CORNELL PUMP COMPANY

IOT ECOSYSTEM

REMOTE PUMP MONITORING SYSTEM

CORNELL®

EFFICIENT BY DESIGN

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.

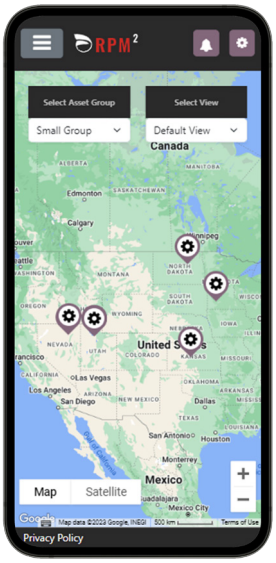
Through this strategic fusion, we continue to empower our customers with the tools to make informed decisions, minimize disruptions, and drive sustainable growth. As we navigate the dynamic challenges of various industries, our IoT ecosystem ensures that our customers remain at the forefront of efficiency, 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.

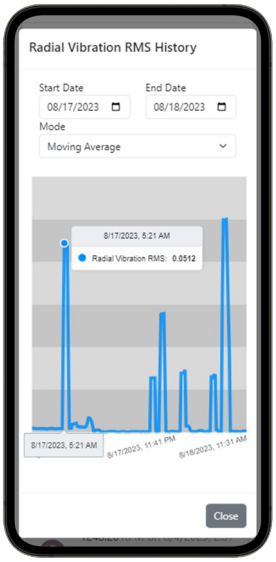
CORNELL'S IOT ECOSYSTEM

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.

RPM²™ EQUIPMENT MANAGEMENT PLATFORM





What is RPM²

RPM² 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 esclations
- Flow rate
- GPS Location
- Alert if equipment moved beyond a determined area (GeoFencing)
- Asset recovery if stolen
- Location history

CONTROL

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

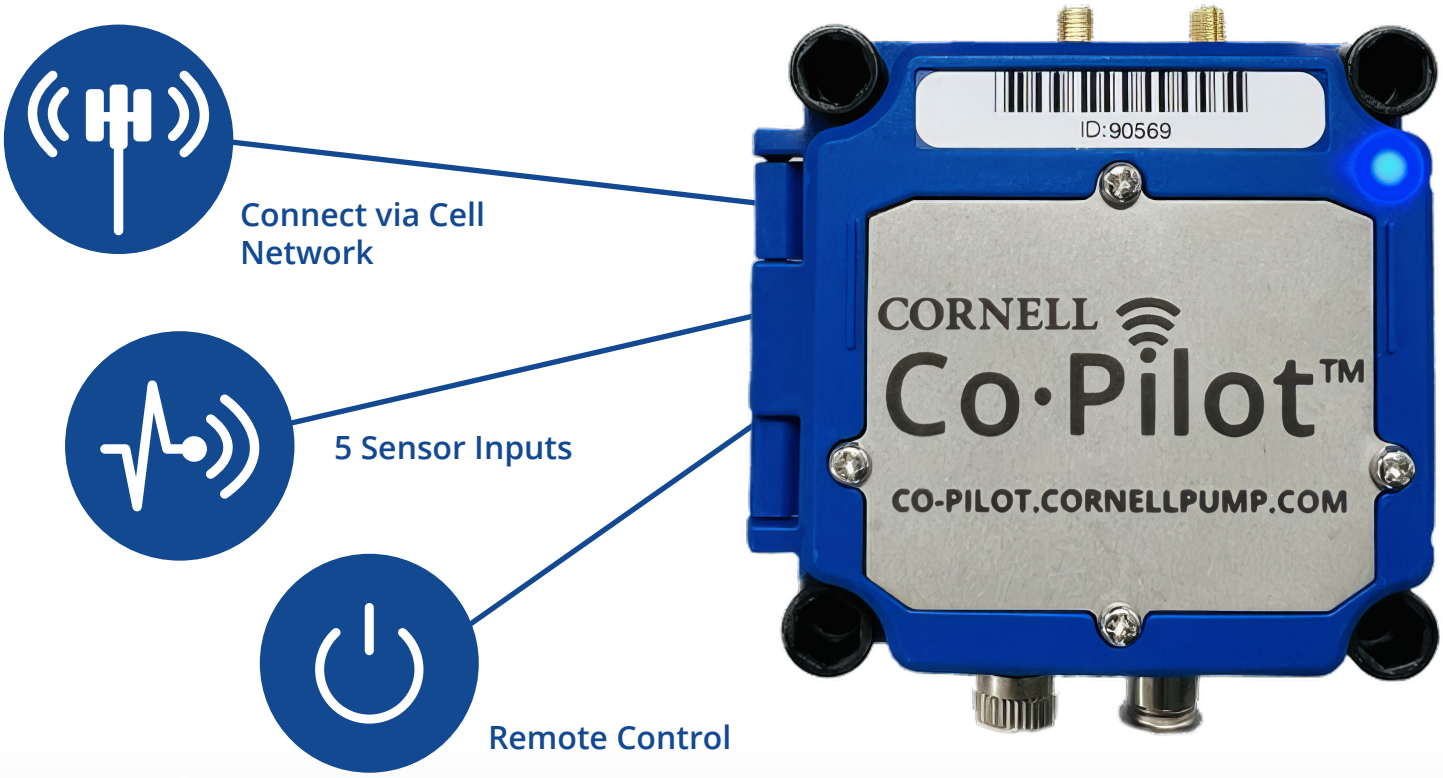
ANALYSIS

- 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.”

