Industrial Metal Detectors
THS/21

Programming Manual

Document code	Revision	Date	Software version
FI 025 GB 2K8	V6	18/12/2008	THSV532x – ALMV526x

Read this manual carefully before installing, operating or carrying out maintenance on the device. Keep the manual in a safe place for future reference, and in perfect condition. **This manual must accompany the device described therein in the case of change of ownership, and until the device is broken up.**

SYMBOLS

The equipment is marked with this symbol wherever the user should refer to this manual in order to avoid possible damage. The same symbol appears in the manual at points where warnings or particularly important instructions, essential for safe, correct operation of the device, are given.

The equipment is marked with this symbol in the areas where there is dangerous voltage. Only trained maintenance personnel should carry out work in these areas. The same symbol appears in the manual at points where warnings essential for safe, are given.

This symbol appears in the manual at points where suggestions, additional information or other relevant notes are given.

REVISION RECORD

Revision	Date	Author	Reference	Description
1	28/05/2004	TP2 – Pasquini	-	First Emission
2	05/04/2005	TP2 – Pasquini	-	Software version THS/21V3700 and minor corrections
			Chapter 3	Insertion of *Reset Al/Fault* command
			Paragraph 3.6	Removal of CD, CL and DN commands
			Paragraph 3.7	Insertion of *RSM* command
				KE and DI commands now enabled also for THS/G21
			Paragraph 3.10	Insertion of *FE_NFE_SS Test* and *Fail Safe Test* command
2.101	26/09/2006	TP2 – Pasquini	-	Custom version for software 3.357
2.201	19/12/2006	TP2 – Pasquini	Paragraph 2.1	Note on password asterisk
			Paragraph 3	RF moved under Counters menu, EM only with F and S mode, PH removed, I1 description, added FI.
3.001	28/02/2007	TP2 – Pasquini	-	Custom version
4	12/09/2007	TP2 – Pasquini	-	Software upgrade to THSV50xx
5	15/05/2008	TP2 – Pasquini	-	Software upgrade to THSV53xx
5.1	04/11/2008	TP2 – Pasquini	-	Software upgrade to THSV531x – Parameter lists
6	18/12/2008	TP2 – Pasquini	-	Software upgrade to THSV532x – ALMV526x

CONTENTS

Read this manual carefully before installing or operating the device and before carrying out maintenance operations.

1 - SAFETY INSTRUCTIONS – WARNINGS

1.1 – General warnings

- All personnel operating on the device must have an adequate preparation and shall know the procedures described in this manual.
- Observe current regulations regarding electrical and personal safety for both the operator and the installer when installing the device.
- Any modification to the system is forbidden and void all warranties and certifications.
- Follow the instructions contained in this manual for all operations relating to installation, use and maintenance of the device.
  CEIA cannot be held responsible for any damage resulting from procedures which are not expressly indicated in this manual, or from any lack of attention, either partial or total, of the procedures described therein.
- This manual must accompany the device described therein in the case of change of ownership, and until the device is broken up.

1.2 - Correct use of the device

- The **THS/21** Metal Detectors are electronic devices for the detection of metal masses transiting inside the detection antenna.
- The final user is responsible for selecting the appropriate sensitivity for their application. After this selection has been made, and programming has been adjusted accordingly, it is also the final user's responsibility to verify calibration using the test object(s) appropriate to the level of security selected. Additionally, this test should be carried out periodically to insure no changes have occurred in the equipment.

2 - PROGRAMMING

The list of parameters and menus, accessible by each users, together with the system behaviours, can change in respect of this manual description, depending on the settings modifications. Contact the System Administrator for any information.

2.1 – Access to Programming

Upon access to Programming a **user name** and a **password** are requested.
Each type of operator can access a specific set of parameters, consisting of one or more menus.

2.1.1 – Factory preset configuration

When first switched on, the metal detector is configured with users and passwords pre-set in the factory:

Operators

	Default Operator	Operator	Supervisor	Technician	Quality Control Operator	Head of Quality Control	Administrator
	Default Username	000001	000002	000003	000004	000005	ADMINI
	Default Password	000001	000002	000003	000004	000005	000000
MENU	Administrator						•
	Product Selection	•				•	•
	Products		•	•			•
	Autolearn		•	•			•
	Detection		•	•			•
	Ejection		•	•			•
	Counters					•	•
	Configuration			•			•
	Configuration(advan)			•			•
	Barcode[1]		•	•			•
	I/O Status			•			•
	Diagnosis manager			•			•
	MD Test				•	•	•
	Print					•	•
	QC setup					•	•

1 - The Barcode management is available only upon request

Password for Remote Communication

The password for RS 232 serial and Ethernet communications is pre-set in the factory: 000006

Only the Administrator can manage users.

It is extremely important that the person in charge of the detector modifies the passwords in order to avoid unauthorised access to programming.

2.2 - Administrator functions

The Administrator has total control over the configuration of the Metal Detector and can define the roles of the staff that will be working with it. The Administrator's prerogatives, therefore, are the following:

- Modifying or deleting existing operators and/or setting new passwords.
- Defining new operators and their passwords.
- Authorisation for operators to access operational parameters, grouped into menus.
- Total access to all operating parameters.

2.3 - Configuration of the system by the Administrator

2.3.1 - Programming

The Administrator can program the detector independently to define its operational configuration, or can delegate one or more functions to the operators.

2.3.2 - Users

The Administrator defines the users that work with the detector according to their respective responsibilities. The Administrator therefore gives the user:

- an user name and password for access to Programming
- the indication of the operational parameters that the user can modify or display.

The Administrator can define up to 40 users (including the Administrator).

It is imperative that the Administrator responsible for the device redefines the users and passwords pre-set in the factory in order to block access to Programming on the part of unauthorised personnel.

THS/21 is the first system on the market that allows complete personalisation of product names and of the users that work with them (name and surname, user name, password, …).

2.3.3 - Defining of a new user

Before creating a new user, or assigning a new operator to a pre-defined one, print the event list and erase the event buffer.

2.4 – General points on programming

2.4.1 – Keypad functions

The control of the Metal Detector and the setting of the device parameters are performed through the control panel keyboard, as shown below:

Key	Function
P PROG	Access and exit from the programming phase
	Return back from the submenus to the previous menu
	Exit from the Metal Detector Status visualization
STATUS ↓	Scroll through the sequence of instructions
	Choice of the parameters to be changed
STATUS	Metal Detector Status visualization
E ENTER	Selection of the selected submenu from the main menu
	Confirmation of the data entered
	Reset of some kinds of fault
← ESC	Cancel the last character entered
QUICK ACCESS	Quick access to predefined functions, with programming method complying with CFR21 (see User Manual)
1 2 ABC 3 DEF 4 GHI 5 JKL 6 MNO 7 PQRS 8 TUV 9 WXYZ 0 ␣	Modification of the parameter values

2.4.2 – Entering the username

In the following example, the way to digit the username “STEVEN” is shown.

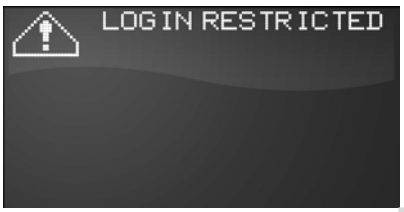
Display	Keys pressed	Meaning
User _____	P PROG	Press P to enter Programming. The cursor blinks in the position of the first character
User S____	7 PQRS, 7 PQRS, 7 PQRS, 7 PQRS	Press four times the key “7” to cycle through the letters and to set the “S” as the first character. The cursor moves on.
User ST___	8 TUV, 8 TUV	Press twice the key “8” to set the “T” as the second character.
User STE__	3 DEF, 3 DEF, 3 DEF	Press three times the key “3” to set the “E” as the third character.
User STEV_	8 TUV, 8 TUV, 8 TUV, 8 TUV	Press four times the key “4” to cycle through the letters and to set the “V” as the fourth character.
User STEVE	3 DEF, 3 DEF, 3 DEF	Again three times the key “3” to set the “E” as the fifth character.
User STEVEN	6 MNO, 6 MNO, 6 MNO	Press three times the “6” to set the “N” as the last character. The cursor disappear.
User STEVEN	E ENTER	Press “Enter” to confirm the username

2.4.3 – Entering the password

Display	Keys pressed	Meaning
Password _____		After the user name, the password is required. As an example we will digit "**000004**".
Password *____	0	Push "0" to get for the letter "0" as the first character. The cursor moves on.
Password ****_	0 0 0 0	Continue to push "0" until the cursor reach the last character position.
Password ******	4 GHI	Press once the key "4" to set the number "4" as the last character
Password ******	E ENTER	Press "Enter" to confirm the password

The display will show an asterisk in the place of each character entered.

2.4.4 – Restricted login



This fault message appears if three attempts to access with the wrong password or user name have been made. The detector is NOT operative (alarm status)

To reset from this fault, enter Programming at Administrator level and exit.

This function is active if FCR = ON .

2.5 – Exit from programming

2.5.1 – Exit from programming

P PROG To exit from programming mode or from a submenu, press the P key.

2.5.2 - Time out

The programming session will be terminated automatically if no commands are entered for a period of **5 minutes**.

2.6 – Defining a new user

Example: *John Smith*, product operator, password *OPER01*, enabled for *Product selection* menu.

Before creating a new user, or assigning a new operator to a pre-defined one, print the event list and erase the event buffer.

Display	Keys pressed	Meaning
Administrator→ Reset Product selection Products Autolearn Autolearn(advanc) Detection Ejection	E ENTER	Select menu Administrator
Create user → Modify user Erase user	E ENTER	Select command
User .....OPER001◆	1 2 ABC ... 9 WXYZ 0 ␣ E ENTER	Enter name of new user (6 alphanumeric characters) and press “Enter” to confirm.
User .....OPER001◆ Name USER01 Surname USER01 Descrip. USER01 Password Reset N Product selection N Products N		The properties list will appear, followed by the menu list.
User OPER001 Name JOHN Surname SMITH Descrip. OP PROD Password.....OP0001◆ Reset N Product selection N Products N	1 2 ABC ... 9 WXYZ 0 ␣ E ENTER	Enter the name, surname, a brief description and the desired password
User OPER001 Name JOHN Surname SMITH Descrip. OP PROD Password OP0001 Reset N Product selection.....Y◆ Products N	↓ ... E ENTER	Enable the PRODUCTS menu only by changing the menu status from N (disabled) to Y (enabled).
Create user → Modify user Erase user	P PROG	Exit the menu to confirm the newly-defined user

2.7 - Programming the metal detector according to the kind of product

The operating mode of the metal detector according to the kind of product is determined by the parameters of Detection menu.

