The Thermo Scientific APEX 500 metal detector offers unrivaled sensitivity to enable you to fulfill your legal obligations and protect your brand. An innovative user interface enables quick set up and optimum configuration with minimal training, reducing production downtime.

APEX™ 500 High-Performance Metal Detector

Advanced detection of metal contamination in package and process applications

Features and Benefits

- Unmatched sensitivity; up to 20% smaller diameter metal can be detected than previous generations
- Unique icon driven interface with multilingual Help and Autocalibrate functions
- Quality Assurance Test (QAT) and AuditCheck features to ensure peak performance
- Sanitary blue epoxy aperture lining
- Dual frequency operation for application flexibility
- Available with Thermo Scientific conveyor systems designed to your specifications
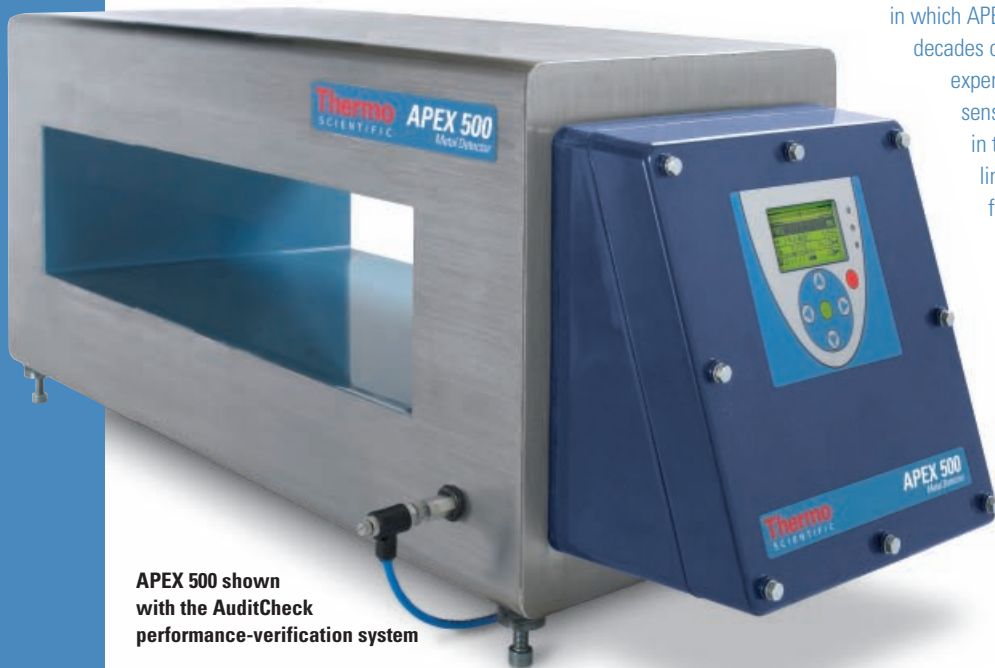
The Thermo Scientific APEX 500 high-performance metal detector once again raises the industry standard for performance, stability and reliability. It incorporates a unique (patent pending) multi-coil design to make magnetic flux more consistent in the aperture, improving signal levels resulting in the highest level of detection capability. This innovation is combined with new shielding techniques to reduce product effect and costly waste caused by false rejects.

APEX 500's unrivaled performance is due to state-of-the-art electronics and advanced digital signal processing (DSP) technology first introduced by Thermo Fisher Scientific over 20 years ago. New detection algorithms are employed as well as improved noise-reduction filters, product phase-tracking techniques and balance/recovery schemes. AuditCheck™, a unique and patented device that validates performance of the metal detector is available as an option. All these capabilities combine to make

