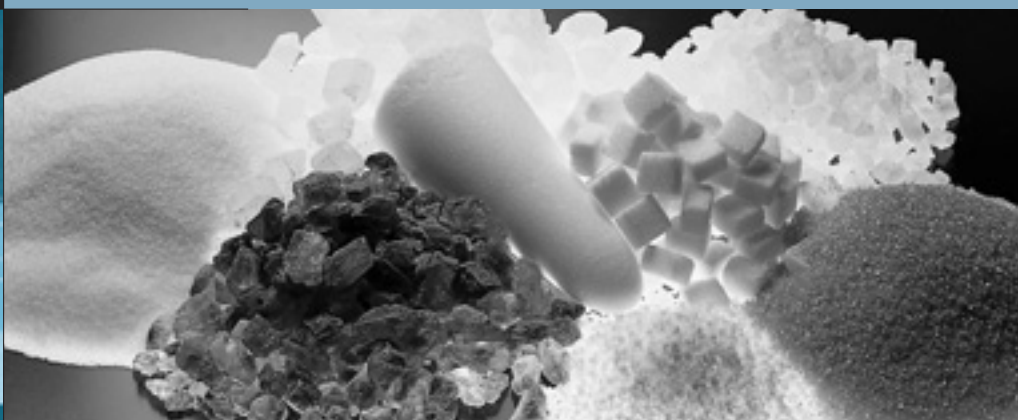


P R O C E S S C O N T R O L

CONCENTRATION
DRY SUBSTANCE-
BRIX-CONTENT

measured by microwaves

Micro-Polar Brix™ LB 565

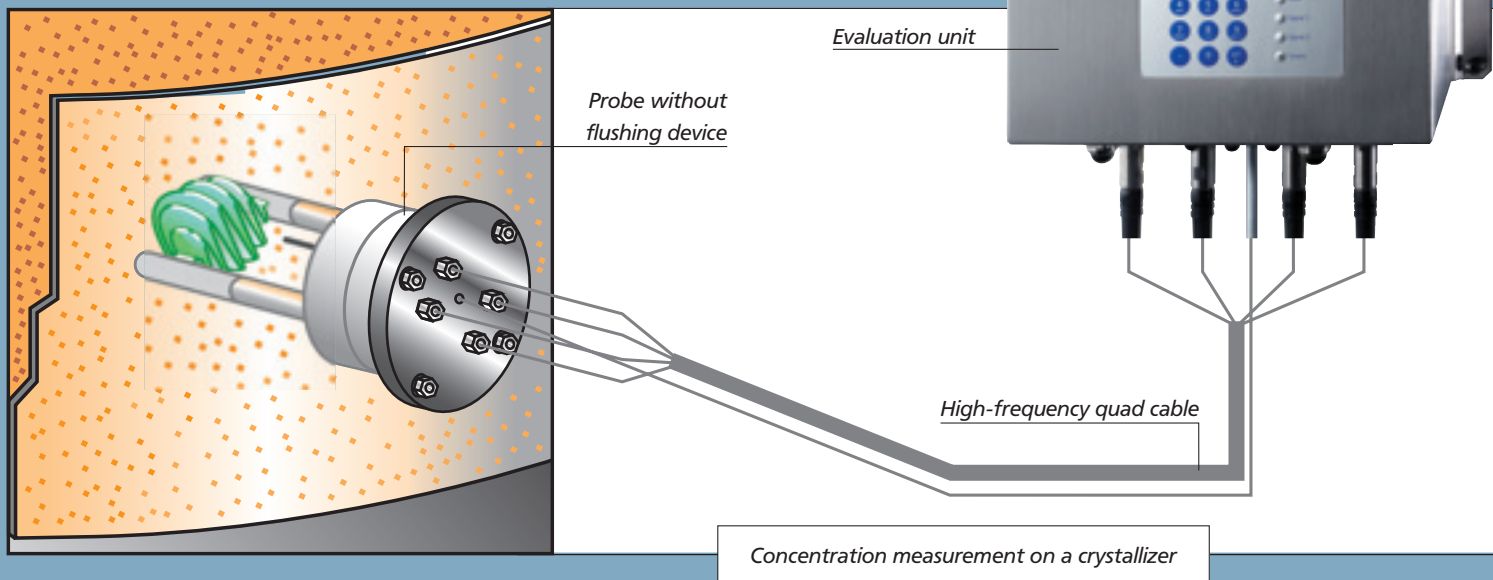


BERTHOLD
TECHNOLOGIES

Micro-Polar Brix LB 565

An important parameter for the **extraction of sugar** is the concentration of the sugar massecuite. Measurement of the **dry substance content**, usually represented as Brix is absolutely essential in order to optimize, control and improve the sugar quality. Based on experience in process control, BERTHOLD TECHNOLOGIES provides products, which exactly match the instrument needs and expectations of customers producing sugar.

We offer specially designed microwave sensors for measurements in product pipelines, dissolved sugar containers, crystallizers and at other process locations. The **Micro-Polar Brix** provides accurate, reliable on-line concentration measurements of the sugar magma over the entire process.



Measuring Arrangement

The pan probe is fastened to the assembly flange of the crystallizer and/or integrated into the existing pipeline. The probe is connected to the evaluation unit by a high frequency multi-core cable up to a distance of 10 m. The reference line integrated in this cable provides drift compensation.

