P1dWB

Manual code no.:
D296WB00GF

MARPOSS

MANUFACTURER	Marposs SpA
ADDRESS	Via Saliceto, 13 - Bentivoglio (BO) Italy www.marposs.com
TYPE OF EQUIPMENT - MODEL	**P1dWB (firmware V 1.0)**
FUNCTION	Measurement system for grinding machines
MANUAL CODE	**D296WB00GF**
MANUAL TYPE	**INSTALLATION AND USER MANUAL**
ISSUE	January 2017
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	Original Language: Italian

For information on the "**RoHS**" Directive that regulates the presence of hazardous substance in Marposs electronic and electrical equipment, consult:

http://www.marposs.com/compliance_detail.php/eng/rohs

For information about the use of raw materials originating from combat zones in Marposs products, see:

http://www.marposs.com/compliance_detail.php/eng/conflict_minerals

CE

This product conforms to the EMC requirements, as defined by the directive.

- **2014/30/EU**

This product has been designed, assembled and tested in conformity with the following European standards:

- **EN61010 - 1: (SAFETY)**
- **EN61326 - 1: (EMC)**

The product conforms to the directive provided the installation conditions described in this manual are respected.
This product has been designed to be operated in industrial environments; the equipment should be connected to a SELV type 24 V d.c. power supply, as defined by EN60950-1 and NOT to the mains electrical power supply.

INFORMATION FOR USERS

in accordance with article 26 of the Italian Legislative Decree N. 49, "Enactment of the Waste Electrical and Electronic Equipment Directive 2012/19/EU", dated 14 March 2014.

The crossed out wheelie bin symbol that appears on the product or its packaging indicates that the product must be disposed of separately from other waste materials at the end of its working life.

The manufacture shall be responsible for organizing and handling separate collection of the equipment described in this manual at the end of its working life. Users who wish to dispose of the equipment must contact the manufacture and follow the procedures implemented by the latter for the separate collection of the equipment at the end of its working life.

Sorting the equipment to be disposed of into its component materials before recycling, treatment and environmentally compatible disposal helps to prevent potentially harmful effects on health and the environment and favours re-use and/or recycling of these materials.

Illegal disposal of the product by the user is punishable by the application of fines or other penalties as defined by the applicable regulation.

MARPOSS S.p.A. is not obliged to notify customers of changes to the product.
The descriptions in this manual in no way authorize tampering by unauthorized personnel.
The warranty covering the equipment shall be void if any evidence of tampering is found.

SUMMARY

1 GENERAL INFORMATION

1.1 Foreword

The **P1dWB** has been designed and built to be installed in machines, such as grinders, as a machining control accessory.
The **P1dWB** must be installed in accordance with the instructions provided in this manual and shall not conform to the European standards and directives listed on page 2 unless these conditions are fulfilled.
Any modification that alters the **P1dWB** construction specifications, whether mechanical or electrical, can only be performed by Marposs that will certify the compliance with the safety standards. Any modification or maintenance not indicated in this document shall be considered unauthorised.
Marposs declines all responsibility in case of any non-compliance with the above.

The descriptions and illustrations supplied with this documentation are not definitive. Marposs reserves the right to modify the product as and when necessary, in order to improve performance, or for any other reason, and without the obligation to update this document.
This document may not be reproduced or transmitted, either wholly or partially, in any form or medium without the prior permission of Marposs SpA.
Legal action will be taken in the event of any violations of this condition.

1.2 Original version

This document was originally written in Italian.
In case of any dispute arising from translation errors and inaccuracies, even where carried out by Marposs, the definitive version shall be in Italian.

1.3 Warnings for users

This instruction manual provides all the specific information necessary for the knowledge and correct use of the Marposs equipment in your possession.

THE USER MUST ENSURE THAT ALL PERSONEL ASSIGNED TO INSTALL, OPERATE AND SERVICE THE EQUIPMENT READ THIS MANUAL

The information contained in this manual is intended for use by the following categories of personnel:

- Marposs personnel, or personnel assigned by the manufacturer of the machine tool that will house the **P1dWB** (henceforth the client), who will be directly responsible for installing the equipment.
- Technical personnel employed by the end user (hereafter "the User") who will be directly responsible for operating the Marposs equipment.
- Technical Personnel assigned by the User to carry out maintenance work on the production line where the **P1dWB** is installed.

The manual is an integral part of the equipment, therefore the user must ensure that it is always available and in kept good condition throughout the working life of the device.
Marposs' responsibility is limited to the correct use of the **P1dWB**, as defined in this manual and its attachments.
Marposs shall provide the customer with a copy of this manual and its attachments.

Preparations that are the responsibility of the Customer.

The customer shall:

- Ensure the **P1dWB** is positioned and secured correctly on his/her machine.
- Carry out the electric connections.
- Set-up the **P1dWB**.

The User shall:

- Program the **P1dWB**
- Perform the routine and extraordinary maintenance operations.

1.4 Functional test and warranty

Materials are guaranteed against defects, with the following limitations:

- DURATION OF WARRANTY: the warranty covers the product and all repairs carried out on it during the standard warranty period.
- OBJECT OF THE WARRANTY: the guarantee applies to the product or its parts marked with the serial number or other identification systems used by Marposs.

The above warranty applies unless other agreements are reached between Marposs and the Customer.

1.5 Service and maintenance requests

In case of failures or faults that require the intervention of Marposs personnel contact your local technical support centre (for a complete list, go to: http://www.marposs.com/worldwide_addresses.php/eng).

1.6 How to order spare parts

To order spare parts please contact your closest Marposs centre (listed at: http://www.marposs.com/worldwide_addresses.php/eng)

1.7 Consulting this manual

Various different text formats were used when preparing this manual. Various safety warnings have been defined.

1.7.1 Key to symbols:

ATTENTION
This symbol indicates the risk of damage to the electronic unit or other devices connected to it, or the risk of data loss.

ATTENTION
This symbol indicates the presence of risk conditions for the operator or technician.

FIRE OR EXPLOSION HAZARD
The **P1dWB** may not be used in locations where there is a risk of explosion and/or fire (**P1dWB** is not certified pursuant to directive 94/9/EC ATEX).

CRUSHING HAZARD
Proceed with caution when moving or handling the **P1dWB**.

ENVIRONMENTAL HAZARD
Recycle and/or dispose of in accordance with the applicable regulations in the destination Country.

NO SMOKING
Smoking is prohibited while installing the unit.

N.B.
Important information that may help the operator to use and understand the system is contained in boxes indicated by the letters "N.B." in bold.

INFORMATION
Data that refer to the correct use of the equipment.

THE FINAL MACHINE DOCUMENTATION MUST BE READ
in order to ensure that the machinery is operated correctly.

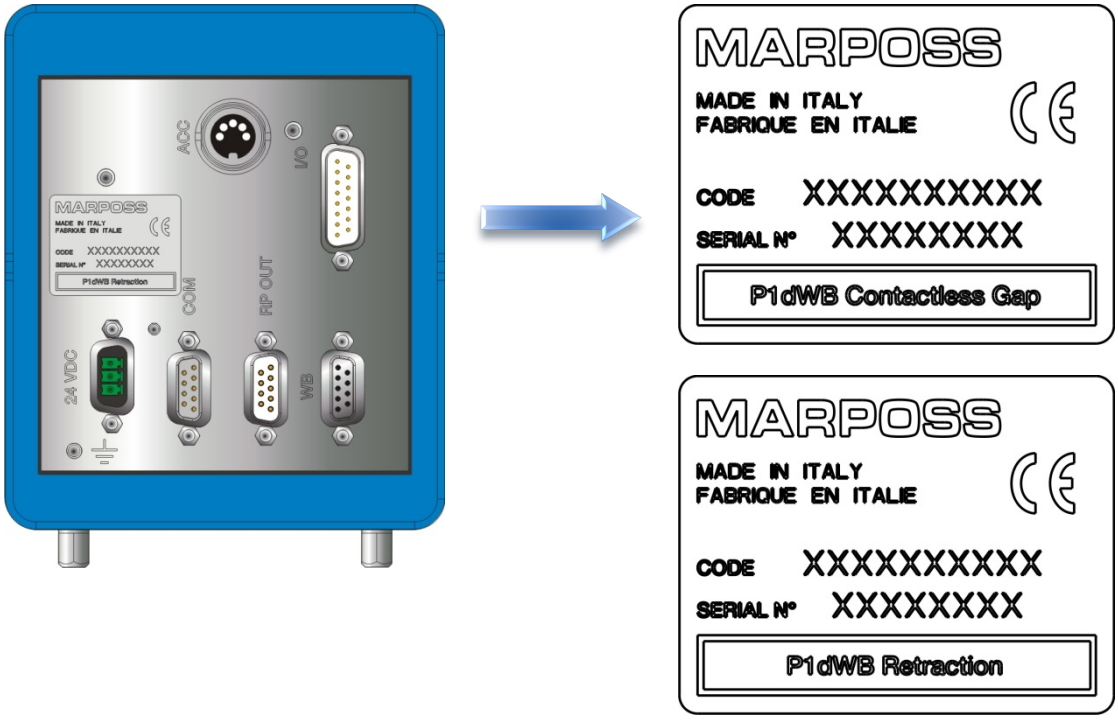
WARNING - Area protected against ESD.
Observe the procedures for handling devices that are sensitive to electro-static discharges.

1.8 Identification plates

The identification plate is positioned on the rear of the **P1dWB** :
the plate includes the Marposs product identification code (CODE), the serial number (SERIAL No.) of the individual **P1dWB** and the CE marking.

Warnings:

a) Never remove the plate from the original position selected by Marposs;
b) do not modify or alter any of the technical details indicates on it;
c) do not attempt to clean the plate using objects, such as wire brushes, that could render the data indicated on it illegible.
d) When requesting technical assistance, always quote the data indicated on the plate



N.B.
All the data listed on the plate must always be legible.
If a data plate is damaged or even partially illegible due to wear, ask MARPOSS for another one, quoting the data in these instructions or on the original data plate.

2 SAFETY

2.1 General safety information

2.1.1 Reference directives

The **P1dWB** has been designed and manufactured in accordance with the directives indicated on page 2. The **P1dWB** must be managed by a grinder type machine used to machine mechanical parts, in compliance with the applicable safety standards in the user's country in terms of machinery equipment.

2.1.2 Product conformity

The **P1dWB** described in this document has been designed and built to be installed in an industrial type environment.

ATTENTION
Any modification that alters the **P1dWB** design and/or manufacturing specifications may only be implemented by Marposs, who shall be responsible for certifying compliance with the safety standards.
Therefore the modifications or maintenance interventions not set out in this document shall be considered unauthorised.
Marposs declines all responsibility in case of any non-compliance with the above.

2.1.3 Selecting the operator

2.1.3.1 Definition of operator

For the attention of Health and Safety Officers 1.1.1 "Definitions" of attachment I of the machinery directive 2006/42/EC, defines the **operator** as the person or persons assigned to install, operate, adjust, clean, repair and move a machine or to repair it.

2.1.3.2 Physical and mental health of the operator/installation personnel

The operator assigned to install the **P1dWB** must be aware of dangers that may be generated while installing machining equipment, and capable of dealing with them.

2.1.4 Personal protection equipment (PPE)

The operators assigned to assemble and maintenance of the **P1dWB** must use the following personal protection equipment:

Operators responsible for mounting the gauge:


SUITABLE CLOTHING


SAFETY SHOES


SAFETY GLOVES

Personnel responsible for operating the gauge/machine where it is installed:
The operator does not require particular PPE when operating the gauge, apart from that required in the work environment. Additional information may be found in the manual provided with the machine where the gauge is to be installed.

Maintenance personnel:


SUITABLE CLOTHING


SAFETY SHOES


SAFETY GLOVES


SAFETY GOGGLES

The operator must use only PPE that complies with the locally applicable directives.

IMPORTANT
In order to guarantee the complete safety of the operator, it is important to note that **this list is not exhaustive**. The operator must use both the obligatory personal protection equipment required in the specific production environment (plant) and that prescribed by the employer.

2.1.5 General notes

2.1.5.1 Operator's position

The **P1dWB** has been designed and built to be slaved to a machine tool, of which it becomes, to all intents and purposes, a sub-assembly.
Therefore, refer to the final machine that the **P1dWB** will be installed in for a description of how the operator should behave during the various operation processes, in particular during production and maintenance.

2.1.5.2 Operator's duties

The operator assigned to **install** the unit shall be responsible for:

1. lifting, transporting and storing the **P1dWB**;
2. assembling and programming the **P1dWB**;
3. remove the **P1dWB**.

During **normal operation** the operator shall be responsible for:
The operator is not required to perform any operations while the is **P1dWB** operating, consult the manual supplied with the machine where the unit is to be installed for further information.

The **maintenance** personnel shall be responsible for:

1. perform routine maintenance;
2. perform extraordinary maintenance;
3. signal unexpected situations (e.g. wear, failures, breakages, errors, etc.) not set out in this document and therefore generated by unforeseen causes.

2.1.5.3 Training

THE FINAL MACHINE DOCUMENTATION MUST BE READ
The operators assigned to monitor normal operation must be trained in accordance with the instructions set out in the documentation supplied with the machine that the **P1dWB** is is installed on, as it is not the scope of this documentation to be exhaustive.

The following personnel require training:

Operators assigned to transport, store and install the gauge, in order to:

- In order to ensure they are aware of the appropriate lifting and transport methods used for the parts of the **P1dWB**, as stipulated by Marposs, in order to prevent the risks associated with moving loads;
- Ensure they are aware of the correct storage procedures for the parts of the **P1dWB** in order to avoid damaging important parts, not only in terms of safety but also from an operational point of view;
- Ensure they are aware of the correct **P1dWB** installation procedures, such as wiring the electrical parts, in order to prevent assembly errors that could generate dangerous situations for the health and safety of the operators.

Operators assigned to monitor normal operation of the P1dWB, in order to:

- Ensure they adhere to the applicable regulations governing the use of the product, and that they read and following the instructions and other information provided in the attached documentation.

Operators assigned to carry out maintenance activities on the P1dWB, in order to:

- ensure they are aware of the correct procedures for carrying out scheduled and unscheduled maintenances activities on the **P1dWB**

2.1.5.4 Procedures

Before performing any of the operation described in these instructions using the **P1dWB**, the Operator must check that all safety conditions are met in order to prevent accidents.

2.2 Safety instructions regarding theP1dWB

2.2.1 Authorised and unauthorised use

2.2.1.1 Intended use

The **P1dWB** has been designed and built to be installed on automatic machines such as grinders in order to manage the Marposs measurement heads used for in-process part dimension checks.

N.B.
Any use that differs from the use described above shall be considered unauthorised.
Any modification altering the **P1dWB** in terms of safety and risk prevention may only be made by Marposs, which will certify equipment compliance with safety standards.
Therefore, modifications or maintenance operations not covered by the technical documentation shall be considered arbitrary.
Marposs declines all responsibility in case of any non-compliance with the above.

2.2.1.2 Unauthorised uses

Do not use the **P1dWB**:

1. in environments where there is a risk of fires or explosions;
2. in environments where contaminants such as acids, corrosive gases, salt etc. are present (see paragraphs 4.1.1.1 “Type of environment” and 4.1.1.6 “Contaminating agents”);
3. in environments where there is a risk of the **P1dWB** being exposed to radiation, such as microwaves, ultraviolet rays, lasers, X rays, etc. (see paragraph 4.1.1.7 “Ionising and non-ionising radiation”);

Furthermore, the user MAY NOT:

4. modify the original **P1dWB** settings;
5. connect the **P1dWB** to power supplies having specifications that differ from those described in this manual;
6. use components for uses not set out by Marposs.

2.2.2 Risks, protection devices, warnings, caution

2.2.2.1 Residual risks

Electrical wiring

Moreover, it is important to remember that:
incorrect actions by the operator can generate residual risks.
The risks and dangers generated by:

- operator distraction,
- failure to adhere to the information and rules contained in these operating instructions,
- deliberate tampering with the **P1dWB** and/or its safety devices,

3 SHIPPING, STORAGE

3.1 General warnings

3.1.1 Personal protection equipment (PPE)

The operators assigned to the transport, store and install the **P1dWB** must be provided with, and use, the PPE indicated in section 0, as well as the obligatory PPE for the environment that the **P1dWB** is used in.

3.1.2 Training

The operators assigned to the transport, store and install the **P1dWB** must be trained and informed as required by the applicable directives in the respective countries.

3.1.3 State of tools and equipment

The operators must use the equipment listed in the corresponding paragraphs when carrying out transport, storage and installation operations.
It is important to ensure that the equipment and tools are in good condition and that they are not worn, excessively aged or fatigued in any way.
The tools must be selected in accordance with the applicable laws and regulations governing working tools and must be used in accordance with the manufacturers' instructions.

3.1.4 Moving loads

When moving loads the operators must pay the utmost attention in order to avoid dangerous movements that could generate dangerous situations for themselves and for the people exposed in the danger zone.
Handling operations must be performed in compliance with the instructions pertaining to the lifting equipment in use.

3.1.5 Taking delivery of the material

During packing all the **P1dWB** technical material is thoroughly checked in order to ensure that no damaged material is shipped.
When unpacking the material check that the **P1dWB** is perfectly intact and not damaged in any way; if so, notify Marposs without delay.

3.2 Packaging, handling, transport

3.2.1 Packaging

The **P1dWB** is protected with carton and an internal insert for the movement and transport operations.

3.2.2 Handling the packaging

The package can be lifted manually, as set out by the general health and safety standards in the work place for manually moving loads, especially when lifting a load from the ground.

3.2.3 Transporting the packaging

The package containing the **P1dWB** must be transported on covered transport vehicles to prevent it and the **P1dWB** being exposed to atmospheric agents.

3.2.4 Disposing of packaging materials

The packaging used for the **P1dWB** consists of materials that may be disposed of without exposing people, animals or property to any significant hazards.
Operators or personnel responsible for disposing of the packaging should be aware that it consists of:

- **Cardboard: external container and internal insert**
- **Polyurethane film: internal insert.**

ENVIRONMENTAL HAZARD
The polyurethane film is NOT biodegradable. Must NOT be disposed of in the surrounding environment; recycle and/or dispose of materials in accordance with the locally applicable regulations.

3.3 Storage

3.3.1 General information

The mechanical and electronic components installed in the **P1dWB** have been selected for their reliability and resistance. The components satisfy the manufacturing safety requirements and have been designed to withstand temperatures between **-25 °C** and **+70 °C (-4 °F ÷ 158 °F)** during transport and storage.

3.3.2 Storing the P1dWB

The **P1dWB** must be stored in a covered area where dust and humidity levels are kept to a minimum.
The warehouse storage shelf must be level and smooth.
Do not position other materials, even light, on the upper part of the **P1dWB** package or the **P1dWB** itself, to avoid damages.

4 INSTALLATION

4.1 General information

Before starting the **P1dWB** installation procedure, the operator must ensure that all the normal mechanical workshop equipment is available.

NO SMOKING
The operator's hands must be free from any foreign objects or dangerous items when carrying out the installation procedures.
For this reason **smoking is prohibited** while installing the unit.

4.1.1 Environmental conditions

When installing the unit, the operator must check that the final machine has been designed and built to operate in the environmental conditions set out below.

4.1.1.1 Type of environment

The **P1dWB** and the relative electrical components have been designed and built to be installed in an industrial plant and to be used only in closed environments where they cannot be subject to atmospheric agents.
Unless indicated otherwise in the contract, the **P1dWB** can operate regularly only in the environmental conditions set out below. Environmental conditions other than those described may damage the machine or cause it to malfunction, giving rise to potential hazardous situations for the operator and exposed personnel.

4.1.1.2 Explosion and/or fire

EXPLOSION AND/OR FIRE HAZARD
P1dWB does not satisfy the requirements of the 94/9/EC (ATEX) directive.
The product has not been designed and manufactured to be operated in environments where there are explosion or fire hazards.

4.1.1.3 Ambient air temperature

The **P1dWB** components will operate correctly at temperatures between **+5** and **+ 45 °C (41** and **113 °F).**

4.1.1.4 Humidity

The equipment is designed to operate correctly at a maximum relative humidity level of 80% and temperatures of up to 31°C (87.8°F), decreasing linearly to a relative humidity level of 50% at a temperature of 40°C (104°F). The equipment may be operated at up to 45°C (113°F), with an additional linear reduction of the relative humidity level to 30%.

4.1.1.5 Altitude

The electrical components are designed to operate correctly up to **2000 metres** above sea level.

4.1.1.6 Contaminating agents

The electrical components have been adequately protected against the foreseeable level of infiltration of solid and liquid bodies when using the **P1dWB** for the intended purposes and in the specified operating environment.
Unless otherwise stated in the contract, the electrical components **DO NOT** have specific protections against contaminating agents such as dust, liquids, acids, corrosive gases, salt, etc.
If it is necessary to use the electrical components and the complete equipment in environments subject to such contaminating agents contact Marposs immediately. Marposs will check the suitability of the assembly based on the environments they are used in.

4.1.1.7 Ionising and non-ionising radiation

The electrical components **ARE NOT** specifically protected against radiation such as microwaves, ultraviolet rays, lasers, X-rays.
If the **P1dWB** is exposed to radiation, additional measures must be implemented to prevent to incorrect operation of the components and their early deterioration.

4.1.1.8 "Normal" environmental lighting

The installation procedure must be carried out under "normal" lighting conditions, i.e. without dazzling the operators with too much light or causing them to strain their eyes in insufficient lighting.
The personnel responsible for installing the **P1dWB** must comply with the minimum requirements set out by the applicable laws in the respective countries in terms of natural and artificial lighting of the premises.
If there is poor lighting in the work place the operator must use portable lighting equipment.

4.1.2 Removing the P1dWB from its packaging

Marposs has not indicated that any special equipment is required when removing the **P1dWB** from its packaging.

ATTENTION
Handle with care: static sensitive components
Before accessing the front panel, operators must make sure they have eliminated any accumulated electrostatic charges by touching a metallic surface that is connected to the building earth system.

5 GENERAL DESCRIPTION OF THE SYSTEM

The **P1dWB** system is designed to resolve the following types of problem on grinding machines:

- **Grinding wheel balancing**
  The system can be used to solve the problems relating to grinding wheel unbalance, in order to optimise the quality of the product safely and quickly.

- **GAP Control:**
  a. *Grinding wheel-work-piece contact check:*
     Defining a noise threshold make it possible to detect the contact between the grinding wheel and the work-piece for the transition from the approach speed to the feed speed.
  b. *Grinding wheel position check*
     Defining a noise threshold makes it possible to detect the position of the grinding wheel with respect to a known reference point, as defined by a CNC elaboration process.
  c. *Dressing continuity check (grinder dressing)*
     By monitoring the acoustic emissions during the grinder dressing process it is possible optimize the dressing cycle. The dressing cycle may be considered complete when the sound emission is continuous and uninterrupted.

- **CRASH CHECK**
  Definition of a correct noise threshold allows detection of accidental grinding wheel collisions.

The system is available in two versions:

- **P1d WB Retraction** - for measurement heads with retraction
- **P1d WB Contactless** – for contactless and GAP transmission measurement heads

Both versions, together with the respective functions, are described in the manual.

This system is compatible with, and can be used to replace, the old Marposs E78 and E82 electronic units, in addition, it is supplied complete with the **P1dWB** Software Tool application for the Windows ® operating system.

