

PULP AND PAPER

KPM KC9 Optical Consistency Transmitter

Testing and industry-specific instruments



Optical consistency transmitters are typically the only choice for measuring total consistency below 2 percent Cs. ABB offers the latest design in optical consistency transmitters covering the widest consistency range for inline and bypass installations. The variety of sensors utilizing different measuring principles ensures that each application can be covered cost effectively without compromising measurement accuracy.

Robust design in AISI 316 steel & sapphire

KPM KC9 sensors are constructed of a stainless steel measurement cell and sapphire glass lenses to withstand the harsh process environments.

The display unit and sensor have protection class of IP65 (Nema 4X) and do not need protective housing to withstand difficult conditions in stock preparation or the wet end.

Inline Sensors

The KPM KC9 inline sensors can be installed directly to process pipe by using Sandvik NS40 process coupling. The sensor is available with an optional retraction system, enabling sensor maintenance without interrupting the process.

The compact and lightweight design ensures that installation locations for optimal performance can be utilized.

The inline consistency sensors are developed to measure single component fiber consistency in liquids from 0-14 percent.

Bypass Sensors

The KPM KC9 bypass consistency sensors are developed to measure consistency in liquids from 0-5 percent. KPM KC9-25 and KPM KC9-50 are suitable for single component fiber consistency and KPM KC9-25 LC for very low consistency applications. KPM KC9-P is ideal for multicomponent stock total consistency measurement. KPM KC9-A includes additional ash consistency measurement that enables accurate monitoring and control of ash content.

The sensors have an application-specific measurement gap between lenses, ensuring accuracy and low maintenance requirements.

Remote display unit for operation

The sensors are pre-calibrated for quick and easy start up. After installation, one-point adjustment is performed against a laboratory test. With multicomponent stock, comprehensive modelling is performed to achieved high measurement precision.

The display unit has four selectable calibration models for applications with varying furnishes.

Technical specifications

The system is easy to use, set up and operate with the display unit.



Sensor type	KPM KC9 optical consistency transmitter 150; sensor pressure class is PN25
Applications	- KPM KC9-25, KPM KC9-25 LC, KPM KC9-50, KPM KC9-IL and -ILV for clean pulps - KPM KC9-25 K for white and green liquor - KPM KC9-P for total consistency of mixed stock with fines and fillers - KPM KC9-A for total and ash consistency of mixed stock with fines and fillers
Output signals	3 × 4–20 mA, active, consistency, ash consistency (KPM KC9-A) and temperature
Binary inputs	4 × closing dry contact, process stop, grade change (2), sampler input
Binary output	2 × closing relays, 230 VAC, 110 VAC or 24 VDC for flushing control 1 × dry contact opening/closing relay for system alarm
Power requirements	90–264 VAC, 50/60Hz + 3; 20VA (20W), connected to display unit
Instrument air	If flushing valve is used, pressure 4–8 bar (60–120 psi), oil-free
Process pressure	Minimum 1 bar (15 psi), turbulent flow
Ambient temperature	- Sensor, 0–60°C (32–140° F) - Display Unit = -10–60° C (-14–140° F)
Interconnect cable	10m (32 ft) cable from sensor to display unit, max 5 in series
Materials	Wetted parts AISI 316, Windows: Sapphire, Display: Polycarbonate
Conformance	73/23/EEC, 89/336/EEC, EN 61000-6-4:2001 - EN 61000-6-2:2001, EN 61010-1:2001
Enclosure class	IP 65 (Nema 4x)
Dimensions (L × H × W) and weight	- KPM KC9-2x: 128 × 101 × 97 mm (5.0 × 4.0 × 3.8"), 2.6 kg (5.7 lbs) - KPM KC9-50: 203 × 101 × 97 mm (8.0 × 4.0 × 3.8"), 2.6 kg (5.7 lbs) - KPM KC9-P&-A: 128 × 101 × 97 mm (5.0 × 4.0 × 3.8"), 2.6 kg (5.7 lbs) - KPM KC9-IL: 149 × 79 × 79 mm (5.9 × 3.1 × 3.1"), 1.0 kg (2.2 lbs) - KPM KC9-IL V: 283 × 79 × 79 mm (11.1 × 3.1 × 3.1"), 1.0 kg (2.2 lbs) - IL V Valve & Jack: 362 × 284 × 110 mm (14.2 × 11.2 × 4.3"), 5.8 kg (12.8 lbs) - Display: 355 × 268 × 95 mm (14.0 × 11.2 × 3.7"), 2.7 kg (6.0 lbs)

Sensor type KPM	KC9-25	KC9-25 LC	KC9-25 K	KC9-50	KC9-P	KC9-A	KC9-IL & -IL V
Measurement range	Cs 0–2%	Cs 0–0,02%	Cs 0–5000 mg/l	Cs 0–5%	Cs 0–2%	Cs 0–2% Ash 0– 1%	Cs 0–14%
Process temperature	90° C (194° F)	60° C (140° F)	100° C (212° F)	90° C (194° F)	90° C (194° F)	60° C (140° F)	90° C (194° F)
Minimum flow velocity	20 l/m (5 gpm)	20 l/m (5 gpm)	20 l/m (5 gpm)	60 l/min (16 gpm)	10 l/min (3 gpm)	10 l/min (3 gpm)	Cs<1% 1 m/s (3 f/s) Cs>1% 1.5 m/s (5 f/s)
Pressure class	PN25	PN25	PN25	PN25	PN25	PN25	PN25
Process connection	Bypass 25 mm (1")	Bypass 25 mm (1")	Bypass 25 mm (1")	Bypass 50 mm (2")	Bypass 25 mm (1")	Bypass 25 mm (1")	NS40 saddle

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