

# METAL DETECTOR

## METRON 04 ProfiLine

RELIABLE DETECTION OF ALL METALS:

- FERROUS
- STAINLESS STEEL
- ALUMINUM
- COPPER
- BRASS

RELIABLE DETECTION OF FREE OR  
ENCAPSULATED CONTAMINANTS.

Version 08/19

MULTISEGMENTED METAL DETECTOR FOR THE  
INSPECTION OF WEBS (WOVEN AND NON-WOVENS)



### INDUSTRIES

- TEXTILE INDUSTRY
- PLASTICS AND RUBBER  
INDUSTRY

### APPLICATION

- PRODUCT INSPECTION
- MACHINERY PROTECTION:  
CALENDERS  
FABRIC SHREDDING /  
FABRIC CLEANING MACHINES  
FORM PRESSES

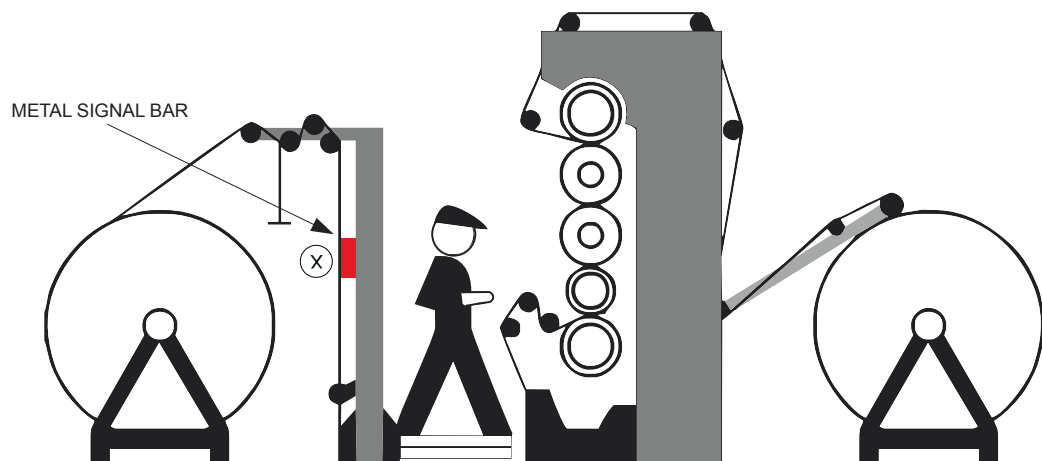
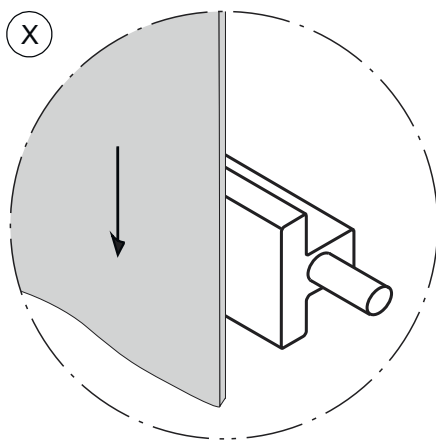
[www.mesutronic.de](http://www.mesutronic.de)

# MESUTRONIC

*Metal Detection made in Germany*

## FEATURES

- MINIMAL "METAL FREE ZONE" REQUIRED FOR INSTALLATION.
- SPECIAL COIL CONFIGURATIONS MAKE THE SYSTEM IMPERVIOUS TO VIBRATIONS OR EXTERNAL EFFECTS.
- ANTI-STATIC SENSOR SURFACE.
- EASY TO OPERATE.
- SELFMONITORING ELECTRONICS.
- EXCELLENT SENSITIVITY TO FERROUS, NON-FERROUS AND STAINLESS STEEL.
- DESIGNED FOR INDUSTRIAL USE.



METAL DETECTOR METRON 05 ProfLine IN USE.

## STANDARD SCOPE OF DELIVERY

- DETECTION COIL
- ELECTRONICS IN HOUSING
- CONNECTING CABLES
- USER MANUAL INCL. INSTALLATION INSTRUCTIONS, WIRING DIAGRAM AND SPARE PARTS LIST IN SEVERAL LANGUAGES
- EU - CONFORMITY DECLARATION



## OPTIONS

- WARNING DEVICE
  - BEACON
  - BUZZER
  - BEACON WITH SIREN
- METAL DETECTOR-TEST SPHERES
  - A METAL SPHERE EMBEDDED IN CREDIT CARD SIZE PLASTIC TO CONFIRM PROPER FUNCTIONING. SEVERAL SIZES AND TYPES (IF DESIRED WITH CERTIFICATE)
- REMOTE RESET BUTTON

## SPECIAL VERSIONS

- HIGH TEMPERATURE VERSION (PRODUCT TEMPERATURE  $\leq 120^{\circ}\text{C}$ )
- HIGH SPEED VERSION FOR CONVEYING SPEEDS UP TO 20 M/S
- UNITS PAINTED IN CUSTOMER SPECIFIC COLOR CODE
- NEUTRAL VERSION FOR OEM CUSTOMERS
- SPECIAL POWER SUPPLY