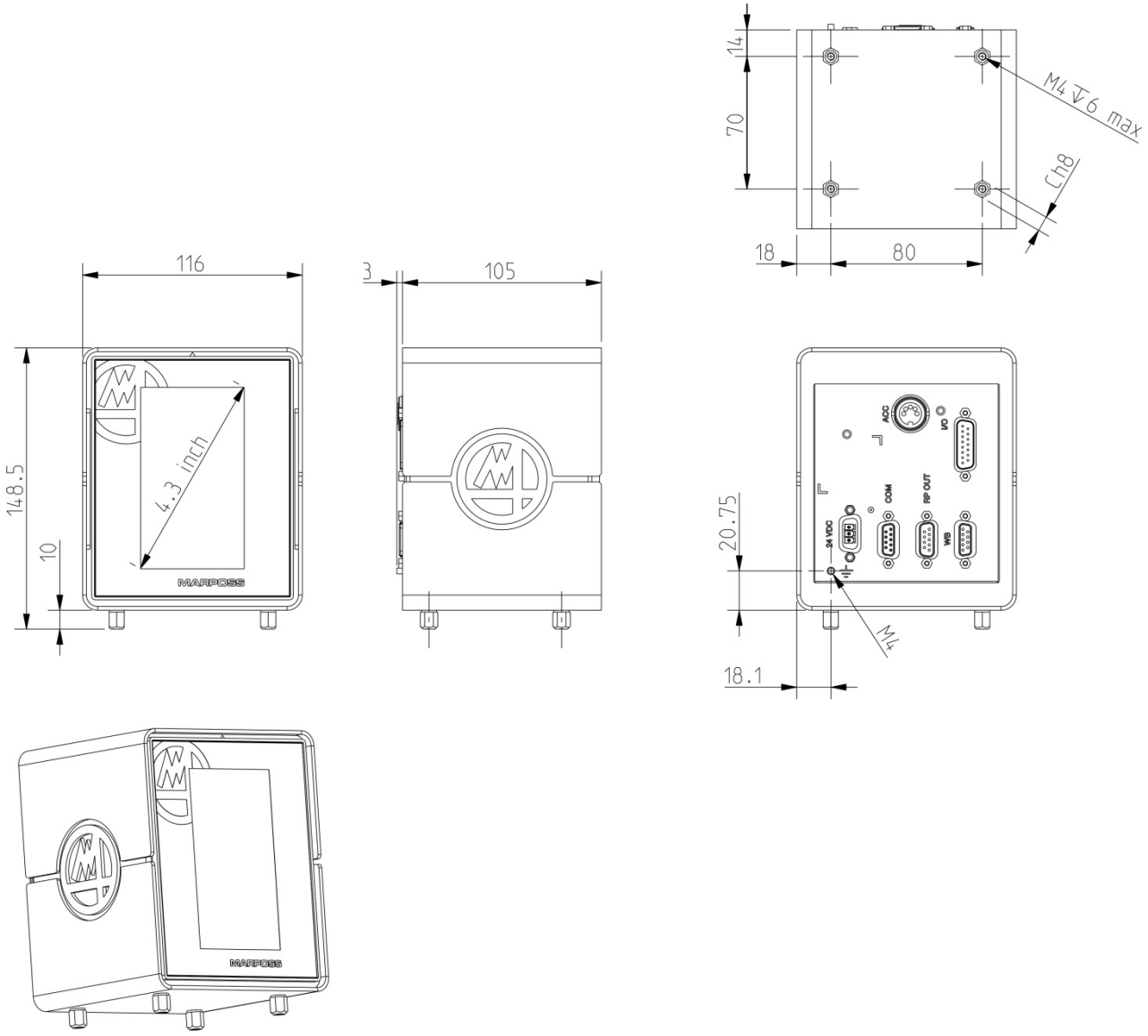
5.1 P1dWB versions

The device is available in 6 different models, which may be identified as follows:

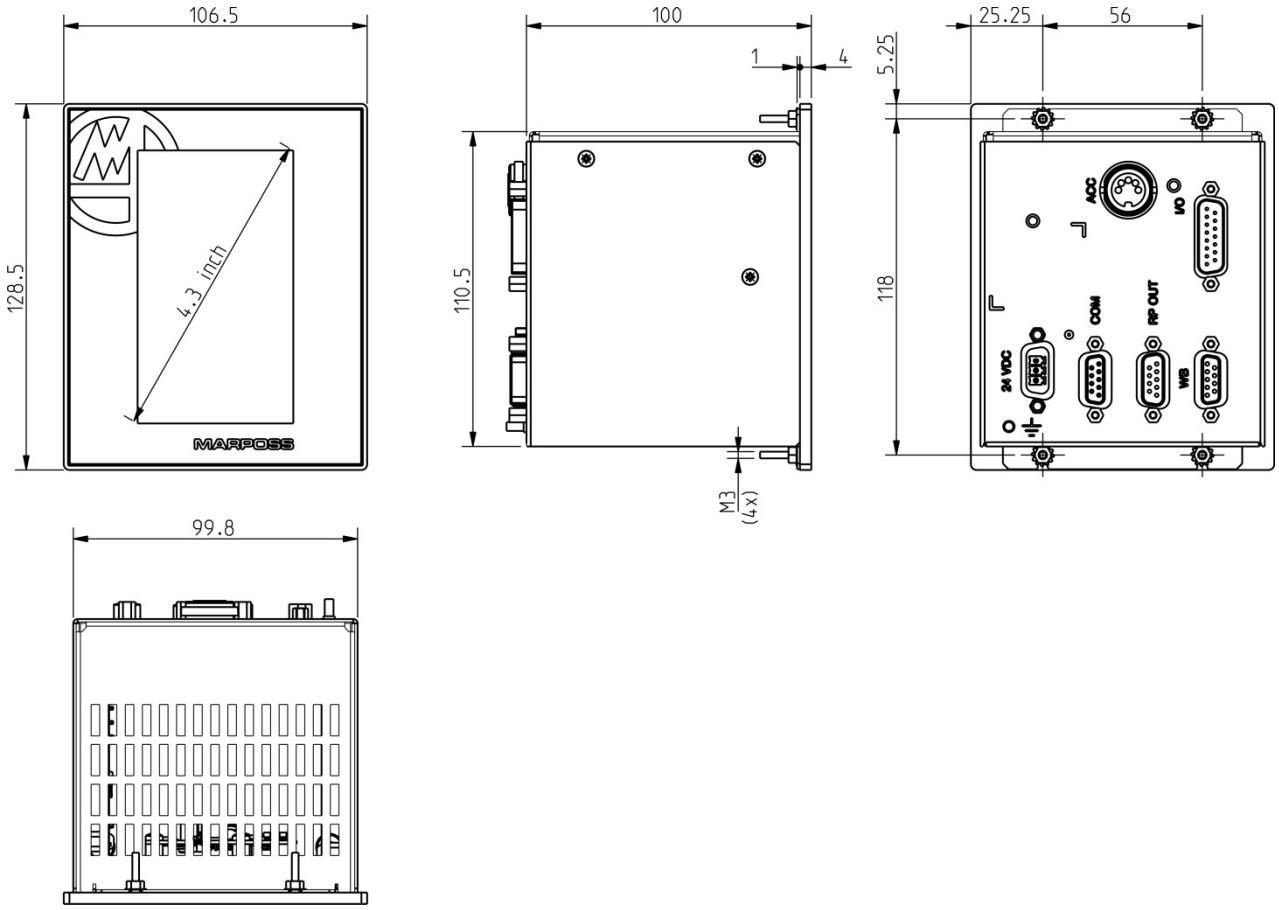
VERSION WITH CASE		
	**Code Number**	**Description**
	830WBC0000	**P1dWB-CG** Version with case - Contactless Gap
	830WBR0000	**P1dWB-R** Version with case – Retraction
RACK VERSION		
	**Code Number**	**Description**
	830WBC1000	**P1dWB-CG** Rack version - Contactless Gap
	830WBR1000	**P1dWB-R** Rack version – Retraction
VERSION WITH REMOTE PANEL		
	**Code Number**	**Description**
	830WBC2000	**P1dWB-CG** Version with remote panel - Contactless Gap
	830WBR2000	**P1dWB-R** Version with remote panel – Retraction
	7708010000	Remote panel

5.2 Size

P1dWB size and volumes: Case versions

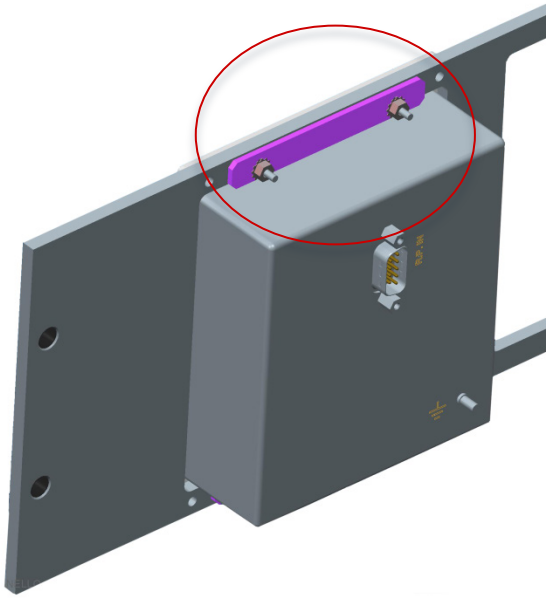


P1dWB size and volumes: Rack version

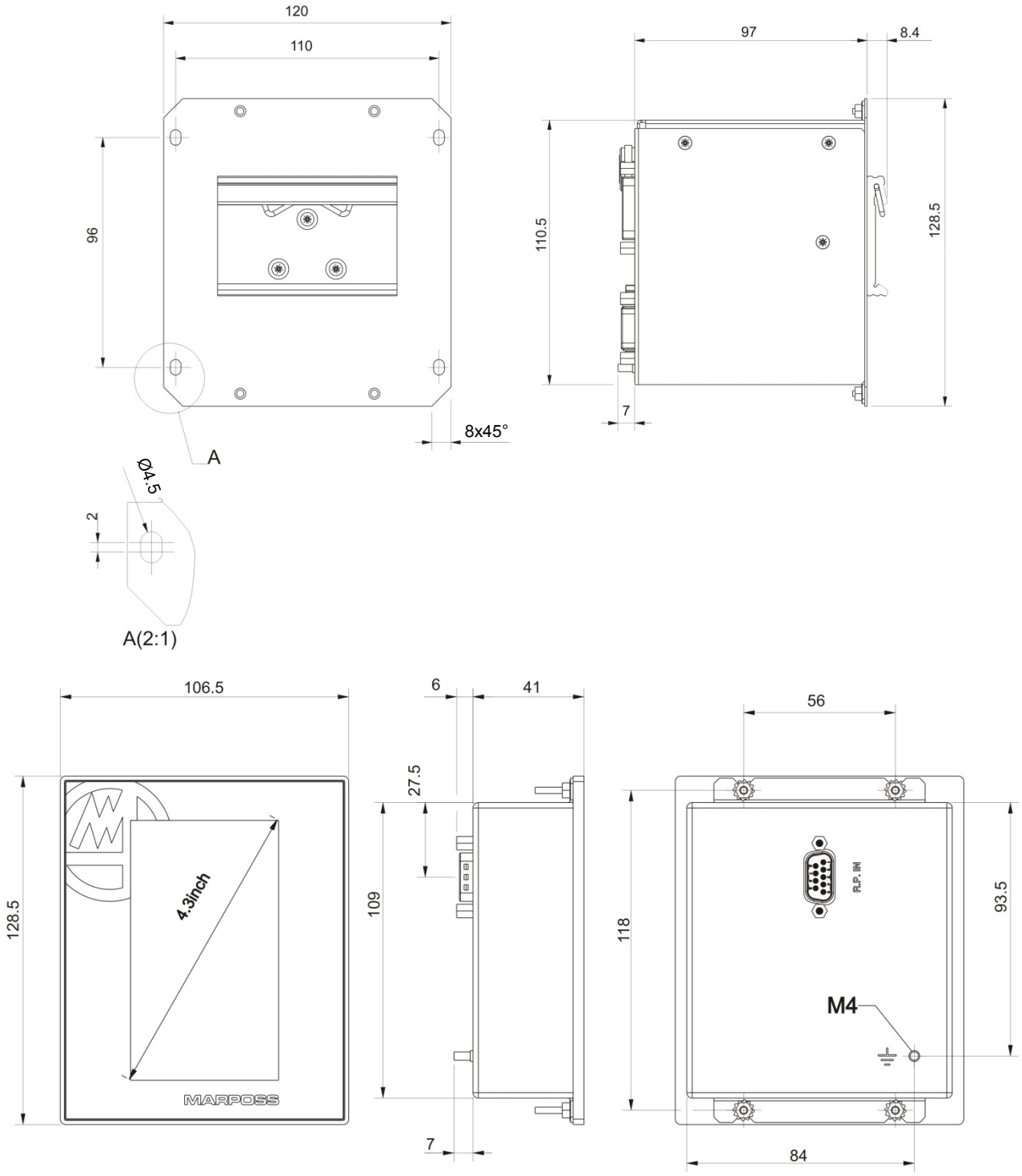


ATTENTION
The rack version requires a fire-resistant covering irrespective of whether it is fitted with the front or remote panel.

When installing the **P1dWB** Rack or Remote panel version (see below for description), use the panel bracket (Part N. 1502051200) and the nuts (supplied).



P1dWB size and volumes: Remote panel version



5.3 TECHNICAL SPECIFICATIONS

Structure	Rack, Case or Remote panel
Version	**P1dWB_R** **P1dWB_CG**
Power supply	SELV type 24 Vdc ± 20 %
Current consumption	0.8 A
Operating temperature	Between +5° and +45° C
Working temperature	Between -40° and +70° C
Storage temperature	Between -25° and +70° C
Humidity	Storage <90% Shipping <90% In use <85% ≤ RH<90% max 2 months
Weight	Rack 900 gr. – Case 2000 gr
Protection rating **(Standard IEC 60529)**	IP54 - Front panel IP 40 - Product
I/O signal connections	**P1dWB -R version**: D-SUB male 15 pin connector.
	P1dWB-CG version: D-SUB male 25 pin connector.
I/O signals	Sink & Source
Output signal rate	1 ms
Serial Interface	RS232 RX and TX only
Display	LCD Touchscreen display. Resolution 272x480 pixel – Size 4.3”
RPM measurement range	from 0 to 12,000 RPM
Tunable unbalance range	from 60 to 30.000 RPM
Controls	Gap & Crash
Thresholds	Programmable
Electrical Safety Standard	EN 61010-1
EMC Immunity Standard	EN 61326-1

6 INSTALLING THE HARDWARE

P1dWB R

P1dWB CG

	Description
POWER 24 VDC	Electrical power supply collector. [Ref.Connecting the power supply]
⏚	Functional earth stud (M4) [Ref.Connecting the functional earth]
RP OUT	Output for remote panel connection (D-SUB female pin connector) [Ref. Connecting the remote panel]
COM	Serial RS232 interface for connection to an external PC (D-SUB male 9 pin connector) [Ref. Connecting a PC]
WB	Balancing head connector (D-SUB female 9 pin connector) [Ref.Connecting Balancing heads]
ACC	Vibration sensor/accelerometer sensor connector (Amphenol 5 pin connector) [Ref. Installing an Accelerometer (vibration sensor)]
I/O	Machine PLC I/O connection: • D-SUB male 15 pin connector for **P1dWB** with retraction • D-SUB male 25 pin connector for **P1dWB** with contactless [Ref.I/O Interface]

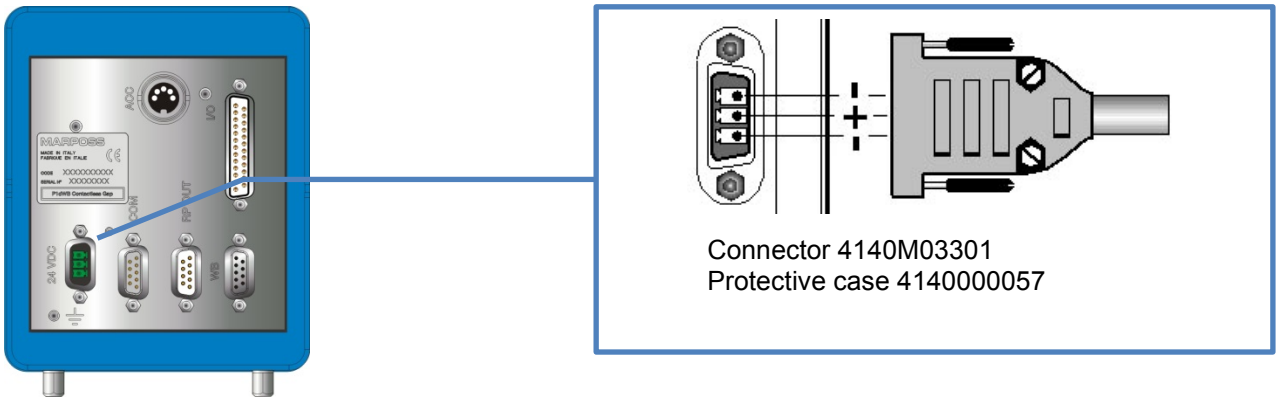
6.1 Connecting the power supply

POWER specifications:

Voltage:	24 VDC (±20%) SELV type as defined by EN 60950-1
Consumption:	current: 0.8 A

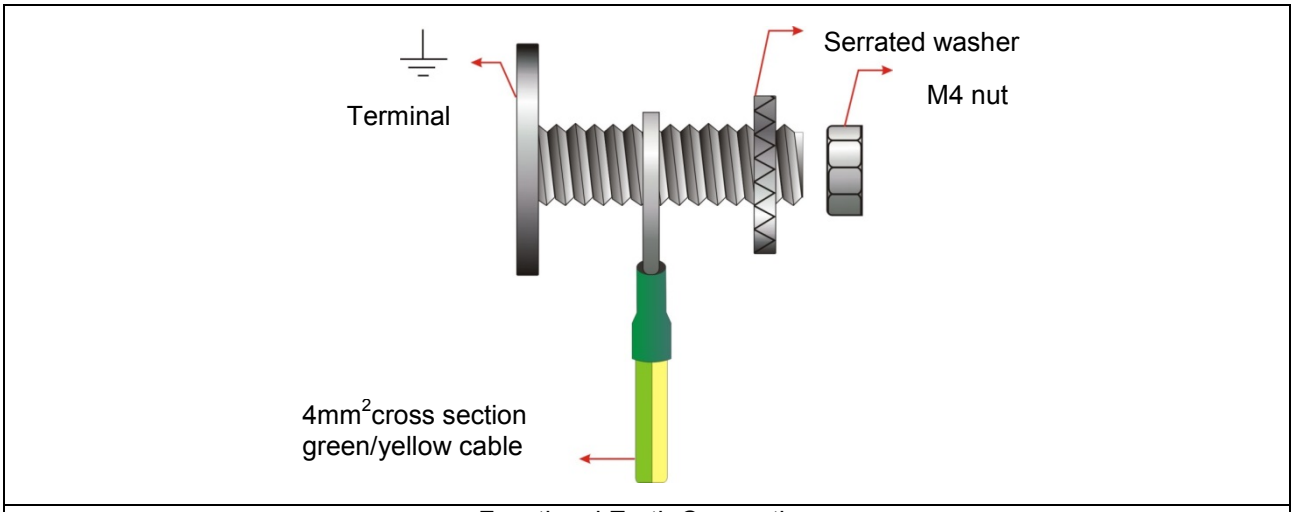
The Phoenix connector is supplied with the equipment and features knurled-headed screws for manual tightening. We recommend fitting a breaker switch upstream of the machine during installation and operation.

N.B.
The maximum power cable cross section that is compatible with this connector is 1.5 mm^2.



6.2 Functional Earth Connection

Connect the drawer to earth via the dedicated terminal (identified by ⏚).
The earth connection is made by connecting the terminal to the centre of mass of the machine the drawer is installed on. Use the shortest possible connection.
Use yellow/green cable with a cross section of at least 4 mm^2



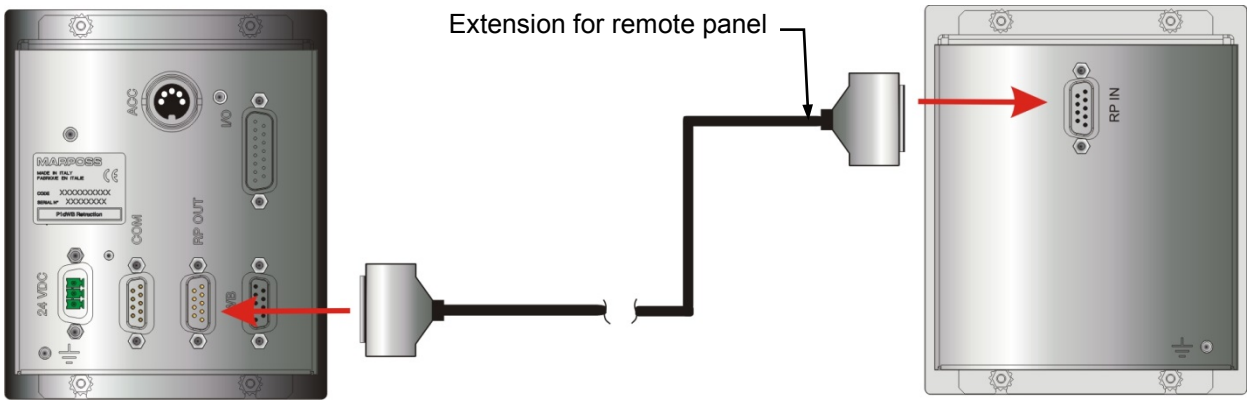
Functional Earth Connection

6.3 Connecting the remote panel

D-SUB female 9 pin for the connection to the remote panel.

This connector is protected by a metal cap, which should only be removed if it is necessary to connect the unit to the remote panel.

6.3.1 Extension for remote panel



Extension for remote panel	
Length (m)	**Code Number**
6	6737959030
10	6737959032
15	6737959034
20	6737959036

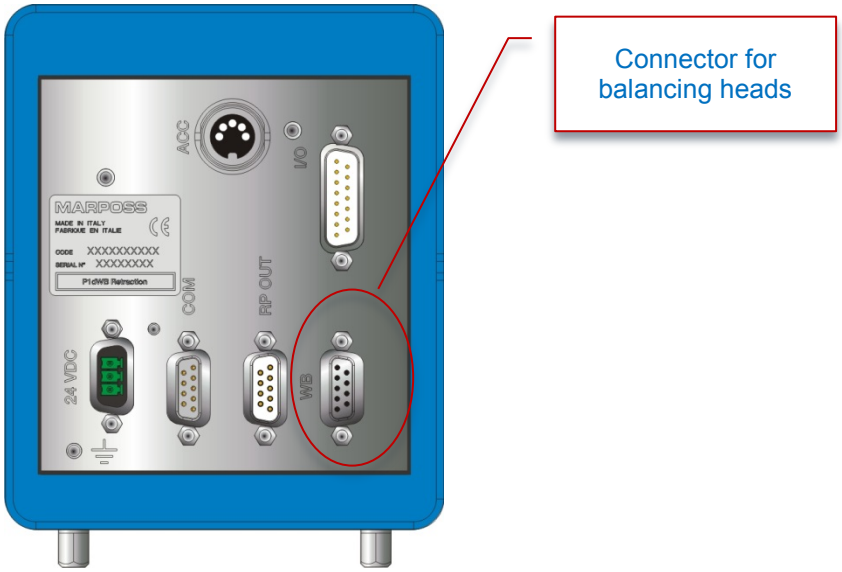
6.4 Connecting a PC

The COM port is used for connecting to an external PC, where the "**P1dWB TOOL SW**" software supplied with the unit may be installed.

The **P1dWB TOOL SW** software may be installed on a normal PC, which is connected to the **P1dWB** unit via a COM port, and can be used to perform the same functions as the unit directly from the PC.

For a list of functions and a complete description of the software, consult the user manual.

6.5 Connecting Balancing Heads



There are two types of balancing heads FT (Flange Type) and ST (Spindle Type), which are subdivided as follows, depending on the type of transmission:

Balancing heads with retractable contacts:

- ✓ **FT R** **Flange Type Head** with Retractable contacts
- ✓ **ST R** **Spindle Type Head** with Retractable contacts

Balancing Heads with contactless transmission

- ✓ **FT C HG** Contactless + GAP **Flange Type Head**
- ✓ **ST C HG** Contactless + GAP **Spindle Type Head**
- ✓ **FT C H** Contactless **Flange Type Head**
- ✓ **ST C H** Contactless **Spindle Type Head**

The letters **H** (Home) and/or **G** (GAP) indicate the presence of the corresponding optional Home (neutral position of the weights) and GAP&CRASH AE sensors on the balancing head.

N.B.
In the case of Contactless heads, the transmission may be MiniCT or E82/E78 type.

