

Special sensors for automation



METAL DETECTORS

System 3000

- for jaw crusher
- for conveyer belt monitoring
- for waste separation



ISO 9001
certified

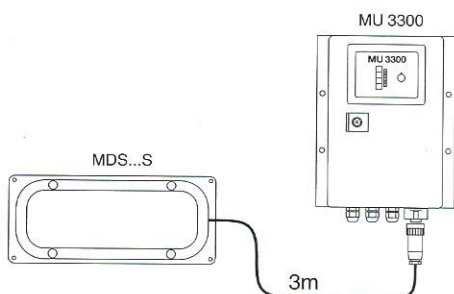
METAL DETECTORS

Technology and Use



The metal detector System 3000 is designed to detect medium size and larger pieces of metal. The system has a very effective means of adjusting sensitivity. When used with the MU 3300 amplifier, it will respond at the highest level of sensitivity to medium size parts like nails, washers, or pieces of flatware. When used with the MDV amplifier, it will respond only to larger pieces of metal like teeth from an excavator bucket, tools, or metal paneling. If not discovered, these items could destroy stone-crushing machines, vibratory equipment, or wood-chipping machines. When used in this manner, the metal detector is suitable for protecting machinery, whereby smaller parts will not interrupt operation of the equipment. It detects metal during bulk material transport by means of contactless measurement.

The System 3000 consists of an amplifier and an inductive detector coil. The amplifier is equipped with an automatic adjustment regulator that ensures reliable operation even when disturbing metal parts are in close proximity to the detector coil. In addition, the adjustment regulator also ensures that only metal parts that are in motion will be detected.

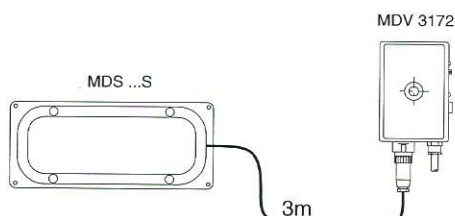


One of the amplifier's tasks is to process the signals emitted by the metal detector coil and convert them into an electronic pulse. The detector coil generates an electromagnetic field. As soon as a piece of metal passes by the coil, it disturbs that field, resulting in a signal that can be evaluated.

The operator adjusts the metal detector's sensitivity on the potentiometer. The coil's sensitivity is dependent on several factors, including: the coil's environment, the electromagnetic characteristics of the material to be detected, and the speed with which the material is transported.

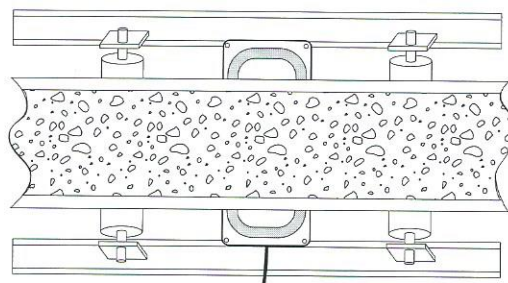
The MU 3300 amplifier has a self-monitoring function. Any error that appears in the system will activate a separate output relay. The unit's electronics are installed in a robust metal housing that has a window for the functional display.

The MDV 3172 amplifier is particularly well suited for use in extremely difficult environments like those that involve dirt, temperature fluctuations, or vibration. This model therefore possesses only the most critical adjustment and display functions.

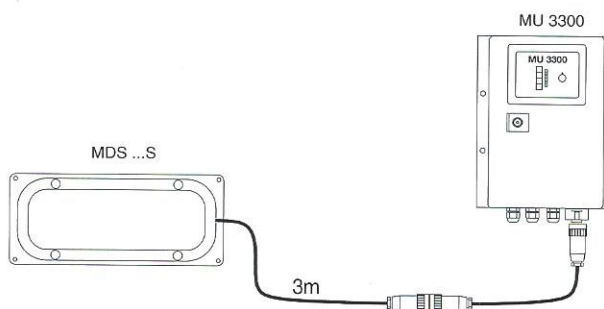


The detector coils are mounted with PVC columns on an aluminium baseplate that shields the coils from electromagnetic disturbances coming from the substructure. The baseplate simultaneously provides stability. Whenever the operator must arrange the detector coil in the presence of iron structural elements, he can use the aluminium plate to shield the coil.