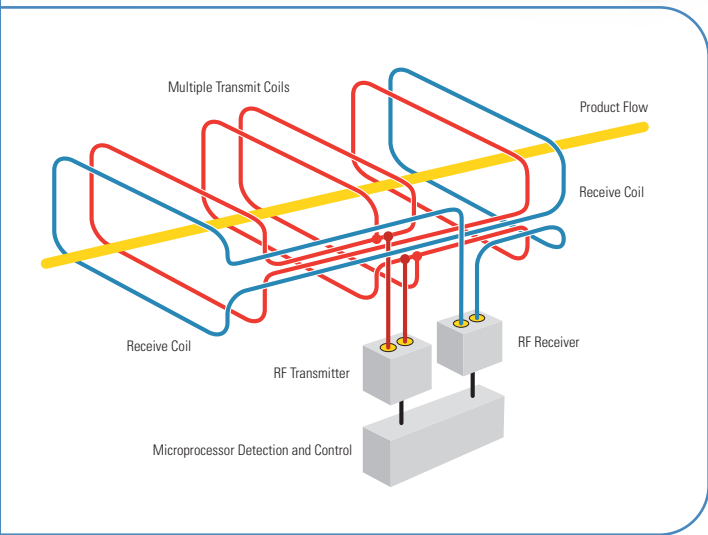the APEX 500 the most sensitive metal detection system available today.

Supported by the global Thermo Fisher service network, the APEX 500 meets the reliability, environmental and hygienic needs of the food industry. It has been designed for failsafe operation with built-in fault notification and has been fully tested to meet IP66/NEMA 4X/ATEX requirements. Only food grade materials are employed in construction including the stainless steel case and ABS control panel.

We provide advanced analysis instrumentation for the food, pharmaceutical and beverage industries in the lab and on the production line. With over 50 years of experience providing high-quality, cost-effective contaminant detection systems, we are recognized as a world leader. Our solutions include many models of metal detectors for a variety of applications, as well as a full line of X-ray inspection systems.

Thermo SCIENTIFIC

In today's competitive marketplace, food products must be delivered on time and at a competitive price. Food safety cannot be compromised so metal detectors are an integral part of a HAACP program. The key to protecting your brand is to deploy the highest performance, easiest to use, and most robust detectors available. These are the areas in which APEX 500 sets a new standard. Drawing on decades of metal detection design and application experience, We have developed the most sensitive, yet easy to operate metal detector in the world. With APEX 500 in your production line you can quickly and completely fulfill your quality goals, protect expensive downstream production equipment and be assured your production shipments don't contain any unwanted metallic foreign objects.

**APEX 500 shown
with the AuditCheck
performance-verification system**

APEX 500 multi-coil detection architecture

Labels in diagram: Multiple Transmit Coils, Product Flow, Receive Coil, Receive Coil, RF Receiver, RF Transmitter, Microprocessor Detection and Control

Breakthrough Search Head Design

Using technology developed for super-sensitive Thermo Scientific pharmaceutical metal detectors, APEX 500 incorporates innovative multi-coil technology, to achieve signal levels significantly greater than previous generations. Proprietary software simulation techniques were developed to optimize the coil arrangement for each head size. Multiple transmit coils are configured to yield a magnetic field that is more effective as compared to competing metal detectors. In addition, sensitivity on wet or conductive products has been radically improved through a new, proprietary shielding technique.
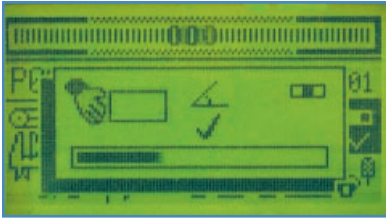
The result of this breakthrough technology is that fundamental metal detection sensitivity has been improved such that metal spheres up to 20% smaller in diameter can be reliably detected. An additional benefit of the new coil design is that APEX 500 also has a decreased overall case size. This means APEX 500 can support your ever-tightening quality programs or new product challenges without the annoyance of false rejects.

Unique Icon-Driven User Interface

Drawing on design concepts successfully utilized in many consumer products such as cell phones and PCs, the APEX 500 user interface is universally understandable because it's based on icons, not complex technical terms. To facilitate ease of use, multilingual help-text can be activated for additional information. A durable touch panel circuit is used behind the navigation buttons so you don't have to worry about keypad fragility or damage during cleaning or by physical abuse. The completely integrated control panel is made of heavy duty, food grade ABS plastic which won't dent or distort like metal control panels. Minor damage to metal control panels can result in water leaks and electronics failure.

