Analog Pulse Kit
Model APK.PLUS

2 YEAR WARRANTY

MADE IN USA

RoHS Compliant

Provides 4-20 Milliamp Flow Rate and Pulse-per-Volume Meter Signals to SCADA, Telemetry, and Building Automation Systems!

SCADAmetrics® is pleased to introduce a new member to its DINstrumentation™ series – **Analog Pulse Kit Plus!**

This new electronic signal generator for water meters provides a 4-20 milliamp (flow) output, a dry contact pulse (per volume) output, and a dry contact flow switch output!

Certain flow meters, such as the Sensus® OMNI™ and HydroVerse Series, feature a digital pulse output signal. The SCADAmetrics **Analog Pulse Kit** was designed to expand upon this signal to provide an efficient flow meter interface to SCADA, Telemetry, and Building Automation Systems.

Furthermore, the **Analog Pulse Kit Plus** was designed using SCADAmetrics' signature approach of providing users with the capability to easily set the instrument's meter-specific behavior in-the-field, as opposed to only at the factory. All meter-specific customization is accomplished using 16 integrated DIP-switches, which are set according to our lookup table. The obvious benefits to our approach are accelerated project schedules and shortened lead-times.

The **Analog Pulse Kit** utilizes the digital pulse output from the water meter to generate a 4-20mA rate-of-flow signal and a secondary dry-contact pulse-per-volume signal. It also generates a dry-contact flow switch signal, which can be used, for example, to trigger ON/OFF a chemical disinfection pump.

For Sensus® OMNI™, HET Propeller, HydroVerse, and W-Series Turbo Meters, the **Analog Pulse Kit** provides the
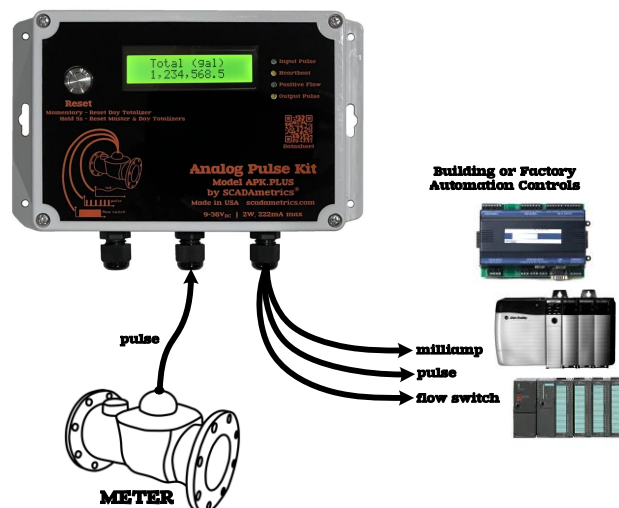
necessary $24V_{DC}$ auxiliary power supply for these unique meters.
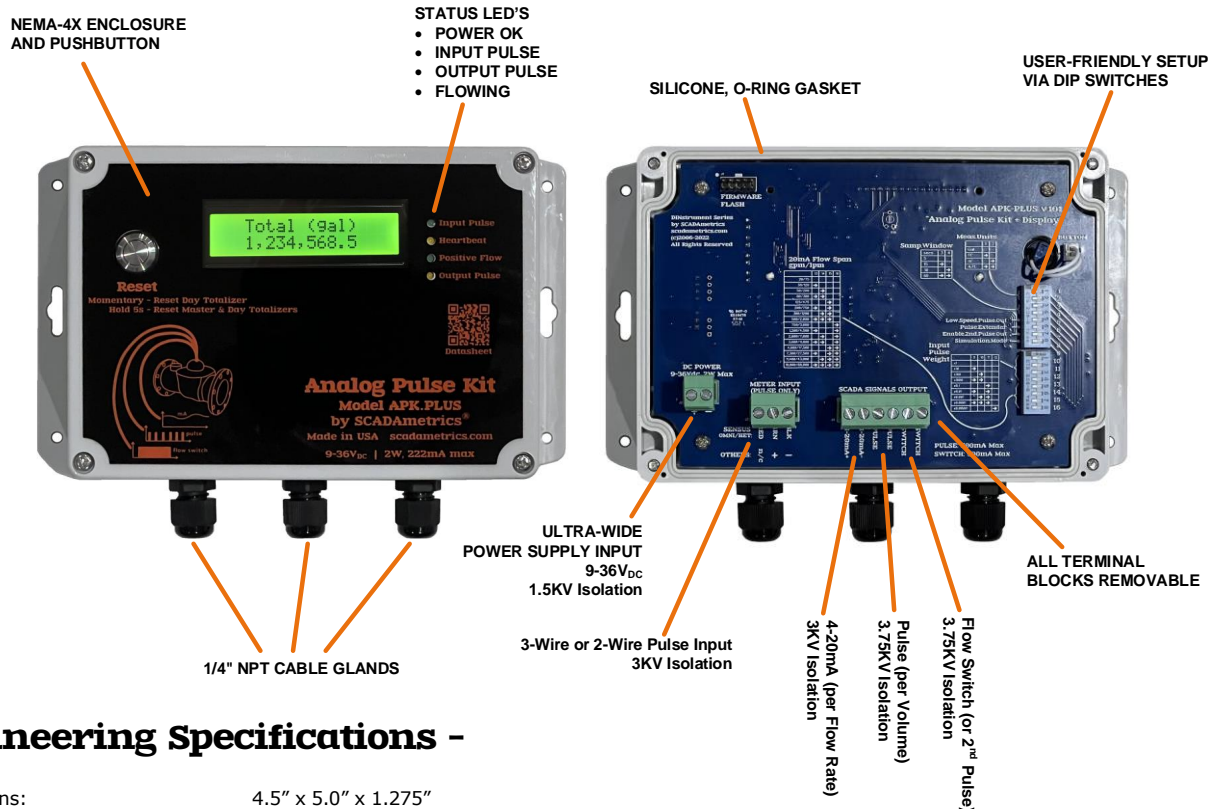
For flow meters whose pulse output signal is too short-duration (milliseconds) or too high-frequency (Hz) to be detected by certain low-pulse-bandwidth BMS systems, the **Analog Pulse Kit** provides a **Pulse Extension** feature, which lengthens the duration of each output pulse to at least 100 milliseconds; and the **Analog Pulse Kit** also provides a **Low-Speed Pulse Output** feature, which decreases the pulse output frequency (Hz) by a factor of 10.

