

## Product sheet

### BT-5500 / BT-5510 / BT-5520

#### Brightness Transmitter

#### Brightness and Color Transmitter with Fluorescence

#### FEATURES

- Measures brightness, color (L\*a\*b\*) and ERIC
- One state-of-the-art communication platform
- Mounting studs in SS, Ti, SMO and FRP
- Low weight and lean design

#### BENEFITS

- Maximum installation flexibility
- Safe and easy handling with low maintenance
- Low start-up and installation cost

#### GENERAL / BACKGROUND

The BT-55 series comprises the BT-5500, BT-5510 and BT-5520 brightness transmitters. These transmitters are designed for monitoring and control of bleaching chemicals, optical brightening agents (OBA) and dyes in mechanical pulps, chemical pulps, recycled fiber and paper machine applications.

The three transmitters differ from each other by their size due to the length of the sensor probe (see Fig. 5 to 7 on page 4).

The BT-5500 and BT-5520 are suitable for all standard applications. The BT-5510 is especially designed for large wall thicknesses and retrofits of existing sensors.

The transmitters are installed in-line without any special bypass arrangement and provide continuous real time results. All feature a unique low-maintenance probe. The BT-5500 and BT-5510 are mounted through a ball valve assembly (SS or titanium grade 2 and also 254SMO for BT-5500) to a weld-in or FRP stud and are fitted with a retraction mechanism for online removal of the sensor. The light variant, the BT-5520, is mounted directly to a weld-on stud and does not have a retraction mechanism.

The BT-55s are operated using BTG's electronic platform, the CPM, which ensures capability with



present and future communication interface requirements, from analog output with HART® to field buses.

Due to a unique method of measuring brightness and a user-programmable algorithm, the BT-55 series can calculate compensated brightness signals that consider variables and inputs from a variety of process measurements, such as pulp flow, consistency or pH. All transmitters have an Ultra Violet (UV) light source for measurement of fluorescence (OBA).

As part of the new generation of an easier, smaller, smarter and lighter product range, the BT-55 series is designed to help you rapidly optimize the pulp and paper making process, for significant cost and productivity improvements.



Use QR-code or link for more information  
[www.btg.com/mybtg/en/instruments/bt-55x0](http://www.btg.com/mybtg/en/instruments/bt-55x0)

### MEASURING PRINCIPLE / MEASUREMENT

Pulp properties are measured at different wavelengths (blue, green, red, or UV) by a group of LEDs. LEDs are ideal light sources due to their longevity and monochromatic output. Color, brightness, ERIC, and OBA (Optical Brightening Agent) can be measured each with different requirements for applied wavelength. In BT-55s the wavelengths can be combined to find the optimum lab correlation in a specific application.

Light from the LEDs is directed into the process stream via flexible transmitting fiber optics. It passes through the probe window and is diffused by the pulp or other medium. The scattered light is then collected by receiving fiber optics and conducted to a photo detector.

Optical feedback and software control routines are based on BTG's proven 4-Beam™ Principle.

Because they minimize drift due to temperature or aging of optical components, continuous compensation can be made for process temperature changes as well as for inevitable degradation of signal sources and detectors. These active equalization techniques provide the required signal stability.

