



The OMNI 4000/7000 series flow computer delivers reliable, fully traceable, and secure measurement of gas and liquid flow for control and communication systems and custody transfer operations.

Since 1991, the OMNI flow computer has been recognized as the best flow computer available for performance, reliability, support, and lifecycle. The OMNI 4000/7000 flow computer represents the next evolution of the OMNI flow computer. By incorporating the latest processor technologies and communication protocols, the 4000/7000 delivers the highest levels of:

- Reliability
- Traceability
- Security
- Ease of Use
- Data Storage

APPLICATIONS

- Crude oil
- Refined products
- LPGs
- Natural gas
- NGLs

MIGRATION FROM LEGACY OMNI FLOW COMPUTERS

OMNI is known for its lifetime commitment to every installed OMNI flow computer in terms of ongoing, backward compatibility and upgrade paths to current specifications, approvals, customer service, and support. With the 4000/7000, OMNI maintains that commitment through a migration path that enables existing OMNI users to upgrade to the 4000/7000 flow computer, while reusing their investment in wiring and engineering.

For existing OMNI customers, the 4000/7000 offers a path to incorporate the latest innovations and capabilities of flow computers.

- The OMNI 4000/7000 uses the same chassis as the previous generation 3000 and 6000 models, to fit into the same location, reducing re-wiring requirements and implementation time.
- Installation requires minimal rewiring, to simplify installation and commissioning.
- It offers users custom Modbus database mapping to convert most 4000/7000 registers to 3000/6000 registers, to maintain communications with SCADA and PLC systems, which reduces re-engineering requirements.

- Very little re-learning is required – the software functionality is similar, with more powerful capabilities available in the OMNICONNECT software for the 4000/7000 flow computer.

PROVEN PERFORMANCE

The OMNI 4000/7000 uses the same proven mathematical formulas as previous generations, while harnessing the capabilities of newer technology, so users have the same level of performance that is necessary in custody transfer in a flexible, robust system. The OMNI 4000/7000 leverages linearity, repeatability, and reproducibility to reduce uncertainty. It determines volume, mass, and density, and performs conversion calculations according to approved API standards.

TRACEABILITY

The OMNI 4000/7000 is the only flow computer to have received WELMEC WG7.2, issue 6, extension D approval. This means that the 4000/7000 flow computer is fully traceable, with the ability to log every manipulation or measurement change. As the only flow computer to be WELMEC WG7.2, issue 6, extension D compliant, the 4000/7000 offers an unbroken chain of data that hasn't been available before. If there is ever a question with reconciliation, the 4000/7000 flow computer allows a discrepancy to be traced back to the exact moment of a change.

OMNI also extends 100% traceability into our manufacturing and assembly process. Every flow computer is assigned a serial number, which allows the factory to trace the origin of every component, every step of assembly, and every point of quality testing and assurance. This process is incorporated into our ISO9000-2008 certification.

SECURITY

There are two main considerations when addressing the security vulnerabilities of a

flow computer. First, there are internal vulnerabilities with flow computers that may have an open or programmable architecture, which creates an opportunity for anyone with access to the flow computer to edit, modify, or otherwise compromise the manufacturer's calculations. With programmable flow computers, traceability to existing approvals can be overwritten, manipulated, or simply avoided during application re-programming. Even the simple audit of firmware revision and checksum for compliance could require the complete re-verification of all the flow computer calculations and functions.

The OMNI 4000/7000 is fully configurable in the field, but not programmable, which maintains the integrity of factory-certified programming. With the 4000/7000, OMNI has built in multiple levels of security, including 16 individual users with administrator-definable access and rights.

The second security concern is a vulnerability to outside intruders or hackers. The oil and gas industry is one of the most targeted industries for cyber-attacks. For energy and utility companies, it costs an average of \$13.2 million each year for lost business and damaged equipment. Cyber intrusions can result in problems such as:

- Process shutdown
- Equipment damage
- Product quality issues
- Undetected spills
- Compliance violations
- Safety violations

*<http://www.bloomberg.com/news/articles/2015-06-10/hackers-favorite-target-big-oil>

The OMNI 4000/7000 flow computer was designed to be as secure as possible to reduce the possibility of an unauthorized intrusion into the flow computer. Some of the resources available are:

- Each access port can be protected with unique passwords and/or a user customized Modbus map.

