

**TECHNICAL DATA SHEET**  
**METAL DETECTOR**  
**METRON® 05 D**

RELIABLE DETECTION OF **ALL** METALS (ENCAPSULATED OR FREE)

- FERROUS & NON-FERROUS   ● NON-MAGNETIC STEEL   ● ALUMINIUM   ● COPPER   ● BRASS   .....

DIVISIBLE TUNNEL TYPE DETECTOR FOR INSTALLATION  
IN BELT CONVEYORS, VIBRATORY CHUTES, ...



**INDUSTRIES**

- TEXTILE INDUSTRY
- QUARRY INDUSTRY
- TIMBER INDUSTRY
- RUBBER AND PLASTIC INDUSTRY
- RECYCLING INDUSTRY

**APPLICATION**

- PRODUCT INSPECTION
- MACHINERY PROTECTION  
GRINDERS, CRUSHERS, MILLS  
CHIPPERS  
CALENDARS  
BANDSAWS  
AND MORE

## SCOPE OF DELIVERY

- DETECTOR HEAD
- CONTROL UNIT
- INTERCONNECTING CABLES
- INSTALLATION ACCESSORIES
- MANUAL, INSTALLATION INSTRUCTIONS, WIRING DIAGRAM AND PARTSLIST
- EC-CONFORMITY DECLARATION

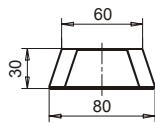
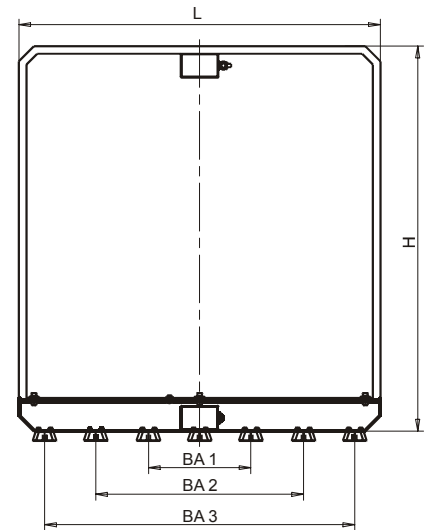
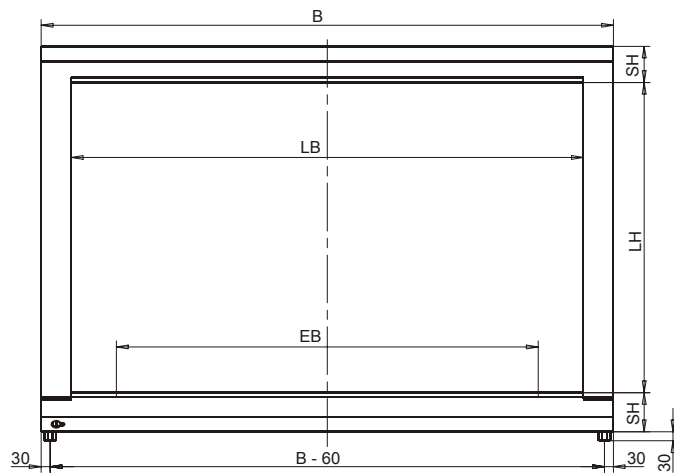
## OPTIONAL EQUIPMENT

- WARNING DEVICE
  - BEACON
  - BUZZER
  - BEACON WITH SIREN
- REMOTE RESET DEVICE
- CONVEYOR CONTROLS
  - CONVEYOR REVERSE
  - .....
- VISUAL MARKERS
  - INK JET SYSTEM
  - BAG DROP SYSTEM
  - .....
- REJECT SYSTEMS
  - PUSHER SYSTEMS
  - FLAP SYSTEMS
  - CUT-OUT DEVICE
  - .....
- CUSTOMIZED SOFTWARE SOLUTIONS
  - SPECIAL CONTROL OPERATIONS
  - DATA TRANSFER
- POWER CONDITIONER
  - MAGNETIC VOLTAGE STABILIZER
  - ELECTRONIC VOLTAGE STABILIZER
- TURN KEY SYSTEMS CONSISTING OF CONVEYOR - DETECTOR - REJECT

