

990

INTELLIGENT INTEGRATED INSTRUMENT SYSTEM

Measure • Monitor • Communicate • Control



THE BASICS

- Six Independent Input/Output Ports (Channels)
- 184 User Programmable Configuration Values
- Mixed Quantity-Rate/Scaler Measurements
- Universal Input-Output Translation
- Complete Keypad/Local/Remote Operation
- High Precision Floating Point Arithmetic
- Future Features Remotely Upgradable
- Easy Private Label Customization

DISPLAYS AND INDICATORS

- Large Backlit Liquid Crystal Display
- Multi-Color State Lamps
- Audio Annunciation

COMPUTER COMMUNICATION

- Built-In RS232/RS485 Serial Interfaces
- Built-In Remote Telcom Communication
- Network Multiple-Unit Operation
- Packetized Error Corrected Information

INFORMATION REPORTING

- Channel Programmable Report Selection
- Real-Time Y2K Safe Clock-Calendar
- Alarm or Clock Instigated Reporting
- Selectable Local/Remote Report Destination
- Secondary Telcom Disaster Recovery Number

ALARM SERVICES

- Accumulated Grand and Cyclic Quantities
- Rate/Value High/Low and Peak
- Scaler Low and Ultra Low
- Operation Service Time

ZERO FUNCTIONS

- Zero Any Accumulated Value
- Scaler Tare With Polarity
- Rate/Value Zero Permanently Saved

BATCH CONTROL

- Manual Keypad Batch Start-Stop
- Computer Controlled Quantity Delivery
- Batching State Indications

SPECIAL FUNCTIONS

- Analog Input/Output Value-Units Mapping
- User Programmable Measure Units
- Rate/Value Smoothing Filters
- Selectable Rate Time Base

DIAGNOSTICS

- Six Frequency Counters, Voltmeters/Ammeters
- Extensive Power-up and Operating Self Tests
- Telcom Line Dial Tests

CALIBRATIONS

- Factory Default Configuration
- Analog Input/Output Calibration
- Accumulated Quantity Presets

EASY INSTALLATION

- Plug-N-Play Wiring Without Special Cables
- Built-In Communicator Functions
- Wall, Panel and Desk Mounting
- Bottom or Rear Signal Access

THE MANUFACTURER

- Designed and Built in the USA
- Customer Service at 800 GET M2C2



The **990** is a full-featured precision multiport instrumentation system. It supports six independent, full function rate-totalizer and scaler input measurement ports, advanced technology output ports, and extensive local and remote information communication. The **990** combines superior technology with operating simplicity, versatility, and ruggedness. Easy to install and easy to operate. Exclusive open architecture offers a wide range of special operating capabilities organized to meet the needs of nearly any precision measurement application.

The Technology

The **990** is microcomputer based, employing surface mount technology that supports powerful floating point digital signal processing arithmetic. It is capable of remote or local feature upgrade for easy future enhancements — eliminating product obsolescence. Special built-in test capabilities offer simple installation and enhanced operating reliability. The **990's** ruggedized package is modularly architected, comprising the ideal solution for use in demanding applications and tough environments. Options allow panel, wall, or desk mounting, with support for various signal access methods.

THE 990 SYSTEM

Ports

The **990** System is modular with independent ports to meet present and future instrumentation requirements. Ports are the measurement inputs and outputs for the system, which have modules installed that may be intermixed as desired. Inputs provide for value accumulation or value scaling of process frequency, voltage or current. Independent input smoothing filters compensate for erratic signals from sources such as metering pumps, or reject electrical noise when inputting low level signals over extended cable distances. Output ports provide voltage or current, relay or pulse support, with programmable sensor excitation voltages. Input port measurements may be user programmed to drive output ports, detect alarm limit conditions, and provide information to be sent periodically to local or remote host computers.

Communication

Communications provide for data acquisition, command and control functions, and support information reporting and alarm signaling. The standard **990** has a built-in RS-232C interface, and is configurable for RS-485 multidrop and remote modem telecommunication. The telcom function supports collision avoidance and retry capabilities and may be user programmed with separate telephone numbers for alternate host or disaster recovery. Communication is initiated by command, by scheduled reports based on the date-time clock, or by alarms. All communications are error corrected and networkable. Communication resources are shared by input ports, which are individually programmed to send information over a local link or the remote telcom link to central host sites.

Reporting

A user programmable Y2K safe date-time clock initiates measurement reports based on the programmed date-time and frequency.

