

CORNELL PUMP COMPANY

# IOT ECOSYSTEM

REMOTE PUMP MONITORING SYSTEM



# CORNELL'S IOT ECOSYSTEM

## CORNELL'S COMMITMENT TO PROGRESS



Cornell Pump Company's IoT ecosystem is a testament to our unwavering commitment to innovation and customer-centric efficiency improvements. We have seamlessly integrated cutting-edge IoT technologies into our pump systems, creating an interconnected network that redefines how our customers approach pump management. This ecosystem empowers our customers with real-time data insights, predictive maintenance capabilities, and remote monitoring, enabling them to optimize performance, reduce downtime, and maximize energy efficiency.

Our dedication to innovation aligns perfectly with Cornell's overarching goal of enhancing the operational experience for our valued customers. By embracing IoT, we have not only elevated the performance of our pump systems but also revolutionized how our customers interact with and benefit from our products. This ecosystem represents a synergistic blend of our nearly century-long expertise in pumping solutions and the ever-evolving technological landscape.

Through this strategic fusion, we continue to empower our customers with the tools to make informed decisions, minimize disruptions, and drive sustainable growth. As we navigate the dynamic challenges of various industries, our IoT ecosystem ensures that our customers remain at the forefront of efficiency, productivity, and innovation. At Cornell Pump Company, we are creating pumps and shaping the future of pumping technology for a more connected and efficient world.

## CORNELL'S IOT ECOSYSTEM

Since 2018, Cornell has been at the forefront of hardware and software innovations designed to easily track, monitor, and operate rotating equipment and other assets in settings as diverse as farms, factories, oil rigs, emergency bypass, water treatment, open pit mining, marine environments, and more.

Powered by constantly evolving components, our customers provide a virtuous feedback loop to improve systems and designs to suit your needs better and increase the range and efficacy of our IoT products.

# RPM<sup>2</sup>™ EQUIPMENT MANAGEMENT PLATFORM

## What is RPM<sup>2</sup>



RPM<sup>2</sup> is a software platform that allows users to track, manage, locate, and perform predictive analysis on equipment with attached Internet of Things (IoT) hardware. The software enables different user level protection so a company can assign access pertinent to roles.

It allows groupings and comparative performance between and among groups and individual equipment, can alert if the equipment is out of condition or moved beyond a specified location, and keeps documentation, such as O&M manuals, operating curves, etc., centralized.

The software also offers a service log for each piece of equipment, allowing users to track the time and details of maintenance.



### OPERATIONS

- Run Time
- Engine or motor condition
- Vibration and bearing temperature
- User defined alert conditions: available via email, SMS, or phone call, with timed escalations
- Flow rate
- GPS Location
- Alert if equipment moved beyond a determined area (GeoFencing)
- Asset recovery if stolen
- Location history

### ANALYSIS

- Comparative analysis of individual assets over time (usage, efficiency, etc.) and comparison across a fleet
- Leads to better business intelligence and decision-making

### PREDICTIVE MAINTENANCE

- Establish baseline operation for equipment
- Leads to suggestions on when materials may need to be replaced:

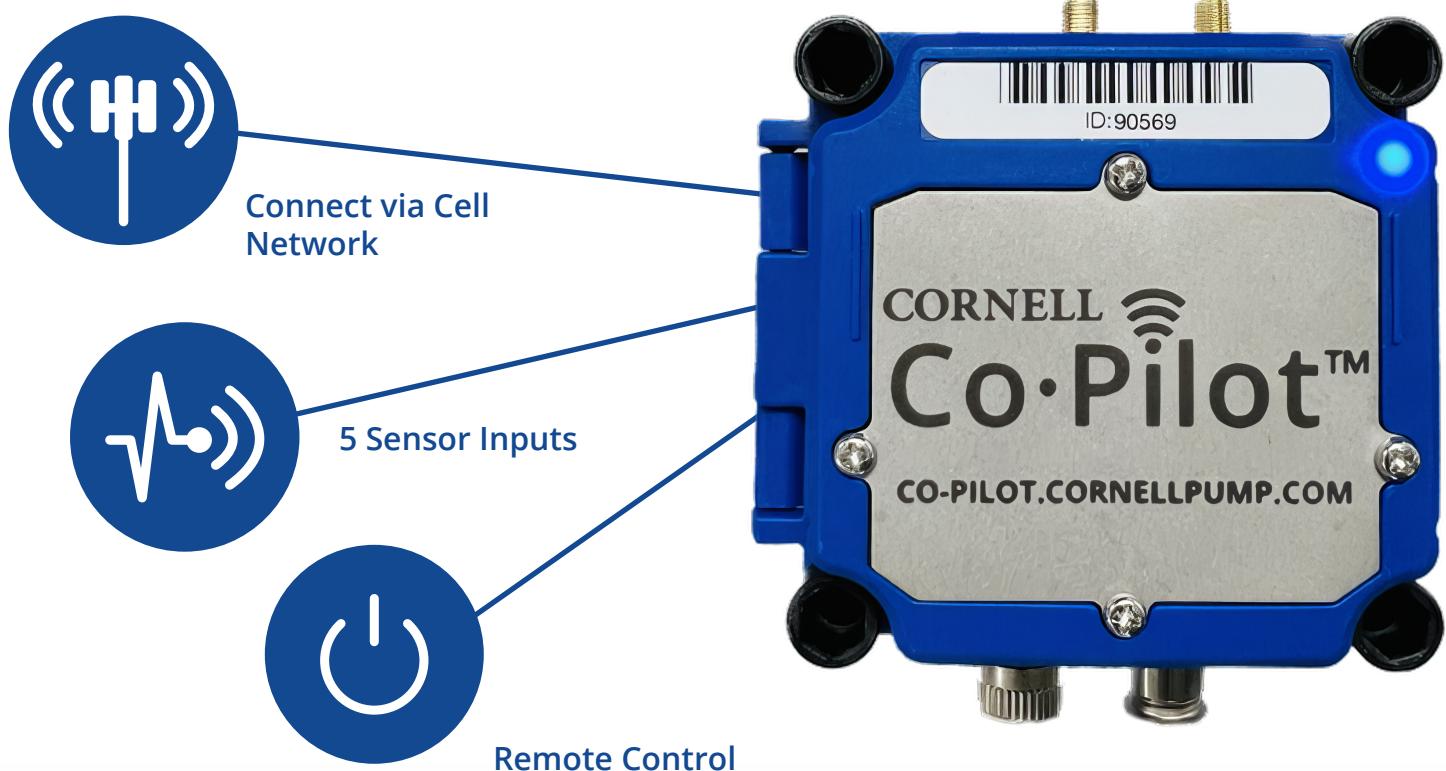
- Grease or oil in the bearing frame, based on run time
- Engine lubrication/service
- Seals, Impellers, and other wear parts, based on performance
- Flags equipment that is out acting outside of "normal."



### CONTROL

- Start and Stop Machinery
- Control Operating Speed
- Configure Automated Operating Parameters

# CORNELL CO-PILOT™



Cornell Co-Pilot is a telematics monitoring system that mounts on your pump and is externally powered by 12-24 VDC via battery or wired connection. Co-Pilot harnesses the power of IoT (Internet of Things) by delivering you the control and data you need to maximize your pump's efficiency, compare data across multiple pumps, and manage maintenance all from your phone, tablet, or PC. We at Cornell pride ourselves in providing quality, user-friendly pump monitoring solutions that reflect our dedication to cutting-edge design and meeting customer needs.