Key Features –

- 4-20mA Flow-Proportional Output (3KV Isolation).
- Dry-Contact, Volume-Proportional Output (3.75KV Isolation).
- Dry-Contact Flow-Switch Output (3.75KV Isolation).
- Large, 2x16 Character Backlit Display: Master Total, Day Total, Rate

- Compatible with Most Late-Model, Pulse-Type Flow Meters.
- Works with All Popular Registration Units (Gallons, Cubic Feet, Cubic Meters, Acre Feet).

- No Computer Required! – Setup via DIP Switches Only!
- Removable Terminal Blocks, Simplified Wiring Procedures.
- NEMA-4X Wall-Mountable.
- 24VDC-Powered (1.5KV Isolation). Low 1.2W Power Consumption.
- Enclosure and Circuit Board: UL 94-VO recognized materials.
- Simulation-Mode Feature: Emits 12mA and 1 Hz Pulse.

Are you interested in how SCADAmetrics meter technology can help you more closely monitor the flow through your water meters? Give us a call! We'll be glad to discuss the details!

SCADAmetrics
scadametrics.com
Wildwood, Missouri USA
636.405.7101

STATUS LED'S
- POWER OK
- INPUT PULSE
- OUTPUT PULSE
- FLOWING

NEMA-4X ENCLOSURE AND PUSHBUTTON

SILICONE, O-RING GASKET

USER-FRIENDLY SETUP VIA DIP SWITCHES

Total (gal)
1,234,568.5

Input Pulse
Heartbeat
Positive Flow
Output Pulse

Reset
Momentary - Reset Day Totalizer
Hold 5s - Reset Master & Day Totalizers

Analog Pulse Kit
Model APK.PLUS
by SCADAmetrics®
Made in USA   scadametrics.com
9-36V_DC | 2W, 222mA max

ALL TERMINAL BLOCKS REMOVABLE

1/4" NPT CABLE GLANDS

ULTRA-WIDE POWER SUPPLY INPUT
9-36V_DC
1.5KV Isolation

3-Wire or 2-Wire Pulse Input
3KV Isolation

4-20mA (per Flow Rate)
3KV Isolation

Pulse (per Volume)
3.75KV Isolation

Flow Switch (or 2nd Pulse)
3.75KV Isolation

Engineering Specifications –

Dimensions:	4.5" x 5.0" x 1.275"
Weight:	17.1 Ounces
Supply Voltage:	9-36V_DC
Supply Power:	1.25W
Power Supply Isolation:	1500V_RMS
Solid-State Pulse Support:	Yes
Dry-Contact Pulse Support:	Yes
Sensus® Meter Support:	Yes – OMNI™, HydroVerse, Propeller/HET, Legacy W-Series Turbo
Supported Units:	Gallon, Cubic Feet, Cubic Meters, Acre-Feet
Supported Scalors:	x1 , x10 , x100 , x1,000 --- x0.1 , x0.01 , x0.001 , x0.0001 , x0.00001 , x1/60 , x1/6 , x10/6 , x100/6
Flow Calculation Window:	5s, 15s, 30s, 60s (User-Selectable)
Programming Method:	Integrated DIP Switches, 16-Poles
Totalizer Max Unscaled Count:	999,999,999
Input Pulse Frequency Range:	0 – 5000 Hz
Minimum Pulse Width	100 microseconds
4-20mA Flow Range (gpm):	20,30,50,80,125,200,300,500,750,1200,2000,3000,4600,7300,11400,18000
4-20mA Flow Range (lpm):	75,120,200,300,475,750,1200,2000,3000,4500,7000,11000,17500,27500,43000,68000
4-20mA Resolution:	16-Bit DAC
4-20mA Isolation:	3000V_RMS
4-20mA Max Series Resistance:	500 Ω
4-20mA Signal Type:	Active. Therefore, do not add an external loop supply, or else damage to the unit will result!
Physical Display:	2x16 Characters, Character Dimension: 0.114 x 0.203 inch
Displayed Metering Data:	Master Totalization, Day Totalization, Flow Rate
Loss-of-Power Memory:	Master and Day Totalizers Stored in Non-Volatile, Ferro-Electric RAM
Pulse Output Type:	Solid-State Dry-Contact, 1 Output Pulse per Input Pulse
Flow Switch Output Type:	Solid-State Dry-Contact, Closes if Rate-of-Flow > 0
Pulse Output Resolution:	Normal-Speed Mode: Output Pulse Resolution = Input Pulse Resolution
	Low-Speed Mode: Output Pulse Resolution = Input Pulse Resolution/10 (De-Activates De-Bounce Filter)
De-Bounce Filter:	200ms – Activated Only For 15s, 30s, and 60s Flow Calculation Windows When Pulse Extension Mode is ON
	100ms – Activated Only For 5s Flow Calculation Window When Pulse Extension Mode is ON
Closed-Contact Resistance:	0.4 ohm, typical
Closed-Contact Max Current:	500mA
Open-Contact Max Voltage:	60V
Pulse/Flow Switch Isolation:	3750V_RMS
Meter Cable Connection:	3-Position, Removable Screw-Down Terminal Block, 12-26 AWG
SCADA Cable Connections:	6-Position, Removable Screw-Down Terminal Block, 12-26 AWG
Temperature:	-40C to 85C (-40°F to 185°F)
Relative Humidity:	5% to 95%, Non-Condensing
Enclosure Rating:	Built to NEMA-4X Specifications, Not Rated for Submersion
Manufacturing Location:	USA
Environmental:	ROHS-Compliant, Lead-Free
Warranty:	2 Years (see www.scadametrics.com for details)

