

DETEX SERIES

Metal Detector
AD-4976

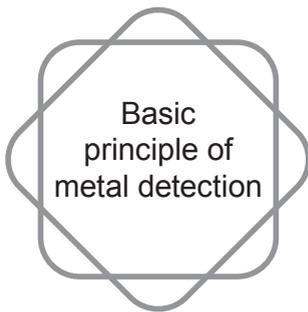


AND
A&D Inspection

AD-4976 Series: Technology that Aids in Manufacture of Top-Quality Products



Detection and removal of contaminants during production/processing of food, pharmaceuticals, chemical products and clothing is a particularly important theme in terms of compliance with product liability laws and the HACCP system.

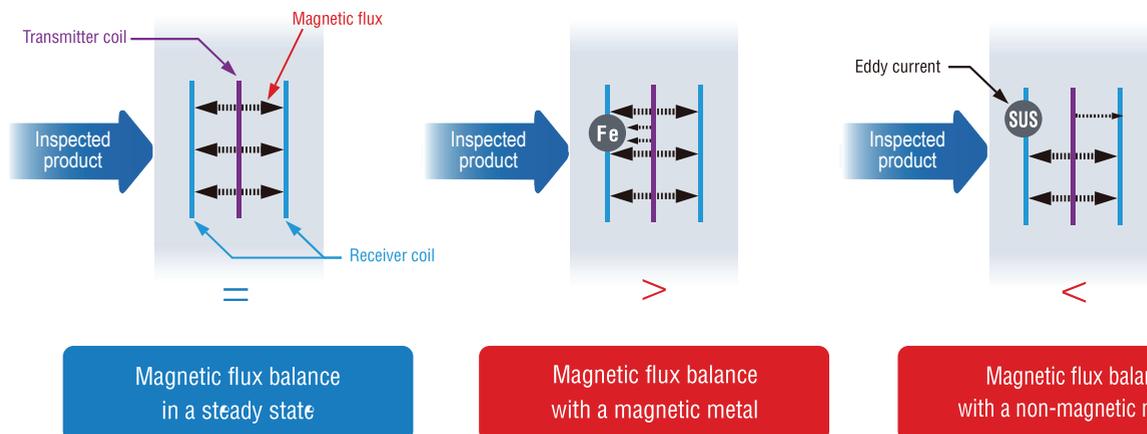


A sensor head of an electromagnetic induction type metal detector consists of a transmitter coil and two receiver coils that are equally spaced and are differentially connected.

A magnetic field is generated inside the coils and the product to be inspected passes between the coils. When no contaminants exist, both receiver coils receive an equal amount of magnetic flux. When a product contaminated with an electrically conductive item (such as metal) passes through the coils,

the magnetic flux balance is disturbed and creates a differential output signal.

Metal detectors detect metal contaminants by processing this differential output signal.



Advanced Metal Detector by A&D

Multi-frequency support



Automatic frequency selection system

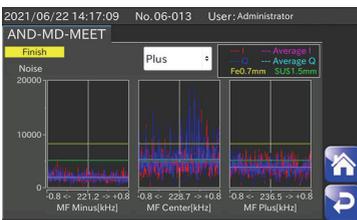
Before the start of an inspection, the AD-4976 automatically selects the most suitable frequency band for higher sensitivity and more stable inspection by analyzing the frequencies of the three detection bands. This system realizes a stable inspection and better sensitivity.

High/medium/low frequency bands

You can conduct metal detection for dry products, wet products, products in aluminum metalized packages as well as missing product inspection for oxygen absorbers.

As an option, you can also conduct metal detection for products which contain oxygen absorber.

AND-MD-MEET



Visualization of external noises (patent pending)

AND-MD-MEET (AandD Metal Detector Measurement Environment Evaluation Tool)

AND-MD-MEET is the software that measures and displays the electromagnetic noise of the environment using the sensor head of the metal detector. This software has been installed into A&D's metal detector for the first time.

With this function, it is possible to visualize noise conditions (up to the currently used frequency and surrounding frequencies) in installation environments that were difficult to understand in the past, enabling you to implement noise countermeasures more easily and quickly.

Warm-up Free

Improvement to temperature/phase characteristics enables stable inspection immediately after startup.

Improvement of environmental resistance

Effects due to noise such as from an inverter has been mitigated. Anti-vibration capability has been improved.

Adjustable height of sensor head

The height of the sensor head from the conveyor is adjustable. This allows you to position products to pass through closer to the center of the aperture. This decreases the product effect and leads to more stable use.



