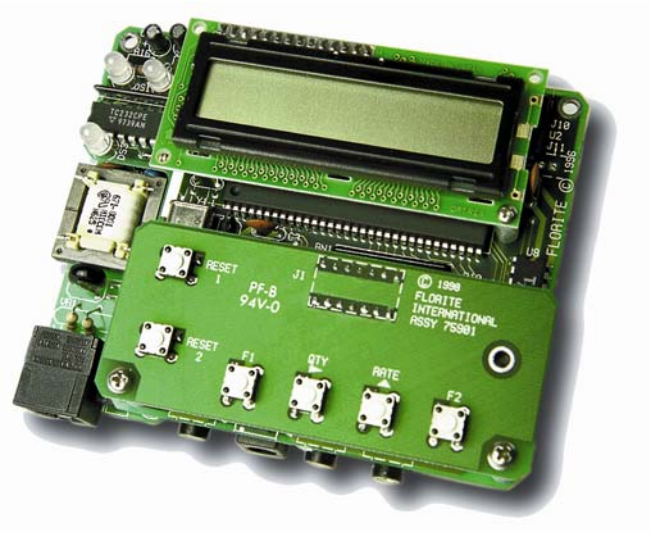
Model N920 Embedded Controller

Training Guide

Model N920 Instrument
Embedded Controller

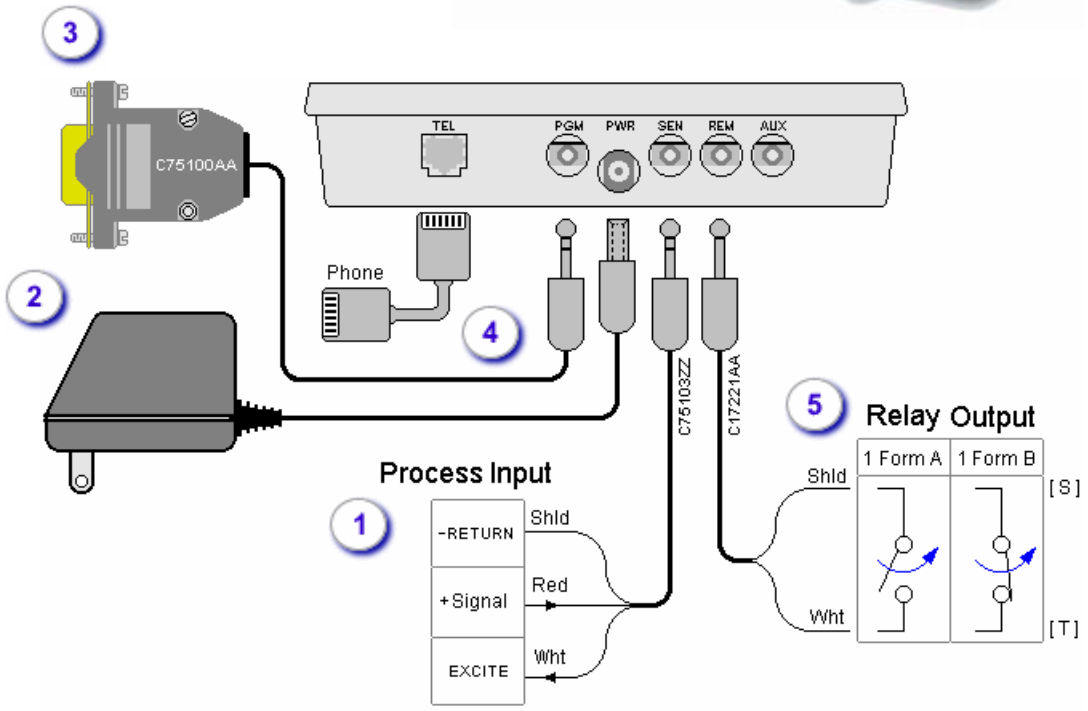
Wiring & Programming Guide



Installation Instruction

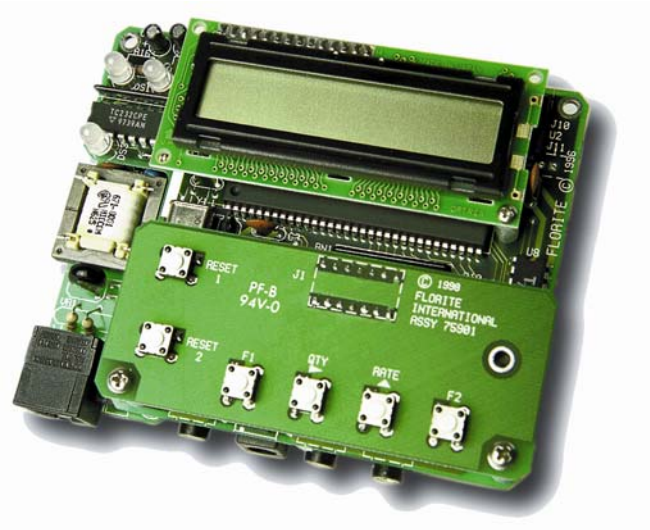
1. Connect input or output into the desired instrument port as shown.
2. Insert power plug into PWR jack as shown.
3. Plug the D9 part of a (C75100AA) RS-232 cable into a computer serial port. Insert the plug on the other end of the cable into the N920 PGM jack as shown.
4. When your unit is installed with the WAN modem option then plug either end of a (C75106AG) cable (RJ-11) into the corresponding jack and the other end of the cable into a standard telephone jack as shown.
5. When relay output option is installed then plug the (C17221AA) cable into the REM jack and connect the wires shown to the controlled equipment.

