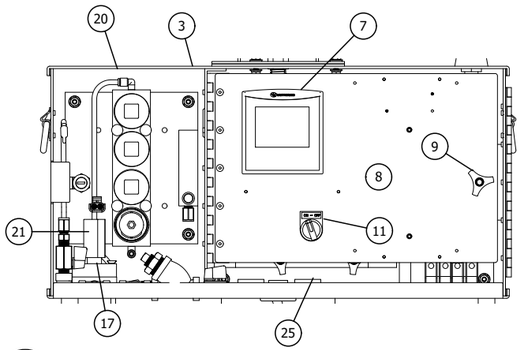
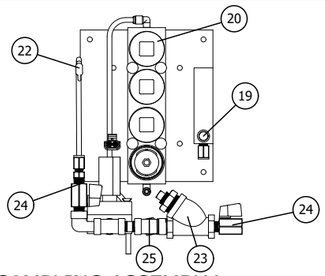
#9700i : INTELLIGENT PORTABLE FLUSHING DEVICE



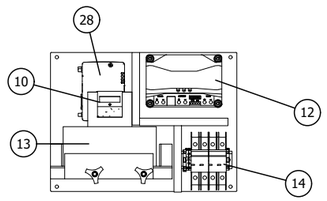
A CONTROL ENCLOSURE - OPEN

Scale: 1-1/2"=1'0



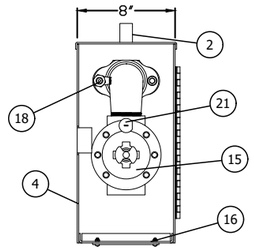
B SAMPLING ASSEMBLY

Scale: 1-1/2"=1'-0"



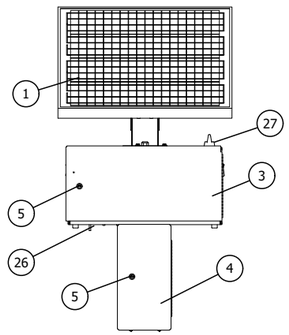
C SUBPANEL - CONTROL PANEL OPEN

Scale: 1"=1'-0"



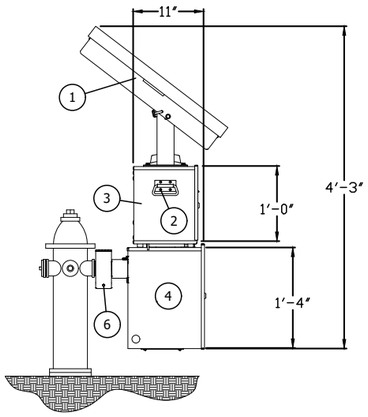
D FLUSHING ENCLOSURE - OPEN

Scale: 1"=1'-0"



1 FRONT VIEW

Scale: 1/2"=1'-0"



2 SIDE HYDRANT MOUNT

Scale: 1/2"=1'-0"

i-SERIES PRODUCT ORDERING GUIDE																						
MODEL#	9700i	-	WC	-	24LIS	-	0	-	*	-	X	-	*	-	*	*	*	*				
SUBSECTION	1		2		3		4		5		6		7		8	9	10	11				
MODEL SHOWN IN VIEW 1: 9700i-WC-24LIS-0-A-X-A-AD																						

SUBSECTION DESCRIPTION	MODEL # SUBSECTION	OPTIONS	DESCRIPTIONS
MODEL	1	9700i	PORTABLE i-SERIES HYDRANT
CLIMATE	2	WC	WARM CLIMATES
POWER	3	24LIS	24 VDC, 23 AMP HOUR LITHIUM ION BATTERY WITH SOLAR RECHARGING
DEPTH OF BURY	4	0	N/A
COMMUNICATION	5	X	NONE
		A	CELLULAR
		B	ALARM INDICATION LIGHT
		C	ETHERNET CARD ADDED
		D	SECOND SERIAL CARD ADDED
BACKFLOW PREVENTION	6	X	N/A
PRESSURE SENSOR	7	X	NONE
		A	ANALOG 0-200.0 PSI SENSOR
CHOOSE UP TO 4 SENSORS FOR SUBSECTIONS 8-11. LEAVE UNUSED SUBSECTIONS BLANK			