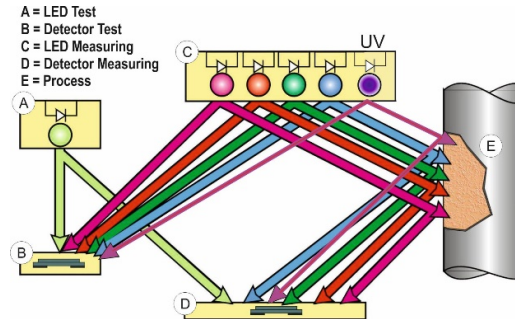


Figure 1: Measuring principle

### APPLICATION EXAMPLE

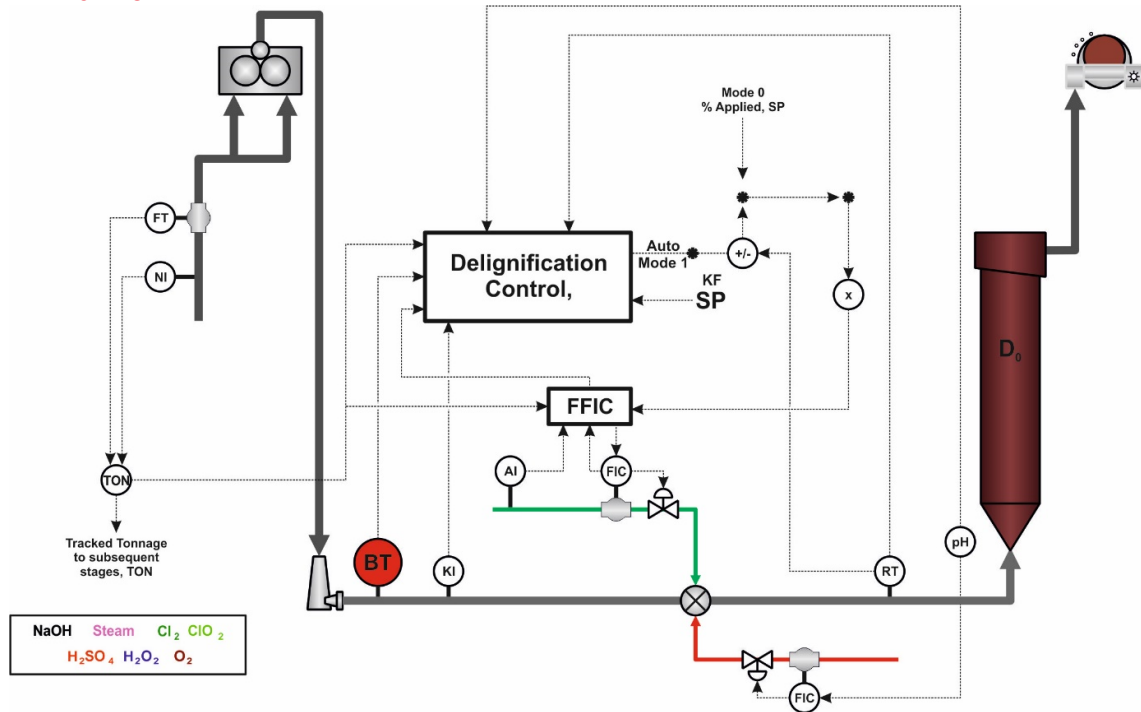


Figure 2: Bleaching control

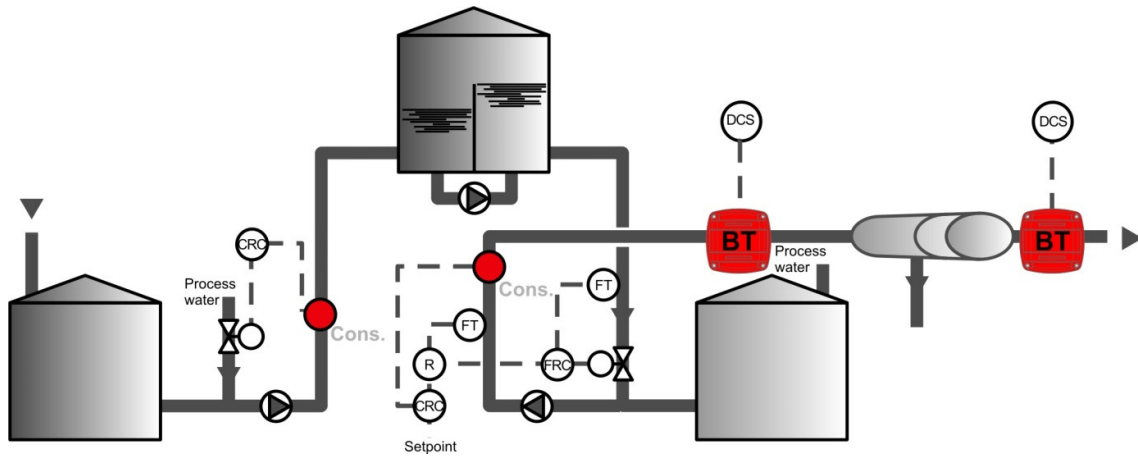


Figure 3: Flotation cell monitoring

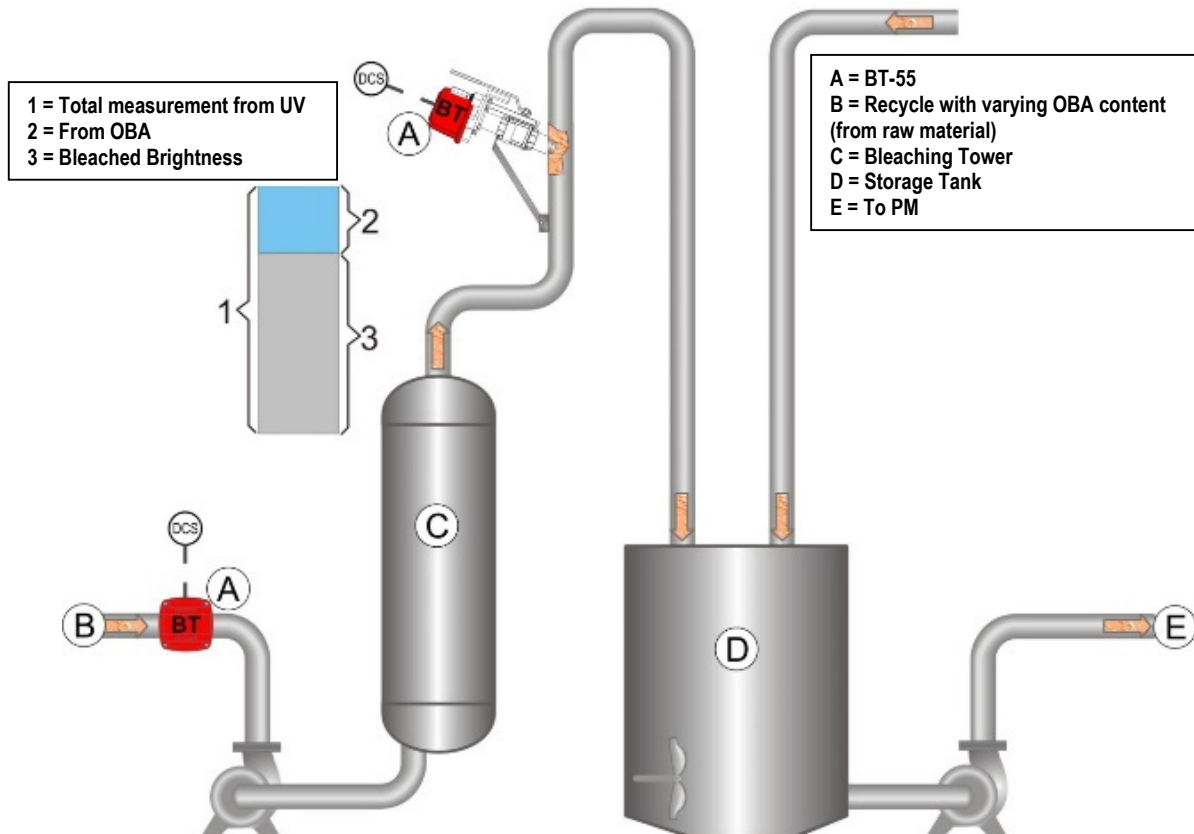


Figure 4: Brightness control with OBA

## TECHNICAL DATA / SPECIFICATIONS

### GENERAL

<b>Type</b>	BT-55 series brightness transmitters
<b>Manufacturer</b>	BTG Instruments AB, Säfte Sweden
<b>Measuring principle</b>	Reflectance with BTG's patented 4-Beam™ Principle
<b>Repeatability</b>	$\sigma = 0.3\%$ ISO

### PROCESS SPECIFICATIONS

Process pressure	PN25 (25 bar at 20 °C [362 psi at 68 °F])
Minimum flow velocity	1 m/s [3.3 ft/s]
Media temperature	Max. 120 °C [248 °F] Min. 5 °C [41 °F]
Max. ambient temperature	Probe: 80 °C [176 °F] Electronics: 50 °C [122 °F]

### Material:

Wetted parts	Stainless steel EN1.4404 (AISI316L) with EPDM O-rings Titanium grade 2 with Kalrez O-rings 254SMO with Kalrez O-rings (only BT-5500)
Weld-in stud	SS, EN 1.4404, equiv. to ASTM 316L Titanium grade 2 254SMO Epoxi (Only for PN16)
Window	Sapphire

### Weight:

BT-5500 probe	Stainless steel: 3.7 kg [8.2 lb] Titanium: 3.1 kg [6.8 lb] 254SMO: 3.7 kg [8.2 lb]
BT-5510 probe	Stainless steel: 4.2 kg [9.3 lb] Titanium: 3.6 kg [7.9 lb]