Various different balancing heads may be used, depending on which version of **P1dWB** is in use:

P1dWB –R
- FT Contacts
- ST Contacts

P1dWB –CG
- FT contactless sH
- ST contactless sH
- FT contactless sH + GAP
- ST contactless sH + GAP

Note: sH = Home position sensor

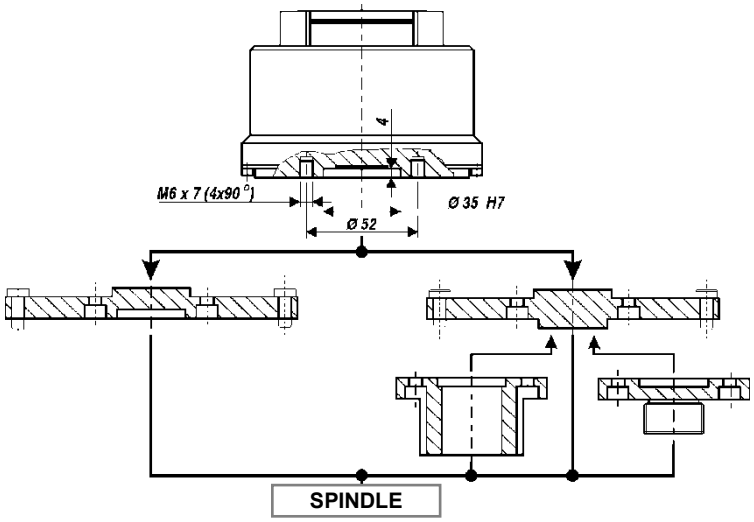
6.5.1 Installing "FT" balancing heads

The FT type heads may be secured to the grinding wheel locking nut or the grinding wheel mounting flange using a suitable mounting adaptor (see figure below).
In order to ensure that the system functions correctly, the flange must guarantee that the head is centred with respect to the spindle, within a tolerance of 50µm (.002").

The type of mounting adaptor must be defined on an ad hoc basis, depending on the form and dimensions of the spindle. The machine manufacturer shall be responsible for producing this part.

Warning
To avoid hazardous mechanical stresses that could damage the balancing head, DO NOT loosen the grinding wheel locking nut when the balancing head is balancing head is secured to it.

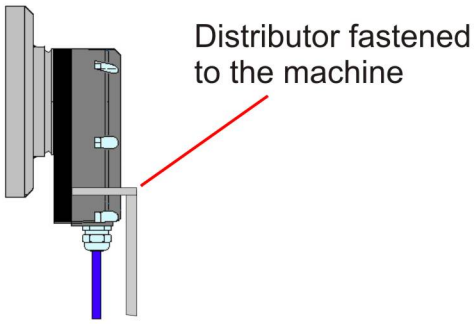
N.B.
When using balancing heads with integrated Gap & Crash AE sensors (FT HG), we recommend applying a layer of silicon grease between the two mounting surfaces in order to improve sound transmission to the acoustic sensor.

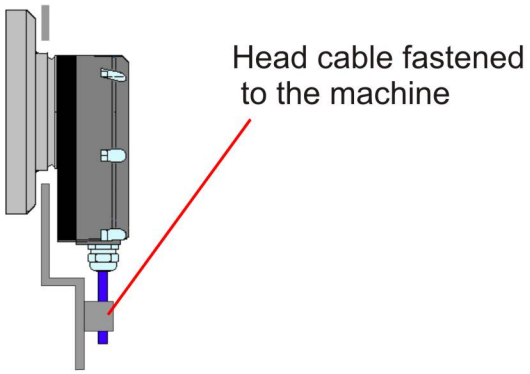


6.5.1.1 Installing the distributor for FT heads with retraction (FT R)

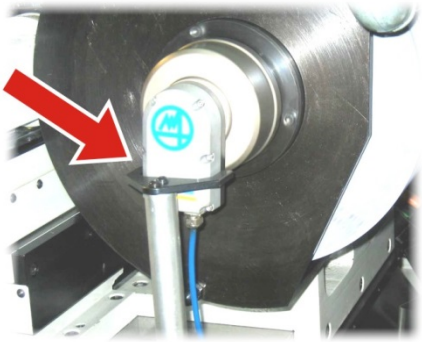
The FT R heads consist of a single unit on which both the rotating part and the fixed part (or distributor) are mounted.
In this configuration, the head and associated distributor are both supported by the adaptor described in the previous paragraph. The distributor or its cable must also be secured to the machine in order to prevent it from rotating together with the grinding wheel.

ATTENTION
Secure the distributor or cable to the machine.





Examples:



Securing the distributor

Securing the cable

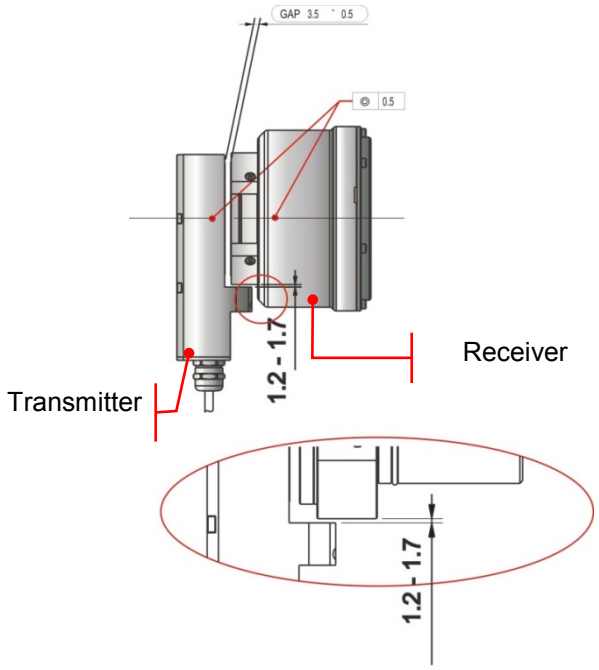
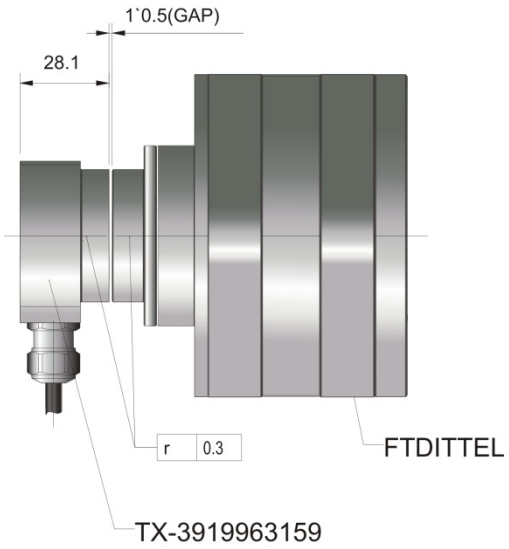
6.5.1.2 Installing the contactless transmission system for FT (FT H / FT HG) E82 type heads

The contactless transmission system consists of two parts:

- **Rotor** (rotating part, built into the balancing head)
- **Stator** (stationary part)

In order ensure that the contactless transmission system is installed correctly, the following conditions must be satisfied:

- the distance between the two transmission surfaces must be **3.5 ± 0.5 mm**
- the maximum receiver misalignment (TIR) error must be ≤ **0.5 mm** in all directions
- the distance between the RPM sensor and receiver must be between **1.2** and **1.7 mm**

CONTACTLESS TRANSMISSION E78/E82	**MINI CT TRANSMITTER**
	
Rotor/stator distance	
3.5 ± 0.5 mm	**1 ± 0.5 mm**
Maximum receiver misalignment (TIR) error	
≤ **0.5 mm** in all directions	≤ **0.3 mm** in all directions
Distance between RPM sensor and receiver	
between **1.2** and **1.7 mm**	Integrated

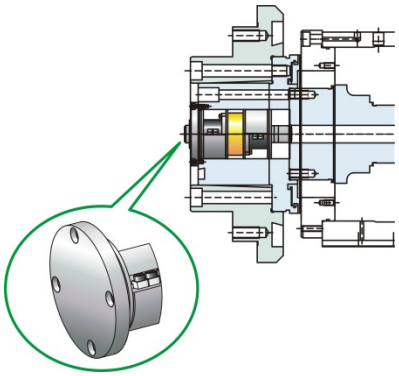
N.B.
If the receiver and transmitter are aligned correctly it also implies that the voltage between the transmitter and the receiver is at the optimum value (receiver power supply voltage). The optimum voltage value is between 12.2V and 15V, when the motors are stationary.
To check this value, access the Gauge Test environment.

Warning
In order to guarantee optimum performance of the balancing heads, the temperature in the transmission zone MUST NOT exceed 55 °C (130 °F).

6.5.2 Installing "ST" balancing heads

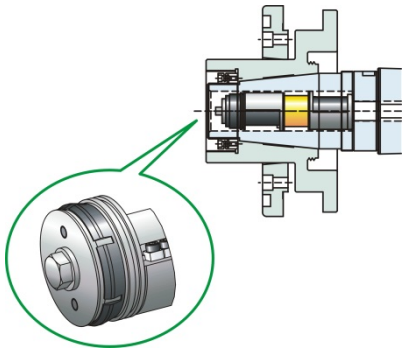
There are various different systems for mounting ST type heads. All mounting systems are equipped with O-ring seals.

Direct flange mounting
The head is fitted with a mounting flange (see figure).
The mounting holes and centring guides are located on the flange.



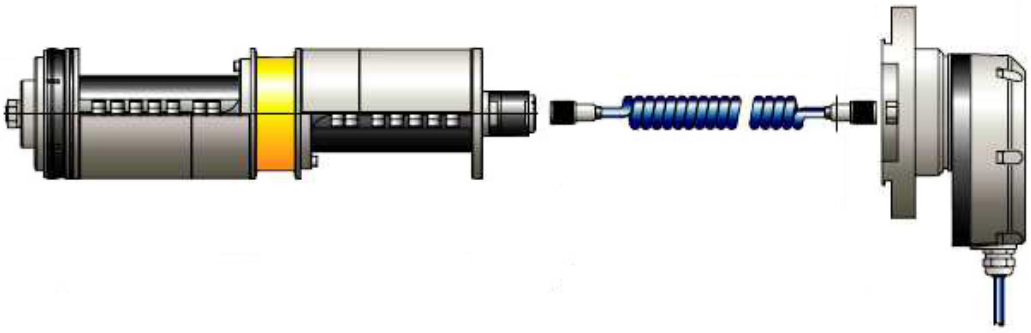
N.B.
When using balancing heads with integrated Gap & Crash AE sensors (ST HG), we recommend applying a layer of silicon grease between the two mounting surfaces in order to improve sound transmission to the acoustic sensor.

Mounting with self-locking device.
The head is mounted directly by means of an expansion device.

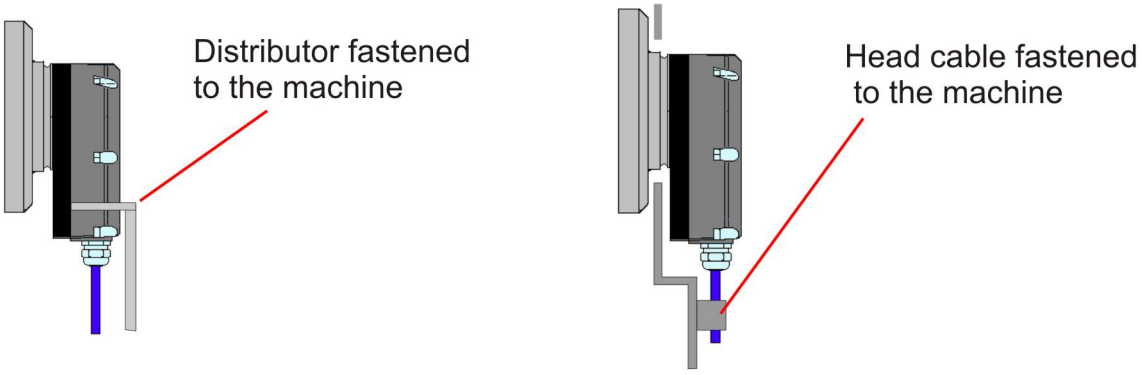


N.B.
Tightening torque: 15-20 Nm

6.5.2.1 Installing the distributor for ST heads with retraction (ST R)



Warning
Secure the distributor or cable to the machine as indicated in the figure.



6.5.2.2 Installing the contactless transmission system for ST heads

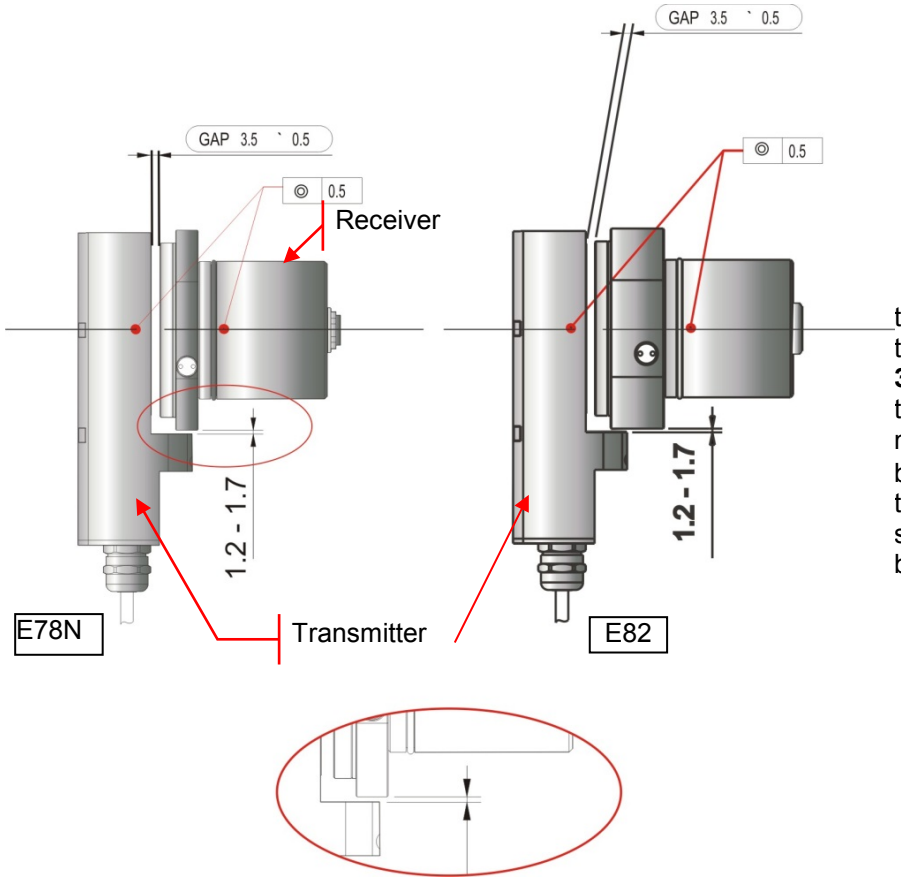
The contactless transmission system consists of two parts:

- **Rotor** In the case of the receiver it is mounted on the spindle and secured using four screws.
- **Stator** (stationary part)

In order ensure that the contactless transmission system is installed correctly, the conditions described in the following chapters must be satisfied:

6.5.2.3 "E78N/E82" type contactless transmission system

Transmission system for *"ST H"* / *"ST HG"* type balancing heads.
In order ensure that the transmission system is installed correctly, the following conditions must be satisfied:



the distance between the two transmission surfaces must be **3.5 ± 0.5 mm**
the maximum receiver misalignment (TIR) error must be ≤ **0.5 mm** in all directions
the distance between the RPM sensor and receiver must be between **1.2** and **1.7 mm**

Warning
In order to guarantee optimum performance of the balancing heads, the temperature in the transmission zone MUST NOT exceed 55 °C (130 °F).

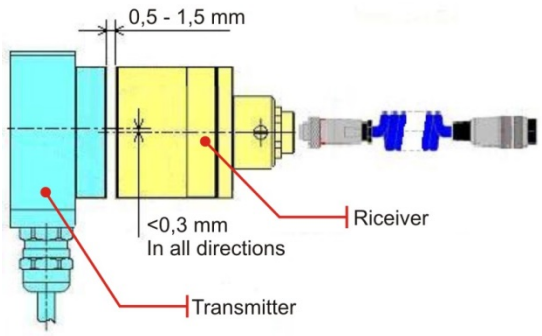
N.B.
If the receiver and transmitter are aligned correctly it also implies that the voltage between the transmitter and the receiver is at the optimum value (receiver power supply voltage). The optimum voltage value is between 12.2V and 15V, when the motors are stationary.
To check this value, access the Gauge Test environment.

6.5.2.4 "MINI CT" type contactless transmission system

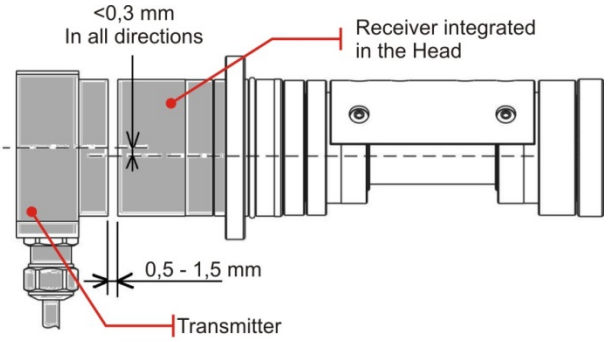
Transmission system for *"ST H" / "ST HG"* type balancing heads.
In order ensure that the transmission system is installed correctly, the following conditions must be satisfied:

- the distance between the two transmission surfaces must be between **0.5** and **1.5 mm**
- maximum receiver misalignment (TIR) error: ≤ **0.3 mm** in all directions.

Head without integrated receiver



Head with integrated receiver



Warning
In order to guarantee optimum performance of the balancing heads, the temperature in the transmission zone MUST NOT exceed 55 °C (130 °F).
Alarm threshold (maximum permissible value) of the internal temperature of the rotor:

- 80°C (176°F) for MiniCT for software versions up to and including 3.4.
- 76°C (169°F) for MiniCT for software versions 3.5 and later.

If the value exceeds the alarm threshold for more than 6 seconds, an Alarm #39 signal is displayed.
To check this temperature value, access the Motors Test environment.

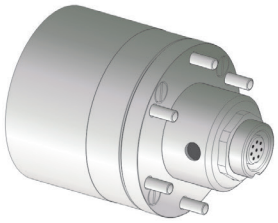
N.B.
If the receiver and transmitter are aligned correctly it also implies that the voltage between the transmitter and the receiver is at the optimum value (receiver power supply voltage). The optimal voltage value is between 23.0 V and 26.0 V. If this value is less than 18.0 V, the device may not function correctly, whereas if it exceeds 29.0 V it may generate anomalies in the transmission system that could damage the system.
To check this value, access the Gauge Test environment.

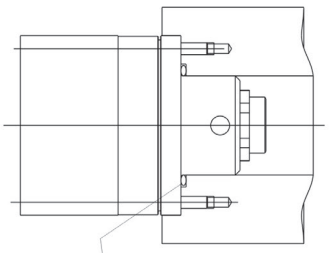
Warning
When it is necessary to carry out maintenance operations that require the rotor and/or stator to be removed according to procedures that differ from the indicated mounting specifications, the **P1dWB** electronic unit must be switched off in order to avoid damaging the transmission system.

Receiver installation instructions.

3919963106

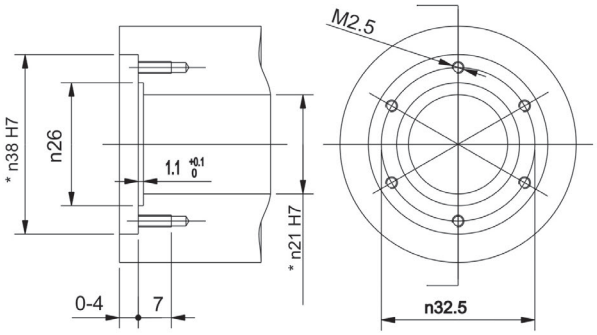
MINI CT 38-21 CG





O-RING Ø20X1.5
PARKER 6-078
CUSTUMER CARE

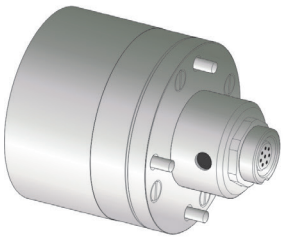
SPINDLE FOR 3919963106

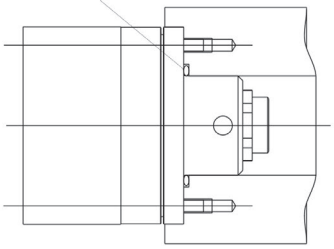


ONE OF THE TWO VALUES INDICATED WITH (*) OR (**) MUST BE INCREASED BY 0.1 MM BASED ON THE TYPE OF CENTERING ADOPTED BY THE CUSTOMER.

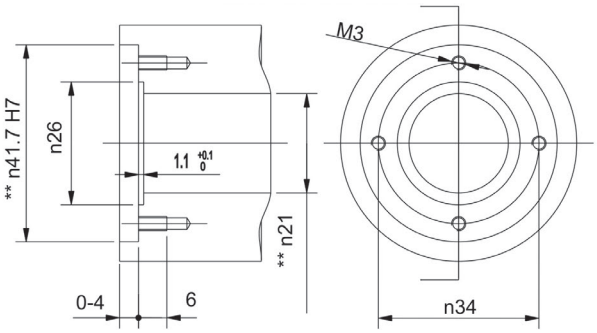
3919963107

MINI CT 41.7-21 CG





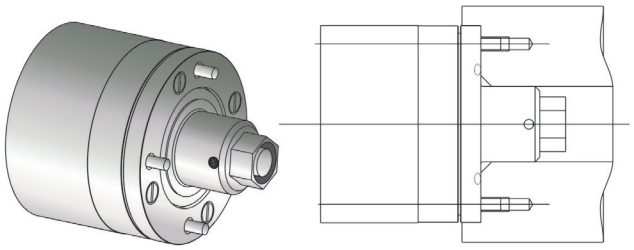
SPINDLE FOR 3919963107



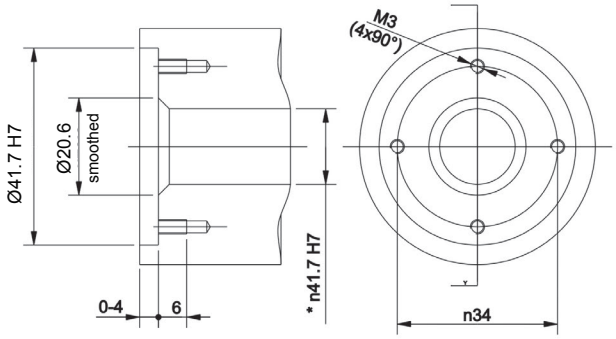
N.B.
(For MiniCT p/n 3919963106/107)
The sealing gasket and its housing must be provided by the machine manufacturer.

3919963109

MINI CT 41.7-16 CG
(PROVIDED WITH OR



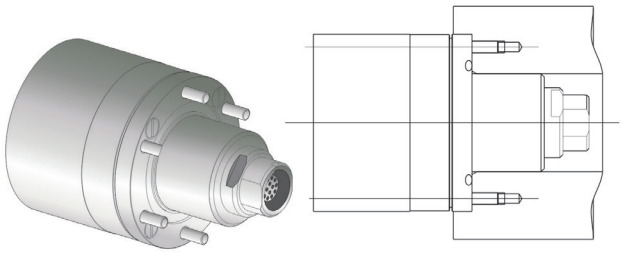
SPINDLE FOR 3919963109



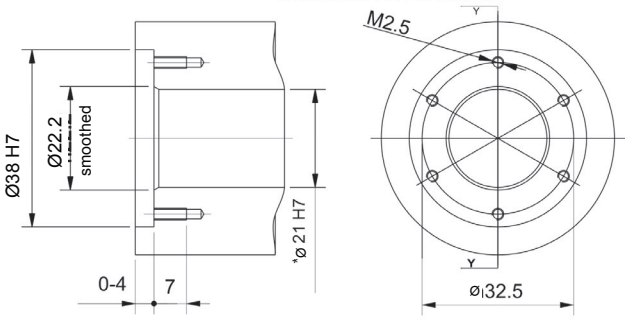
ONE OF THE TWO VALUES INDICATED WITH (*) OR (**) MUST BE INCREASED BY 0.1 MM BASED ON THE TYPE OF CENTERING ADOPTED BY THE CUSTOMER.