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- User ID and permission levels
- SSL encryption: public & symmetric Key
- Intruder detection recorded in SysLog
- Cyber-attacks cannot interrupt flow calculations.

Whether protecting against flow computer modifications that lead to unintentional discrepancies or against external attacks, the OMNI 4000/7000 flow computer delivers the assurance that your measurement and applications are secure.

RELIABILITY

Legacy OMNIs have a documented mean time between failures (MTBF) of greater than 8,000 days, based on field performance data. There have been cases of continued performance after exposure to lightning strikes, hurricanes, water immersion, and car crashes.

The OMNI 4000/7000 is engineered with the same principles of performance as earlier models to withstand severe service conditions with the same reliability and performance as its predecessors.

EASE OF USE

The OMNI 4000/7000 offers a simplified user experience. There are several options for interaction with the flow computer:

- The **front-panel** has been redesigned with fewer buttons and a highly functional 11-line 4.3" color LCD screen for fast, on-site interaction with the flow computer.
- **OMNICONNECT software**, the next generation of OMNI software, offers users more flexibility to configure and perform certain tests on the flow computer. Similar in design to previous-

generation OMNI software, OMNICONNECT requires very little re-training for users who are already familiar with OMNI software. Even new users will become proficient with minimal training.

- **OMNIPANEL** is a Windows-based PC or Windows-based tablet software application with a user interface that mimics the look and function of the OMNI 4000/7000 front panel. It allows operator and technician functions to be performed remotely on the flow computer without actually being physically present at the front panel. It is user-customizable for a vertical or horizontal view.



Horizontal view of OMNIPANEL

DATA STORAGE

The OMNI 4000/7000 has 128MB of ample execution memory. Measurement data storage is performed utilizing a 4GB SD card for historical data archiving. This highly efficient data storage feature translates into the ability to store data for very long periods – sometimes years. This makes it easy to conduct annual reconciliation or review. Because data can be extracted from the flow computer and then possibly manipulated in other systems within the process, the 4000/7000 maintains the original unmodified data so it can be used as an original reference if necessary. The data storage

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capabilities can also be used to provide data to external software applications in support of critical business analysis, such as for producing trending reports.

COMMUNICATIONS

- The OMNI 4000/7000 flow computer has been developed with the capacity to handle large amounts of data quickly and securely with the dual Ethernet (DE) and serial modules.

. It features:

- 4 Ethernet ports & 10 serial ports
- Maximum 32 independent Ethernet virtual port connections – 8 per physical Ethernet port
- Ethernet hardware setup can be done via OMNICONNECT configuration software or the front panel.
- RJ-45 onboard Ethernet connector with maximum speed of 100BaseT – 10BaseT from rear panel connector
- Automatic Ethernet RX/TX & polarity detection
- User configured Modicon or non-Modicon compatibility on each of 32 independent Ethernet virtual port connections
- Full password handling over Ethernet
- Software-selectable termination on the RS-485 ports located on the dual Ethernet (DE) modules
- Secure Socket Connections (SSL)

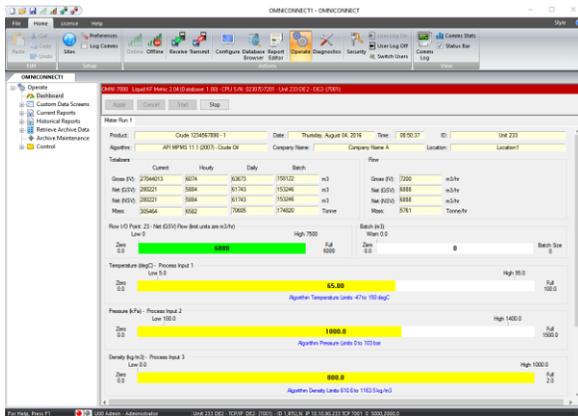
These features mean that the 4000/7000 is extremely secure, and can handle large amounts of process, business, or enterprise data quickly, and that the flow computer will be flexible enough to meet expanded data needs into the future. This includes communication with higher level systems, such as SCADA, DCS, pipeline integrity, and accounting systems, as well as

secondary systems like third-party PLCs or instruments on the pipeline.