It is preferable to arrange the detector coils underneath the material transport belts in order to minimize the chance of mechanical damage to the coil. The distance to the belt's transport rollers should be at least equal to the width of a coil. In order to most effectively exploit the metal detector's sensitivity, maintain a metal-free area around the detector coil approximately equal to 1.5 to 2 times the coil diameter.



If the coil is installed in a hanging position above the transport belt, always make sure that no structural parts made of iron are too close to the coil and especially that they do not vibrate. If this cannot be avoided, it will be necessary to reduce the sensitivity. This will consequently reduce the detection distance or may have the result that only large pieces of metal will be detected.



The detector coils have a special 3-meter long cable. If the distance between the detector coil and the amplifier is longer than 3 meters, connect these two units with the KS 030 DS... extension cable. The longest permissible distance is 50 meters. In order to ensure that the system will work properly at that distance, we recommend using the EGE special extension cable.

METAL DETECTORS

Amplifier for detector coils



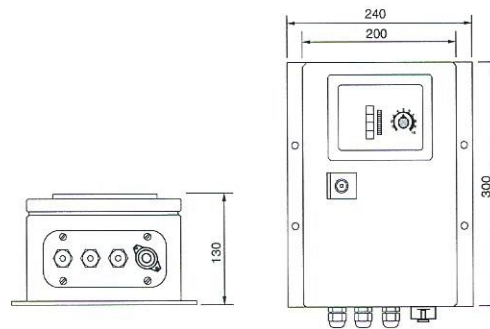
Series MU

- High sensitivity
- Automatic adaption
- Self monitoring function
- Reset function
- 230 / 115 VAC

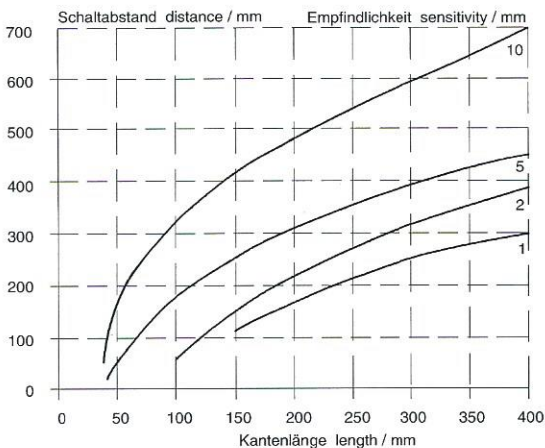


Design MU 3300

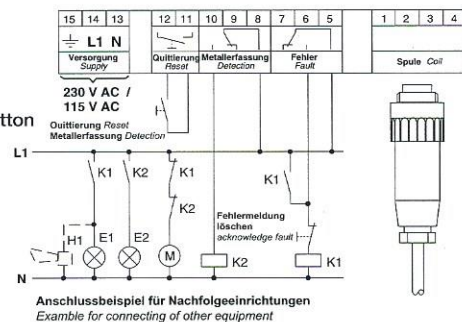
Dimensions



Order-No.	P81012
Type	MU 3300
Supply voltage [V]	230 / 115 AC $\pm 10\%$
Current consumption [mA]	<60
Output	relay / change over contact
Switching voltage [V]	250 AC / 220 DC
Switching current [A]	4
Switching power [VA]	1000 / 60 ($\cos \varphi = 1$)
Ambient temperature [°C]	-20...+60
Time delay [s]	typ. 60
EMC class	A
Protection [EN 60529]	IP 65
Display	LED array
Housing material	steel
Sensitivity diagram (steel cube ST 37)	Connections



- Relay decays when metal is detected
- Metal detection is acknowledged with reset button
- Relay decays on fault condition