3919963111

MINI CT 38-21 CHG



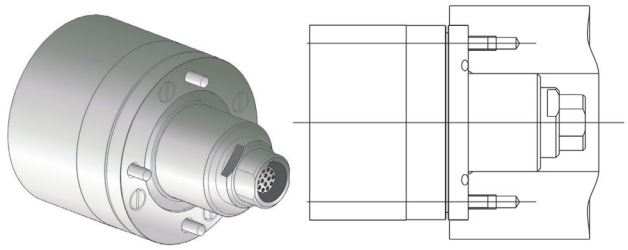
SPINDLE FOR 3919963111



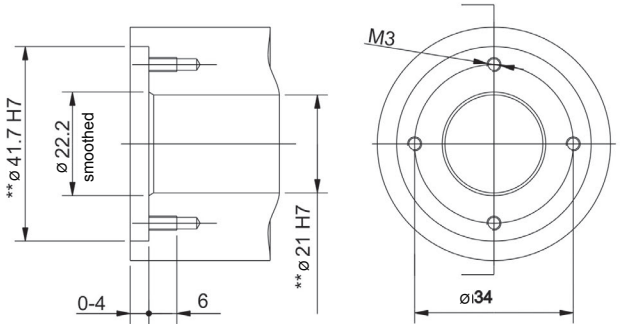
ONE OF THE TWO VALUES INDICATED WITH (*) OR (**) MUST BE INCREASED BY 0.1 MM BASED ON THE TYPE OF CENTERING ADOPTED BY THE CUSTOMER.

3919963112

MINI CT 41.7-21 CHG



SPINDLE FOR 3919963112

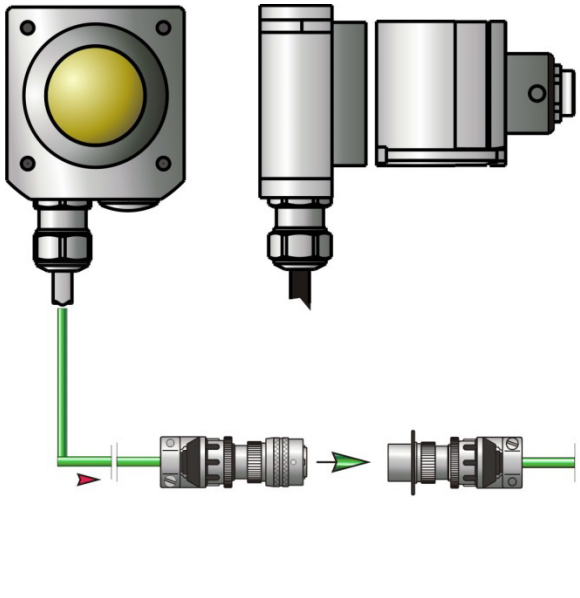


N.B.
(For MiniCT p/n 3919963109/111/112)
The sealing gasket is an integral part of the MiniCT.

N.B.
In order to centre the rotor in the spindle, refer to the value of one of the two diameters identified by * or **.
The value that is not used as the centring reference must be increased by 0.1 mm.

"MINI CT" type contactless transmission system

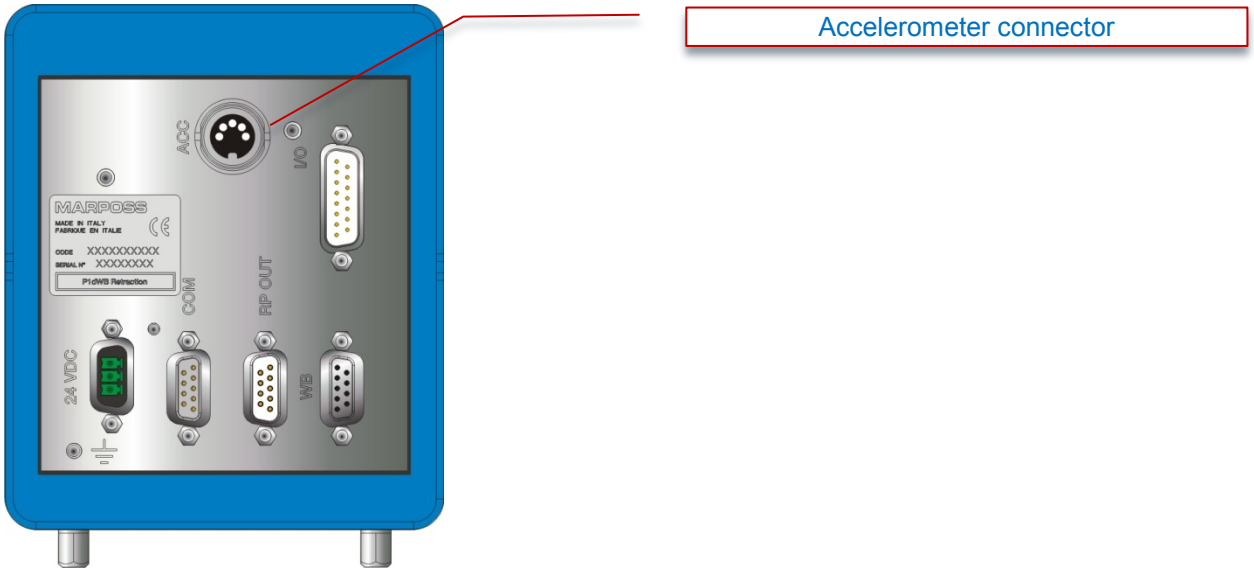
Version with output cable only (WB+AE integrated)



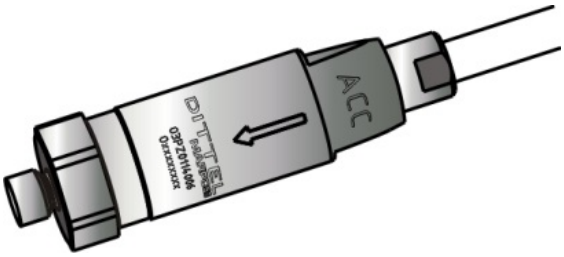
WB Balancer board

Extension for balancing heads

6.6 Installing an Accelerometer (vibration sensor)]



Accelerometer with axial cable
(Part N. O3PZ0114006 –O3PZ0114009)

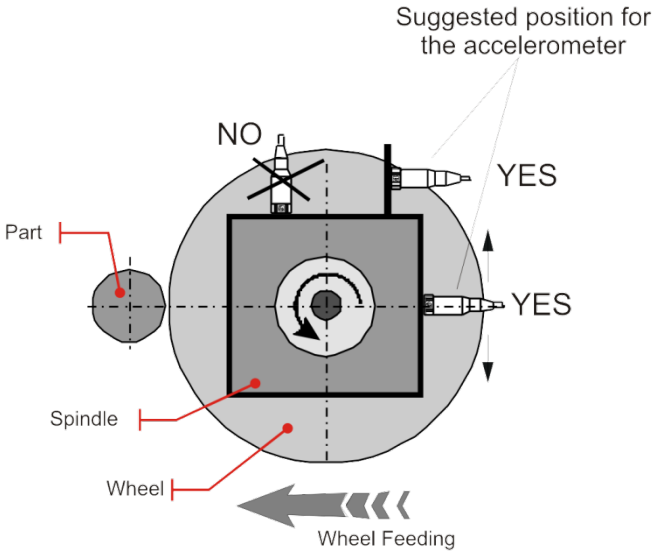


Accelerometer with radial cable
(Part N. O3PZ0114007 – O3PZ0114010)

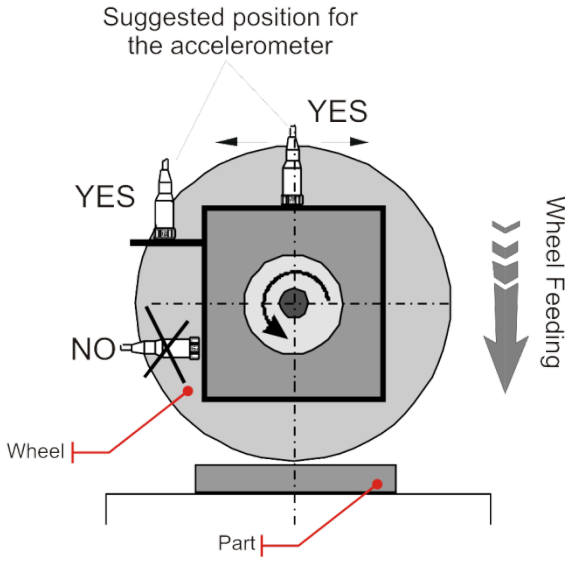
6.6.1 Installing the accelerometer

N.B.
If possible, the accelerometer should be installed close to the bearing nearest the grinding wheel, and parallel to its direction of travel.

EXTERNAL OR CENTRELESS GRINDING MACHINES



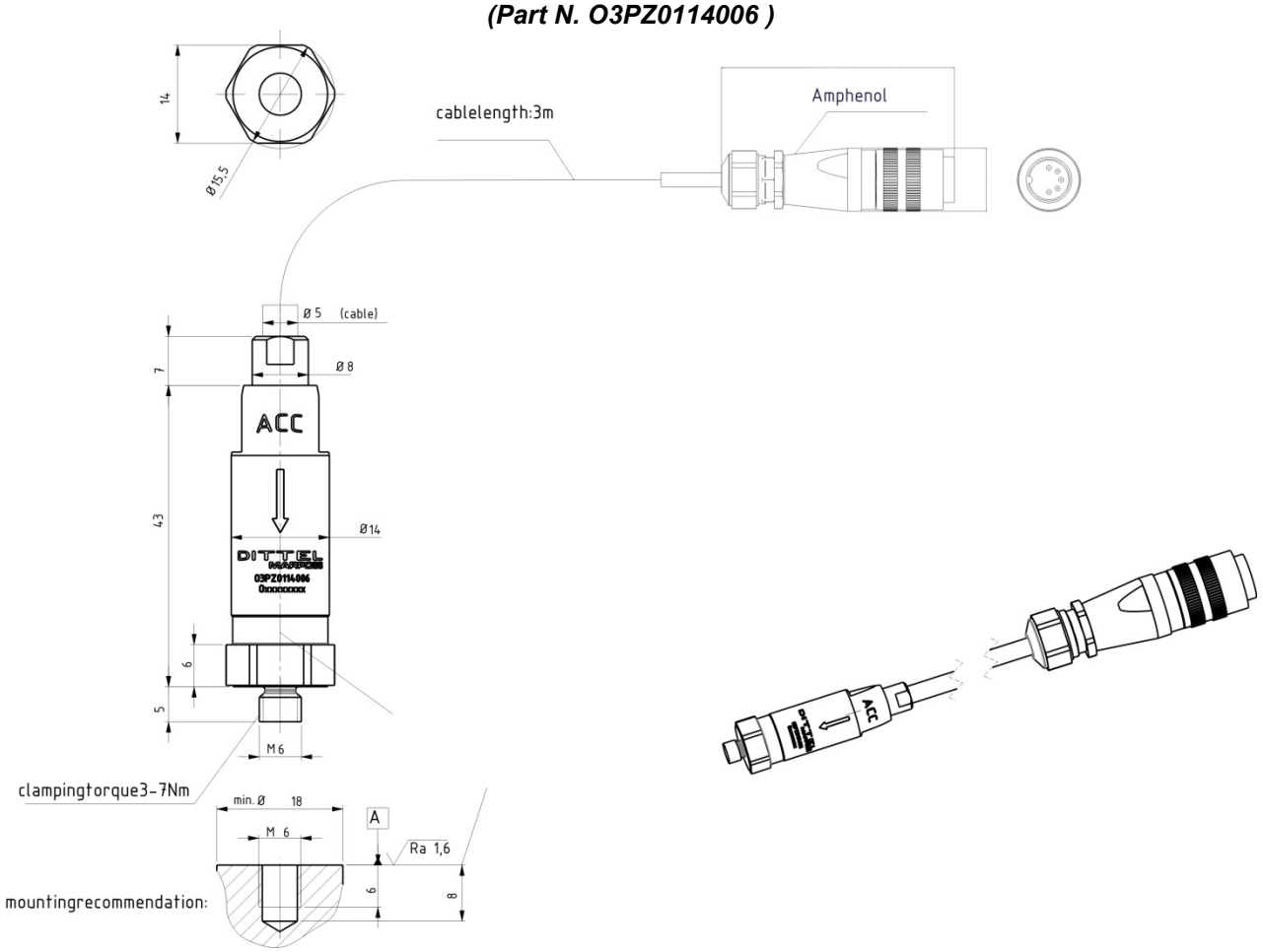
SURFACE GRINDING MACHINES



6.6.1.1 Mounting the accelerometer directly

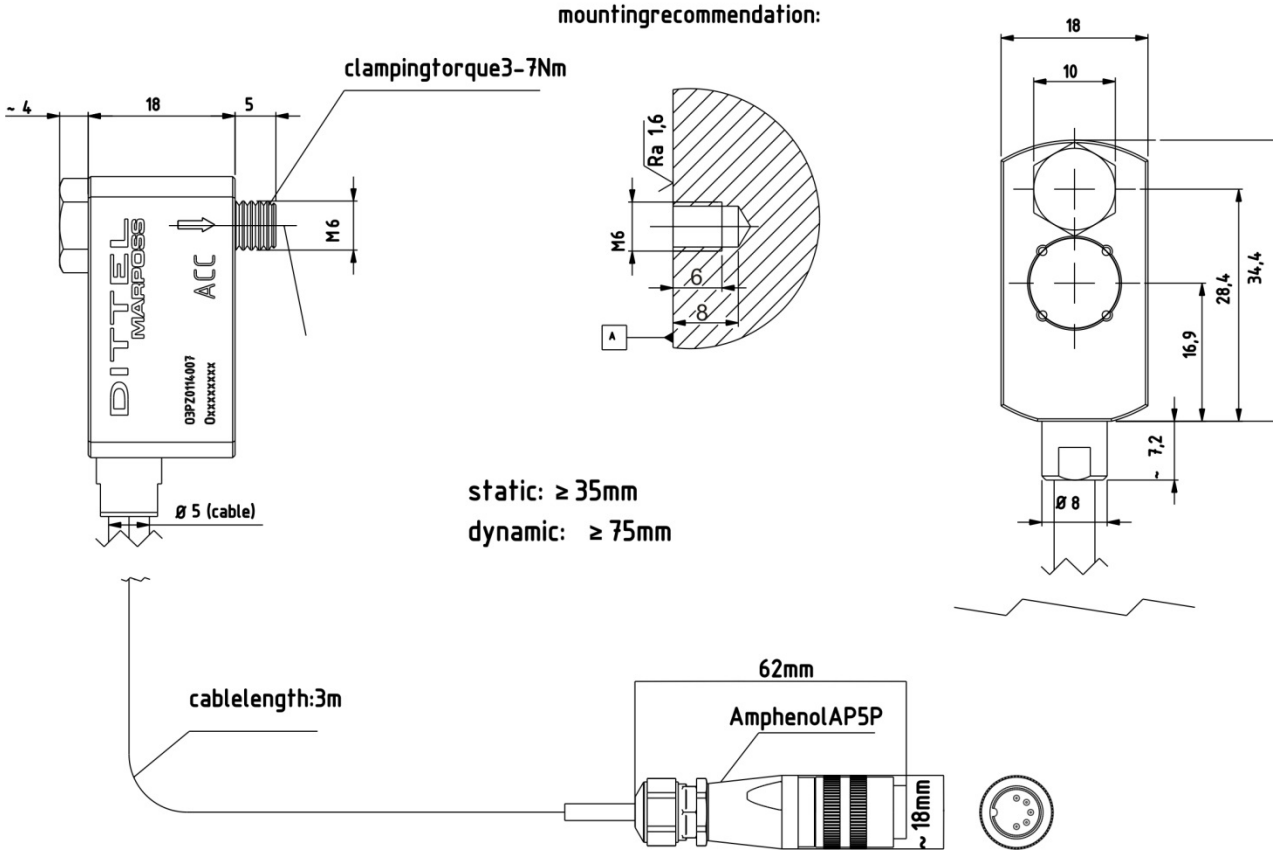
The accelerometer is secured in position by means of the 5 mm long threaded M6 pin that protrudes from its base. Drill a M6 hole, to a sufficient depth in the desired position on the machine.

Accelerometer with axial cable
(Part N. O3PZ0114006)



N.B.
The method used to mount the accelerometer part n. **O3PZ0114009** is identical to the procedure described above, the only difference being that the cable is 6 m in length.

Accelerometer with radial cable
(Part N. 6871170007)



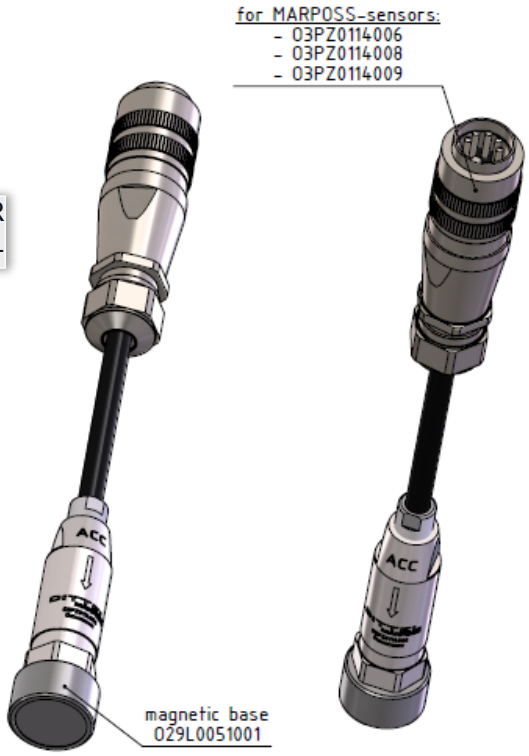
N.B.
The method used to mount the accelerometer part n. **O3PZ0114010** is identical to the procedure described above, the only difference being that the cable is 6 m in length.

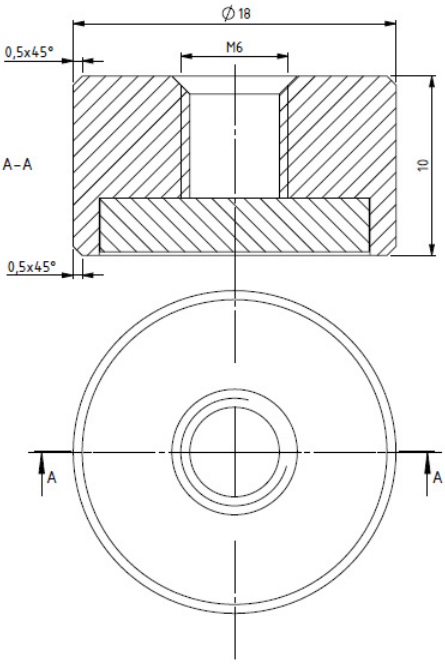
6.6.1.2 Mounting the accelerometer using the magnetic base

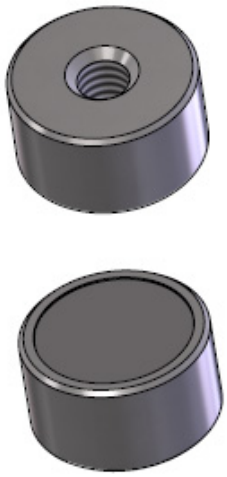
- Clean the machine surface where the magnetic base is to be housed, eliminating any detritus.
- Screw the magnetic base on to the threaded M6 pin (adapter) on the accelerometer.

Axial accelerometer + magnetic base

ACCELEROMETER AXIAL

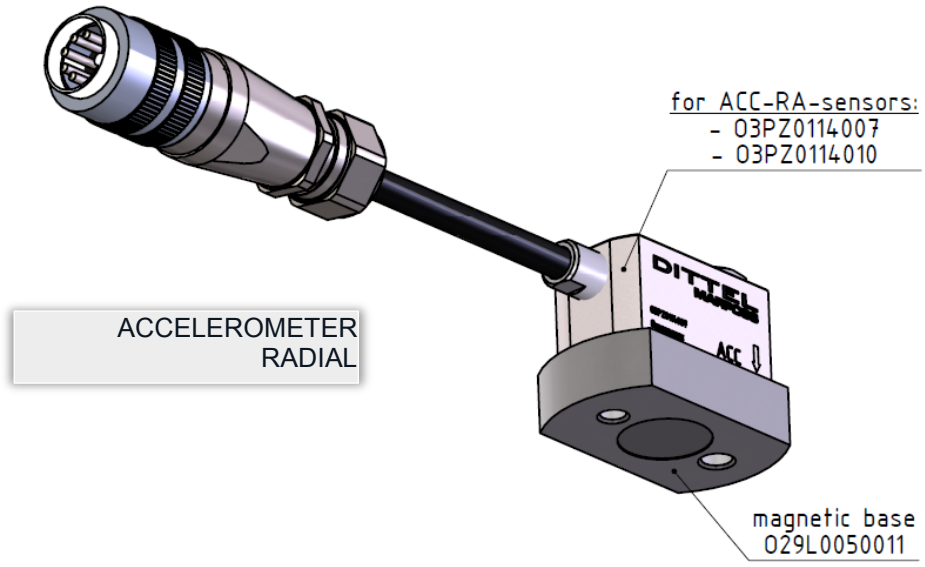


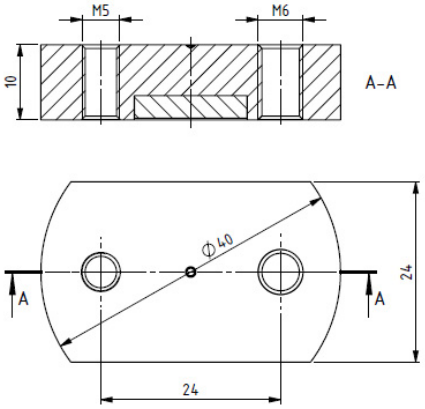


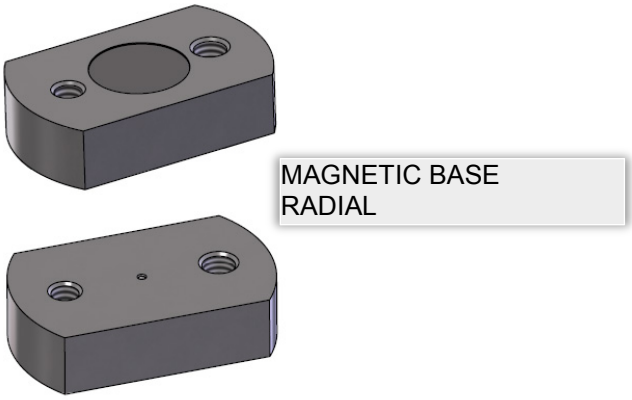


MAGNETIC BASE AXIAL

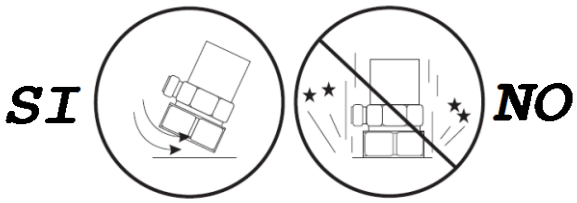
Radial accelerometer + magnetic base







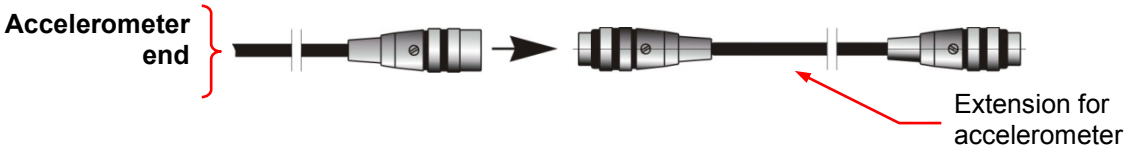
- Position the sub-assembly at the desired point on the machine, allowing it to oscillate/slide along the surface.



Warning
There is a very strong magnetic force of attraction between the base and the machine surface, therefore it is important to avoid collisions that could damage the accelerometer.