## USE THE CO-PILOT TO:

- Plan maintenance
- Check operation with real-time pump data, and monitor performance degradation and critical conditions.
- Get alerts from out-of-condition operation
- Reduce manual inspections
- Reduce warranty claims
- Improve efficiency
- Compare data across multiple pumps
- Better asset management
- Cloud monitor single and multiple pumps

3 | Cornell IoT Ecosystem

## MONITORING AT YOUR FINGER TIPS

Easily monitor your pump's performance and get remote control through your PC and mobile apps available for iOS and Android. Receive alerts for out-of-condition parameters and view the GPS location of the pump(s). Set up user accounts for employees and end users in one convenient platform.

## CORNELL CO-PILOT ALLOWS YOU TO:

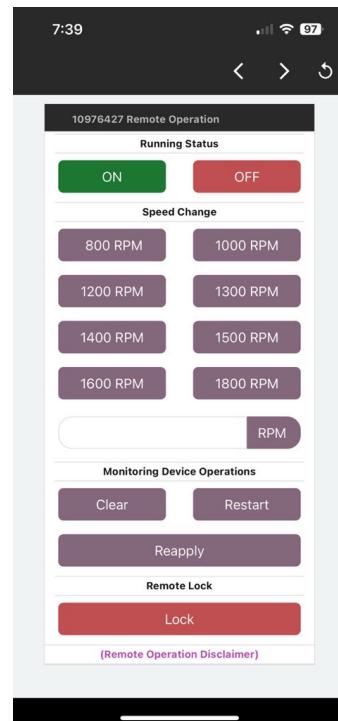
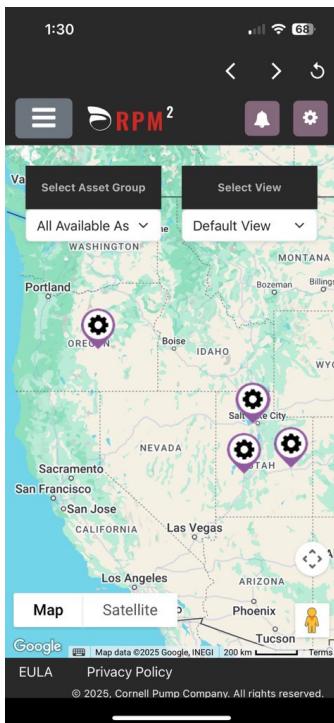
- GPS location and history
- Flow rate & accumulation with compatible flow meter
- Suction & discharge pressure
- Radial & axial vibration
- Temperature
- Remote start/stop and adjust RPM
- Engine/Motor data
- Operation hours
- Fluid levels

\*Requires external sensors; contact Cornell for details.

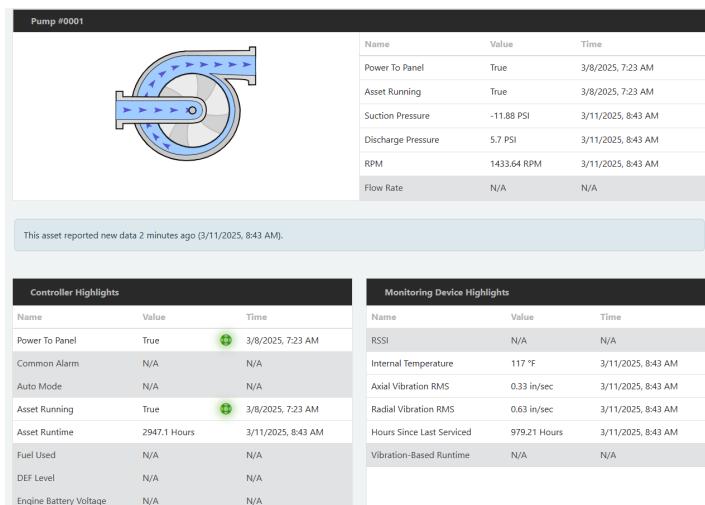
**PART OF RPM<sup>2</sup> ASSET MANAGEMENT SYSTEM**



# CO-PILOT™ SPECIFICATIONS



Screenshots from the mobile Co-Pilot app.



Co-Pilot desktop version screenshot.

## TECHNICAL SPECIFICATIONS

### COMMUNICATION

- 4G LTE cellular cloud connectivity
- Monitor all connected pumps from a single app
- GPS Location Information

### ON-BOARD MONITORING

- 3-axis vibration monitoring [Inch/Sec]
- Temperature ±5°F / ±2.7°C
- Modbus (RS-485)
- Up to 5 additional inputs to connect external sensors

### NOTIFICATIONS

- Parameter threshold cross
- Basic and Dynamic Geo-Fence Location
- Service Hours reached
- Pump Start/ stop
- Operational Engine/Motor alerts
- And more

### DIMENSIONS/ OPERATIONS/STANDARDS

- 3.4" x 3.4" x 1.9" (86mm x 86mm X 48mm)
- Robust insulated enclosure
- IP65 compliant (dust tight and protected against water from a nozzle)
- FCC Part 15 and RoHS compliant
- Temperatures from -22°F/ -30°C to 158°F/70°C

### POWER

- External DC power: 12-24 VDC
- 500mA MAX
- Avg. 70mA @VDC

Get started at  
[CO-PILOT.CORNELLPUMP.COM](http://CO-PILOT.CORNELLPUMP.COM)

# CORNELL PULSE™



## CORNELL Pulse™

An innovative technology that makes monitoring your pump easier than ever.



MONITOR PUMP  
HEALTH ONSITE



LOG REPORTS TO REVIEW  
AND COMPARE



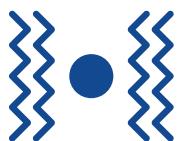
ACCESS INFORMATION VIA  
AN EASY-TO-USE MOBILE APP



GAUGE BEARING FRAME  
TEMPERATURE



USE ONBOARD POWER FOR UP TO  
THREE YEARS FOR CONSISTENT,  
ACCURATE READINGS



MEASURE PUMP VIBRATION  
SEVERITY



DISTINGUISH/RENAME PUMPS  
FOR GREATER CLARITY IN  
MULTIPLE PUMP INSTALLATIONS

### LEADING-EDGE REAL TIME SNAPSHOT

Cornell Pulse is an innovative technology that allows a user to measure a pump's vibration severity and temperature in real time. Pulse is a compact (approx. 1.5"/4CM diameter) pump-mounted wireless device that captures pump data when queried by the end user. Helpful pump measurements, such as temperature and vibration, are viewed by logging into a mobile app for phones and tablets. When coupled with our Remote Pump Maintenance and Monitoring (RPM2®) system, Pulses report data to the cloud and track pump and other rotating equipment conditions. RPM2® can also record the GPS location from where the scan took place. The detection of common pump problems is vital to increasing the lifespan of a pump and its efficiency.

As the name implies, the Pulse allows a user to check a pump's health quickly. The Pulse is a robust wash-down duty unit that can last around three years with daily measurements (more frequent measurements use battery power and reduce service life.)



# CORNELL CO-PILOT™ FLOW METER

## INTRODUCING NEW CO-PILOT FLOW METERS



FLOW METER	
LINEAR MATERIALS	EBONITE
METERING TYPE	MAGNETIC
ELECTRODE MATERIAL	HASTELLOY C
FLANGE RATING	ANSI 150LB
INGRESS RATING	IP68 (HEAD UNIT)
BODY CONSTRUCTION	FULLY WELDED & INTERNALLY POTTED
VOLTAGE	BATTERY or 12-24VDC
AMBIENT TEMPERATURE	-4° TO 140°F / -20 TO 60°C
FLUID TEMPERATURE	-13° TO 176°F / -25° TO 80°C
ACCURACY	0.2% of rate +/- 0.08in/sec
FLOW VELOCITY RANGE	0.05ft/sec TO 32.81ft/sec
FLOW UNITS	Ft3, GAL, m, m3, l, ML
OUTPUTS	PULSE, 4-20mA (when powered) MODBUS

Battery or wired configurations are available!