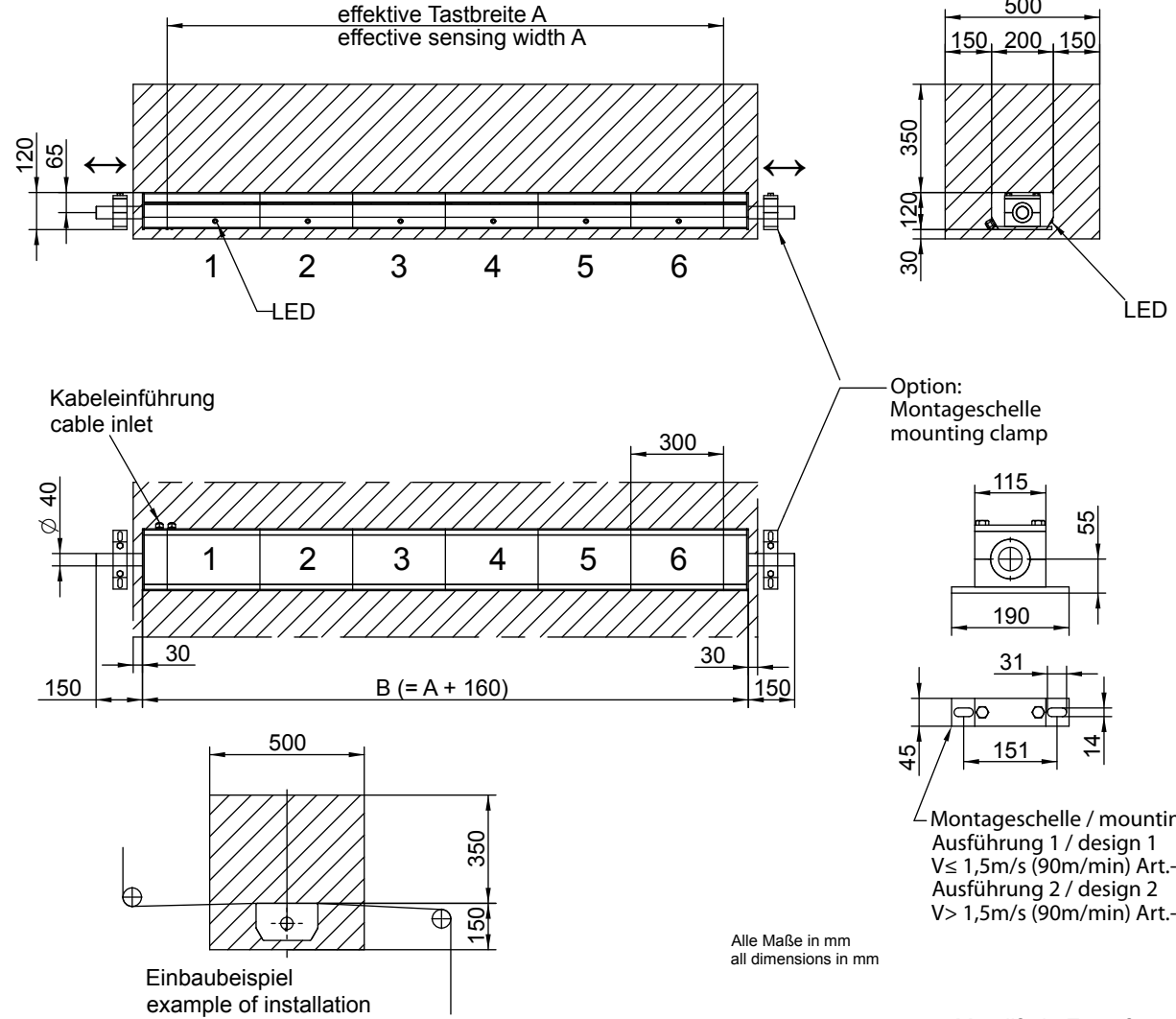


# DIMENSIONS

ALL DIMENSIONS IN MM

Segmentlänge 300 mm

Segmente	B	A
3	1060	900
4	1360	1200
5	1660	1500
6	1960	1800
7	2260	2100
8	2560	2400
9	2860	2700
10	3160	3000
11	3460	3300
12	3760	3600
13	4060	3900
14	4360	4200
15	4660	4500
16	4960	4800
17	5260	5100
18	5560	5400
19	5860	5700
20	6160	6000
21	6460	6300
22	6760	6600
23	7060	6900
24	7360	7200
25	7660	7500
26	7960	7800
27	8260	8100
28	8560	8400
29	8860	8700
30	9160	9000
31	9460	9300
32	9760	9600
33	10060	9900
34	10360	10200
35	10660	10500
36	10960	10800
37	11260	11100
38	11560	11400
39	11860	11700
40	12160	12000



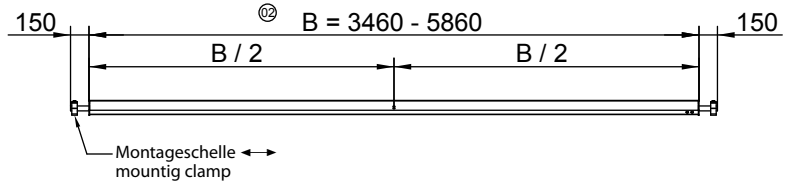
Der Metalldetektor ist innerhalb der "Metallfreien Zone" mittig zu positionieren  
Die errechneten Werte dienen als Orientierungshilfe (Minimalwerte, die gerne überschritten werden dürfen!) und sind durch uns projektbezogen zu bestätigen.  
Für bewegte Metallteile ist die "Metallfreie Zone" zu erweitern, und von uns ebenfalls projektbezogen zu bestätigen!  
THE METAL DETECTOR IS TO BE POSITIONED IN THE CENTER OF THE METAL FREE ZONE. THE VALUES ARE FOR REFERENCE PURPOSES AND SHOULD, IF POSSIBLE, BE INCREASED TO ENSURE OPTIMUM PERFORMANCE. FOR MOVING METAL THE METAL FREE ZONE IS TO BE INCREASED AND TO BE CONFIRMED BY A REPRESENTATIVE.

