Product sheet

RET-5533

PeakAsh

FEATURES

- **High accuracy of ash and total consistency**
- **Easy calibration on lab ash**
- **Fed by process pressure**
- **Real time results**
- **One state-of the art communication platform**
- **Lean design and top functionality**

BENEFITS

- **Retention chemical savings**
- **Faster grade changes**
- **Closed loop ash and total retention control**
- **Lowest total cost of operation**
- **Low start-up and installation cost**

GENERAL / BACKGROUND

BTG's RET-5533 PeakAsh is the perfect solution for measuring ash and total consistency of pulp suspensions in the range of 0.01-2%. Due to its LED and laser technology, it can easily be calibrated to secure stable and accurate ash consistency based on laboratory ash determination. Ash and total consistency values are independent of variation in pulp brightness or color.

The PeakAsh sensor is mounted in a bypass arrangement and provides real time results. The unit has a unique low-maintenance probe which is fed by the process pressure.

The sensor electronic employs modern microprocessor technology with advanced signal analysis. It is operated using BTG's communication platform, the CPM, which ensures compatibility with present and future communication interface requirements, from analogue output with HART® to field buses.

The RET-5533 PeakAsh offers a number of advanced capabilities. It is the ideal sensor for accurate ash control applications. In combination with BTG´s in-line sensors and specialist application know-how, it is the perfect solution for all retention control applications where highest ash accuracy is required.

Its ability to hook up with a pre-configured PC allows chemical suppliers convenient data storage, remote equipment access and retention calculation – all through one customer-friendly software.

As part of the new generation of easier smaller, smarter and lighter BTG instruments, the PeakAsh is designed to help you rapidly optimize the paper making process, for significant cost and productivity improvements.

Use QR-code or link for more information
www.btg.com/mybtg/en/instruments/ret-55xx

MEASURING PRINCIPLE / MEASUREMENT

The RET-5533 PeakAsh employs two light beams. Based on the patented optical BTG Peak Method the first light beam measures total and fine particle consistency of paper suspensions, and the second light beam, a laser, determines the true ash/filler content of the sample (Fig 1 and Fig 2).

The Peak Method is based on the fact that suspensions contain both large and small particles. Large particles are typically the fibers and small particles are the fillers and fines.

The large particles form a relatively transparent network within which the small particles move freely. A narrow light beam directed through the suspension is generally affected by both large and small particles. If only small particles get in front of the light source, light transmission is higher so that a peak is detected.

The LED detects fibers and small particles; the laser serves to identify particles of up to 5 µm, a typical size of fillers.

Multiple signals are computed out of the two detector signals: the mean value, V_{DC}, the Peak value, V_P and the AC component, VAC. Figure 2 is a typical time-diagram showing a detector signal. The total consistency is obtained by adding the processed V_P and the V_{DC} values, the filler consistency is mainly calculated using the peak values V_P.

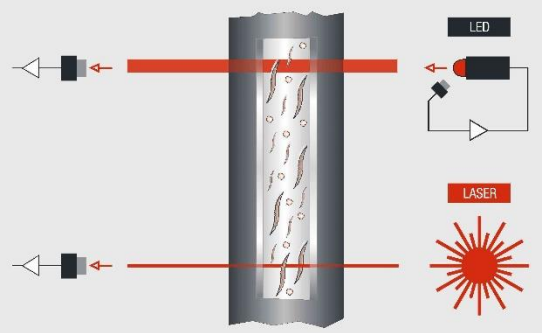

Figure 1: Measuring principle of the RET-5533 PeakAsh

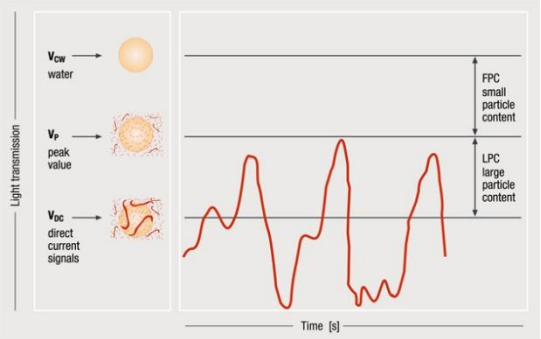

Figure 2: Time diagram of the detector signal

APPLICATION EXAMPLE

CLOSED LOOP RETENTION AID CONTROL

On paper machines, with a conventional headbox, where higher ash accuracy is needed the optimum solution for closed loop retention control is to install one RET-5533 PeakAsh sensor in the HC line after the fan pump and one RET-5503 in the white water. The optimum installation point depends on the application, but is either located in the tray water or the total white water (Fig 3).