In addition, network printing is a standard feature that includes address identification for up to eight printer IPs, with the additional feature of report assignment to each printer. Two additional RS-232 printers are supported.

SUMMARY

The OMNI 4000/7000 flow computers are designed to meet the current and future measurement needs of the oil and gas industry. The OMNI exceeds all requirements for data processing, accuracy, and calculation cycle time for all recognized standards bodies, including API, ISO, OIML, and AGA. Coupled with the largest flow computer specialist support team and unique on-line support tools and documentation, the OMNI continues to be the first choice of industry experts.



Dashboard screen in OMNICONNECT

SOFTWARE

OMNICONNECT is the Windows-based PC software that offers an enhanced level of configurability with the OMNI 4000 and 7000 flow computers. Developed on a real-time operating system, OMNICONNECT is robust and can keep up with the demands of advanced data management. Designed to be highly responsive and very fast, OMNICONNECT completes cycles in seconds. OMNICONNECT allows users to perform any task on the OMNI 4000/7000. It simplifies both offline and online flow computer configuration, and allows the user to test some operations, such as quality monitoring in gas systems, batching, and proving in liquid systems. Port and user security settings can be imported and then exported into other OMNI flow computers if a duplicated security structure is desired.

OMNICONNECT features an easy-to-use interface that offers more flexibility in customization and makes it simple to navigate between menus. Existing OMNI users will find the software to be familiar with OMNICOM in look and feel and will need minimal training to learn the extended capabilities of OMNICONNECT.

Except through OMNICONNECT, there are no other high-level programs that permit changes or manipulations to the software and firmware in contravention to the requirements of WELMEC approvals.

A standard OMNICONNECT software license is included with each 4000/7000 OMNI flow computer. Use is subject to the terms outlined in the OMNI software license agreement.

OMNICONNECT features:

- Larger menu buttons for enhanced ease of use
- Optional QuickStart dialog
- Customization of screen items on a per-user basis
- Dashboard to see operating information at a glance
- Local and remote access
- Access to multiple flow computer sites
- User-configurable custom data screens for real-time register content
- Online and offline configuration
- Management of OMNI features licensing
- Administration of up to 16 user logins and passwords
- Configurable OMNICONNECT and front panel password time outs
- Extensive F1 help
- Validation checks to recognize errors immediately
- Built-in Modbus database browser with numerous search filters
- Built-in safety limits
- Extensive communications logging and debugging
- Customizable reports
- Windows 10 supported

**OMNI 4000 AND 7000 BENEFITS**

Since the first OMNIs were built 25+ years ago, technologies have evolved. With every innovation and development that changed the way flow computing was handled, OMNI has been able to continue to support every OMNI flow computer sold by developing fully backward-compatible updates and upgrades. Since 1991, OMNI has ensured our installed systems avoid obsolescence. With the 4000/7000, we've continued this tradition by creating a migration path, so users can continue to have access to the latest functionality, such as:

- Powerful, robust, real-time operating system
- Faster access to data when you have remote connections, such as PLCs, SCADA systems, and other third-party assets
- 365+ days of batch storage for reconciliation or more dynamic historical reporting
- Enhanced functionality with a simplified front-panel interface and simplified and highly flexible PC software for an improved user experience

OMNI 4000 AND 7000 FEATURES

- Standard, field-proven firmware – no need for custom programming
- 32-bit processing with hardware floating point unit, multi-tasking execution
- 500mS update cycle
- Plug-in assignable digital, serial, and combination I/O modules
- Point-to-point digital transmitter interface
- Temperature trimmed analog inputs
- Expanded discrete digital I/O capabilities
- Electrical isolation of each I/O point
- Meter pulse fidelity checking
- Double chronometry proving
- Dual Ethernet communications module
- Dual LEDs indicate active/fused digital I/O
- User-configurable control logic
- User-configurable variables for displays and reports
- Data archive and report storage
- Modbus™ peer-to-peer for exchanging data between redundant flow computers or Modbus slave devices
- Real-time diagnostics
- International testing on hardware and software
- 10 user-defined database maps, each assignable to one or more Serial or virtual Ethernet port – 1000 database points per map
- Managed security and permissions for 16 users and each individual communication port
- Includes OMNICONNECT configuration software and OMNIPANEL front panel emulator
- Five-year limited warranty

Flow Computer Specifications

Pursuant to a policy of product development and improvement, OMNI Flow Computers, Inc. may make any necessary changes to these specifications without notice.