CORNELL CO-PILOT™



CORNELL Co·Pilot™

THE POWER OF IOT

Cornell Co-Pilot is a monitoring system that connects to your pump to track temperature, vibration, and location. Co-Pilot can also be powered with a wired connection for continuous monitoring and control system integration. Our Internet of Things (IoT) platform reflects our dedication to cutting-edge design and meeting customer needs.

USE THE CO-PILOT TO:

- Plan maintenance
- Check operation
- Reduce manual inspections
- Track pump location
- Demonstrate run conditions to customers on warranty claims
- Improve run time through the maintenance program

MONITORING AT YOUR FINGER TIPS

Easily monitor your pump's performance with desktop and mobile apps available for iOS and Android. Receive alerts for out-of-condition operations and view the last GPS location of the pump, all in one convenient platform.

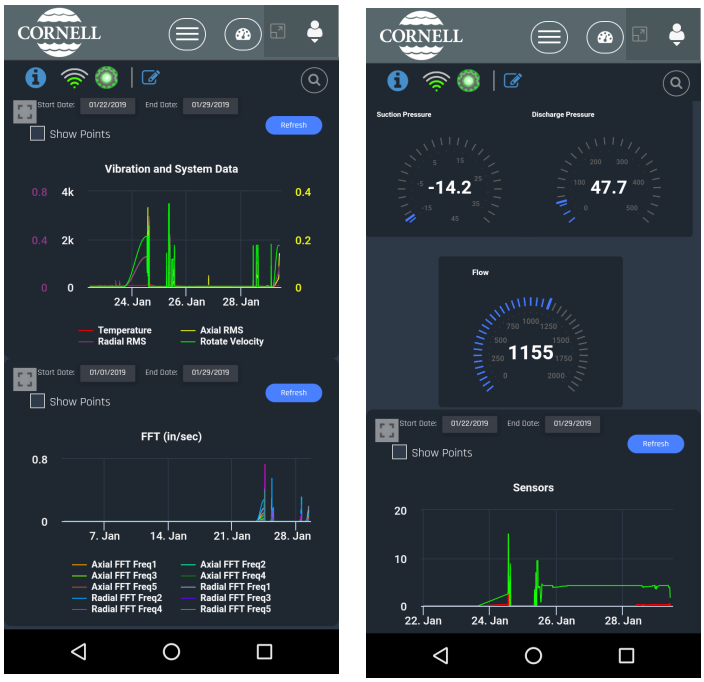
CORNELL CO-PILOT ALLOWS YOU TO:

- Monitor pumps using the cloud and IOT
- Monitor temperature, vibration, and GPS location
- Additionally monitor pressure, flow, start/stop operations, and more*
- Track data over time via web-based and mobile apps
- Receive real-time pump data for performance and health monitoring
- Receive alerts for preset running conditions

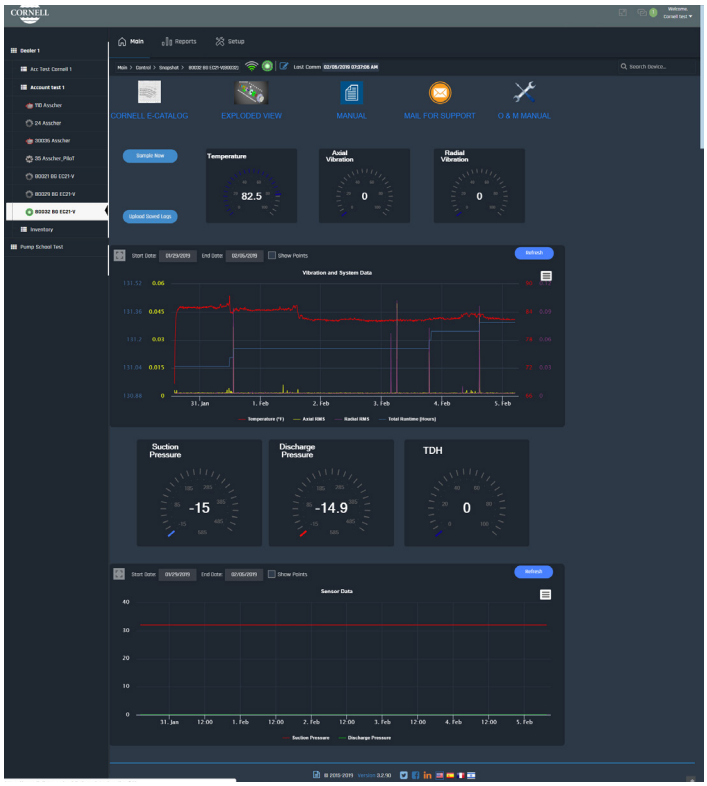
PART OF RPM² ASSET MANAGEMENT SYSTEM RPM² REMOTE

*Requires external sensors; contact Cornell for details.

