

994

INTELLIGENT INTEGRATED INSTRUMENT SYSTEM

Measure • Monitor • Communicate • Control



PROCESS CONTROL FUNCTIONS

Linear PID
Batch Quantity
Dose Mixing
Manual Output Control
Monitor Measurements and Alarms

CONTROL FUNCTION SERVICES

Rate/Value Smoothing Filters
Quick-Time Control Response
Control State Indicators
Manual or Computer Controlled

SYSTEM BASICS

Four Independent Input/Output Ports (Channels)
122 User Programmable Configuration Values
Mixed Quantity-Rate/Scaler Measurements
Universal Input and Output Scaling
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

Daisy Chainable RS232 Serial Repeater Interface
LAN and WAN Communications
Multiple-Unit Network Operation
Automatic Communication Port Routing
Error Corrected Compressed Information

INFORMATION REPORTING

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

ALARM SERVICES

Grand and Running Totals
Rate/Value High/Low Detection
Operation Service Time

ZERO FUNCTIONS

Zero Any Accumulated Value
Scaler Tare With Polarity
Zero Value Permanently Saved

SPECIAL FUNCTIONS

Selectable Rate Time Base
User Programmable Measure Units

DIAGNOSTICS

Four Frequency Counters, Voltmeters and Ammeters
Extensive Power-up and Operating Self Tests
WAN Installation Tests

CALIBRATIONS

Factory Set Digitally Stored
User Factory Default Configuration

EASY INSTALLATION

Built-In Communicator Functions
Wall, Panel and Desk Mounting

THE MANUFACTURER

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



The 994 is a full-featured precision multiport instrumentation system, supporting control and logging functions using four independent, full function rate-totalizer and scaler input measurement ports, advanced technology output ports, built-in data logging capability, multiplexed input port expansion, and extensive local and remote information communication. The 994 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 any precision measurement and data reporting application.

The Technology

The 994 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 994's ruggedized package is modularly architected, comprising the ideal solution for use in demanding applications and tough environments. Options allow panel or desk mounting.

The 994 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 and quick-tune 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. Inputs provide programmable sensor excitation voltages and currents. Input port measurements may be user pro-

THE 994 SYSTEM

grammed to drive output ports, detect alarm limit conditions, and provide information to be sent periodically to local or remote host computers.

Process Control

Process control functions have been built into your 994 Instrument System, including proportional-integral-differential (PID), batch, dose, manual and monitor, and are completely controlled either manually using the keypad and display or by using serial computer commands. Monitor allows the output of rescaled process measurements linked from an input port and relay contact states. Batch discontinuously controls delivery of programmed amounts. Dose controls continuous mixing of different constituents having a wide mixing ratio. PID operation provides continuously variable control for processes that required maintaining a programmed performance target.

Data Logging

Data logging may be optionally installed in the 994 Instrument System, and supports date-time stamped storage for 131,040 sequential records acquired from input ports at a programmed frequency rate. Operation is completely controlled from the keypad, or by local or remote serial computer commands. The logging controls include Start, Stop, Clear, or Send records.

Communication

Communications services provide for data acquisition, command and control functions, and support information reporting and alarm signaling. The standard 994 has a built-in RS-232 repeater interface, and is configurable for LAN RS-485 multidrop, Ethernet, DeviceNet, and remote WAN modem communications. The WAN facility supports collision avoidance and retry capabilities and may be user programmed with separate network access addresses 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 or remote 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, 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.

Indicators

The 994 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.

Operator Controls

The 994 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 features splash proofing and is resistant to heavy weather.

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, communication adapter status, clock operation, lamp and audio indicators, and display-keypad operation.

Custom Services

Florite invites 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.



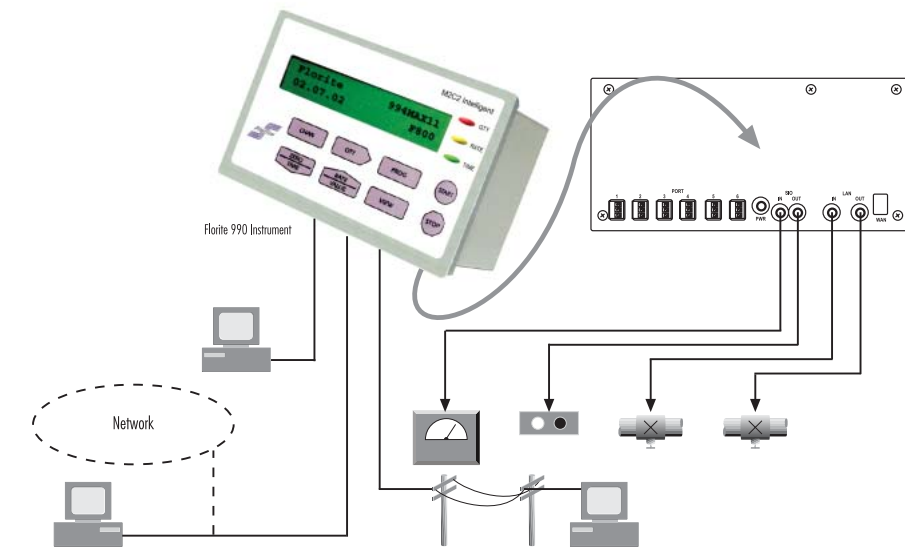
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APPLICATIONS

The 994 suits applications requiring advanced multiple channel precision process signal and sensor measurements, integrated with extensive information communication capabilities. The 994 services all process signals and sensor measurements and controls required to support manufacturing and batch processing, linear value and rate control, machine control, biomedical, chemical, pharmaceutical, laboratories,

ecologic, agriculture, petroleum, heating and air conditioning, water filtration 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.



