Rapiscan systems
An OSI Systems Company

METOR 6E

TECHNICAL SPECIFICATIONS

General Information

Metor 6E is a state-of-the-art Walk-Through Metal Detector developed for the most demanding high profile security screening applications. The unit has been developed using the latest technology to meet the strictest requirements set by the international civil aviation authorities.
Typical Metor 6E applications include passenger screening at airports and other transportation terminals as well as visitor screening in public and private buildings such as ministries, embassies and courthouses.

Benefits

Metor 6E is a highest quality Walk-Through Metal Detector with exceptional operational performance and versatile capabilities. The key benefits include:

- Compliance with the internationally recognized civil aviation requirements
- Powerful screening of large crowds with “regulated” level of detection reliability
- Accurate alarm resolution using a 2-dimensional location function with 60 segments
- Superior immunity in the presence of electrical instruments or multiple Walk-Through metal detectors
- Built-in advanced features for enhanced security and usability e.g. automatic sensitivity adjustment, automatic frequency selection, power guard, system ready violation monitoring etc.
- IP 55 protection class against intrusion of foreign objects and water allows both indoor and sheltered outdoor use
- Alarm distribution information for analyses of the cause of the resulted alarms to optimize the divesting procedure and throughput
- SD memory card support for easy upgrade of new firmware and UI language versions

Operation Principle

Metal Detection Technology
Metor 6E generates an alternating electromagnetic field within the aperture of the unit. The metal objects passing through the metal detector cause changes in the electromagnetic field. These changes are detected by the receiver coils and processed by the electronics unit and the firmware. If the received signal variation from the primary electromagnetic field due to the size, material or shape of the item exceeds the preset alarm threshold level an audio/visual alarm indication is activated.
The Metor 6E uses a unique multi-channel technology combined with powerful processing capacity. This allows fast collection of information from multiple metal items passing through simultaneously the Metor 6E and accurate threat resolution based on the characteristics of the items.

Continuously Active

The Metor 6E is continuously active. At no time is it possible to toss, pass or slide a contraband item through undetected. No photoelectric, infrared, or other sensor device is used to enable and disable the detection circuitry and thus mask the impact of external interference.

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Metor 6E Features

High Throughput Rate

Metor 6E is capable of a throughput rate of over 50 persons per minute. The throughput rate is not limited by the performance of the detector but the concept of operation at the check process (walking speed of people, time spent to check the people that caused alarm etc.)

Easy Assembly

- Metor 6E's integrated construction allows installing the unit in 5-10 minutes
- Crosspiece fits either way.
- Electronics unit pre-assembled inside the crosspiece in factory
- Polarized, easy to use connectors
- Number of connections minimized

2 - Dimensional Location Function

Metor 6E has an integrated 2-dimensional location display on exit side of the coil panels. The display indicates the location of the detected metal object(s) by pinpointing either left, right or center position of the height where the Item(s) passed through the metal detector. The location display has 20 vertical and 3 horizontal segments resulting in a total resolution of 60 pinpointing segments within the unit's aperture.
The location display has two user selectable modes: 2-dimensional or vertical. In vertical mode the vertical location of the detected item within the unit's aperture is indicated. Timing of the location display is adjustable and the display can be enabled or disabled through the user interface.

Intelligent Traffic Counters

Metor 6E incorporates intelligent traffic counters as a standard feature. The counters are fully integrated inside the coil panels meaning they are completely invisible. The desired walking direction of travel can be selected and the number of passengers, number of alarms and the resulted alarm percentage can be displayed on the alphanumeric display. The traffic counter can be set to increase the count in one direction and decrease the count in the opposite direction. This type of counter gives a more accurate traffic count, especially when passengers are asked to step back through the gate to divest themselves of alarming metallic items. Alternatively the counters can be set to increase the count in one direction and have no effect in the opposite direction.

Alarm Distribution Data

For more in depth analyses of the statistical data Metor 6E provides information on the distribution of the alarms throughout the vertical height of its aperture. The unit collects the number of alarms resulted in each vertical segment and indicates it as % of overall alarms. This information can be viewed through the Metor 6E user interface. The distribution of alarms provides information on the cause of the resulted alarms and assists in optimizing the throughput and security at the checkpoint through a better planning of the divesting procedure as well as the whole concept of operation.