Model N920 Connections



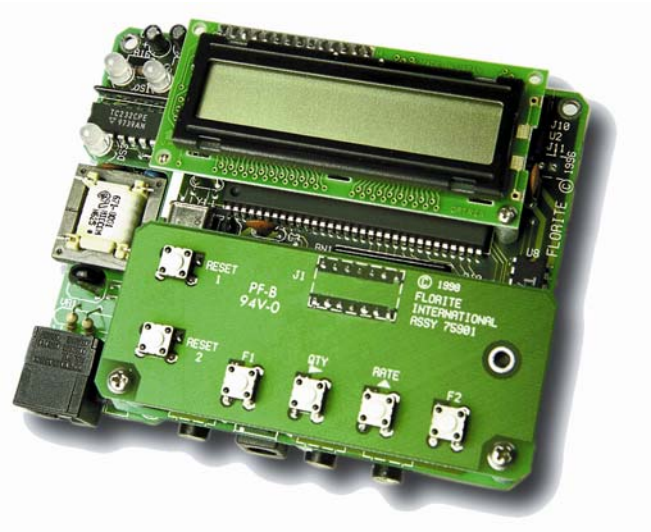
Model N920 Instrument
Embedded Controller

1) **Keypad & Functions**
2) **Lamp Indicators**
3) **Navigation & Structure**
4) **Programming Navigation**
5) **Viewing Navigation**
6) **Optional Configuration**

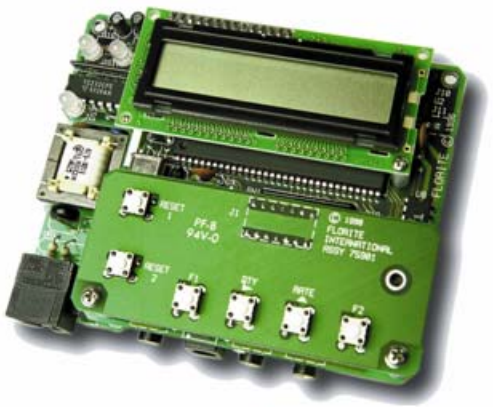


Model N920
Embedded Controller

Instrument Keypad & Functions



N920 Key Functions



Basic Key Functions

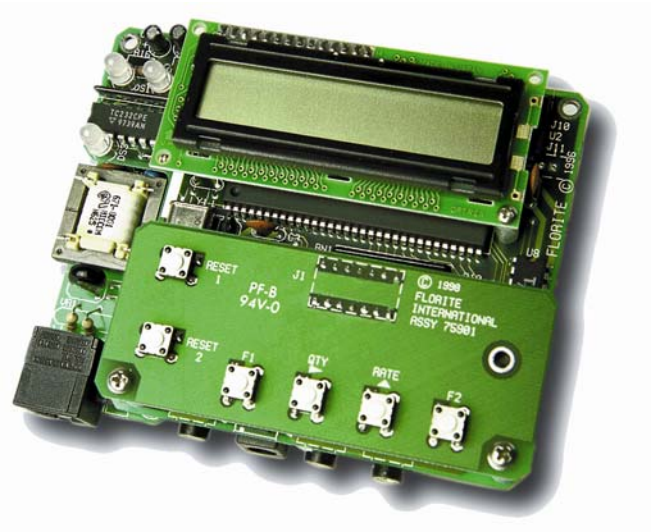
	View State	Program State
F1	Enter view state	Exit program state
F2	Enter program state	View and program values
QTY	View Quantity 1 value	Scroll to next right character
RATE	View process rate	Increase blinking value
Reset 1	Zero value being viewed	
Reset 2	Zero Quantity 2 value	Decrease blinking value

Macro Key Functions

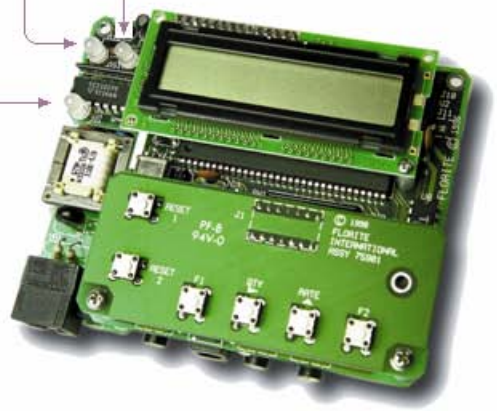
Reset 1	+	Reset 2	Zero all measured values
F1	+	Reset 1	Set factory defaults
RATE	+	F1	Start control process
RATE	+	F2	Stop controll process
Reset 2	+	RATE	Recall field unit values
Reset 2	+	F2	Zero field unit measured values
Reset 2	+	F1	Zero field unit Quantity 2
QTY	+	RATE	Wide area network log-on dial-out

