METAL DETECTOR

Metal Detector
AD-4971 Series

IP65

Capable of detecting metal contaminants in products,
this system contributes to the delivery of
safe products to customers.

A&D ...Clearly a Better Value

A&D Company, Limited

http://www.aandd.jp

Provides high sensitivity detection with simple and easy operation and contributes to the delivery of safe products to your customers.

High sensitivity detection

You can conduct high sensitivity detection with simple and easy operation. The optimal sensitivity setting can be set through the auto sensitivity settings.
The phase tracking function enables minimization of product phase and allows constant high sensitivity inspection.

7 inch color touch panel

The display utilises a high visibility touch panel color LCD with user friendly Graphic User Interface (audio guidance support function included).

Image import from USB

Product images can be quickly uploaded to the metal detector from USB memory, making product identification and upload fast and simple.

USB memory
(sold separately)

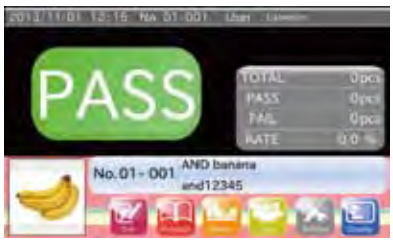
Stores up to 1000 products

Products can be divided into 10 different groups, with up to 100 products able to be recorded within each group.

IP65

Protected from dust and water to IP65 standards. Hygienic design with the entire system washable.

Display examples



Normal display

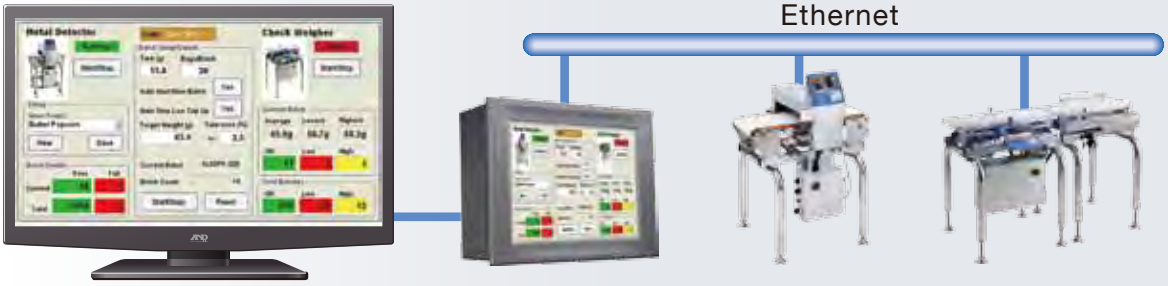
Bar graph display

Lissajous display

Modbus® communication

Equipped with Modbus RTU/Modbus TCP as standard. With Modbus communication, seamless connection can be easily achieved.

Operations such as stopping and starting inspection, collecting data and changing product can all be set from an external device.



LCD screen | Touch panel PC | AD-4971 Metal Detector | AD-4961 Checkweigher

History function

Operation history

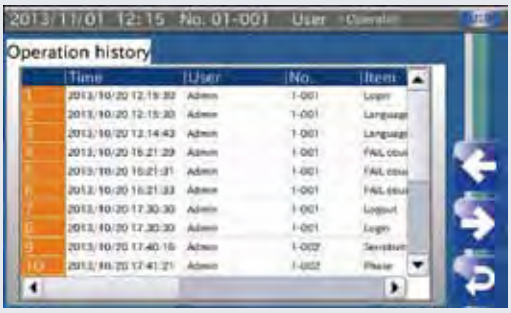
The history of configuration changes can be recorded and displayed.
Suitable for use in HACCP programs along with the inspection history function.

Users can be registered and their scope of permitted operations controlled according to 4 management levels.

- Operator
- Supervisor
- Quality Manager
- Administrator

By assigning each user to the appropriate level of access, inadvertent operations can be avoided. *

* "Operator" is set as the factory default setting.



Inspection history

Inspection results, such as date, time, product codes and inspection results, can be recorded to USB memory during inspection.

Inspection history output example

```
2013/07/31 12:30:00,01-001,PASS
2013/07/31 12:30:05,01-001,PASS
2013/07/31 12:30:10,01-001,PASS
2013/07/31 12:30:15,01-001,PASS
2013/07/31 12:30:20,01-001,FAIL 1
2013/07/31 12:30:25,01-001,PASS
2013/07/31 12:30:30,01-001,FAIL 2
2013/07/31 12:30:35,01-001,PASS
2013/07/31 12:30:40,01-001,PASS
2013/07/31 12:30:45,01-001,PASS
2013/07/31 12:30:50,01-001,FAIL 1
```

Date | Time | Code | Detection result

Data output to USB

All inspection data (csv), operation history (csv), inspection summary data (PDF) and operation check results (PDF) can be outputted to USB memory.