Easy to use touch-panel interface

Autocalibration quickly determines product settings

Intuitive Software

APEX 500 can be set up for most applications in a matter of minutes. The detector comes standard with two operating frequencies and high/low gain electronics. An Autocalibration routine is selectable, which quickly determines product phase and detection thresholds while the production line is running. Once these settings are learned and basic system parameters are configured (i.e., photoeye, reject output/distance, et.al.) a product profile is saved for easy recall by operators. To protect the system from inadvertent changes to critical parameters, a multi-level password system is included. Behind the user interface you will find completely new signal processing software that targets and amplifies metal signals. Innovative new Digital Signal Processing (DSP) filters are incorporated to reduce background noise and annoying false rejects. Phase-tracking is used to adjust the detection system to deal with temperature changes in conductive products or bulk density variations.

Total Quality Solution

To make the APEX 500 metal detector the best possible QA tool, it is available with our Total Quality Solution (TQS). TQS ensures that your metal detector is at peak performance and all rejects are dealt with correctly. AuditCheck, an optional feature with APEX 500, is an automatic performance verification system where a metal test shuttle is pneumatically passed through the head. The resulting signal is compared to a baseline calibration level. Any deviation from this standard is reported so the operator can take action.
Total Quality Solution includes:

• AuditCheck; a patented automatic performance verification feature
• Quality Audit Test (QAT); a unique, manual three-pass signal level check
• Reject verification and bin full detection
• Dual reject outputs; one for packages and one for quality tests
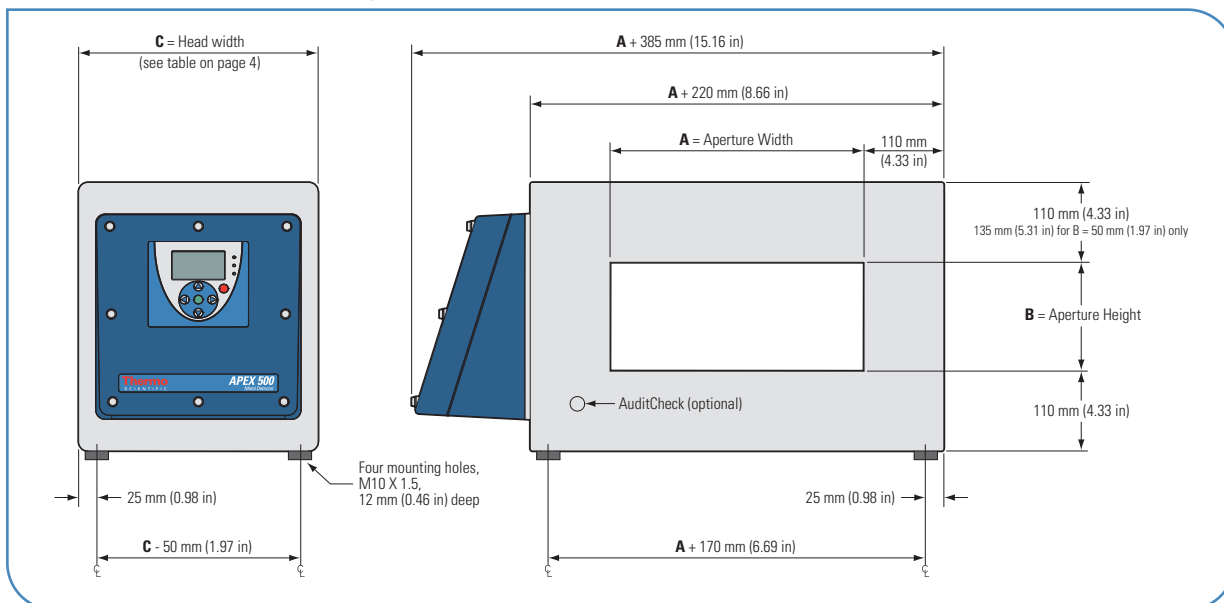• Batch printer output

Aftermarket Services

A full range of aftermarket services is available worldwide to support the Thermo Scientific APEX 500 throughout its lifetime. This includes application evaluation, installation, training and preventive maintenance. To ensure maximum operational efficiency, we also offer on-site maintenance contracts and a full spare-parts service.