DIMENSIONS (PANEL-MOUNT)

Panel Cut-Out	<ul style="list-style-type: none"> 8.25 x 4.75 inches (210 x 121mm)
Behind Panel	<ul style="list-style-type: none"> OMNI 7000 16.25 inches (413mm) OMNI 4000 9.50 inches (241mm)
Front Panel Bezel	<ul style="list-style-type: none"> 9.25 x 5 inches (235 x 127mm)
Weight	<ul style="list-style-type: none"> OMNI 7000 17.5 pounds (7.9 kg) OMNI 4000 10.5 pounds (4.8 kg)

DIMENSIONS (NEMA-MOUNT)

Front Panel Cut-Out	<ul style="list-style-type: none"> 6.78 x 1.65 inches (172 x 42mm)
Chassis	<ul style="list-style-type: none"> OMNI 7000 8 x 13.5 inches (216 x 343mm) OMNI 4000 8 x 6.75 inches (216 x 172mm)
Front Panel Bezel	<ul style="list-style-type: none"> 9.25 x 5 inches (235 x 127mm)
Extended Back Panel	<ul style="list-style-type: none"> OMNI 7000 18.5 x 3.5 inches (470 x 89 mm) OMNI 4000 8 x 4.5 inches (203 x 114 mm)
Weight	<ul style="list-style-type: none"> OMNI 7000 13 pounds (5.9 kg) OMNI 4000 7.75 pounds (3.5 kg)

ENVIRONMENTAL

Operating Temperature	<ul style="list-style-type: none"> +14°F to +140°F (-10°C to +60°C)
Storage Temperature	<ul style="list-style-type: none"> -4°F to +158°F (-20°C to +70°C)
Relative Humidity	<ul style="list-style-type: none"> 90% non-condensing maximum

ELECTRICAL

Supply Voltage for Power Supply Module
Model 68-6218

- 90 to 264VAC, 47 to 440Hz; or 22 to 26VDC
- 10 to 22W (*excluding transducer loops*)
- 10 to 35W (*including transducer loops*)

Caution: Maximum DC offset from +DC or -DC to earth ground is 120VDC.

Transducer Output Power

- 24VDC at ~350mA for most configurations (*when AC powered*)

Isolation

- All analog inputs and outputs are electrically isolated from computer logic supply.
- Maximum common mode voltage on any input or output is ± 250 VDC to chassis ground.

Power Fuse

- Located on Standard/Extended Back Panels
- Standard Back Panel (4000/7000)
 - DC Fuse 5x20 = 3.15A Slow Blow (Littelfuse #02183.15)
 - AC Fuse 5x20 = 1.6A Fast Blow (Littelfuse #021701.6)
- Extended Back Panel (7000)
 - DC Fuse 2AG = 3A Slow Blow (Littelfuse #0229003)
 - DC Fuse for Transducer Loop power 2AG = 250mA Fast Blow (Littelfuse #0225.250)
 - AC Fuse 5x20 = 1.6A Fast Blow (Littelfuse #021701.6)

Transient/Over-voltage Protection for Power Supply Module Model 68-6218

- Current limiting circuit and Transzorbs

CPU MICROPROCESSOR AND MEMORY

Type	<ul style="list-style-type: none">• 32-bit microprocessor• Clock speed: 416.67MHz maximum• Hardware floating point• ECC error correcting memory• Hardware encryption• Secure digital card interface
Flash	<ul style="list-style-type: none">• 16MB
RAM	<ul style="list-style-type: none">• 128MB SDRAM (DDR2)
Nonvolatile RAM	<ul style="list-style-type: none">• 4MB (no battery required)• Stores configuration data and historical records• Saves 35 most recent daily and batch records• 1 MB reserved for User Archives
SD Card	<ul style="list-style-type: none">• 4GB available for storing historical records
Real Time Clock	<ul style="list-style-type: none">• Maintains time during power loss• Reports downtime on power-up• Field replaceable battery• Battery monitor and alarming
Real Time Clock Battery Backup Period	<ul style="list-style-type: none">• 1000 days (2.75 yrs) typical• Actual backup period is dependent on ambient temperature of the equipment. Higher ambient temperatures increase the self-discharge rate of the battery.