The factory settings are suitable for dry products.

It is always advisable to optimise installation in line with the criteria described in the installation manual in order to obtain maximum sensitivity and maximum rejection of environmental interference.

2.7.1 - Procedure for minimising the "product effect"

The goal of this procedure is to obtain the following operating mode:

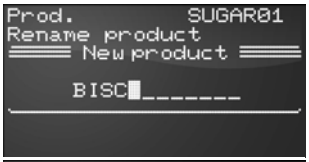
a) the detector does not set off an alarm when some of the pure product, without any metallic contamination, passes through the probe.
b) the detector sets off an alarm when some of the product containing a metallic sample passes through the probe

2.7.2 - Procedure for automatic product acquisition

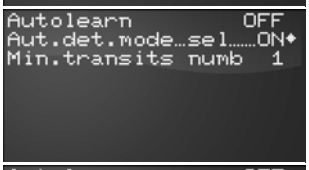
This procedure comprises the automatic acquisition of product characteristics in order to identify the contribution to the received signal due to the metal mass to be detected. The characteristics are acquired progressively by making the product pass through the metal detector several times.

The procedure must be completed once started. Do not change any parameter setting during the procedure.

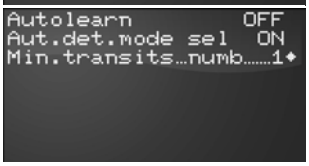
1. Select a product or create a new one (see User Manual, par. 3.6.1).



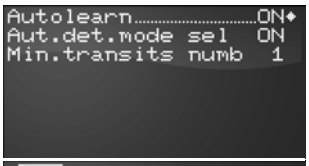
2. Set **Autolearn > Aut.det.mode sel** to **ON** to perform an autolearn for all detection modes. Set it to **OFF** to perform it only on the current detection mode. Set it to **ON** if not sure about the correct detection mode of the product.



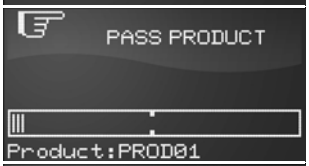
3. Set the parameter **Autolearn > Min.transits numb** to a suitable value for the product composition. The value of **1** is suggested for products that have regular shape and composition, higher the product non-uniformity, higher should be the minimum transits to perform a correct autolearn.



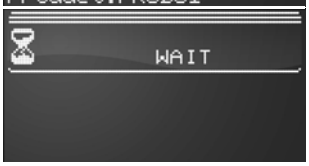
4. Set **Autolearn > Autolearn** to **ON** and exit from the programming phase (push P button).



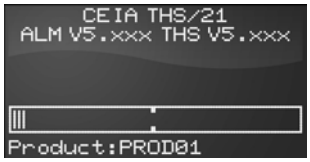
5. Pass the product through the metal detector each time is requested. The message **PASS PRODUCT** appears on the display, and the buzzer (if enabled) is activated.



6. At the end of each transit, the Metal Detector will ask to wait for a few seconds, in order to process the signal. In this phase, the alarm led is blinking.



7. At the end of the Autolearn procedure, the Metal Detector exits from the autolearn phase and the standard message appears on the display.



8. Pass some **pure product** through the detector: the device should not set off any alarm. If the detector gives an alarm whenever some of the pure product passes through the probe, repeat the procedure, increasing the number of transits (see point 3.). At the end of this second procedure, the pure product is still giving alarm, **decrease the "Sensitivity" parameter** until the detector does not give an alarm (this is probably due to non-uniformity of the product).
9. Pass some of the **product with the metallic sample**: the detector should give an alarm.

   If any alarm is given, increase the size of the metallic sample gradually, until locating its minimum dimension that will be detected with at least 6 dB.

In the case that the size of the metallic samples has been modified, communicate them immediately to the Head of Quality Control or to the Administrator, so as to let them to change their values in the relative menu.

If the signal given by the sample is higher than 10 dB, is advisable to decrease the sensitivity, in order to achieve a better immunity to external noises and/or probable non-uniformities of the product, until the signal amplitude will be in the range 5 – 10 dB.

At the end of the procedure, on the Metal Detector Status screen, will be indicated the minimum detectable diameters. This indication is purely indicative and it is responsibility of the customer to verify their effective detection.

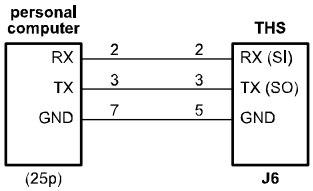
The minimum detected diameters can be different from the indication on Status screen.

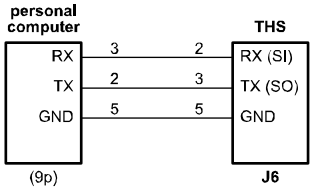
2.8 - Serial line connection

Connect the serial communication cable to the terminal board.

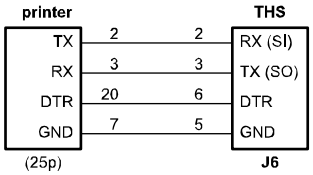
RS 232 connections

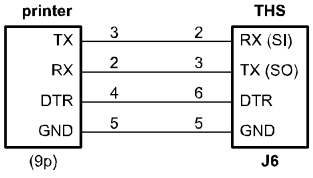
Connection of a personal computer to a THS metal detector





Connection of a printer fitted with a serial interface



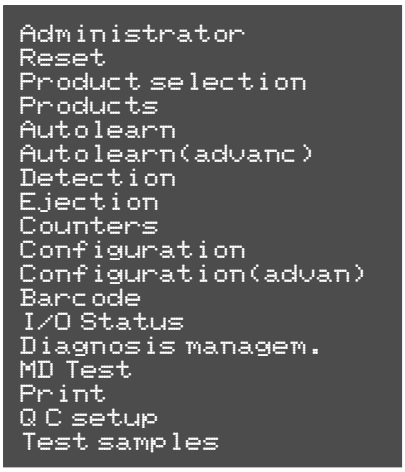


Select DTR=H mode on the THS

3 – PROGRAMMING PARAMETERS

List of submenus available in the **Programming** phase.

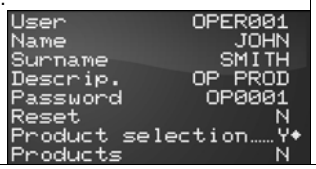
Each submenu is visible only to the enabled users.
The list beside is the example of the proramming tree for the Administrator level, in a system with the barcode reader enabled.



3.1 – Administrator menu

List of commands available under the **Administrator** menu

Create User	Remote	Possible settings	Standard setting	Parameter
	-	6 alphanumeric chars.	-	Global
Description				Models
Creation of a new user Enter the name of a new user: a list of the user's properties will appear: - Name from 1 to 12 alphanumeric char. - Surname from 1 to 12 alphanumeric char, - Description from 1 to 12 alphanumeric char, - Password 6 alphanumeric characters - List of menus that can be enabled				All models



If the user name already exists, the command aborts.

If the user name is 000000, the access to Programming will be achieved simply by pressing P, without any username or password request. When an username 000000 is set, to access to Programming at different levels, hold the P key pressed for at least 3 seconds.

Name, Surname or Description shorter than 12 characters: enter the character string and press the E key twice

If the password field is left empty, the password will not be requested for this username.

Do not enter two consecutive spaces

Modify User	Remote	Possible settings	Standard setting	Parameter
	-	6 alphanumeric chars.	-	Global
Description				Models
Modify an user Select an existing user by pressing the arrows keys: the list of the user's properties will appear:				All models

Erase User	Remote	Possible settings	Standard setting	Parameter
	-	6 alphanumeric chars.	-	Global
Description				Models
Delete an user Select an existing user by pressing the arrows keys				All models

Set Bluetooth PIN	Remote	Possible settings	Standard setting	Parameter
	BPIN	Upto 8 alphanum. chars.	00000000	Global
Description				Models
Set the Bluetooth PIN Needed for the remote connection with a personal computer, via Bluetooth.				All models

3.2 – Reset

This command resets all alarms and faults.

3.3 – Product selection menu

List of commands available under the **Product selection** menu

Product	Remote	Possible settings	Standard setting	Parameter
	PI	12 alphanumeric chars.	-	Global
Description				Models

Type of product selected

Selection of a product previously entered and saved.

Local programming

The various defined products are shown on the display. Scroll them with the arrow keys and choose the desired product by pressing the E key.
Typing letters in the search field results in a product list restricted to the names that match that string.

Remote programming

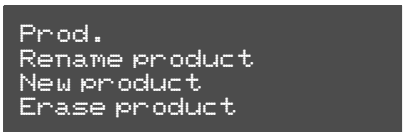
This command displays the list of products: the current product is shown by the ">" cursor.
To change the current product, assign the corresponding value to the PI setting.

```
#PI<ENTER>
              Default
              ProdA
            > ProdB
              ProdC

#PI ProdA<ENTER>
#PI<ENTER>
              Default
            > ProdA
              ProdB
              ProdC
#
```

All models

3.4 – Products menu

List of commands available under the **Products** menu



Product	Remote	Possible settings	Standard setting	Parameter
	PI	12 alphanumeric chars.	-	Global
Description				Models

Type of product selected

Selection of a product previously entered and saved.

Local programming
The various defined products are shown on the display. Scroll them with the arrow keys and choose the desired product by pressing the E key.
Typing letters in the search field results in a product list restricted to the names that match that string.

Remote programming
This command displays the list of products: the current product is shown by the ">" cursor.
To change the current product, assign the corresponding value to the PI setting.

