DI, DO, AI and AO module
5606-120-AO 297336 Combination 120V DI, DO, AI and AO module
5606-240-AO 297337 Combination 240V DI, DO, AI and AO module

I/O Simulator Modules

Module 5421
Toggle Switch Digital Input Module

Features:
- 8 toggle switch digital inputs
- Reliable, sealed toggle switches
- Ideal for simulation, testing
- Status LEDs show switch position

Model Part No. Model
5421 297104 8 point, toggle switch DI module for simulation/testing

Module 5521
Potentiometer Input Module

Features:
- 8 potentiometer inputs
- Multi-turn pots aid adjustment
- 12 bit resolution
- Does not require 24V power

Model Part No. Model
5521 297119 8 channel potentiometer analog input module for simulation/testing
Module 5901
Dial-Up Modem

Features:
- Heavy duty lightning suppression prevents damage
- Automatic recovery from failure-to-answer
- Power-down mode conserves power when battery-operated
- -40ºC/F to 70ºC/158ºF operating temperature range
- v.32bis, 300 - 1,440 baud

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5901</td>
<td>297198</td>
<td>Auto dial/auto answer modem module, 56K baud</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V.32 bis, with built-in transient protection</td>
</tr>
</tbody>
</table>

5901SA
Same as 5901 with a 115VAC AC adapter for connection to PCs or other RS-232 devices

Module 5902
Bell 202 Radio or Leased Line Modem

Features:
- Universal radio or telephone interface
- Soft carrier turnoff for rapid turn-around
- Excellent performance on poor lines
- Optional stand-alone versions for PCs

<table>
<thead>
<tr>
<th>Model</th>
<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5902</td>
<td>297120</td>
<td>Bell 202 modem module, 1200 baud, FSK, 2/4 wire, with radio PTT key control and RF carrier detect</td>
</tr>
<tr>
<td>5902SA</td>
<td>297194</td>
<td>Same as 5902 with a 115VAC AC adapter for connection to PCs or other RS-232 devices</td>
</tr>
<tr>
<td>5902SAF</td>
<td>297195</td>
<td>Same as 5902SA with a full duplex to half duplex converter - for devices without RTS/CTS support</td>
</tr>
</tbody>
</table>

Module 5908/5908-W02
Wireless Data Transceiver

Features (5908)
- Incorporates Freewave Radio Technology
- Available in 900 MHz and 2.4~GHz versions
- High Speed (115.2 kbps true data throughput)

Features (5908-W02)
- Incorporates MDS TransNET Radio Technology
- Available in 900 MHz
- High Speed (115.2 kbps true data throughput)

<table>
<thead>
<tr>
<th>Model</th>
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<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5908</td>
<td>297270</td>
<td>Radio Transceiver, Freewave 900MHz Spread Spectrum Radio, 6-30VDC</td>
</tr>
<tr>
<td>5908-2.4G</td>
<td>297283</td>
<td>Radio Transceiver, Freewave 2.4GHz Spread Spectrum Radio, 6-30VDC</td>
</tr>
<tr>
<td>5908-W02</td>
<td>297310</td>
<td>Radio Transceiver, MDS 900 Spread Spectrum Radio, 9-30VDC</td>
</tr>
</tbody>
</table>

Module 5910
Ethernet Switch

Features:
- 5-port, 10/100BaseT Ethernet switch
- Auto MDI/MDI-X crossover operation
- Powered by SCADAPack 5V source
- Class 1, Division 2, Hazardous Area Rating

<table>
<thead>
<tr>
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<th>Part No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>5910</td>
<td>297288</td>
<td>Ethernet Switch, 5 port (unmanaged), 10/100Mb autodetect, 12-24 Vdc powered</td>
</tr>
<tr>
<td>5910SA</td>
<td>297289</td>
<td>Same as 5910 with a 115VAC AC adapter for connection to PCs or other RS-232 devices</td>
</tr>
</tbody>
</table>

†Note: Serial communication cable sold separately

Module 5904
HART Interface Module

Features:
- Compliant with HART physical layers specifications
- Configurable as primary or secondary master
- Unloads HART protocol details from application software
- Enables up to 4 HART ports per CPU without using CPU serial ports

<table>
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</thead>
<tbody>
<tr>
<td>5904</td>
<td>297205</td>
<td>HART interface module</td>
</tr>
</tbody>
</table>

Interface Modules & Gateways
Expansion & Communication Modules

Interface Modules & Gateways

Module 5913
Serial to Bluetooth® Adapter

Features:
- Acts as Bluetooth slave
- Connects to SCADAPack RJ-45 serial port connector, [cable included]
- Wireless communications module certified to Bluetooth version 2.0
- Bluetooth Class 1: +100 meter (330 feet) distance when communicating with another Class 1 device
- Encryption and 16-character alphanumeric Personal Identification Number (PIN) and error correction schemes for guaranteed packet delivery
- Class I, Division 2 Groups A, B, C and D Hazardous Locations

Model  Part No.  Model
5913    297373  Serial to Bluetooth Adapter w/ 24” RJ45-to-RJ45 cable

Module 5914
USB to Bluetooth® Adapter

Features:
- Acts as Bluetooth master
- Connects to USB port on desktop or laptop computer
- Wireless communications module certified to Bluetooth version 2.0
- Bluetooth Class 1: +100 meter (330 feet) distance when communicating with another Class 1 device
- Encryption and 16-character alphanumeric Personal Identification Number (PIN) and error correction schemes for guaranteed packet delivery

Model  Part No.  Model
5914    297374  USB to Bluetooth Transceiver

Module 5915
SDI-12 Interface Module

Features:
- RS232-to-SDI-12 hardware interface
- Supported by SCADAPack 32 & 300 Series controllers
- C++ application provides SDI-12 protocol functionality #
- Companion TelePACE or IsaGRAF application generates protocol messages #
- External (RJ45) RS232 connection to SCADAPack com port
- Powered by external 12V source
- ATEX II 3G and IECEx: Ex nA IIC T4 per EN 60079-15, protection type n (Zone 2)

Model  Part No.  Model
5915    297475  SDI-12 Interface Module

UPS Power Supply

Module 5103
Uninterruptible Power Supply

Features:
- Transformer isolated
- Built-in battery charger for UPS
- Isolated 24 volt analog loop output
- Dual, wide range AC/DC inputs
- Cool running switch-mode design

Model  Part No.  Model
5103    29/102  External UPS with 5V@2A, 24V@0.5A isolated outputs, 16-24VAC or 12-40 VDC

Non-Programmable Controller Modules

Module 5201
RS-485 Communication Controller

Features:
- Simple configuration – no programming
- Powerful industry-standard protocol
- Support 64 AI, 64 DI, 64 DO, 32 AO
- Watchdog timer
- Power saving LED control

Model  Part No.  Model
5201    29/101  CPU, 1 RS-485 port, 2/4 wire, supports up to 64 D/I, 64 D/O, 64 A/I and 32 A/O, non-programmable

Module 5202
RS-232 Communication Controller

Features:
- Simple configuration – no programming
- Powerful industry-standard protocol
- Support 64 AI, 64 DI, 64 DO, 32 AO
- Watchdog timer
- Power saving LED control

Model  Part No.  Model
5902    29/111  CPU, 1 RS-232 port, DB9P, supports up to 64 D/I, 64 D/O, 64 A/I and 32 A/O, non-programmable
Sample installation of Communications & I/O Modules