MOTHERBOARD

Type	<ul style="list-style-type: none">• Proprietary configured with plug-in DIN connectors for CPU, PSU and I/O Modules
Number of I/O Module Slots	<ul style="list-style-type: none">• OMNI 7000: 10 slots• OMNI 4000: 4 slots
Transient Protection	<ul style="list-style-type: none">• Transzorb devices on motherboard

PROCESS INPUT/OUTPUT COMBO MODULES

Capabilities and Features

Type	Input #1	Input #2	Input #3	Input #4	Analog Outputs	Level A Fidelity	Double Chronometry Proving
A	4-20mA, 1-5V, RTD		4-20mA, 1-5V, Flow Pulses		Two 4-20mA	No	No
B	4-20mA, 1-5V, RTD		4-20mA, 1-5V, Flow Pulse	Frequency Density	One 4-20mA	No	No
E/D	4-20mA, 1-5V, RTD		Frequency Density		Two 4-20mA	No	No
E	4-20mA, 1-5V, RTD		Flow Pulses		Two 4-20mA	Yes	Yes

FLOWMETER PULSE INPUTS

(Use DC Coupling – High Threshold Setting)

Input Frequency	<ul style="list-style-type: none"> • DC to 15kHz square wave • DC to 12kHz sine wave*
Positive Going Trigger Threshold	<ul style="list-style-type: none"> • +4.2V ± 0.2V (nominal @ 1kHz)
Negative Going Trigger Threshold	<ul style="list-style-type: none"> • +3.2V ± 0.2V (nominal @ 1kHz)
Input Impedance	<ul style="list-style-type: none"> • 1MΩ (nominal @ 1kHz)
Configuration	<ul style="list-style-type: none"> • Differential input (E module inputs are single-ended referenced to DC return)
Common Mode Voltage	<ul style="list-style-type: none"> • ±250VDC to chassis ground
Pulse Fidelity Check	<ul style="list-style-type: none"> • Channels are continuously compared for frequency and sequence.
E Module Only	<ul style="list-style-type: none"> • Complete failure of either A or B channel will not affect totaling. • Simultaneous noise pulses are rejected with better than 90% certainty.

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*The maximum frequency allowed is reduced when operating with a sine wave input signal. This is because the signal must extend beyond the high-level threshold and below the low-level threshold for a minimum of 30µs to allow the photo-optical couplers to conduct.

DENSITOMETER PULSE INPUTS

(Use AC Coupling – Low Threshold or DC Coupling – High Threshold Settings)

Positive Going Trigger Threshold	<ul style="list-style-type: none">• +1.6V ± 0.2V – AC Coupling/Low Threshold• +4.2V ± 0.2V – DC Coupling/High Threshold
Negative Going Trigger Threshold	<ul style="list-style-type: none">• +1.2V ± 0.2V – AC Coupling/Low Threshold• +3.2V ± 0.2V – DC Coupling/High Threshold
Minimum Signal Level	<ul style="list-style-type: none">• 2V peak to peak
Maximum Signal Level	<ul style="list-style-type: none">• 5V peak to peak
Minimum Frequency	<ul style="list-style-type: none">• 100Hz (10,000µs period)
Maximum Frequency	<ul style="list-style-type: none">• 6.7kHz (150µs period)

Note: AC coupling is only used in conjunction with the low signal input threshold setting. It is available for densitometer periodic time measurements only.

