

# NIRMaster™



Technical Information

# The NIRMaste<sup>TM</sup> – the first standalone FT-NIR spectrometer

The NIRMaste<sup>TM</sup> is the new generation of the proven BUCHI FT-NIR spectrometer. It satisfies the needs of the food or feed industry especially in the production environment where rugged and protected instruments are required.



## Designed for your benefits

- **Easy to operate and to clean**  
with hygienic easy-clean design in high ingress protection (IP) and with easy-spin drive for sample rotation
- **Best performance**  
for all working conditions with food-grade PMMA or stainless steel housing
- **Fast installation and safe operation**  
with built in, reliable embedded PC
- **Robust and accurate**  
using the BUCHI polarization FT-NIR technology
- **Efficient and time saving**  
with quick-start calibrations without the need for standardization



# Robust and continuous performance



## **No downtime and continuous process with the twin-lamp safeguard**

The NIRMaster™ is the only FT-NIR standalone system equipped with the twin lamp module, which will automatically switch to a second integrated lamp in the event of a failure of the primary source.

This minimizes the risk of an instrument failure, and sufficient time is left to order a replacement lamp. Meanwhile measurements can continue without further intervention.

## **Superior performance with the rugged polarization interferometer**

The superior concept of this interferometer provides insensitivity to mechanical disturbances even in rough environments.

There is only one light beam traveling through the optical path. Thus, the risk of misalignment is eliminated. Whereas in the Michelson interferometer mechanical distortions directly affect the interference, such effects do not appear in a polarization interferometer.



## **Ensure performance of the system with the integrated standards**

Each NIRMaster™ is equipped with various integrated standards. The System Suitability Test (SST) will perform automatically to check the performance of the instrument.

The NIRWare Automatic Diagnose (NADIA) enables a complete, extended overview of the general NIRMaster™ condition.

The integrated laser reference eliminates the need of frequent external instrument standardization.

IQ/OQ documentation is available to serve you the confidence of installation and operation qualification.

# Designed for in production use – flexible for your needs

Different needs, different working environments demand different types of instrument housing. To supply a FT-NIR spectrometer which suits your needs, BUCHI offers stainless steel and food-grade PMMA housings that are ingress protected.



NIRMaster™



NIRMaster™ Pro

To reduce the risk of chemical contamination, the suitable housing materials should be considered. The NIRMaster™ offers two different housing materials (food-grade PMMA or stainless steel).

Both food-grade PMMA and stainless steel housings provide good resistance against organic acids, salt and alkalis at moderate temperatures.

To prevent the risk of bacterial contamination, regular cleaning is mandatory. The NIRMaster™ helps you with ingress protection (IP) and hygienic easy-clean design.

# Technical data

NIR technology	Fourier transform (FT)-NIR
Spectral range	800–2500 nm (recommended 1000–2500 nm)
	12 500–4000 cm <sup>-1</sup> (recommended 10 000–4000 cm <sup>-1</sup> )
Resolution	8 cm <sup>-1</sup>
Type of interferometer	Polarization interferometer
Wavenumber accuracy	± 0.2 cm <sup>-1</sup>
Signal-to-noise ratio	10 000 (peak-to-peak noise of a linear corrected baseline between 5600–6000 cm <sup>-1</sup> )
Number of scans/sec.	2–4
Operating temperature	5–35 °C (25 ± 5 °C recommended)
Relative humidity	< 80% for T < 31 °C, linearly decreasing to 67% at 35 °C
Type of lamp/lifetime lamp (MTBF)	Tungsten halogen with the twin lamp module / 12 000 h (2 x 6000 h)
Type of laser	HeNe, wavelength at 632.992 nm
Detector	Extended range InGaAs (temperature controlled)
Electric power supply	100–240 VAC ± 10%, 50/60 Hz, 150 W
Embedded PC	Intel Core 2 Duo
Housing materials	Food-grade PMMA or stainless steel
System protection	IP 54 (higher IP class available on request)
Dimensions (WxHxD) and weight	360x420x540 mm Approx. 43 kg (NIRMaster™) and 49 kg (NIRMaster™ Pro)
Sample rotation	Easy-spin drive, a magnetic spinner is included for high performance measurement of inhomogeneous sample
Measurement mode	Diffuse reflectance and transfectance for liquid measurement

# NIRMaster™ – dedicated solution for your needs

## Ask for more information on

### NIRMaster™ Feed and Forage

Production of compound feeds is a complex matter. Accurate and meaningful nutritional facts are most important. Understanding customer needs in the feed and forage industry, BUCHI has designed the first standalone FT-NIR Spectrometer specifically for that industry – the NIRMaster™.