# DIMENSIONS

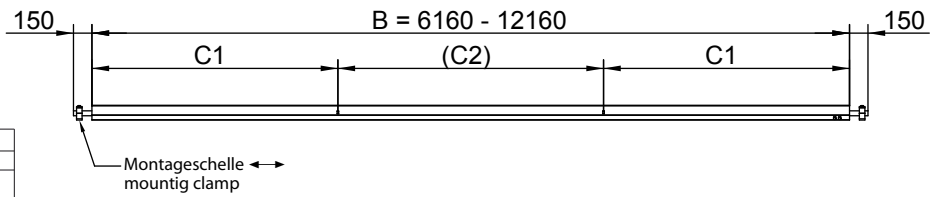
ALL DIMENSIONS IN MM

## Zusatzbefestigung ADDITIONAL SUPPORTS

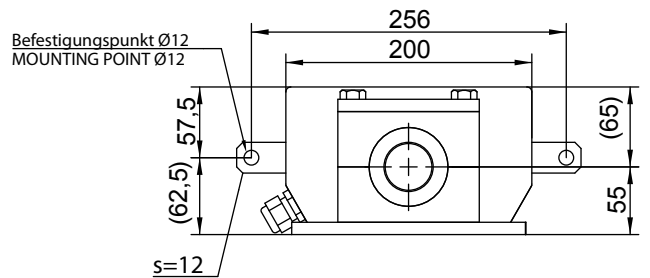
von 11 bis 19 Segmente  
from 11 to 19 Segments



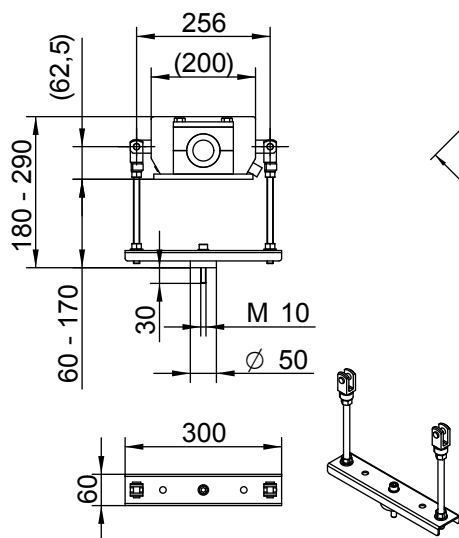
ab 20 Segmente  
20 or more Segments



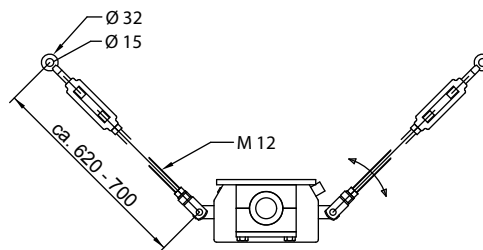
METRON 04 PR			
Segmente	Länge B [mm]	C1 [mm]	C2 [mm]
20	6160	2000	(2160)
21	6460	2000	(2460)
22	6760	2000	(2760)
23	7060	2500	(2060)
24	7360	2500	(2360)
25	7660	2500	(2660)
26	7960	2500	(2960)
27	8260	3000	(2260)
28	8560	3000	(2560)
29	8860	3000	(2860)
30	9160	3250	(2660)
31	9460	3250	(2960)
32	9760	3250	(3260)
33	10060	3500	(3060)
34	10360	3500	(3360)
35	10660	3500	(3660)
36	10960	3500	(3960)
37	11260	3850	(3560)
38	11560	3850	(3860)
39	11860	3850	(4160)
40	12160	3850	(4460)



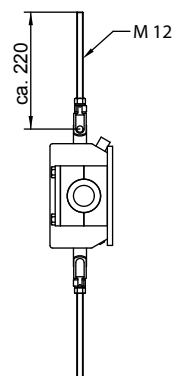
EQUIPMENT 1 - RETAINING YOKE  
ITEM.-NO 350418