SENSORS	8 - SENSOR #1 9 - SENSOR #2 10 - SENSOR #3 11 - SENSOR #4 12 : 15 - ADDITIONAL SENSORS #5 : #8	A - FREE CHLORINE	H - DISSOLVED OXYGEN
		B - COMBINED CHLORINE	I - FLUORIDE
		C - TOTAL CHLORINE	J - DISSOLVED OZONE
		D - pH	K - CHLORINE DIOXIDE
		E - TURBIDITY	L - PERACETIC ACID
		F - ORP	M - HYDROGEN PEROXIDE
		G - CONDUCTIVITY	X - CUSTOM (CALL)

PLEASE SEE CUT SHEET FOR UPGRADES AND AVAILABLE OPTIONS

GENERAL SENSOR SPECIFICATIONS	
VOLTAGE:	BUS POWERD (5 VDC)
COMMUNICATIONS:	SERIAL 485
CONNECTIONS:	M8-5 IP67/68
CHLORINE SENSOR SPECIFICATIONS	
MEASURING RANGE:	0.00 to 5.00 PPM
WETTED MATERIALS:	PVC, TEFLON, VITON, EPDM, RYTON
RESOLUTION:	0.01 PPM
POWER:	40 mW
WATER TEMPERATURE SPECIFICATIONS	
MEASURING RANGE:	23 TO 131°F
TEMPERATURE INPUT:	PT100 RTD W/ AUTOMATIC COMPENSATION
ELECTRICAL SPECIFICATIONS	
VOLTAGE:	24 VDC
BATTERY SIZE:	10 AMP HOURS
CIRCUIT BREAKERS:	2 POLE, 10 AMP, MCB
SOLAR PANEL:	65 WATTS
PLC SPECIFICATIONS	
OPERATING VOLTAGE:	20.4 - 28.8 VDC
POWER CONSUMPTION:	215 mA @ 24 VDC
INPUTS:	(10) 24 VDC
ANALOG INPUTS:	(2) : 10-BIT RESOLUTION, 4-20 mA
OUTPUTS:	(6) : INDIVIDUALLY ISOLATED RELAY
NON-VOLITALE MEMORY:	120K DYNAMIC DATA
REMOVABLE MEMORY:	STANDARD MICRO SD CARDS (UP TO 32 GB)
COMMUNICATIONS:	RS-232 OR RS 485 PORT AND OPTIONAL ETHERNET/IP
OTHER SPECIFICATIONS	
MAX PRESSURE:	220 PSI
SAMPLE FLOW RATE:	1 FLOWCELL:UP TO ~10 GALLONS PER HOUR
FLUSH FLOW RATE:	UP TO ~220 GPM
WEIGHT:	~75 LBS
MINIMUM TEMPERATURE DESIGN:	5°C OR 41°F
CERTIFICATIONS:	ARRA, NSF/ANSI 372

OTHER SPECIFICATIONS AVAILABLE UPON REQUEST

Intelligent Flushing Device (IFD) shall be attached to hydrant in the following location(s): _

A 2-1/2" NST swivel connection will lead into a flushing enclosure with 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. A tap and hose leading into the control enclosure shall bring water into the sampling line. A removable floor plate shall allow access, if needed, to a 2" FIP outlet. Discharged water exiting the enclosure shall be diffused via the 5/8" perforations in the floor of the flushing enclosure.

The control enclosure shall mount to the top of the flushing enclosure, utilizing a pair of attachment bars, securely binding the enclosures together. A sampling hose shall be used to pass between enclosures connecting to the hydraulic fitting in the flushing enclosure to allow the flow of water into the sampling assembly. The hose shall continue to a 1/4" ball valve controlling the flow of water through the sampling assembly. From the ball valve, a sampling point with valve shall be provided to allow a dedicated sampling point. A Y-strainer shall be located immediately before the sampling point for maintenance purposes. A sampling valve shall be included to control the flow of water through the IFD 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 through an adjustable flow meter, to a node based flowcell that can house up to 4 plug-and-play sensors. The node based Modbus sensor(s) shall be serially (RS485) connected to a hub and then to the PLC via a custom cable. The specified chlorine sensor shall be amperometric using a membrane sensor which measures chlorine directly without the use of reagents. From this flowcell, the water will plumb away through 1/4" tube out the bottom of the enclosure and be at the customers discretion as to how they want the water to drain. The sample used for water quality monitoring shall not be altered by adding any chemicals or reagents to the sample stream.

