



KUPFERLE
WATER SOLUTIONS
Quality • Conservation • Innovation
Since 1857

The Intelligent Solution for Water Distribution Systems

ECLIPSE™
i series

9800i



Intelligent Flushing
Station with Built-In
Chlorine Analyzer



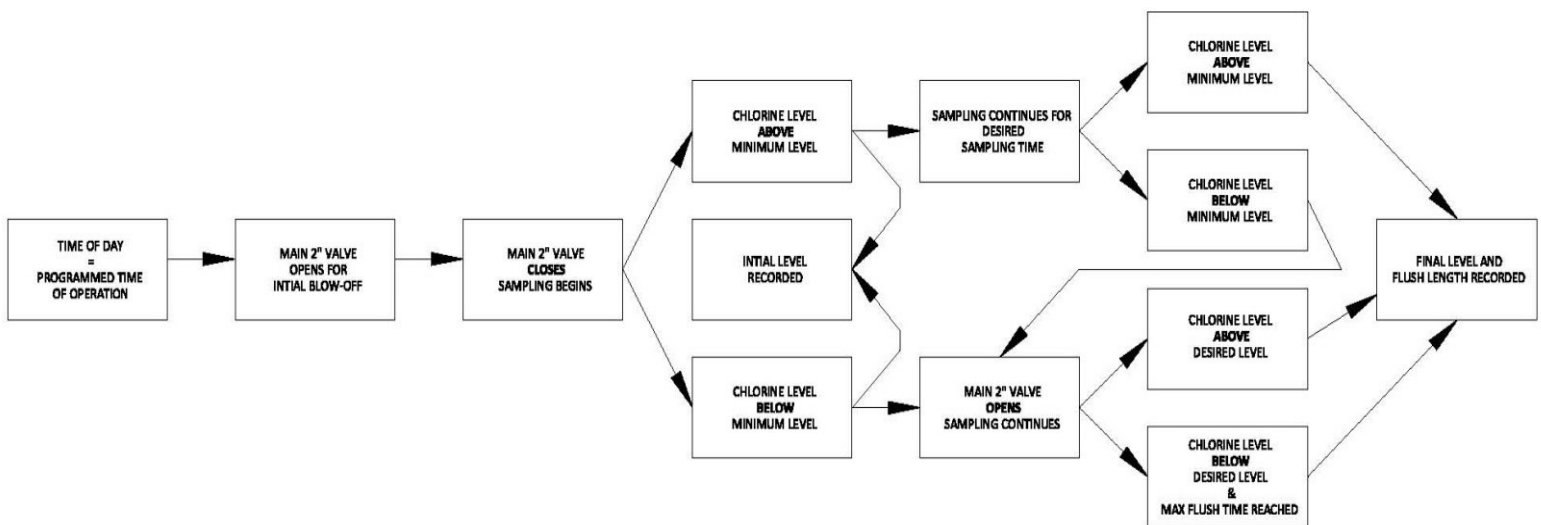
Features

- Intelligent Flushing Device with Programmable Logic Controller (PLC) and touchscreen HMI
- Built-in Amperometric chlorine analyzer (specify free, combined, total)
- RV50 Wireless Gateway with three-year data plan
- Multiple scalable flow cells can accommodate up to a total of 8 sensors
- Adjustable flow rates up to 200 gpm
- Locking aluminum thermal insulated enclosure (R-9 rated)
- Built-in 120VAC high performance heater with fan
- Self-regulating heat trace

What Does It Do?

- Maintains safe residuals levels for drinking water
- Intelligently flushes when residuals fall below programmed minimum levels
- Automatically shuts off when residuals reach programmed desired levels
- Flushes exact amount of water needed for ultimate water conservation
- Records, captures and transmits all data related to residual levels and flush times
- Additional available sensors include but not limited to turbidity, pressure, pH, temperature
- Operates on 120 VAC power (self-powered model also available)
- EPA approved for water conservation (*EPA Green Project Reserve Program*)

How Does It Work?



The Eclipse 9800i captures and records all residual and flushing activity. Data exports into pre-formatted Excel worksheets.