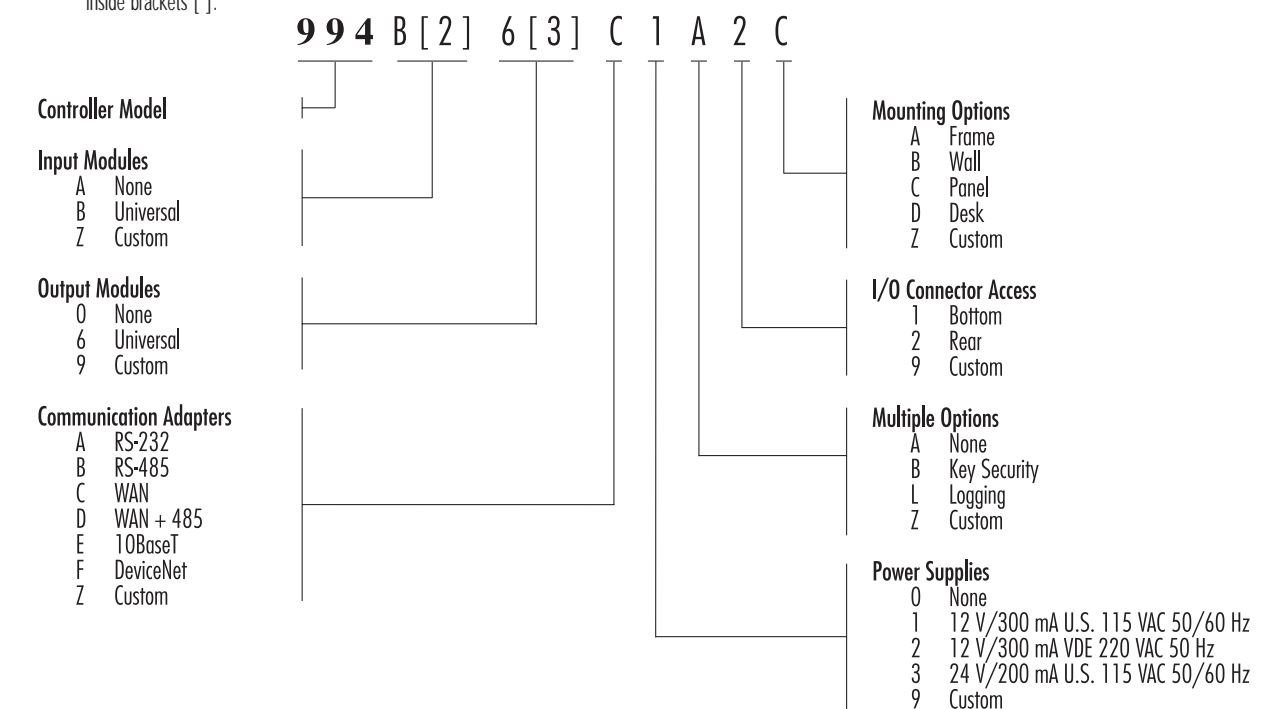
SYSTEM ORDER CODE

USE THE SCHEME BELOW TO DETERMINE THE FLORITE ORDER CODE.

EXAMPLE: To order a Florite 994 with two universal inputs, three universal outputs, WAN interface, 115 VAC power supply, and panel mount, and rear signal access, you would use the following order code:

994 B[2] 6[3] C 1 A 2 C

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



994 Technical Specifications

Control Functions	PID, batch, dose, manual, monitor	Process Rate Range	0.00±9,999,999.99 units/time base
Service Time Range	0–65,535 hrs	Totalizer Ranges	0–99,999,999.99 units
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)
WAN 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	Ctrl Amount	0.00±9,999,999.99 units
Date–Time	Day/month/year, hrs/min/sec	Analog Input and Output	Low/High Value=0-10.000/20.00, Low/High=0.00±9,999,999.99 units
Comm Port Select	SIO (main)/WAN/LAN, Report/Alarm	Rate Time Base	Sec/min/hrs
Report/Log/Frequency	0–999 sec/min/hrs/days/months	Port Select	Input, output, off
Rate/Value Filter	0 to –20 dbHz, Smoothing Ratio=4:1		
Factory Functions	Keypad Security (on/off), Report Message Response Retry (on/off), analog cal, default set		
Runtime Operations	Clock and LAN/WAN 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	>85 dbv (nom.)		
Interface	3.5mm plug, sleeve=gnd, ring=signal, tip=+excitation or wire terminal plugs		
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, ±0.01%, Hall effect open collector TTL/CMOS switch contacts		
Analog Voltage	Levels=0/1–10.000 volts, Z-in=10.0K, ±0.024% (12 bits), Excitation=5 or 12 VDC regulated, 2.300 mA constant		
Analog Current	Levels=0/4–20.000 mA, Z-in=100 ohms, ±0.024% (12 bits), Excitation=unregulated supply voltage		
Output Port			
Interface	3.5mm plug or wire terminal plugs		
Analog Current	0/4–20.000 mA, Z-out=60.4 ohms, ±0.024%, source or sink (sleeve=neg, ring=n/c, tip=pos.)		
Analog Voltage	0/1–10.000 Volts, Z-out=1.0 ohm, ±0.024%, (sleeve=neg., ring=n/c, tip=pos.)		
Relay Rating	Form "C," 28 VAC, 5 A., ISO=1,000 V, (sleeve=N.O., ring=N.C., tip=common)		
WAN 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		
LAN Port	EIA/TIA485 multidrop master/salve dual jack plug-on card (option), Ethernet or DeviceNet		
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 (warm up to rated accuracy = 30 min.)		
Enclosure	NEMA 4X panel or desk mount, aluminum anodized, 3/16 DIN (96 x 72 x 111 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)		