THS 21 SERIES
Quality Control at its finest

MULTI-SPECTRUM INDUSTRIAL METAL DETECTORS

FEATURES

- Unique detection capability of magnetic, non-magnetic and stainless steel metal contaminants
- Extremely high adaptability to any product to be inspected
- FDA Title 21CFR Part 11 compliant:
  - Data Security
  - Data Integrity
  - Data Traceability
- Rugged AISI 316L stainless steel construction and food-compatible plastic parts (EU, FDA compliant)
- Superior washdown construction

THS/MS21
Multi-Spectrum Technology for extreme compensation of the product effect.

Heat and Control reserves the right to make changes, at any moment and without notice, to the models, their accessories and options, to the prices and conditions of sale.
THS 21 Metal Detectors Series with 
MULTI-SPECTRUM TECHNOLOGY

FEATURES

- Ultra high sensitivity to all magnetic and non-magnetic metals, including stainless steel
- Multi-Spectrum Technology for extreme compensation of the product effect
- High immunity to environmental interference
- AISI 316L stainless steel construction to IP66 and IP69K protection levels
- Control Panels listed according to UL 508A and CSA-C22.2 No. 14-05
- Automatic learning & tracking of product effect
- 500 product data memories, selectable by local programming or network software
- 10,000 storable events
- High-contrast graphical OLED display
- Local programming: 16 keys, 3 with double function
- Quick Access key for fast programming of user parameters

MULTI-SPECTRUM TECHNOLOGY

Exclusively developed by CEIA, this is a unique metal detection technology that both optimizes sensitivity to all metal contaminants and minimizes product effect in a very wide range of possible products.

By recognizing the different frequency response of conductive products and metals, this innovative technology cancels product effect and maintains high performance levels for all types of metal contaminants, both magnetic and non-magnetic.

The autolearn function used by CEIA Multi-Spectrum Metal Detectors equates to the repetition of hundreds of conventional transits. It explores the whole spectrum of available frequency bands in order to determine the best operating conditions resulting in unique detection performance.
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The THS/G21 series is designed to inspect powders, granules and other loose materials transported in free-fall through tubes and pipelines.

When fitted with a deflector, the THS/G21 becomes a system that detects and removes any contaminating metals, both magnetic and non-magnetic.

Digital analysis of the signal provided by the antenna allows extremely high levels of sensitivity, immunity to interference and operational stability to be achieved.

The very high detection speed of the THS/G21 allows the contaminated portion of product to be removed without slowing down the production flow.

Alternatively, when mounted on a packaging machine, the THS/G21 system is able to send a command to produce a double layer of packaging around the contaminated product. This can later be identified and removed from the production cycle manually.

The system is designed to communicate with external control systems, either connected directly or via a communications network.
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### THS/G21 and THS/GMS21 models

<table>
<thead>
<tr>
<th>MODEL</th>
<th>T</th>
<th>TW</th>
<th>DH</th>
<th>VL</th>
<th>HL</th>
</tr>
</thead>
<tbody>
<tr>
<td>THS/G21x-50</td>
<td>2&quot;</td>
<td>14.2&quot;</td>
<td>9.9&quot;</td>
<td>8.1&quot;</td>
<td>8.9&quot;</td>
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<tr>
<td>THS/G21x-100</td>
<td>4&quot;</td>
<td>16.2&quot;</td>
<td>11.8&quot;</td>
<td>10&quot;</td>
<td>10.9&quot;</td>
</tr>
<tr>
<td>THS/G21x-150</td>
<td>6.9&quot;</td>
<td>17.2&quot;</td>
<td>12.8&quot;</td>
<td>11&quot;</td>
<td>11.9&quot;</td>
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<tr>
<td>THS/G21x-200</td>
<td>8&quot;</td>
<td>18.1&quot;</td>
<td>13.8&quot;</td>
<td>12&quot;</td>
<td>12.8&quot;</td>
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<tr>
<td>THS/G21x-250</td>
<td>9.9&quot;</td>
<td>20.1&quot;</td>
<td>15.8&quot;</td>
<td>14&quot;</td>
<td>14.8&quot;</td>
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</table>