EQUIPMENT 2 - SUSPENSION  
ITEM.-NO 350419



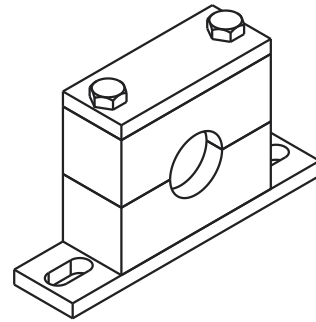
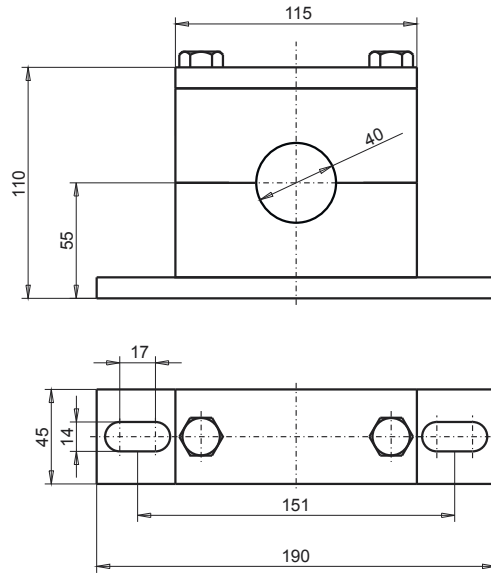
EQUIPMENT 3 - SUSPENSION  
ITEM.-NO 350679



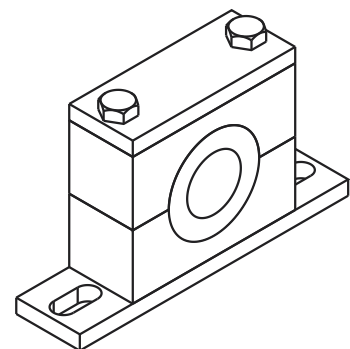
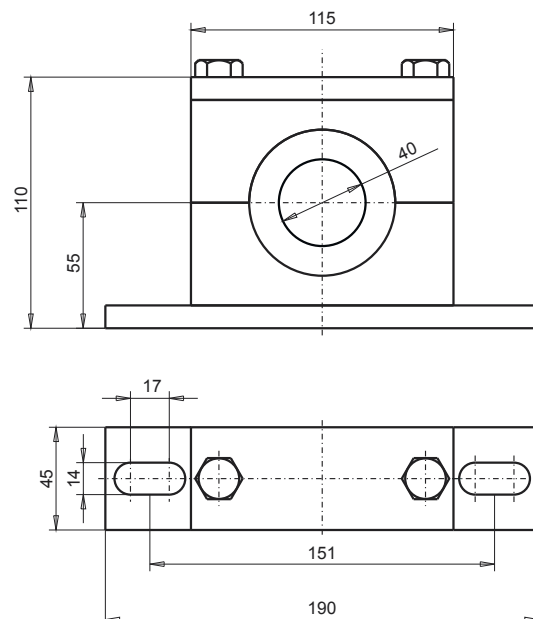
## DIMENSIONS

ALL DIMENSIONS IN MM

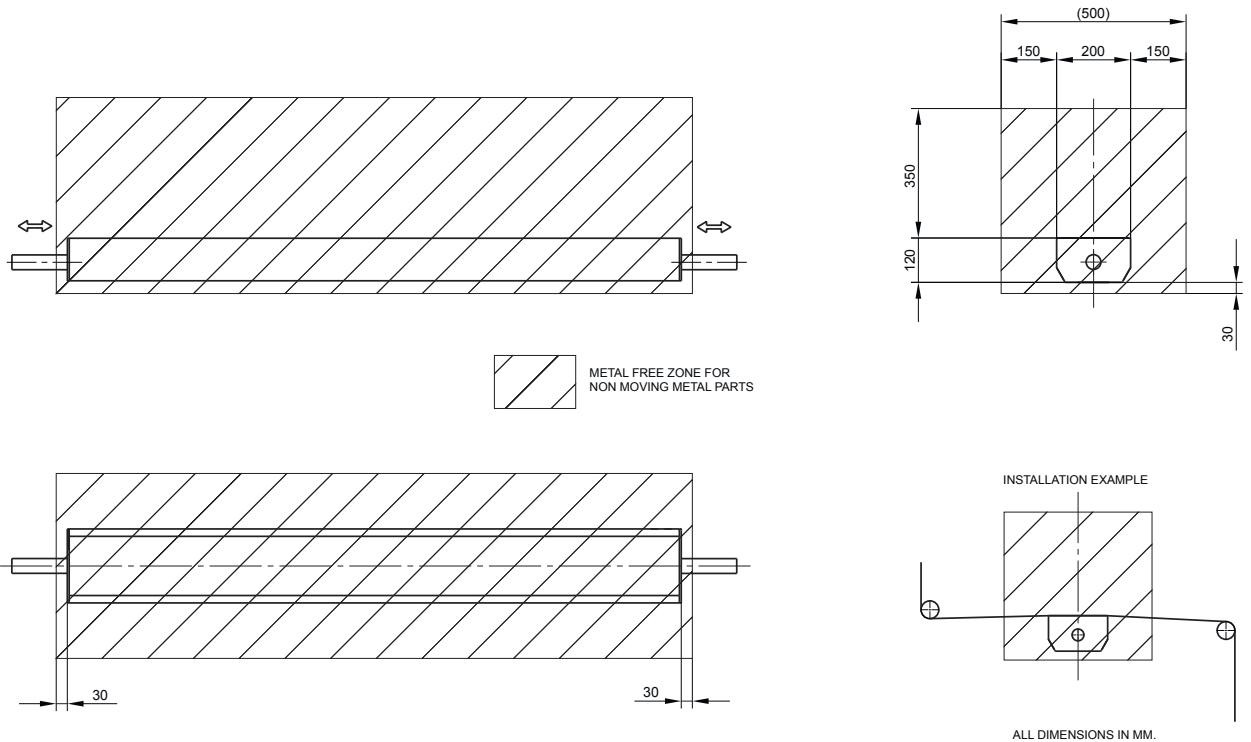
### MOUNTING BRACKETS ProfLine "SLOW" (LOW SPEED, $V = < 90$ M/MIN.)