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 (R5-485)
- Up to 5 additional inputs (4 analog; 1 digital) to connect external sensors

NOTIFICATIONS

- Vibration threshold cross
- Temperature threshold cross
- Service Hours reached
- Pump Start/ stop
- High pressure
- 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

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

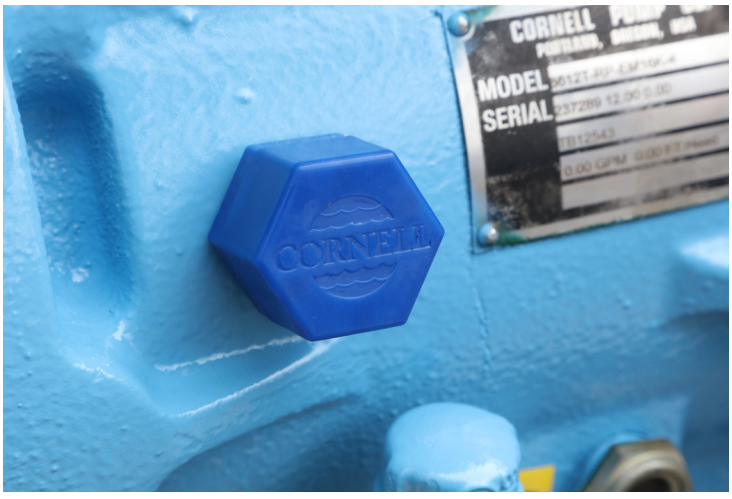
MEASURE PUMP VIBRATION SEVERITY

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 (Modbus and 4-20 mA options available on powered units)

Battery or wired configurations are available!

FEATURES OF THE METERS INCLUDE:

- 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

CO-PILOT™ FLOWMETER SKID

ABOUT ELECTRIC SKID

Flowmeter Skid can operator 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 AT&T or Verizon
Web browser or iOS/Android apps

ELECTRICAL SPECIFICATIONS

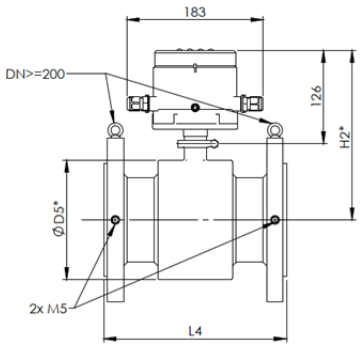
Standard 12 VDC car battery
40 W solar panel
Optimized charge controller

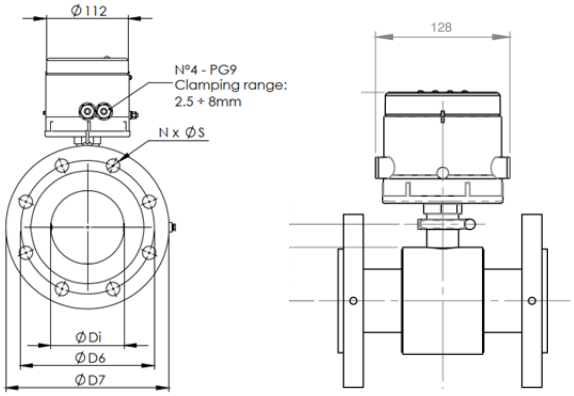
CORNELL Co·Pilot™

To learn more about Co-Pilot’s monitoring capabilities, visit co-pilot.cornellpump.com

CO-PILOT™ FLOWMETER SKID

CORNELL Co·Pilot



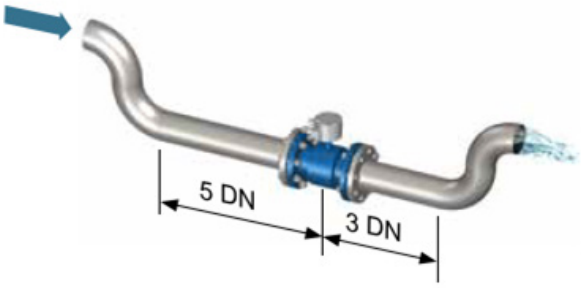


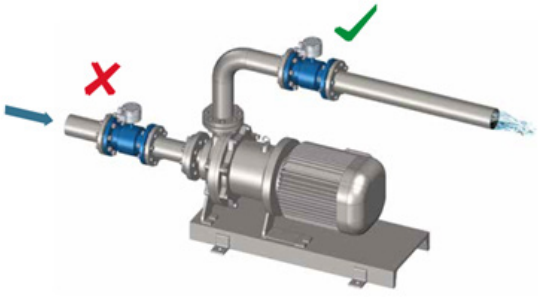
MECHANICAL INSTALLATION

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 IoT 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