Accessories | see page 8.06

METAL DETECTORS

Amplifier for detector coils



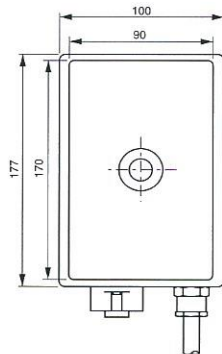
Series MDV

- Automatic regulation adaption
- Waterproof IP 67
- For detector coil with cable plug



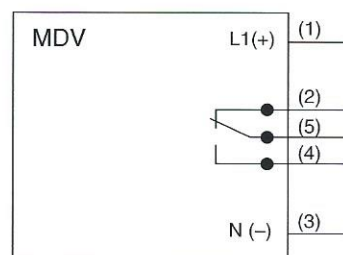
Design MDV

Dimensions



ID-No.	P81010	P81017	P81011
Type	MDV 3172 WR2	MDV 3172 WR1	MDV 3172 GR
Supply voltage [V]	230 AC $\pm 10\%$	115 AC $\pm 10\%$	24 DC $\pm 10\%$
Current consumption [mA]	<20	<60	<100
Output	relay / change over contact		
Switching voltage [V]	250 AC / 220 DC		
Switching current [A]	1 AC / 2 DC		
Switching power [VA]	125 VA / 60 W		
Ambient temperature [°C]	-25...+70		
EMC class	A		
Protection [EN 60529]	IP 67		
Display	LED array		
Housing material	PVC		
Connection	2 m PVC cable 7 x 0.5 mm ²		

Note:
Other output-function
on request



Accessories Central screw M 16x1 (Z00105) is part of delivery

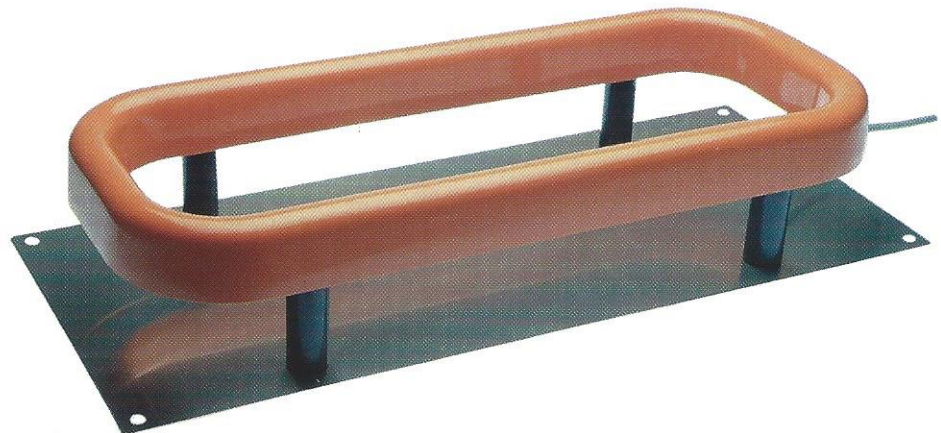
METAL DETECTORS

Detector coils



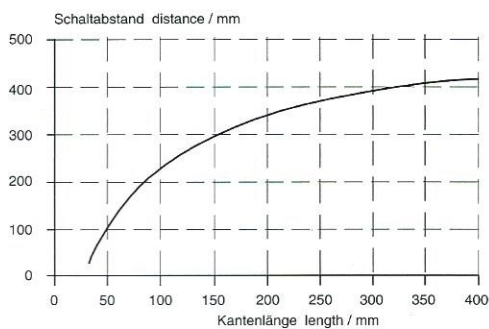
Series MDS

- Designed for outdoor use
- Rugged construction
- Substantially made



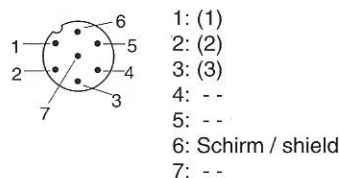
Design	MDS	
Dimensions		
Dimensions L1-L2-L3 [mm]	650-700-670	950-1000-970
ID-No.	P81007	P81009
Type	MDS 3065-S	MDS 3095-S
Ambient temperature [°C]	-25...+70	
Protection [EN 60529]	IP 67	
Housing material	PBT / aluminium plate	
Connection	3 m PUR cable with cable plug	