### THS/G21-F and THS/GMS21-F models

<table>
<thead>
<tr>
<th>MODEL</th>
<th>T</th>
<th>Te</th>
<th>TW</th>
<th>DH</th>
<th>VL</th>
<th>HL</th>
<th>VD</th>
</tr>
</thead>
<tbody>
<tr>
<td>THS/G21x-100F</td>
<td>4&quot;</td>
<td>4.7&quot;</td>
<td>15.2&quot;</td>
<td>9.9&quot;</td>
<td>8.1&quot;</td>
<td>8.9&quot;</td>
<td>4.9&quot;</td>
</tr>
<tr>
<td>THS/G21x-150F</td>
<td>6&quot;</td>
<td>6.6&quot;</td>
<td>17.1&quot;</td>
<td>11.8&quot;</td>
<td>10&quot;</td>
<td>10.9&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>THS/G21x-175F</td>
<td>6.9&quot;</td>
<td>7.6&quot;</td>
<td>18.1&quot;</td>
<td>12.8&quot;</td>
<td>11&quot;</td>
<td>11.9&quot;</td>
<td>6.4&quot;</td>
</tr>
<tr>
<td>THS/G21x-200F</td>
<td>8&quot;</td>
<td>8.6&quot;</td>
<td>19.1&quot;</td>
<td>13.8&quot;</td>
<td>12&quot;</td>
<td>12.8&quot;</td>
<td>6.9&quot;</td>
</tr>
</tbody>
</table>
CEIA THS 21 Metal Detection Systems offer detection, construction quality and reliability characteristics that make them the most suitable and effective solution to automatic elimination of metal contaminants.

Fully HACCP and GMP compliant, CEIA Metal Detectors are manufactured according to ISO 9001 certified Quality System using EC and FDA approved materials.

**FDA 21 PART 11 COMPLIANT**

The THS 21 Metal Detector Series is a high-sensitivity, high-precision measuring instrument. The data relating to each detection and ejection are stored in an events memory and certify production quality, the inspection itself and programming operations, as well as the periodic functional test phases using standard test samples.

FDA Code Title 21 Part 11 prescribes rigorous criteria for access to programming and computer data protection which have been fully adopted in the CEIA THS 21 Series firmware.

The requirements regarding Security, Integrity and Traceability are therefore satisfied.

FDA 21 CFR Part 11 Compliant for data security, integrity, and traceability

- Exclusive Global Auto-Learn System
- Real-time embedded Self-Calibration Control
- Increase in Sensitivity performance
- Modern, rugged and user friendly interface
- Automatic verification of the installation Quality and Environmental Compatibility
- IXC and Web-Server functions
- Continuous Auto-Test function ensuring maximum Production Safety
CONTINUOUS AUTO-TEST FUNCTION
ENSURING MAXIMUM PRODUCTION SAFETY

THS 21 Series Metal Detectors constantly self-test and adjust their detection characteristics during operation to ensure maximum stability and performance. Specific electronic signals are sent to the reception and transmission channels, constantly monitoring the detection characteristics. Variations are automatically compensated for to maintain stability and cancellation of product effect. This process eliminates the need for periodic calibration and ends line arrest and product waste.

The result is the extreme stability of the system, with no variation in detection performance and reliable cancellation of product effect.

AUTOMATIC VERIFICATION OF THE INSTALLATION QUALITY AND ENVIRONMENTAL COMPATIBILITY

THS 21 Series introduces new tools for the installation and maintenance technicians which allow them to measure the environmental compatibility of the Metal Detector.

The measurements include general mechanical and electromagnetic environmental compatibility, specific electromagnetic compatibility and the automatic examination of the degree of metal interference from the conveyor belt.

This latter function becomes even more important when the high level of sensitivity of the THS 21 Metal Detector Series is taken into consideration.