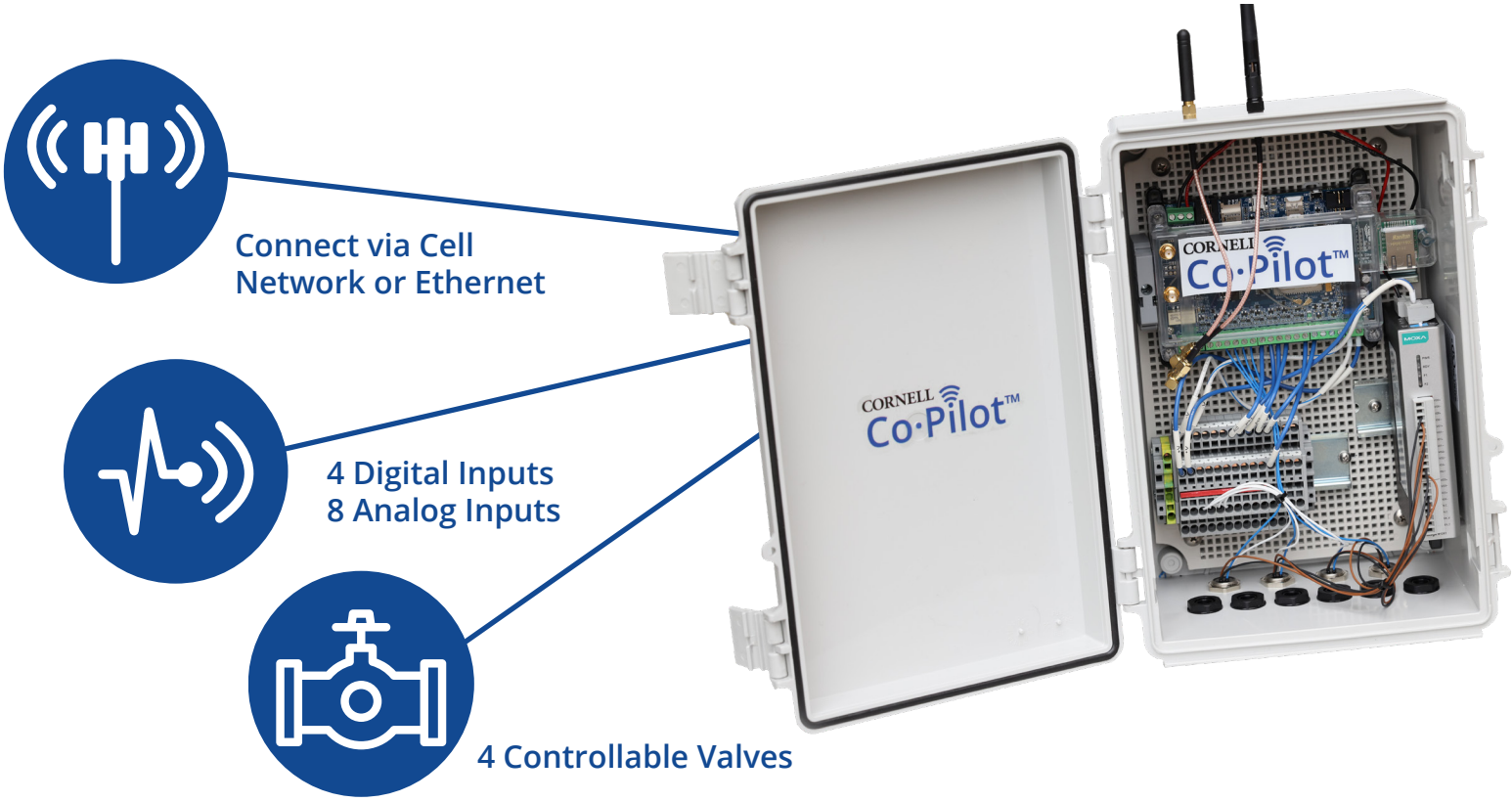
IMPORTANT NOTE: THE SENSOR MUST ALWAYS BE FULL OF LIQUID

Flow Meter should be installed 5x pipe diameters down-stream 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/@CORNELLPUMPCOMPANY

CO-PILOT™ REMOTE VALVE CONTROLLER



CORNELL
Co·Pilot™

CO-PILOT REMOTE VALVE CONTROLLER

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 accuators 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