Model N920
Embedded Controller

Instrument Lamp Indicators



N920 Lamp Indicators



QTY1

Lamp State	Condition Description
GRN-GRN	No quantity alarm
RED-RED	Quantity 1 alarm
ORN-OFF	Quantity 1 warning
RED-OFF	Service time alarm

RATE

Lamp State	Condition Description
GRN-GRN	No rate alarm
RED-OFF	High rate alarm
ORN-OFF	Low rate alarm
GRN-OFF	Value report pending
GRN-ORN	Wide area network log-on in process

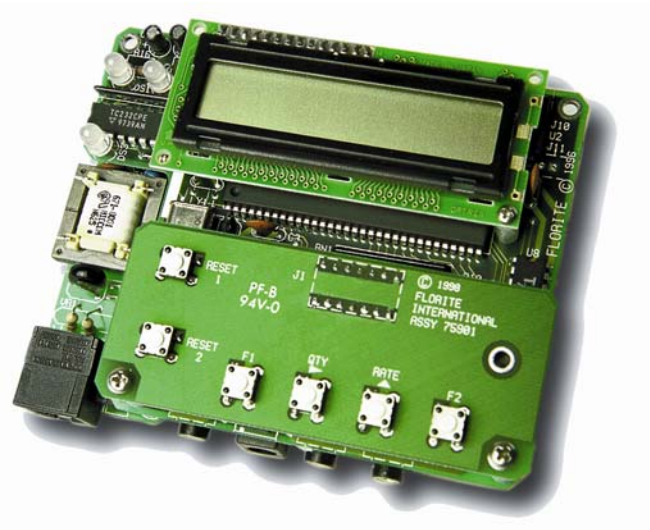
QTY2

Lamp State	Condition Description
GRN-GRN	No quantity 2 alarm
RED-RED	Quantity 2 alarm
ORN-OFF	Quantity 2 warning <or> Batch-Dose control in process