### MOUNTING BRACKETS ProfLine "FAST" (HIGH SPEED, $V = > 90$ M/MIN.)



### METAL FREE ZONE (MFZ)

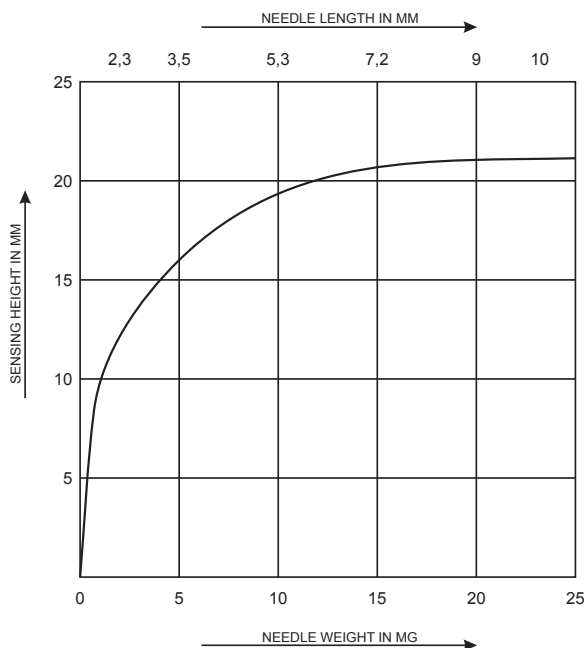


POSITION THE DETECTOR APERTURE IN THE MIDDLE OF THE „METAL FREE ZONE“:  
 THE STATED VALUES ARE TO BE TAKEN AS ORIENTATION VALUES (MINIMUM VALUES WHICH SHOULD BE EXCEEDED)  
 AND HAVE TO BE VERIFIED BY THE MANUFACTURER, DEPENDING ON THE PROJECT.

THE METAL FREE ZONE NEEDS TO BE EXTENDED IN CASE OF MOVING METAL PARTS, AND NEED TO BE VERIFIED BY US FOR THE SPECIFIC PROJECT!

### SENSITIVITY DIAGRAM

THE SENSITIVITY IS DEPENDENT UPON THE DISTANCE BETWEEN THE METAL CONTAMINANT AND THE SENSING SURFACE.  
 THE CLOSER THE METAL IS TO THE SURFACE, THE GREATER THE SENSITIVITY.



TYPICAL SENSITIVITY CURVE FOR A 2,600 MM WIDE DETECTION COIL.

THE SENSITIVITIES STATED IN THE DIAGRAM HAVE BEEN ACHIEVED UNDER PRODUCTION CONDITIONS AND ARE INDICATIVE WITH NORMAL FABRICS. THE MATERIAL WAS CONTAMINATED WITH NEEDLE TIPS OF VARYING LENGTH FOR TEST PURPOSES. DIFFERING RESULTS THAN SHOWN IN THE DIAGRAM ARE POSSIBLE DUE TO THE RELATIVE POSITION "ORIENTATION EFFECT" OF THE NEEDLES TO THE DETECTOR APERTURE. EXTRAORDINARY STRONG PERIPHERAL DISTURBANCES MAY AFFECT THE SENSITIVITY, AS WELL AS ELECTRICALLY CONDUCTIVE FIBERS WHICH CAN CREATE A "PRODUCT EFFECT". IF SAMPLES ARE PROVIDED WE CAN TEST THEM IN OUR R&D FACILITY TO DETERMINE PROJECT SPECIFIC SENSITIVITIES.

TO CALCULATE SENSITIVITY FOR OTHER METALS USE THE FOLLOWING MULTIPLICATION FACTOR.

VA (STAINLESS STEEL) = DIAGRAM VALUE x 1 TO 2  
 (FACTOR DEPENDS ON THE METAL ALLOY)

CU, ALU, BRASS... = DIAGRAM VALUE x 1.2 TO 1.8  
 (FACTOR DEPENDS ON THE METAL TYPE)

## CONTROL UNIT AMD 04 (VERSION 4.1)

ADVANTAGES THAT WILL CONVINCE YOU!

**CAN-BUS- TECHNOLOGY** FOR OPTIMUM RELIABILITY AND EASE OF SERVICE. MINIMAL WIRING BETWEEN THE ELECTRONICS AND THE SENSING COIL, AS WELL AS INTERNALLY IN THE MULTISEGMENT SENSING COIL. THIS TECHNOLOGY INCREASES RELIABILITY. SPACE SAVING SMD TECHNOLOGY GUARANTEES QUALITY AND RELIABILITY. AUTOMATED COMPONENT PLACEMENT ELIMINATES MANUFACTURING ERRORS. EACH MOTHERBOARD IS 100% TESTED AND UNDERGOES A BURN IN AND ARTIFICIAL AGING PRIOR TO INSTALLATION. MESUTRONIC PRODUCTS ARE MANUFACTURED ACCORDING TO CURRENT SAFETY, NATIONAL AND INTERNATIONAL REGULATIONS.