Multiple Alarms

Independent user programmable thresholds are available for every measurement variable for every input port including quantity, scaler value, process rate, peak demand rate, process input, and service time. Alarms may be programmed to activate audio and lamp indicators and cause relay or analog outputs. Alarms are independently programmed for each input port to invoke local and remote communications.

Batch Delivery

Quantities are easily delivered using the front panel keypad or by command from a local or remote computer. Quantity delivery amounts are permanently saved when programmed from the keypad.

Indicators

The **990** features a large backlit liquid crystal alphanumeric display, visible from a distance even in low light. The multi-colored lamps and audio indicator provide quick and easy status for quantities, rates, times and batch states, reporting, telcom and diagnostic status, and more. Key activation feedback is also provided by the audio indicator.

Controls

The **990** has no power switch to be accidentally turned off. Operation can be completely controlled from the integral eight key pad when used to program and review values. Key inputs can be single-touch activated, or multiply-activated when continued to be depressed. The keypad also provides splash proofing and heavy weather resistance.

Diagnostics

Powerful automatic built-in tests support easy installation and ensure a long, trouble-free operating life. These tests include overall system operating status, memory conditions, telcom adapter status, clock operation, lamp and audio indicators, and display-keypad operation.

Custom Services

We invite requests for private labeling or customized solutions to meet your specific system requirements. We offer system design, software and firmware development, electronic design, product packaging, and manufacturing.

Call Florite at 800 GET M2C2

...or just visit our web site at www.florite.com to discover how easily we can provide your next solution.



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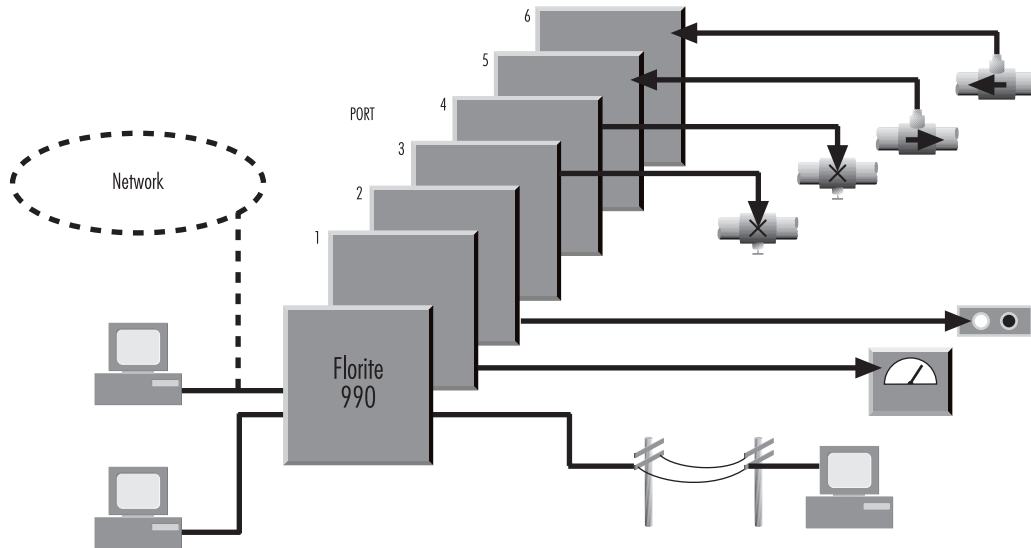
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APPLICATIONS

The **990** suits applications requiring advanced multiple channel precision sensor measurements, integrated with extensive information communication capabilities. The **990** services nearly all process signals and sensor measurements for manufacturing and batch processing, machine control, biomedical, chemical, pharmaceutical, laboratories, ecologic, agriculture, petroleum, heating and air conditioning, water fil-

tration and purification, beverage and fluid delivery, automated billing, asset accounting and service programs, performance tracking and verification, quality assurance, operations and maintenance management information, regulatory compliance, liability mitigation, and public safety.