## OTHER OPTIONS

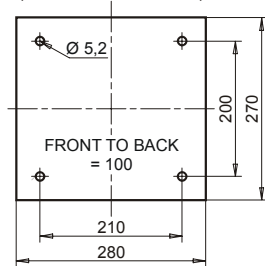
- DETECTOR HEAD AND CONTROL BOX IN STAINLESS STEEL
- EXPLOSION PROOF
- PROTECTION TYPE IP65, NEMA 4
- CUSTOM PAINT
- SPECIAL POWER SUPPLY
- HIGH TEMPERATURE
- ALUTRON (NO FALSE TRIPPING BY METALIC FILMS SUCH AS CUP LIDS, .....)  
PATENT NO. 4342826

## DIMENSIONS



DETECTOR SUPPORT LEGS - SCREW THREAD M12  
MAX. DEPTH OF THREAD 18 MM  
MATERIAL PE (POLYETHYLENE)

CONTROL - BOX  
(DRILLING PATTERN)

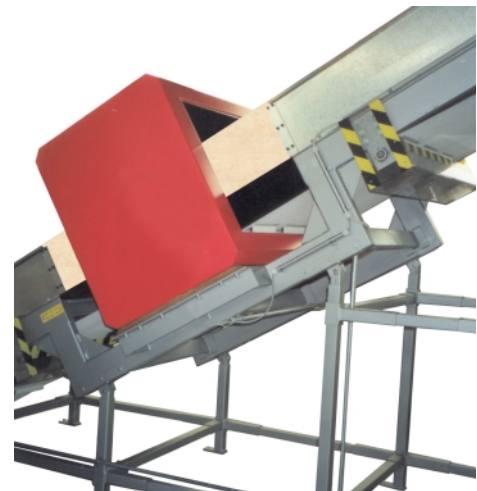
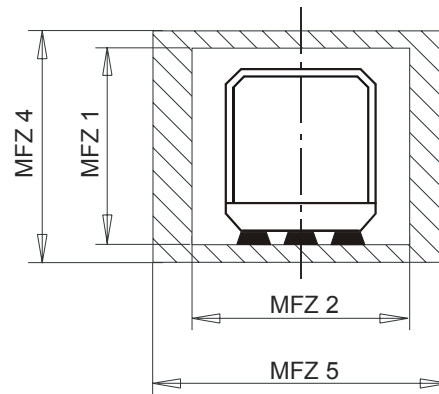
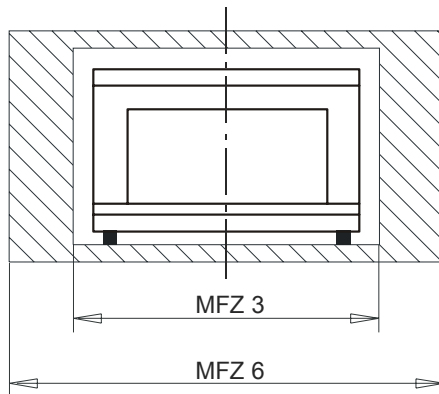


B (DETECTOR WIDTH) = LB + 200  
EB (SENSING AREA)

LH	LB	SH	L	BA 1	BA 2	BA 3			MFZ
APERTURE HEIGHT	APERTURE WIDTH	TOP/BOTTOM THICKNESS	DETECTOR LENGTH	DISTANCE BETWEEN BORE CENTRES			NUMBER OF THREADED BORE HOLES IN TOTAL	COIL SUPPORT CENTERED	METAL FREE ZONE FOR NON-MOVING PARTS
TO 200	EB + 220	115	400	230			6	YES	1000
TO 300	EB + 220	115	500	110	330		8	NO	1100
TO 400	EB + 240	115	600	215	430		10	YES	1300
TO 500	EB + 240	115	700	265	530		10	YES	1400
TO 600	EB + 240	115	750	290	580		10	YES	1500
TO 700	EB + 280	115	800	150	390	630	12	NO	1600
TO 800	EB + 280	120	850	150	420	680	12	NO	1700
TO 900	EB + 280	120	900	150	440	730	12	NO	1800
TO 1000	EB + 280	120	1000	280	560	830	14	YES	1800
> 1000	EB + 300	120	1200	340	690	1030	14	YES	ON INQUIRY

ALL DIMENSIONS IN MM.

## METAL FREE ZONE (MFZ)



CALCULATING THE „METAL FREE ZONE“ ...