Engineering Dimensions (Inches) -

5.750"

8.063"

2.250"

Meter Terminal Block Hookup (Table.1) -

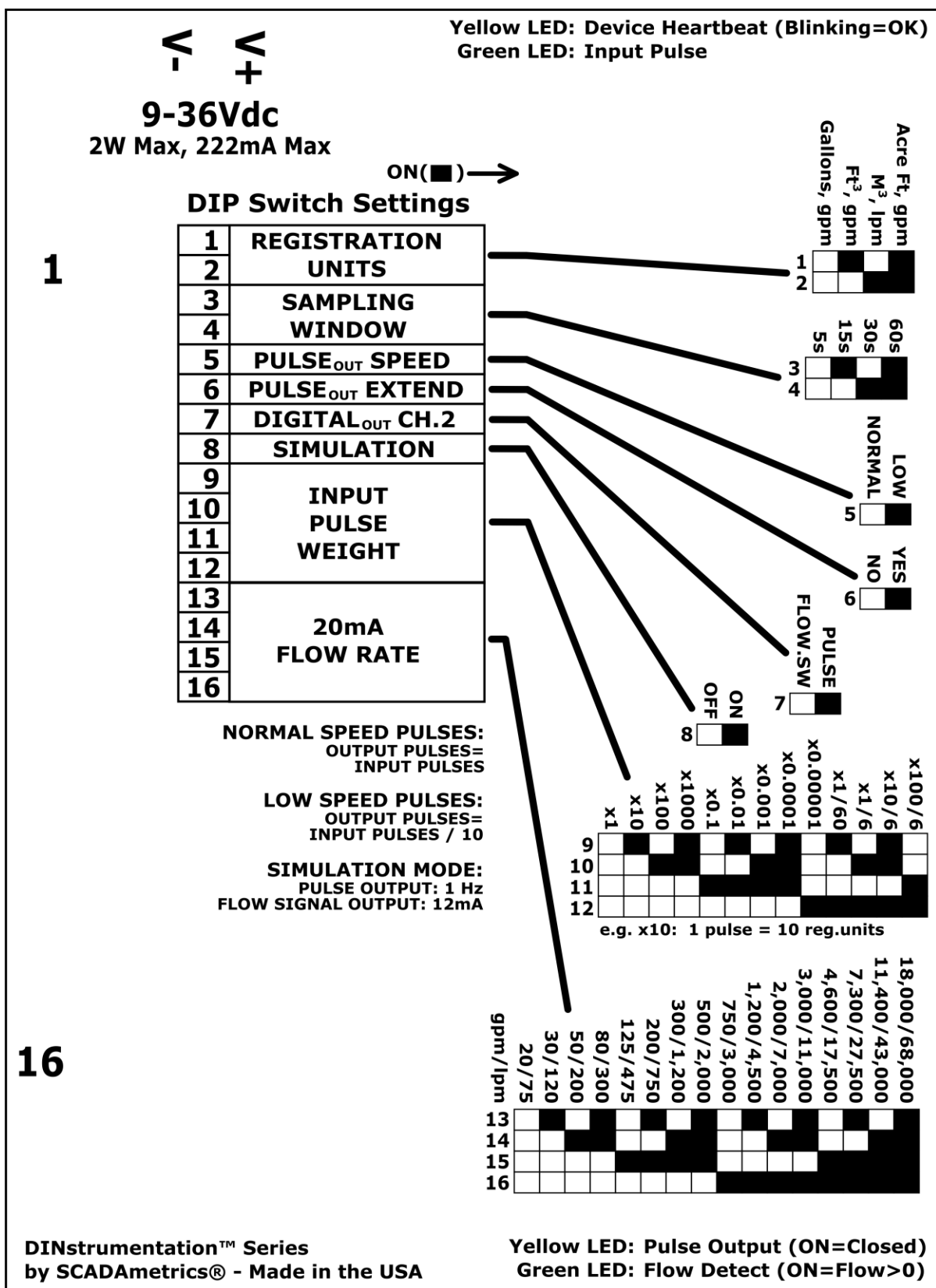| Terminal	Function	Sensus® OMNI™ , HET Prop , W-Series Turbo	Dry-Contact Pulse Input or Transistor Pulse Input or Sensus® HydroVerse
1	Excitation Power (+24V$_{DC}$)	Red	No Connection!
2	Pulse Input (+)	Green	Pulse (+)
3	Pulse Input (-)	Black	Pulse (-)