### UTILIZE RPM<sup>2</sup> SOFTWARE WITH FLOW METER TO TRACK:



ROBUST AND RELIABLE CONSTRUCTION



ACCURATE MEASUREMENTS



SMALL PHYSICAL FOOTPRINT



BI-DIRECTIONAL METERING



ABILITY TO OPERATE ON BATTERY



EXTRAORDINARY CHEMICAL RESISTANCE



CERTIFIED IP68 PROTECTION



FULLY WELDED POTTED BODY



ELECTRODES IN HASTELLOY C



EASY INSTALLATION



OUTSTANDING CO-PILOT SUPPORT AND INTEGRATION

FLOWMETER AVAILABLE SIZES: 4" - 12"  
FOR OTHER SIZES INQUIRE WITH CORNELL

PART OF RPM<sup>2</sup> ASSET MANAGEMENT SYSTEM

**RPM<sup>2</sup>**  
REMOTE

# CO-PILOT™ FLOWMETER SKID



## ABOUT ELECTRIC SKID

Flowmeter Skid can operate autonomously in harsh, remote conditions, sending back information via cell service. No need to travel to isolated locations with this easy-to-configure and easy-to-monitor device.

### FEATURES

- Remote flow meter data
- Self-sustaining unit
- Available in sizes 4"-12"
- Stack-able units
- Fork pockets and lifting eyelets

### CO-PILOT SPECIFICATIONS

- 4 Analog Inputs
- 1 Digital Input
- 4G LTE on National & International Networks
- Web browser or iOS/Android apps

*See Co-Pilot Brochure for further monitoring information*

### ELECTRICAL SPECIFICATIONS

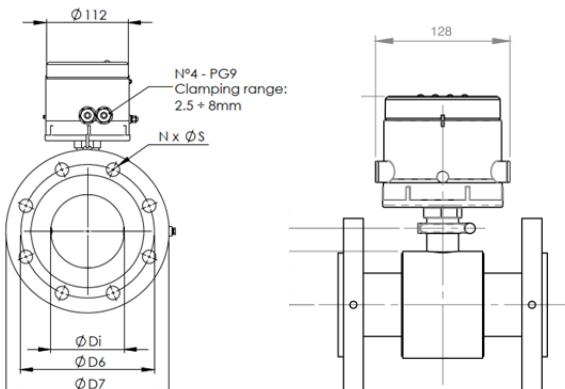
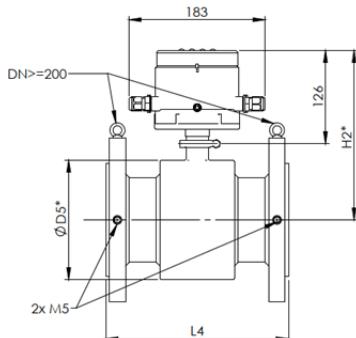
- Standard 12 VDC car battery
- 40 W solar panel
- Optimized charge controller

**CORNELL**   
**Co·Pilot™**

To learn more about Co-Pilot's monitoring capabilities, visit [co-pilot.cornellpump.com](http://co-pilot.cornellpump.com) or contact [iotsales@cornellpump.com](mailto:iotsales@cornellpump.com).

# CO-PILOT™ FLOWMETER SKID

CORNELL  
**Co-Pilot**



## MECHANICAL INSTALLATION

The following mechanical installation images are designed to show how simple it is to set up a Cornell Co-Pilot Flow Meter. If an end-user has questions, Cornell offers calibration videos on our YouTube Channel for an easy setup. Cornell's inside application engineers also stand ready to answer any questions about Flow Meter installation, Co-Pilot, or other IIoT offerings.

SIZE	H (in)	H1 (in)
4"	3.19	19.08
6"	4.13	21.08
8"	5.16	23.25
10"	6.30	25.67
12"	7.32	27.83

DN	L4	DS	Di	D6	D7	N	S	H1	H2	H3
4"	9.84	6.34	3.83	7.50	9.06	8	3/4	9.19	9.00	10.81
6"	11.81	8.27	5.84	9.50	11.02	8	7/8	10.16	9.96	11.77
8"	13.78	10.28	7.68	11.75	13.58	8	7/8	11.16	10.96	12.78
10"	17.72	12.56	9.65	14.25	15.94	12	1	12.30	12.11	13.92
12"	19.69	14.61	12.12	17.00	19.09	12	1	13.33	13.13	14.94

## INSTALLATION GUIDELINES

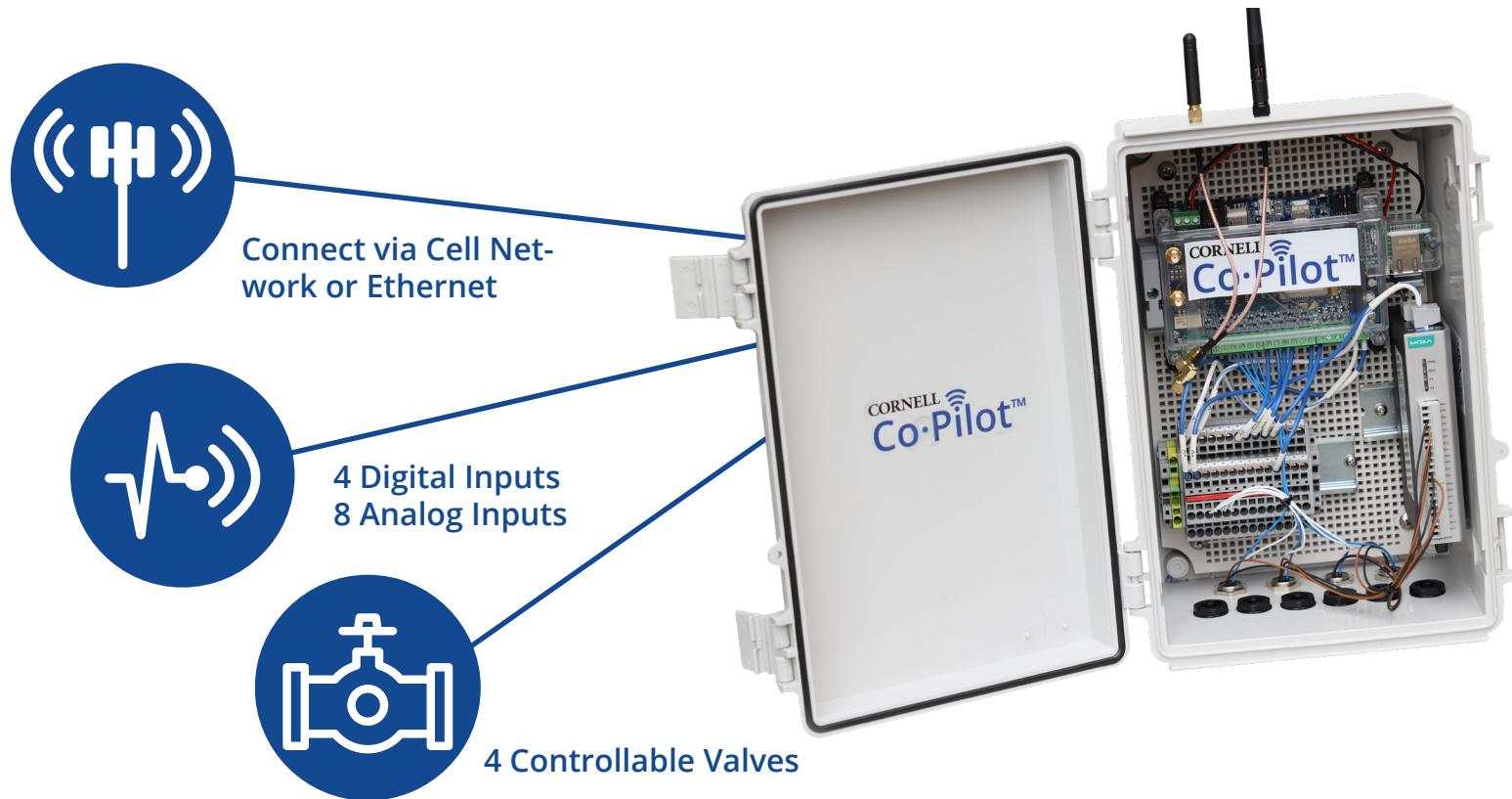
IMPORTANT NOTE: THE SENSOR MUST ALWAYS BE FULL OF LIQUID

Flow Meter should be installed 5x pipe diameters downstream of any obstructions (pipe bends, valves, etc.) and 3x pipe diameters upstream of any obstructions.