Traffic Lights

The traffic lights facilitate controlling the traffic flow through the checkpoint. The Metor 6E has traffic lights that utilize international signs for "STOP" and "GO". The traffic lights are integrated into the crosspiece in order to provide the best possible visibility. The timing of the traffic lights is adjustable and the lights can be enabled or disabled.

Power Indicator

The top segments of the vertical location displays flash to indicate that the power is on. This feature can be switched "ON" or "OFF"

Random Alarm for non-alarming/alarming

Metor 6E can be set to randomly alarm for selected percentage (0-100%) of non-alarming people passing through the metal detector. Random alarms are generated with 1% accuracy. This feature can be switched "ON" or "OFF".
The audio/visual indication of the random alarm can be set to be distinct from the normal alarm indication.
Metor 6E can be set also to generate a distinct alarm randomly for a selected percentage (0-100%) of alarming people to allow random pat down checking of people who generated a natural alarm due to metal items they carried on them. This feature can be switched "ON" or "OFF".
This dual random alarm capability of the Metor 6E enables a more versatile concept of operations for the screening process.

Calibration Guard

Calibration Guard provides added tamper resistance by continuously observing the calibration parameters. When any of the calibration parameters are changed from the saved value a warning message is shown. This feature can be switched "ON" or "OFF".

Power Guard

Metor 6E is equipped with a Power Guard that activates an alarm when the unit loses power i.e. the power cord is disconnected or there is an internal power failure.

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Ready State Violation
Monitors the operation of the Metor 6E and alarms in case of a person accessing when the system is not ready for normal operation e.g. in case when two persons are passing through the metal detector too close to each other.

Noise Measurements
Metor 6E has two special noise measurement functions: EM Noise and Total Noise. EM Noise measures only electromagnetic interferences from the environment with its own magnetic field turned off. Total Noise measures both electromagnetic interferences and mechanical interferences like vibration and moving metal.

Object Speed Response
Metor 6E operates over a wide object velocity range. The low and high speed response of the unit can be independently adjusted.

Parameter Memory
Non-volatile memory is used to store all of the parameters regardless of the power connection. At no time is a battery back-up system required to maintain the parameters when the main power is disconnected.

I/O Configuration
Metor 6E has two configurable digital Input and Output connections.

Digital Inputs
Both inputs have three alternative configurations:
- TAMPER SWITCH - can be used to activate alarm when the crosspiece hatch is opened (optional switch required)
- MANUAL ALARM - can be used to activate an alarm from an external switch (optional switch required)
- ALARM INHIBIT - can be used to disable the alarm from an external switch (optional switch required)

Digital outputs
Can be configured to control an external device in following alternative cases:
- ALARM
- PAX
- PAX and NO ALARM
- PAX and ALARM

Excellent Interference Immunity
Static Metal Compensation
Static metal close to the Metor 6E is compensated by digital filtering.

Influence of Moving Metal
The Metor 6E detection coil design is designed to maximize the ratio between moving metal inside and moving metal outside the detector.
Immunity to Mechanical Vibration
The mechanical construction of the Metor 6E enables an excellent immunity against mechanical vibration.
Influence of Electromagnetic Interference
The carefully selected operating frequencies together with effective digital filtering allow excellent immunity to electromagnetic interference. Furthermore the coil design of the Metor 6E is optimized to minimize external electromagnetic interference. Metor 6E meets with the requirements of applicable standards for Electromagnetic Compatibility.

Self Diagnostics
A comprehensive self-diagnostics continuously monitors the operation of the Metor 6E. If a fault condition occurs, an alphanumeric readout shall display the exact nature of the problem. Operating personnel cannot override a fault condition prior to it being corrected.

Warranty
Metor 6E has a two-year warranty for parts.

Metor 6E User Interface

Display unit
The display of Metor 6E is equipped with alphanumeric display, keypad, including standby button, status LED's and audible indicator.

Alphanumeric Display
The alphanumeric display is a 2x20 character display. It indicates the relative size of the metal object on bar graph. All programming and statistical as well as error information is shown with explicit text format on the display.