Wiring Notes:

1. Terminal #1 is a 24V$_{DC}$ Excitation Power Supply, which is provided as a convenience for Sensus® OMNI™ and HET Propeller and W-Series Turbo Water Meters only.

2. Non-Sensus® Water Meters and the Sensus HydroVerse should connect to Terminals #2 and #3 only.
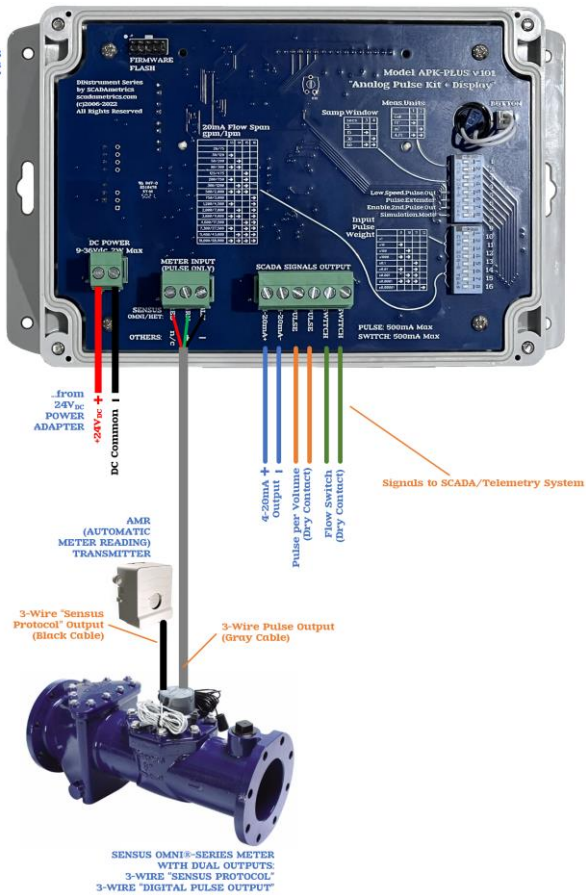
Signal Terminal Block Hookup (Table.2) -

Terminal	Function	Notes
4	4-20mA +	Settable Range via DIP Switches
5	4-20mA –	
6	Pulse +	Solid-State Dry Contact (N-O) 500mA Max, 60V Max
7	Pulse –	
8	Flow Switch +	Solid-State Dry Contact (N-O) 500mA Max, 60V Max
9	Flow Switch –	

DIP Switch Setup (Figure.1) –

9-36Vdc
2W Max, 222mA Max

< − < +

Yellow LED: Device Heartbeat (Blinking=OK)
Green LED: Input Pulse

ON(■) →

DIP Switch Settings

#	Function
1	REGISTRATION
2	UNITS
3	SAMPLING
4	WINDOW
5	$PULSE_{OUT}$ SPEED
6	$PULSE_{OUT}$ EXTEND
7	$DIGITAL_{OUT}$ CH.2
8	SIMULATION
9	INPUT
10	PULSE
11	WEIGHT
12	
13	20mA
14	FLOW RATE
15	
16	

Registration Units (1–2):

	Acre Ft, gpm	M³, lpm	Ft³, gpm	Gallons, gpm
1	■	□	■	□
2	■	■	□	□

Sampling Window (3–4):

	60s	30s	15s	5s
3	■	□	■	□
4	■	■	□	□

PULSE_OUT SPEED (5):

	LOW	NORMAL
5	□	■

PULSE_OUT EXTEND (6):

	YES	NO
6	□	■

DIGITAL_OUT CH.2 (7):

	PULSE	FLOW.SW
7	□	■

SIMULATION (8):

	ON	OFF
8	■	□

NORMAL SPEED PULSES:
OUTPUT PULSES = INPUT PULSES

LOW SPEED PULSES:
OUTPUT PULSES = INPUT PULSES / 10

SIMULATION MODE:
PULSE OUTPUT: 1 Hz
FLOW SIGNAL OUTPUT: 12mA

Input Pulse Weight (9–12):

	x1	x10	x100	x1000	x0.1	x0.01	x0.001	x0.0001	x0.00001	x1/60	x1/6	x10/6	x100/6

e.g. x10: 1 pulse = 10 reg.units

20mA Flow Rate (13–16):

	gpm/lpm	20/75	30/120	50/200	80/300	125/475	200/750	300/1,200	500/2,000	750/3,000	1,200/4,500	2,000/7,000	3,000/11,000	4,600/17,500	7,300/27,500	11,400/43,000	18,000/68,000