### FOR NON-MOVING METALS

MFZ 1 =  $H + 60 \text{ MM}$   
 MFZ 2<sup>1)</sup> =  $L + LH$   
 MFZ 3 =  $LB + 300 \text{ MM}$

### FOR MOVING METALS

MFZ 4 =  $4 LH$   
 MFZ 5<sup>1)</sup> =  $L + 3,5 LH$   
 MFZ 6 =  $LB + 1000 \text{ MM}$

<sup>1)</sup> POSITION THE DETECTOR APERTURE IN THE MIDDLE OF THE „METAL FREE ZONE“  
 FOR THE OTHER DIMENSIONS: POSITION THE DETECTOR SYMMETRICAL IN RELATION TO THE APERTURE.

THE CALCULATED DIMENSIONS 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. MAKE THE „METAL FREE“ ZONE AS LARGE AS POSSIBLE. „NON-MOVING“ METALS ARE CONVEYOR FRAMES AND COIL SUPPORTS. ( BUT NOT THE TRAVERSE CONNECTIONS BETWEEN SUCH EQUIPMENT!)

MOVING METALS ARE DIVERTER AND DRIVE ROLLERS OR FOR EXAMPLE THE AXIS OF A REJECT PUSHER.

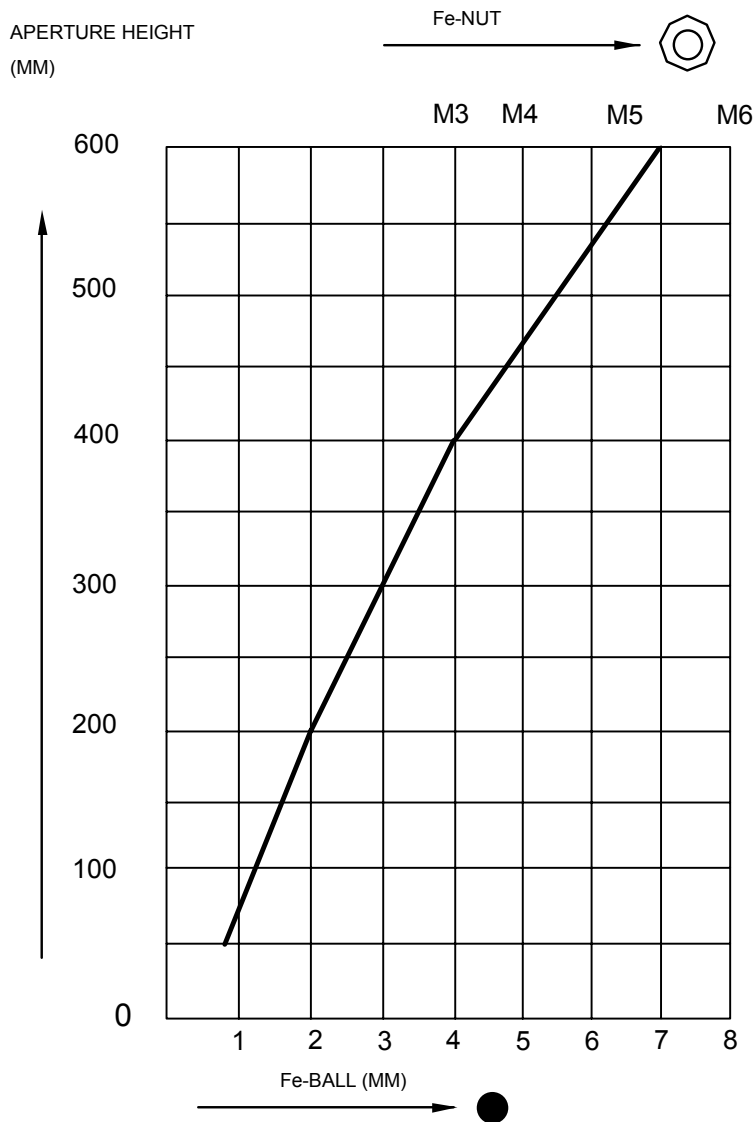
PAY PARTICULAR ATTENTION TO MOVING GATES AND MACHINES OR MACHINE PARTS WHICH CHANGE THEIR DISTANCE TO THE METAL DETECTOR OR WHICH MOVE IN THE VICINITY OF THE APERTURE.

IF THE METAL FREE ZONE CANNOT BE MAINTAINED DUE TO SPACE RESTRICTIONS FALSE REJECTS AND OR REDUCED SENSITIVITY CAN BE EXPECTED.