COMPATIBLE VALVES

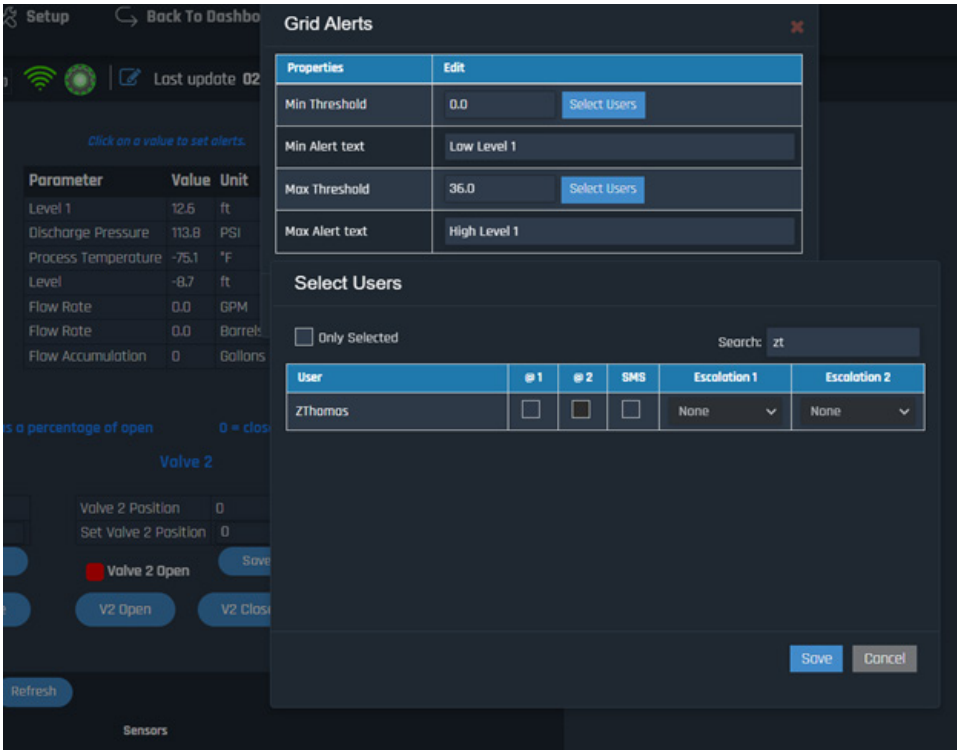
This panel empowers seamless remote control over four 4-20mA position valves. Each valve requires a dedicated power source that is compatible with 12-24VDC. By operating through 4-20mA signals, the valves can respond to commands and generate their own 4-20mA signals. This unique feature ensures that 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



Co-Pilot desktop version screenshot.

Get started at CORNELLPUMP.COM/CO-PILOT

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

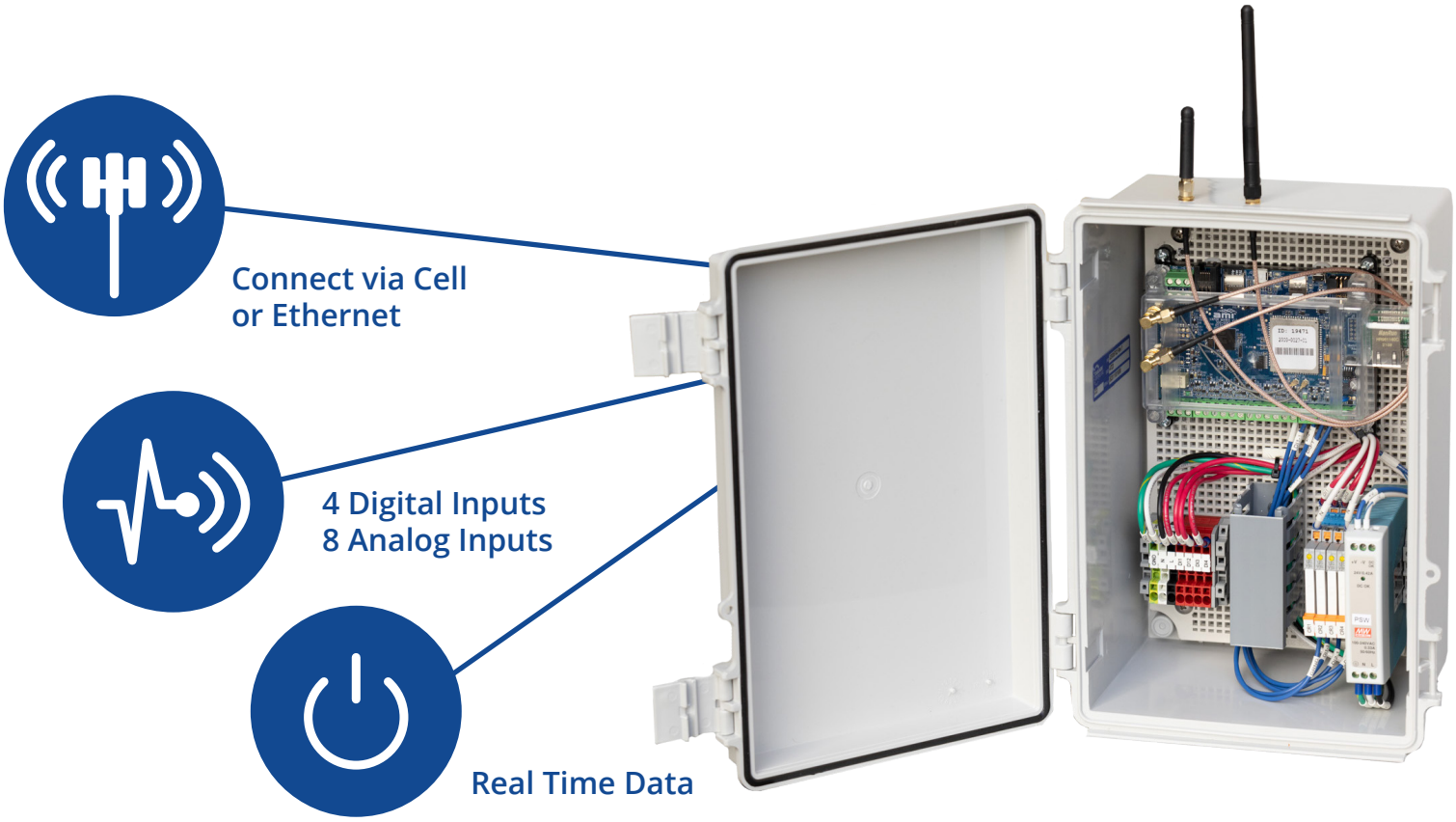
- 12.15” by 6.46” by 5.97”
- Temperatures from -22°F/ -30°C to 158°F/70°C
- UL standard upon request