PROVER DETECTOR SWITCH INPUTS

(Conventional/Pipe)

Input Type	<ul style="list-style-type: none">• Digital I/O
Gating Transition	<ul style="list-style-type: none">• Voltage transition starts and stops prove run counts
Minimum Time Pulse High	<ul style="list-style-type: none">• 1ms
Minimum Time Pulse Low	<ul style="list-style-type: none">• > 2s
Input Impedance	<ul style="list-style-type: none">• 4.7kΩ

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Input Voltage	<ul style="list-style-type: none">> +5VDC ON, < +4VDC OFF (<i>referenced to DC return</i>)
Debounce	<ul style="list-style-type: none">100 ms in hardware logic
Common Mode Voltage	<ul style="list-style-type: none">±250VDC to chassis ground

PROVER DETECTOR SWITCH INPUTS ON E COMBO MODULE

(Pulse Interpolation)

- Normally driven by bounce-free open collector transistor or normally open switch

ANALOG INPUTS

Input Type	<ul style="list-style-type: none">1-5V or 4-20mA
Input Impedance	<ul style="list-style-type: none">1MΩ when configured for 1-5V250Ω when configured for 4-20mA (<i>selected by installing shunt resistor</i>)
Resolution	<ul style="list-style-type: none">14 binary bits
Accuracy	<ul style="list-style-type: none">±0.025% of reading ± 2 counts 14°F to 131°F (-10°C to +55°C)
Common Mode Voltage	<ul style="list-style-type: none">±250VDC to chassis ground

RTD INPUTS

RTD Configuration	<ul style="list-style-type: none">4-wire bridge
RTD Resistance	<ul style="list-style-type: none">100Ω at 32°F (0°C)
Excitation Current	<ul style="list-style-type: none">3.45mA nominal (±0.02mA)
Maximum Field Wiring Resistance	<ul style="list-style-type: none">1kΩ per wire
Resolution	<ul style="list-style-type: none">0.008Ω

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Range	<ul style="list-style-type: none">-229°F to 293°F (-145°C to +145°C)
Accuracy	<ul style="list-style-type: none">±0.025% of reading ±2 counts 14°F to 131°F (-10°C to +55°C)
Common Mode Voltage	<ul style="list-style-type: none">±250VDC to chassis ground

ANALOG OUTPUTS

Resolution	<ul style="list-style-type: none">12 binary bits
Output	<ul style="list-style-type: none">Current source 4-20mA (<i>referenced to transducer power return terminal</i>)
Common Mode	<ul style="list-style-type: none">±250V to chassis ground
Maximum/Minimum Working Loop Voltage	<ul style="list-style-type: none">30VDC to 18VDC
Loop Resistance	<ul style="list-style-type: none">900Ω with 24VDC power1.2kΩ with 30VDC power
Update Rate	<ul style="list-style-type: none">Each 500ms
Accuracy	<ul style="list-style-type: none">±0.05% of reading ±2 counts 14°F to 131°F (-10°C to +55°C)

CONTROL OUTPUTS/STATUS INPUTS

(10 Per Digital MUX Module, One Module Per Unit)

Configuration	<ul style="list-style-type: none">FET transistor source (<i>referenced to transducer power return terminal</i>)
(Configured as an Output) Output Current Capacity	<ul style="list-style-type: none">200mA maximum per point, 500mA Maximum per digital MUX I/O module
Output Voltage	<ul style="list-style-type: none">+DC – 1V nominal
Scan Rate	<ul style="list-style-type: none">Outputs may be pulsed at 50Hz maximum.

CONTROL OUTPUTS/STATUS INPUTS**(10 Per Digital MUX Module, One Module Per Unit)****(Configured as an Input)**

Input Impedance	<ul style="list-style-type: none"> • 4.7kΩ
Input Voltage	<ul style="list-style-type: none"> • Input voltages > +5VDC to < DC+ will be recognized as ON. • Input voltages < +4VDC will be recognized as OFF. • 30VDC Maximum.
LEDs	<ul style="list-style-type: none"> • Operating and fault condition indicators on each channel
Common Mode	<ul style="list-style-type: none"> • \pm250V to chassis ground

MULTI-BUS SERIAL I/O MODULE**(2 Ports Per Module)****Each port can be configured for RS-232, RS-485 2-wire or 4-wire.****RS-232**