AVOID NEGATIVE PRESSURE INSTALLATIONS

VIEW HELPFUL SETUP VIDEOS AT:  
[HTTPS://WWW.YOUTUBE.COM/@CORNELLPUMP COMPANY](https://www.youtube.com/@cornellpumpcompany)

# CO-PILOT™ REMOTE VALVE CONTROLLER



**CORNELL**  **Co-Pilot™**

## CO-PILOT REMOTE VALVE CONTROLLER COMPATIBLE VALVES

The Co-Pilot Remote Valve Controller enhances pumping operations by seamlessly integrating valve control, providing advanced precision and flexibility. It can manage up to four 4-20 mA valve actuators simultaneously and offers precise positioning ranging from 0% to 100% using analog out signals.

This controller enables remote monitoring and control of valves, allowing users to leverage additional analog or digital inputs. In the event of a power loss, the system ensures safety by offering the option to back up valves in either open or closed positions, safeguarding personnel and equipment.

## USE THE VALVE CONTROL UNIT FOR:

- Live data monitoring
- Control 4 valves with 0-100% positioning
- Monitor 4 valves
- Configure valves for power loss
- 8 total analog inputs
- 4 Optional digital inputs

This panel empowers seamless remote control over four 4-20mA position valves. Each valve requires a dedicated power source that is compatible with 12-24VDC. By operating through 4-20mA signals, the valves can respond to commands and generate their own 4-20mA signals. This unique feature ensures that the Co-Pilot remains informed about the precise position of the valves, thereby achieving a comprehensive and efficient feedback loop.

## CO-PILOT USER INTERFACE ALLOWS YOU TO:

- Access historical data for all sensors
- Enable live data when needed
- Receive real-time alerting
- Integrate a valve controller into your pumping fleet

*Valves sold separately.*

# CO-PILOT™ REMOTE VALVE CONTROLLER



Screenshots from the mobile RPM<sup>2</sup> app.

## TECHNICAL SPECIFICATIONS

### COMMUNICATION

- 4G LTE cellular cloud connectivity or Ethernet
- Available on Android and iOS apps
- GPS location information

### ON-BOARD MONITORING

- Modbus (RS-485)
- 4 analog outputs (4-20mA)
- 8 analog inputs (4-20mA)
- 4 optional digital inputs
- 1 relay output

### EDGE COMPUTING

- Live Data (polling times under 5 sec.)
- Cloud-based automation compatible

### ALERTING AND REPORTS

- Generate automatic reports
- Configurable alerts
- Voice, text, or email alerts
- Alert escalation

### DIMENSIONS/ OPERATIONS/ STANDARDS

- 12.15" by 6.46" by 5.97"
- Temperatures from -22°F/ -30°C to 158°F/ 70°C
- UL standard upon request

### POWER

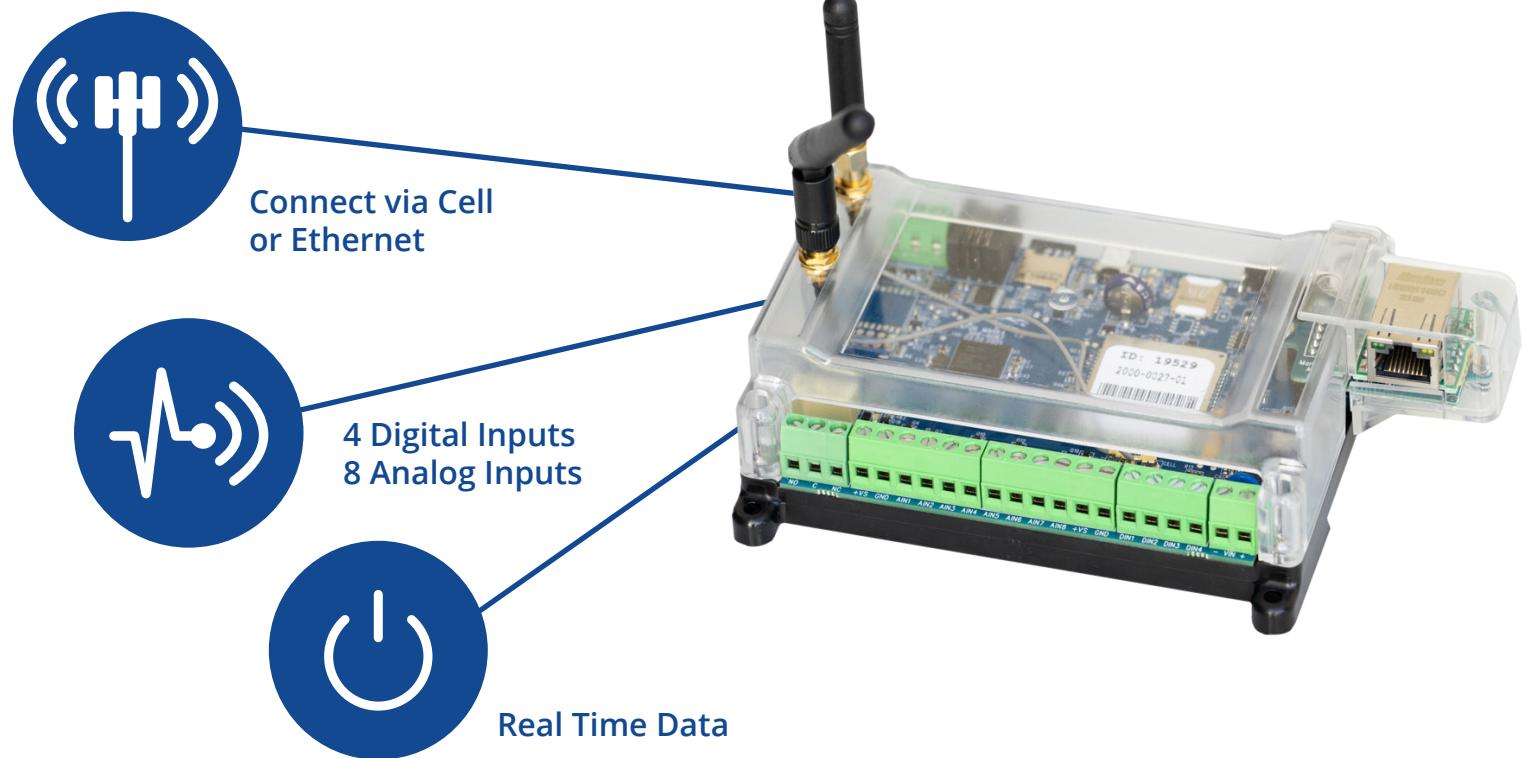
- External power: 12-24 VDC
- 500mA maximum

*Valves sold separately.*

Co-Pilot desktop version screenshot.

Get started at  
[CORNELLPUMP.COM/CO-PILOT](http://CORNELLPUMP.COM/CO-PILOT)

# CO-PILOT™ INTEGRATED SCADA UNIT



CORNELL  
**Co-Pilot™**

## WHY THE CO-PILOT SCADA UNIT?

The Co-Pilot Integrated SCADA Unit not only shares the user-friendly web browser and app interface with our Cornell Co-Pilot units but also boasts an elevated level of sophistication. Employing 120VAC relays and a specialized power source, this panel is designed to oversee duplex pumping setups with unparalleled efficiency.