DINstrumentation™ Series
by SCADAmetrics® - Made in the USA

Yellow LED: Pulse Output (ON=Closed)
Green LED: Flow Detect (ON=Flow>0)

QUICK-START GUIDE –

SENSUS® OMNI® WIRING
Fig.1

SENSUS® HET/ PROPELLER WIRING
Fig.2
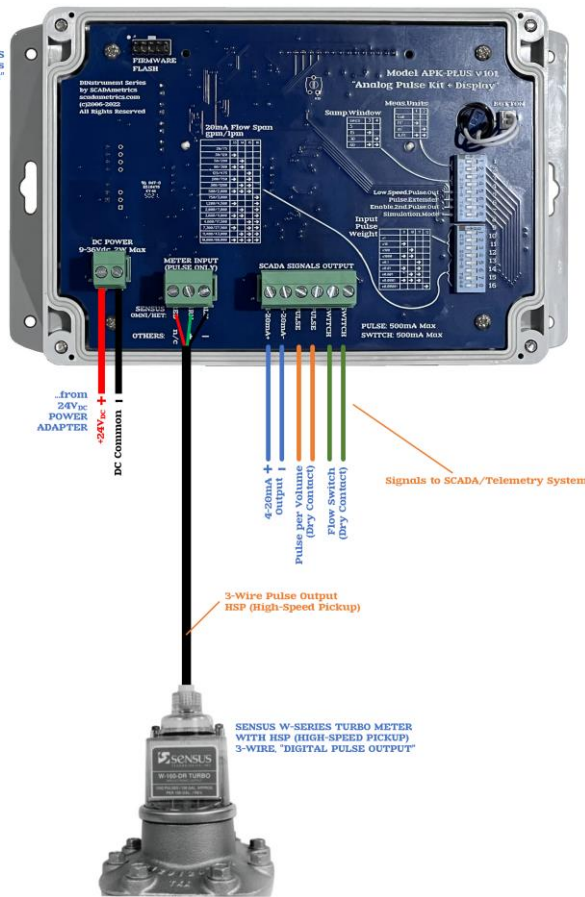
SENSUS® HSP/ W-SERIES TURBO WIRING
Fig.3
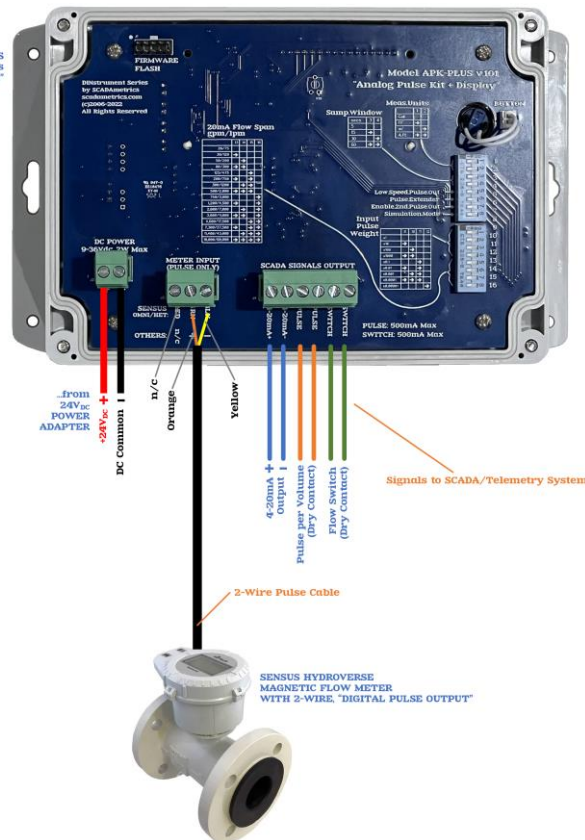
SENSUS® HYDROVERSE MAGMETER WIRING
Fig.4

Sensus HydroVerse Configuration Tool (Android/Tablet):

1. Enable pulse output
2. Set Pulses per Unit Volume:
   - 1"-4"   1 pulse per: 1 gallon   0.1 ft^3 0.01 m^3
   - 6"-8"   1 pulse per: 10 gallon   1 ft^3 0.1 m^3
   - 10"+   1 pulse per: 100 gallon   10 ft^3 1 m^3
3. Set Pulse Width: 2ms (HydroVerse default) is OK

Initial Setup:

1. **Attach the water meter's two (2) pulse wires (or three (3) pulse wires for Sensus Omni/Prop/W-Turbo meters) Analog Pulse Kit terminals 1,2,3 (see above table for color-coding).**

2. **(If Applicable) Connect the 4-20mA output signal to PLC/Controller: Terminals 4(+) and 5(-). Important Note! – The Analog Pulse Kit provides loop power. The user <u>must not</u> add an additional loop power supply, or else damage to the unit will result.**

3. **(If Applicable) Connect the pulse output signal to the PLC/Controller: Terminals 6 and 7. Important Note! – The pulse output is a solid-state, dry-contact type. 500mA max, 60V max. Circuit must be current-limited by external means.**

4. **(If Applicable) Connect the flow switch signal to the PLC/Controller: Terminals 8 and 9. Important Note! – The flow switch output is a solid-state, dry-contact type. 500mA max, 60V max. Circuit must be current-limited by external means.**