Hygiene design

Sensor head is made of stainless steel, making it easier to clean and gives it a more robust structure. Dust-/water-proof (IP66) sensor head and conveyor unit reduces accumulation of dust and dirt.

IP66

Dust-/water-proof (IP66) sensor head and conveyor unit allows the AD-4976 series to be washed cleanly.



Easy Operation

7" color touchscreen

Intuitive user interface and high visibility LCD color touchscreen with high-speed CPU enable easier operation.



Product registration using images imported from USB flash drive

Product images can be quickly uploaded to the metal detector from a USB flash drive. The images can be easily registered as a thumbnail image for each product. This makes product identification when selecting a product faster and simpler.



Up to 1,000 products can be registered and categorized into 10 different groups (up to 100 products per a group).



Multi-language

The screen can be shown in English, Spanish, Russian, Korean, Chinese and Japanese languages as standard specification. Languages can be easily switched just by selecting a button on screen.

Easy Maintenance

Detachable conveyor unit without tools

The resin plate of the conveyor unit is detachable without tools.



Easy maintenance

The conveyor belt is driven by gears, making it easy to clean, maintain, and replace the belt. Durability of the conveyor unit (IP66) has been improved and belt meandering occurs less often.

Remote maintenance

AD-4976's touchscreen can be operated from a PC via a LAN cable connection using device operation software for PC. Also, by utilizing remote control software to control another PC, the touchscreen can be operated from another PC. This is useful for remote maintenance since engineers can check machine settings even if the AD-4976 is in a remote place. (Please prepare separately, a LAN cable, PCs, device operation software for PC and remote-control software.)



LAN cable & device operation software for PC



Easy Customization

Modular design

Sensor head can be sold separately on its own.
 Sensor head for AD-4976 can be mounted on a customized conveyor.
 (Operation screen is embedded into the sensor head.
 Sensor head does not include a photoelectric sensor.)

Standard type

Photo: AD-4976-H4517



Vertical type

(For tall products such as beverage.)

Photo: AD-4976-H3510

(Please prepare conveyor separately in the case of vertical type.)



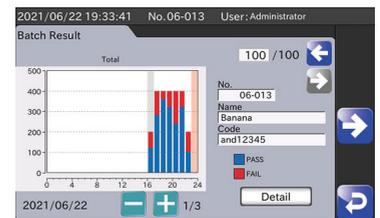
Easy Data Management

History management

Operation Log and Inspection History can be helpful for HACCP management.

Inspection History & Batch Result

Inspection result per inspection is saved automatically.
 Numbers & ratio of pass/fail products can be summed up automatically.
 Graphs of the result can be seen on the touchscreen.



2021/06/22 14:07:17 No.06-013 User:Administrator

Batch Result

Start Time 2021/06/22 13:57:09 Stop Time 100 / 100

No. 06-013 Name Banana Code and12345

FAIL List	Data 1	Data 2
Result	Validation	Testpiece
1	FAIL.o	2021/06/22 13:58:23 0.95 0.5
2	FAIL.o	2021/06/22 13:58:30 1.28 1.2
3	FAIL.o	2021/06/22 13:58:35 1.12 1.1
4	FAIL.o	2021/06/22 13:58:40 0.93 0.5
5	FAIL.o	2021/06/22 13:58:48 0.85 0.5
6	FAIL.o	2021/06/22 14:01:42 0.85 0.5

Inspection results from the start to the end of an inspection can be saved as a Batch Result in PDF format.

Operation Log

A log of setting changes can be saved and displayed, up to the last 100 changes.

User management

For each user registered, you can limit the operations they can perform depending on their user level.
 Inadvertent operation can be avoided by assigning each user a user level from the four levels below.

Operator	Quality Manager
Supervisor	Administrator

Output to a USB flash drive

* USB flash drive is not included.

Inspection history (csv), operation log (csv), and batch result (PDF) can be output to a USB flash drive.
 Please start inspection after connecting a USB flash drive to the connector on the sensor head.