Keypad
The Metor 6E display unit is equipped with a keypad. Keypad has the same function keys as the remote control unit.

Standby Button
The Metor 6E's display unit incorporates a standby button. During standby mode metal detection is disabled, traffic lights, display and other possible power indications are turned off. Standby button can be enabled/disabled from user interface (requires super user privileges). The standby feature saves power when the unit not in use and allows resuming to normal operation instantly when the security line is re-opened.

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Status LED's
The status LED's consist of "ALARM"/"WAIT"/"READY" LED's. "ALARM"/"READY" LED's indicate normal operation. The "WAIT" LED indicates that the Metor 6E is in programming mode.

User Interface Menu Structure
The user interface menu structure groups the Metor 6E functions into six main categories. Similar functions can be found under same main menu which makes the user interface logical and easy-to-use for the users.

Built-in Help Texts
The build-in help texts guide the user when navigating through the menu structure. Metor 6E is easy to use even without manual.

Bi-directional Wireless Remote Control Unit
Metor 6E is equipped with a wireless bi-directional remote control unit as an alternative means of programming to the keyboard on the display unit. Bi-directional operation enables loading parameters from one Metor 6E and sending the same parameters to other Metor 6E's. This makes the programming of multiple Metor 6E units easy. One remote control unit can be programmed to operate several detectors or up to ten remote control units can be tuned to a specific Metor 6E.

Security
In the design of Metor 6E, security of operation has been in a high priority.
Secure Connections
All the cabling and connections except external power supply are located inside the crosspiece. The crosspiece is key-locked preventing any unauthorized persons to access the electronics unit or remote control unit.
Metor 6E is equipped with one On/Off switch. The power switch is accessible by opening the crosspiece lid – access only with key
Access Code Protection
Parameter adjustments are access code protected. Access code protection eliminates any unauthorized tampering with parameters. Only authorized personnel can change the access code.
The user interface locks down after entering a wrong access code three times.
The remote control operation is also secured with code hopping algorithm.
Metor 6E enables both numeric and alphanumeric access codes as user selectable feature.
Fully Configurable User Access Rights
Metor 6E has fully configurable user access rights. This allows different type of users to have access to all or only some specific functions. There are following pre-configured user groups:
Super User
- Access to all parameters
- Access code required for access

User
- View statistical information and clear the counters
- Access code required for access
- Other rights the same as for operator level

Operator
- Read only -level (allowed to read Program and Sensitivity)
- Allowed to adjust volume
- No access code required

Metor 6E has 8 fully configurable user groups that can have individual access rights. The group "User" can be re-configured as needed. The "Super User" group is fixed. There can be totally 99 different users with individual passwords. Each user belongs to one of the 8 configurable user groups or to the Super User group.

Technical Specifications

Mechanical Construction
Metor 6E coil panels use a mechanical construction which gives the whole unit an excellent durability and mechanical stability. The panels are finished in laminate with plastic location display profiles. The coil panels are equipped with integrated boots that protect the panels against floor washing liquids. The boots include holes for fixing the detector to the floor. The crosspiece is made of aluminum that provides excellent durability in applications requiring multiple installations and dismantling.

Hardware
Metor 6E has an electronics unit in a metal enclosure. The electronics unit is located inside the lockable aluminum crosspiece.

Firmware
Metor 6E firmware includes weapon detection programs to meet the international requirements as well as material specific detection programs. Operations are easy to upgrade using an SD –memory card when future firmware versions are introduced.

UI language versions
Metor 6E can be equipped with different UI language versions. Please contact your local Metor distributor for the availability of the UI version with your language. The UI language version can be easily upgraded to the Metor 6E by using the SD-memory card feature.

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Sensitivity
The sensitivity settings are divided to overall sensitivity and zone sensitivity.
- There are 100 sensitivity steps available to adjust overall sensitivity.
- The zone sensitivity of 10 different zones can be adjusted independently. The range of the zone sensitivity setting is 0 – 200 % with respect to the overall sensitivity.
- Sensitivity can be set either manually or automatically.