5. **Set the DIP Switches, per Figure.1, and per Following Instructions:**

DIP Switches	Function
1-2	Set Registration Units to Match Target Flow Meter: • Gallons • Cubic Feet • Cubic Meters • Acre Feet
3-4	Set Sampling Window, Per Typical Pulse Input Frequency: • 5s – When Pulse Input Freq > 4 Hz • 10s – When Pulse Input Freq: 2-4 Hz • 30s – When Pulse Input Freq: 1-2 Hz • 60s – When Pulse Input Freq < 0.5 Hz
5	Set Pulse Output Speed: • Normal (Output Pulse Speed = Input Pulse Speed) • Slow (Output Pulse Speed Hz = Input Pulse Speed Hz / 10) Recommendation: Use Slow Speed if SCADA, Telemetry, BMS Incapable of Processing Normal Speed Pulses.
6	Enable/Disable Pulse Output Extension Mode: • Disable (Output Pulse Width = Input Pulse Width) • Enable (Output Pulse Width = Max(Input Pulse Width , 100 or 200 ms)) (Enables 100ms De-Bounce Filter and Extension, if Sampling Window = 5s) (Enables 200ms De-Bounce Filter and Extension, if Sampling Window = 15s, 30s, or 60s) Recommendation 1: Enable Pulse Extension Mode If Pulse Width Too Short for Detection by SCADA, Telemetry, BMS System. Recommendation 2: Enable Pulse Extension Mode for Low-Frequency, Mechanical Contact Closure Inputs In Order to Activate De-Bounce Function. Note! – If Extended Pulse Width Mode Causes Output Pulses to Overlap, Then User May Also Set Pulse Output Speed to 'Slow'. Possible Examples: • Badger Meter HR Default Pulse Width: 50ms • Metron-Farnier Innov8 Default Pulse Width: 50ms

7	Configure Digital Output Channel 2: • Flow Switch Output (Contact Closure When Flow Rate > 0) • 2nd Pulse Output (Mirrors 1st Pulse Output)

8	Enable / Disable Simulation Mode:
	• Enable (For Debugging Control Panel):
	    4-20mA Output = 12mA (50%) Fixed
	    Pulse Output = 1 Hz Fixed
	    Flow Switch Output = ON / Closed
	• Disable (Run Mode):
	    4-20mA, Pulse, & Flow Switch Operate in Normal Run Mode

9,10,11,12	Set the Input Pulse Weight:
13,14,15,16	Set the 20mA Flow Rate. (4mA Flow Rate Always Equals Zero Flow). If Meter Registration Units = gal, ft^3, or AF Set 20mA Flow Rate in GPM (gallons per minute). If Meter Registration Units = m^3 Set 20mA Flow Rate in LPM (liters per minute).

For row 9,10,11,12:

x1	1 pulse per 1 unit
x10	1 pulse per 10 units
x100	1 pulse per 100 units
x1000	1 pulse per 1000 units
x0.1	1 pulse per 0.1 unit
x0.01	1 pulse per 0.01 unit
x0.001	1 pulse per 0.001 unit
x0.0001	1 pulse per 0.0001 unit
x0.00001	1 pulse per 0.00001 unit
x1/60	1 pulse per 1/60 unit
x1/6	1 pulse per 1/6 unit
x10/6	1 pulse per 10/6 unit
x100/6	1 pulse per 100/6 unit

...where unit = gal/ft^3/m^3/AF

6. Note the Following Behaviors of the Input Pulse De-Bounce Function and the Output Pulse-Extension Function:

Sample Period = 5 seconds...

	Pulse Extension = ON (Enables De-Bounce)	Pulse Extension = OFF (Disables De-Bounce)
Pulse Speed = SLOW (Disables De-Bounce)	Extension = 100ms De-Bounce = Disabled	Extension = Disabled De-Bounce = Disabled
Pulse Speed = NORMAL	Extension = 100ms De-Bounce = 100ms	Extension = Disabled De-Bounce = Disabled

Sample Period = 15, 30, 60 seconds...

	Pulse Extension = ON (Enables De-Bounce)	Pulse Extension = OFF (Disables De-Bounce)
Pulse Speed = SLOW (Disables De-Bounce)	Extension = 200ms De-Bounce = Disabled	Extension = Disabled De-Bounce = Disabled
Pulse Speed = NORMAL	Extension = 200ms De-Bounce = 200ms	Extension = Disabled De-Bounce = Disabled

7. Connect DC voltage source to the Analog Pulse Kit's V+/V– terminals. Apply Power, and Observe...

- The #1 LED (Green) 'Pulse Input' should blink ON whenever an incoming pulse (contact closure) has been detected.

- The #2 LED (Yellow) 'Heartbeat' should signal with an OCCASIONAL BLINK OFF, signifying that the Analog Pulse Kit is working.

- The #3 LED (Green) 'Flow Detect' will light up SOLID GREEN during periods when Positive Flow is Detected.

- The #4 LED (Yellow) 'Pulse Output' will follow the Pulse Output (LED ON=Contact Closure).

8. RESET PushButton Operation:

- If the RESET PushButton is depressed for 1 second (or more), then the Day Totalizer will be reset to ZERO (0).

- If the RESET PushButton is depressed for 5 seconds (or more), then the Day Totalizer and the Master Totalizers will both be reset to ZERO (0).