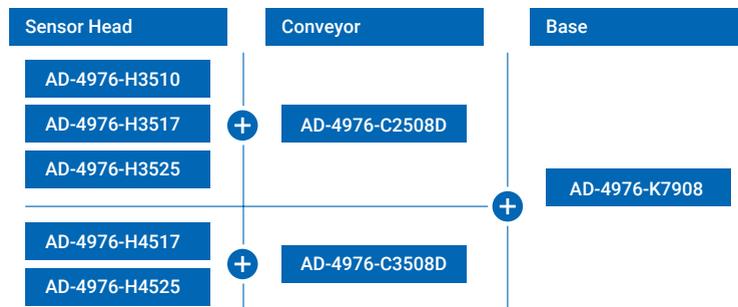


AD-4976 Series Specifications

Complete Set

Model	AD-4976-3510	AD-4976-3517	AD-4976-3525	AD-4976-4517	AD-4976-4525
Aperture width	350 mm			450 mm	
Aperture height	100 mm	170 mm	250 mm	170 mm	250 mm
Maximum pass height	80 mm	150 mm	230 mm	150 mm	230 mm
Conveyor	Width 250 mm, Length 800 mm			Width 350 mm, Length 800 mm	
Belt speed *1	10.0 to 50.0 m/min				
Conveyor load capacity *2, 3, 4	5 kg (less than 30.0 m/min) 3 kg (30.0 m/min or more)			10 kg (less than 20.0 m/min) 5 kg (20.0 m/min or more and less than 40.0 m/min) 3 kg (40.0 m/min. or more)	
Conveyor height *5	Floor + 793 mm ±70 mm				
Display	7-inch color touchscreen				
Storable product numbers	1,000 Items (including product data and image)				
Communication	Ethernet (Modbus TCP, PostScript compatible printer) RS-232C (same product number as that of cable used for Checkweigher AD-4961) RS-485 (Modbus RTU) USB Port (USB flash drive, history storage, image source and PostScript compatible printer)				
Net weight	66 kg	70 kg	79 kg	87 kg	93 kg
Power	Single phase AC 100 to 240 V (+10 %, -15 %) 50/60 Hz, 100 VA				
Operation temperature & humidity range	0 to 40 °C, humidity below 85 % RH or less, no condensation				

AD-4976 Composition



*1 By replacing the normal gear with an optional high-speed gear, the belt speed can be raised up to a range of 20.0 m/min to 80.0 m/min. In this case, the conveyor load capacity becomes half of that of normal mode.

*2 The conveyor load capacity values are for when the AD-4976 is used in a clean environment. However, these values will vary depending on the environment where the AD-4976 is used.

*3 For heavy items (3 kg or more), do not put two products on the conveyor at the same time and set the same speed for the AD-4976 and the conveyors attached before and after the AD-4976 in the line.

*4 For heavy items (near 10 kg), continuous overloading of the AD-4976 during transfer will cause a temporary reduction in belt speed. In that case, transport the items at 3 second intervals at a minimum.

*5 The conveyor height values are for when an A&D conveyor is installed with the AD-4976. The height does not include projections.

*6 The product speed means the transfer speed range supported by the software.

Power cable is not included.

Please prepare a φ6-φ10 mm cable with M4 round terminal on sensor head side.

Sensor Head

Model (AD-4976-Hxxxx)	H3510	H3517	H3525	H4517	H4525
Aperture width	350 mm			450 mm	
Aperture height	100 mm	170 mm	250 mm	170 mm	250 mm
Protection class	IP66				
Display	7-inch color touchscreen				
Operation	Touch panel and flat panel key				
Storable product numbers	1,000 items including product data and image				
Detection method	Metal detection with electromagnetic induction (EMI) and single frequency (selected from H/M/L frequencies)				
Stabilization time	1 minute (Warm-up Free function)				
Metal detection output	Belt stop, automatic rejection, warning light, communication port				
Communication	Ethernet (Modbus TCP, PostScript compatible printer) RS-232C (same product number as that of cable used for Checkweigher AD-4961) RS-485 (Modbus RTU) USB terminal (USB flash drive, history storage, image source and PostScript compatible printer)				
Product speed *6	5.0-120.0 m/min				
Net weight	38 kg	42 kg	51 kg	56 kg	62 kg
Power	Single phase AC 100 to 240 V (+10 %, -15 %) 50/60 Hz, 50 VA				
Operation temperature & humidity range	0 to 40 °C, humidity below 85 % RH or less, no condensation				

Conveyor

Model (AD-4976-Cxxxx)	C2508D	C3508D
Maximum pass height	Head aperture height -20 mm	
Conveyor belt	Width 250 mm Length 800 mm	Width 350 mm Length 800 mm
Belt speed *1	10.0 to 50.0 m/min	
Conveyor load capacity *2, 3, 4	5 kg (less than 30.0 m/min) 3 kg (30.0 m/min or more)	10 kg (less than 20.0 m/min) 5 kg (20.0 m/min or more and less than 40.0 m/min) 3 kg (40.0 m/min or more)
Protection class	IP66	
Motor control	Controlled from the Sensor Head	
Net weight	13 kg	16 kg
Operation temperature & humidity range	0-40 °C, humidity below 85 % RH or less, no condensation	

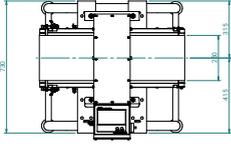
Photoelectric sensor is included as a standard accessory with conveyor unit.