BT-5520 probe	Stainless steel: 2.8 kg [6.2 lb] Titanium: 2.2 kg [4.9 lb]
Sluice valve	Stainless steel: 4.5 kg [9.9 lb] Titanium: 5.3 kg [11.7 lb]
<b>Communication platform (CPM)</b>	For information about the CPM, including input and output signals, see the CPM product sheet PS2026
<b>Functions:</b>	
Analog output signals	5 x 4-20 mA. (6 x 4-20 mA with SMAR-unit)
Calibration sets	Four separate calibration sets, individually programmable, and externally controllable
Alarm function	Provides alarm signal
User interface	See Communication platform (CPM)
Serial port	RS485
<b>Mounting:</b>	
Min pipe diameter	100 mm [4"]
Electrical connection	100-240 $\pm 10\%$ V AC, 50/60 Hz. Connected in CPM
Power consumption	Max 50 VA, a 2 A slow blow fuse must be used
<b>Optional:</b>	
SMAR-unit	Up to 6 x 4-20 mA Analog output signals

### SAFETY & DIRECTIVES

#### Safety and protection class:

Product safety	CE, C-tick, ETLc, CRN
Protective rating	Equivalent to IP65, NEMA 4x

#### EU-directives

Designed in accordance with relevant CE standards.

#### Quality Assurance

Quality-assured in accordance with ISO 9001.

### YOUR LOCAL BTG OFFICE



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[www.btg.com/en/contact/sales-service-network](http://www.btg.com/en/contact/sales-service-network)

## DIMENSION DRAWINGS

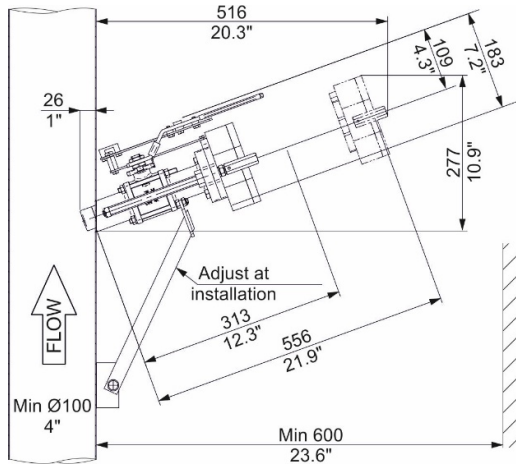


Figure 5: BT-5500 Brightness Transmitter, standard

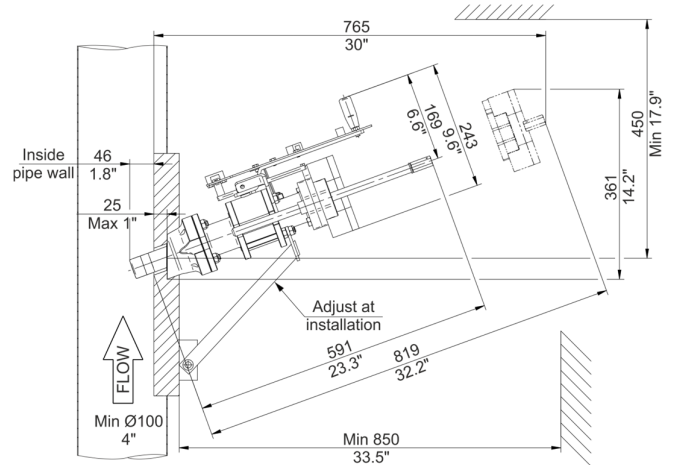


Figure 7: BT-5510 Brightness Transmitter, long

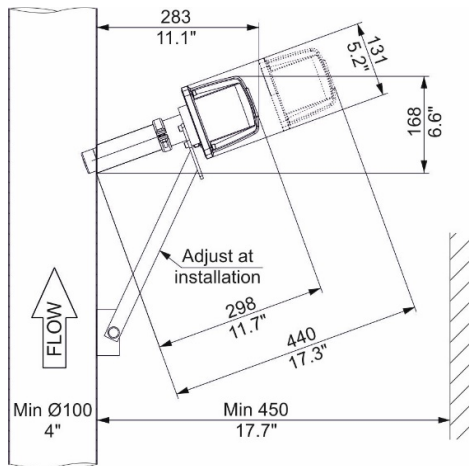


Figure 6: BT-5520 Brightness Transmitter, light