The IFD to be installed on the water lines mentioned above shall use a Unitronics 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). These files shall have the ability to be automatically emailed daily, weekly, or monthly. The IFD 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.

Unit shall come standard with a Sierra Wireless gateway commissioned with an active 2FF SIM on an M2M profile through Kupferle's cellular carrier (Verizon). The wireless gateway shall forward the information from the PLC to the cellular network where it may be controlled and/or accessed 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 Kupferle and the end user.

The enclosures shall be powder coated and include security mounting and locking features as well as a front opening door with a cam lock. The front panel of the power and control enclosure with the PLC shall swing open to allow for maintenance, data retreival, and/or manual battery charging if required. The solar panel shall mount on top of the control enclosure and shall be rotatable (directed southwest when installed) and be positioned to provide for maximum solar hours. Battery shall be 24 V Lithium Ion with 23 Amp Hours of available power and shall utilize a battery capacity gauge for easy indication of the battery charge. Photovoltaic solar panel shall provide 65 Watts of charging power to the battery through a charge controller, and be attached with tamper proof bolts. Two - 2 pole 10 Amp circuit breakers shall be used to allow disconnection of the photovoltaic solar panel and the battery. The solar package is sized for the 9700-i hydrant only.

Unit model # shall be 9700i-WC-24LIS-0-*-X-*-**** with *'s specified in accordance with the product ordering guide as manufactured by Kupferle Water Solutions, Saint Louis, MO, or approved equal.

ITEM	DESCRIPTION
1	SOLAR PANEL ASSEMBLY
2	HANDLE
3	CONTROL ENCLOSURE
4	FLUSHING ENCLOSURE
5	LOCK
6	2-1/2" NST SWIVEL W/ LOCKING COLLAR
7	PROGAMMABLE LOGIC CONTROLLER (PLC)
8	HINGED CONTROL PANEL
9	CONTROL PANEL WING KNOB
10	BATTERY CAPACITY GAUGE
11	ON/OFF SWITCH
12	CHARGE CONTROLLER
13	24 VDC LITHIUM ION BATTERY
14	CIRCUIT BREAKERS
15	2" FLUSHING VALVE
16	REMOVABLE ACCESS PLATE
17	SAMPLING VALVE
18	SAMPLING LINE CONNECTION
19	ADJUSTABLE FLOW METER
20	NODE BASED FLOWCELL
21	DC LATCHING SOLENOID
22	DEDICATED SAMPLE POINT
23	Y-STRAINER
24	SAMPLING BALL VALVE
25	ANALOG PRESSURE SENSOR
26	1/4" DRAIN HOSE
27	ANTENNA
28	WIRELESS GATEWAY

NOTES	
A	NOT ALL WIRES AND PIPING SHOWN FOR CLARITY PURPOSES.
B	UNIT SHALL BE DRAINED OF WATER AND SENSORS TAKEN INDOORS IN POTENTIAL FREEZING CONDITIONS.
C	SOLAR PANEL SHALL BE PROPERLY MAINTAINED TO ALLOW FOR MAXIMUM SOLAR CHARGING HOURS.

MODBUS SENSOR RESOLUTIONS	
CHLORINE SENSOR RESOLUTION (ALL TYPES):	0.01 PPM
pH SENSOR RESOLUTION:	0.01
TURBIDITY SENSOR RESOLUTION:	0.01 NTU
ORP SENSOR RESOLUTION:	1 mV
CONDUCTIVITY SENSOR RESOLUTION:	1 µS
DISSOLVED OXYGEN SENSOR RESOLUTION:	0.01 PPM
FLUORIDE SENSOR RESOLUTION:	0.01 PPM

DD/MM/YY	ISSUED FOR …
DATE	STATUS / REVISION

	INITIALS	DATE
DRAWN	ABR	9/25/25
APPROVED	DCL	10/2/25
MODIFIED		

#9700i SOLAR SPEC SHEET

SHEET SIZE B (11x17)

SCALE VARIES

KUPFERLE WATER SOLUTIONS

1291 N HIGHWAY DR
ST. LOUIS, MO 63026
1-800-231-3990
FAX 314-231-2820
www.hydrants.com