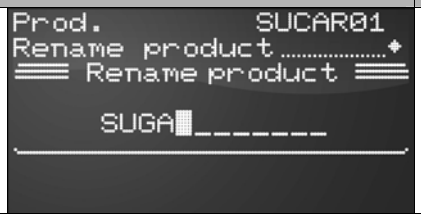
```
#PI<ENTER>
              Default
              ProdA
            > ProdB

#PI ProdA<ENTER>
#PI<ENTER>
              Default
            > ProdA
              ProdB
#
```

All models

Rename product	Remote	Possible settings	Standard setting	Parameter
	PN	12 alphanumeric chars.	-	Related to the current product
Description				Models

Rename the product

Changes the name of the current product.

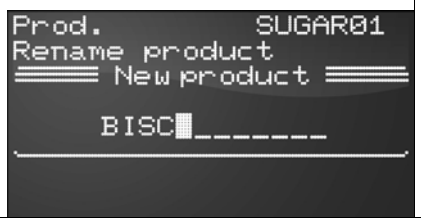


All models

New product	Remote	Possible settings	Standard setting	Parameter
	NW	12 alphanumeric chars.	-	Related to the current product
Description				Models

Creation of a new product

Create a new product. Up to 500 products can be created.
The initial parameters of the new product will be the same of the product selected when the new product is created.
Copying the DEFAULT product, parameters FD, SD and ND will not be copied.



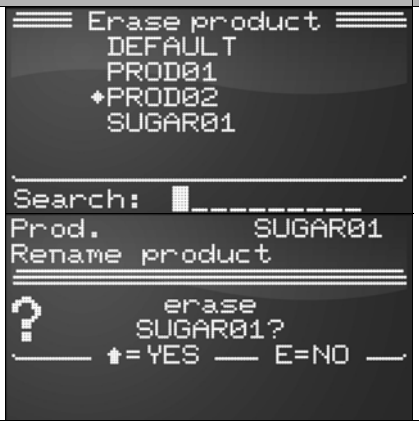
All models

Erase product	Remote	Possible settings	Standard setting	Parameter
	EP	12 alphanumeric characters	-	Related to the current product
Description				Models

Elimination of a product

Elimination of an existing product: select the desired product in the list displayed using the arrow keys, and confirm with the E key.

A confirmation is needed to complete the operation.



All models

3.5 – Autolearn menu

List of commands available under the **Autolearn** menu

Autolearn	Remote	Possible settings	Standard setting	Parameter
	LE	ON / OFF	OFF	Global
Description				Models

Autolearn

Select ON and exit from programming to activate the autolearn procedure. The parameter returns to OFF automatically at the end of procedure. See paragraph "Programming the metal detector according to the kind of product" in the Instructions manual.

All models

Aut.det.mode sel	Remote	Possible settings	Standard setting	Parameter
	ADMS	ON / OFF	ON	Global
Description				Models

Autolearn detection mode selection

If ADMS is set to ON the Autolearn procedure will be performed for all detection modes.
If set to OFF the Autolearn procedure will be performed only on current detection.

THS/MS21

Min.transits numb	Remote	Possible settings	Standard setting	Parameter
	TN	1 – 10	1	Global
Description				Models

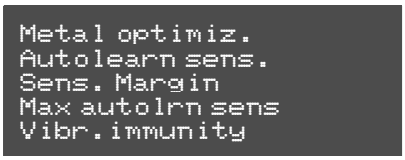
Number of minimum product transits for autolearn

In the case of non-uniform products, increase TN so as to obtain a more accurate mean.

All models

3.6 – Autolearn(advanc) menu

List of commands available under the **Autolearn(advanc)** menu



Metal optimiz.	Remote	Possible settings	Standard setting	Parameter
	MOPT	AVRG / BFE BNFE / BSS	AVRG	Global
Description				Models
Selection of the operating band criteria during autolearn During the autolearn procedure, the Metal Detector choose automatically the best detection mode, according to this criteria.				THS/MS21

Autolearn sens.	Remote	Possible settings	Standard setting	Parameter
	ASE	ON / OFF	ON	Global
Description				Models
Automatic Sensitivity adjustment during autolearn If ASE is set to ON, the Metal Detector can adjust also the sensitivity value, during the autolearn procedure.				All models

Sens. margin	Remote	Possible settings	Standard setting	Parameter
	SA	10 – 50	25	Global
Description				Models
Margin of sensitivity Margin of sensitivity below the limit used to set SE during the autolearn procedure: by lowering the sensitivity, false alarms are avoided in the case of significant variations in the characteristics of the product. If the value of SA is increased, the sensitivity determined by the autolearn procedure decreases.				All models

Max autlrn sens	Remote	Possible settings	Standard setting	Parameter
	MASE	100 – 299	-	Global
Description				Models
Maximum sensitivity value adjustment during autolearn This parameter indicates the maximum sensitivity value allowed to be selected during autolearn.				All models

Vibr.immunity	Remote	Possible settings	Standard setting	Parameter
	VI	0 – 250	0	Global
Description				Models
Vibration immunity selection during Autolearn Change the parameter value before the Autolearn procedure. If VI is set to 0, during the Autolearn procedure the Metal Detector will optimise only the sensitivity. If set to a value between 1 and 250, the optimisation will be performed also for the vibrations. Increasing the value will result in a higher immunity to vibrations, but could result in a lower sensitivity.				All models

3.7 – Detection menu

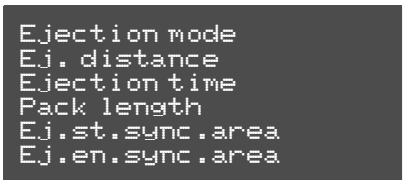
List of commands available under the **Detection** menu

Sensitivity	Remote	Possible settings	Standard setting	Parameter
	SE	0 - 299	-	Related to the current product
Description				Models
Sensitivity Alarm trigger threshold: the smaller the object to be detected, the greater the sensitivity must be. The parameter is set automatically during Autolearn.				All models

Detection mode	Remote	Possible settings	Standard setting	Parameter
	DM	Depending on model	0	Related to the current product
Description				Models
Detection mode Parameter determined automatically by the system during the autolearn procedure (if parameter ADMS=ON). The default value of 0 is suitable for dry products.				Available only on some models

3.8 – Ejection menu

List of commands available under the **Ejection** menu



Ejection mode	Remote	Possible settings	Standard setting	Parameter
	EM	B / F / S / SB / R / FS	-	Related to the current product

Description		Models
Ejection mode Selection of ejection mode for contaminated material.		All models
Mode B	Used for loose product and belt stop. No photocell required. This includes halting of the production line, manual elimination of the contaminated material and manual reset by the operator.(See also parameters ED and ET). *Note: The metal detector does not check if there are any subsequent fragments in the material immediately following: all material under the probe must therefore be eliminated along with the part that caused the alarm. To minimise waste of material it is advisable to select a low setting for the ejection relay activation delay.*	
Mode F	Used for loose product and ejection effected using retracting band or flap. No photocell required Includes automatic set-aside of contaminated material. (See also parameters ED and ET)	
Mode S	Used for packed product and ejection effected using pusher. Photocell required. Includes automatic set-aside of contaminated material with photocell synchronisation. (See also parameters ED, ET, PD, PH)	
Mode SB	Used for packed product and ejection effected with belt stop. Photocell required. This includes halting of the production line with photocell synchronisation, manual elimination of the contaminated material and manual reset by the operator. (See also "Timing" section and parameter ED)	
Mode R	Reversed belts. The conveyor belt direction is reversed for a distance ED.	
Mode FS	Used for packed product and ejection effected using air blow, flap or retracting band. Photocell required. Includes automatic set-aside of contaminated material with photocell synchronisation. (See also parameters ED, PD, ECPD, ERT, ERF, EE, ES and PLEN)	

Ej. distance	Remote	Possible settings	Standard setting	Parameter
	ED	0 – 6000 mm	-	Related to the current product

Description	Models
Distance of ejector from probe or photocell This parameter determines the activation delay of the relay relative to the transit of the product inside the antenna. This delay is approximately : **ED** (distance between ejector and antenna or photocell) **BS** (transit speed)	All models

Ejection time	Remote	Possible settings	Standard setting	Parameter
	ET	0,01 – 30,00 s	-	Global
Description				Models
Ejection relay activation time If **EM=S** this parameter represents the ejection activation time after an alarm. If **EM=F**: this parameter represents the minimum ejection relay activation time, because the relay is activated for a length of time given by the sum of the alarm time (the transit time of the metal mass through the probe) and time ET.				All models

Pack length	Remote	Possible settings	Standard setting	Parameter
	PLEN	20 – 250 mm	-	Related to the current product
Description				Models
Nominal length of the pack Nominal length of the pack in millimeters. Available only with EM = FS.				All models

Ej.st.sync.area	Remote	Possible settings	Standard setting	Parameter
	ES	0 – 250 mm	-	Related to the current product
Description				Models
Ejection start synchronization area Area used by the Metal Detector to synchronize the movement of the ejector with the packages transit, in order to avoid jam. This parameter must be set to the typical length of packs. *Available only with EM = FS.*				All models

Ej.en.sync.area	Remote	Possible settings	Standard setting	Parameter
	EE	0 – 250 mm	-	Related to the current product
Description				Models
Ejection end synchronization area Area used by the Metal Detector to synchronize the movement of the ejector with the packages transit, in order to avoid jam. This parameter must be set to the length of packs. *Available only with EM = FS.*				All models

3.9 – Counters menu

List of commands available under the **Counters** menu

Prd alarms	Remote	Possible settings	Standard setting	Parameter
	CA	0 – 999999999	-	Related to the current product
Description				Models
Number of alarms caused by the current product (since last reset) To reset this counter select the parameter, press the P PROG key and press the STATUS (increase) key; in remote programming execute the CR command.				All models

Prd packs	Remote	Possible settings	Standard setting	Parameter
	CO	0 – 999999999	-	Related to the current product
Description				Models
Number of transits of packs of current product (since last reset) This count is performed through the photocell input. To reset this counter select the parameter, press the P PROG key and press the STATUS (increase) key; in remote programming execute the CR command.				All models