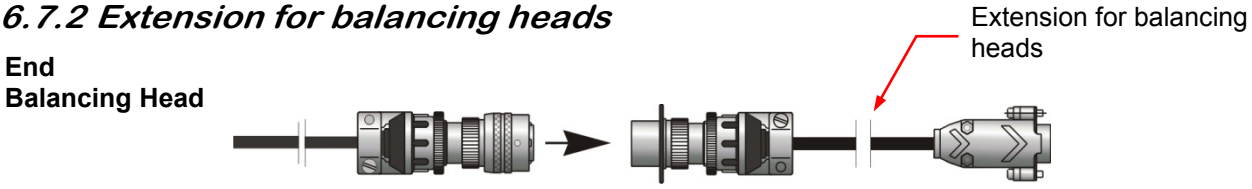
6.7 Extensions

6.7.1 Extensions for accelerometers



Extensions for Accelerometers	
Length (m)	**Extension part n.**
6	6739696233
10	6739696194
15	6739696148
20	6739696222

6.7.2 Extension for balancing heads



Extensions for Balancing Heads	**WB Balancer board**
Length (m)	**Heads with retractable contacts** **Heads with contactless transmission**
6	679060001V
10	679100001V
15	679150001V
20	679200001V

7 P1DWB – R I/O CONNECTIONS

D-SUB male 15 pin connector for I/O connections.

N.B.
The I/O must be powered by a 24VDC +20%-15%, SELV type power supply, in accordance with the specifications set out in the Standard EN60950-1

7.1 Technical specifications of the I/O circuits

The connection to the machine logic is performed through a male 15-pole connector.

The I/Os are optoisolated compared to the internal **P1dWB** references. The outputs are protected against short circuits.

The I/O circuits to the machine logic is 24V SINK or SOURCE type : the mode of operation is programmed by the performance of the link.

To program the mode SOURCE connect the signal **+SOURCE/-SINK to +24V** and the signal -**SOURCE/+SINK to ground** (GND).
To program m the mode SINK connect the **-SOURCE/+SINK to +24V** and the signal **+SOURCE/-SINK to ground** (GND).
In SOURCE mode the outputs operate at current emission while the inputs work at current absorption. So if two devices are connected in SOURCE mode outputs emitting current of a mate with the other inputs that absorb current. The vice versa is true for the SINK mode.

In SOURCE mode, the outputs provide a current output from the terminal while the inputs absorb a incoming current from the clamp. Vice versa for the SINK mode.

In SINK mode inputs provide an outgoing current from the terminal while the outputs absorb a incoming current from the clamp.

DESCRIPTION	VALUE	M.U.
Power Supply voltage Inputs/Outputs (+VCC)	24V (+20% ,-15%)	VDC
Absorption from + VCC (VCC =max without loads at the outputs)	< 10	mA
Max. input ripple on supply	2	Vpp

INPUTS

Description	Value	M.U.
Input voltage	Minimum 0 Maximum 36	VDC
Input Impedance	> 4800	Ohm
Maximum Input Current	9	mA
Maximum voltage at Logic State 1 – SINK	+ VCC – 16	VDC
Minimum voltage at Logic State 0 – SINK	+ VCC – 4	VDC
Minimum voltage at Logic State 1 – SOURCE	16	VDC
Minimum voltage at Logic State 0 – SOURCE	4	VDC

OUTPUTS

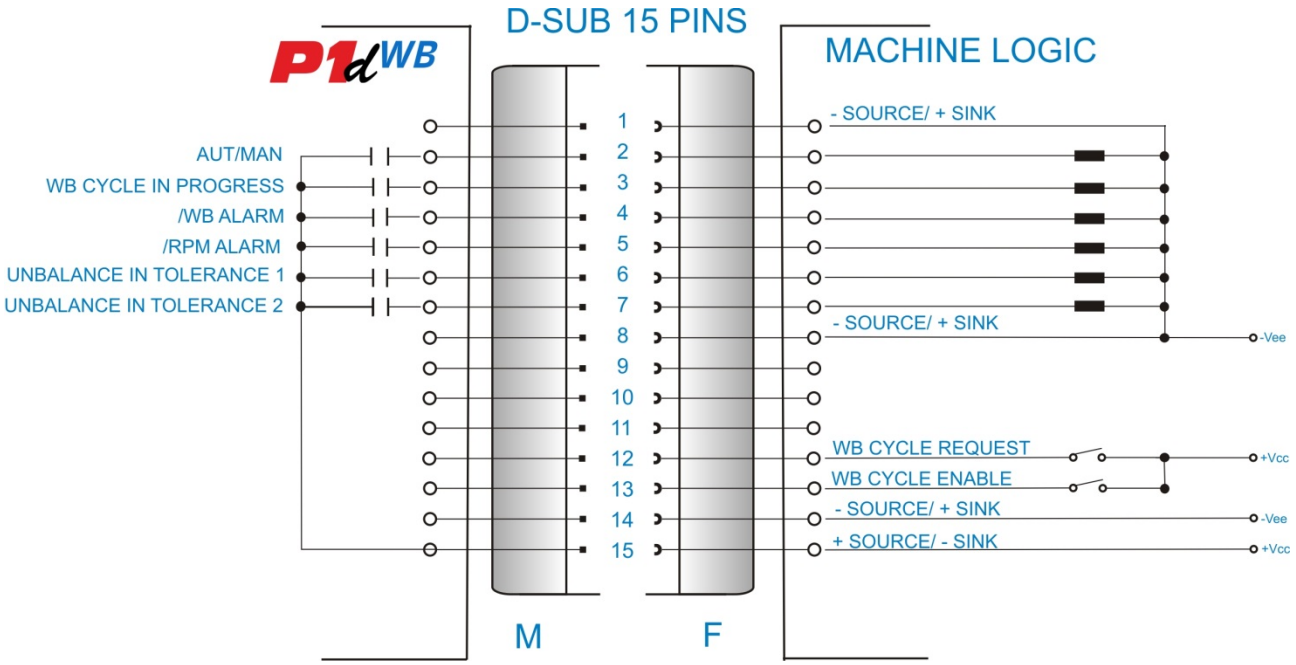
Description	Value	M.U.
Currents for each output	50	mA
Voltage at Logic State 1 @20 mA – SOURCE	> + VCC – 2	VDC
Voltage at Logic State 1 @20 mA – SINK	< 2	VDC

7.2 Connection diagrams

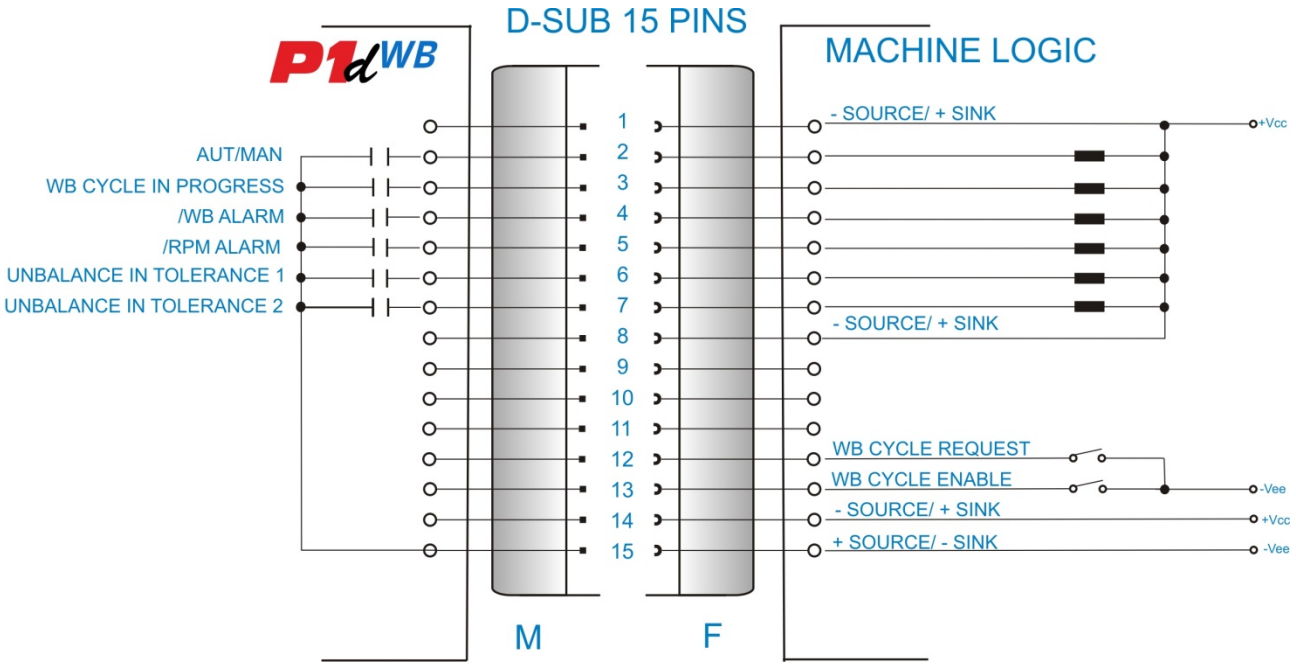
Conventional logic state of the signals :

- logic state **0** → - **Vee**
- logic state **1** → + **Vcc**

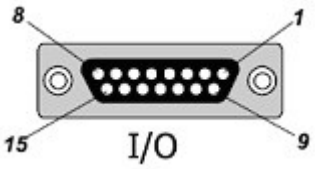
24 V opto-isolated SOURCE TYPE



24 V opto-isolated SINK TYPE



7.3 I/O interface



D-SUB male 15 Pin

PIN Nr.	IN/OUT	NAME	DESCRIPTION	
			low level	*high level*
1	IN		-SOURCE/+SINK	
2	OUT	AUT/MAN	MANUAL mode	AUTOMATIC mode
3	OUT	WB CYCLE IN PROGRESS	no cycle in progress	WB cycle in progress
4	OUT	/WB ALARM	WB alarm pending	no WB alarm pending
5	OUT	/RPM ALARM	RPM alarm pending	no RPM alarm pending
6	OUT	UNBALANCE IN TOLERANCE 1	Narrow Band Unbalance > L1 threshold	Narrow Band Unbalance ≤ L1 threshold
7	OUT	UNBALANCE IN TOLERANCE 2	Narrow Band Unbalance > L2 threshold	Narrow Band Unbalance ≤ L2 threshold
8	IN		-SOURCE/+SINK	
9	---		N/C	
10	---		N/C	
11	---		N/C	
12	IN	WB CYCLE REQUEST	no WB Automatic Balancing cycle request	WB Automatic Balancing cycle request
13	IN	WB CYCLE ENABLE	WB Balancing cycle disabled	WB Balancing cycle enabled
14	IN		-SOURCE/+SINK	
15	IN		+SOURCE/-SINK	

7.3.1.1 Recommended Bit activation level. ENHANCED

For **reasons of safety**, we strongly recommend setting up a **low activation level** for the following Bits

/WB ALARM	WB Surveillance and WB Environment Alarm	Output
/RPM ALARM	RPM Threshold and RPM Alarm	Output

7.3.2 WB automatic balancing algorithm

In order to carry out a balancing which takes into account the effective vibration of the wheel and is not influenced by other external agents , the balancing cycle must be necessarily performed in fit machine conditions :

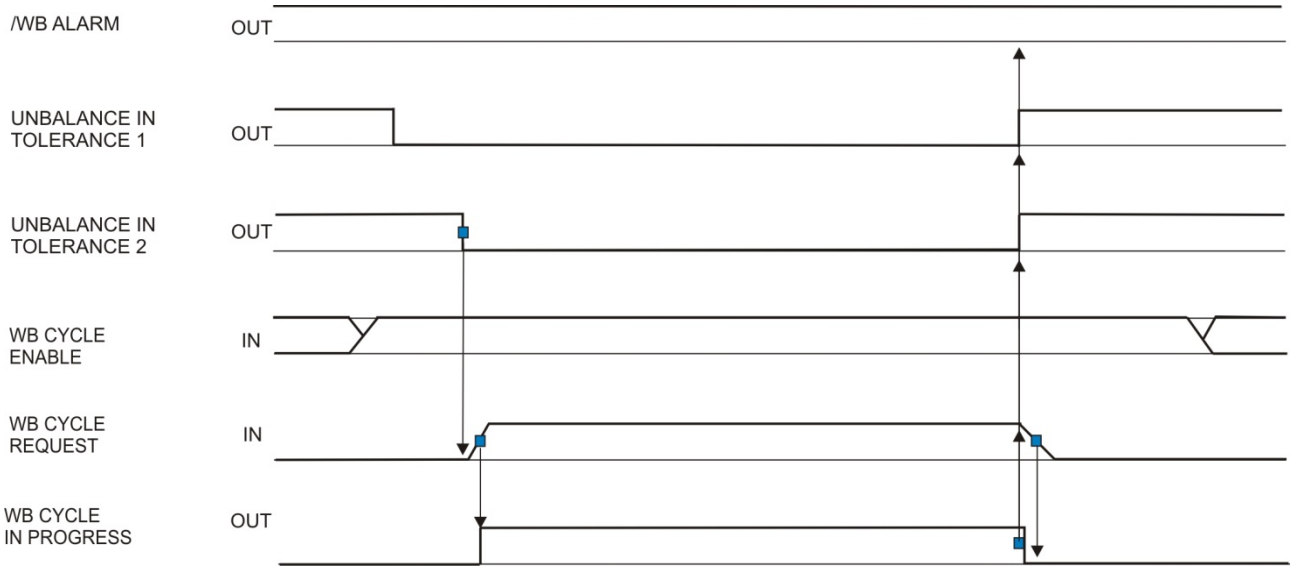
- the wheel must rotate at a speed included between 60 and 30000 RPM
- the wheel must be retracted from the working position
- dressing operations of the wheel must not be in progress
- movements of machine components must not be present
- if possible, the coolant flow should be stopped

To have a good balancing accuracy, it is recommended not to go below 300 RPM.

With the inputs signal WB CYCLE ENABLE at *Logic State 1* **P1dWB** balancer is enabled to receive the signal for the beginning of a balancing cycle .

WB Automatic Balancing Algorithm Cycle request is explained as example:

- *cycle is performed without alarms*



When the signal WB CYCLE IN PROGRESS is at *Logic State 1* , the output of UNBALANCE IN TOLERANCE 1 and 2 signals is disabled and the electronic unit controls the movement of the masses of the balancing head until the condition of optimal balancing is reached .

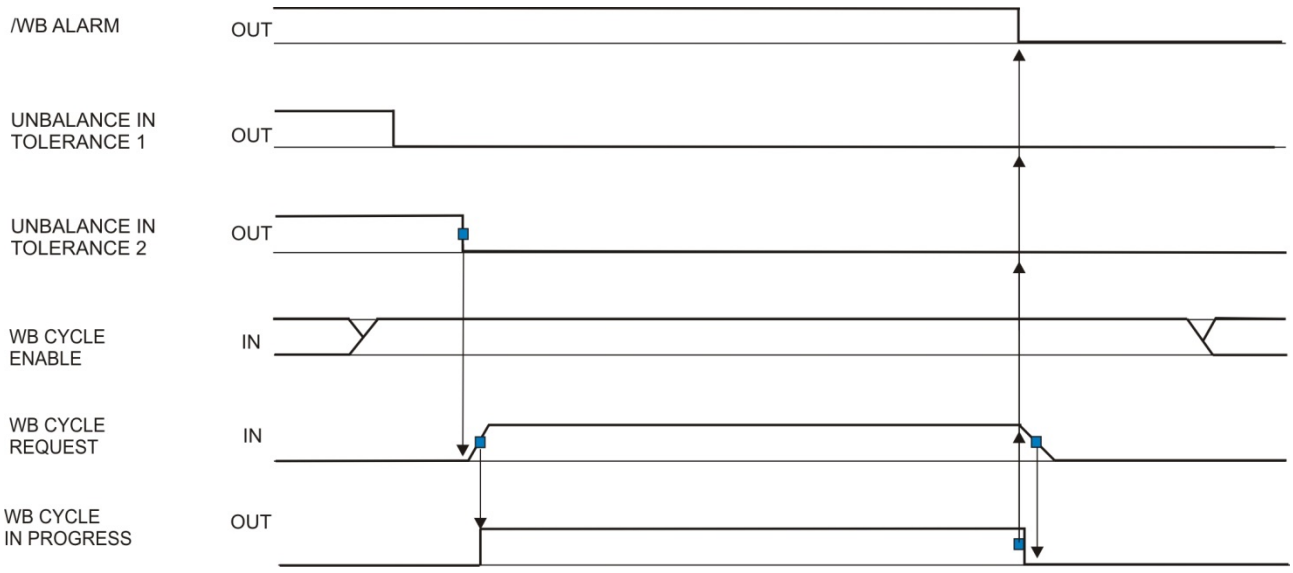
The balancing is considered optimal when the Unbalance of the wheel does not exceed the value which has been set at threshold limit L1.

When this condition is reached , the WB CYCLE IN PROGRESS signal switches to *Logic State 0* indicating the end of the balancing cycle and consequently the output of the signals IN TOLERANCE 1 and IN TOLERANCE 2 is enabled (they will switch to *Logic State 1*).

If the Unbalance does not go at least below threshold limit L2 within about 210 seconds , the **P1dWB** balancer interrupts the balancing cycle by moving to zero the logic state of the WB CYCLE IN PROGRESS signal and supplies the /WB ALARM signal at output.

WB Automatic Balancing Algorithm Cycle request is explained as example :

- *cycle is performed with timeout*
- */WB ALARM is activated*



7.4 Cycles in Legacy behaviour.

Elab.Delay = 20ms

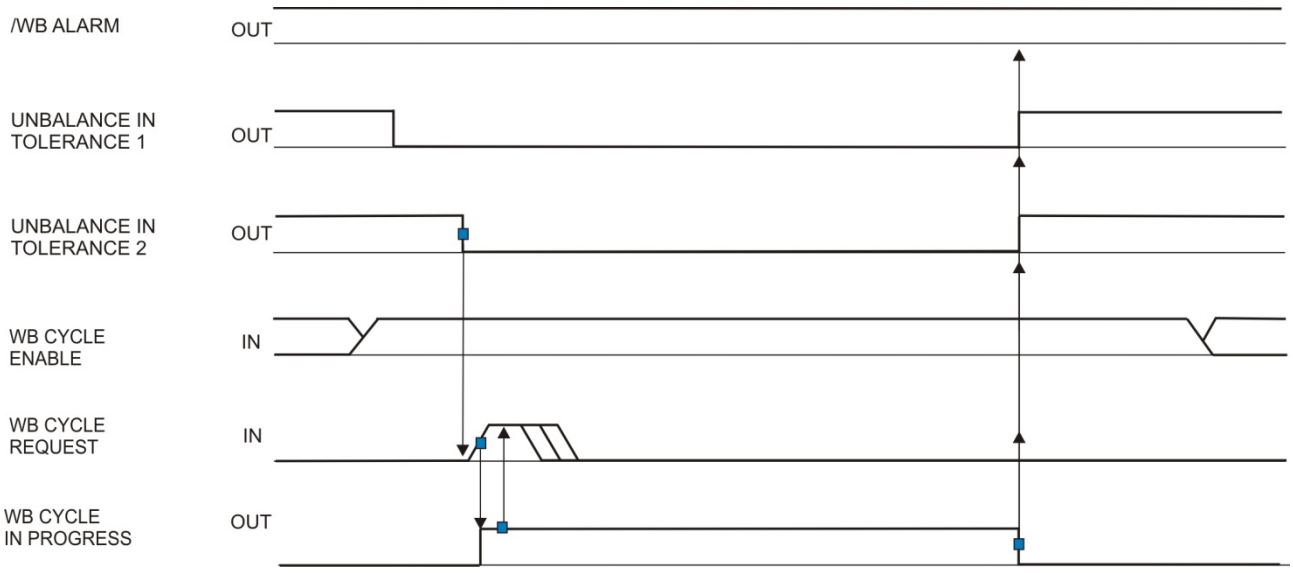
t_{trg} is the minimum time the signal is above threshold causing output bit activation

t_{PLC} is the minimum bit activation time

7.5 WB Automatic Balancing Algorithm.

WB Automatic Balancing Algorithm Cycle request is explained as example :

- *cycle is performed without alarms*



8 P1DWB – CG I/O CONNECTIONS

N.B.
The I/O must be powered by a 24VDC +20%-15%, SELV type power supply, in accordance with the specifications set out in the Standard EN60950-1

8.1 Technical specifications of the I/O circuits

The connection to the machine logic is performed through a D-SUB male 25 pin connector .

The I/Os are optoisolated compared to the internal **P1dWB** references. The outputs are protected against short circuits.
The I/O circuits to the machine logic is 24V SINK or SOURCE type : the mode of operation is programmed by the performance of the link.
To program the mode SOURCE connect the signal +SOURCE/-SINK to +24V and the signal -SOURCE/+SINK to ground (GND).
To program the mode SINK connect the -SOURCE/+SINK to +24V and the signal +SOURCE/-SINK to ground (GND).
In SOURCE mode the outputs operate at current emission while the inputs work at current absorption. So if two devices are connected in SOURCE mode outputs emitting current of a mate with the other inputs that absorb current. The vice versa is true for the SINK mode.
In SOURCE mode, the outputs provide a current output from the terminal while the inputs absorb a incoming current from the clamp. Vice versa for the SINK mode.
In SINK mode inputs provide an outgoing current from the terminal while the outputs absorb a incoming current from the clamp.