The pre-calibrated Micro-Polar Brix supplies very exact measurement values after a simple start-up and automatic reference calibration. The final calibration is automatic and graphic displays of results are provided. In a crystallization process samples may be taken before or after the seed point and the system stores a record of each sample.

Principle of Measurement

Microwaves penetrate the product to be measured, causing free water molecules to rotate, resulting in phase shift and an attenuation of the transmitted microwaves. Micro-Polar Brix uses these two parameters to determine the concentration while compensating for influences of different products and for variations in the purity of the sugar concentrate.

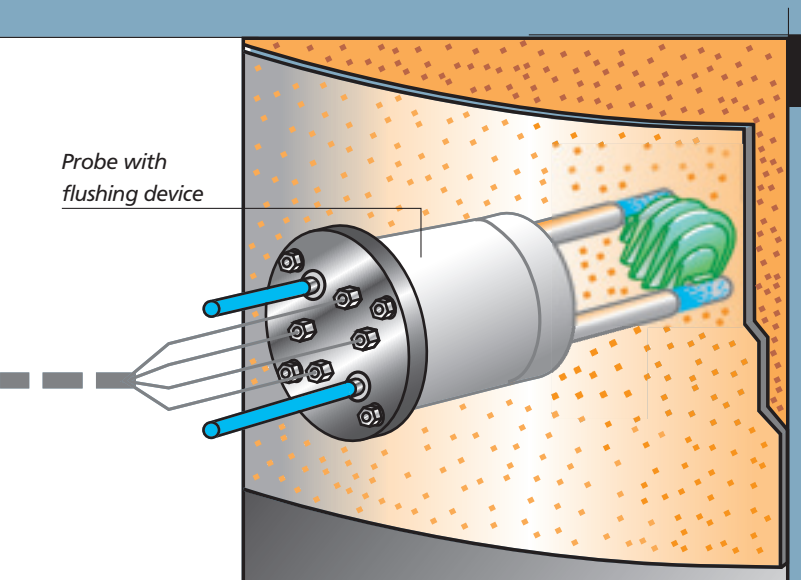
Our multi-frequency technology employs a range of frequencies per measurement cycle to ensure repeatable measurements.



Typical installation on an evaporation crystallizer

System Configuration

Micro-Polar Brix consists of the evaluation unit, the microwave sensor and a high frequency quad cable. The microwave sensor is available in two versions, as a batch pan probe without flushing device and as a continuous pan probe with flushing device.