Available Options

• AuditCheck performance verification
• Remote control panel mounting
• White polypropylene aperture liners
• Field compression flanges
• Certified test spheres
• Reject verification/bin full sensors
• Mounting kits to convert from DSP 1/2/3 to APEX
• A wide variety of customized conveyor systems

APEX 500 Metal Detector dimensional diagram

APEX 500 High-Performance Metal Detector

General Specifications

Construction	Stainless steel 304 straightlined case, ABS plastic control panel
Protection Ratings	IP 66, NEMA 4X, ATEX zone 22, hazardous location Class II Division 2 Groups F&G
Operating Temperature	-10°C to +40°C (+14°F to +104°F)
Relative Humidity	20% to 80% non-condensing
Electrical Supply	85 volts to 260 volts AC single phase plus earth ground; 47 Hz to 65 Hz, 100 watts maximum
Air Supply (for AuditCheck)	5.5 bar (80 psi)
Product Speed	0.5 m/min (1.7 ft/min) to 1000 m/min (3,300 ft/min)
Outputs	6 Relays outputs; Relays: 250 volt AC 2 amp max. 50 volt DC 1 amp max.
Output Allocation (selectable via menu)	Reject 1, Reject 2, AuditCheck, Fault, Alarm, Warning, QA lamp
Inputs	6 Inputs - Active 12v DC+12 volt auxiliary supply for input sensors
Input Allocation (selectable via menu)	Speed Sensor, Keylock, Product Select 1, Product Select 2, Infeed PEC, Reject Confirmation 1 (bin full), Reject Confirmation 2, External Suppression
Communications	Optional AnyBus modules
Safety and Export Approvals	cCSAus, CE, ATEX zone 22
Manufacturing Quality	ISO9001 certified
Help-Text, Users Manual Languages	English, Spanish, French, German, Italian, Dutch, Chinese, Czech, Russian

APEX 500 Metal Detector Standard Aperture Sizes — table shows case width (C) dimension stated in millimeters (custom sizes available also, consult the factory)

mm (in)	Aperture Height (B) 50 (1.9)	75 (2.9)	100 (3.9)	125 (4.9)	150 (5.9)	175 (6.9)	200 (7.9)	250 (9.8)	300 (11.8)	350 (13.8)	400 (15.7)	450 (17.7)	500 (19.7)	550 (21.6)	600 (23.6)
50 (1.9)	295	295	295	295	295	295									
75 (2.9)	295	295	295	295	295	295	295	295							
100 (3.9)	295	295	295	295	295	295	295	295							
125 (4.9)	295	295	295	295	295	295	295	295							
150 (5.9)	295	295	295	295	330	330	330	330	330	330	330	330	330		
175 (6.9)	295	295	295	295	330	330	330	330	330	330	330	330	330		
200 (7.9)	295	295	295	295	330	330	380	380	380	380	380	380	380		
250 (9.8)	295	295	295	295	330	330	380	380	380	380	380	380	380		
300 (11.8)	295	295	295	295	330	330	380	380	380	380	380	380	380		
350 (13.8)	295	295	295	295	330	330	380	380	380	480	480	480	480		
400 (15.7)	295	295	295	295	330	330	380	380	380	480	480	480	480		
450 (17.7)	295	295	295	295	330	330	380	380	380	480	480	480	480		
500 (19.7)	295	295	295	295	330	330	380	380	380	480	480	480	680		
550 (21.6)	295	295	295	295	330	330	380	380	380	480	480	480	680	680	680
600 (23.6)	295	295	295	295	330	330	380	380	380	480	480	480	680	680	680
650 (25.6)	295	295	295	295	330	330	380	380	380	480	480	480	680	680	680
700 (27.6)	295	295	295	295	330	330	380	380	380	480	480	480	680	680	680
750 (29.5)	295	295	295	295	330	330	380	380	380	480	480				
800 (31.25)	295	295	295	295	330	330	380	380	380	480	480				
850 (33.5)	295	295	295	295	330	330	380	380	380	480					
950 (37.4)	295	295	295	295	330	330	380	380	380						
1050 (41.4)	295	295	295	295	330	330	380	380	380						
1150 (45.3)	295	295	295	295	330	330	380	380							
1250 (49.2)	295	295	295	295	330	330	380								

(Row label on left axis: Aperture Width (A))

Legend
- Standard aperture case width in mm
- Vertical aperture case width in mm

Note: For vertical apertures, APEX control panel can be mounted on the side of the case or installed remotely.

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