Base

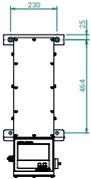
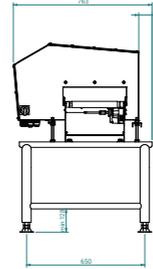
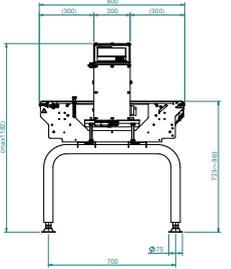
Model (AD-4976-Kxxxx)	K7908
Conveyor height *5	Floor + 793 mm ±70 mm
Net weight	15 kg

A&D METAL DETECTOR

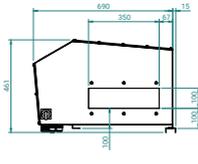
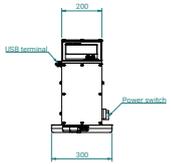
AD-4976-3510



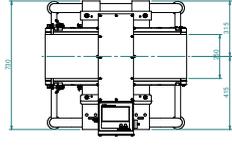
Complete Set
AD-4976-H3510
+
AD-4976-C2508D
+
AD-4976+K7908



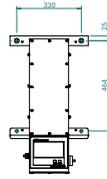
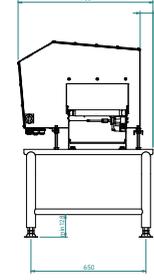
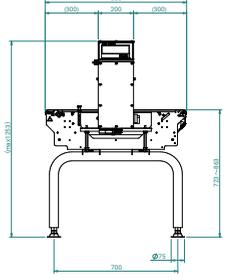
Sensor Head
(Single Unit)
AD-4976-H3510



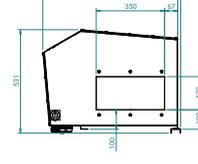
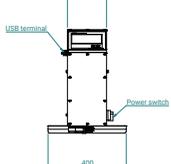
AD-4976-3517



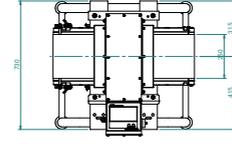
Complete Set
AD-4976-H3517
+
AD-4976-C2508D
+
AD-4976+K7908



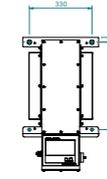
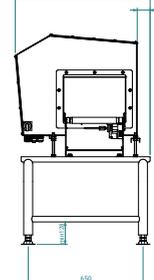
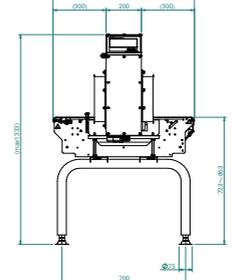
Sensor Head
(Single Unit)
AD-4976-H3517



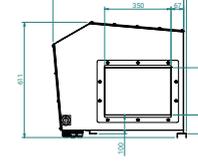
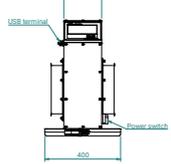
AD-4976-3525



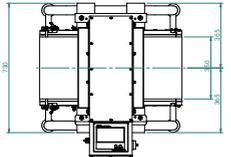
Complete Set
AD-4976-H3525
+
AD-4976-C2508D
+
AD-4976+K7908



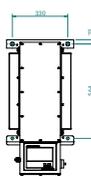
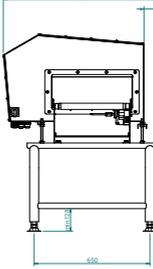
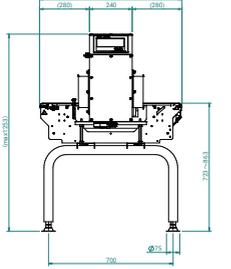
Sensor Head
(Single Unit)
AD-4976-H3525