IN ADDITION, PLEASE OBSERVE OUR „ HINTS FOR THE INSTALLATION OF SEARCH COILS“

## SENSITIVITY DIAGRAM

VALID IF  $LB \leq 1,5 \times LH$



THE SENSITIVITY DEPENDS ON THE APERTURE SIZE I.E. THE SMALLER THE APERTURE HEIGHT THE GREATER THE SENSITIVITY.

THE SENSITIVITIES SHOWN IN THE ADJACENT DIAGRAM WERE ACHIEVED IN THE APERTURE CENTRE UNDER SIMULATED PROCESS CONDITIONS - POSSIBLE PRODUCT EFFECTS HAVE NOT BEEN CONSIDERED.

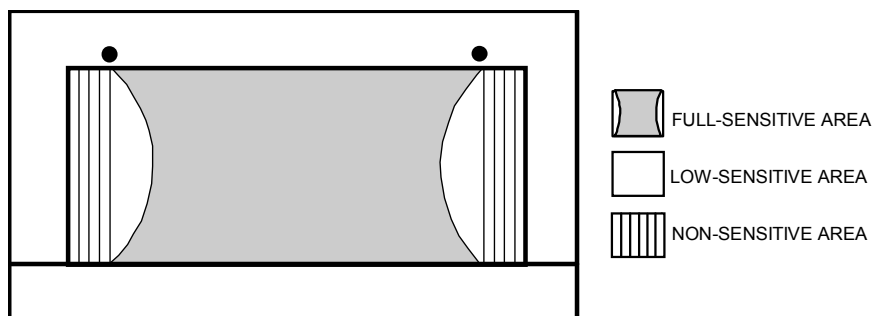
IF YOU SEND US SOME PRODUCT SAMPLES, WE WOULD BE PLEASED TO DO A TEST AND QUOTE THE BEST SENSITIVITY.

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

VA (STAINLESS STEEL) = FE-BALL X 1 TO 2  
(FACTOR DEPENDS ON THE METAL ALLOY)

CU, ALU, BRASS... = FE-BALL X 1.4 TO 1.6  
(FACTOR DEPENDS ON THE METAL TYPE)

## SENSITIVITY DISTRIBUTION



## CONTROL UNIT AMD 05 (VERSION 5.0)

**SINGLE BOARD DESIGN** WITH BUILT IN REGULATED POWER SUPPLY FOR RELIABLE PERFORMANCE AND EASE OF SERVICE.

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

**MULTI-FILTERSYSTEM** USING DIGITAL FILTRATION FOR MAXIMUM STABILITY IN HARSH ENVIRONMENTS.

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

**SELF MONITORING SYSTEM** ENSURES ALL COMPONENTS ARE FUNCTIONING PROPERLY. IN CASE OF A FAULT, RELAY OUTPUTS ARE AVAILABLE AS WELL AS A ALPHA-NUMERIC DISPLAY ON SELECT MODELS.

**NARROW DETECTION ZONE** PROVIDES AN ACCURATE LOCATION OF THE METALLIC PARTICLE IN THE DETECTION FIELD ALLOWING PRECISE SEPARATION.

**TOUCHPAD CONTROLS** MODERN DESIGN. RUGGED TOUCHSCREEN FOIL WITH ERGONOMIC CONTROLS.

**4 BUTTON TOUCHPAD CONTROLS** SUPPORTED BY EASY TO UNDERSTAND MENUS FAST ACCESS TO ALL OPERATING PARAMETERS. USER SELECTABLE DIALOG LANGUAGE.

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

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

**METAL COUNTER** CAN BE DISPLAYED ON THE LCD SCREEN OR INTERFACED WITH A PRINTER OVER A SERIAL INTERFACE.



**PRODUCT STORAGE MEMORY BACKUP** FOR UP TO 6 INDIVIDUAL PRODUCTS. EACH PRODUCT HAS A COMPLETE SET OF ADJUSTMENT DATA ASSIGNED, SUCH AS SENSITIVITY, REJECT TIME ETC. THE DISPLAY OF TIME RELEVANT DATA IS IN REAL-TIME. INDIVIDUAL PRODUCT NAMES CAN BE STORED AS WELL.