Retention aid additions can be controlled by continuously measuring the white water consistency. In many process steps white water is used for dilution and for consistency control. Thus white water consistency stabilization results in faster grade changes, reduced basis weight variability and optimized disc filter operation.

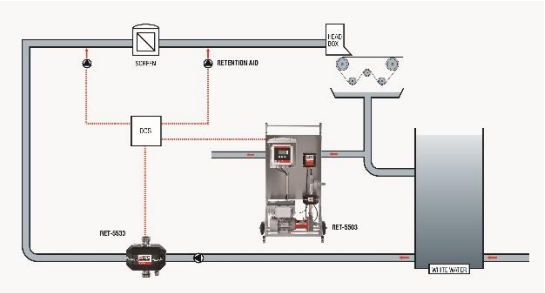

Figure 3: Typical installation of a PeakAsh in a conventional headbox paper machine RET-5503 in WW and 5533 in headbox.

TECHNICAL DATA / SPECIFICATIONS

GENERAL

Type	RET-5533 bypass solution with a smart optical total and ash consistency sensor for pulp suspensions
Manufacturer	BTG Instruments AB, Säffle, Sweden
Measuring principle	Light transmission and scattering using BTG's patented Peak Method. Performed by light transmission of NIR, 880 nm and Laser technology
Measuring range	0.01 to 2.00 % total consistency and 0.01 to 0.70 % ash consistency depending on filler content and fiber type
Repeatability	± 0.002% Cs

PROCESS SPECIFICATIONS

Pressure rating	PN16 (16 bar at 20°C [230 psi at 68°F])
Process pressure	2-5 bar [29-72.5 psi] (sampling line)
Media temperature	Max. 100°C [212°F] Min. 5°C [16°F]
Max. ambient temperature	50°C [122°F]
Process pH	4 – 9
Sample flow	15 - 20 l/min [4 – 5.3 gal/ min]
Damping	0 – 99 s
Material:	
Wetted parts	Stainless steel, EN 1.4404, equiv. to ASTM 316L
Electronics box	Painted aluminum
Weight:	
RET-5533 sensor	0.6 kg [1.3 lb]
Sensor electronics box	0.3 kg [0.65 lb]
LASER product:	
According to IEC/EN 60825-1	Class 1
Wavelength:	880 nm (invisible light)
Wavelength:	687 nm (visible light)
Mounting:	
Sample feed and outlet line	1" outer thread, The inner diameter of the hose must not be below 20 mm [0.8"].
Electrical connection	100-240 ±10% V AC, 50/60 Hz. Connection to the CPM
Power consumption	Max 50 VA, a 2 A fuse is recommended.
Communication platform (CPM)	For information about the CPM, including input and output signals, see the CPM product sheet PS2026
Functions:	
Analog output	4-20mA, HART® protocol
Output signal	Total consistency in %, g/l, mg/l Ash consistency in %, g/l, mg/l, or %ash
Calibration sets	Four separate calibration sets, individually programmable, and externally controllable
Alarm function	Provides alarm signal on low and high consistency level, unstable signal
User interface	See Communication platform (CPM)
Serial port	RS485

SAFETY & DIRECTIVES

Safety and protection class

Product safety	CE, C-tick, ETL
Protective rating	Equivalent to IP65, NEMA 4x
Laser	Class 1

EU-directives:

Designed in accordance with relevant CE standards.

Quality Assurance

Quality-assured in accordance with ISO 9001.