Equipped with dedicated timers and configurable alerts for its four digital inputs, this advanced panel goes beyond mere monitoring – it offers a comprehensive control system. Moreover, by leveraging the cellular gateway, users can opt for a fully remote option to access and view intricate pumping details effortlessly.

## USE THE INTEGRATED SCADA UNIT FOR:

- Live data monitoring
- High Float and Fault alerting
- Monitor pump usage on 2 pumps
- Automated reports
- Track historical pump usage

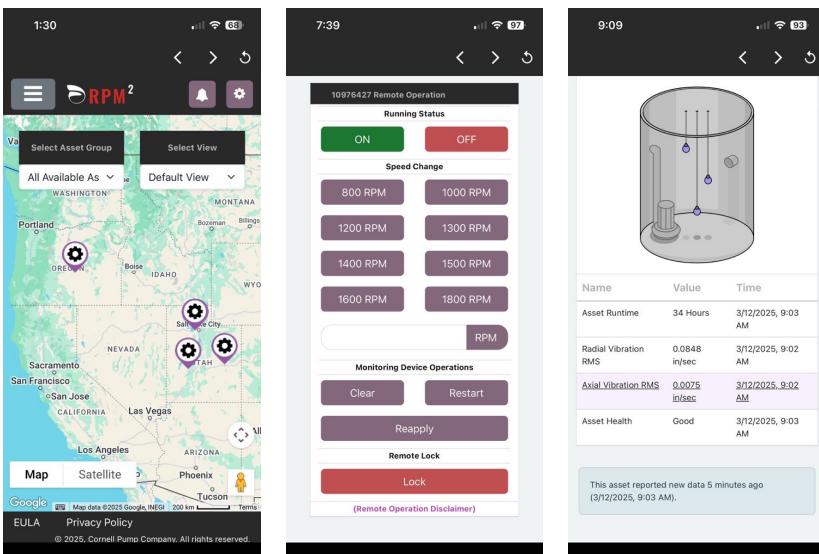
## CO-PILOT PANEL MOUNTED GATEWAY (PMG)

The Co-Pilot Integrated SCADA Unit harnesses the cutting-edge technology of the Co-Pilot PMG device, setting a new standard in sophistication. The PMG boasts superior capabilities, offering a host of additional inputs, including eight analog inputs, four digital inputs, and a relay output.

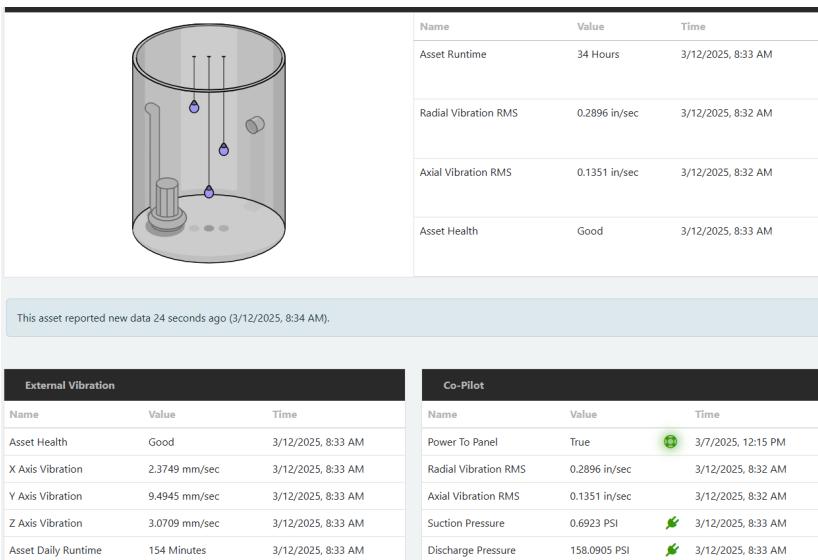
## CORNELL CO-PILOT ALLOWS YOU TO:

- Monitor pumps using the cloud and IOT
- Monitor duplex pumping setup
- View pump usage with historical data
- Enable live data when needed
- Receive real time alerting

# CO-PILOT™ INTEGRATED SCADA UNIT



Screenshots from the mobile RPM<sup>2</sup> app.



Co-Pilot desktop version screenshot.

**Get started at**  
**[CORNELLPUMP.COM/CO-PILOT](http://CORNELLPUMP.COM/CO-PILOT)**

## TECHNICAL SPECIFICATIONS

### COMMUNICATION

- 4G LTE cellular cloud connectivity
- Ethernet Compatible
- Monitor all connected pumps from a single app
- GPS Location Information

### ON-BOARD MONITORING

- Modbus (RS-485)
- 4 Digital inputs with 120VAC relays
- 8 Analog inputs

### NOTIFICATIONS

- Generate automatic reports
- Configurable alerts
- Service hours reached
- Pump start/ stop
- High float
- Fault tripped or phase lost

### DIMENSIONS/ OPERATIONS/STANDARDS

- 12.15" x 6.46" x 5.97" (308mm x 164mm x 152mm)
- UL certified upon request
- Temperatures from -22°F/ -30°C to 158°F/70°C

### POWER

- External power: 120VAC or 12-24 VDC option
- 500mA maximum

## SCADA: SUPERVISORY CONTROL AND DATA ACQUISITION

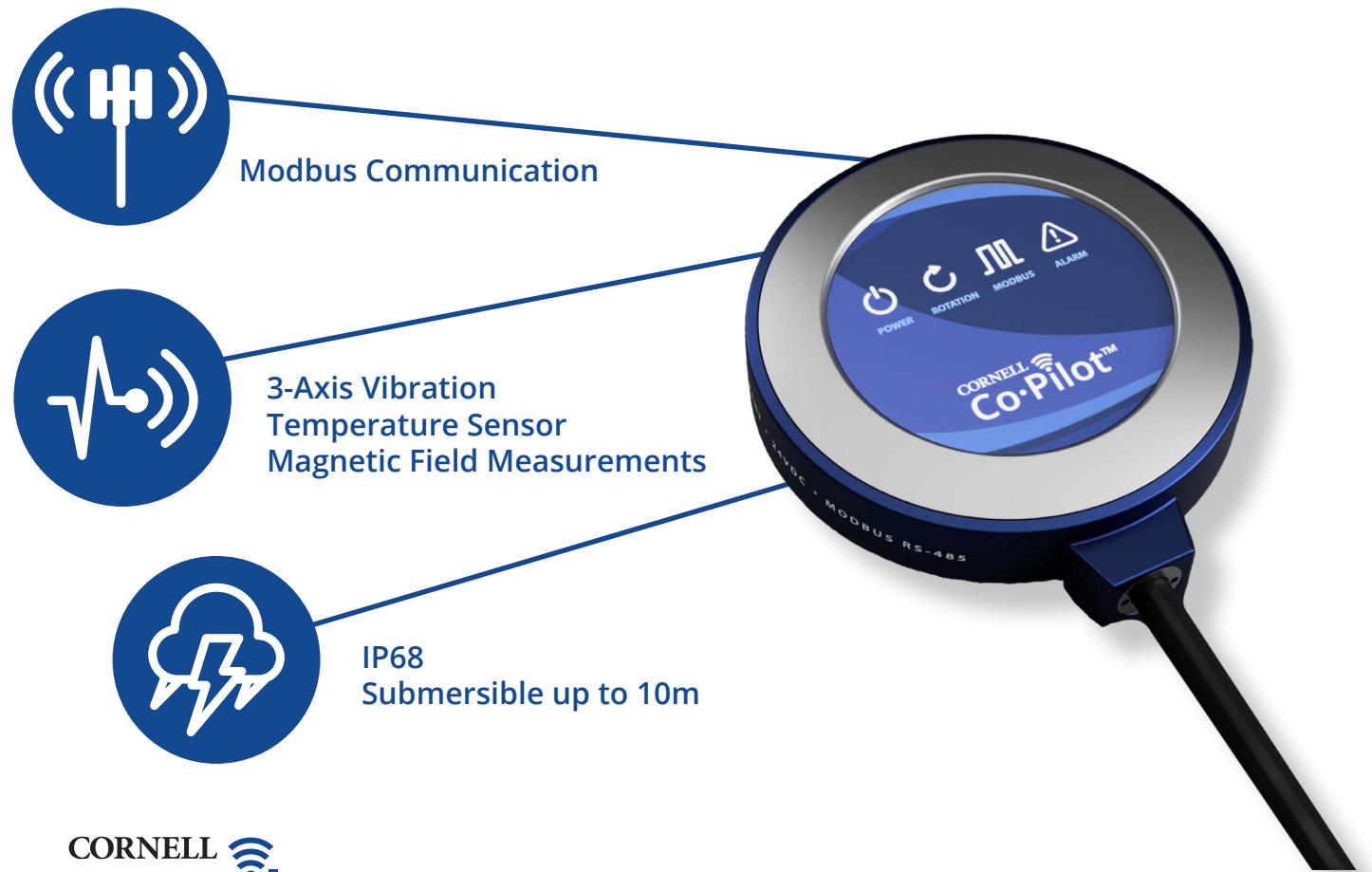
Supervisory control and data acquisition (SCADA) is a system of software and hardware elements that allows organizations to control and monitor industrial, municipal, and processes by directly interfacing with plant-floor machinery and viewing real-time data.