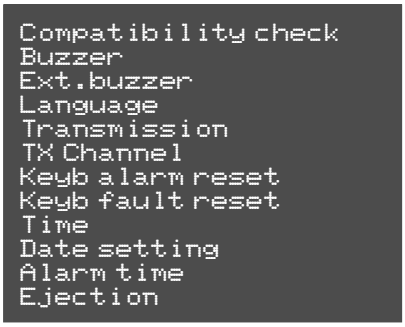
Tot.alarms	Remote	Possible settings	Standard setting	Parameter
	AC	0 – 999999999	-	Global
Description				Models
Number of alarms (since last reset) This counter increases with all products. To reset this counter select the parameter, press the P PROG key and press the STATUS (increase) key; in remote programming execute the AR command.				All models

Tot.packs	Remote	Possible settings	Standard setting	Parameter
	OC	0 – 999999999	-	Global
Description				Models
Number of packs (since last reset) This count is performed through the photocell input. This counter increases with all products. To reset this counter select the parameter, press the P PROG key and press the STATUS (increase) key; in remote programming execute the OR command.				All models

Work time	Remote	Possible settings	Standard setting	Parameter
	WT	-	-	Global
Description				Models
Working time This parameter returns the number of operative hours of the Metal Detector.				All models

3.10 – Configuration menu

List of commands available under the **Configuration** menu



3.10.1 – Compatibility check submenu

Gener.comp.check	Remote	Possible settings	Standard setting	Parameter
	GCC	-	-	Global
Description				Models
General compatibility check This command perform a complete set of automatic checks to verify the general compatibilty of the system with the environment.				All models

Elec.comp.check	Remote	Possible settings	Standard setting	Parameter
	ECC	-	-	Global
Description				Models
Electrical compatibility check This command perform an automatic check to verify the electrical compatibilty of the system with the environment.				All models

Belt contam.check	Remote	Possible settings	Standard setting	Parameter
	BCC	-	-	Global
Description				Models
Belt contamination check This command perform an automatic check to verify if the belt is contaminated. This command will not be visible if BLEN=0.				All models

Belt length	Remote	Possible settings	Standard setting	Parameter
	BLEN	0 – 20000 mm	-	Global
Description				Models
Length of the conveyor belt If set to 0 the conveyor belt is not present.				All models

Buzzer	Remote	Possible settings	Standard setting	Parameter
	SO	ON / OFF	ON	Global
Description				Models
Activation of the built-in buzzer				All models

Ext.buzzer	Remote	Possible settings	Standard setting	Parameter
	ESO	OFF / ON1 / ON2	ON1	Global
Description				Models
Activation of the external buzzer If ESO is set to ON1 the external buzzer will be activated only when the operator is urgently required. If set to ON2, the external buzzer will be activated also during a metal alarm.				All models

Language	Remote	Possible settings	Standard setting	Parameter
	LG	GB / F / D / S / NL JP / P / E / H / I	-	Global
Description				Models
Language for messages The International Codes are used to identify each language.				All models

Transmission	Remote	Possible settings	Standard setting	Parameter
	TX	ON / OFF	ON	Global
Description				Models
Enabling of the transmitter If set to OFF it is possible to understand if a noise is electrical or mechanical. Refers to the Instructions manual. When TX=OFF the THS/21 does not detect metals. The parameter is automatically set to ON if the THS/21 is switched off and on again.				All models, except THS/MN21

TX channel	Remote	Possible settings	Standard setting	Parameter
	CH	1 / 2	1	Global
Description				Models
Transmission channel Selection of different channels on adjacent detectors for automatic synchronisation.				All models, except THS/MN21

Keyb alarm reset	Remote	Possible settings	Standard setting	Parameter
	KAR	ON / OFF	ON	Global
Description				Models
Enabling of the keyboard for direct alarm reset If set to ON, in case of an alarm just press E to reset. If set to OFF, in case of an alarm, will be necessary to enter Programming phase and to activate the Reset command.				All models

Keyb fault reset	Remote	Possible settings	Standard setting	Parameter
	KFR	ON / OFF	ON	Global
Description				Models
Enabling of the keyboard for direct fault reset If set to ON, in case of fault just press E to reset. If set to OFF, in case of fault, will be necessary to enter Programming phase and to activate the Reset command.				All models

Time	Remote	Possible settings	Standard setting	Parameter
	TM	HH:MM	-	Global
Description				Models
Current time HH = Hours; MM = Minutes. In remote programming, digit: TM=HH:MM				All models

3.10.2 – Date settings submenu

Year	Remote	Possible settings	Standard setting	Parameter
	-	Last two figures of the year	-	Global
Description				Models
Year For remote programming, see parameter DA.				All models

Month	Remote	Possible settings	Standard setting	Parameter
	-	1 - 12	-	Global
Description				Models
Month For remote programming, see parameter DA.				All models

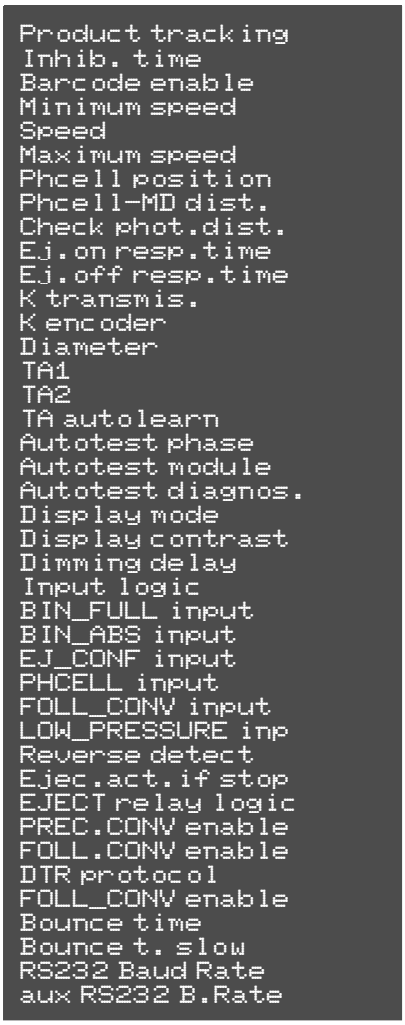
Day	Remote	Possible settings	Standard setting	Parameter
	-	1 - 31	-	Global
Description				Models
Day For remote programming, see parameter DA.				All models

Alarm time	Remote	Possible settings	Standard setting	Parameter
	AT	0 – 20 s / A / R	A	Global
Description				Models
Alarm relay activation time When set to A (automatic) the alarm relay is activated only for the time that the signal exceeds the alarm threshold. When set to R the alarm relay and the yellow lamp are activated until a manual reset is performed. If AT>0, the alarm relay is activated for the time that the signal exceeds the alarm threshold plus AT seconds. If AT=0, the alarm relay is not activated.				All models

Ejection	Remote	Possible settings	Standard setting	Parameter
	EJ	ON / OFF	ON	Global
Description				Models
Ejection Enabling/disabling of ejection, used only for servicing purposes. **This parameter is automatically restored to ON at startup**.				All models

3.11 – Configuration (advan) menu

List of parameters available under the **Configuration (advan)** menu



Product tracking	Remote	Possible settings	Standard setting	Parameter
	FO	OFF / 1 – 5	OFF	Global
Description				Models
Automatic adjustment to variations in the characteristics of the product If activated, in case of product with chemical-physical characteristics which can vary gradually with time, the detector automatically determines the best point of operation accordingly. The value indicated the tracking speed.				All models, except THS/MN21

Inhib. time	Remote	Possible settings	Standard setting	Parameter
	IN	0,00 – 30,00 s	0	Global
Description				Models
Inhibition time Inibiths the metal detector alarm for a certain time. If KT=0.000 (MDL or MDT not fitted), the time refers to the activation of the “Inhibition input”. If KT>0.000, the time refers to the conveyor startup.				All models

Barcode enable	Remote	Possible settings	Standard setting	Parameter
	BE	6 alphanumeric chars	-	Global
Description				Models
Enabling code for operation with bar-code reader 6-character code which enables the THS/21 to work with the bar-code reader: this is supplied by CEIA on delivery of an upgrade kit.				All models

Minimum speed	Remote	Possible settings	Standard setting	Parameter
	BL	See below	-	Global
Description				Models
Minimum transit speed This parameter appears only if the variable speed inverter module is fitted (KT > 0.000) or an encoder is connected (KE>0). In case an encoder is fitted without inverter, the range is 2 – BM m/min. The parameter is not applicable in case of fixed-speed or no conveyor belt. Variable-speed conveyor belt: select the minimum operating speed If the inverter is fitted, BL ≥ 10KT; Alteration of parameter KT results in automatic assignment of BL=10KT.				All models

Speed	Remote	Possible settings	Standard setting	Parameter
	BS	2 – 250 m/min.	-	Related to the current product
Description				Models
Transit speed In case of conveyor belt with fixed speed or models without conveyor belt, insert the real value of the product transit speed. If KE>0 and KT=0.000 (with encoder, without inverter), the parameter is not applicable. If the inverter is fitted, set the real conveyor speed within the range BL - BM.				All models

Maximum speed	Remote	Possible settings	Standard setting	Parameter
	BM	See below	-	Global
Description				Models
Maximum transit speed This parameter appears only if the variable speed inverter is fitted (KT > 0.000) or an encoder is connected (KE>0). In case an encoder is fitted without inverter, the range is BL – 250 m/min. The parameter is not applicable in case of fixed-speed or no conveyor belt. Variable-speed conveyor belt: select the maximum operating speed. If the inverter is fitted, BM ≤ MI x KT ; Alteration of parameter KT or MI results in automatic assignment of BM= MI x KT				All models

Phcell position	Remote	Possible settings	Standard setting	Parameter
	PH	IN / OUT	-	Global
Description				Models
Position of the photocell relative to the probe IN: photocell located at entrance to the probe; OUT: photocell located at exit from the probe.				All models