DESCRIPTION	VALUE	M.U.
Power supply voltage Inputs/Outputs (+V_{CC})	24V (+20% ,-15%)	V_{DC}
Consumption at +V_{CC} (V_{CC} = Max without loads on the outputs)	<10	mA
Max. input ripple on supply	2	Vpp

INPUTS

Description	Value	M.U.
Input voltage	Minimum 0 Maximum 36	VDC
Input Impedance	> 4800	Ohm
Maximum Input Current	9	mA
Maximum voltage at Logic State 1 – SINK	+ VCC – 16	VDC
Minimum voltage at Logic State 0 – SINK	+ VCC – 4	VDC
Minimum voltage at Logic State 1 – SOURCE	16	VDC
Minimum voltage at Logic State 0 – SOURCE	4	VDC

OUTPUTS

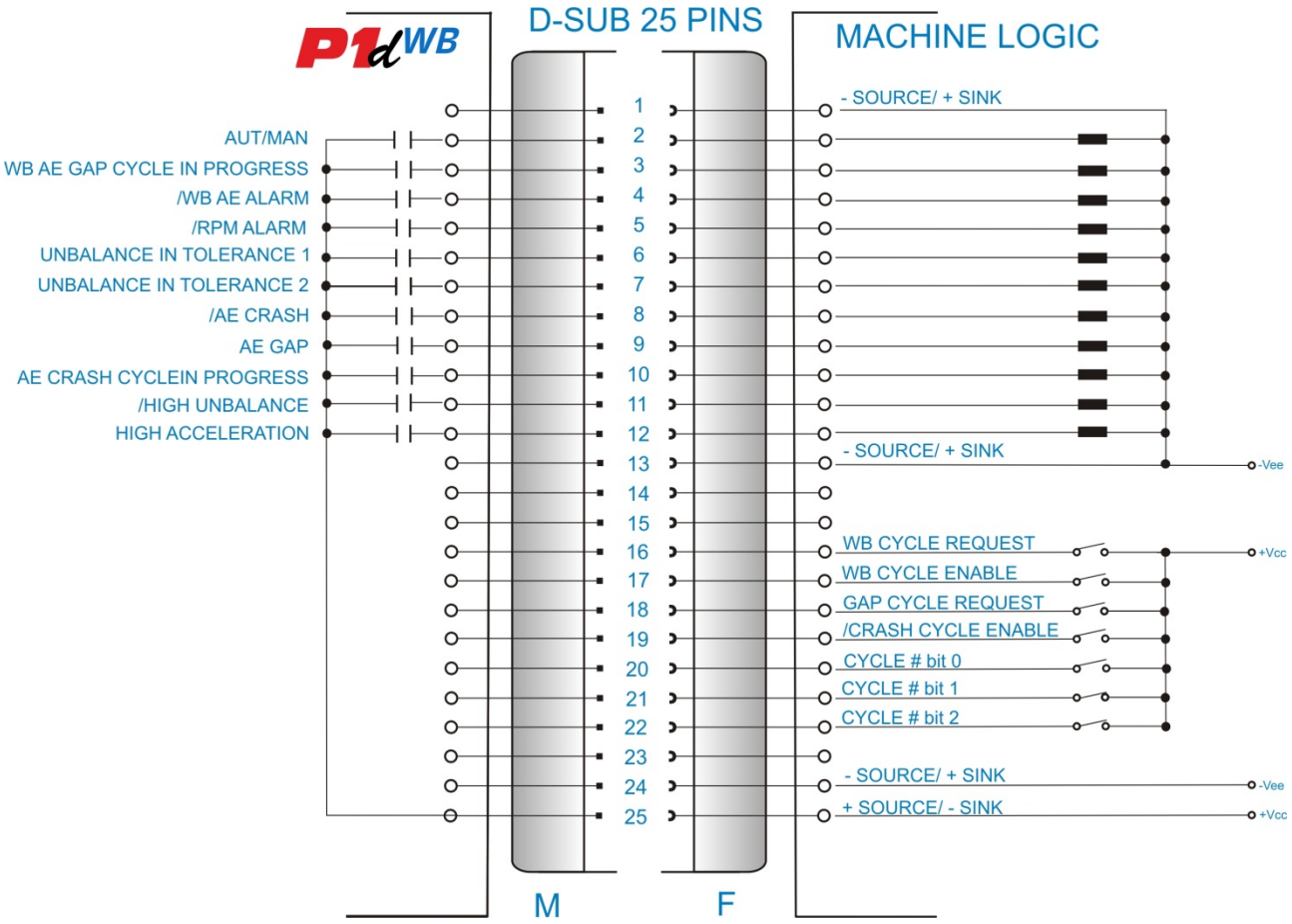
Description	Value	M.U.
Currents for each output	50	mA
Voltage at Logic State 1 @20 mA – SOURCE	> + Vcc – 2	VDC
Voltage at Logic State 1 @20 mA – SINK	< 2	VDC

8.2 Connection diagrams

24 V opto-isolated SOURCE TYPE

Conventional logic state of the signals :

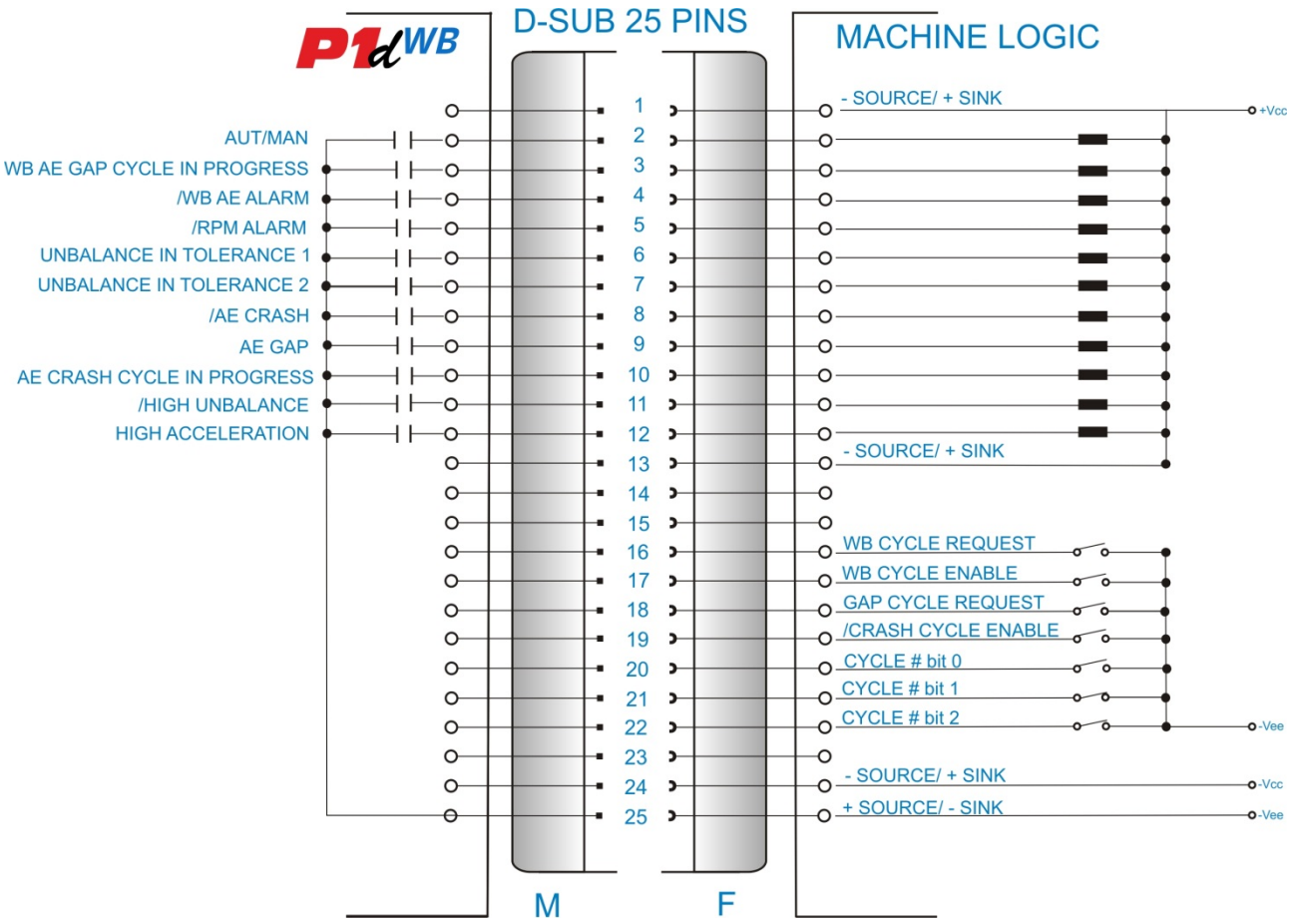
- logic state **0** → - **Vee**
- logic state **1** → + **Vcc**



24 V opto-isolated SINK TYPE

Conventional logic state of the signals :

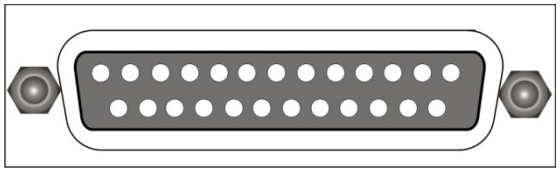
- logic state **0** → + **Vcc**
- logic state **1** → - **Vee**



8.3 I/O interface for P1dWB-CG

The **P1dWB** I/O programming menu can be used to select either the ENHANCED or LEGACY flow control operating modes. The latter should be used when replacing old E82 electronic units in order to guarantee complete compatibility.

8.3.1 "Enhanced" mode connector



D-DUB FEMALE 25 PIN CONNECTOR.

PIN n°	IN/OUT	NAME	SIGNAL DESCRIPTION	
			LOW	HIGH
1	IN		-SOURCE / +SINK	
2	OUT	AUT/MAN	Manual operation	Automatic operation
3	OUT	WB / AE GAPCYCLE IN PROGRESS	No cycle in progress	WB or AE GAP cycle in progress
4	OUT	WB and/or AE ALARM	WB and/or AE alarm active	No alarms active
5	OUT	RPM ALARM	RPM alarm active. The detected rpm value is outside the programmed range.	RPM alarm not active
6	OUT	UNBALANCE IN TOLERANCE 1	Unbalance value more than the programmed "optimum" threshold value L1	Unbalance value less than or equal to the programmed "optimum" threshold value L1
7	OUT	UNBALANCE IN TOLERANCE 2	Unbalance value more than the programmed "acceptable" threshold value L2	Unbalance value less than or equal to the programmed "acceptable" threshold value L2
8(1)	OUT	AE CRASH	The programmed CRASH noise value is more than the programmed threshold value.	The programmed CRASH noise value is less than or equal to the programmed threshold value.
9(1)	OUT	AE GAP	The programmed GAP noise value is more than or equal to the programmed threshold value.	The programmed GAP noise value is more than the programmed threshold value.
10	OUT	AE CRASH CYCLE IN PROGRESS	No CRASH cycle in progress	CRASH cycle in progress
11	OUT	HIGH UNBALANCE	Unbalance value more than the programmed "excessive" threshold value L3	Unbalance value less than or equal to the programmed "excessive" threshold value L3

12	OUT	HIGH ACELERATION	The acceleration signal value is more than the programmed threshold value.	The acceleration signal value is less than or equal to the programmed threshold value.
13	IN		-SOURCE / +SINK	
14	---		N/C	
15	---		N/C	
16	IN	WB CYCLE REQUEST	No Automatic Balancing cycle request in progress.	Automatic Balancing cycle request in progress.
17	IN	WB CYCLE ENABLE	WB balancing cycle disabled	WB balancing cycle enabled
18	IN	AE GAP CYCLE REQUEST	No GAP cycle request	A GAP cycle has been requested
19	IN	AE CRASH CYCLE REQUEST	A CRASH cycle has been requested	No CRASH cycle request
20	IN	CYCLE # - 1st bit	First set selection bit (cycle and piece)	
21	IN	CYCLE # - 2nd bit	Second set selection bit (cycle and piece)	
22	IN	CYCLE # - 3rd bit	Third set selection bit (cycle and piece)	
23	---		N/C	
24	IN		-SOURCE/+SINK	
25	IN		+SOURCE/-SINK	

(1) PINs 8 and 9 can be set up for high or low level activation via the MMI panel

In the “Enhanced” function:

- **WB alarm – AE alarm:** share the same output bit
- **WB cycle request** input bit high level stops AE processing and starts balancing algorithm
- **AE GAP cycle request**: when the input bit goes high the GAP cycle starts
- **AE CRASH cycle request**: when the input bit goes low the CRASH cycle starts

8.3.1.1 Recommended Bit activation level. ENHANCED

For **reasons of safety**, we strongly recommend setting up a **low activation level** for the following Bits

ENHANCED

/AE CRASH CYCLE REQ	AE crash cycle request	Input
/WB and/or AE ALARM	WB Surveillance, WB Environment	Output
	AE environment alarm	Output
/RPM ALARM	RPM threshold and RPM alarm	Output
HIGH UNBALANCE	Narrow band unbalance L3 threshold	Output
/HIGH ACCELERATION	Wide band acceleration threshold	Output

It is possible to set-up the activation level for the following bits:

/AE CRASH	AE Crash threshold	[default low]	Output
AE GAP	AE Gap Threshold	[default high]	Output

8.3.1.2 Programmable Flow Control Parameters.

Description	Type	Mnemonic	PIN
Automatic / Manual mode			
Automatic / Manual Connection pin relevant to current Work mode . This output is activated (*Logic State 1*) if the system is in Automatic mode [default] . *Manual mode can be required by Operator Panel if no Cycle is pending , and forces bit deactivation (Logic State 0) : in this mode all input/output bits are not managed with the optional exception of WB Cycle Enable input bit*	OUTPUT BIT	AUT/MAN	2
WB , RPM , Acceleration , Unbalance Alarms			
WB and/or AE Alarm Connection pin relevant to WB Alarm signal . This output is activated (*Logic State 0*) if a fatal alarm is pending in WB Surveillance and/or in WB Environment : • retentive data not valid • circuitry failure • accelerometer sensor disconnected or in failure state • rpm sensor in failure state • remote actuator communication link failure • remote actuator temperature threshold exceeded • balancing head motors not linked or absorbing too power • automatic balancing algorithm error because wrong rpm , not steady rpm , high unbalance , timeout , Automatic Balancing Cycle cannot be carried out if WB Alarm is pending . Connection pin relevant to AE Alarm signalling . This output is activated if a fatal alarm is pending in AE Environment : • retentive data not valid • circuitry failure • remote actuator communication link failure • acoustic emission sensor in failure state Gap and Crash Cycles cannot be carried out if AE Alarm is pending . *WB and/or AE Alarm output bit management :* • *bit is latched and held till an explicit clear request is issued*	OUTPUT BIT	/WB AE ALARM	4

RPM Alarm Connection pin relevant to RPM Alarm signal or RPM thresholds exceeded , in monitoring of wheel rotating speed . This output is activated if a fatal alarm is pending in RPM monitoring : • retentive data not valid • circuitry failure • rpm sensor in failure state This output is also activated (*Logic State 0*) if RPM value is below RPM MIN or above RPM MAX thresholds . Automatic Balancing Cycle cannot be carried out if RPM Alarm is pending . *RPM Alarm output bit management :* • *status is automatically recovered if a proper RPM is detected*	OUTPUT BIT	/RPM ALARM	5

High Unbalance Connection pin relevant to High Unbalance signal . This output is activated (*Logic State 0*) if the value of wheel unbalance exceeds the value programmed at limit L3 . Automatic Balancing Cycle cannot be carried out or is terminated if High Unbalance is pending . *High Unbalance output bit management :* • *status is automatically recovered if a Low Unbalance is detected*	OUTPUT BIT	/HIGH UNBALANCE	11

High Acceleration Connection pin relevant to High Acceleration signal . This output is activated (*Logic State 0*) if the value of wide band acceleration exceeds the value programmed . *High Acceleration output bit management :* • *status is automatically recovered if a Low Acceleration is detected*	OUTPUT BIT	/HIGH ACCELERATION	12

Cycle in Progress			
WB Cycle or AE GAP Cycle in Progress Connection pin relevant to WB Automatic Balancing Algorithm Cycle or AE Gap Cycle in Progress signal . To be used as acknowledgement of WB Cycle Request : the bit is activated at cycle start , and deactivated on cycle abort or stop , on cycle done with success , on cycle timeout and on alarm condition . To be used as acknowledgement of AE Gap Cycle Request : the bit is activated at cycle start , and deactivated on cycle stop and on fatal alarm condition .	OUTPUT BIT	WB or AE GAP CYCLE IN PROGRESS	3
AE CRASH Cycle in Progress Connection pin relevant AE Crash Cycle in Progress signal . To be used as acknowledgement of AE Crash Cycle Request : the bit is activated at cycle start , and deactivated on cycle stop and on fatal alarm condition .	OUTPUT BIT	AE CRASH CYCLE IN PROGRESS	10

Data Sets			
Data Set Selection Connection pins relevant to Data Set Selection between available Set #0 ÷ #7 . Selection of a not existing Data Set is discarded , and a warning is raised : 1st available one or last available selected one is assumed. Data Set Selection is not processed till almost a cycle request is pending .	INPUT BITS	CYCLE # bit 0 CYCLE # bit 1 CYCLE # bit 2	20 21 22

WB Cycle			
WB Cycle Enable Connection pin relevant to Balancing Algorithm and other balancing masses movement enable signal . The signal must be supplied to enable the balancing operations : • in Manual Mode , execution of automatic balancing cycle , home cycle , manual displacement of balancing masses • in Automatic mode , execution of automatic balancing cycle WB Cycle Enable bit can be programmed to be unused in Manual mode , Enhanced behaviour : Settings → Options → I/O Prog → IGNORE IN MANUAL . WB Cycle Enable deactivation stops balancing algorithm .	INPUT BIT	WB CYCLE ENABLE	17
WB Cycle Request Connection pin relevant to Automatic Balancing Algorithm Cycle start signal . WB Cycle Request requires also WB Cycle Enable to be active , otherwise an alarm is raised . WB Cycle Request must not be required if an AE cycle is pending . WB Cycle Request input bit is acknowledged by Cycle in Progress output bit . *WB Cycle Request input bit management:* • *bit activation starts algorithm if also WB Cycle Enable is active* • *bit deactivation stops algorithm*	INPUT BIT	WB CYCLE REQUEST	16
WB Unbalance in Tolerance 1 Connection pin relevant to Unbalance within Tolerance . The signal at *Logic State 1* indicates that the unbalance does not exceed the value programmed at limit L1 . WB Unbalance in Tolerance 1 is forced at *Logic State 0* when a Balancing Cycle is pending .	OUTPUT BIT	UNBALANCE IN TOLERANCE 1	6
WB Unbalance in Tolerance 2 Connection pin relevant to Unbalance approaching Out of Tolerance . The signal at *Logic State 1* indicates that the unbalance does not exceed the value programmed at limit L2 . The signal at *Logic State 0* indicates that limit L2 was exceeded and an Automatic Balancing Cycle is necessary . WB Unbalance in Tolerance 2 is forced at *Logic State 0* when a Balancing Cycle is pending .	OUTPUT BIT	UNBALANCE IN TOLERANCE 2	7

AE Cycles			
AE Crash Cycle Request Connection pin relevant to AE Crash Cycle start signal . The signal at *Logic State 0* enables Crash survey . AE Crash Request must not be required if a WB cycle is pending.	INPUT BIT	/AE CRASH CYCLE REQUEST	19
AE Gap Cycle Request Connection pin relevant to AE Gap Cycle start signal . The signal at *Logic State 1* starts Gap survey . AE Gap Request must not be required if a WB cycle is pending. AE Gap Cycle Request input bit is acknowledged by Cycle in Progress output bit . If AE Gap measure Zeroing is programmed as enabled , the signal from *Logic State 0* to *Logic State 1* determines the acquisition of the incremental noise value to which the Gap Threshold will refer. If AE Gap measure Zeroing is programmed as disabled , the signal from *Logic State 0* to *Logic State 1* determines the acquisition of the absolute noise value to which the Gap Threshold will refer.	INPUT BIT	AE GAP CYCLE REQUEST	18
AE Crash Connection pin relevant to AE Crash output control signal . When the acoustic emission measure exceeds the limit programmed as Crash Threshold , signal is activated . *AE Crash output bit management with MODE parameter :* • *activation level can be programmed , and it is defaulted to Logic State 0* • *activation can be programmed to occur each time threshold is exceeded [default] , or only 1st time with level latched* • *measure crossing direction can be programmed to be increasing [default] or decreasing*	OUTPUT BIT	/AE CRASH	8
AE Gap Connection pin relevant to AE Gap output control signal . When the acoustic emission measure exceeds the limit programmed as Gap Threshold , signal is activated . *AE Gap output bit management with MODE parameter :* • *activation level can be programmed , and it is defaulted to Logic State 1* • *activation can be programmed to occur each time threshold is exceeded [default] , or only 1st time with level latched* • *measure crossing direction can be programmed to be increasing [default] or decreasing*	OUTPUT BIT	AE GAP	9

8.3.1.3 Cyclograms in ENGANCED mode

Elaboration delay =20ms
Ttrg is the minimum length of time the signal must remain above the threshold level in order to trigger the output signal
T_{PLC} is the minimum time necessary to activate the Bit

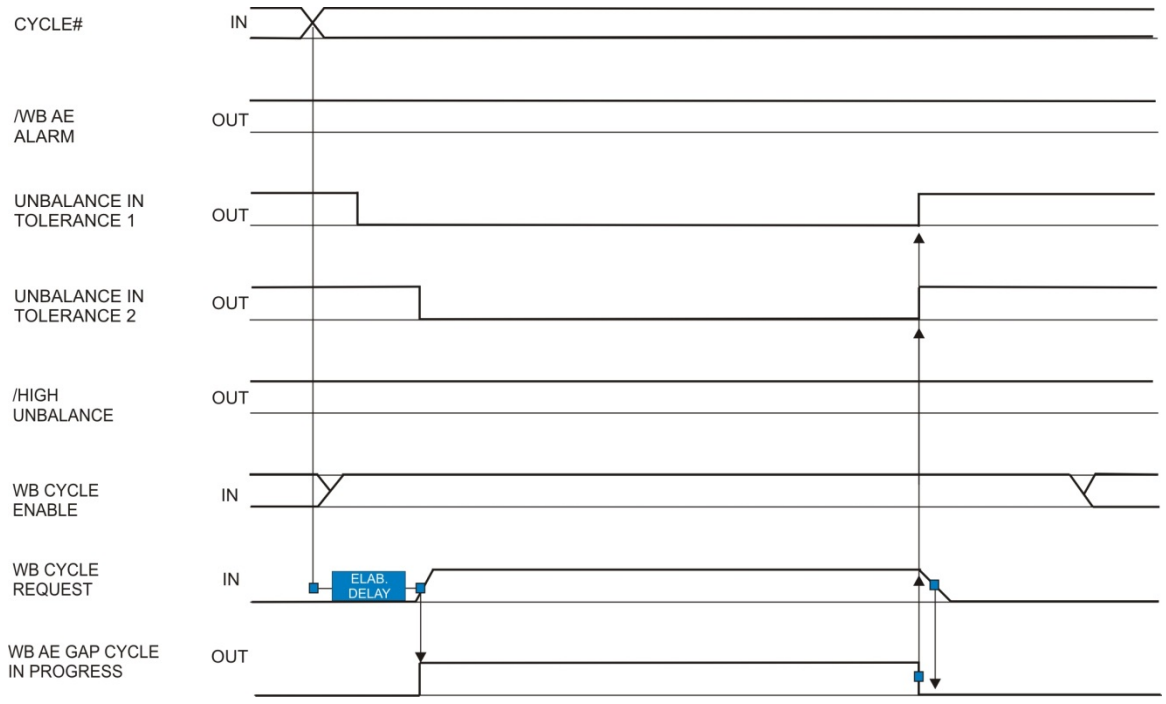
WB Automatic balancing algorithm
In order to ensure the balancing process takes into account the effective grinding wheel vibration, while eliminating the influence of external elements, it is essential to ensure the following conditions are satisfied when carrying out the balancing cycle:

• the grinding wheel must be rotating at between 60 and 30000 RPM
• the grinding wheel must be retracted with respect to the working position
• no grinding wheel dressing cycles must be in progress
• none of the machine components must be in motion
• if possible, the coolant flow should be interrupted
In order to ensure good balancing accuracy, it is advisable to maintain a rotation speed of at least 300 rpm.

When the WB CYCLE ENABLE and /AE CRASH signal inputs are in logic state 1, and the AE GAP CYCLE REQUEST signal input is in logic state 0, the **P1dWB** is enabled to receive the balancing cycle start signal.

See the example below for an explanation of the Automatic balancing cycle Request:

- Cycle performed without alarms:

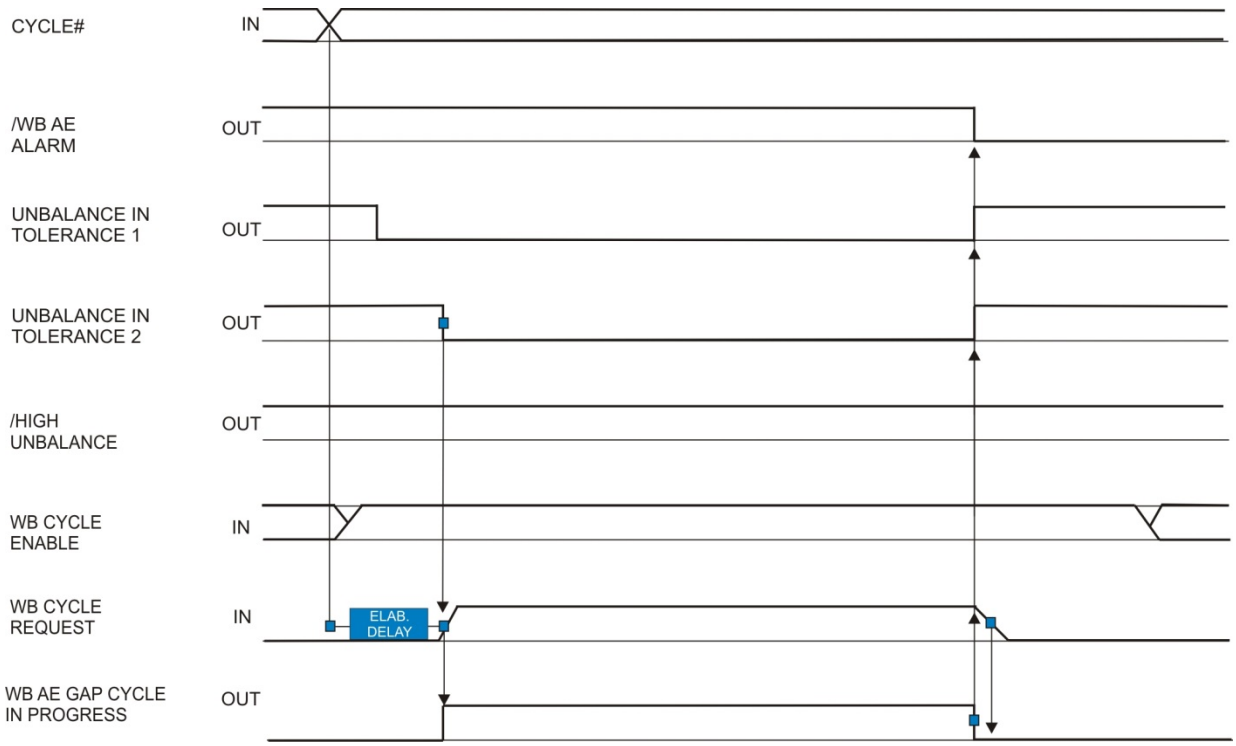


When the CYCLE IN PROGRESS signal is in logic state 1, the UNBALANCE IN TOLERANCE 1 and 2 output is disabled and the electronic unit monitors the movement of the head balancing weights until the optimum balancing condition is achieved.
Balancing is considered to be optimum when the grinding wheel unbalance does not exceed the value set-up for the threshold L1.(PROG/ SET/WHEEL BALANCING)
Once this condition has been reached, the CYCLE IN PROGRESS signal assumes the logic 0 state, which indicates that the balancing cycle is complete, and that the IN TOLERANCE 1 and IN TOLERANCE 2 signals output is enabled (these two signals assume the logic 1 state).