Start Date/Time	Flush Time	Initial/1st	Final/2nd	End Date/Time	Status
6/9/11 21:59	0:00	0.193	1.343	6/9/11 22:01	Chlorine Level Acceptable
6/9/11 18:59	0:50:10	0.002	1.619	6/9/11 17:01	Chlorine Level Acceptable
6/9/11 11:59	0:01:59	0.147	1.426	6/9/11 12:50	Chlorine Level Acceptable
6/9/11 6:59	0:02:00	0.193	1.343	6/9/11 3:01	Chlorine Level Acceptable
6/9/11 2:59	0:02:00	1.398	1.690	6/8/11 22:01	Chlorine Level Acceptable
6/9/11 0:00	0:02:00	1.542	1.560	6/8/11 17:01	Chlorine Level Acceptable
6/8/11 18:59	0:01:59	1.376	1.578	6/8/11 7:37	Chlorine Level Acceptable
6/8/11 15:59	0:37:25	0.058	1.309	6/8/11 3:54	Chlorine Level Acceptable
6/8/11 12:59	0:54:29	0.174	1.458	6/7/11 22:01	Chlorine Level Acceptable
6/8/11 9:59	0:02:00	0.244	1.678	6/7/11 17:15	Chlorine Level Acceptable
6/8/11 6:59	0:02:00	0.206	1.507	6/7/11 12:54	Chlorine Level Acceptable
6/8/11 3:59	0:15:59	0.081	1.260	6/7/11 7:01	Chlorine Level Low Alarm
6/8/11 0:00	0:01:59	0.081	1.289	6/7/11 3:01	Chlorine Level Acceptable
6/7/11 21:59	0:54:29	0.081	1.289	6/7/11 0:01	Chlorine Level Acceptable
6/7/11 18:59	0:02:00	1.270	1.390	6/6/11 17:01	Chlorine Level Acceptable
6/7/11 15:59	0:02:00	0.498	1.482	6/6/11 12:54	Chlorine Level Acceptable
6/7/11 12:59	0:02:00	0.010	1.482	6/6/11 7:01	Chlorine Level Acceptable
6/7/11 9:59	0:54:29	0.206	1.192	6/6/11 3:54	Chlorine Level Acceptable
6/7/11 6:59	0:02:00	0.081	1.289	6/6/11 0:02	Chlorine Level Acceptable
6/6/11 21:59	0:54:29	0.432	1.380	6/5/11 17:01	Chlorine Level Acceptable
6/6/11 18:59	0:02:00	1.287	1.744	6/5/11 12:01	Chlorine Level Acceptable
6/6/11 15:59	0:54:29	0.430	1.426	6/5/11 7:01	Chlorine Level Acceptable
6/6/11 12:59	0:02:00	0.024	1.636	6/5/11 3:01	Chlorine Level Acceptable
6/6/11 9:59	0:02:00	0.107	1.734	6/5/11 0:02	Chlorine Level Acceptable
6/6/11 6:59	0:02:00	0.242	1.687		
6/6/11 3:59	0:01:59	0.422	1.744		
6/6/11 0:00	0:02:00	0.430			

Analysis Table

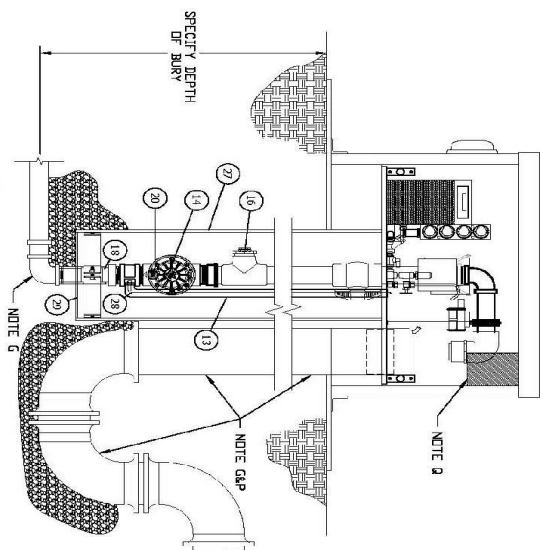
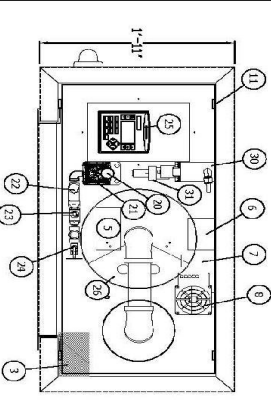
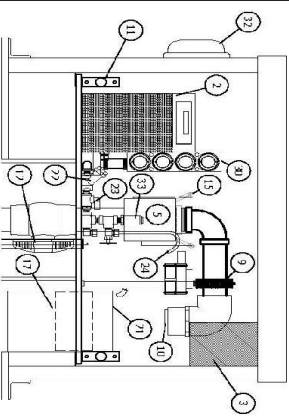
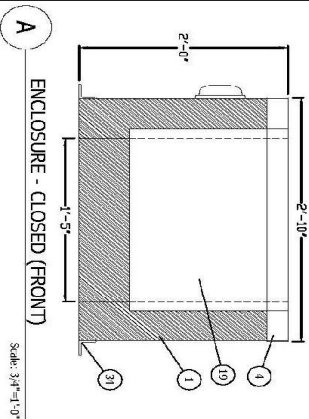
- Displays all programmed information and activity regarding residuals and flushing operations and presents the imported data in an informative color coded format