**ELECTRONIC PRODUCT EFFECT SUPPRESSION** GUARANTEES HIGHEST SENSITIVITY. REAL PRODUCT PARAMETER EVALUATION ALLOWS FOR TARGETED ELIMINATION OF INTERFERENCES WHICH ARE CAUSED BY "PRODUCT EFFECT".

**AUTO-SETUP-ROUTINE** WITH INTERFERENCE SIGNAL SUPPRESSION AND AUTOMATIC SENSITIVITY CALIBRATION.

**MULTI FUNCTION FILTER SYSTEM** HIGHLY SELECTIVE DIGITAL FILTER AND DYNAMIC RESPONSE FILTER FOR RELIABILITY IN HARSH INDUSTRIAL ENVIRONMENTS.

**AUTO-BALANCE** AUTOMATICALLY DETECTS AND COMPENSATES FOR ANY CHANGES IN THE SIGNAL DURING NORMAL OPERATION. (E.G. TEMPERATURE VARIATIONS)

**SELFMONITORING** FOR THE CONTINUOUS MONITORING OF THE UNIT. FAULT INDICATION THRU RELAYS AND TEXT DISPLAY.

**TOUCHPAD OPERATED** USER FRIENDLY TOUCHPAD OPERATION. OPERATING ELEMENTS AND DISPLAY ARE SHIELDED AGAINST HUMIDITY AND DUST.



**3 BUTTON TOUCHPAD CONTROL**S OFFER EASY TO USE MENU DRIVEN COMMANDS - MULTIPLE LANGUAGES ARE ALSO AVAILABLE.

**4-LINE BACK-LIT LCD DISPLAY** WITH METAL SIGNAL INDICATION. ADDITIONAL LED INDICATOR LAMPS ARE BUILT IN TO INDICATE METAL DETECTION OR FAULTS.

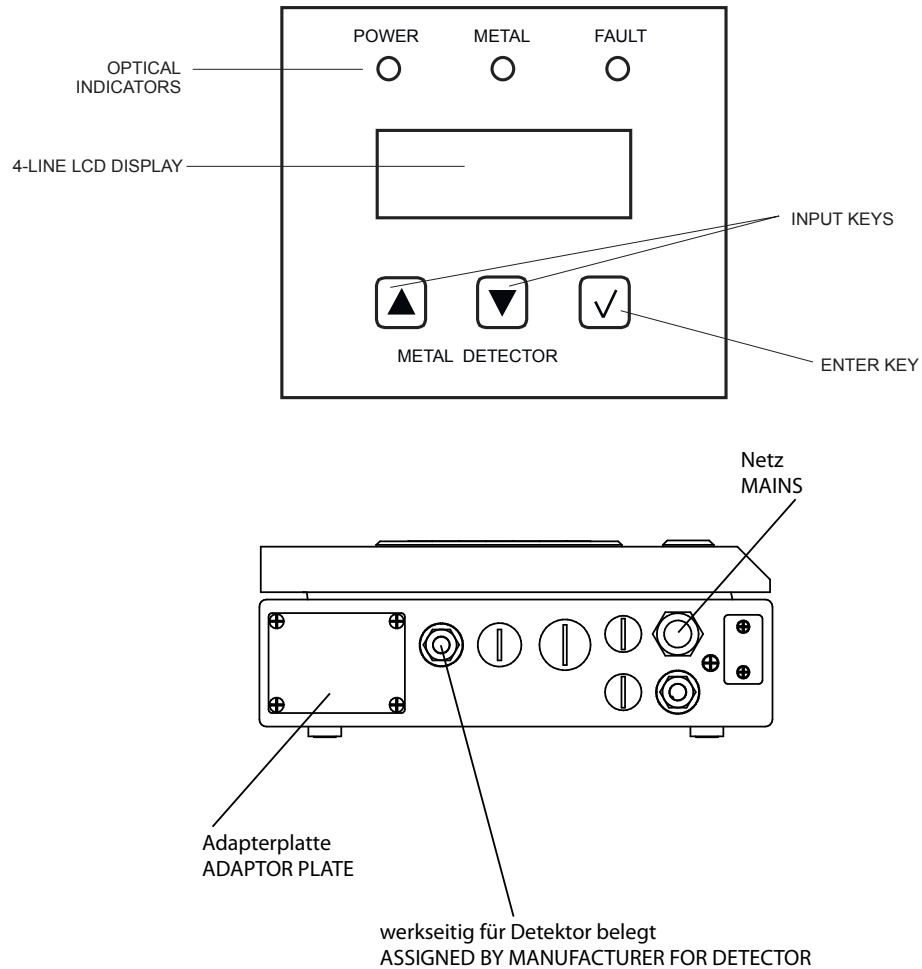
**3-LEVEL PASSWORD** PROTECTION WITH INTER-CHANGEABLE CODE NUMBERS.

**PERMANENT DATA STORAGE** PERMANENT STORAGE OF OPERATING DATA EVEN DURING LONG POWER OUTAGES SAFEGUARDS AGAINST LOSS OF PRODUCTION. TIME DEPENDENT PARAMETERS SUCH AS METAL SIGNAL DELAY OR SIGNAL TIME ARE ADJUSTED IN REAL TIME. INPUT FOR LINE OR UNIT IDENTIFICATION DATA IS ALSO POSSIBLE.