Optional:

BTG SoftwareWall bracket	With 1" nipples
Hand-operated valve	Sample and drain
Wheel kits	Sample and drain valve kit Flushing valve kit
Power supply	24 V DC power supply from CPM
Sample connection	1" inner thread
Water connection	½" hose connection
Water consumption	20-30 l/min [5.3-7.9 gal/ min] during cleaning
Water quality	Standard quality with no impurities larger than 200 µm [8 thou].
Water pressure	2 – 5 bar [29 – 72.5 psi]
Air connections	6/4 mm
Air Pressure	4 – 8 bar [58 – 116 psi]

YOUR LOCAL BTG OFFICE

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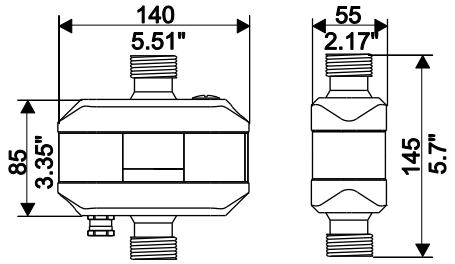
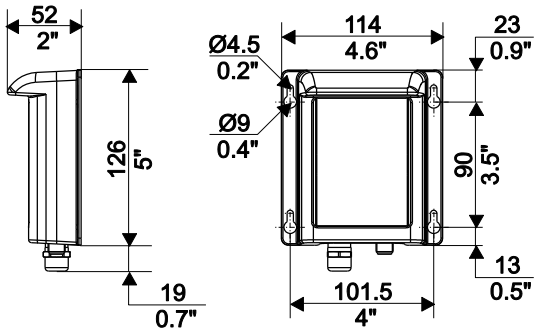
www.btg.com/en/contact/sales-service-network

DIMENSION DRAWINGS

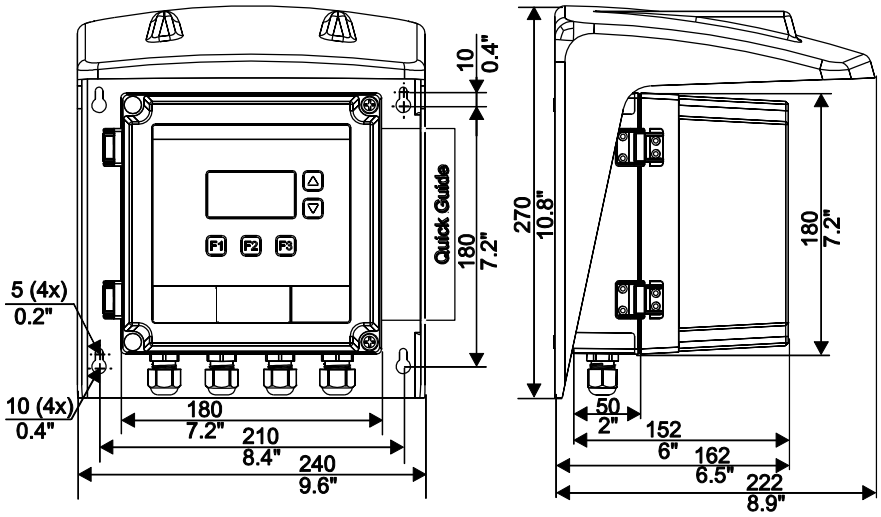
RET-5533 Sensor



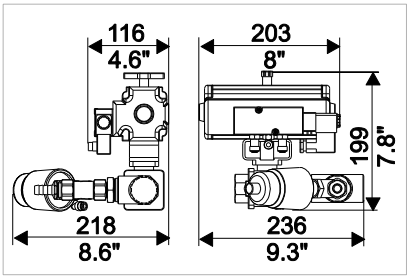
Sensor Electronics Box



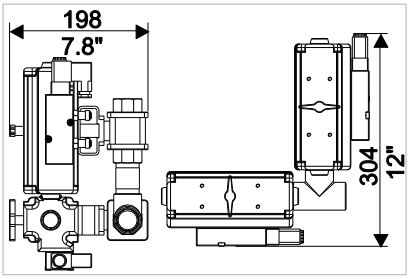
Communication Platform (CPM)



Flushing valve kit (optional)



Sample and drain valve kit (optional)



Wall bracket (optional)

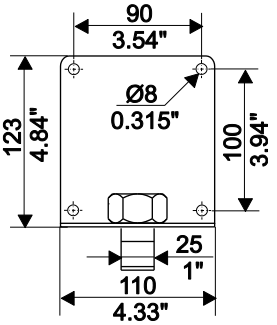


Figure 4: Dimensions