Serial Data Output Voltage	<ul style="list-style-type: none"> • \pm7.5V typical
Recommended Load Impedance	<ul style="list-style-type: none"> • 1.5kΩ
Short Circuit Current	<ul style="list-style-type: none"> • 10mA limited
Input Low Threshold	<ul style="list-style-type: none"> • $V_L = -3.0V$
Input High Threshold	<ul style="list-style-type: none"> • $V_H = +3.0V$
Baud Rate	<ul style="list-style-type: none"> • Software selectable range: .3, .6, 1.2, 2.4, 4.8, 9.6, 19.2, 38.4kbps
Common Mode Voltage	<ul style="list-style-type: none"> • \pm250VDC to chassis ground
LEDs	<ul style="list-style-type: none"> • Indicator LEDs for each channel input, output, and handshaking signals

RS-485

MULTI-BUS SERIAL I/O MODULE**(2 Ports Per Module)****Each port can be configured for RS-232, RS-485 2-wire or 4-wire.**

Serial Data Output Voltage	<ul style="list-style-type: none">• 5V differential driver
Recommended Load Impedance	<ul style="list-style-type: none">• 120Ω (located on module)
Short Circuit Current	<ul style="list-style-type: none">• 20mA limited
Input Low Threshold	<ul style="list-style-type: none">• 0.8V
Baud Rate	<ul style="list-style-type: none">• Software selectable range: .3, .6, 1.2, 2.4, 4.8, 9.6, 19.2, 38.4kbps
Common Mode Voltage	<ul style="list-style-type: none">• ±250VDC to chassis ground
LEDs	<ul style="list-style-type: none">• Indicator LEDs for each channel input, output, and handshaking signals

DUAL ETHERNET MODULE**ETHERNET**

Physical	<ul style="list-style-type: none">• 10/100 BaseT
Speed	<ul style="list-style-type: none">• 10/100Mbits/sec
Ports	<ul style="list-style-type: none">• 2 per module
Connections	<ul style="list-style-type: none">• 8 simultaneous per port
Protocols	<ul style="list-style-type: none">• Modbus, Modbus/TCP, LPD, Syslog, Telnet, TCP, UDP• SSL (individually enabled/disabled for each virtual connection)

RS-485 2-WIRE

Ports	<ul style="list-style-type: none">• 2 per module
Serial Data Output Voltage	<ul style="list-style-type: none">• 5V differential driver
Recommended Load Impedance	<ul style="list-style-type: none">• 120Ω (termination located on module through SW Selectable enable/disable)

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Short Circuit Current	<ul style="list-style-type: none">• 120mA maximum
Input Low Threshold	<ul style="list-style-type: none">• 0.2V
Baud Rate	<ul style="list-style-type: none">• Software selectable range: .3, .6, 1.2, 2.4, 4.8, 9.6, 19.2, 38.4kbps
Common Mode Voltage	<ul style="list-style-type: none">• ± 250VDC to chassis ground
LEDs	<ul style="list-style-type: none">• Indicator LEDs for each channel input, output signals
Protocols	<ul style="list-style-type: none">• Modbus, Modbus/TCP, LPD

OPERATOR KEYPAD

Keypad characteristics	<ul style="list-style-type: none">• 25 keys with tactile and audio feedback: numeric, function, operational, and navigation keys
Data Entry Lockout	<ul style="list-style-type: none">• Internal switch and software passwords
Key Debounce	<ul style="list-style-type: none">• Software controlled

LCD DISPLAY

Display	<ul style="list-style-type: none">• 800 x 480 color graphics
Viewable Temperature	<ul style="list-style-type: none">• +14°F to +140°F (-10°C to +60°C)

ALARM INDICATOR LED

Dual Color	<ul style="list-style-type: none">• Red/green
Indication	<ul style="list-style-type: none">• Active alarm LED:<ul style="list-style-type: none">• Green indicates an acknowledged alarm exists.• Red indicates a new, unacknowledged alarm exists.• Not lit indicates no alarms present

SECURITY

Hardware

- Optional lock on housing and internal keyboard program lockout

Software

- Multi-user, multi-level password control on OMNICONNECT, OMNIPANEL access.
- Port security for SCADA and HMI systems.
- SSL encryption on Ethernet connections
- Front Panel User ID and PIN

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OMNI[®] 4000 & 7000 Flow Computer

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