Since the mid-1970s, the term SCADA has emerged to describe municipal and industrial control systems. At that time, the systems were isolated and siloed. With the Cornell Co-Pilot Gateway, integration, information flow, and control flow across your organization leading to better understanding, execution, and efficiency.

With a SCADA system, municipal and industrial organizations can:

- Monitor, gather, process, and analyze real-time data
- Control processes locally or remotely
- Directly manage devices such as valves, switches, and motors
- Record activities, events, and upset conditions to logs

# EXTERNAL VIBRATION SENSOR



**CORNELL**  
**Co-Pilot™**

## WHAT CAN THIS SENSOR DO?

The external vibration sensor (EVS) is a standalone sensor featuring a stainless steel composite case and integrating an accelerometer for measuring vibration, a magnetic field sensor for tracking RPM, and a temperature sensor. It can be mounted using magnets or epoxy to monitor various parameters on pumps, motors, engines, and other rotating equipment. The sensor uses internal computing to calculate machine health insights and operating time features.

## SUITABLE FOR MOST ENVIRONMENTS

The sensor is designed to be rugged and suitable for most environments. It comes standard with a stainless steel enclosure and is IP68-rated. The sensor is equipped with 12 meters of cable and can be submerged up to 10 meters, making it ideal for use with submersible pumps and motors.

## INTEGRATE THE EVS INTO EXISTING SYSTEMS

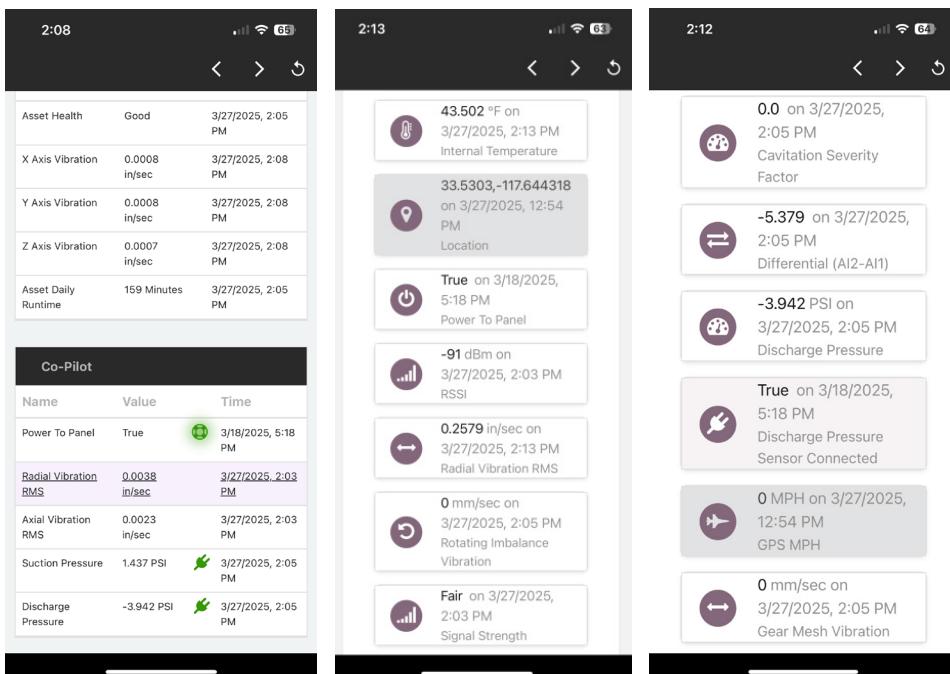
This sensor communicates via Modbus, a widely used protocol that ensures seamless integration into existing SCADA systems. It can also be connected to Cornell Co-Pilot or PMG devices, allowing for remote access to the EVS data.

Integrating the EVS into your systems can reduce maintenance costs and prevent downtime. This is particularly valuable for monitoring problematic or inaccessible pumps or motors, as it offers critical insights into potential issues.

## SENSOR'S ADVANCED COMPUTING

The external vibration sensor uses its inputs to calculate different machine health parameters, such as slip, balance, bearing fault, and cavitation. Users can set alerts for these parameters and configure dynamic alerting for multi-parameter alerts. The system also records operating time, start/stop intervals, and duty cycles.

# EVS SPECIFICATIONS



Screenshots from the mobile RPM<sup>2</sup> app.

## 4 LED 2 COLOR INDICATORS



SUFFICIENT POWER SOURCE



INSUFFICIENT POWER SOURCE (UNDER 12VDC OR OVER 24VDC)



CLOCKWISE ROTATION



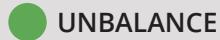
COUNTER-CLOCKWISE ROTATION



MACHINE HEALTH GOOD, NO ALERTS



CALCULATED FAULT OR SYSTEM ALARM



UNBALANCE



CAVITATION



VIBRATION RMS



TEMPERATURE



GEAR MESH LEVEL



BEARING FAULT

## TECHNICAL SPECIFICATIONS

### SENSING CAPABILITIES

#### VIBRATION

- 0-7.8 in/sec (0-200 mm/sec)
- 3D axis vibration (x, y, z-axis)
- Vibration RPM

#### MAGNETIC FIELD

- Magnetic RPM
- 0-2.000  $\mu$ T

#### TEMPERATURE

- 40°C to 110°C

### OPERATING PARAMETERS

- 40°C to 90°C
- Chemical resistant
- Dirt repellent
- Built out of stainless steel
- IP68

### WIRING

- 4 wire, shielded cable
- Power +/-
- Modbus: A+, B

### COMMUNICATION

- Modbus (RS-485)

### DIMENSIONS/ MATERIALS

- 2.15" ( $\varnothing$ 56 mm)
- 12 m of cable

### POWER

- 12-24 VDC power required
- 60 mA current draw

### COMPUTING CAPABILITIES

- Slip
- Unbalance
- Cavitation
- Vibration RMS
- Dynamic Alerting
- Bearing Fault
- Slip Gear
- Tri-Axial Vibration
- RPM

Get started at  
[CORNELLPUMP.COM/CO-PILOT](http://CORNELLPUMP.COM/CO-PILOT)

# SEEKER C SATELLITE ASSET TRACKER

## RELIABILITY AND DEPENDABILITY MELDED IN CONFIGURABLE FORM

Seeker C is a hidden low-power tracking device with a small form factor. Designed for lightweight input and event monitoring, the Seeker C can be line-powered or switched to battery backup in case of a power interruption or intermittent failures. With easy-to-source and replacement AAA batteries, the Seeker C is always vigilant and ready. Utilizing motion sensors, comparative GPS positions, and custom-configured sensors, Seeker C collects and disseminates asset status conditions.