NOTE: LAMP STATES SHOWN AS ALTERNATING COLORS
WHERE ORN-OFF MEANS CHANGING BETWEEN
ORANGE THEN NOT ILLUMINATED

Model N920
Embedded Controller

Instrument Navigation & Structure



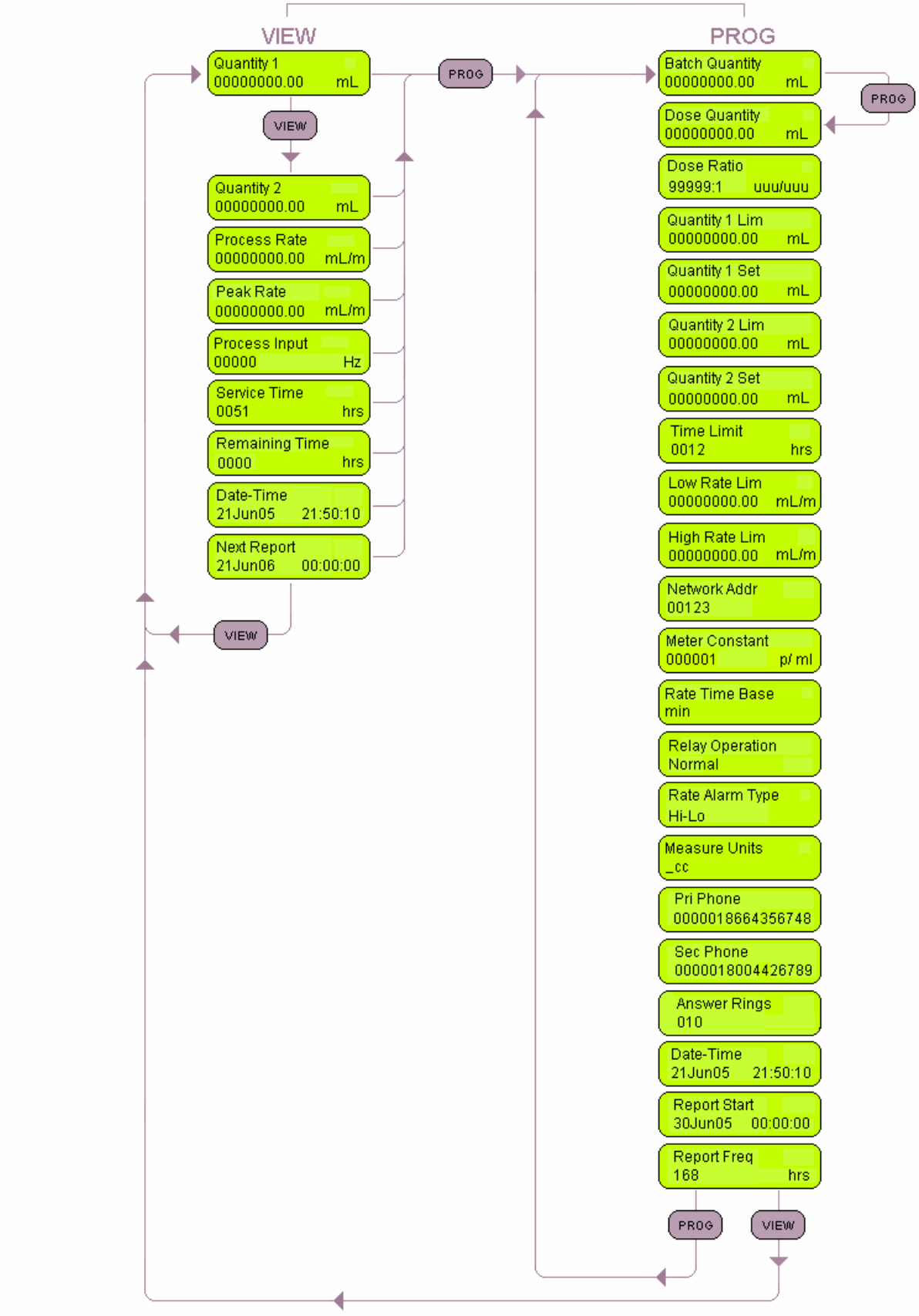
N920 Configuration

Prog Value	Input	Output	
Quantity 1 Lim			
Quantity 1 Set			
Quantity 2 Lim			
Quantity 2 Set			
Time Limit			
Low Rate Lim			
High Rate Lim			
Meter Constant			
Rate Time Base			
Rate Alarm Type			
Measure Units			
Batch Quantity			Batch Control
Dose Quantity			Dose control
Dose Ratio			
Relay Operation			Monitor-Batch-Dose

System				
Prog Value		Prog Option		
Network Addr	00000	Report	ON	OFF
		Secure	ON	OFF
Date-Time	01Nov05	Error	ON	OFF
Report Start	01Jan06	Version	Max	Std
Report Freq	000 / min	Batch	ON	OFF *
Pri Phone	0000000000000000	Dose	ON	OFF *
Sec Phone	0000000000000000	Decimal	X.X	XX
Answer Rings	000			

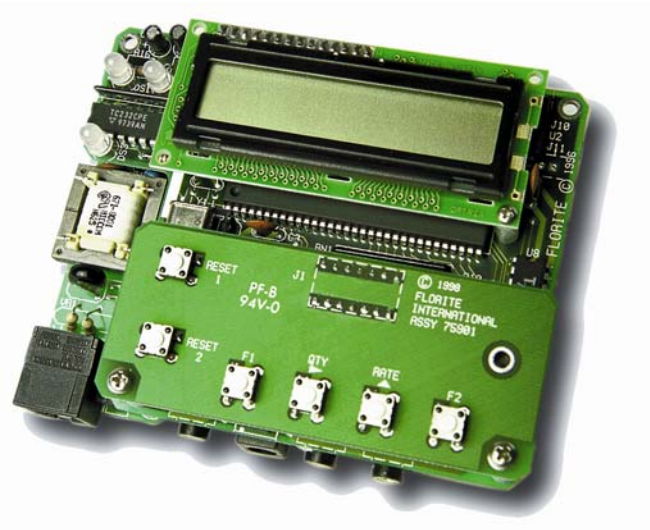
* Monitor when Batch OFF and Dose OFF

N920 Navigate
Input - Output - System



Model N920
Embedded Controller

Instrument Programming Navigation



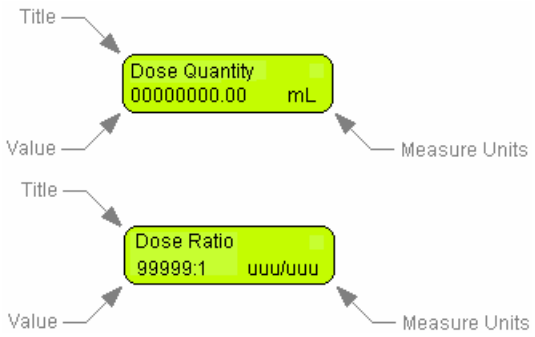
Batch Control Quantity - Output Program

Function
This screen is used to program the quantity that is desired to be delivered upon initiation of Batch processing.

Navigation
Access this screen using the F2 (PROG) key until reaching this screen. Note the first numeric field blinks indicating readiness for programming. The screen above will not be included in the program value list when Batch configuration is not selected.

Select
- Value - change value by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new selection by pressing the F2 (PROG) key.

Dose Control Values - Output Program



Function

These screens are used to program the values required to support Dose control processing. The Dose Quantity is the amount that an injector delivers into a base quantity when activated. The Dose Ratio is the desired proportion of base quantity divided by the injected dose amount.

Navigation

Access these screens using the F2 (PROG) key until reaching these screens. Note the first numeric field blinks indicating readiness for programming. The screens above will not be included in the program value list when Dose configuration is not selected.

Select

- Value - change value by pressing the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new selection by pressing the F2 (PROG) key.

Quantity 1 Lim - Input Program

Function
This screen is used to program the quantity amount above which a quantity 1 alarm condition is declared.

Navigation
Access this screen by using the using the F2 (PROG) key until reaching this screen. Note the first numeric field blinks indicating readiness for programming.

Select
- Field - select value to change by pressing the QTY (right) key.
- Value - change value by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new selection by pressing the F2 (PROG) key.

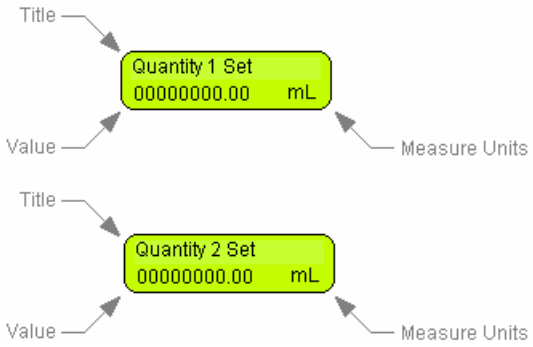
Quantity 2 Lim - Input Program

Function
This screen is used to program the quantity amount above which a quantity 2 alarm condition is declared.