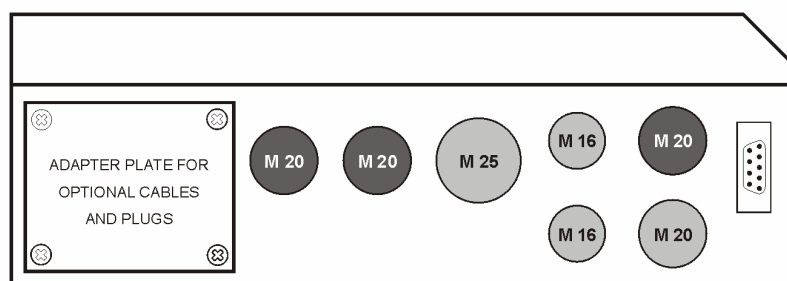
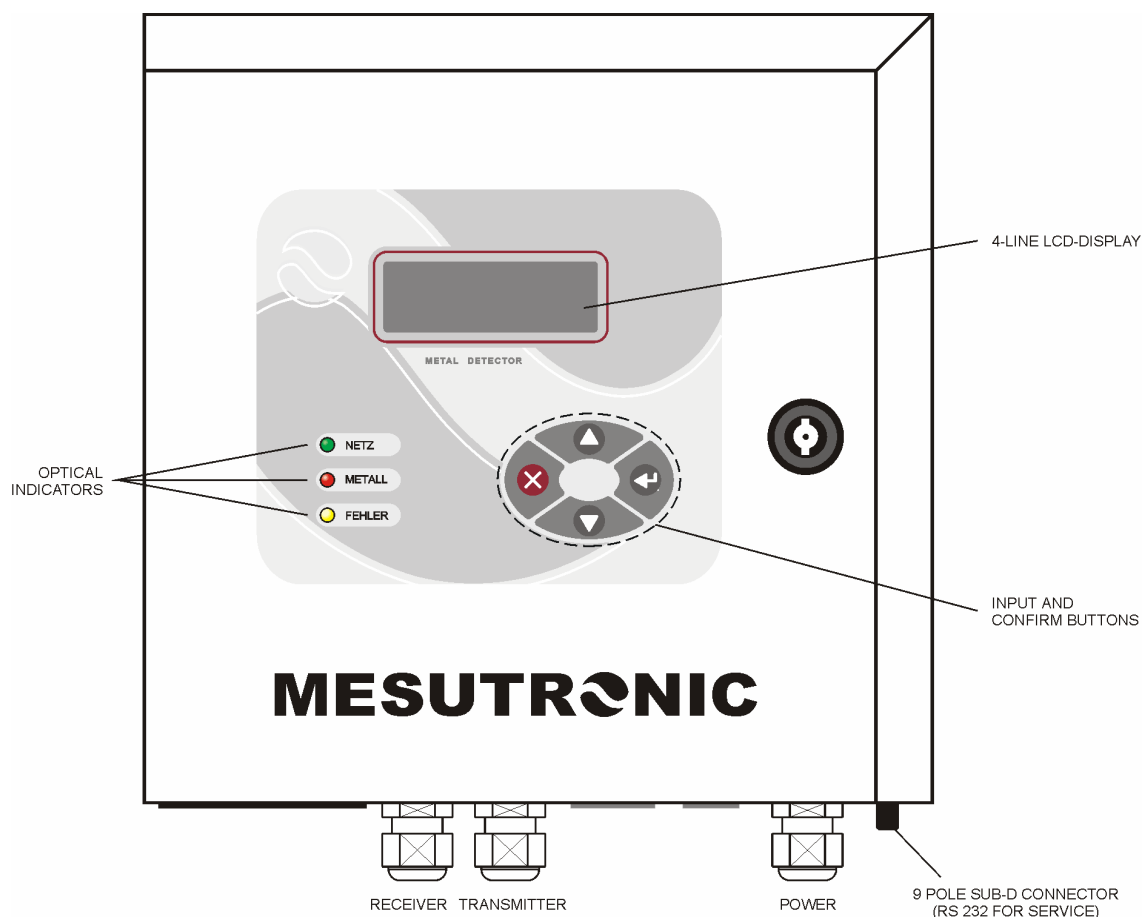
### **METAL DETECTOR NETWORK AND REMOTE SERVICE**

EVERYTHING IS DO-ABLE! SEVERAL OPTIONAL SOFTWARE-PACKAGES ARE AVAILABLE EXAMPLE: WITH THE BUILT-IN CAN-BUS-DATAPORT A NETWORK OF UP TO 63 METAL DETECTORS / SEPARATORS CAN BE OPERATED. THE UNITS CAN THEN BE REMOTE CONTROLLED AND OPERATED VIA A CENTRAL PC. ALSO REMOTE DIAGNOSIS, PARAMETER CHANGE AND SOFTWARE UPDATES VIA MODEM ARE POSSIBLE.