SENSUS WATER METERS –
PERSONALITY SETTINGS FOR <mark>OMNI-SERIES</mark> AND <mark>HYDROVERSE</mark> METERS.

Recommended <mark>DIP Switches 1-12:</mark>

Size	Gallons	Cubic Feet	Cubic Meters
1.5" Omni-R2/T2/F2 2" Omni-R2/T2/F2 3" Omni-T2/F2 **Omni Meter Emits:** **1 pulse per 1.0 gallon** **1 pulse per 0.1 ft^3** **1 pulse per 0.01 m^3**	DipSw.1= DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9= DipSw.10= DipSw.11= DipSw.12= **Normal Speed Pulse:** **1 Pulse / 1 Gal** **Low Speed Pulse:** **1 Pulse / 10 Gal**	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9= DipSw.10= DipSw.11=ON DipSw.12= **Normal Speed Pulse:** **1 Pulse / 0.1 FT^3** **Low Speed Pulse:** **1 Pulse / 1 FT^3**	DipSw.1= DipSw.2=ON DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9=ON DipSw.10= DipSw.11=ON DipSw.12= **Normal Speed Pulse:** **1 Pulse / 0.01 M^3** **Low Speed Pulse:** **1 Pulse / 0.1 M^3**
4" Omni-T2/F2 6" Omni-T2/F2 8" Omni-T2/F2 10" Omni-T2/F2 **Omni Meter Emits:** **1 pulse per 10 gallons** **1 pulse per 1 ft^3** **1 pulse per 0.1 m^3**	DipSw.1= DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9=ON DipSw.10= DipSw.11= DipSw.12= **Normal Speed Pulse:** **1 Pulse / 10 Gal** **Low Speed Pulse:** **1 Pulse / 100 Gal**	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9= DipSw.10= DipSw.11= DipSw.12= **Normal Speed Pulse:** **1 Pulse / 1 FT^3** **Low Speed Pulse:** **1 Pulse / 10 FT^3**	DipSw.1= DipSw.2=ON DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9= DipSw.10= DipSw.11=ON DipSw.12= **Normal Speed Pulse:** **1 Pulse / 0.1 M^3** **Low Speed Pulse:** **1 Pulse / 1 M^3**

SENSUS WATER METERS –
PERSONALITY SETTINGS FOR <mark>HET PROPELLER-SERIES</mark> METERS.

Recommended <mark>DIP Switches 1-12:</mark>

Size	Gallons	Cubic Feet
3" HET **Gallon Meter Emits:** **600 Pulses per 100 Gallons** **(1 Pulse per 1/6 Gallon)** **FT³ Meter Emits:** **600 Pulses per 10 FT³** **(1 Pulse per 1/60 FT³)**	DipSw.1= DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9= DipSw.10=ON DipSw.11= DipSw.12=ON **Normal Speed Pulse:** **1 Pulse / (1/6) Gal** **Low Speed Pulse:** **1 Pulse / (10/6) Gal**	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9=ON DipSw.10= DipSw.11= DipSw.12=ON **Normal Speed Pulse:** **1 Pulse / (1/60) FT³** **Low Speed Pulse:** **1 Pulse / (1/6) FT³**
4" – 10" HET **Gallon Meter Emits:** **600 Pulses per 1000 Gallons** **(1 Pulse per 10/6 Gallon)** **FT³ Meter Emits:** **600 Pulses per 100 FT³** **(1 Pulse per 1/6 FT³)**	DipSw.1= DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9=ON DipSw.10=ON DipSw.11= DipSw.12=ON **Normal Speed Pulse:** **1 Pulse / (10/6) Gal** **Low Speed Pulse:** **1 Pulse / (100/6) Gal**	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9= DipSw.10=ON DipSw.11= DipSw.12=ON **Normal Speed Pulse:** **1 Pulse / (1/6) FT³** **Low Speed Pulse:** **1 Pulse / (10/6) FT³**
12" – 22" HET **Gallon Meter Emits:** **60 Pulses per 1000 Gallons** **(1 Pulse per 100/6 Gallon)** **FT³ Meter Emits:** **60 Pulses per 100 FT³** **(1 Pulse per 10/6 FT³)**	DipSw.1= DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9= DipSw.10= DipSw.11=ON DipSw.12=ON **Normal Speed Pulse:** **1 Pulse / (100/6) Gal** **Low Speed Pulse:** **1 Pulse / (1000/6) Gal**	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8= DipSw.9=ON DipSw.10=ON DipSw.11= DipSw.12=ON **Normal Speed Pulse:** **1 Pulse / (10/6) FT³** **Low Speed Pulse:** **1 Pulse / (100/6) FT³**

SENSUS WATER METERS –
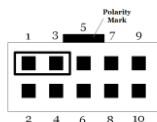## PERSONALITY SETTINGS FOR <mark>W-SERIES TURBO</mark> METERS[1].

