Digital Pulse – Wireless Smart Sensor Connectivity Kit

SENSING INCREDIBLE THINGS

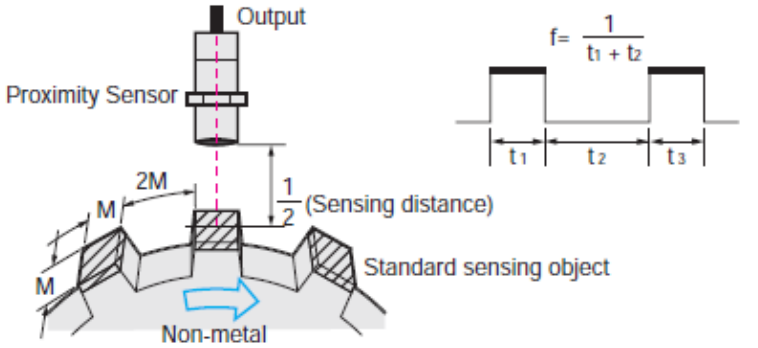
OMEGA™
a spectris company

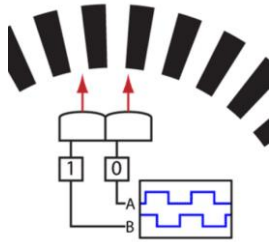
Digital Pulse Signals

What are Digital Pulse Signals

- Ability to measure rate and phase relations of digital pulses produced by rotating or moving electro-mechanical devices
- Can be used to measure Speed, Distance, Flow rate, Position, presence/absence, totalize events.
- Common in ***Intrinsically Safe*** applications where sensor measurement is isolated from the detection system.
- The rate and phase relationship of the pulse (clock) signals determines the measured quantity
- The signal is typically ***scaled*** to represent engineering units, for example, for a FTB4607 flow meter:
  - 75.7 pulses/sec == 1 gal/second
- **Devices <u>may</u> require additional operating power (PSU-93)**

- The number of detection repetitions that can be output per second when the standard sensing object is repeatedly brought into proximity.
- See the accompanying diagram for the measuring method.





Input Options

- **Digital Inputs:** Switch/relay closures, Proximity Switches, Photo detectors
- **Pulse Rate**: Frequency, speed
- **Pulse Width**: Duration (time) of signal
- **Duty Cycle**: Percent of time signal is active, accepts PWM input signals
- **Pulse Delay:** Time between two events
- **Counter:** Number of occurrences
- **Up/Down Counter:** Quadrature inputs, totalizer

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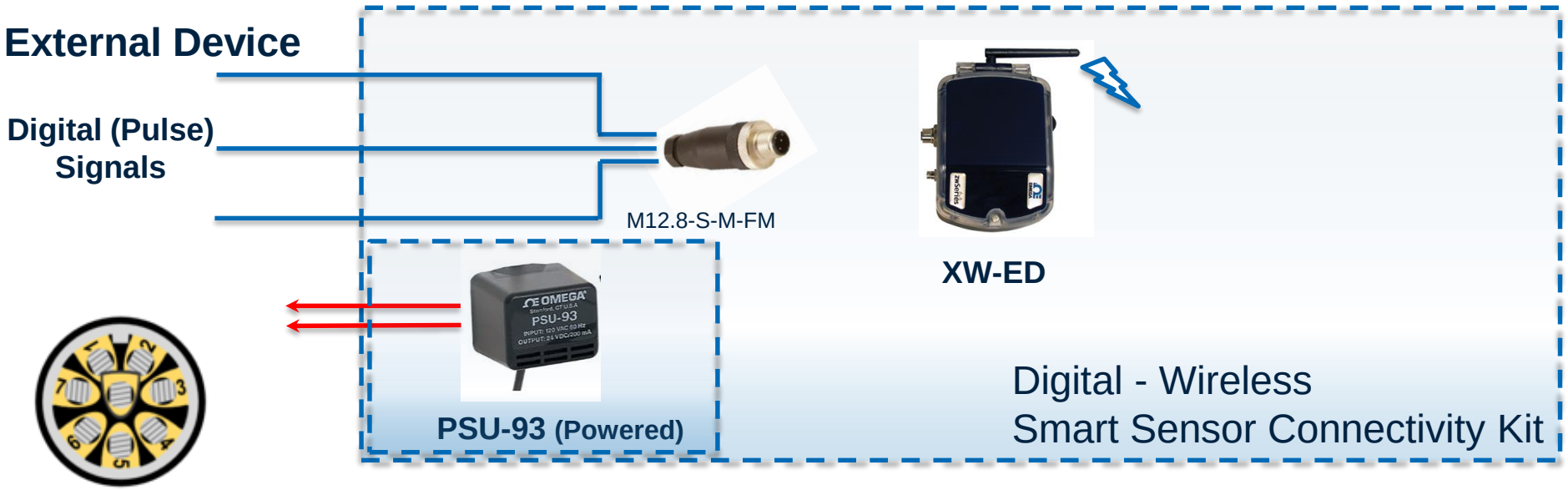