Phcell-MD dist.	Remote	Possible settings	Standard setting	Parameter
	PD	0 – 2000 mm	-	Global
Description				Models
Distance between metal detector and photocell The distance must be measured from the center of the photocell to the side of the probe.				All models

Check phot.dist.	Remote	Possible settings	Standard setting	Parameter
	ECPD	0 – 6000 mm	-	Global
Description				Models
Distance between metal detector and check photocell The distance must be measured from the center of the photocell to the side of the probe.				All models

Ej.on resp.time	Remote	Possible settings	Standard setting	Parameter
	ERT	0.000 – 2.000 s	-	Global
Description				Models
Ejector response time To synchronize correctly the ejector activation, the parameter must be set to the nominal activation time of the ejection system.				All models

Ej.off resp.time	Remote	Possible settings	Standard setting	Parameter
	ERF	0.000 – 2.000 s	-	Global
Description				Models
Ejector response time To synchronize correctly the ejector de-activation, the parameter must be set to the nominal de-activation time of the ejection system. Available only if EM = FS.				All models

K transmis.	Remote	Possible settings	Standard setting	Parameter
	KT	0.000 – 9.999	-	Global
Description				Models
Transmission constant of the motor reducer unit KT= (transit speed in meter per minute) / (motor frequency) ; KT=0.000: no inverter *Note: when the value of KT is altered, parameters **BL** and **BM** are automatically set to nominal values **10 x KT** and **MI x KT respectively**. BL and BM can nevertheless be altered manually as well.*				All models

K encoder	Remote	Possible settings	Standard setting	Parameter
	KE	0 – 1000 pulses / revol.	0	Global
Description				Models
Encoder constant Number of pulses per revolution. If set to 0 the encoder is not present.				All models

Diameter	Remote	Possible settings	Standard setting	Parameter
	DI	10 – 250 mm	-	Global
Description				Models
Diameter of encoder wheel Diameter of encoder wheel. Correlated parameter: K encoder.				All models

TA1	Remote	Possible settings	Standard setting	Parameter
	TA1	0 – 17999	-	Global
Description				Models
Correction of the received signal analysis parameter This parameter is specific to each device. This parameter must be automatically set up using the TL parameter in case the SCD card is replaced.				All models, except THS/MN21

TA2	Remote	Possible settings	Standard setting	Parameter
	TA2	0 – 17999	-	Global
Description				Models
Correction of the received signal analysis parameter This parameter is specific to each device. This parameter must be automatically set up using the TL parameter in case the SCD card is replaced.				All models, except THS/MN21

TA autolearn	Remote	Possible settings	Standard setting	Parameter
	TL	ON / OFF	-	Global
Description				Models
Autolearn of parameter TA Select ON to activate the autolearn procedure (see TA parameter). *Note: TL=OFF automatically at the end of procedure. See paragraph "Replacement of SCD card "*				All models, except THS/MN21

Autotest phase	Remote	Possible settings	Standard setting	Parameter
	ATTP	ON / OFF	ON	Global
Description				Models
Activation of phase tracking upon Autotest signal				All models

Autotest module	Remote	Possible settings	Standard setting	Parameter
	ATTM	ON / OFF	ON	Global
Description				Models
Activation of magnitude tracking upon Autotest signal				All models

Autotest diagnos.	Remote	Possible settings	Standard setting	Parameter
	ATD	ON / OFF	ON	Global
Description				Models
Activation of antenna diagnosis upon Autotest signal				All models

Display mode	Remote	Possible settings	Standard setting	Parameter
	DMD	GRAPH / ALPHA	GRAPH	Global
Description				Models
Selection of the display mode If set to ALPHA, the display will appears as the THS versions, showing 4 lines of 20 characters, without any graphic.				All models

Display contrast	Remote	Possible settings	Standard setting	Parameter
	DC	2 – 115	100	Global
Description				Models
Display contrast adjustment				All models

Dimming delay	Remote	Possible settings	Standard setting	Parameter
	DDD	10 – 900 s	60 s	Global
Description				Models
Selection of the dimming delay If DDD > 0, then the display wait for the amount of seconds set, before lowering the contrast.				All models

Input logic	Remote	Possible settings	Standard setting	Parameter
	LO	P / N	P	Global
Description				Models
Input logic Applies to all inputs. If set to P (positive logic) all inputs are read as active when they are pulled to +V (with pull-down incorporated on card ALM). If set to N (negative logic) all inputs are read as active when they are pulled to -V (with pull-up incorporated on card ALM).				All models

BIN_FULL input	Remote	Possible settings	Standard setting	Parameter
	IL	NC / NO	-	Global
Description				Models
Type of device connected to the "BIN_FULL" input NC: Normally Closed; NO: Normally Open If set to NO the Metal Detector gives an alarm when the BIN_FULL input is closed. If set to NC the alarm is given when the input is open.				All models

BIN_ABS input	Remote	Possible settings	Standard setting	Parameter
	IA	NC / NO	-	Global
Description				Models
Type of device connected to the "BIN_ABS" input NC: Normally Closed; NO: Normally Open.				All models

EJ_CONF input	Remote	Possible settings	Standard setting	Parameter
	IE	NC / NO	-	Global
Description				Models
Type of device connected to the "EJ_CONF" input NC: Normally Closed; NO: Normally Open If set to NO the Metal Detector read an "Ejection confirmation" when the EJ_CONF input is closed. If set to NC the confirmation is given when the input is open.				All models

PHCELL input	Remote	Possible settings	Standard setting	Parameter
	IP	NC / NO	-	Global
Description				Models
Type of device connected to the "Photocell" input NC: Normally Closed; NO: Normally Open If set to NO the Metal Detector read the passage of a pack when the photocell input is closed. If set to NC the passage is read when the input is open.				All models

FOLL_CONV input	Remote	Possible settings	Standard setting	Parameter
	IW	NC / NO	-	Global
Description				Models
Type of device connected to the "FOLL_CONV" input NC: Normally Closed; NO: Normally Open				All models

LOW_PRESSURE inp	Remote	Possible settings	Standard setting	Parameter
	IAP	NC / NO	-	Global
Description				Models
Type of device connected to the "LOW_PRESSURE" input NC: Normally Closed; NO: Normally Open				All models

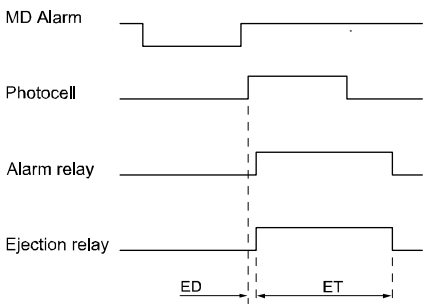
Ejec.queue reset	Remote	Possible settings	Standard setting	Parameter
	QR	ON / OFF	OFF	Global
Description				Models
Reset of alarm queue in case of belt stop				All models

Reverse detect	Remote	Possible settings	Standard setting	Parameter
	RD	ON / OFF	OFF	Related to the current product
Description				Models

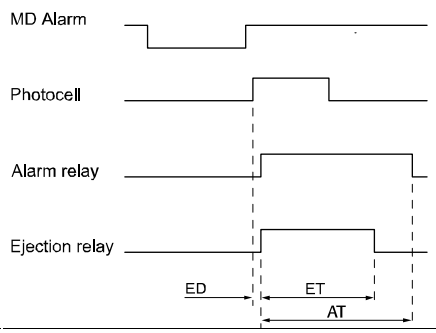
Reverse detection

Detection of lack of metal parts, with inverted operation of both output relays. This requires a photocell to be mounted before or after the probe. This function is normally used, for example, to detect packages without closing clip.
Example with photocell at exit:

AT =A



AT≠A



All models

Eject.act.if stop	Remote	Possible settings	Standard setting	Parameter
	EIS	ON / OFF	-	Global
Description				Models

Ejector activation when belt stops

If the conveyor belt stops and EIS=ON the ejector will stay activated until the belt restart.
With EIS=OFF the ejector is deactivated after 2 seconds from the belt stop.

All models

EJECT relay logic	Remote	Possible settings	Standard setting	Parameter
	ERL	NO / NC	NO	Global
Description				Models

Ejection relay logic

All models

DTR protocol	Remote	Possible settings	Standard setting	Parameter
	DT	N / H	N	Global
Description				Models

DTR protocol

Use of DTR line to communicate with printer.
N = line not used; H = line used, handshake mode, high active line.
The metal detector stop sending data to the serial port, in case the line is not pulled up.

All models

PREC_CONV enable	Remote	Possible settings	Standard setting	Parameter
	PC	ON / OFF	OFF	Global
Description				Models

Enable “preceding conveyor” relay

ON: if the THS/21 belt is running, the relay is activated when the motor is running;
OFF: the relay is deactivated

Only for models with Conveyor Control System

FOLL_CONV enable	Remote	Possible settings	Standard setting	Parameter
	FC	ON / OFF	OFF	Global
Description				Models
Enable "following conveyor" input ON: if the following conveyor belt is running, the THS/21 belt can be activated; with KT=0.000 (no MDL or MDT fitted) and KE=0 (no encoder fitted) or with THS/G21 if FC=ON, the metal detector stops incrementing the delay counter in case the "following conveyor" input is not active. This functionality can be used for example on a pipeline to stop the delay counting in case the pump that runs the liquid is stopped. OFF: the motor can be activated whatever is the status of following conveyor input.				All models

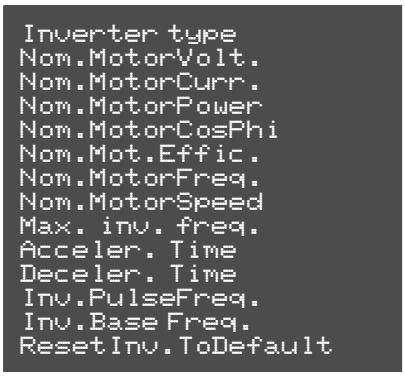
Autom. restart	Remote	Possible settings	Standard setting	Parameter
	RE	ON / OFF	OFF	Global
Description				Models
Belt restart if there is "following conveyor" input activation If FC= OFF, the parameter has no effect; If FC=ON: - RE=OFF: if the belt is stopped by the "following conveyor" input deactivation, when the FOLL-CONV input reactivated the THS/21 belt must be restarted manually. - RE=ON: if the belt is stopped by the "following conveyor" input deactivation, when the FOLL-CONV input reactivates the THS/21 belt restarts automatically unless the STOP key has been pressed in the meantime. When the belt is stopped because of the following conveyor, the green light (▶) flashes.				All models, excepts THS/G21

Stop Time	Remote	Possible settings	Standard setting	Parameter
	ST	0 – 99 min	0	Global
Description				Models
Belt auto-stop time Available on models with photocell: if no passage is detected for a time ST, the conveyor belt stops automatically (N.B. No signal is given).				All models, excepts THS/G21

3.11.1 – Motor config submenu

List of parameters available under the **Motor config** submenu.