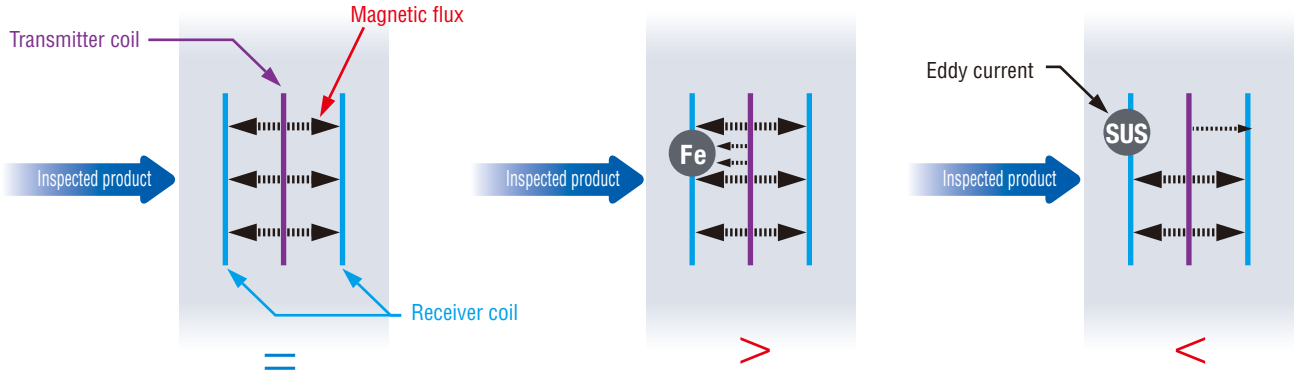
*USB memory is not included. Please prepare separately.

Graph printing to a printer

Inspection results and operation check results can be outputted to a PostScript printer via Ethernet.

Basic principle of metal detection

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 transmitter coil broadcasts a radio frequency signal and generates an electromagnetic field between the transmitter coil and the receiver coils. When no contaminant exists, both receiver coils receive an equal amount of magnetic flux and differential signal output is balanced at zero.
The magnetic flux balance is disturbed and creates a differential output signal when a contaminant passes through the aperture.
Metal detectors detect metal contaminants by processing this differential output signal.



Magnetic flux balance in a steady state | Magnetic flux balance with a magnetic metal | Magnetic flux balance with a non-magnetic metal

Common Specifications for AD-4971 Series

Conveyor belt width	250mm (AD-4971-3510/3517/3525)
	350mm (AD-4971-4517/4525)
Conveyor length	800mm
Transport medium	Urethane belt
Conveyor belt speed	10～60m/min
Display	7inch touch panel color display
Operation method	Touch panel (WVGA), Key switch
Number of recorded items	1000
Communication functions	Modbus TCP / Modbus RTU / TCP/IP(PostScript printer)/
	USB (for USB memory, data storage, image import use)
External input	Non-voltage contact input 4 points
External output	Relay output 8 points
Dust/water resistance specifications	IP65 compliant
Operation temperature/humidity range	0~40℃/Humidity below 85%(with no condensation)
Power supply	Single phase AC100V~240V(+10%,-15%),50/60Hz,100VA
Material	Sensor head: Stainless Steel
	Display: ABS resin
	Conveyor unit: Phenolic resin, stainless steel, aluminum (alumite treatment)
	Control box: ABS resin
	Base unit: Stainless steel

Operating precautions

1. Decide where in the production process to install the metal detector by assessing the risk of metal contamination.
   - For raw materials with a lot of metal contaminants, install a metal detector before processing begins.
   - For products packed in aluminum foil packages, install a metal detector before the packaging process.
   - For frozen products, install a metal detector after freezing. (make sure the product is frozen to the core and is below -18 degrees celcius.)
2. Production flow of horizontally long or oblique orientation is preferable.
3. Keep inspected products as small as possible.
4. Keep product temperature constant.
5. Installing the metal detector in an area with little vibration is advised.
6. Dedicated 100-240V wiring with low noise is advised.
7. Make sure to ground the metal detector.
8. Remove vibrating or shifting metals near the sensor head.
9. Make sure that ground loops are not created by nearby equipment.
10. Please prepare a ϕ4-7mm power cable.