Navigation
Access this screen by using the F2 (PROG) key until reaching this screen. Note the first numeric field blinks indicating readiness for programming.

Select
- Field - select value to change by pressing the QTY (right) key.
- Value - change value by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new selection by pressing the F2 (PROG) key.

Quantity 1 and Quantity 2 Set - Input Program

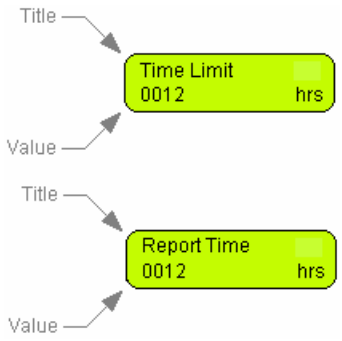


Function
These screens are used to program the associated quantity with a pre-set amount.

Navigation
Access this screen by using the using the F2 (PROG) key until reaching this screen. Note the first numeric field blinks indicating readiness for programming.

Select
- Field - select value to change by pressing the QTY (right) key.
- Value - change value by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new selection by pressing the F2 (PROG) key.

Time Limit and Report Time - Input Program



Function
This screen has two uses as determined by the Report configuration programmed state.

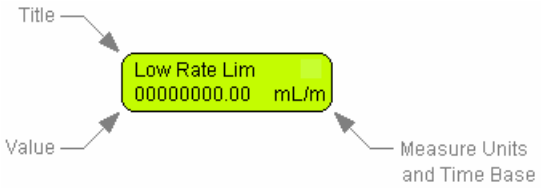
When Report is Off - this screen becomes Time Limit which is used to program a time amount above which a service time alarm condition is declared.

When Report is On - this screen becomes Report Time allowing periodic reports of measurements to be sent without the need for the real time clock option to be installed.

Navigation
Access this screen by using the F2 (PROG) key until reaching this screen. Note the first numeric field blinks indicating readiness for programming.

Select
- Field - select value to change by pressing the QTY (right) key.
- Value - change value by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new selection by pressing the F2 (PROG) key.

Low Rate Lim

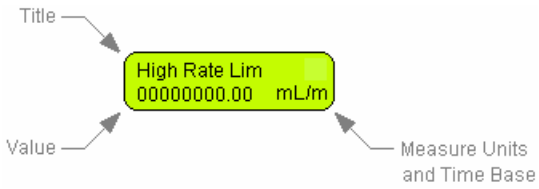


Function
This screen is used to program the rate value below which an alarm is detected.

Navigation
Access this screen by using the F2 (PROG) key until reaching this screen. Note the first numeric field blinks indicating readiness for programming.

Select
- Field - select value to change by pressing the QTY (right) key.
- Value - change value by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new selection by pressing the F2 (PROG) key.

Hi Rate Lim - Input Program

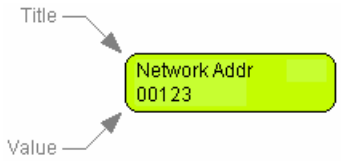


Function
This screen is used to program the rate value above which an alarm is detected.

Navigation
Access this screen by using the F2 (PROG) key until reaching this screen. Note the first numeric field blinks indicating readiness for programming.

Select
- Field - select value to change by pressing the QTY (right) key.
- Value - change value by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new selection by pressing the F2 (PROG) key.

Network Address - System Program



Function

This screen is used to program the base address for serial communication programming and information reporting.

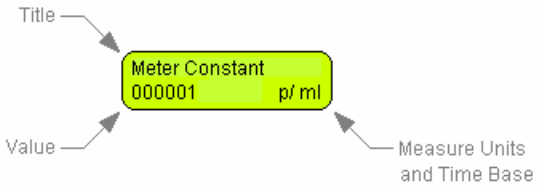
Navigation

Access this screen by pressing the F2 (PROG) key until reaching the desired screen. Note the first character field blinks indicating readiness for programming.

Select

- Field - by pressing the QTY (right) key.
- Character - change by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new value by pressing the F2 (PROG) key.

Meter Constant - Input Program

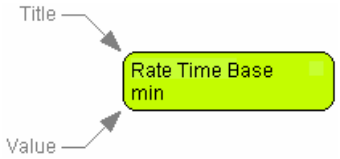


Function
This screen is used to program the factor by which measured pulses are converted to an engineering value in the measure units indicated.

Navigation
Access this screen by using the F2 (PROG) key until reaching this screen. Note the first character field blinks indicating readiness for programming.

Select
- Field - by pressing the QTY (right) key.
- Value - change by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new units character string by pressing the F2 (PROG) key.

Time Base - Input Program

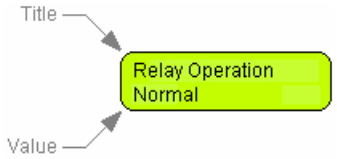


Function
This screen is used to program the time base used for input signal rate and quantity measurements in units of seconds, minutes or hours.