REAL-TIME EMBEDDED SELF-CALIBRATION CONTROL

The Self-Calibration control allows maximum repeatability and performance consistency over time and with environmental changes. By means of specific signals sent to the transmission and reception chain of the Metal Detector, constant monitoring of the detection characteristics is carried out, with consequent constant compensation for any variations caused by environmental factors.
MODERN, RUGGED AND USER FRIENDLY INTERFACE

- Industrial rate design
- Rapid data entry with extended keyboard
- Easy to read, high-contrast graphic display
- Rugged, antivandalic stainless steel keyboard
  Organic graph display with extremely high contrast (3000:1) and a viewing angle up to 180°, and an extended alphanumeric keypad for quick keystrokes.

- Quick Access Function
  A new function, activated simply by pressing a dedicated key, allows the most frequently-used functions to be directly recalled. These functions are programmable by the operator.

- Large Product Memory: 500 entries with easy alphabetical sorting and pattern matching
SOPHISTICATED INTERFACE CAPABILITIES

» **BLUETOOTH® CONNECTIVITY**
In the THS/21 Series, local connection to the maintenance technician’s computer no longer requires physical access to the interior of the detector or the use of unwieldy connection cables. The Bluetooth connection can be used for programming, monitoring of the signals via the CEIA MD-Scope program and the transfer of the data contained in the Metal Detector’s events memory.

» **NETWORK COMMUNICATION CAPABILITIES**
The Metal Detector can be linked to an Ethernet network (optional IXC module required). In association with the THS Production Plus Software, it enables remote management of production, collection of all technical and operational events, generation of statistical and traceability reports in compliance with FDA 21 CFR part 11 requirements.

» **MD-SCOPE**
Software Diagnostic Package complete with connector cable and hardware key:
- Remote programming
- Signal input/output
- Alarm threshold and amplitude of the signal
- Oscilloscope functionalities

» **THS PRODUCTION PLUS**
- Connects and Acquires Data from Multiple THS Detectors via Ethernet LAN
- Provides Connection to an External Database and Definition of a Programmable Block of SQL Instructions for each Metal Detector Event
- Enables Data Base Management and Back-Up of Metal Detector events
- Report Data Exportable in HTML and CSV format
- Provides User Authentication and Manages Electronic Signatures and Records
- Allows Data Integrity and Operator Auditing
- FDA Requirements Compliant, Title 21 of the Code of Federal Regulations (CFR)
- Email sender

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I XC AND WEB-SERVER FUNCTIONS

» I XC MODULE
- Gateway to THS Production Net Management System
- Integrated Web-server
- Dual 100base-T Ethernet
- Dual Full Speed USB interface
- Wi-Fi 802.11b/g
- 100,000 events internal data logger
- Additional web-server functionality

» WEB-SERVER INTERFACE
- Built-In MD SCOPE
  The MD Scope functions (including oscilloscopes) are available to every user connected to the Metal Detector via Ethernet or WiFi.
- Status
  Replicates every message displayed by the THS (updated each 5 s).
- Products
  Displays the list of products stored into the THS memory, the selected product is shown in green. This page allows the product to be changed.
- Products Export
  Allows selection of all or part of the products stored in the THS memory in order to export them.
- Products Import
  Allows importation of all or part of the products exported.
- Buffer Export
  Allows exportation of events occurred in a selected time frame.
- Configuration Backup/Restore
  Allows backup or restoring of the connected system configuration.
- Configuration Export/Import
  Allows the configuration to be exported or imported from other Metal Detectors of the same model, installed on the same system.
### SPECIAL FEATURES