**SERIAL DATA PORTS** FOR DIFFERENT TASKS. THE DETECTOR IS EQUIPPED WITH 3 SERIAL DATA PORTS. ONE OF THE PORTS (RS 232) IS RESERVED FOR FACTORY SERVICE (PRODUCT DATA PROTECTION, LOCAL SOFTWARE UPDATES ETC.) THE OTHER 2 PORTS ARE AVAILABLE FOR PRINTERS AND SUCH. THE PROTOCOL LAYOUT CONFORMS TO ISO 9000 AND HACCP GUIDELINES. BI-DIRECTIONAL DATA COMMUNICATION WITH CUSTOMER'S SPS OR PC SYSTEMS IS AVAILABLE. (OPTIONAL SOFTWARE PACKAGE)

**QUALITY** SMD (SURFACE MOUNTED DEVICES) HAVE BEEN USED IN THE PRODUCTION OF THE CONTROLS. THEY NOT ONLY OFFER A COMPACT DESIGN, BUT ALSO PROVIDE A HIGHER QUALITY AND MORE ROBUST PERFORMANCE UNDER HARSH CONDITIONS. ALL MESUTRONIC PRODUCTS MEET THE REQUIREMENT OF EN, DIN, VDI/VDE, UVV AND CE REGULATIONS.

## CONTROLS



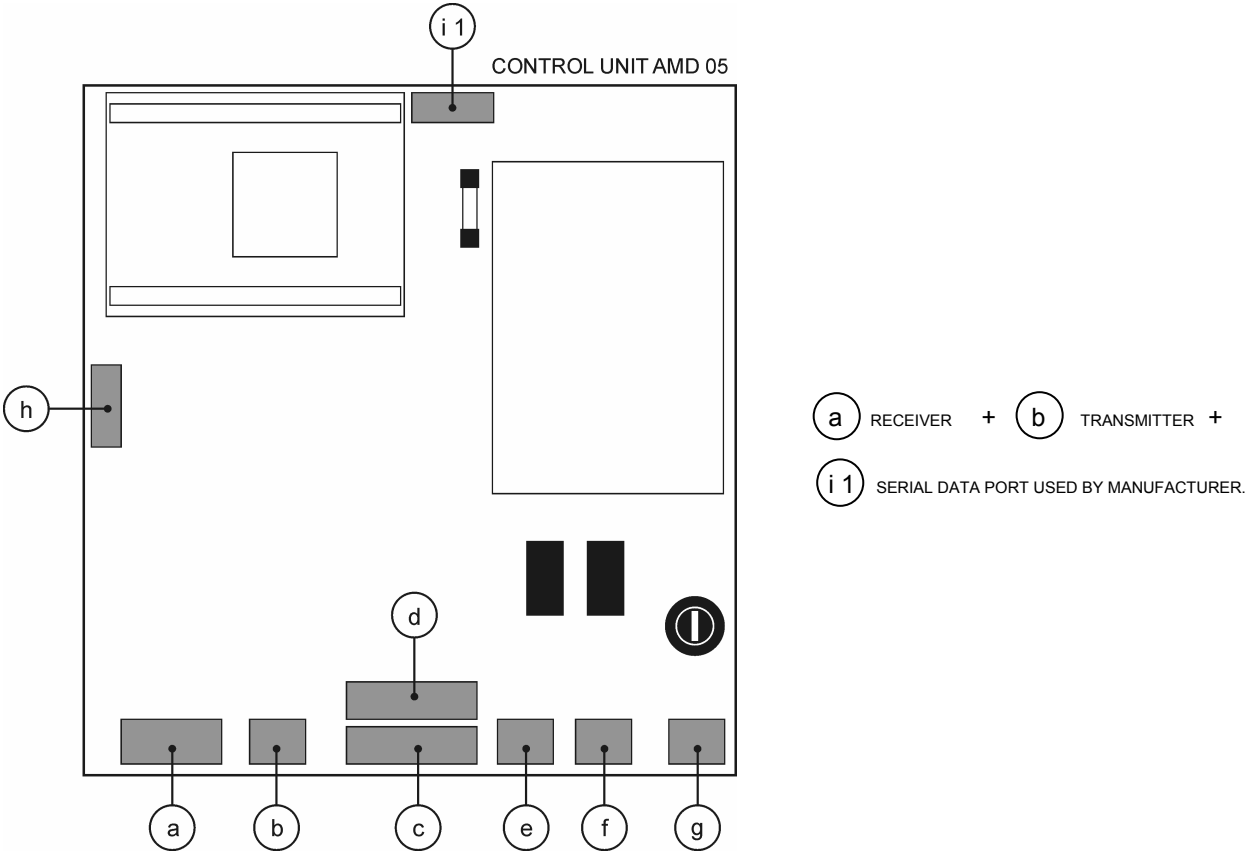
- CABLE ENTRY - USED BY THE MANUFACTURER
- CABLE ENTRY - TO BE USED BY THE CUSTOMER