Sensitivity diagram (steel cube ST 37)



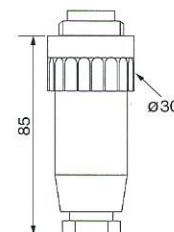
Maximum sensitivity for detector coil MDS 3065 with MDV

plug connection



During the normal use the plugtype connections 4 and 7 have to be short-out

plug K 031



The standard cable length for the connection cable of the detector coil is 3 m. The extension cable type KS031-DS05 has two plugs, which can connected at the amplifier and also at the detector coil. The maximum lengths of the extension cable is 50 m.

ACCESSORIES

Metal detectors



SUPPLY ISOLATION UNIT NTG 251/255

Type	ID-No.	Design
NTG 251	P81030	230 V AC
NTG 255	P81032	115 V AC

The power supply isolation unit is connected between the power supply and the amplifier MDV 3172... It limits the power supply overvoltage and therefore protects the amplifier against overloading. It is used where ever no overvoltage protection is available, where the power supply takes place via an overhead power transmission network, or where high inductive loads, e.g. motors, are directly switched. The power supply cut-off unit acts also as an interface filter. The floating changeover output contact is designed to be connected to a power relay. It is not suitable for high loads.



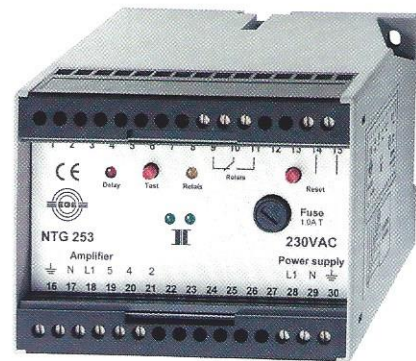
SUPPLY ISOLATION UNIT NTG 253

Type	ID-No.	Design
NTG 253	P81034	230 V AC

The supply isolation unit NTG 253 is a special design. It works only together with the amplifier MDV 80004. The amplifier MDV 80004 has a NC function. During metal detection, the relay decays.

The supply isolation and evaluation NTG 253 has the following additional functions:

- 1. Hold function:** In case of an fault or metal detection the relay output is opened permanently.
- 2. Reset function:** After removal of the fault or after metal detection the metal detector function is activated again either by an external switch or by the built in reset button.
- 3. Supply interrupt function:** When the power supply is interrupted for less than 1 second, the output relay keeps being closed. The hold function is not activated and operation without interruption is assured.

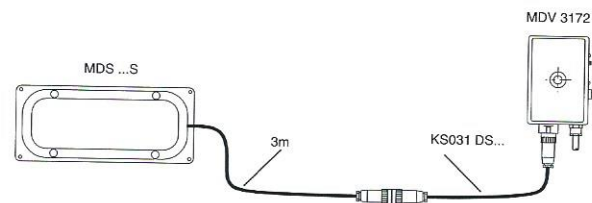


EXTENSIONS CABLE KS031-DS

Type	ID-No.	Design
KS031-DS05	P81051	5 m IP 68
KS031-DS10	P81052	10 m IP 68

The KS031-DS... double-end cable connects in particular the detector coil with an extension cable (watertight) that has on its opposite end a plug for connecting to the MDV... or MU... amplifiers.

An extension up to 50 meters is permissible.



SPECIAL-CABLE KS031

Type	ID-No.	Design
KS031	Z01164	PUR shielded

The KS031 special connection cable is specially designed for use with the Series 3000 of metal detectors. Due to its solid construction and resistant polyurethane sheath, it will not generate any "cable signals" that could initiate an error signal in the amplifier.

Experience Report

The presence of metal pieces in the clay or the starting material was causing problems at a brick factory. The metal pieces causing the problem were large (greater than 8 mm).

The largest problem occurred in the belt conveyors that forward the clay to the brick production area. The company had used three inductive scanners, but they were not the ideal solution because some pieces of metal were not detected. It also happened that the belt would be held up the entire time just because a piece of metal was stuck between the scanners.