Accessories

AD4971-02

Tower light

IP53 dust and water resistance levels

AD-4971 Series Specifications

AD-4971-3510

Aperture size:
350 mm (W) x 100 mm (H)
(Pass height 80 mm)
Detection sensitivity*
Fe: Ø0.3 mm, SUS: Ø 1.0 mm

AD-4971-3517

Aperture size:
350 mm (W) x 170 mm (H)
(Pass height 150 mm)
Detection sensitivity*
Fe: Ø0.5 mm, SUS: Ø 1.0 mm

AD-4971-3525

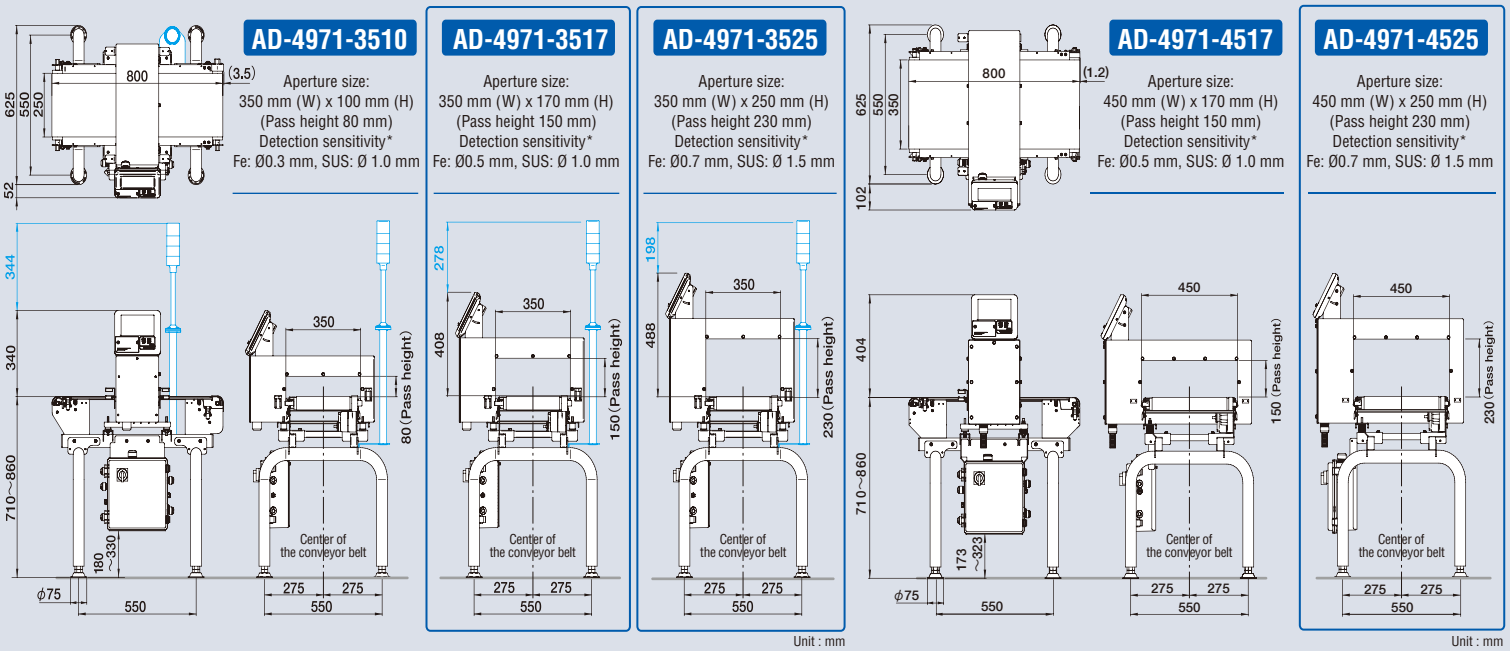
Aperture size:
350 mm (W) x 250 mm (H)
(Pass height 230 mm)
Detection sensitivity*
Fe: Ø0.7 mm, SUS: Ø 1.5 mm

AD-4971-4517

Aperture size:
450 mm (W) x 170 mm (H)
(Pass height 150 mm)
Detection sensitivity*
Fe: Ø0.5 mm, SUS: Ø 1.0 mm

AD-4971-4525

Aperture size:
450 mm (W) x 250 mm (H)
(Pass height 230 mm)
Detection sensitivity*
Fe: Ø0.7 mm, SUS: Ø 1.5 mm



Unit : mm

*Optional tower lights are illustrated in blue.

* Detection sensitivity will change depending on product and environmental conditions. Please prepare a φ4-7mm power cable.

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