Navigation
Access this screen by using the F2 (PROG) key until reaching this screen. Note the value field blinks indicating readiness for programming.

Select
- Press either RESET 2 (CHAN) (down) or RATE (up) key.
- Press F2 (PROG) key to save the new selection.

Relay Operation - Output Program



Function

This screen is used to program the desired relay contact state conditions. Normal operation without activation criterion causes Form-A relay contacts to be OPEN (un-energized) - and Form-B contacts to be CLOSED (un-energized). Reverse operation causes opposite contact states such as without activation criterion - From-A contacts CLOSED or Form-B contacts OPEN.

This selection provides a means to pre-determine critical default power loss contact state conditions.

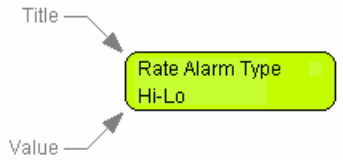
Navigation

Access this screen by using the F2 (PROG) key until reaching this screen. Note the first character field blinks indicating readiness for programming.

Select

- Character - change by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new units character string by pressing the F2 (PROG) key.

Rate Alarm Type - Input Program

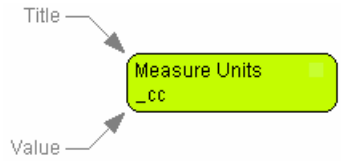


Function
This screen is used to program the source of a rate alarm as either from immediate High or Low rate conditions, or long-term average value state. The default setting is Hi-Lo.

Navigation
Access this screen by using the F2 (PROG) key until reaching this screen. Note the first character field blinks indicating readiness for programming.

Select
- Character - change by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new units character string by pressing the F2 (PROG) key.

Measure Units - Input Program



Function

This screen is used to program a three character field defining units of measure representing the physical engineering measurement.

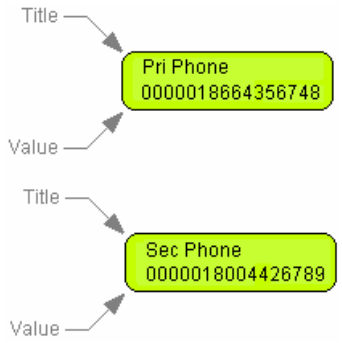
Navigation

Access this screen by using the F2 (PROG) key until reaching this screen. Note the first character field blinks indicating readiness for programming.

Select

- Field - by pressing the QTY (right) key.
- Character - change by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new units character string by pressing the F2 (PROG) key.

Alarm and Report Phone Numbers - System Program



Function

These screens are used to program the phone numbers to remotely access computers and data collection equipment to report either one or more alarm conditions, or send scheduled measured information.

Should an alarm condition occur without the primary number programmed - the alarm will be sent to the secondary number to insure alarm information is reported. When scheduled reports are enabled - alarm information will be sent along with the value report which will be delayed by the programmed Report Frequency.

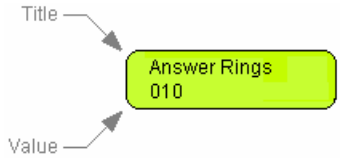
Navigation

Access these screens by pressing the F2 (PROG) key until reaching the desired screen. Note the first character field blinks indicating readiness for programming.

Select

- Field - by pressing the QTY (right) key.
- Character - change by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new value by pressing the F2 (PROG) key.

Answer Rings - System Program



Function

This screen is used to program the number of public switched telephone system rings after which the ringing line is answered by the instrument when the modem option is installed. This function is often used for maintenance, diagnostic, and general remote access purposes. The line will not be answered if Answer Rings is set to zero

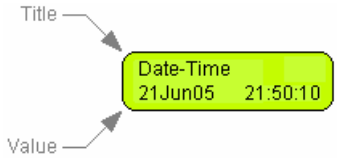
Navigation

Access this screen by pressing the F2 (PROG) key until reaching this screen. Note the first character field blinks indicating readiness for programming.

Select

- Field - by pressing the QTY (right) key.
- Character - change by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new value by pressing the F2 (PROG) key.

Date-Time - System Program



Function

This screen is used to program the real time clock date and time. It is comprised of a date field and a 24 hour clock time field. This screen will not exist in the program list unless the real time option is installed.

Navigation

Access this screen by pressing the F2 (PROG) key until reaching the desired screen. Note the first character field blinks indicating readiness for programming.

Select

- Field - by pressing either the QTY (right) key.
- Character - change by pressing RATE (up) key.
- Program - save new value by pressing the F2 (PROG) key.

Report Start - System Program

Function

This screen is used to program the date and time that scheduled value reports are to then be sent. It is comprised of a date field and a 24 hour clock time field. This screen will not exist in the program list unless the real time option is installed.

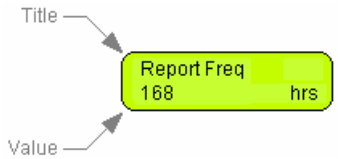
Navigation

Access this screen by pressing the F2 (PROG) key until reaching this screen. Note the first character field blinks indicating readiness for programming.

Select

- Field - by pressing the QTY (right) key.
- Character - change by pressing RATE (up) key.
- Program - save new value by pressing the F2 (PROG) key.