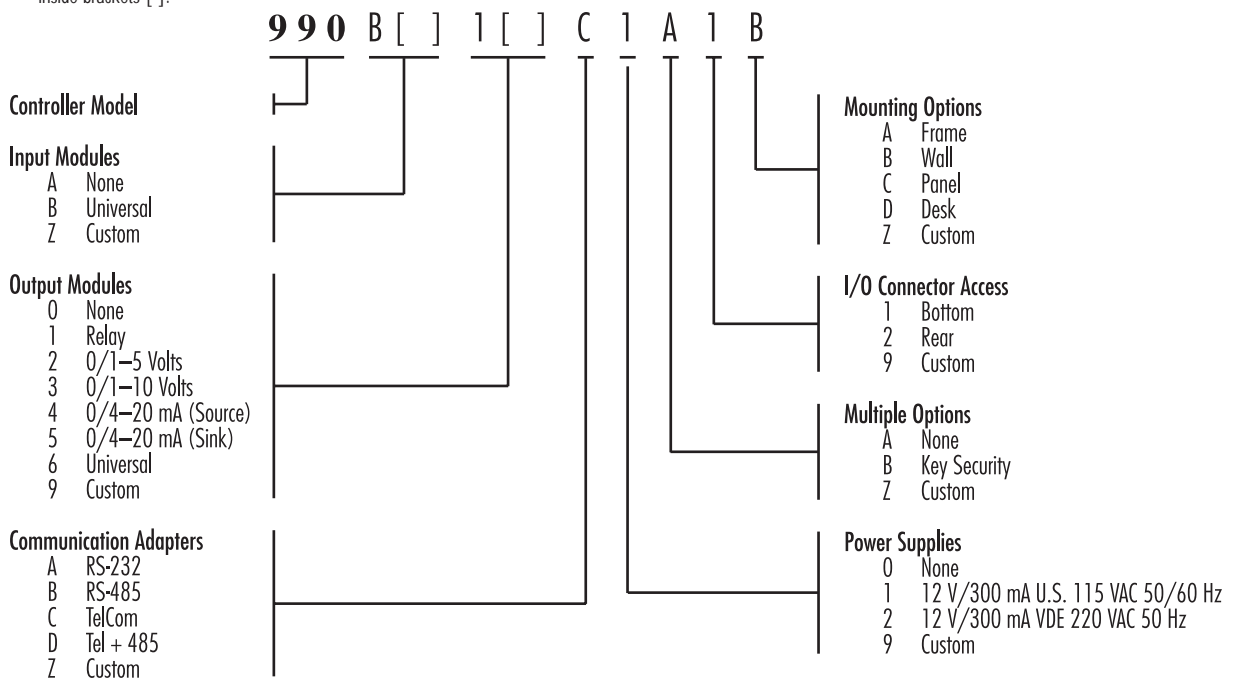
SYSTEM ORDER CODE

USE THE SCHEME BELOW TO DETERMINE THE FLORITE ORDER CODE.

EXAMPLE: To order a Florite 990 with two universal inputs, three relay outputs, TelCom interface, 115 VAC power supply, and wall mount option with bottom I/O connector access, you would use the following order code:

990 B[2] 1[3] C 1 A 1 B

NOTE: Place number of port modules inside brackets [].



