InfraCana II
Automated Cane Analyser
Model IC02

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Automated Cane Analyser

- Fast analysis system for cane payment, breeding & maturity testing
- Multiple parameter results for brix, pol and fibre are available in seconds
- Uses a purpose-designed near infrared spectrometer for accurate analysis
- A complete integrated system with sample fibration, preparation & analysis
- Powerful cutter grinder with safety braking, variable speed drive & anti-vibration mounts for noise minimisation
- Total software programmability of all mechanical and processing functions
- Powerful integrated computer with touch screen, networking and remote access
- Fully equipped with safety sensors & VSD with SIL-3 safety standards
- Solid construction in stainless steel and polypropylene for long life
- Uses CAMO The Unscrambler X Prediction Engine for accurate statistical results
- Designed & manufactured in Australia

The **JEFFCO InfraCana II Model IC02** is a versatile, fast automated cane analyser for both lab and production use. Incorporating its own custom solid state near infrared spectrometer and powerful computing capability, the InfraCana II can process and accurately analyse a 3kg cane sample (from a core sampler) in less than 120 seconds for such parameters as brix, pol and fibre, with no chemicals or laboratory processing.

The **JEFFCO InfraCana II** is the second generation of the **InfraCana** family and incorporates the benefits of more than 14 years of experience using near infrared spectroscopy for the rapid analysis of sugar cane for cane payment, breeding and maturity testing. It is the culmination of more than 60 years of involvement with the sugar industry worldwide. The **JEFFCO InfraCana II** is a complete system in one compact instrument capable of taking a sample of sugar cane directly from a core sampler and producing a comprehensive analysis for many parameters such as brix, pol, fibre and as many other parameters as have been calibrated into the system such as ash, trash, moisture etc.

At the heart of the **InfraCana II** is the fourth generation of the **JEFFCO Cutter Grinder** Our Cutter Grinders are used throughout the world as the standard for laboratory preparation of sugar cane for accurate wet chemistry results. With an installed base of more than 500 units, the **JEFFCO Cutter Grinder** has a long and proud history. Its performance is paramount in providing the high sample preparation quality not only for consistent spectroscopic analysis but also to provide the critical high quality wet chemistry results necessary to build and maintain good calibrations for the spectroscopic system.

The **JEFFCO InfraCana II** is a complete integrated system using the patented ASAS system for sample presentation and analysis. All components are under programmable software control from the user-friendly colour touch screen which shows constant status information and results. Operational and conveyor speeds can be quickly changed for optimised performance and the Cutter Grinder uses a new programmable electronic variable speed drive to help lower environmental noise and to meet the latest safety standards. With an easy-to-use operator station that can be located in any convenient place, the **InfraCana II** is designed to be adapted to meet the requirements of the End User. Naturally, it has full networking and printing facilities built-in to allow easy interfacing with factory systems, group calibration networks and printing of delivery verification dockets. Remote secure access from anywhere in the world via the Internet means that diagnostics, software updates and new calibrations can be applied from any convenient location. Database recording of all operations and results allows easy auditing and diagnostic analysis.

A brand new spectrometer was specifically designed and built by Jeffress Engineering for incorporation into the **InfraCana II**. It uses the latest advances in solid state technology to provide a stable and robust industrial device, purpose built for the analysis of sugar cane. Using diode array technology and thermo-electric cooling for stability under all temperature conditions, the **JEFFCO IS02 Spectrometer** has its own internal references meaning that no external calibration standards are required.

The statistical capabilities of the **JEFFCO InfraCana II** are provided by the **CAMO The Unscrambler X Prediction Engine**. Calibrations for use in the **InfraCana II** are generated by CAMO The Unscrambler statistical software which is world-famous for its multivariate data analysis. It is not manufacturer-specific so the user is able to use the latest statistical chemometric and multivariate analyses to build calibrations. The user remains in complete control of calibration development. In partnering with CAMO, the aim is to make spectroscopy an integral, valuable and affordable tool in measurement systems for the real world where speed, accuracy and environmental care are key factors.

THINK SUGAR CANE – THINK JEFFCO

The **JEFFCO InfraCana II** comprises four essential components:

1. **The Cutter Grinder**
   for sample preparation
2. **The ASAS Presentation System**
   for sample control & movement
3. **The Spectrometer**
   for spectroscopic analysis
4. **The Touch Screen Controller**
   for control and computations

The Cutter Grinder:

This is a 4th generation evolution of the famous units in use in dozens of countries around the world, as the standard for high quality preparation of sugar cane for both wet chemistry & spectroscopic analysis.