### FEATURES

- Low battery message
- No need to purchase expensive proprietary batteries for replacement
- Quick installation
- Track intermediate bulk containers, vehicles, and boats as a solution to improve your asset's operating efficiency and security
- Operates on external line power, regulator cable, or lithium batteries
- Contact closure parameters
- Diagnostic messages
- Automatic alerts if an asset moves outside of the predetermined range
- Operates on 5V external line power, 8-24V regulator cable, or (4) AAA Lithium batteries
- Hardware on/off feature: Allows the unit to initiate GPS re-centering functionality
- Satellite technology: Global LEO Satellite operation using the Globalstar Satellite Network.

*Seeker C is an imminently affordable tracker with feature-laden options. Designed for intelligent operation with fixed and mobile assets, Seeker C is a practical solution in a small way-to-mount unit ideal for sending GPS coordinates at long intervals and configurable for various frequency rates.*

*The Seeker C's asset-ready design allows easy installation and field management without antennas or external power.*

# SEEKER C SATELLITE ASSET TRACKER

## OPERATING SPECIFICATIONS DIMENSIONS



- 2.7 IN (H) x 3.25 IN (W) x 1 IN (D) (with brackets) weight
- 3.6oz/102g (with four batteries and mounting hardware) operating temperature
- -30° to +60° C Note: The unit shall remain operational over the -40° to +85°C range, though it may experience battery life and RF signal degradation line power
- 5v DC or 8-24V Input Cable with regulator battery type
- (4) AAA Energizer Ultimate Lithium (L92) Included 1.5V lithium
- Provides 1.5+ years of battery life
- Removes the need to purchase expensive proprietary batteries for replacement certifications
- FCC, ISED, CE, UKCA, ACMA, ANATEL, ENACOM, NOM, MTC, ARECOM, NCC, ICASA, TELEC, KCC, NTC, ITU (GMPCS) standards SAE J1455 MIL-STD 810NEMA 4X / IP68RoHS Compliant satellite technology
- Global LEO Satellite operation using the Globalstar Satellite Network. See the Globalstar website for Coverage Map.

## ACCESSORIES

- USB Configuration Cable (Sold Separately)
- Combined Serial, 5v LP, I/O Cable (Sold Separately)
- Combined Serial, 8-24V Dry Contact Input Cable, I/O Cable (Sold Separately) Feature Set standard messaging
- Wake, GPS locate, transmit location, resume sleep
- 12 programmable sleep time-of-wake settings integrated accelerometer
- Message on start and stop
- Engage interval to override on a motion for a set time or while in motion alternative reporting
- Supervisory reporting schedule triggered by alarm or motion
- Transmits GPS location at intervals for programmed time or while the alarm remains active change of location
- Theft alert reporting based on distance moved
- Reduced messaging mode serial communication capability
- User-defined messages
- Serial (TTL) I/O capability to interface with remote passive and smart sensors and deliver user-defined messages

# SEEKER SOLAR ASSET TRACKER

## SOLAR-POWERED ASSET TRACKER CERTIFIED INTRINSICALLY SAFE TO ATEX ZONE 0 AND HERO

Solar-powered and designed for demanding environments, this industrial IoT asset-tracking device is intrinsically safe and maintenance-free for tracking, monitoring, and data collection.

Seeker Solar's integrated solar panel and battery capabilities deliver up to 10 years of life with minimal maintenance. This asset GPS tracking device easily mounts to any fixed or mobile asset for intelligent tracking, and monitoring,. Seeker Solar has unparalleled safety/device certifications such as ATEX, IECEx, and North America, IP68/69K, HERO certifications, and others to meet the needs of every application.



### KEY FEATURES

- Solar-powered with up to 10 years of battery life
- Intrinsically Safe IoT asset tracking solutions
- Bluetooth interface for configuration and firmware updating
- Two dry contact or wetted-voltage inputs available to manage engine run time, tank level, or various alarm inputs
- Quick and easy installation requires no harnesses, external power, or external antennas

### WIDE RANGE OF REPORTING CAPABILITIES

- Geofencing with the configurable range setting
- Low battery message
- Contact closure parameters
- Diagnostic messages

### BENEFITS

- A maintenance-free device as the power of the sun recharges its batteries, providing up to 10 years of usable service
- Delivers reliable location reporting for assets deployed worldwide – providing security and improved efficiency for your business
- Easy to install as simple packaging requires no harnesses, external power, or external antennas
- Two dry contact or wetted-voltage inputs available to manage engine run time, tank level, or various alarm inputs

# RPM<sup>2</sup> SEEKER SPECS

## DIMENSIONS

3.25 IN (H) X 7 IN (W) X 1.125 IN (D)  
8.26 CM (H) X 17.78 CM (W) X 2.86 CM (D)

## WEIGHT

13.5 oz/385 g  
With optional mounting bracket 40.57 oz. (1150 g)

## OPERATING TEMPERATURE\*

-40° C to +65° C (-40° F to 149° F)

*NOTE: The unit is certified intrinsically safe for hazardous environments over the temperature range of -40° C to +65° C (-40° F to 149° F).*

## INPUT VOLTAGE

10 TO 48 VDC

*NOTE: The device is not intrinsically safe when any cable is connected.*

## BATTERY TYPE

Built-in rechargeable NiMH batteries (non-replaceable)

## CERTIFICATIONS & STANDARDS

FCC, ISED, CE, AUS/NZ, ANATEL, INMETRO CERTIFICATE – LMP 19.0127 X, JQA(JAPAN), IFT, ARECOM, ENACOM, KCC, NCC, ASEP, AND ICASA

ATEX/IECEx II 1 G, Ex ia IIC T4 Ga For international Zone 0 applications, HERO

North America cETLus:

- Class I, Division 1, Groups A-D, T4
- Class I, Zone 0, AEx ia IIC T4 Ga
  - WEEE Compliant
  - GMPCS-MoU
  - IP68/69K
  - MIL-STD-810G for:
  - Immersion
  - Impact resistance
  - Salt Fog
  - Acidic Atmosphere
  - Humidity
  - Vibration

*RPM<sup>2</sup> Seeker Solar operates on one of the world's most modern and fastest satellite networks and is powered by the sun. This IoT device provides excellent remote monitoring and tracking capabilities. Seeker Solar's NiMH rechargeable batteries deliver up to 10 years of usable service, drastically reducing maintenance time, labor, and parts costs. It lets users intelligently configure reporting times and intervals for custom information delivery. The Seeker Solar has unparalleled safety/device certifications such as ATEX, IECEx, North America, IP68/69K, HERO certifications, and others to meet the needs of every application.*

# ADDITIONAL COMPONENTS



## CO-PILOT VALVE CONTROL

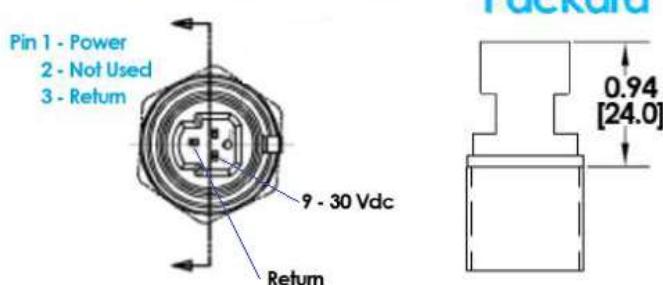
- Co-Pilot Integrated Remote Valve Position & Control
- Control for up to (4x) 4-20mA actuated valves in 1% increments (0-100%)
- Feedback Loop to readback valve position over 4-20mA
- Configurable for power loss conditions (full open or full closed)
- (4x) 4-20mA Analog Inputs for Pressure or other sensors
- (1x) Digital Input for connecting to a compatible flow meter
- 12-24VDC Power Required (Valves require separate power source)
- NEMA 4X Enclosure
- GPS Location
- Connectivity via Cellular Modem (Verizon or AT&T options available)