Recommended <mark>DIP Switches 1-12:</mark>

| Size	Gallons	Cubic Feet	Cubic Meters
W-Series - All Sizes	DipSw.1= DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8=	DipSw.1=ON DipSw.2= DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8=	DipSw.1= DipSw.2=ON DipSw.3= DipSw.4= DipSw.5= DipSw.6= DipSw.7= DipSw.8=
1.5" W-120	DipSw.9= DipSw.10= DipSw.11= DipSw.12= 12.42 Pulses / Gal	DipSw.9= DipSw.10= DipSw.11= DipSw.12= TBD Pulses / FT^3	DipSw.9= DipSw.10= DipSw.11= DipSw.12= TBD Pulses / M^3
2" W-160	DipSw.9=ON DipSw.10= DipSw.11= DipSw.12= 12.42 Pulses / Gal	DipSw.9=ON DipSw.10= DipSw.11= DipSw.12= TBD Pulses / FT^3	DipSw.9=ON DipSw.10= DipSw.11= DipSw.12= TBD Pulses / M^3
3" W-350	DipSw.9= DipSw.10=ON DipSw.11= DipSw.12= 4.654 Pulses / Gal	DipSw.9= DipSw.10=ON DipSw.11= DipSw.12= TBD Pulses / FT^3	DipSw.9= DipSw.10=ON DipSw.11= DipSw.12= TBD Pulses / M^3
4" W-1000	DipSw.9=ON DipSw.10=ON DipSw.11= DipSw.12= 1.242 Pulses / Gal	DipSw.9=ON DipSw.10=ON DipSw.11= DipSw.12= TBD Pulses / FT^3	DipSw.9=ON DipSw.10=ON DipSw.11= DipSw.12= TBD Pulses / M^3
6" W-2000	DipSw.9= DipSw.10= DipSw.11=ON DipSw.12= 0.501 Pulses / Gal	DipSw.9= DipSw.10= DipSw.11=ON DipSw.12= TBD Pulses / FT^3	DipSw.9= DipSw.10= DipSw.11=ON DipSw.12= TBD Pulses / M^3
8" W-3500	DipSw.9=ON DipSw.10= DipSw.11=ON DipSw.12= 0.2617 Pulses / Gal	DipSw.9=ON DipSw.10= DipSw.11=ON DipSw.12= TBD Pulses / FT^3	DipSw.9=ON DipSw.10= DipSw.11=ON DipSw.12= TBD Pulses / M^3
10" W-5500	DipSw.9= DipSw.10=ON DipSw.11=ON DipSw.12= 0.1195 Pulses / Gal	DipSw.9= DipSw.10=ON DipSw.11=ON DipSw.12= TBD Pulses / FT^3	DipSw.9= DipSw.10=ON DipSw.11=ON DipSw.12= TBD Pulses / M^3
16" W-10,000	DipSw.9=ON DipSw.10=ON DipSw.11=ON DipSw.12= 0.1157 Pulses / Gal	DipSw.9=ON DipSw.10=ON DipSw.11=ON DipSw.12= TBD Pulses / FT^3	DipSw.9=ON DipSw.10=ON DipSw.11=ON DipSw.12= TBD Pulses / M^3

* All Pulse Weights are Approximate for W-Series Turbo Meters.

(1) Requires Setting of "W-Series Turbo Meter" Activation Jumper.
   User Must Open Device Case, and Set Shunt Jumper on Circuit Board Utility Header:
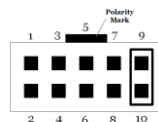
Activate Sensus W-Series Mode   De-Activate Sensus W-Series Mode

SENSUS WATER METERS –
PERSONALITY SETTINGS FOR OMNI, HYDROVERSE, PROPELLER, & W-SERIES METERS.

Recommended <mark>DIP Switches 13-16</mark>:

The Following Are *Suggested* Flow Span Settings, and May Need to Be Adjusted Based on Anticipated Max Flow Conditions.

Size	Gallons , Cubic Feet , Cubic Meters	
1.5" Omni, HydroVerse, Prop, W-120 Turbo 200 gpm 750 lpm	DipSw.13=ON DipSw.14= DipSw.15=ON DipSw.16=	
2" Omni, HydroVerse, Prop, W-160 Turbo 300 gpm 1200 lpm	DipSw.13= DipSw.14=ON DipSw.15=ON DipSw.16=	
3" Omni, HydroVerse, Prop, W-350 Turbo 500 gpm 2000 lpm	DipSw.13=ON DipSw.14=ON DipSw.15=ON DipSw.16=	
4" Omni, HydroVerse, Prop, W-1000 Turbo 1200 gpm 4500 lpm	DipSw.13=ON DipSw.14= DipSw.15= DipSw.16=ON	
6" Omni, HydroVerse, Prop, W-2000 Turbo 3000 gpm 11000 lpm	DipSw.13=ON DipSw.14=ON DipSw.15= DipSw.16=ON	**4-20mA Span Settings Are Based Solely on Meter Size and Maximum Expected Flow Rates.**
8" Omni, HydroVerse, Prop, W-3500 Turbo 4600 gpm 17500 lpm	DipSw.13= DipSw.14= DipSw.15=ON DipSw.16=ON	
10" Omni, HydroVerse, Prop, W-5500 Turbo 7300 gpm 27500 lpm	DipSw.13=ON DipSw.14= DipSw.15=ON DipSw.16=ON	
16" Prop, HydroVerse, W-10,000 Turbo 11,400 gpm 43000 lpm	DipSw.13= DipSw.14=ON DipSw.15=ON DipSw.16=ON	