Inside the Cutter Grinder

Using the proven multi-blade cutting chamber and laser-profiled screen plate for precise particle control, it now incorporates electronic control for maximum processing speed and safety whilst reducing overall noise levels. It can be fitted with custom sample feed chutes to suit every installation, from laboratory to mill receiving centre applications.

The ASAS Presentation System:

The patented ASAS system is the heart of the **JEFFCO InfraCana II**. It uses a custom design of conveyor to carry the prepared sample from the Cutter Grinder under the Compression Plate, a vibrating plate which precisely controls the height and packing density of the material. This is critical for consistent and reliable spectroscopic analysis because it standardises the path length from the read head and eliminates air gaps and density changes in the sample. With its top-reading method, there is no contact between the sample and the spectrometer window to give incorrect results. Infrared height sensors automatically detect and accommodate varying sample sizes from 1-100kg.

Touch Screen and Control Panel

The Spectrometer:

Designed and built in Australia by Jeffress Engineering, the spectrometer was developed specifically for the **InfraCana II** and is optimised to measure sugar cane. Using the latest diode array technology and thermo-electric cooling for stability, it is fully integrated into the IC02 and provides precise, fast measurements. It takes more than 10 full measurements per second, ensuring that accurate results are achieved even for small samples.

The Touch Screen Controller:

The IC02 is easily managed from the user-friendly touch screen controller. All functions are programmable and sample identification can come from barcode readers, RF-ID tags etc. The Touch Screen, which can be positioned away from the Controller for operator efficiency, shows full status information, dynamic display of spectra and prediction results. Cable and wireless network connectivity is standard.

JEFFCO InfraCana installations have a proven track record of reliability (with individual installations in the Philippines having analysed over 110,000 samples per system per season since 2003). The IC02 is completely designed and manufactured in Australia to the highest quality standards for long life and cost-effective operation.

The ASAS system is patented in Australia, Brazil, China, India, South Africa, Thailand and USA. JEFFCO and InfraCana are registered trademarks of Jeffress Engineering Pty Ltd.

PRELIMINARY SPECIFICATIONS

Construction:

Main Cabinets: stainless steel
Cutting Components: stainless and special heat-treated alloy steels
Cutter Grinder: cast stainless steel
Conveyor: Polypropylene

Motor & Electronic Circuitry:

Motor:	11kW 3 Ø
AC Supply:	380 – 460 Volts
Frequency:	50 or 60 Hz
Current:	25A max FLC
Supply:	must be rated ≥35A
RPM:	1700 (electronic control)
Sensors:	Inductive x 2; IR x 2
Power:	UPS for computer

Safety Systems:

Stopping:	Emergency Stop switch
Warning:	Malfunction indicator
Motor:	Electrodynamic braking
	Electronic overload sense
Sensor:	Head locking clamp closed
Sensor:	Discharge hood closed
Outlet:	Self-closing safety shield
Security:	Key start, operator login

Cutting System:

System:	Grappler Rotor
	Reversible Precut Blade
	Four fixed Stators
	Dual Main Blades
	Geometric Screen Plate
	Downdraught Ejector
Material:	Proprietary alloy steels
Screen:	32mm hexagonal mesh

Controller:

Screen:	15” touch, HD 1366 x 768
Processor:	i3/i7, 8Gb RAM, m-ITX
Storage:	Dual 120Gb SSD
Network:	10/100/1000Mb cable
	802.11 b/g/n wireless
External	USB 3.0 x 1
Ports:	USB 2.0 x 3
Control:	Wireless Keyboard/Mouse

Spectrometer:

Type:	Diode array solid state
Resolution:	256 pixels ~3 nm
	Interpolated 1 nm
Range:	Nominal 900-1700 nm
Reference:	Spectralon, gold/titanium
Speed:	>10 full spectra per second
Optics:	F2.0, 50mm Ø at sample

Size (mm):

Nominal: 1915 W x 1875 H x 1125 D

Distributed by:

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Our Australian Manufacturing Plant

Proudly designed and manufactured in Australia by:

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