This menu is available only when an inverter is present (KT ≠ 0).



Inverter type	Remote	Possible settings	Standard setting	Parameter
	INVT	SG110 / ABPF4	-	Global
Description				Models
Inverter type Available models are Siemens G110 (SG110) and Allen Bradley Power Flex 4.				All models

All the following parameters refers to motor and inverter provided by CEIA.
In case of customer motor, read the motor label for the correct values

Nom.MotorVolt.	Remote	Possible settings	Standard setting	Parameter
	NMV	70 – 230 V	230	Global
Description				Models
Nominal motor voltage				All models

Nom.MotorCurr.	Remote	Possible settings	Standard setting	Parameter
	NMC	0.00 – 9.00 A	-	Global
Description				Models
Nominal motor current If set to 0.00 the overcurrent check will be deactivated.				All models

Nom.MotorPower	Remote	Possible settings	Standard setting	Parameter
	NMP	0.00 – 10.00 kW	-	Global
Description				Models
Nominal motor power The maximum value of this parameter is limited by the inverter power.				All models

Nom.MotorCosPhi	Remote	Possible settings	Standard setting	Parameter
	NMCP	0.000 – 1.000	-	Global
Description				Models
Nominal motor cos(φ)				All models

Nom.Mot.Effic.	Remote	Possible settings	Standard setting	Parameter
	NME	0 – 100 %	-	Global
Description				Models
Nominal motor efficiency				All models

Nom.MotorFreq.	Remote	Possible settings	Standard setting	Parameter
	NMF	0 – 99,00	-	Global
Description				Models
Nominal motor frequency				All models

Nom.MotorSpeed	Remote	Possible settings	Standard setting	Parameter
	NMS	0 – 3000 rounds per minute	-	Global
Description				Models
Nominal motor speed				All models

Max. inv. freq.	Remote	Possible settings	Standard setting	Parameter
	MI	60 – 100 Hz	-	Global
Description				Models
Maximum output frequency of the inverter				All models

Acceler. Time	Remote	Possible settings	Standard setting	Parameter
	ACCT	0.00 – 99.00 s	1.00	Global
Description				Models
Motor acceleration time				All models

Deceler. Time	Remote	Possible settings	Standard setting	Parameter
	DECT	0.00 – 99.00 s	1.00	Global
Description				Models
Motor deceleration time				All models

Inv.PulseFreq.	Remote	Possible settings	Standard setting	Parameter
	IPF	2, 4, 6, 8, 10, 12, 14, 16 kHz	-	Global
Description				Models
Inverter pulse frequency				All models

Inv.Base Freq.	Remote	Possible settings	Standard setting	Parameter
	IBF	50 / 60 Hz	-	Global
Description				Models
Inverter base frequency This parameter shall be set the same as the power line frequency				All models

ResetInv.ToDefault	Remote	Possible settings	Standard setting	Parameter
	IRST	-	-	Global
Description				Models
Reset inverter parameters to default This command reset all inverter internal parameters (not listed here) to the default values, optimized for THS. A confirmation will be requested.				All models

RS232 Baud Rate	Remote	Possible settings	Standard setting	Parameter
	BR	9600 / 57600 bps	57600	Global
Description				Models
Setting of the RS232 baud rate				All models

aux.RS232 baudrate	Remote	Possible settings	Standard setting	Parameter
	AUBR	9600 / 57600 bps	57600	Global
Description				Models
Setting of the auxiliary RS232 baud rate				All models

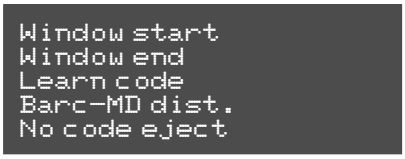
Bounce time	Remote	Possible settings	Standard setting	Parameter
	BT	0,001 – 0,200 s	0,005	Global
Description				Models
Setting of the minimum activation time for fast inputs Minimum activation time for a fast input, to be considered active. The fast inputs are: Photocell, Following conv., Low Air Pressure, Bin absent, Ejectin Confirm, Bin full, External reset, Inhibition.				All models

Bounce t. slow	Remote	Possible settings	Standard setting	Parameter
	BTS	0,001 – 0,200 s	0,05	Global
Description				Models
Setting of the minimum activation time for manual inputs Minimum activation time for a slow input, to be considered active. The slow inputs are: all inputs related to the emergency circuit, buttons start, stop, up, down and reset				All models

3.12 – Barcode menu

List of parameters available under the **Barcode** menu.

This menu is available only upon request.



Window start	Remote	Possible settings	Standard setting	Parameter
	WS	1 - 48	-	Global
Description				Models
First of product identification characters First character of series used to identify the product within the code. *Example: If on an EAN13 code (code length 13 digits) we want to ignore the first 3 digits, we must set WS=4 and WE=13. In this case code 8004040090011 is considered the same of code 9114040090011.*				All models

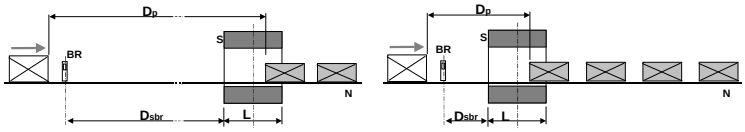
Window end	Remote	Possible settings	Standard setting	Parameter
	WE	1 - 48	-	Global
Description				Models
Last of product identification characters Last character of series used to identify the product within the code. *Example: If on an EAN13 code (code length 13 digits) we want to ignore the last 2 digits, we must set WS=1 and WE=11. In this case code 8004040090011 is considered the same of code 8004040090022.*				All models

Learn code	Remote	Possible settings	Standard setting	Parameter
	LC	ON / OFF	OFF	Related to the current product

Description	Models
Activation of code/product association phase Command which allows a code to be associated with a product. When activated (LC=ON), the message "Pass Code" appears on the display. After the barcode is passed in front of the reader, the message "ENTER to confirm" and the code read both appear on the display. Press E ENTER to associate the code read with the current product, press P PROG key to cancel the operation. if one of the arrow keys is pressed, a new request to pass the barcode in front of the reader is made.	All models

Barc-MD dist.	Remote	Possible settings	Standard setting	Parameter
	BD	300 – 5000 mm	-	Global

Description	Models
Distance between reading point and antenna The reader is mounted upstream of the probe in order to read a code stamped on the package. If the code is recognised, the reader sends a command to the metal detector to select the relevant product type. The time required by the THS/21 to process the barcode is usually insignificant, but becomes important if the band is changed due to a modification in the type of product. When the metal detector receives the signal to change product type, an internal adjustment procedure is activated the length of which determines the minimum distance between two packages with different codes, that is to say containing different products.	All models



Model / Event	**THS/MS21** with change of band (BA parameter) between one product and the other	**Other THS/21 models** and **THS/MS21** without change of band (BA parameter) between one product and the other
Distance between the packs	**$D_p \geq L$ + 3000 mm**	**$D_p \geq L$ + 300 mm**
Distance between the barcode reader and the THS/21 probe	**$D_{sbr} \geq 3000$ mm**	**$D_{sbr} \geq 300$ mm**

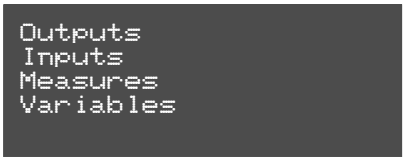
S	probe/electronics unit of the metal detector	**L**	length of probe
N	conveyor belt	**Dsbr**	Distance THS/21 probe-barcode reader
BR	Barcode reader	**Dp**	Distance between packs of different products

Nocode eject	Remote	Possible settings	Standard setting	Parameter
	NE	ON / OFF	OFF	Global

Description	Models
Ejection of packs with wrong code When activated, the packages without barcodes or with invalid barcodes are ejected. If deactivated, there is no action. This command is available only if the barcode reader function is enabled. *Note: In order to function, a photocell for synchronisation of the packs must be installed. This photocell can be installed before or after the THS/21 probe; HOWEVER, IT MUST BE INSTALLED AFTER THE BARCODE READER*	All models

3.13 – I/O Status Menu

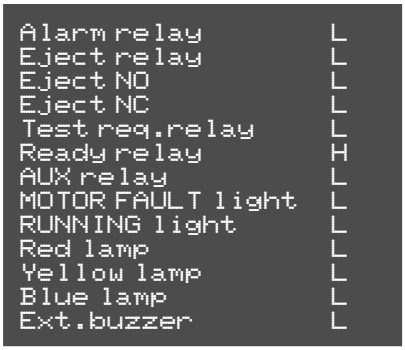
This menu shows, in real time, the list of input and output lines with indication of their status, together with the value of the measures performed by and variables set on the Metal Detector. The status display is subdivided into practical submenus.



3.13.1 – Outputs

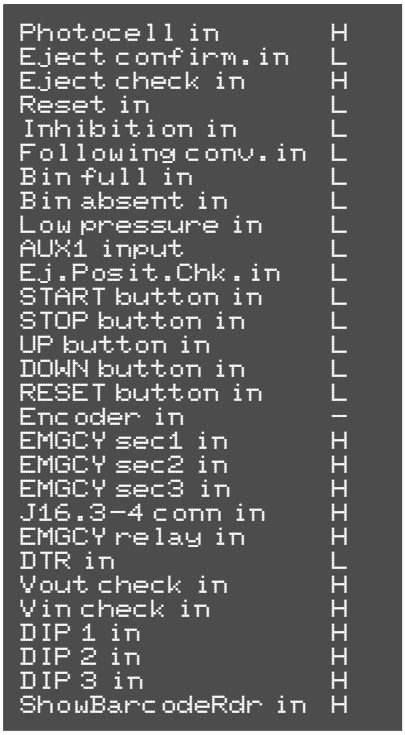
This submenu shows, in real time, the list of output lines with indication of their status. L stands for Low, H stands for High.