Automatic Interactive Sensitivity Calibration
An Automatic interactive Sensitivity Calibration function enables the detector's sensitivity to be automatically selected for a specific test object. The user can simply start the "Auto Sensitivity" function and walk through the unit with each test object one at the time (minimum 3 walkthroughs are required). At the end of the process Metor 6E indicates the correct sensitivity level for detecting all the items that were passed through during this process.
Automatic Floor Sensitivity Calibration
Metor 6E has an Automatic interactive Floor Sensitivity Calibration Program to help floor level calibration. Program enables the detector's floor level sensitivity to be automatically selected for a specific test object. The process is same as above but the objects are taken through at the foot/ankle level only.

Operating Frequency
Metor 6E has 10 operating frequency sets. The operating frequency sets have been carefully selected from the noise free frequency band.
Automated Frequency Search
Metor 6E searches automatically suitable operating frequency during start-up or when the feature is activated from the user interface. This feature can be switched On or Off.
Multiple Unit Operation
Two or more Metor 6E metal detectors can be operated in close proximity. Side-by-side use does not require synchronization cables.

Alarm Indication
Display unit indicates alarm with
- Audible alarm
- Alarm LED's
- Alphanumeric display with signal display relative to signal size

In addition, alarm is indicated with the 2-dimensional location display on the exit side of the coil panels.

Network Connection
Metor 6E is connectable to MetorNet 3 Pro Web security monitoring system through Ethernet.

Power Supply
Mains, nominal: 100 - 240 VAC
Mains, maximum: 90 - 264 VAC
Mains frequency (nominal): 50/60 Hz
Battery (optional): 12 VDC
Power consumption, typical: 31 W (AC), 26 W (DC)
The Metor 6E has the ability to adjust automatically to variations in line voltage from 90 to 264 VAC or 12 VDC without operator intervention. In an installation site where line voltage regulation is a problem, there will be no degradation in WTMD performance.

Battery Back-up Set (optional accessory)
Metor 6E can be equipped with an optional 12 VDC battery to provide up to 8 hours fully operation in case of mains voltage failure.

Operating Temperature
Ambient operating temperature range:
-20°C to +60°C (-4°F to +140°F)

Storage Temperature
Ambient storage temperature range:
-30°C to +70°C (-22°F to +158°F)

Operating Humidity
Ambient operating humidity range:
0 to 95%

Protection
IP 55, against intrusion of foreign objects and water

Weight
65 kg (143 lbs)

Dimensions
Width
Interior: 76 cm/30 in., with crosspiece extension kit (available for ADA compliance) 81 cm/32 in.
Exterior: 90 cm/35 in., with crosspiece extension kit 95 cm/37 in.

Height
Interior: 205 cm/81 in.
Exterior: 224 cm/88 in.

Depth
70 cm/28 in.

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Regulatory Information

Standards and Directives

- European Electromagnetic Compatibility (EMC) Directive 2004/108/EC
  - EMC Standard – IEC 61000-6-3:2006 (Second Edition) + A1:2010 [Emission]
  - EMC Standard – IEC 61000-6-2:2005 (Second Edition) [Immunity]
- European Low Voltage Directive 2006/95/EC
  - Safety Standard - IEC 61010-1:2010 (third edition) [Electrical Safety]
- Federal Communications Commission Class B Standards for noise emission from electrical equipment

Magnetic field safety

- Safe for all people including pregnant women
- Complies with the following standards and recommendations
- 1999/519/EC - European Union Council recommendation on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)
- ICNIRP 1998 – Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields up to 300 GHz
- ICNIRP 2010 – Guidelines for limiting exposure to time-varying rlectric and magnetic fields (1 Hz – 100 kHz)
- IEEE Std C95.6 (2002) – IEEE standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0 to 3 khz.
- IEEE Std C95.1 (2005) – IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
- ACGIH-0302 (2002) (Occupational) – The American Conference of Governmental Industrial Hygienists guidelines to occupational exposures only

Pacemaker safety

Safe for people wearing cardiac pacemakers.

Fulfills the requirements regarding limitation of the risk of electromagnetic interference with implanted cardiac pacemakers according to the following standard:

- EN 50527-2-1:2010, Subclause G.2.2

Additional Safety Information

No Metor products will erase, alter, or damage magnetic storage media including credit cards, computer floppy disks, tapes, or IC's.

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