Reporting Frequency - System Program



Function

This screen is used to program the rate at which measurement information is sent. It is comprised of a three character numeric field, and a time field of either seconds, minutes, hours, days or months. This screen will not exist in the program list unless the real time option is installed.

Navigation

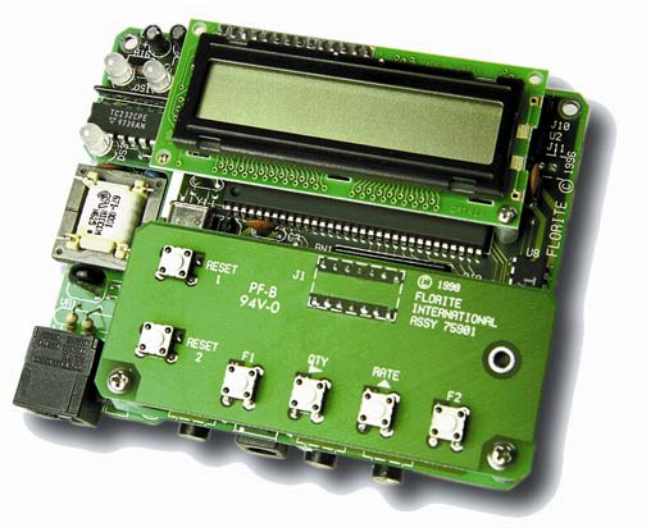
Access this screen by pressing the F2 (PROG) key until reaching this desired screen. Note the first character field blinks indicating readiness for programming.

Select

- Field - by pressing the QTY (right) key.
- Character - change by pressing either the RESET 2 (CHAN) (down) or RATE (up) key.
- Program - save new value by pressing the F2 (PROG) key.

Model N920
Embedded Controller

Instrument Viewing Navigation



Quantity 1 - Input View

Function
This screen is used to independently view and zero the accumulated port quantity 1 when the port time base is set for seconds, minutes, or hours.

Navigation
Access this screen by using the F1 (VIEW) key until reaching this screen.

Zero
Press the RESET 2 (CHAN) key while viewing.

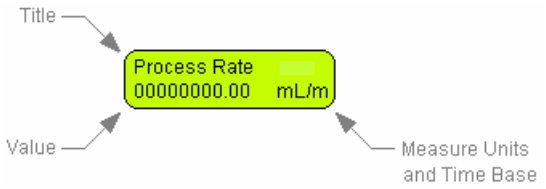
Quantity 2 - Input View

Function
This screen is used to independently view and zero the accumulated port quantity 2 when the port time base is set for seconds, minutes, or hours.

Navigation
Access this screen by using the F1 (VIEW) key until reaching this screen.

Zero
Press the RESET 2 (CHAN) key while viewing.

Rate - Input View



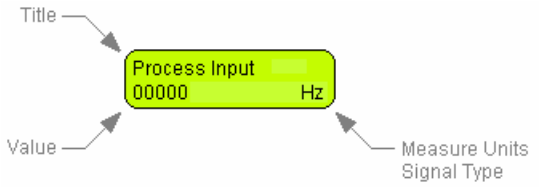
Function

This screen is used to view the present process rate when the port time base is set for seconds, minutes, hours.

Navigation

Access this screen by using the F1 (VIEW) key until reaching this screen.

Process Input - Input View



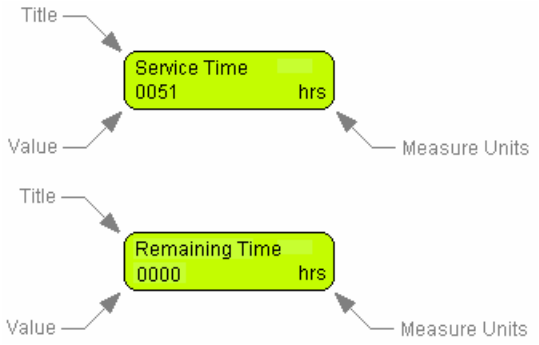
Function

This screen is used to view input signal measurement value for install diagnostic purposes. It indicates the value pulse frequency presently being input into the port.

Navigation

Access this screen by using the F1 (VIEW) key until reaching this screen.

Service and Remaining Time - Input View



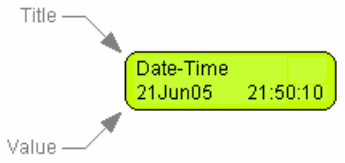
Function
The Service Time screen is used to view the present accumulated service time. This value is often used for such purposes as maintenance scheduling as a Hobbs Hour-Meter would be used.

The Remaining Time screen counts down the amount of time remaining prior to detecting a Time alarm if a Time Limit alarm value is programmed.

Navigation
Access this screen by using the F1 (VIEW) key until reaching these screens.

Zero
Press the RESET 2 (CHAN) key while viewing the Service Time screen to cause the accumulated hours to be cleared to zero.

Date-Time - System View



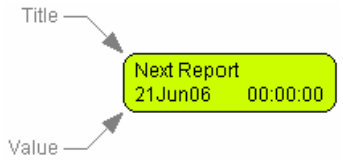
Function

This screen is used to view the real time clocks date and time when the real time clock option is installed. The clock field is in 24 hour format.

Navigation

Access this screen by pressing the F1 (VIEW) key until reaching this screen.