**UNIVERSAL USE!** ALL INPUTS AND OUTPUTS ARE ADJUSTABLE AS REQUIRED BY THE PROJECT OR CUSTOMER. THE ELECTRONICS CAN BE USED TO REGULATE OTHER DEVICES AS WELL. THE STANDARD PROGRAMMING ALLOWS FOR CONNECTION OF A SECOND RESET WHICH RESTS THE ACTIVE 24V OUTPUT WHICH POWERS, FOR EXAMPLE, AN ACOUSTIC "METAL SIGNAL" DEVICE. AFTER THE METAL PARTICLE WAS FOUND AND REMOVED, THE OPERATOR PUSHES RESET 1, WHICH RESETS ALL OUTPUTS AND STARTS PRODUCTION AGAIN. OR THE METAL DETECTOR MAYBE SWITCHED ON OR OFF WITH AN EXTERNAL 24 V SIGNAL. WE OFFER AN INFINITY OF POSSIBILITIES TO ALLOW OUR CUSTOMER THE FREEDOM TO CHOOSE.

**SERIAL DATA COMMUNICATION** VIA AN RS 232, 422, 485 TO TRANSMIT DATA TO A LOCAL OR CENTRALIZED PRINTER. (MAXIMUM CABLE LENGTH OF UP TO 1.2 KM DEPENDING ON SERIAL CABLE).

## CONTROLS

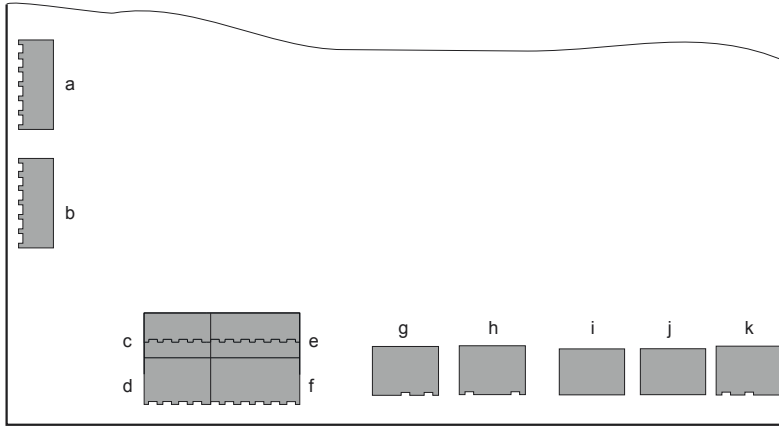


## TECHNICAL DATA

<b>POWER SUPPLY:</b>	<b>100 V - 240 V AC, 50 / 60 HZ</b>
<b>CURRENT CONSUMPTION:</b>	<b>MAX. 0,75 A</b>
<b>FUSE (OPERATING UNIT):</b>	<b>1,6 A (SLOW BLOW)</b>
<b>FUSE (MAINS ELECTRONIC CIRCUITRY):</b>	<b>2,5 A (SLOW BLOW)</b>
<b>TYPE OF PROTECTION:</b>	<b>IP 54</b>
<b>WORKING TEMPERATURE RANGE:</b>	<b>- 10° C TO + 50° C</b>
<b>STORAGE TEMPERATURE RANGE:</b>	<b>- 10° C TO + 60° C</b>
<b>PRODUCT TEMPERATURE:</b>	<b>MAX. + 50° C</b>
<b>RELATIVE HUMIDITY:</b>	<b>0 TO 95 % (WITHOUT CONDENSATION)</b>
<b>CONVEYING SPEED (STANDARD VERSION):</b>	<b>0,005 M/S TO 10 M/S</b>
<b>CONVEYING SPEED (HIGH SPEED VERSION):</b>	<b>0,042 M/S TO 20 M/S</b>
<b>MATERIALS:</b>	<b>DETECTOR HEAD AND CONTROL BOX MADE OF CARBON STEEL, PAINTED (RAL 3027 = RASPBERRY RED) SENSING AREAS MADE OF BETONOL (ANTISTATIC) SEARCH COIL / CONTROL CABINET = 2 M LONG</b>
<b>INTERCONNECTING CABLES:</b>	<b>APP. 1, 8 M CABLE WITH PLUG (TWO POLE AND EARTHING PIN) (US-VERSION WITH US-STANDARD PLUG)</b>

OTHER VERSIONS AVAILABLE

## INPUTS AND OUTPUTS



(b) CAN-BUS + (j) POWER OUTPUT  
(SEARCH COIL) USED BY THE MANUFACTURER!

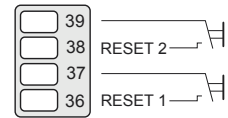
1) STANDARD PROGRAMMING  
INPUTS AND OUTPUTS CAN BE PROGRAMMED AS REQUIRED.