## TECHNICAL DATA

POWER SUPPLY	: 100 – 240 V AC, 50/60 HZ
CURRENT CONSUMPTION	: MAX. 0,75 A
FUSE	: 315 MA (SLOW BLOW)
TYPE OF PROTECTION	: IP 54
WORKING TEMPERATURE RANGE	: -10 °C TO +50 °C
STORAGE TEMPERATURE RANGE	: -10 °C TO +60 °C
REL. HUMIDITY	: UP TO 100 %
CONVEYING SPEED	: 0.05 TO 1.5 M/SEC (FASTER SPEED ON REQUEST)
MATERIALS	: DETECTOR HEAD AND CONTROL BOX MADE OF CARBON STEEL, SENSING AREAS MADE OF DUROPLEX
PAINT	: RAL 3027 = RASPBERRY RED
INTERCONNECTING CABLES	: DETECTOR COIL / CONTROL BOX = 2 M LONG
POWER CABLE	: APP. 1,8 M CABLE WITH PLUG (TWO POLE AND EARTHING PIN) (US-VERSION WITH US-STANDARD PLUG)

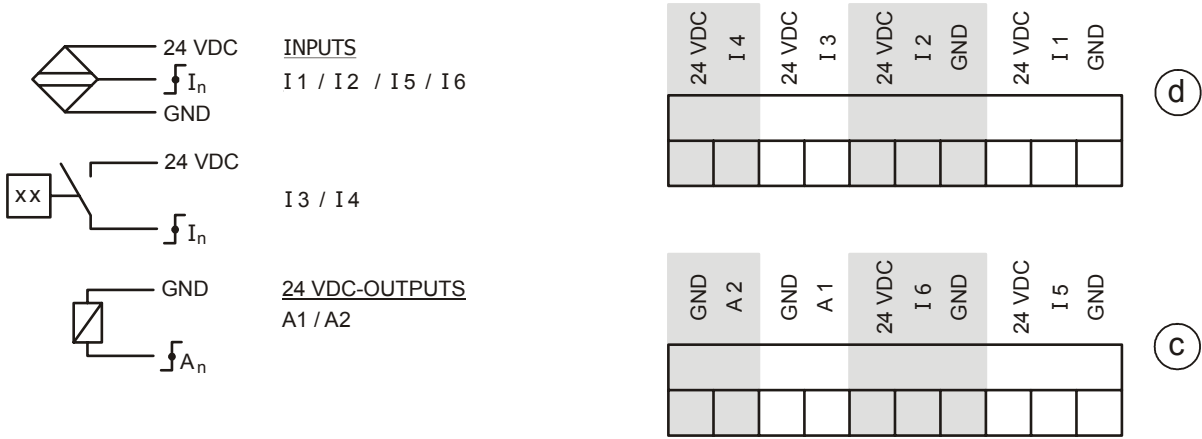
OTHER VERSIONS AVAILABLE

INPUTS AND OUTPUTS



(c) + (d) FUNCTION BLOCK

CONNECTION EXAMPLES



INPUTS AND OUTPUTS ARE USED ACCORDING TO PRODUCT REQUIREMENTS.  
MAX. LOAD FOR ALL INPUTS AND OUTPUTS  $I_{TOTAL} = 300 \text{ mA CUMULATIVE !}$