Graphic Displays:

- Initial vs. Final residuals data
- Residual levels over time period
- Flushing duration data



#9800I-CC : INTELLIGENT PERMANENT FLUSHING STATION



The flushing station (IFS) shall be installed in the following location(s):

A 2" stainless steel MPP inlet will lead vertically to the bottom of a 2" flushing valve. The flushing valve shall control the flow of water through the hydrant and its diaphragm with the extension and retraction of a DC latching solenoid. Flushed water shall flow from the flushing valve through a self-draining tee and a 2" PVC ball valve. From the 2" PVC ball valve, a 2" stainless steel quick disconnect shall connect to a PVC arm and the flushed water shall discharge to the 6" sewer pipe through a removable 2" stream shaper to reduce splashing of the discharged water and allow removal of debris. Removal of the 2" valve and assembly shall be possible via a coupling connector located beneath the valve after the above ground disconnection of the sampling line, heat trace junction box, and the stainless steel access plate. Valve assembly shall be housed in a PVC enclosure and each unit shall be self-draining non-freezing. The sampling line shall be looped with self-regulating heat trace running inside of foam pipe insulation vertically along the valve assembly body.

A 3/8" copper tubing sampling line shall be plumbed below the flushing valve and connect to a 1/4" ball valve to allow the flow of water into the sampling assembly. A Y-strainer shall be located immediately after the ball valve for maintenance purposes. From the Y-strainer, a sampling point with valve shall be provided to allow a dedicated sampling point. A sampling valve shall be included to control the flow of water through the IFS with the extension and retraction of a DC latching solenoid. Both solenoids shall have no loose parts when removed from their respective valves. The sampling valve shall control the flow of water to a pressure regulating valve (PRV) and through a node based flowcell that can house up to 4 plug-and-play sensors. As an upgrade, a second flowcell increasing the number of available sensor ports to 8, shall be added to the right of the primary flowcell behind the control panel and filling out the appropriate sensors in the Product Ordering Guide for subsections 12.15. The node based Modbus sensor(s) shall be generally (RS485) connected to a hub and then to the PLC. The specified chlorine sensor shall be amperometric using a membrane sensor which measures chlorine directly without the use of reagents. From the node based flowcell, the water will plumb away through 1/4" plastic tubing out of the top of the flowcell and empty into the 6" sewer pipe. The sample used for water quality monitoring shall not be altered by adding any chemicals or reagents to the sample stream.

The IFS to be installed on the water lines mentioned above shall use a PLC to control the intelligent blow-off of water to maintain chlorine residual levels while collecting data into local data tables (viewable at the site) and/or a removable micro SD card in a CSV file (removable and viewable in Excel). The IFS shall have the capability to monitor either the free, combined, and/or total chlorine levels in a water distribution system. The unit shall also allow the user to manually flush water from the line with the simple push of a button, allow a maximum of 8 intelligent sampling times per day, have a max flush length per sampling time, and allow the end user to program the minimum and desired chlorine levels.

The IFS shall be upgradeable to use a Sierra Wireless RV50 wireless gateway commissioned with an active 2P SIM on an M2M profile through the customer's cellular carrier (Sprint, Verizon, AT&T, etc.). The RV50 shall forward the information from the PLC to the cellular network where it may be controlled and/or assessed by the customer on a device (smart phone, tablet, laptop, existing SCADA system, etc.) that can connect to the internet. Firewalls and security to be coordinated between Knapheide and the end user.