POWER

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

Valves sold separately.

CO-PILOT™ 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

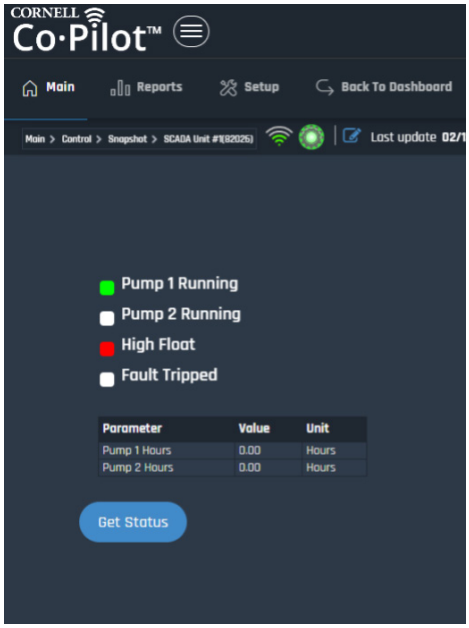
CO-PILOT PANEL MOUNTED GATEWAY (PMG)

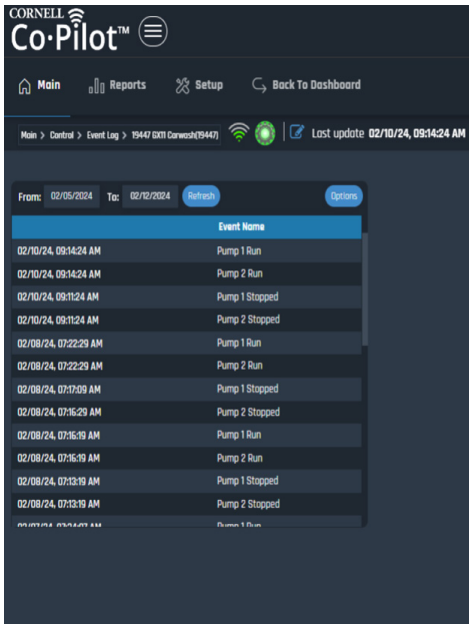
The Co-Pilot Integrated SCADA Unit harnesses the cutting-edge technology of the Co-Pilot PMG device, setting a new standard in sophistication. The PMG boasts superior capabilities, offering a host of additional inputs, including eight analog inputs, four digital inputs, and a relay output.

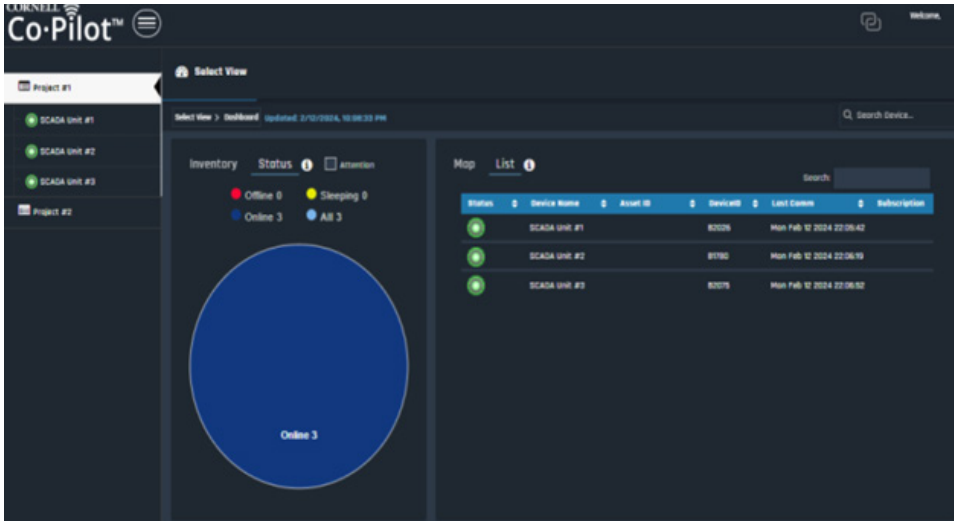
CORNELL CO-PILOT ALLOWS YOU TO:

- 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







Co-Pilot desktop version screenshot.