Pressing the E key, it is possibile to manually change each state.



3.13.2 – Inputs

This submenu shows, in real time, the list of input lines with indication of their status. L stands for Low, H stands for High.

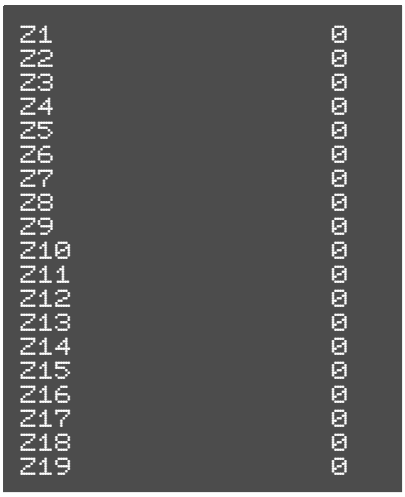


3.13.3 – Measures

This submenu shows a list of measures performed in real time by the detector.

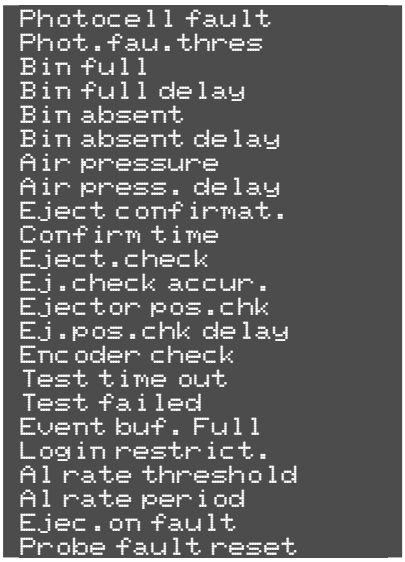
3.13.4 – Variables

This submenu shows a list of variables, only for technical assistance.



3.14 – Diagnosis managem. Menu

List of parameters available under the **Diagnosis managem.** menu.



Photocell fault	Remote	Possible settings	Standard setting	Parameter
	PA	ON / OFF	OFF	Global
Description				Models

Enabling of photocell fault alarm

If an ejection check photocell is not installed, with PA = ON, in case of synchronisation photocell fault (continuously activated), the system goes into malfunction mode. If set to OFF, the system does not go into malfunction mode.
If the photocell is in a continuously active state for a long period, this is interpreted as a malfunction of the sensor by the self-diagnosis system. There are many possible causes (wrong position, short-circuited wiring etc.).
If an ejection check photocell is present, the diagnosis is made comparing the number of activations and deactivations of each photocell.
When a photocell is activated for PAT times while the other is not active, an error message is displayed.

On systems without encoder and with the Control Power Box, it is the installer's and operator's responsibility to ensure that **material does not remain in front of the photocell when the belt is stopped**: if it does, the photocell will be continuously active even though it is not malfunctioning. If the foregoing situation can not be avoided, it is advisable to disable photocell self-diagnosis.

All models

Phot.fau.thres	Remote	Possible settings	Standard setting	Parameter
	PAT	110 – 10000	-	Global
Description				Models

Photocell fault threshold

When a photocell is activated for PAT times while the other is not active, an error message is displayed.

All models

Bin full	Remote	Possible settings	Standard setting	Parameter
	LF	ON / OFF	OFF	Global
Description				Models

Enabling of "BIN_FULL" alarm

If the input remains active for more than 5 seconds, the malfunction signal is activated.
The alarm is reset by pressing the E ENTER key.

All models

Bin full delay	Remote	Possible settings	Standard setting	Parameter
	LFD	0 – 60 s	0	Global
Description				Models
Time delay of "BIN_FULL" alarm Time delay from the activation of the photocell to the alarm activation.				All models

Bin absent	Remote	Possible settings	Standard setting	Parameter
	LA	ON / OFF	OFF	Global
Description				Models
Enabling of "BIN_ABS" alarm If the input remains active for more than 5 seconds, the malfunction signal is activated. The alarm is reset by pressing the E ENTER key.				All models

Bin absent delay	Remote	Possible settings	Standard setting	Parameter
	LAD	0 – 60 s	5	Global
Description				Models
Time delay of "BIN_ABS" alarm Time delay from the activation of the sensor to the alarm activation.				All models

Air pressure	Remote	Possible settings	Standard setting	Parameter
	AP	ON / OFF	-	Global
Description				Models
Alarm in case of insufficient air pressure OFF: LOW_PRESS input ineffective; ON: if the LOW_PRESS input is active the system goes into "Low Pressure" fault mode.				All models

Air press. delay	Remote	Possible settings	Standard setting	Parameter
	APDL	0 – 60 s	3	Global
Description				Models
Time delay of "LOW_PRESS" alarm Time delay from the activation of the sensor to the alarm activation.				All models

Eject confirmat.	Remote	Possible settings	Standard setting	Parameter
	CE	ON / OFF	-	Global
Description				Models
Enabling of "Confirm ejection " alarm If set to OFF, the confirm ejection is deactivated. If set to ON, after activation of the ejection relay, the status of the "confirm ejection" input is checked; if, after time CT (hundredTHS/21 of a second), the input has not been activated (see parameter IE), the "fault ejection" is activated. This may be caused by the failure to move a contaminated pack into a storage container. The fault relay is activated if the input remains active for a few seconds – e.g. a package is jammed. The alarm is reset by pressing E ENTER.				All models

Confirm time	Remote	Possible settings	Standard setting	Parameter
	CT	0,01 – 60,00 s	-	Global
Description				Models
Confirm ejection time With the Ejection Confirmation activated (CE=ON), after activation of the ejection relay the status of the "eject confirmation" input is checked; if, after time CT, the input has not been activated (see parameter IE), the "fault ejection" status is activated (fault relay, visible and audible indicators activated, message "Fault: ejection" displayed). This may be caused by the failure to move a contaminated pack into a storage container. The "fault ejection" status is activated if the input remains active for a few seconds – e.g. if a pack is jammed. The alarm is reset by pressing the E ENTER key.				All models

Eject.check	Remote	Possible settings	Standard setting	Parameter
	ECK	ON – OFF	-	Global
Description				Models
Ejection check functionality The metal detector checks that the area cleared from packages by the ejector, is really cleared.				All models

Ej.check accur.	Remote	Possible settings	Standard setting	Parameter
	ECKA	2 – 250 mm	-	Global
Description				Models
Accuracy of the ejection check functionality The check of the area cleared by the ejector is reduced by ECKA mm at the begin and at the end of the nominal area.				All models

Ejector pos.chk	Remote	Possible settings	Standard setting	Parameter
	EPC	ON – OFF	-	Global
Description				Models
Activation of the ejector position verification If set to ON th Metal Detector will perform the check on the ejector position.				All models

Ej.pos.chk delay	Remote	Possible settings	Standard setting	Parameter
	EPCD	1,00 – 60,00 s	1,00	Global
Description				Models
Setting of the ejector position verification delay				All models

Encoder check	Remote	Possible settings	Standard setting	Parameter
	EA	ON – OFF	OFF	Global
Description				Models
Activation of the encoder check functionality **Control Power Box** 10 seconds after the activation of the following conveyor input, if the speed read by the encoder is outside BL and BM limits, an error message is displayed **Conveyor Control System** After 10 seconds the following conveyor is activated, if the speed read by the encoder is lower than 0.7 BL or higher than 1.3 BM, an error message is displayed Conveyor Control System.				All models

Test time out	Remote	Possible settings	Standard setting	Parameter
	FT	ON / OFF	ON	Global
Description				Models
Activation of fault status if maximum time for test expires FT=ON: If periodic tests are enabled, the fault signal is activated if the maximum timeout is exceeded.				All models

Test failed	Remote	Possible settings	Standard setting	Parameter
	FF	ON / OFF	ON	Global
Description				Models
Activation of fault status if a test fails FF=ON: If a test fails, the fault signal is activated.				All models

Event buf. full	Remote	Possible settings	Standard setting	Parameter
	FB	ON / OFF	OFF	Global
Description				Models
Activation of fault signal when the event memory buffer is full The alarm is given when the buffer is 90% full. The only possible action in this case is to print the events and delete the buffer contents (Print menu).				All models

Login restrict.	Remote	Possible settings	Standard setting	Parameter
	FLR	ON / OFF	ON	Global
Description				Models
Activation of restricted login after three failed attempts				All models

Al.rate threshold	Remote	Possible settings	Standard setting	Parameter
	ART	0 – 250	0	Global
Description				Models
Setting of alarm rate threshold Maximum number of alarms allowed during alarm rate period (ARP). If ART is set to 0, this function is disabled				All models

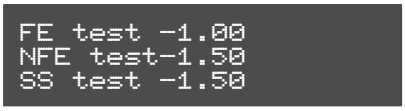
Al.rate period	Remote	Possible settings	Standard setting	Parameter
	ARP	0 – 60 min	0	Global
Description				Models
Setting of alarm rate period If during the alarm rate period (ARP), the number of alarms is higher than ART value, the THS system goes in FAULT status. If ARP=0 then the FAULT status is applied when the system reaches the ART number of alarms. To reset, the alarm counters need to be set to 0.				All models

Ejec.on fault	Remote	Possible settings	Standard setting	Parameter
	EF	ON / OFF	ON	Global
Description				Models
Ejection on fault ON: the ejector is activated in case of fault; OFF: the ejector is NOT activated in case of fault				All models

Probe fault reset	Remote	Possible settings	Standard setting	Parameter
	PFR	MAN / AUT	AUT	Global
Description				Models
Automatic probe fault reset If set to MAN, the system needs to be manually reset for each probe fault, even when the fault is automatically solved by the system itself.				All models

3.15 – MD Test menu

List of commands available under the **MD Test** menu.