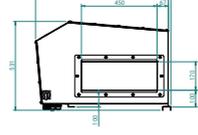
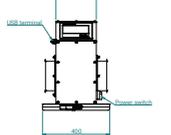
AD-4976-4517



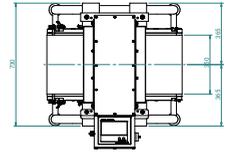
Complete Set
AD-4976-H4517
+
AD-4976-C3508D
+
AD-4976+K7908



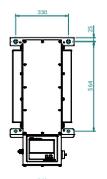
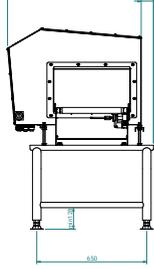
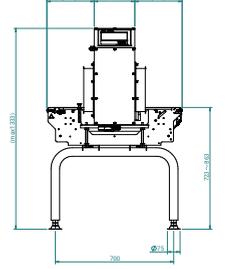
Sensor Head
(Single Unit)
AD-4976-H4517



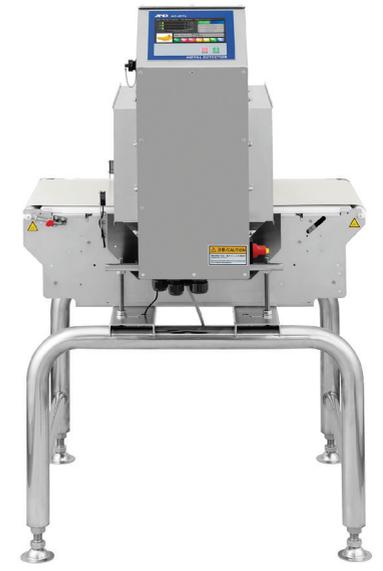
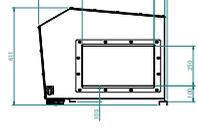
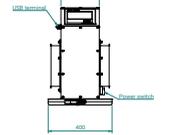
AD-4976-4525



Complete Set
AD-4976-H4525
+
AD-4976-C3508D
+
AD-4976+K7908



Sensor Head
(Single Unit)
AD-4976-H4525



AD-4976-H4525
+
AD-4976-C3508D
+
AD-4976+K7908

Options

AD-4976-C2500-13

Transfer roller
for 250 mm conveyor width



AD-4976-C3500-13

Transfer roller
for 350 mm conveyor width

AD-4976-C2500-15

Scraper
for 250 mm conveyor width



AD-4976-C3500-15

Scraper
for 350 mm conveyor width

AD-4976-CAL08-14

Product guide
for 800 mm conveyor length



AD-4976-51

Oxygen absorber
application software



AD-4971-02

Tower light

AD-4971-02BZ

Tower light with buzzer

* Protection class of the tower lights is IP53.

AD-4971-05

Caster
(4 pieces)

AD-4976-31

Emergency stop
button

Rejectors



Flipper type

Photo:
AD-4976-3510 with flipper type Rejector
(AD-4981-2570)



Conveyor drop type

Photo:
AD-4976-3510 with conveyor drop Rejector
(AD-4982-C2540 & AD-4982-11-79)



Pusher type

Photo:
AD-4976-4525 with pusher type Rejector
(AD-4983-3050)

Test Pieces	
Fe (standard)	Φ=0.5, 0.6, 0.7, 0.8, 1.0, 1.2, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 mm
SUS304 (standard)	Φ=0.7, 0.8, 1.0, 1.2, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.6, 6.0 mm
Fe (with certificate)	Φ=0.5, 0.7, 0.8, 1.0, 1.2, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 mm
SUS304 (with certificate)	Φ=0.8, 1.0, 1.2, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0 mm
Brass (with certificate)	Φ=1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0 mm
Aluminum (with certificate)	Φ=1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0 mm



Discover Precision

A&D Company, Ltd. (JAPAN)

aandd.jp

A&D Engineering, Inc. (USA)

andonline.com

A&D Australasia Pty Ltd. (Australia)

andaustralasia.com.au

A&D Instruments Ltd. (United Kingdom)

andprecision.com

< German Sales Office >

andprecision.com

A&D Korea Ltd. (South Korea)

andk.co.kr

A&D Rus Co., Ltd. (Russia)

and-rus.ru

A&D Instruments India (P) Ltd. (India)

aanddindia.in

A&D Sciencetech Taiwan Ltd. (Taiwan)

aandd.com.tw

A&D Instruments Thailand Ltd. (Thailand)

thai.andprecision.com