990 Technical Specifications

| | | | |
|----------------------------|--|-------------------------|--|
| Totalizer Ranges | 0–99,999,999.99 units | Process Rate Range | 0–9,999,999.99 units/time base |
| Service Time Range | 0–65,535 hrs | Peak Rate | 0–9,999,999.99 units/time base |
| Process Input | Hz, volts, mA | Measurement Type | Rate-Total or Scaler |
| Programmable Values | | | |
| Quantity 1 and 2 Limits | 0.00–99,999,999.99 units | Service Time Limit | 0–65,535 hrs |
| High and Low Rate Limits | 0.00–9,999,999.99 units | MeterConstant | 0–999,999 (pulse/quantity ratio) |
| Telephone Numbers | 2 each, 16 Chars (0-9, *, #, A, B, C, D, T, P, ', ') | Measure Units | 3 Chars, (a-z, 0–9, A-Z, other common) |
| Answer Rings | 0–255 | Quantity 1 and 2 Preset | 0-99,999,999.99 |
| Network Address | 0–65,535 | Batch Amount | 0–99,999,999.99 units |
| Date–Time | Day/month/year, hrs/min/sec | Analog Input and Output | Low/High Value=0-5.000/20.00, Low/High Unit=0-9,999,999.99 |
| Comm Port Select | SIO (local)/TEL (remote), Report/Alarm | Rate Time Base | Sec/min/hrs |
| Report Frequency | 0–999 sec/min/hrs/days/months | Port Select | Input, output, off |
| Rate/Value Filter | Selections=0–9, Smoothing Ratio=4:1 | | |
| Communicator Functions | Clone (program field unit values), Reverse Clone (read field unit values), Factory Preset (zero field unit accumulated values) | | |
| Factory Functions | Keypad Security (on/off), Report Message Response Retry (on/off), analog cal, default set | | |
| Runtime Operations | Clock and Telcom installation status | | |
| Scaler TARE Function | [RST/TARE] key saves immediate input value as a zero reference, applied as offset to subsequent measured values, permanently saved | | |
| Indicators | | | |
| Display | Backlit, liquid crystal super-twist nematic 2x16 alphanumeric dot matrix, ±20 degree view, yel-grn, 122x44 mm | | |
| Audio | 2.0 KHz, 85 db @ 10 cm | | |
| Lamps | LED, Quantity/Rate/Time, each red/green/orange | | |
| Keypad | 8-key, metal dome tactile — Chan, qty, prog, view, start, stop, zero/tare, rate/value | | |
| Input Port | | | |
| Interchannel Isolation | >74 dbv | | |
| Digital Pulse | 0–24 V, 2.4 V threshold (typical), Z-in=8.7K tied to excitation voltage, excitation=5 or 12 VDC regulated, 24.570 KHz, Precision=±0.01%, Hall effect open collector TTL/CMOS switch contacts, 3.5 mm audio stereo plug (sleeve=gnd ring=signal tip=excitation) | | |
| Analog Voltage | Levels=0/1–5.000 volts, Z-in=10.0K, Precision=±0.024% (12 bits), Excitation=5 or 12 VDC regulated, 3.5 mm audio stereo plug (sleeve=gnd, ring=signal, tip=excitation) | | |
| Analog Current | Levels=0/4–20.00 mA, Z-in=100 ohms, Precision=±0.024% (12 bits), Excitation=5 or 12 VDC regulated, 3.5 mm audio stereo plug (sleeve=gnd, ring=signal, tip=excitation) | | |
| Output Port | | | |
| Analog Current | Levels=0/4–20.00 mA, Z-out=121 ohms, Precision=±0.024%, Passive (std) or Active (option), 3.5 mm audio stereo plug (sleeve=neg, ring=n/c, tip=pos.) | | |
| Analog Voltage | Levels=0/1–5.000 Volts, Z-out=1.0 ohm, Precision=±0.024%, 3.5 mm audio stereo plug (sleeve=neg., ring=n/c, tip=pos.) | | |
| Relay Rating | Form "C," 125 VAC, 2 A., ISO=1,000 V, Open Collector=(Pwr driver option), 3.5 mm audio mono plug (sleeve=contact, ring=n/c, tip=contact) | | |
| Telecom Port | RJ-11, tip/ring, FCC Subpart "H," modem, V.22 bis full duplex | | |
| Local Serial Ports | EIA/TIA 232D (RS-232C), full duplex, 3.5 mm audio stereo plug | | |
| DTE | Sleeve=gnd, ring=TXD, input tip=RXD | | |
| DCE | Sleeve=gnd, ring=RXD, input tip=TXD | | |
| Multidrop Port | EIA/TIA485 multidrop master/slave dual jack plug-on card (option) | | |
| Value Memory | Non-volatile EEROM 100 year retention without power, Capacity=64x8 (external)/512x8 (internal), Write=1.0 ms/10 ⁶ writes, Error detect algorithm | | |
| Diagnostics | Memory checksums, installation, local serial, telecommunication | | |
| Power Required | 12–24 VDC, 65–33 mA (no options), 110–130 VAC, 50–60 Hz, U.S. standard wall adapter, 2.0 mm (center post positive) DC power jack, UL/CSA (VDE 220) VAC, 50 Hz Europe option | | |
| Consumption | 0.78 watts (no options) | | |
| Clock-Calendar Battery | 3.0 VDC, 35 mA/hr lithium, 9 years | | |
| Operating Environment | 0–55° C (30–132° F) 0–95% RH non-condensing, Shipping/Storage: –20° to +85° C | | |
| Enclosure | Panel, wall, or desk mount, aluminum anodized, 8.25 inches x 4.05 inches x 2.125 inches (210 x 103 x 54 mm) | | |
| Weight | 1.865 lbs. (847 gm.) weight | | |
| Publications | Installation and Operation Manual, Warranty Registration | | |
| Regulatory Qualifications | FCC Part 15 Class A verified, FCC Part 68 5TUUSA-23969-DT-E, UL and CSA: Power Adapter, Foreign: CSA and CE mark (as required) | | |