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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”x5.97” (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

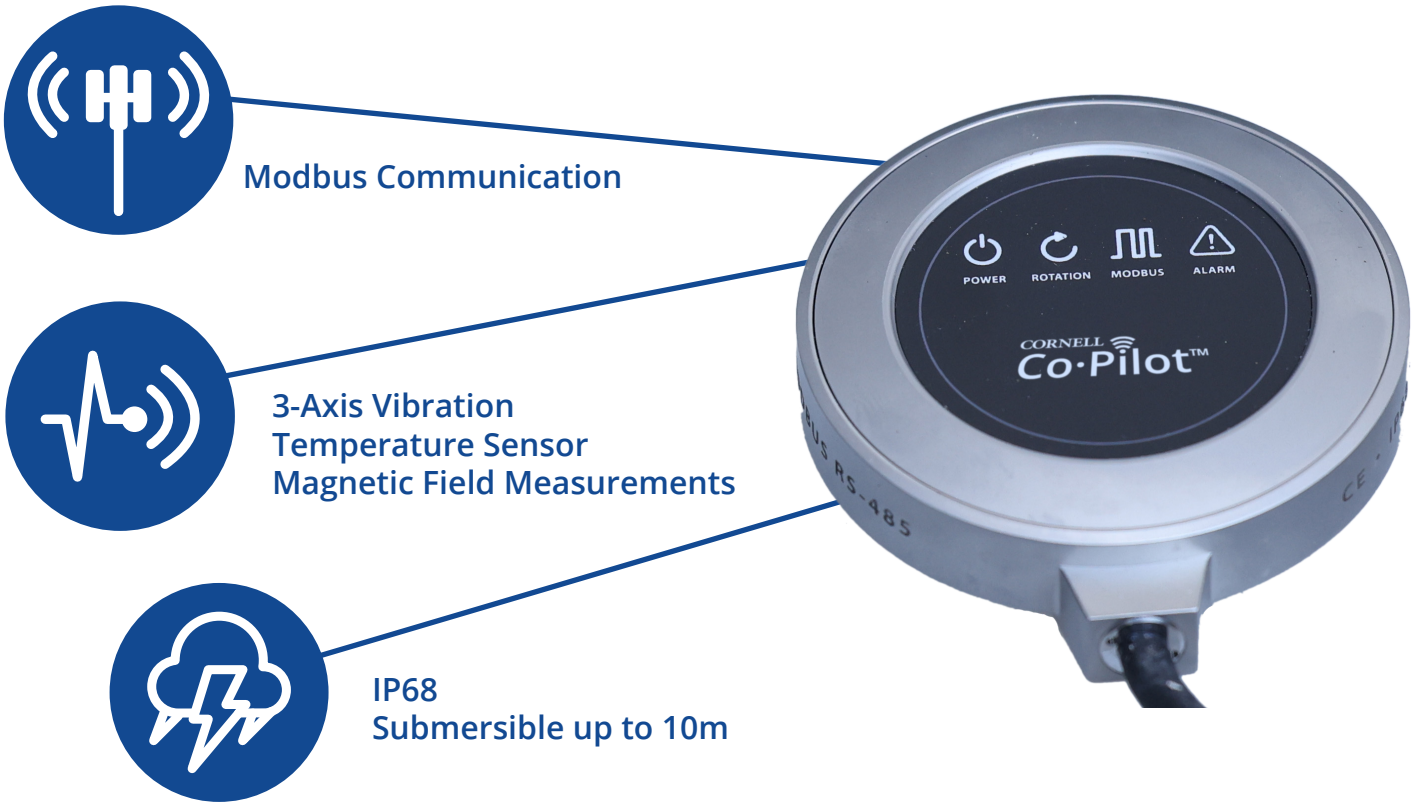
Supervisory control and data acquisition (SCADA) is a system of software and hardware elements that allows organizations to control and monitor industrial, municipal, and processes by directly interfacing with plant-floor machinery and viewing real-time data.

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.

IT SPECIFICATIONS

4 LED 2 COLOR INDICATORS

- SUFFICIENT POWER SOURCE
- INSUFFICIENT POWER SOURCE (UNDER 12VDC OR OVER 24VDC)
- COUNTER-CLOCKWISE ROTATION
- INSUFFICIENT POWER SOURCE
- MACHINE HEALTH GOOD, NO ALERTS

CALCULATED FAULT OR SYSTEM ALARM

- UNBALANCE
- CAVITATION
- VIBRATION RMS
- TEMPERATURE
- GEAR MESH LEVEL
- BEARING FAULT

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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 µT

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" (Ø56 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

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

RPM² 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

RPM² 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.