STANDARD LAYOUT

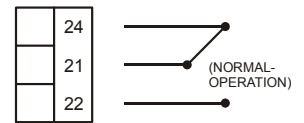
- I 1 NOT CONNECTED
- I 2 NOT CONNECTED
- I 3 NOT CONNECTED
- I 4 RESET BUTTON, EXTERN
- I 5 NOT CONNECTED
- I 6 NOT CONNECTED
- A 1 METAL
- A 2 UNIT OPERATIONAL INDICATOR



## INPUTS AND OUTPUTS

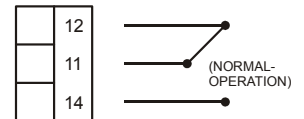
### e RELAY 2 (OPERATIONAL)<sup>1)</sup>

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



### f 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 (AUTO-RESET) : 0,1 SEC. TO 10 SEC. (ADJUSTABLE)  
PULSE DURATION (RESET BY HAND) : PERMANENT SIGNAL UNTIL RESET-BUTTON IS PRESSED



### g POWER SUPPLY

- ♦ 100 – 240 V AC, 50/60 HZ, CURRENT CONSUMPTION: MAX. 750 MA  
OTHER VERSIONS AVAILABLE



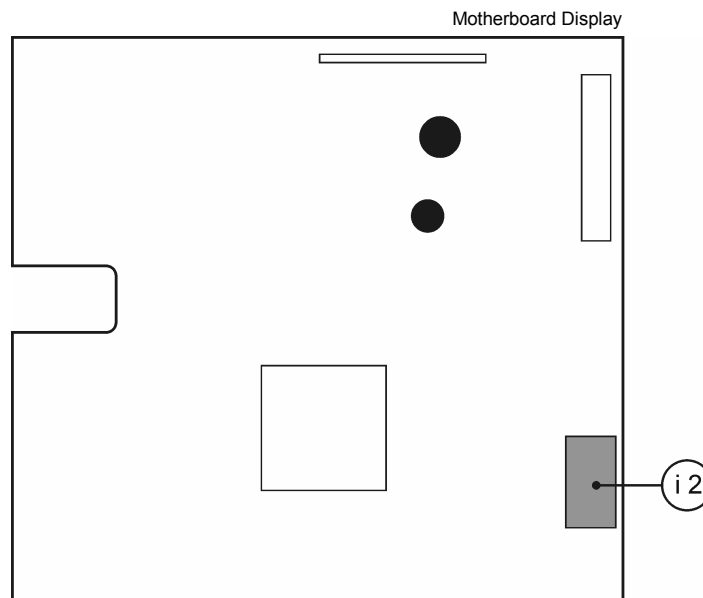
### h CAN – BUS DIGITAL INTERFACE

### i 2 SERIAL DIGITAL INTERFACES

- ♦ 1 X AS SELECTED: RS 232, 422, 485  
(LAID OUT FOR RS 232, UNLESS OTHERWISE SPECIFIED)
- ♦ 1 X ONLY FOR RS 232

#### 1) STANDARD PROGRAMMING

OTHER GIVEN OPERATIONS ARE POSSIBLE  
(PLEASE CONTACT OUR APPLICATION TEAM)



## MESUTRONIC GERÄTEBAU GMBH

A TEAM OF SPECIALISTS DEDICATED TO DEVELOP, MANUFACTURE AND MARKET THE WORLD'S FINEST ELECTRONIC METAL DETECTION AND SEPARATION EQUIPMENT FOR ALL INDUSTRIES. IT IS OUR GOAL TO PROVIDE THE OPTIMUM SOLUTION TO MEET EVERY CRITERIA. MANY YEARS OF EXPERIENCE PROVIDING HUNDREDS OF DETECTION COILS WITH VARIOUS CONTROLS AS WELL AS A MULTITUDE OF MECHANICAL SEPARATING AND SORTING COMPONENTS, ARE AT YOUR DISPOSAL. WE POOL OUR KNOWLEDGE AND EXPERIENCE TO OFFER A SOLUTION TO VIRTUALLY ANY APPLICATION.

„WHEN OTHERS SAY NO, WE SAY LETS GO!“

LET OUR TEAM PROVIDE YOU WITH THE OPTIMUM SOLUTION FOR YOUR METAL CONTAMINATION.

**Our knowledge is our strength**

**MESUTRONIC**

**Strength is always being available**

**MESUTRONIC®**

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SUBJECT TO MODIFICATION!