Next Report Date-Time - System View



Function

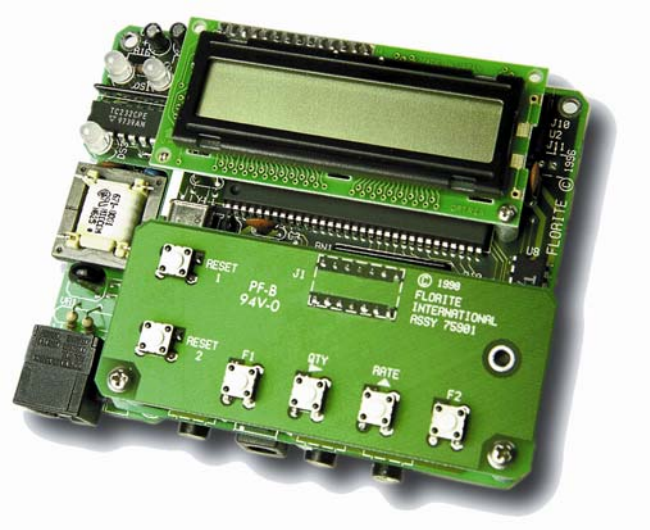
This screen is used to view the date and time that a next regularity scheduled value report is to be sent either from the standard serial port or modem port. The clock field is in 24 hour format.

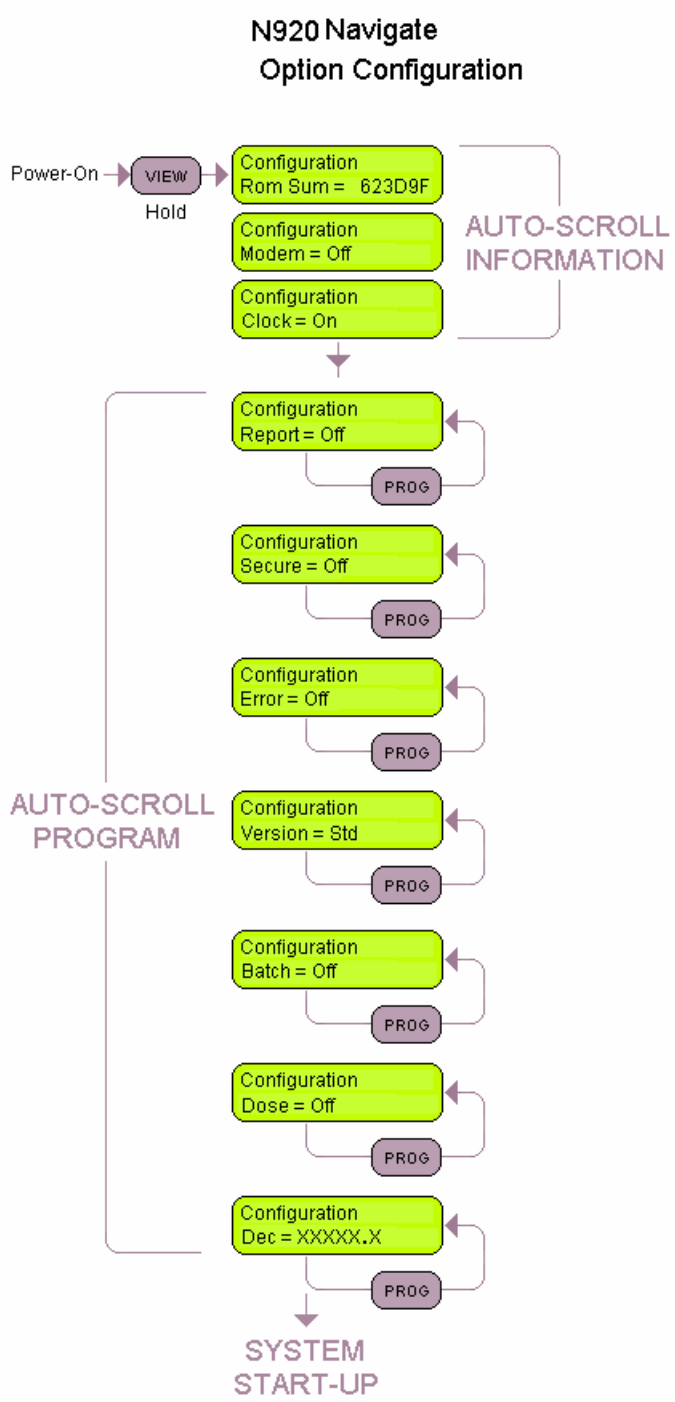
Navigation

Access this screen by pressing the F1 (VIEW) key until reaching this screen.

Model N920
Embedded Controller

Instrumentation Optional Configuration




N920 Navigate
Option Configuration
Power-On
VIEW
Hold
Configuration
Rom Sum = 623D9F
Configuration
Modem = Off
Configuration
Clock = On
AUTO-SCROLL
INFORMATION
Configuration
Report = Off
PROG
Configuration
Secure = Off
PROG
Configuration
Error = Off
PROG
AUTO-SCROLL
PROGRAM
Configuration
Version = Std
PROG
Configuration
Batch = Off
PROG
Configuration
Dose = Off
PROG
Configuration
Dec = XXXXX.X
PROG
SYSTEM
START-UP