If the unbalance remains below the L2 threshold limit for approximately 210 seconds, the **P1dWB** interrupts the balancing cycle, setting the CYCLE IN PROGRESS signal to the logic 0 state, and activates the /WB ALARM output signal.

See the example below for an explanation of the Automatic balancing cycle Request:

- Cycle performed with time-out
- /WB and/or AE alarm high



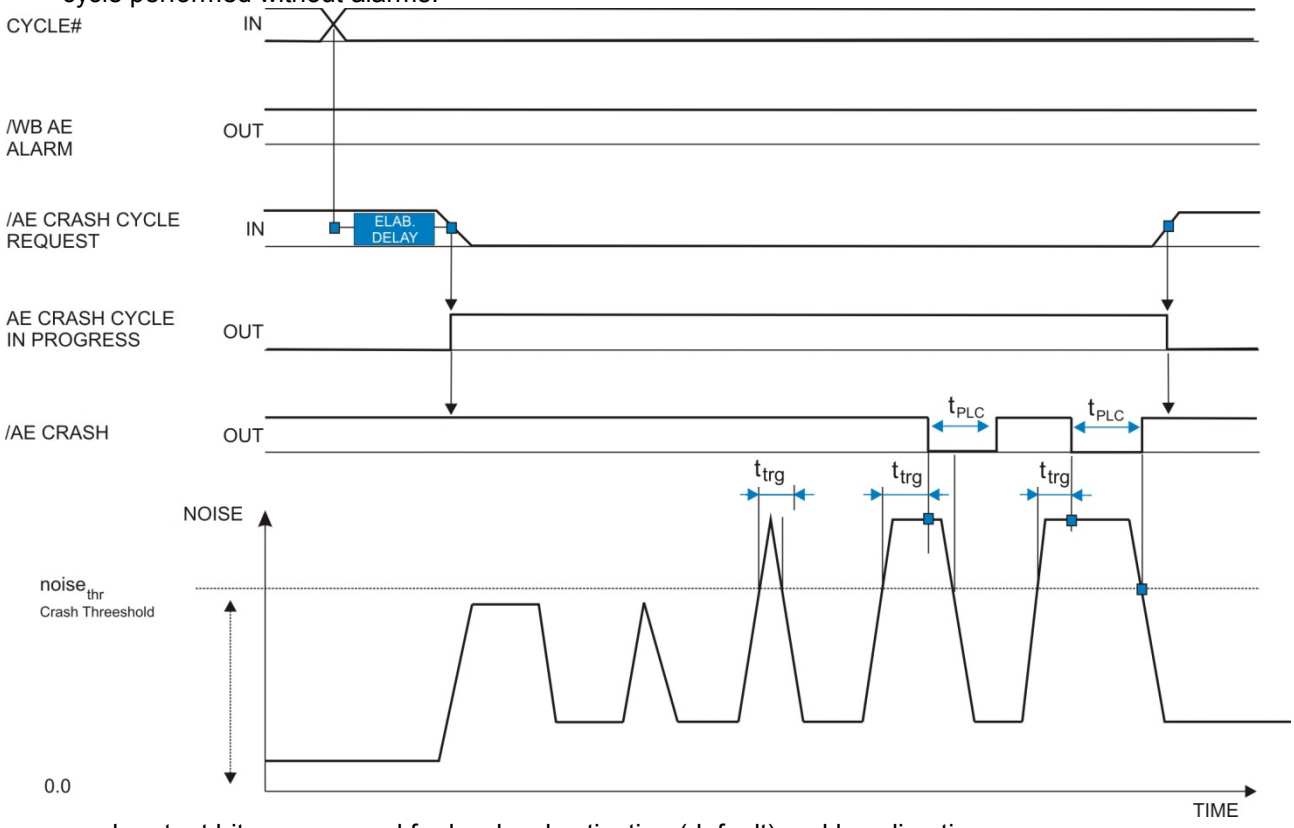
AE ALARMS

Whatever AE CRASH CYCLE REQUEST and AE GAP CYCLE REQUEST levels are:

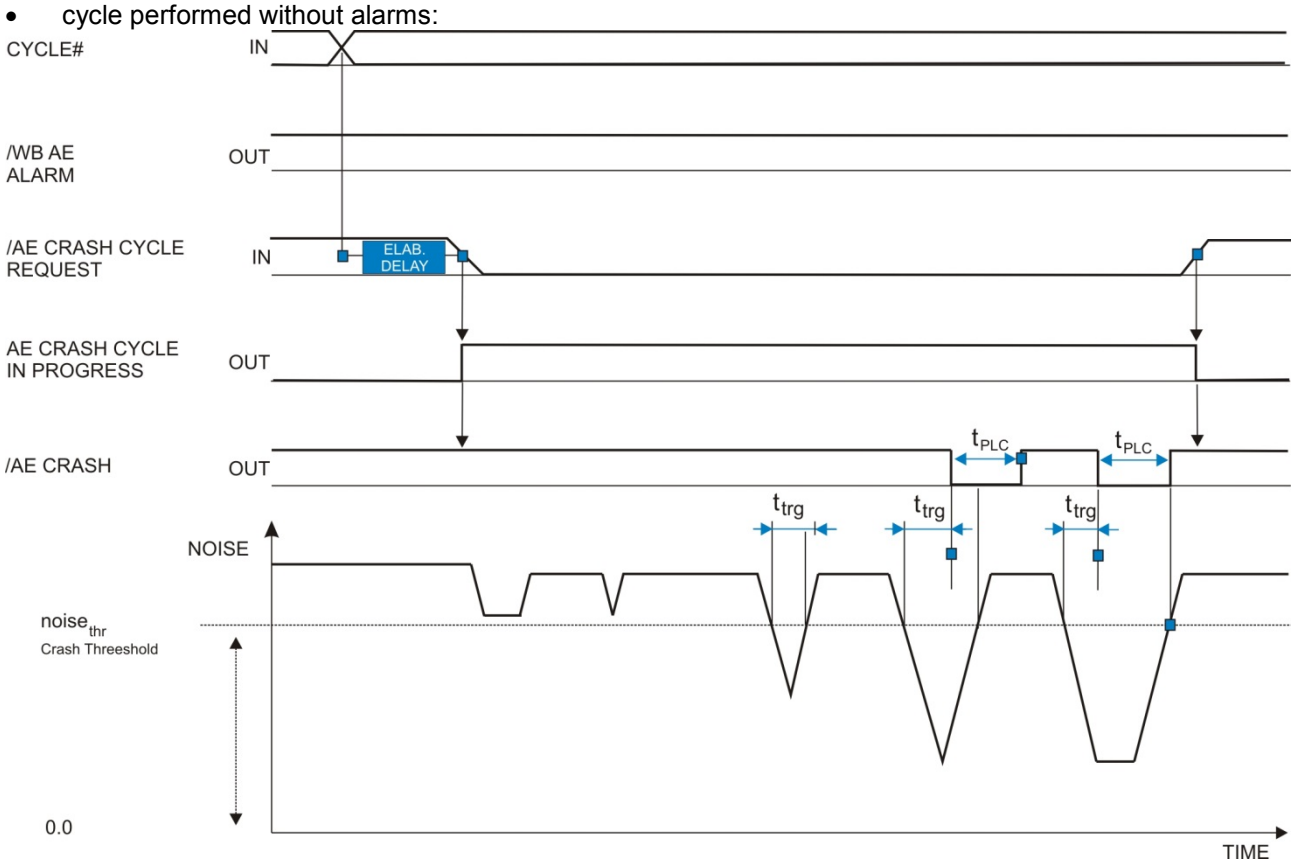
- the AE CRASH output is activated (forced to low or high level, depending on the configuration)
- the AE GAP output is activated (forced to low or high level, depending on the configuration)

AE CRASH CHECK, with non self-retaining command, not zeroed

- crash output bit programmed for low level activation (default) and high direction (default)
- cycle performed without alarms:

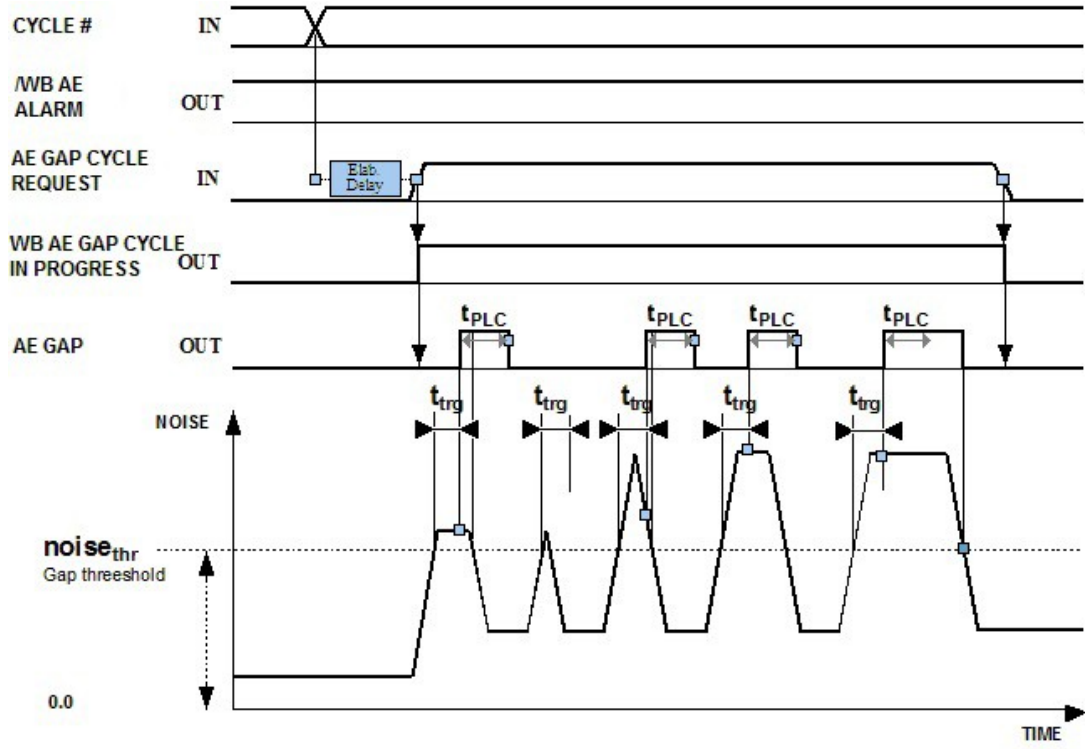


- crash output bit programmed for low level activation (default) and low direction
- cycle performed without alarms:

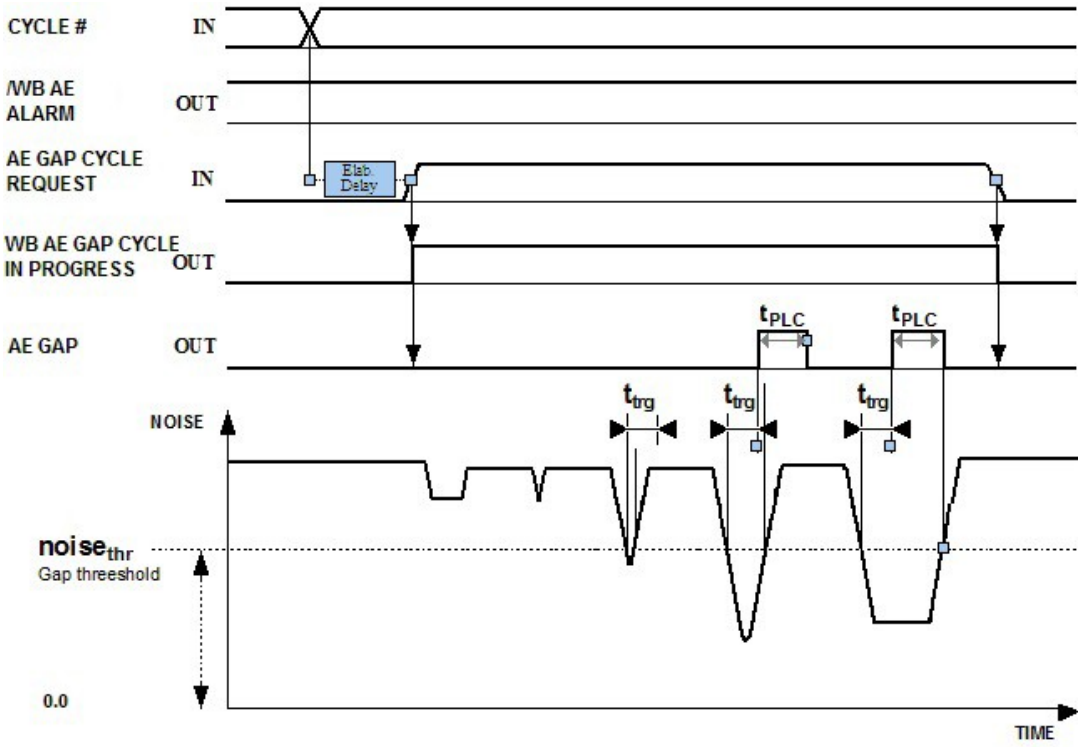


AE GAP CHECK, with non self-retaining command, not zeroed

- gap output bit programmed for high level activation (default) and high direction (default)
- cycle performed without alarms:

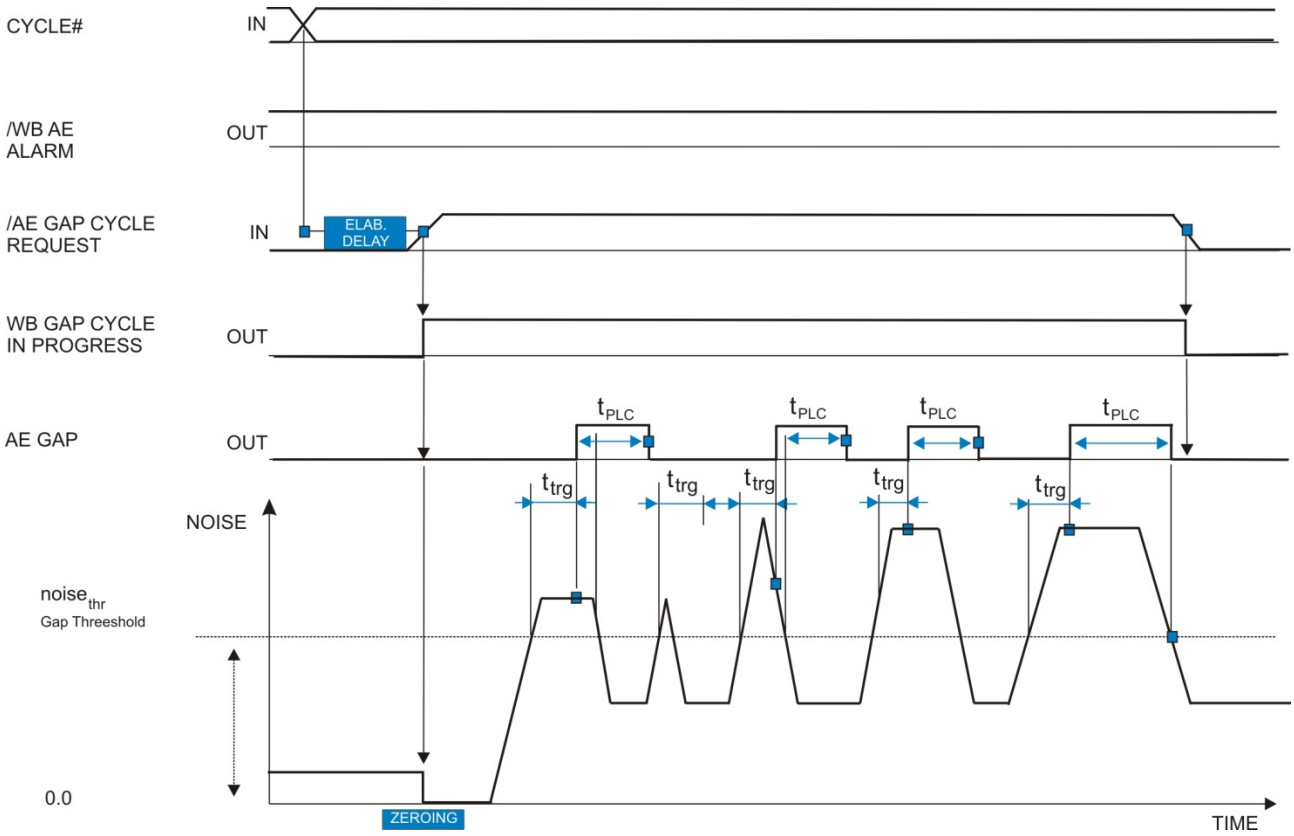


- gap output bit programmed for high level activation (default) and low direction (default)
- cycle performed without alarms:

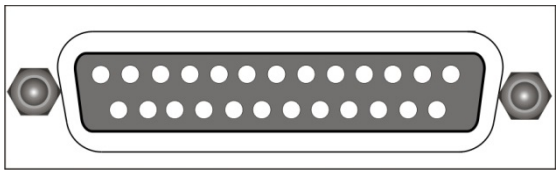


AE GAP CHECK, with non self-retaining command, zeroing at cycle start

- gap output bit programmed for high level activation (default) and high direction (default)
- cycle performed without alarms:



8.3.2 "Legacy" mode connector



D-SUB FEMALE 25 PIN CONNECTOR.

PIN n°	IN/OUT	NAME	SIGNAL DESCRIPTION	
			LOW	HIGH
1	IN		-SOURCE / +SINK	
2	OUT	AUT/MAN	Manual operation	Automatic operation
3	OUT	WB or AE GAPCYCLE IN PROGRESS	No cycle in progress	WB or AE GAP cycle in progress
4	OUT	/WB ALARM	WB alarm active	WB alarm not active
5	OUT	/RPM ALARM	RPM alarm active. The detected rpm value is outside the programmed range.	RPM alarm not active
6	OUT	UNBALANCE IN TOLERANCE 1	Unbalance value more than the programmed "optimum" threshold value L1	Unbalance value less than or equal to the programmed "optimum" threshold value L1
7	OUT	UNBALANCE IN TOLERANCE 2	Unbalance value more than the programmed "acceptable" threshold value L2	Unbalance value less than or equal to the programmed "acceptable" threshold value L2
8(1)	OUT	/AE CRASH	The programmed CRASH noise value is more than the programmed threshold value.	The programmed CRASH noise value is more than or equal to the programmed threshold value.
9(1)	OUT	/AE GAP	The programmed GAP noise value is less or equal to the programmed threshold value.	The programmed GAP noise value is more than the programmed threshold value.
10	OUT	/AE ALARM	AE alarm active	AE alarm not active
11	OUT	/HIGH UNBALANCE	Unbalance value more than the programmed "excessive" threshold value L3	Unbalance value less than or equal to the programmed "excessive" threshold value L3
12	OUT	/LOW COMM. LEVEL		
13	IN		-SOURCE / +SINK	
14	---		N/C	
15	---		N/C	
16	IN	WB CYCLE REQUEST	No cycle request	Automatic balancing cycle request in progress.

17	IN	WB CYCLE ENABLE	WB balancing cycle disabled	WB balancing cycle enabled
18	IN	AE GAP CYCLE REQUEST	No GAP cycle request	A GAP cycle has been requested
19	IN	/AE CRASH CYCLE REQUEST	A CRASH cycle has been requested	No CRASH cycle request
20	IN	CYCLE # - 1st bit	Set cycle and piece selection, 1st bit	
21	IN	CYCLE # - 2nd bit	Set cycle and piece selection, 2nd bit	
22	IN	CYCLE # - 3rd bit	Set cycle and piece selection, 3rd bit	
23	---		N/C	
24	IN		-SOURCE/+SINK	
25	IN		+SOURCE/-SINK	

(2) PINs 8 and 9 can be set up for high or low level activation via the MMI panel

In “Legacy” operating mode:

- The **/HIGH ACCELERATION** output bit is not available, and is replaced by /**LOW COMM**. **LEVEL**
- The **/AE CRASH CYCLE IN PROGRESS** output bit is not available, and is replaced by /**AE ALARM**
- **WB ALARM** and **AE ALARM STATUS** are divided between two different output signals
- **WB CYCLE ENABLE** input bit acts also as alarms clear request
- **Wb cycle request**: when the input bit goes high, the AE process is interrupted and the balancing algorithm starts.
- **AE GAP cycle request**: when the input bit goes high the GAP cycle starts
- **AE CRASH cycle request**: when the input bit goes low the CRASH cycle starts

8.3.2.1 Recommended Bit activation level. LEGACY

/AE CRASH CYCLE REQ	AE crash cycle request	Input
/WB and/or AE ALARM	WB Surveillance, WB Environment	Output
	AE environment alarm	Output
/RPM ALARM	RPM threshold and RPM alarm	Output
HIGH UNBALANCE	Narrow band unbalance L3 threshold	Output
/HIGH ACCELERATION	Wide band acceleration threshold	Output

8.3.2.2 Cyclograms in LEGACY mode

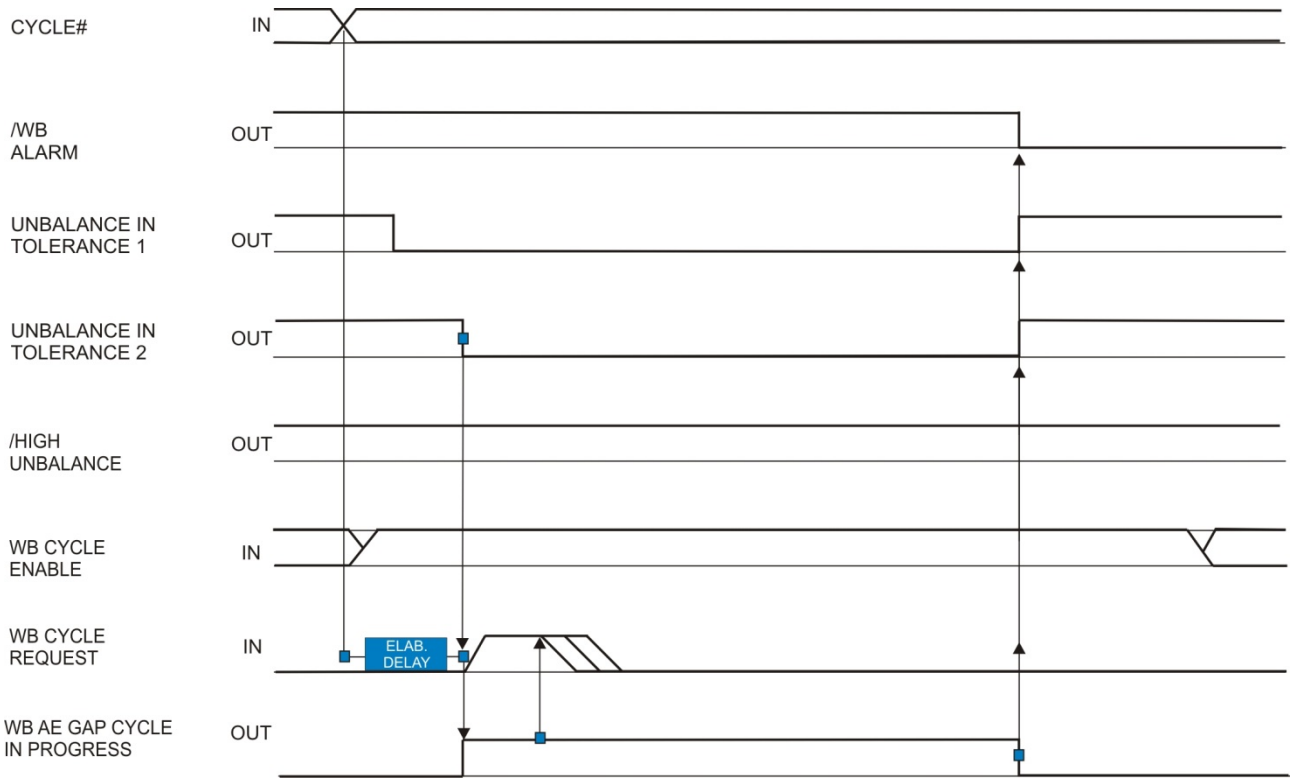
Elaboration delay (ELAB. DELAY) = 20ms

t_{trg} is the minimum length of time the signal must remain above the threshold level in order to trigger the output signal

t_{PLC} is the minimum time necessary to activate the Bit

WB Automatic balancing algorithm

- Cycle performed without alarms



If AE CRASH CYCLE REQUEST is at high level (active , request pending) :