*\*Kit does not include valve actuators*



*Image is for reference ONLY*

Packard Connector Transmitter (4 to 20 mA)



## PRESSURE TRANSDUCER

Measuring pressure levels and changes through Cornell Co-Pilot, these transducers are matched explicitly for unrivaled ease of installation, longevity, and accuracy. The units in 250 and 500 psi models handle burst pressure up to 10XFS or 15,000 PSI. Operable in a wide range of temperatures and conditions, these pressure transducers relay vital information about operating conditions to the Co-Pilot, all in a compact unit.

Optional diaphragm seal that increases sensor life and protects against fouling and wear.

# ADDITIONAL COMPONENTS



## SUBMERIBSLE TRANSMITTER

The Cornell Co-Pilot Submersible Level Transmitter is a cost-effective, fully submersible solution for all your level monitoring needs. All stainless steel construction is designed to withstand immersion for extended periods in most water, wastewater, and sewage applications. The "Steel Cage" design protects against mud, debris, sand, and rag build-up, making it an excellent choice in the most demanding level sensing applications. With the 2-pin Deutsch connector pre-installed, the transducer is plug-and-play compatible with your Co-Pilot monitoring system right out of the box.



## TEMPERATURE PROBE

One option to monitor the temperature of liquid media and operating equipment is to use this small and accurate temperature probe. This probe is simple to set up and has a wide operating range of 0 to 300°F / -18 to 149C. Additionally, it can withstand high pressures of up to 400 bar.

# CO-PILOT™ FLEX



## CO-PILOT FLEX

FRAME	POWDER COATED STEEL
VOLTAGE	BATTERY or 12-24 VDC
SOLAR PANEL	RUGGED, 40 W
CHARGE CONTROLLER	OPTIMIZED 12V
CO-PILOT MODULE	4 ANALOG, 1 DIGITAL INPUTS
MODBUS	RS-485
CONNECTIVITY	CELLULAR AND GPS
DIMENSIONS	H 48" W 32" D 16"

## COMMON APPLICATIONS

SEWER BYPASS  
TANK LEVEL  
FLOW RATE & ACCUMULATION  
WATER TRANSFER

## ABOUT CO-PILOT FLEX

Easily transport the Co-Pilot Flex to an on-the-spot location where remote monitoring is needed. Retrieve your application data via cell service through our RPM<sup>2</sup> portal to manage and maintain project parameters, attributes and alerting. Available on iOS/Android app or web browser.

### FEATURES

On-The-Spot mobile monitoring  
Easy to transport  
Multi application use  
Self-Sustaining unit

### CO-PILOT SPECIFICATIONS

4 Analog Inputs  
1 Digital Input  
4G LTE on National & International Networks  
Web browser or iOS/Android apps  
*See Co-Pilot Brochure for further monitoring information*

### ELECTRICAL SPECIFICATIONS

Standard 12 VDC car battery  
40 W solar panel  
Optimized charge controller

**CORNELL**   
**Co·Pilot™**

To learn more about Co-Pilot's monitoring capabilities, visit [co-pilot.cornellpump.com](http://co-pilot.cornellpump.com) or contact [iotsales@cornellpump.com](mailto:iotsales@cornellpump.com).

# ADVANCED SOFTWARE FEATURES



**CORNELL** **Co-Pilot™**

The latest upgrade to the Cornell Co-Pilot brings a significant improvement, offering data polling as frequently as every 3 seconds and logging information every 5 seconds. The Advanced Logging feature is a game-changer, empowering users to poll up to 16 parameters, including engine RPM, Co-Pilot sensors, engine controller transducers, and more. This data is versatile, enabling familiar functions such as report generation, exporting data to PDF or Excel, and presenting information through user interface elements such as gauges, graphs, grids, and state labels. This upgrade is available on C6 and newer Co-Pilots (IDs 885XX and above) and the Cornell Co-Pilot Panel Mounted Gateway device.

## CO-PILOT CLOUD-BASED AUTOMATION

Co-Pilot Cloud-Based Automation utilizes a cloud-based automation protocol to enable Co-Pilot devices with seamless remote automation capabilities. This innovative system allows Co-Pilot units to execute actions seamlessly based on inputs from analog sensors, digital sensors, contacts, and Modbus data points from other units, all without the need for cumbersome hardwired connections. This system streamlines automation processes and significantly reduces hardware expenditures.

To ensure that co-pilot automation systems run smoothly, setting up at least two co-pilots for specific tasks and linking them to the cellular network is

important. Once connected, the system can be automated easily, with real-time alerts and feedback available at each unit. You can make the most of the multi-unit co-pilot page and Advanced Logging features by using the multi-unit co-pilot page and Advanced Logging features.

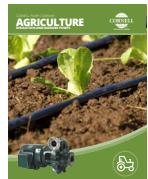
## MULTI-VIEW CO-PILOT PAGE

In the Cornell Co-Pilot browser and apps, you can conveniently monitor up to 10 Co-Pilot devices simultaneously on a single screen. Users can create custom pages tailored to specific applications, which can be saved for future use, streamlining workflow efficiency. This feature enhances project organization, particularly for the Site feature and other multi-asset projects. Even when units are grouped on a page, individual units remain accessible for configuring alerts, generating reports, and remote-control operations.

While the multi-view page aggregates data from multiple units for easy viewing, it's important to note that updates on the individual unit screen may cause some data desynchronization across the devices. Nonetheless, the Multi-Unit page ensures that data updates correspond with individual unit updates, providing a comprehensive overview.

# CORNELL PUMP COMPANY

# MARKET & PRODUCT LINE



AGRICULTURE



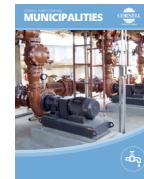
FOOD PROCESS



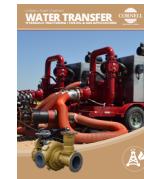
INDUSTRIAL



MINING



MUNICIPAL



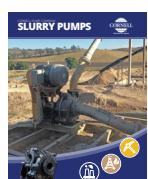
WATER TRANSFER



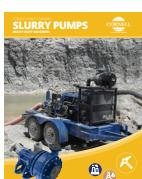
REFRIGERATION



CONSTRUCTION



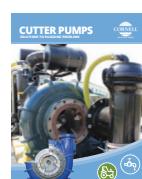
SLURRY



SLURRY SM



MANURE



CUTTERS



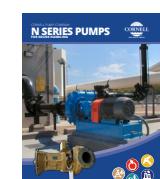
SELF PRIMING



CLEAR LIQUIDS



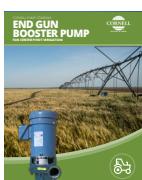
MX SERIES



N SERIES



Z-SERIES



EDGE™



HYDRAULIC SUBS



IMMERSIBLE



CD4MCU



RUN-DRY™



PRIMING SYSTEMS



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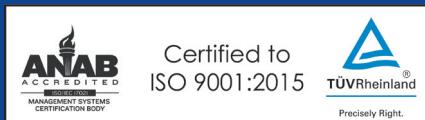
6,074,554; 6,036,434; 6,079,958; 6,309,169; 6,104,949; 12,270,421 B2

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