

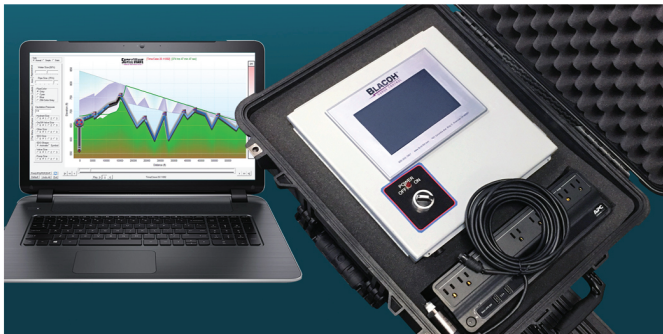
Protect your system from damage. Accurately monitor for water hammer or pressure spikes to be able to respond quickly.

## SURGEWAVE™

— TRANSIENT MONITORING SYSTEM —

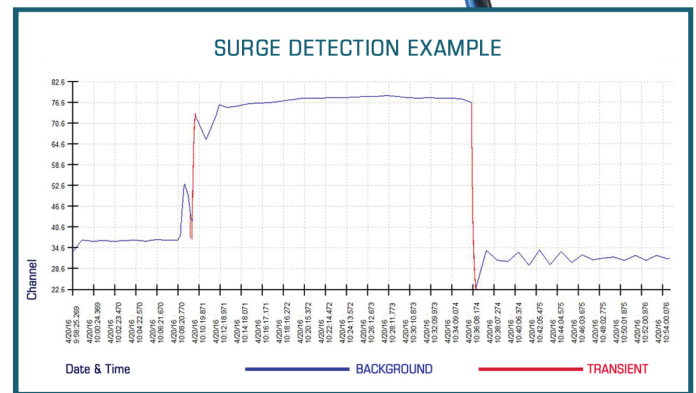
### ABOUT SURGEWAVE TRANSIENT MONITORING SYSTEM

Blacoh's patented SurgeWave™ Transient Monitoring Systems addresses the need for pipeline operators to detect and record transient pressure events occurring in water, wastewater and petroleum/chemical pipelines. The system is unique in that it employs a system of dynamic pressure transducers and digital technology to monitor pipelines for indefinite periods of time. When a transient such as a pressure spike or water hammer event is detected, the system activates a high speed data recorder to record the event up to 200 times per second.



### What Is Transient Pressure?

Most commonly known as "water hammer" or a "surge event", a hydraulic transient is a wave phenomenon that is generated by a change of velocity of the fluid in a piping system. It can be caused from a sudden start/stop of pump or the closing of a valve. These pressure variations may go to vacuum or have a magnitude several times the normal or maximum operating pressure. This can result in expensive system damage when not mitigated. The duration of the pressure spike can be anywhere from milliseconds to minutes. Blacoh's SurgeWave™ Transient Monitoring System makes it possible for a user to capture these pressure fluctuations and address the pressures changes to protect your piping system.



### FEATURES & BENEFITS

- ✓ Instantly detect and record transient pressures up to 200 times per second.
- ✓ Provide graphical analysis of recorded data.
- ✓ Set the limits of the system's normal operating pressure.
- ✓ Alert when any pressure transient is detected.

# SURGEWAVE<sup>TM</sup> SURGEWAVEPRO<sup>TM</sup>

— TRANSIENT MONITORING SYSTEM —



## EASY INSTALLATION:

- Portable and easy to install in any pipeline transporting fluid
- Operate anywhere in the world
- Accessible and programmable via cellular connection from Blacoh facility
- Additional monitoring systems can be linked together to analyze both the intake and discharge side of a pump



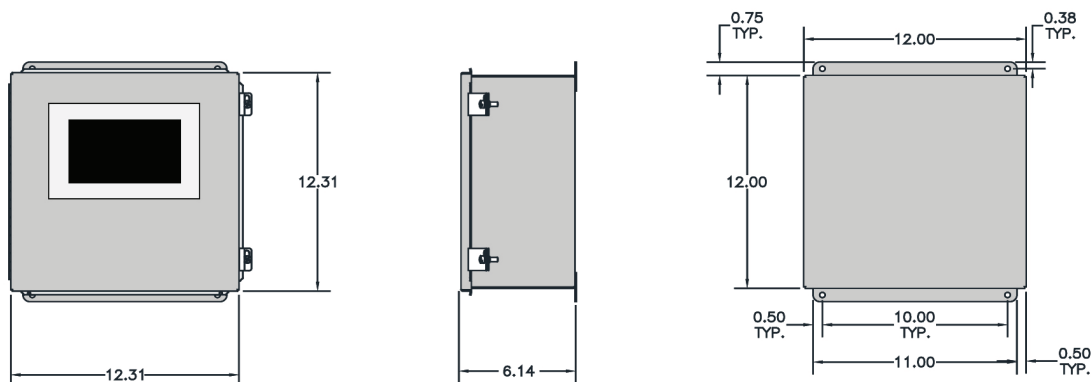
## ASSISTS OPERATORS IN FINDING:

- Leaks and ruptures
- Faulty or insufficiently placed air valves
- Faulty valve actuators
- Faulty or inadequate pumps
- Poor pipeline management procedures
- Electrical failures
- Pulsations or oscillations from unstable pressure

SurgeWave<sup>TM</sup> is available in various and customizable configurations.

## SurgeWavePro<sup>TM</sup>: Professional Grade Specifications

Size	12H x 12W x 6D inches (optional antenna adds 0.6-in to height)
Weight	21.8 lbs
Power	110 VAC (0.1A @ 110 VAC)
Environmental	Steel NEMA 12/13 enclosure with weathertight IP68 connectors
User Interface	7-in Touch Screen, Energy efficient, step-less dimmable display with 16 million colors, and viewing angles of up to 170°, with ingress protection rated to NEMA 4/4X and IP65
Communication	Cellular connection to Blacoh Factory (optional)
Analog Input	2 channels, 0 - 5 VDC, 0-10 VDC, 4-20 mA (optional)
Analog Output	Optional, consult factory
Digital Inputs	Optional, consult factory
Digital Output	Optional, consult factory
Resolution per Channel	15 Bit + Sign bit
Internal data storage	8 GB non-volatile user-replaceable USB flash drive
Sample rate for Spike Detection	200 Hz
Recording rate (User Specified)	1 Hz to 200 Hz (during transient event) 1 per second to 1 per day (background /non-transient recording)
Sensors	Blacoh can specify sensors for many different applications



SurgeWave<sup>TM</sup> protected by United States Patent Nos. 7,219,553 & 7,357,034

PS13E11\_010

CONTACT US: [www.BlacohSurge.com](http://www.BlacohSurge.com) · 800.603.7867 · [Info@Blacoh.com](mailto:Info@Blacoh.com)