The IFS shall be enclosed in an insulated (R9 rating) and powder coated lockable housing with one access panel on the front of the unit. The enclosure shall be lockable by using a pair of stainless steel hasps on the short sides of the enclosure. The IFS shall include a 150 Watt high-efficiency fan heater and 4 separate thermocouples (1 located in each corner) to account for any possible drafts by the enclosure access panel. To power the device, a 120 VAC source will need to be provided by the customer. Final power input to be further coordinated between customer and manufacturer with the sensors, PLC, and the necessary controls for the solenoid, being powered from this connection.

Unit model # shall be 9800I-CC-120. * * * X * * * with *s specified in accordance with the product ordering guide as manufactured by Knapheide Foundry Company, St. Louis MO, or approved equal.

NOTES

1. NOT ALL WIRES AND PIPING SEVEN FOR CLARITY PURPOSES.
2. ITEM TO BE PROVIDED BY OTHERS.
3. EXPANDING SPRAIT FIRM INSULATION TO BE SPRAYED UNDER THE ENCLOSURE AFTER INSTALLATION.
4. REFER TO THE INSTALLATION OF A 6" DIA. P. PIPE.
5. REFER TO THE INSTALLATION OF A 6" DIA. P. PIPE.
6. CONSULT UP TO ENCLOSURE TO GO DOWN TO A DEPTH OF 18" BELOW GRADE PER NEC ARTICLE 300.5.

ISSUES PRODUCT ORDERING GUIDE	
ORDER NO.	1 2 3 4 5 6 7 8 9 10 11
DESCRIPTION	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.
QUANTITY	1 2 3 4 5 6 7 8 9 10 11
UNIT PRICE	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.
TOTAL PRICE	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.
TAXES	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.
NET TOTAL	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.
ORDER NO.	1 2 3 4 5 6 7 8 9 10 11
DESCRIPTION	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.
QUANTITY	1 2 3 4 5 6 7 8 9 10 11
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TOTAL PRICE	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.
TAXES	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.
NET TOTAL	1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.

GENERAL SENSOR SPECIFICATIONS	
VIA TAG	40 VDC
COMMUNICATIONS	SERIAL 485
CONNECTIONS	4-5 PINS
SENSOR TYPE	FREE FLOWING
RESISTOR SIZES	PLATE, SILICON, CERAMIC
VALVE MATERIALS	PVC, HELIX, VITON, EPDM, NYLON
RESOLUTION	0.1% PER
POWER	40 W
WATER TEMPERATURE SPECIFICATIONS	
RESISTOR MATERIAL	PLATE PER VENDOR SPECIFICATION
TEMPERATURE RANGE	10-250 F
ELECTRICAL SPECIFICATIONS	100-240 VAC, 50/60 HZ
VIA TAG SPECIFICATIONS	
VIA TAG	40 VDC
MAX POWER	100 WATTS PER TAG
HEAT SINK SIZE	3 WATTS PER TAG (PER TAG)
DUAL POWER SUPPLY SPECIFICATIONS	90-264 VAC
3-Phase Voltage	90-264 VAC
INPUT FREQUENCY	50/60 HZ
EFFICIENCY	VI = 40-45 W
OUTPUT VOLTAGE	VI = 200 VDC - 60 W
OUTPUT CURRENT	2A VDC
MAX POWER	2.5 A @ 24 VDC
MAX PHASE	50 WATTS
PLC SPECIFICATIONS	
POWER SUPPLY	24V - 240 VDC
POWER SUPPLY CURRENT	400 mA @ 24 VDC
ANALOG INPUTS	0 - 10 BIT RESOLUTION, 4-20 mA
OUTPUTS	0 - 10 BIT RESOLUTION, 4-20 mA
NON-VOLTAGED MEMORY	128K BYTES
RESISTOR SIZES	PLATE, SILICON, CERAMIC
VALVE MATERIALS	PVC, HELIX, VITON, EPDM, NYLON
RESOLUTION	0.1% PER
POWER	40 W
OTHER SPECIFICATIONS AVAILABLE UPON REQUEST	
MAX PRESSURE	100 PSI
FLUID FLOW RATE	1.5 GPM @ 100 PSI
WEIGHT	UP TO 200 GPM
MINIMUM TEMPERATURE	-20°C OR -10°F
MAXIMUM TEMPERATURE	45°C OR 115°F
CERTIFICATIONS	ANSI, ISO, NSF, ANSI 312

DATE ISSUED FOR STATUS / REVISION

#9800I-CC SPEC SHEET

INITIALS	DATE
DESIGN	10/23/18
APPROVED	11/17/19
MODIFIED	
SHEET SIZE	
SCALE	
VARIABLES	

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