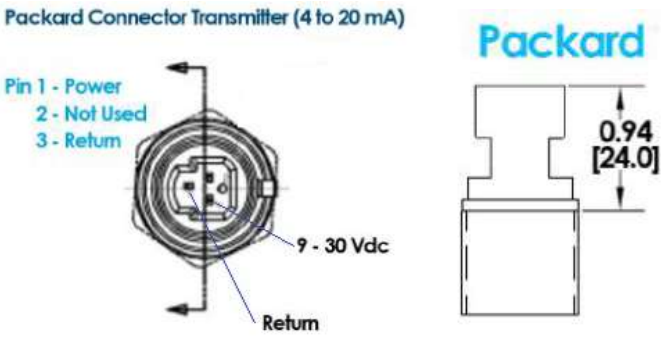
ADDITIONAL COMPONENTS

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



PRESSURE TRANSDUCER

Measuring pressure levels and changes through Cornell Co-Pilot, these traducers 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 diaphram 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.

FLEX POWER UNIT

The Flex Power Unit has its own electrical setup: a 40W solar panel and a 12V battery. This setup includes a Co-Pilot unit with four analog inputs (4-20mA), one digital input, 4G LTE connectivity on AT&T or Verizon, and an app and web browser. The power unit is portable, has a handle and wheels for easy mobility, and can be used with or without the Co-Pilot unit.

Co·Pilot™ FLEX

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.

TOMATO GROWER GETS OUT OF RED WITH CORNELL CO-PILOT™

A large tomato grower in Central California had issues with unattended pumps running. Without someone there to watch the pumps continuously, they ran into operational problems.

The fleet of several dozen pumps would see unsteady cavitation, causing pump damage. Bearing failures were another issue. Frequently, debris would enter the pump suction and restrict flow, or in worst cases, trip motors. All of these instances caused downtime to the facility, maintenance staff time and resources, and the purchase of parts. Additionally, much of the fleet was older, causing issues with spares, and they operate in a tight labor market, so skilled labor for pump maintenance or even more casual work to monitor the pumps took a lot of work to secure.

The grower wanted alerts that helped them stop a problem before it turned critical. They became aware of the possibility of Internet of Things Monitoring (IOT). They considered options and felt that Cornell Co-Pilot™ was the right mix of escalating alerts, geolocation, starting and stopping the pump remotely, and multiple logins so supervisors and workers could all monitor pumps independently.

One of the first wins the facility saw with Co-Pilot was geolocation. With pumps spread over several thousand acres, being able to track mobile assets precisely was a big time saver. Later, as technicians were catching problems before they became critical, the additional cost-saving and maintenance value of Co-Pilot came into sharper focus.

The grower has been operating the Co-Pilot system for more than six months (as of December 2020 for the creation of the app sheet), and in that time, they estimate they saved over $12K in downtime and repairs. The Co-Pilots' expected five years of service life would mean more than $75K in savings.

CORNELL PUMP COMPANY

MARKET & PRODUCT LINE

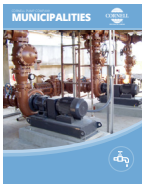
CORNELL
EFFICIENT BY DESIGN

AGRICULTURE

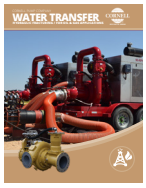
FOOD PROCESS

INDUSTRIAL

MINING



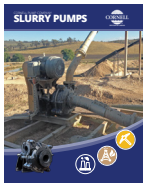
MUNICIPAL



WATER TRANSFER

REFRIGERATION

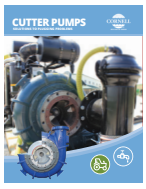
CONSTRUCTION



SLURRY

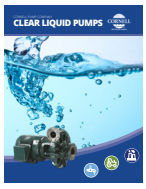
SLURRY SM

MANURE



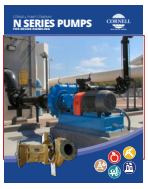
CUTTERS

SELF PRIMING



CLEAR LIQUIDS

MX SERIES



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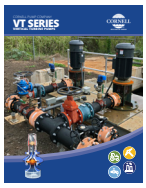
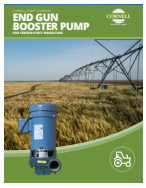
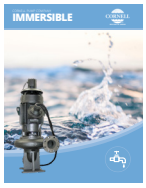


CYCLONE™



EDGE™

HYDRAULIC SUBS



IMMERSIBLE

CD4MCU

RUN-DRY™

PRIMING SYSTEMS

CYCLOSEAL®

Cornell pumps and products are the subject of one or more of the following U.S. and foreign patents:

6,074,554; 6,036,434; 6,079,958; 6,309,169; 6,104,949.

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CORNELLPUMP.COM

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