<table>
<thead>
<tr>
<th>Feature</th>
<th>THS/21 - THS/MS21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection sensitivity</td>
<td>Ultra High</td>
</tr>
<tr>
<td>Immunity to environmental interference</td>
<td>High</td>
</tr>
<tr>
<td>Data display type</td>
<td>High-contrast graphical OLED 128x64 pixels</td>
</tr>
<tr>
<td>Local programming</td>
<td>16 keys, 3 with double function</td>
</tr>
<tr>
<td>Control Power Box or Conveyor Control System according to Standards UL 508A and CSA-C22.2 No. 14-05</td>
<td>on request</td>
</tr>
<tr>
<td>Audio and visual detection indicators</td>
<td></td>
</tr>
<tr>
<td>Display of the signal level by means of bar graph</td>
<td></td>
</tr>
<tr>
<td>Inspected/contaminated product counter</td>
<td></td>
</tr>
<tr>
<td>ISO 9001 certified manufacturer</td>
<td></td>
</tr>
<tr>
<td>Extremely compact probe, on SL (Slim Line) version</td>
<td></td>
</tr>
<tr>
<td>Detector for magnetic and non-magnetic metals, for use with different types of product thanks to selection of the operating frequency</td>
<td></td>
</tr>
<tr>
<td>Autolearn and automatic tracking of the product effect</td>
<td></td>
</tr>
<tr>
<td>Probe with circular opening for checking material transported in tubing, on THS/G21 series</td>
<td></td>
</tr>
<tr>
<td>Up to 500 product data memories, selectable by local programming or network software</td>
<td></td>
</tr>
<tr>
<td>Up to 40 definable users with username and password</td>
<td></td>
</tr>
</tbody>
</table>

### DATA MANAGEMENT

- Management of electronic production data and electronic signatures as per CFR 21, Part 11
  - Data security
  - Data integrity
  - Data traceability

### EVENTS STORAGE

- Complete monitoring of occurred events
  - Ejections
  - Test results
  - Programming accesses
  - Programming operations
  - Faults

### I/O INTERFACES

- RS232, Auxiliary RS232, Bluetooth, Ethernet/WiFi/USB (optional)

### SIGNALLING

- Acoustic
  - Via internal buzzer
- Optical
  - Graphic display with bar-graph indication
  - Light indicators on control unit: RED: Alarm or Fault / GREEN: Power on

### PROGRAMMING

- Local: built-in keyboard and high-contrast display
- Remote: through computer connected via Bluetooth, RS232, Ethernet or WiFi and managed with CEIA MD Scope software, THS Production Plus software or any other terminal emulation program or through Web Server (with optional IXC card)
## SAFETY AND SECURITY

<table>
<thead>
<tr>
<th>Protection degree</th>
<th>THS/21 - THS/MS21</th>
<th>IP66 – IP69K</th>
</tr>
</thead>
<tbody>
<tr>
<td>On UL versions, the Control Power Box and Conveyor Control System have a 4X-12 certified degree of protection.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical insulation</th>
<th>Galvanic isolation of the mains voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliant with international standards for safety and radio interference</td>
<td></td>
</tr>
</tbody>
</table>

## SUPPLY

<table>
<thead>
<tr>
<th>Control Power Box</th>
<th>Main voltage</th>
<th>100-240 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency and phase</td>
<td>50/60 Hz - single phase</td>
<td></td>
</tr>
<tr>
<td>Full load current (FLA)</td>
<td>2.2 A</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conveyor Control System</th>
<th>Main voltage</th>
<th>115 V: 100-120 VAC; 230 V: 200-240 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency and phase</td>
<td>50/60 Hz - single phase</td>
<td></td>
</tr>
<tr>
<td>Full load current (FLA)</td>
<td>115 V version: 11.2 A; 230 V version: 11.4 A</td>
<td></td>
</tr>
</tbody>
</table>

| Connected motor nominal voltage | 200÷240 V triphase |
| Connected motor maximum power | 115 V version: 0.37 kW (0.5 hp); 230 V version: 0.75 kW (1 hp) |

| Small-size power supply card00211AL | Power supply voltage | 20÷30 Vdc o Vac; 2A max. |

## ENVIRONMENTAL CONDITIONS

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Operating</th>
<th>14°F to 131°F (-10 to +55 °C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td>-40°F to 158°F (-40 to +70 °C)</td>
<td></td>
</tr>
</tbody>
</table>

| Relative humidity | Operating / Storage | 5 to 90 %, non-condensing |

## MANAGEMENT SOFTWARE

| THS Production software for statistical and operational management of networked THS systems |
| MD-SCOPE for maintenance and programming operations |

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