Probe with flushing device

Your Advantages

■ **Quick installation** due to wiring of only one probe connection cable, use of standard flanges

■ **Quick and easy start-up** due to pre-calibration, automatic calibration with reference adjustment, processor supported insertion of samples, graphic display and simple operation via an alphanumeric keyboard

■ **Accurate and repeatable measurements** due to two highly stable PLL synthesizers, signal generation of several frequencies per measurement, system and cable drift compensation by means of a reference cable

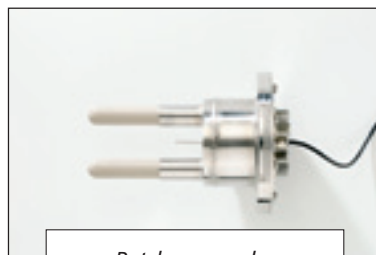
■ **High safety of operation** through accurate and direct DS display during the entire process, separate evaluation unit per measuring point, recognition of pauses between two crystallization processes

■ **Competence** based on 20 years experience in the sugar industry, more than 1000 systems sold worldwide

■ **High Quality Standards** through ISO 9001



Cont. pan probe



Batch pan probe

Technical Data LB 565

Evaluation unit

Assembly	Wall housing made of stainless steel H x W x D: 300 x 323 x 140 mm protection class IP65 Weight: approx. 6.5 kg
Auxiliary energy	Depending on instrument version: 1.) 90 ... 260 V AC, 45 ... 65 Hz 2.) 24 V AC/DC; DC: 18 ... 36 V; AC: 24 V +5 %, -20 %, 45 ... 65 Hz
Power consumption	max. 30 VA (AC/DC)
Transmitting power	max. 0.1 mW
Temperature range	Operating temperature: -20 ... +60 °C (253 ... 333 K), no condensation Storage temperature: -20 ... +80 °C (253 ... 353 K), no condensation
Attainable accuracy	< ± 0.2 % DS (Standard deviation)
Display	Graphic LC display, 114 x 64 mm with back-lighting automatic contrast setting
Keyboard	Freely accessible foil keypad, alphanumeric keyboard and 4 soft-keys, multi-language dialog, data protection through freely selectable password
Serial interface	RS 232 and RS 485

Inputs

Analog inputs	2 x 0/4 ... 20 mA, load 50 Ω 1 x insulated, 1 x instrument ground e.g. for temperature compensation
Digital inputs	Configuration options: DI1: measurement start/stop DI2: measurement hold, product selection DI3: sample measurement, product selection
PT-100 connection	Measuring range -50 ... +200 °C (223 ... 473 K) Measurement tolerance < 0.4 °C

Outputs

Analog outputs	1 x 4 ... 20 mA, 1 x 0/4 ... 20 mA load max. 800 Ω, insulated
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Digital outputs	2 x relay (SPDT), insulated configuration options: – collective error message – measurement hold – threshold (min. and max.) – no product Loading capacity: AC: max. 400 VA DC: max. 90 W AC/DC: max. 250 V or max. 2 A, non-inductive, ≥ 150 V: Voltage must be grounded
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HF Sensor connection

Signal channel	Connection for the HF sensor 2 x N connectors (Tx, Rx), 50 Ω
Reference channel	Connection for the HF reference cable 2 x N connectors (Tx, Rx), 50 Ω
HF quad cable	1 x HF-cable for sensor connection including reference cable lengths 2 m, 6 m, and 10 m (distance sensor – evaluation unit) 4 x N-connectors on both sides, 50 Ω

Pan Probes

Material	Plastic, stainless steel 1.4301
Flange	DIN 2527 Form B: DN 65/PN 6 DN 80, DN 100, DN 150 / PN 16 ASA 2.5"/150 PSI others on request
Process connections	Minimum insertion hole measures: Ø 102 mm
Set-up	With integrated reference path
Varieties	Batch pan probe: without flushing device with PT 100 Cont. pan probe: with flushing device 2 x 3/8" flushing connection

Subject to changes without notice