### NIRMaster™ Milk and Dairy

Food safety and consistent quality are essential in milk and dairy production today. Accurate and meaningful nutritional facts are important. Understanding customer needs in the milk and dairy industry, BUCHI has designed the first standalone FT-NIR Spectrometer specifically for that industry – the NIRMaster™.

### NIRMaster™ Milling and Bakery

Changing consumer behaviour contributed a lot to increased popularity of bakery products and rapid growth of the business. Consistent production and food safety are important for flour milling and bakery producers. Understanding customer needs in milling and bakery industry, BUCHI has designed the first standalone FT-NIR Spectrometer specifically for that industry – the NIRMaster™.

### NIRMaster™ Meat and Meat products

Production of meat products is still based on a high degree of trust. To ensure high quality and legislation fulfillments it is very important to have access to accurate and meaningful quality parameters. Understanding customer needs in the meat industry, BUCHI has designed the first standalone FT-NIR Spectrometer specifically for that industry – the NIRMaster™.

## Or contact us for any other applications

#### BÜCHI Labortechnik AG

CH – 9230 Flawil 1  
T +41 71 394 63 63  
F +41 71 394 65 65  
buchi@buchi.com  
www.buchi.com

#### BUCHI UK Ltd.

GB – Oldham OL9 9QL  
T +44 161 633 1000  
F +44 161 633 1007  
uk@buchi.com  
www.buchi.co.uk

#### BUCHI Hong Kong Ltd.

HK – Central  
T +852 2389 2772  
F +852 2389 2774  
china@buchi.com  
www.buchi.com.cn

#### Nihon BUCHI K.K.

JP – Tokyo 110-0008  
T +81 3 3821 4777  
F +81 3 3821 4555  
nihon@buchi.com  
www.nihon-buchi.jp

#### BUCHI Korea Inc

KR – Seoul 153-782  
T +82 2 6718 7500  
F +82 2 6718 7599  
KR-Sales@buchi.com  
www.buchi.com

#### BÜCHI Labortechnik GmbH

DE – 45127 Essen  
Freecall 0800 414 0 414  
T +49 201 747 490  
F +49 201 237 082  
deutschland@buchi.com  
www.buechigmbh.de

#### BÜCHI Labortechnik GmbH

NL – 3342 GT  
Hendrik-Ido-Ambacht  
T +31 78 684 94 29  
F +31 78 684 94 30  
netherlands@buchi.com  
www.buchi.nl

#### BUCHI Shanghai

CN – 200052 Shanghai  
T +86 21 6280 3366  
F +86 21 5230 8821  
china@buchi.com  
www.buchi.com.cn

#### BUCHI India Private Ltd.

IN – Mumbai 400 055  
T +91 22 667 18983 / 84 / 85  
F +91 22 667 18986  
india@buchi.com  
www.buchi.in

#### BUCHI Canada Ltd.

CA – Thornhill, Ontario L4J 6Z2  
T +1 416 277 7407  
F +1 905 764 5139  
canada@buchi.com  
www.mybuchi.com

#### BUCHI Sarl

FR – 94656 Rungis Cedex  
T +33 1 56 70 62 50  
F +33 1 46 86 00 31  
france@buchi.com  
www.buchi.fr

#### BUCHI Italia s.r.l.

IT – 20090 Assago (MI)  
T +39 02 824 50 11  
F +39 02 57 51 28 55  
italia@buchi.com  
www.buchi.it

#### BUCHI (Thailand) Ltd.

TH – Bangkok 10600  
T +66 2 862 08 51  
F +66 2 862 08 54  
bacc@buchi.com  
www.buchi.com

#### PT. BUCHI Indonesia

ID – Tangerang 15321  
T +62 21 537 62 16  
F +62 21 537 62 17  
indonesia@buchi.com  
www.buchi.com

#### BUCHI Corporation

US – New Castle,  
Delaware 19720  
Toll Free: +1 877 692 8244  
T +1 302 652 3000  
F +1 302 652 8777  
us-sales@buchi.com  
www.mybuchi.com

We are represented by more than 100 distribution  
partners worldwide. Find your local representative at

[www.buchi.com](http://www.buchi.com)

Quality in your hands