The factory managers decided to test an EGE metal detector and were very pleased with the results. In fact, they determined that this metal detector has already paid for itself several times over. In the past, the belt was stopped very often even though it was not necessary.

The photograph shows a belt conveyor that moves clay to the company's pug mill. The mill is very sensitive to larger pieces of metal, which could cause damages of up to 10,000 Euros and result in downtime of up to two days. Their old metal detector detected even small pieces of metal, causing the mill to stop too often. The EGE metal detector system 3000 is particularly well suited to avoiding precisely these types of problems.

The brick producer would be happy to tell others about their experience with the EGE metal detector and can also confirm the detector's 100 % reliability.



Monitoring the presence of metal



**EGE-Elektronik
Spezial-Sensoren GmbH**

Ravensberg 34
D-24214 Gettorf

Tel. +49 4346 / 41580
Fax +49 4346 / 5658

EGE-Elektronik world-wide <http://www.ege-elektronik.com>



EGE-Elektronik ApS
Forstallé 79
DK-6200 Aabenraa
Tel. +45 70207271
Fax +45 70207272



EG-Special Sensorer AB
Box 137
S-51223 Svenljunga
Tel. +46 32512060
Fax +46 32512064



Stork AS
Brynsveien 100
N-1352 Kolsås
Tel. +47 67176400
Fax +47 67176401



Opto-Control OY
Kiitoradantie 11
FIN-01300 Vantaa
Tel. +358 970029660
Fax +358 970029669



Woodhead Connectivity s.a.
57, Rue Jacquard - Z.I.
F-77400 Lagny Sur Marne
Tel. +33 164309136
Fax +33 164309105



Cematic-Electric B.V.
Postbus 777
NL-7550 AT Hengelo
Tel. +31 742433422
Fax +31 742913333



ICM Ital Control Meters Srl
Via della Valle 67
I-20048 Carate Brianza (Mi)
Tel. +39 0362 8052 00
Fax +39 0362 8052 01



Hidrospack, S. L.
Avda. Ricardo Mella, 121
E-36330 Vigo (Pontevedra)
Tel. +34 986295979
Fax +34 986204575



Powelectrics Limited
Unit 46, Kepler, Lichfield Road
Industrial Estate Tamworth
GB-Staffordshire B79 7XE
Tel. +44 1827310666
Fax +44 1827310999



Bachofen AG
Ackerstraße 42
CH-8610 Uster
Tel. +41 19441111
Fax +41 19441233



**Trenka Industriebedarf
Handelsgesellschaft mbH**
Czeija-Nissl Gasse 7
A-1211 Wien
Tel. +43 12782130-0
Fax +43 12782130-41



EMS Electronics Ltd.
Ballycarney, Green Road
IRL, Carlow
Tel. +353 599141768
Fax +353 599137988



**Countpulse Controls
(PTY) LTD.**
P.O.B. 40393
ZA-2022 Cleveland
Tel. +27 116157556
Fax +27 116157513



HITECH Ltd.
1-35-2 Simouma, Setagaya,
JPN Tokyo 154-0002
Tel. +81 35430 2301
Fax +81 35430 2302



Micromax PTY Ltd.
5 Orangegroave Avenue
AUS-Unanderra NSW 2526
Tel. +61 242711300
Fax +61 242718091



**Protek Teknik Elektrik Ticaret
ve Sanayi Ltd. Sti.**
Okçumusa Cad. Kismet Han 94/2
TR-80020 Karaköy/Istanbul
Tel. +90 2122377982
Fax +90 2122354609



Sircon Controls Ltd.
5359 Timberlea Blvd., Unit 36,
Mississauga
CDN-Ontario L4W 4N5
Tel. +1 9052389505
Fax +1 9052388380



YUDEN ELECTRIC CO., LTD
No. 161, Sec. 2. Wen-Huah Rd.,
Panchiao City
Taipai County, Taiwan 22049
Tel. +886 2 2255 3721
Fax +886 2 2255 3723



W. Arthur Fischer Ltd.
11 Te Apunga Place, Mt. Wellington
NZ-Auckland
Tel. +64 92700100
Fax +64 92700900