ZW-REC
Wireless Receiver

SmartEdge Gateway

Pin	Connection
1	N.C.
2	Pulse / Pulse A / Input 1
3	Enable/Direction/Input 3
4	Reset / Input 2
5	Shield
6	N.C.
7	Ground
8	3.3 Vdc (Not Used)

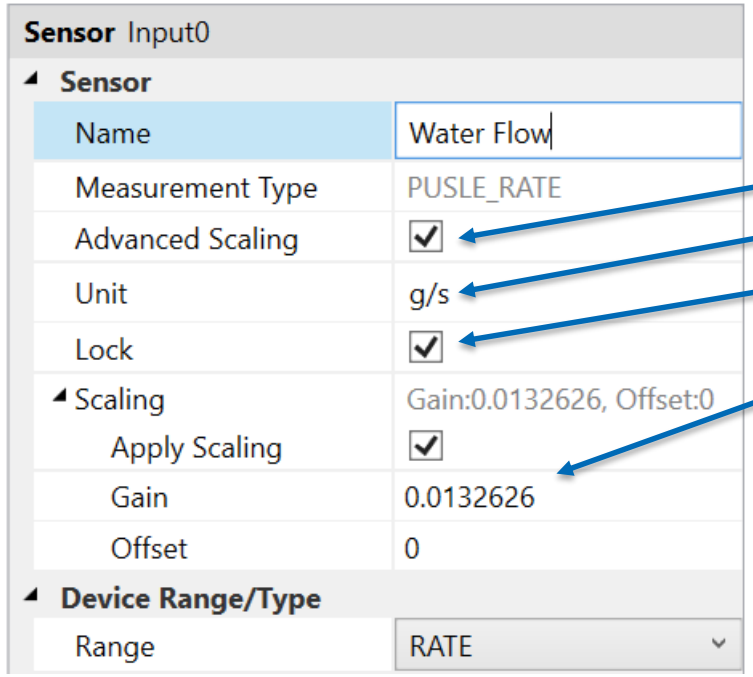
- **M12.8-S-M-FM** provides 8 pin Screw Terminal connector
- **XW-ED** processes and converts digital pulses to Smart Sensor digital interface and transmits wirelessly to **ZW-REC** receiver
- **PSU-93** → included in Powered Kit for external device power

- ZW-REC supports up to 128 XW-ED transmitters

Digital Pulse Signals - Scaling

- External digital signals conveys information in terms of pulses, counts, pulse width or pulse delays, all of which represent some other ‘unit of measure’

  Flow Sensor Example: 75.7 pulses/sec == 1 gal/second, 0 pulses/sec = 0 gal/second
- Smart Sensor allows linear ***scaling*** of measurement for ***unit*** conversion using simple *y = Mx + B* formula, where M is the ‘gain’ and B is an offset.
  - Determine **Gain**: (Actual_Hi – Actual_Lo)/(Reading_Hi – Reading_Lo) == (1 – 0) / (75.4 - 0) == **0.0132626**
  - Determine **Offset**: use calculated Gain, with 0 as Actual == 0 - 0.0132626 * 0 == **0**
  - Change the ‘units’ string to ‘g/s’



Advanced Scaling option opens the scaling options

Change ***unit*** to any string (maximum 4 characters)

Ensure ***lock*** option is set (retains across power reset)

Enter calculated ***Gain*** and **Offset** values