FE test	Remote	Possible settings	Standard setting	Parameter
	-	-	-	Global
Description				Models
Activation of the test for the standard iron reference sample Test procedure: see “Functionality tests” section of the Instructions manual.				All models

NFE test	Remote	Possible settings	Standard setting	Parameter
	-	-	-	Global
Description				Models
Activation of the test for the reference sample in diamagnetic metal Test procedure: see “Functionality tests” section of the Instructions manual.				All models, except THS/MN21

SS test	Remote	Possible settings	Standard setting	Parameter
	-	-	-	Global
Description				Models
Activation of the test for the reference sample in stainless steel Test procedure: see “Functionality tests” section of the Instructions manual.				All models, except THS/MN21

3.16 – Print menu

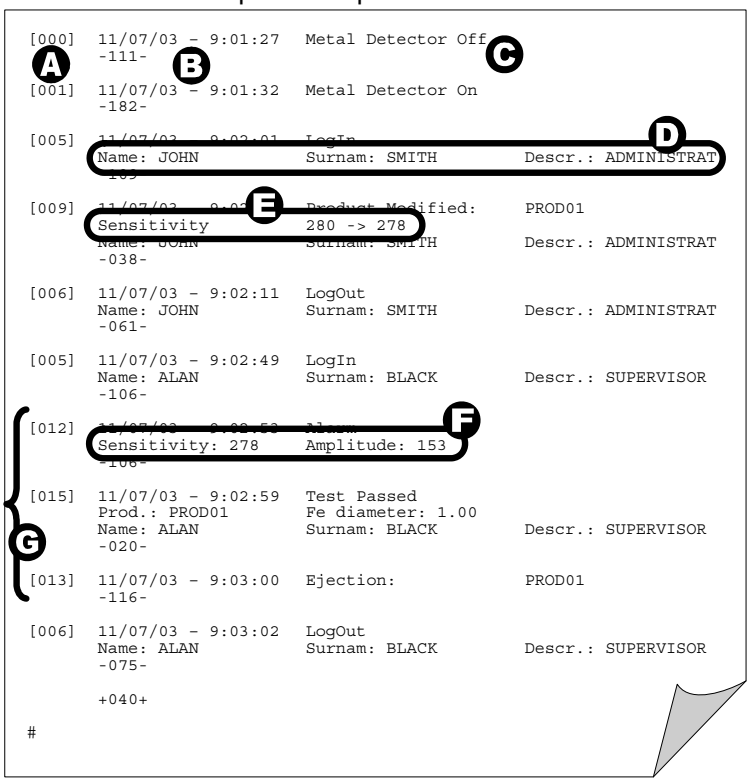
List of commands available under the **Print** menu.

Print events	Remote	Possible settings	Standard setting	Parameter
	PL	-	-	Global
Description				Models
Print events list This command prints all the events occurred since the last print. Up to 1000 events storable.				All models

Once a programming session through Ethernet has been performed, this menu is no more available.

When the events buffer is full ("Events Buffer full" alarm), print the list of events and delete the contents of the buffer to allow storage of new events.

Here below an example of a report:



A	Event code
B	Date and Time
C	Event description
D	User data
E	Parameter change
F	Alarm data
G	Test performed using a ferrous sample

Print all events	Remote	Possible settings	Standard setting	Parameter
	PB	-	-	Global
Description				Models
Print all events This command prints all the last 1000 events.				All models

Erase printed ev	Remote	Possible settings	Standard setting	Parameter
	EV	-	-	Global
Description				Models
Delete printed events from buffer				All models

3.17 – Quality Control menu (Q-C setup)

List of parameters available under the **Q-C setup** menu.

1st test delay	Remote	Possible settings	Standard setting	Parameter
	FTD	00:00 – 23:59	00:05	Global
Description				Models
Pre-defined interval between power-up and the first test request				All models

Test period	Remote	Possible settings	Standard setting	Parameter
	TE	00:00 – 23:59	00:00	Global
Description				Models
Pre-defined interval between Quality Control tests If TE=00:00 the tests are disabled. If TE>00:00 a test is requested every TE interval.				All models

Test max delay	Remote	Possible settings	Standard setting	Parameter
	TD	00:00 – 23:59	00:00	Global
Description				Models
Waiting time for test to be carried out Time within the operator should carry out test every TE interval. *Note: the need to carry out a test is signalled on the display.*				All models

Test mode	Remote	Possible settings	Standard setting	Parameter
	TMD	SINGLE TRIPLE FE/SS NFE/SS FE/NFE	SINGLE	Global
Description				Models
Test execution method SINGLE: The test is performed only on the selected metal test sample (FE, NFE or SS). TRIPLE: The test is expecting the transit of three packages, containing respectively the FE sample, the NFE sample and the SS sample. FE/SS: The test is expecting the transit of two packages, containing respectively the FE sample followed by the SS sample. NFE/SS: The test is expecting the transit of two packages, containing respectively the NFE sample followed by the SS sample. FE/NFE: The test is expecting the transit of two packages, containing respectively the FE sample followed by the NFE sample. ☞ This parameter is available ONLY if the **Ejection mode** (EM) is set to **S** or to **SB** (presence of a photocell)				All models

Sample ampl. check	Remote	Possible settings	Standard setting	Parameter
	SAC	OFF, X2, X3, X4, X6, X8, X12, X16, X24, X32	X4	Global
Description				Models
Sample Amplitude Check When SAC is set to a "Xv" value, during each test the Metal Detector is checking that the signal given by the test sample will not be "v" times higher than the alarm threshold. In case this happens, the display shows the message NULL and the test is recorded as NO (not passed).				All models

3.18 – Test samples Menu

List of parameters available under the **Test samples** menu.

FE diameter	Remote	Possible settings	Standard setting	Parameter
	FD	0.0 – 25.0	-	Global
Description				Models
Diameter of iron sample sphere used to perform the test Datum that must be set for inclusion in the test report. *Note: The value is printed in the Q.C. report and does not effect the sensitivity.*				All models

NFE diameter	Remote	Possible settings	Standard setting	Parameter
	ND	0.0 – 25.0	-	Global
Description				Models
Diameter of non-magnetic metal sample sphere used to perform the test Datum that must be set for inclusion in the test report. *Note: The value is printed in the Q.C. report and does not effect the sensitivity.*				All models, except THS/MN21

SS diameter	Remote	Possible settings	Standard setting	Parameter
	SD	0.0 – 25.0	-	Global
Description				Models
Diameter of stainless steel sample sphere used to perform the test Datum that must be set for inclusion in the test report. *Note: The value is printed in the Q.C. report and does not effect the sensitivity.*				All models, except THS/MN21

3.19 – Commands accessible only in Remote Programming

–	Remote	Possible settings	Standard setting	Parameter
	PE	-	-	Global
Description				Models
Exit from remote programming In case the remote programming is not used for 3 minutes, the PE command is sent automatically by the THS/21				All models

–	Remote	Possible settings	Standard setting	Parameter
	PV	-	-	Global
Description				Models
Software version Provides the software version loaded on the THS/21.				All models

```
#PV <ENTER>
THS/21/STD V5.320 – ALM V5.260
```

–	Remote	Possible settings	Standard setting	Parameter
	HE	-	-	Global
Description				Models
Help Provides the list of commands available, their meanings and their current settings				All models

–	Remote	Possible settings	Standard setting	Parameter
	DA	DD/MM/YY	-	Global
Description				Models
Current date insertion DD = Day, MM = Month YY = last two figures of the year				All models

```
#DA 13/09/07 <ENTER>
#
```

–	Remote	Possible settings	Standard setting	Parameter
	CR	-	-	Related to the current product
Description				Models
Reset of the current product counters Resets the alarm and object counters for the current product.				All models

–	Remote	Possible settings	Standard setting	Parameter
	AR	-	-	Global
Description				Models
Reset total alarm counter				All models

–	Remote	Possible settings	Standard setting	Parameter
	OR	-	-	Global
Description				Models
Reset total pack transit counter				All models

3.20 - Remote programming

Programming can be carried out through a remote computer fitted with an **RS232 interface** or via a **Bluetooth connection**, using a standard communications program (e.g. Windows™ *Terminal*) or the CEIA MDScope program, available on request.

3.20.1 - Communication parameter settings

RS232

- Baud rate as set in parameters BR or AUBR.
- 8 data bits
- NO parity
- 1 stop bit
- no communication protocol
- CR -> CR+LF
- Local echo = OFF
- Terminal: VT 100 (ANSI)

Bluetooth

- Open the Bluetooth software present in your computer.
- Create a new connection. The software will scan the area for available Bluetooth devices. In the list will appear a device named with the THS model and Serial Number. For example: **THS/MS21 SN99999999**
- Selecting this device, the software will ask the insertion of a PIN. The PIN is stored in the **BPIN** parameter, under Adiministration menu (default value is 00000000).
- Your Bluetooth software will now connect with the device, returning a message where will be indicated the virtual COM port created for the device. For example: **COM42**.

3.20.2 - Entering remote programming

Connecting to a metal detector

- Run the communications program
- Set the COM port of the device you want to be connected with.
- Enter the password and key ENTER. The command prompt will appear

```
(password) <ENTER>
#
```

Note: each password accesses programming at the appropriate level (operator, supervisor, …)

3.20.3 - Displaying a parameter setting

Type the code of the parameter and press ***ENTER***: the parameter setting will appear next to it.

```
#SE<ENTER>
#SE 30
```

3.20.4 - Changing a parameter setting

Type the code of the parameter followed by a space, the new value and ***ENTER***.

```
#SE 35<ENTER>
#
```

3.20.5 - Executing a function

Key in the parameter code and press ***ENTER***.

```
#PL<ENTER>
#
```

4 – APPENDIX

4.1 - Parameters list – Alphabetical order

4.2 - Parameters list – Menu order

Page left intentionally blank

Page left intentionally blank