### (a) SERIAL DIGITAL INTERFACE

- RS 232, 485 (CAN BE SWITCHED) OR 422 (UNLESS OTHERWISE SPECIFIED, RS 232 PRE-PROGRAMMED)

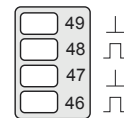
### (c) RESET

- RESET 1 (MAIN-RESET): CONNECT ONLY FLOATING CONTACTS
- RESET 2 (ALARM-RESET): CONNECT ONLY FLOATING CONTACTS



### (d) ACTIV-OUTPUTS <sup>1)</sup>

- ACTIVE-OUTPUT 1: SWITCHES WHEN METAL IS DETECTED  
NORMAL OPERATION 0 V  
IF METAL IS DETECTED + 24 V  
  
PULSE DURATION (RESET BY HAND): PERMANENT SIGNAL UNTIL RESET BUTTON 1 IS PRESSED  
  
PULSE DURATION (AUTO-RESET): 0,1 SEC. TO 30 SEC. (ADJUSTABLE)  
DELAY TIME (AUTO-RESET): 0,0 SEC. TO 30 SEC. (ADJUSTABLE)
- ACTIVE-OUTPUT 2: SWITCHES WHEN METAL IS DETECTED  
NORMAL OPERATION 0 V  
IF METAL IS DETECTED + 24 V  
  
PULSE DURATION (RESET BY HAND): PERMANENT SIGNAL UNTIL RESET BUTTON 2 OR 1 IS PRESSED  
  
PULSE DURATION (AUTO-RESET): 0,1 SEC. TO 30 SEC. (ADJUSTABLE)  
DELAY TIME (AUTO-RESET): 0,0 SEC. TO 30 SEC. (ADJUSTABLE)



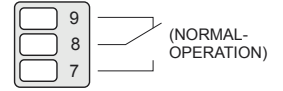
### (c) + (f) CONTROL INPUTS <sup>1)</sup>

- 3 – INDIVIDUALLY PROGRAMMABLE BY THE FACTORY (PLEASE CONTACT OUR APPLICATION TEAM)

## INPUTS AND OUTPUTS

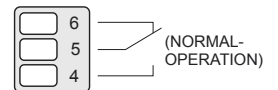
### **g** RELAY 2 (FAULT) <sup>1)</sup>

- FLOATING RELAY-CHANGE OVER CONTACT ACTUATED BY SELF MONITORING SYSTEM  
MAX. CONTACT LOAD : 250 V / 3 A



### **h** RELAY 1 (METAL) <sup>1)</sup>

- FLOATING RELAY-CHANGE OVER CONTACT ACTUATED WHEN METAL IS DETECTED  
MAX. CONTACT LOAD: 250 V / 3 A  
PULSE DURATION (RESET BY HAND): PERMANENT SIGNAL UNTIL RESET  
BUTTON 1 IS PRESSED  
PULSE DURATION (AUTO-RESET): 0,1 SEC. TO 30 SEC. (ADJUSTABLE)  
DELAY TIME: 0,0 SEC. TO 30 SEC. (ADJUSTABLE)



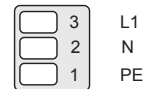
### **i** POWER OUTPUT

- VOLTAGE IS IDENTICAL TO THE POWER INPUT VOLTAGE



### **k** POWER INPUT

- 100 - 240 VAC , 50/60 HZ  
OTHER VERSIONS AVAILABLE



THE MESUTRONIC GERÄTEBAU GMBH IS A GLOBALLY ACTIVE COMPANY IN THE FIELD OF INDUSTRIAL METAL DETECTION TECHNOLOGY WITH HEADQUARTERS IN GERMANY.

A TEAM OF SPECIALISTS FOCUSES FOR DECADES SUCCESSFULLY ON THE DEVELOPMENT, MANUFACTURING AND DISTRIBUTION OF ELECTRONIC METAL DETECTORS AND SEPARATORS FOR ALL INDUSTRIES. DAILY WE TAKE UP THE CHALLENGE TO SOLVE INDIVIDUAL PROBLEMS RELIABLE AND TAILORED TO THE CUSTOMER. WHERE OTHERS SAID "NO" LONG AGO OUR TASK JUST STARTS. TRUE TO THE MOTTO: „NOTHING IS IMPOSSIBLE.“

THOUSANDS OF DETECTOR COILS, VARIOUS TRANSMITTERS AND A VARIETY OF EJECTORS AND MECHANICAL COMPONENTS CAN BE COMBINED DEPENDING ON THE TASK AND SERVE AS A BASIS FOR PRACTICAL AND FLEXIBLE SOLUTIONS. THROUGH YEARS OF CLOSE COLLABORATION WITH OUR CUSTOMERS FROM VARIOUS INDUSTRIES, WE HAVE SHAPED OUR EQUIPMENT PROGRAM CONTINUAL WITH THE RESULT THAT ALL MESUTRONIC PRODUCTS ARE NOW LEADING THE WAY IN PERFORMANCE, QUALITY, RELIABILITY AND HANDLING.

IN ADDITION, OUR WORLDWIDE SALES AND SERVICE NETWORK ENSURES THAT ON ALL CONTINENTS OF THE WORLD A PROFESSIONAL COMPETENT CONTACT PERSON IS AVAILABLE FOR YOU.

>> TECHNOLOGY THAT ENHANCES  
YOUR PRODUCTION. <<

A LOW-COST ALTERNATIVE:  
THE NOT-SEGMENTED MODEL METRON 05 PR



# MESUTRONIC

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