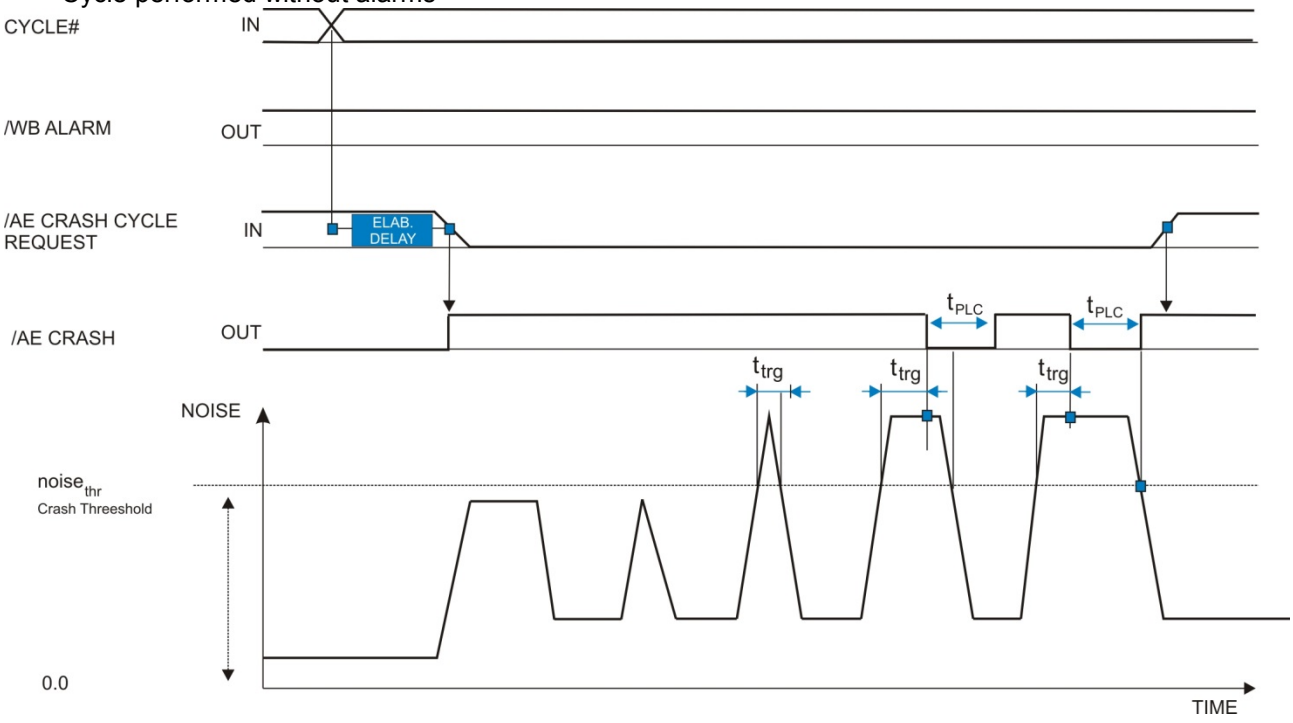
- /AE CRASH output is forced at low level (active) .

If AE GAP CYCLE REQUEST is at high level (active , request pending)

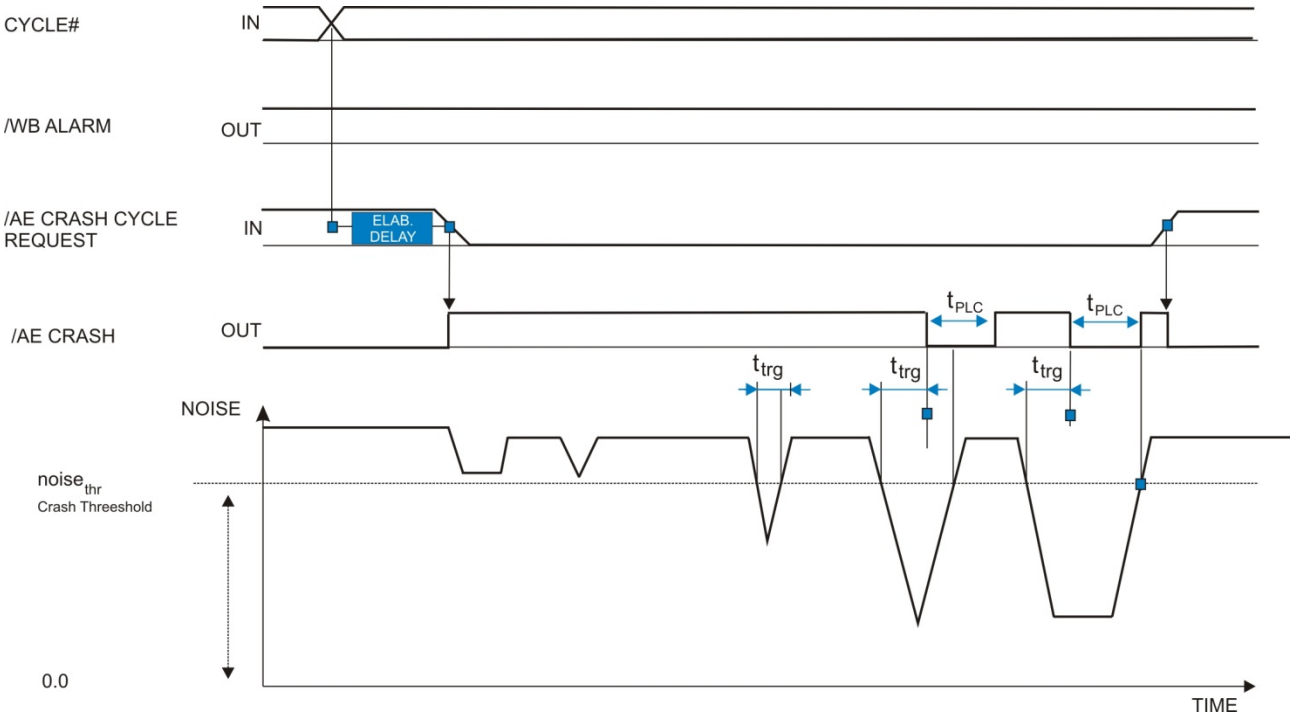
- /AE GAP output is forced at low level (active) .

AE CRASH CHECK, with non self-retaining command

- The crash output bit is set to high direction [default]
- Cycle performed without alarms

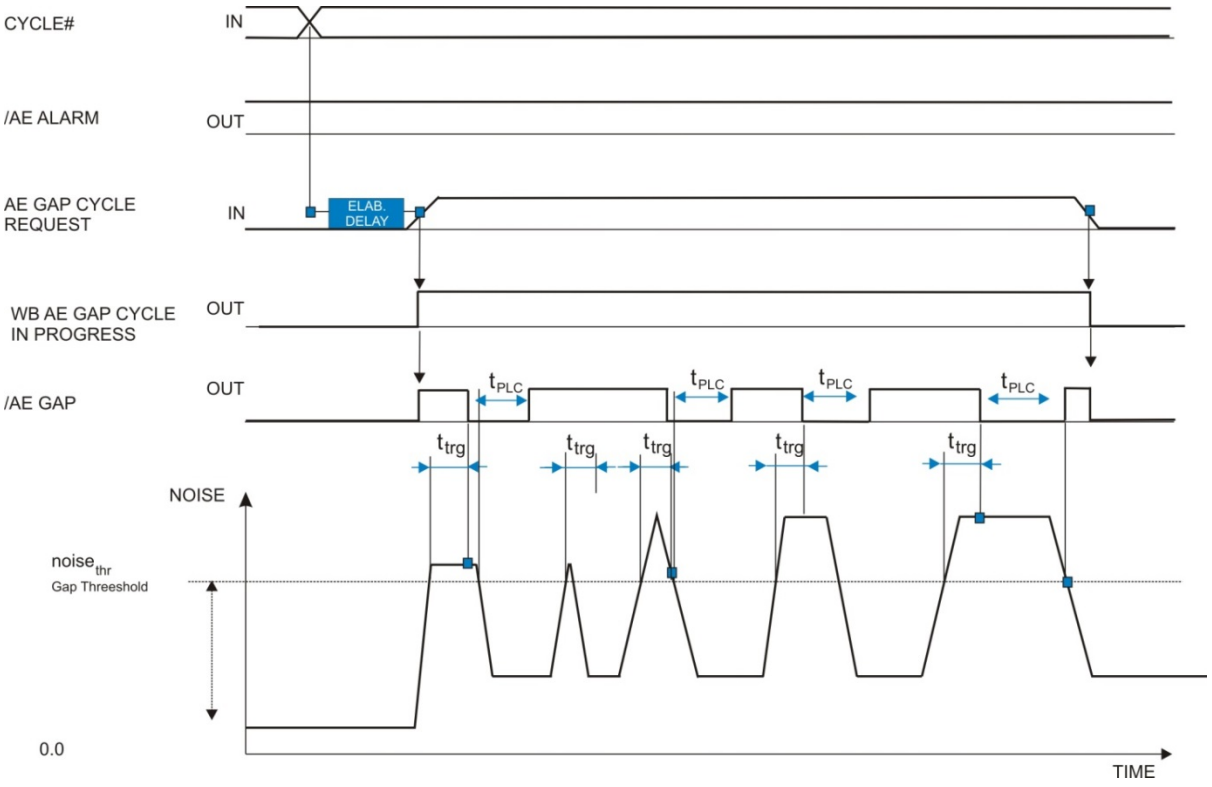


- The crash output bit is set to low direction
- Cycle performed without alarms



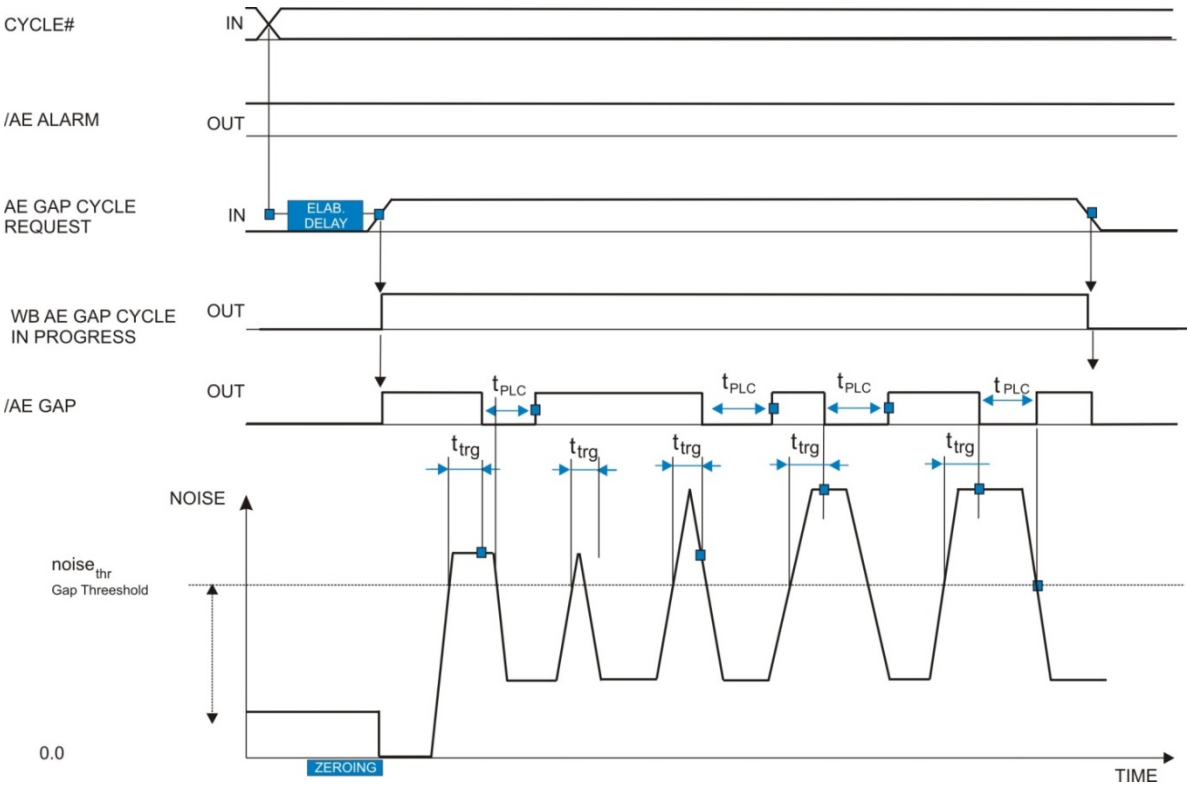
AE GAP CHECK, with non self-retaining command, not zeroed

- The gap output bit is set to high direction [default]
- Cycle performed without alarms



AE GAP CHECK, with non self-retaining command, Zeroing at cycle start

- The gap output bit is set to high direction [default]
- Cycle performed without alarms



Description	Type	Mnemonic	PIN
Automatic / Manual mode			
Automatic / Manual Connection pin relevant to current Work mode . This output is activated (*Logic State 1*) if the system is in Automatic mode [default] . *Automatic/Manual management in ENANCHED behaviour:* • *Manual mode can be required by Operator Panel if no Cycle is pending , and forces bit deactivation (Logic State 0) : in this mode all input/output bits are not managed with the optional exception of WB Cycle Enable input bit* *Automatic/Manual management in LEGACY behaviour:* • *Manual mode can be required by Operator Panel also if a Cycle is pending , and forces bit deactivation (Logic State 0) : in this mode all input/output bits are not managed with the optional exception of WB Cycle Enable input bit and the exception of all Unbalance related output bit*	OUTPUT BIT	AUT/MAN	2
WB , RPM , Acceleration , Unbalance Alarms			
WB Alarm Connection pin relevant to WB Alarm signal . This output is activated (*Logic State 0*) if a fatal alarm is pending in WB Surveillance and/or in WB Environment : • retentive data not valid • circuitry failure • accelerometer sensor disconnected or in failure state • rpm sensor in failure state • remote actuator communication link failure • remote actuator temperature threshold exceeded • balancing head motors not linked or absorbing too power • automatic balancing algorithm error because wrong rpm , not steady rpm , high unbalance , timeout , ... Automatic Balancing Cycle cannot be carried out if WB Alarm is pending . *WB Alarm output bit management :* • *bit is latched and held till an explicit clear request is issued in case of fatal alarm* • *bit is also activated in case of High Unbalance and automatically recovered if a Low Unbalance is detected*	OUTPUT BIT	/WB ALARM	4

Low Communication Level Warning			
Low Communication Level Warning for E82 rx/tx groups Connection pin relevant to signal indicating that the communication level between the transmitter (fixed part) and the receiver (rotating part) is low . This output is activated (*Logic State 0*) if communication level is detected low . This is a pre-alarm condition , available only with E82 like rx/tx groups .	OUTPUT BIT	LOW COMM. LEVEL	12

Cycle in Progress			
WB Cycle or AE Gap Cycle in Progress Connection pin relevant to WB Automatic Balancing Algorithm Cycle or AE Gap Cycle in Progress signal . To be used as acknowledgement of WB Cycle Request : the bit is activated at cycle start , and deactivated on cycle abort or stop , on cycle done with success , on cycle timeout and on alarm condition . To be used as acknowledgement of AE Gap Cycle Request : the bit is activated at cycle start , and deactivated on cycle stop and on fatal alarm condition .	OUTPUT BIT	WB or AE GAP CYCLE IN PROGRESS	3

Data Sets			
Data Set Selection Connection pins relevant to Data Set Selection between available Set #0 ÷ #7 . Selection of a not existing Data Set is discarded , and a warning is raised : 1st available one or last available selected one is assumed. Data Set Selection is not processed till almost a cycle request is pending .	INPUT BITS	CYCLE # bit 0 CYCLE # bit 1 CYCLE # bit 2	20 21 22

WB Cycle			
WB Cycle Enable Connection pin relevant to Balancing Algorithm and other balancing masses movement enable signal . The signal must be supplied to enable the balancing operations : • in Manual Mode , execution of automatic balancing cycle , home cycle , manual displacement of balancing masses • in Automatic mode , execution of automatic balancing cycle WB Cycle Enable bit can be programmed to be unused in Manual mode , Enhanced behaviour : Settings → Options → I/O Prog → IGNORE IN MANUAL . WB Cycle Enable deactivation stops balancing algorithm . Connection pin relevant to Alarms Clear . WB Cycle Enable transition from *Logic State 0* to *Logic State 1* generates the reset of alarms occurred .	INPUT BIT	WB CYCLE ENABLE	17

WB Cycle Request Connection pin relevant to Automatic Balancing Algorithm Cycle start signal . WB Cycle Request requires also WB Cycle Enable to be active , otherwise an alarm is raised . WB Cycle Request must not be required if an AE cycle is pending WB Cycle Request input bit is acknowledged by Cycle in Progress output bit . *WB Cycle Request input bit management :* • *bit activation starts algorithm if also WB Cycle Enable is active* • *bit deactivation does not stop algorithm , and is required after Cycle In Progress is activated*	INPUT BIT	WB CYCLE REQUEST	16
WB Unbalance in Tolerance 1 Connection pin relevant to Unbalance within Tolerance . The signal at *Logic State 1* indicates that the unbalance does not exceed the value programmed at limit L1 . WB Unbalance in Tolerance 1 is forced at *Logic State 0* when a Balancing Cycle is pending .	OUTPUT BIT	UNBALANCE IN TOLERANCE 1	6
WB Unbalance in Tolerance 2 Connection pin relevant to Unbalance approaching Out of Tolerance . The signal at *Logic State 1* indicates that the unbalance does not exceed the value programmed at limit L2 . The signal at *Logic State 0* indicates that limit L2 was exceeded and an Automatic Balancing Cycle is necessary . WB Unbalance in Tolerance 2 is forced at *Logic State 0* when a Balancing Cycle is pending .	OUTPUT BIT	UNBALANCE IN TOLERANCE 2	7

AE Cycles			
AE Crash Cycle Request Connection pin relevant to AE Crash Cycle start signal . The signal at *Logic State 0* enables Crash survey . AE Crash Request must not be required if a WB cycle is pending.	INPUT BIT	/AE CRASH CYCLE REQUEST	19
AE Gap Cycle Request Connection pin relevant to AE Gap Cycle start signal . The signal at *Logic State 1* starts Gap survey . AE Gap Request must not be required if a WB cycle is pending. AE Gap Cycle Request input bit is acknowledged by Cycle in Progress output bit . If AE Gap measure Zeroing is programmed as enabled , the signal from *Logic State 0* to *Logic State 1* determines the acquisition of the incremental noise value to which the Gap Threshold will refer. If AE Gap measure Zeroing is programmed as disabled , the signal from *Logic State 0* to *Logic State 1* determines the acquisition of the absolute noise value to which the Gap Threshold will refer.	INPUT BIT	AE GAP CYCLE REQUEST	18

AE Crash Connection pin relevant to AE Crash output control signal . When the acoustic emission measure exceeds the limit programmed as Crash Threshold , signal is activated . *AE Crash output bit management with MODE parameter :* • *activation level is Logic State 0* • *activation can be programmed to occur each time threshold is exceeded [default] , or only 1st time with level latched* • *measure crossing direction can be programmed to be increasing [default] or decreasing*	OUTPUT BIT	/AE CRASH	8
AE Gap Connection pin relevant to AE Gap output control signal . When the acoustic emission measure exceeds the limit programmed as Gap Threshold , signal is activated . *AE Gap output bit management with MODE parameter :* • *activation level is Logic State 0* • *activation can be programmed to occur each time threshold is exceeded [default] , or only 1st time with level latched* • *measure crossing direction can be programmed to be increasing [default] or decreasing*	OUTPUT BIT	/AE GAP	9

9 OPERATION AND USE

9.1 General description of the device

The **P1dWB** operator panel includes an LCD touchscreen display (resolution 272 x 480 pixels - dimensions 4.3") that can be used to program and view the measurements.

HOME MENU DESCRIPTION

Alarm condition. This icon indicates whether there are any active alarms or warnings. [Alarms and warnings menu]

This icon indicates the operating mode and the number of the set that is currently in use. [Operating mode selection menu]

Press this softkey to return to the Home Page

Press this softkey to return to the previous page.

This bar displays the page title.

This bar displays the name of the current user. [User Menu]

Press this softkey to access the Views Menu [Views Menu]

Press this softkey to access the Prog Menu [Prog Menu]

Press this softkey to access the Settings Menu [SETTINGS MENU]

P1dWB CG and R programming specifications:

Programming and display data	P1dWB_R	P1dWB_CG
Password	3 Levels 1. End User 2. OEM 3. Service	3 Levels 1. End User 2. OEM 3. Service
Sets	1 single cycle	8 cycles
Unit of Measurement	Microns; mm/s	Microns; mm/s
Language	Italian - English - French - German - Swedish - Spanish - Portuguese - Russian - Hungarian - Turkish - Simplified Chinese - Japanese - Korean - Traditional Chinese - Thai - Malaysian	Italian - English - French - German - Swedish - Spanish - Portuguese - Russian - Hungarian - Turkish - Simplified Chinese - Japanese - Korean - Traditional Chinese - Thai - Malaysian
Software Release	1.0	1.0
Types of balancing heads	FT contacts ST contacts	FT c/less sH ST c/less sH FT c/less sH + Gap ST c/less sH + Gap
Home Position	NO	YES (static cycle)
TX/RX group type	Not applicable	E78/E82 MiniCT
Voltage regulation	NO	Yes, with different values: E78/E82 between 12.2 V and 15.0 V with motors stationary MINICT between 18.0 V and 30.0 V with motors stationary
Pulses per rotation	1	2 for E78/E82 1 for MiniCT
RPM sensor	yes	yes
RPM limits	Min. RPM = 60 Max. RPM = 99999 manual valve enabled in the event of faulty sensor	Min. RPM = 60 Max. RPM = 99999 manual valve enabled in the event of faulty sensor
WB motor types	Escap / Faulhaber1724 Faulhaber1906	Escap / Faulhaber1724 Faulhaber1016 / Faulhaber1516
Motor tests	yes	yes
Motor speeds	Low Medium Low Medium High High Automatic	Low Medium Low Medium High High Automatic

Index General Prog.

9.1.1 General panel icons

The menu pages include the following icons:

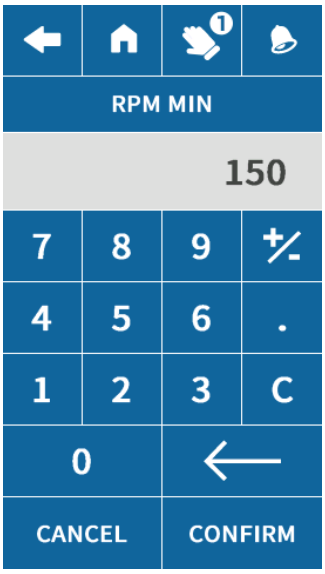
If a page contains more data than it is possible to display on a single page, it will also include arrow icons that can be used scroll up and down in order view all the available data.

This icon, which appears at the end of a parameter string, indicates that a multiple choice window will be opened.

This icon, which appears at the end of a parameter string, indicates that an additional programming page will be opened.

This icon, which appears at the end of a parameter string, indicates whether it is enabled or disabled.

This icon, which appears at the end of a parameter string, indicates that it is possible to open a virtual numerical keypad in order to modify the value.
For example:



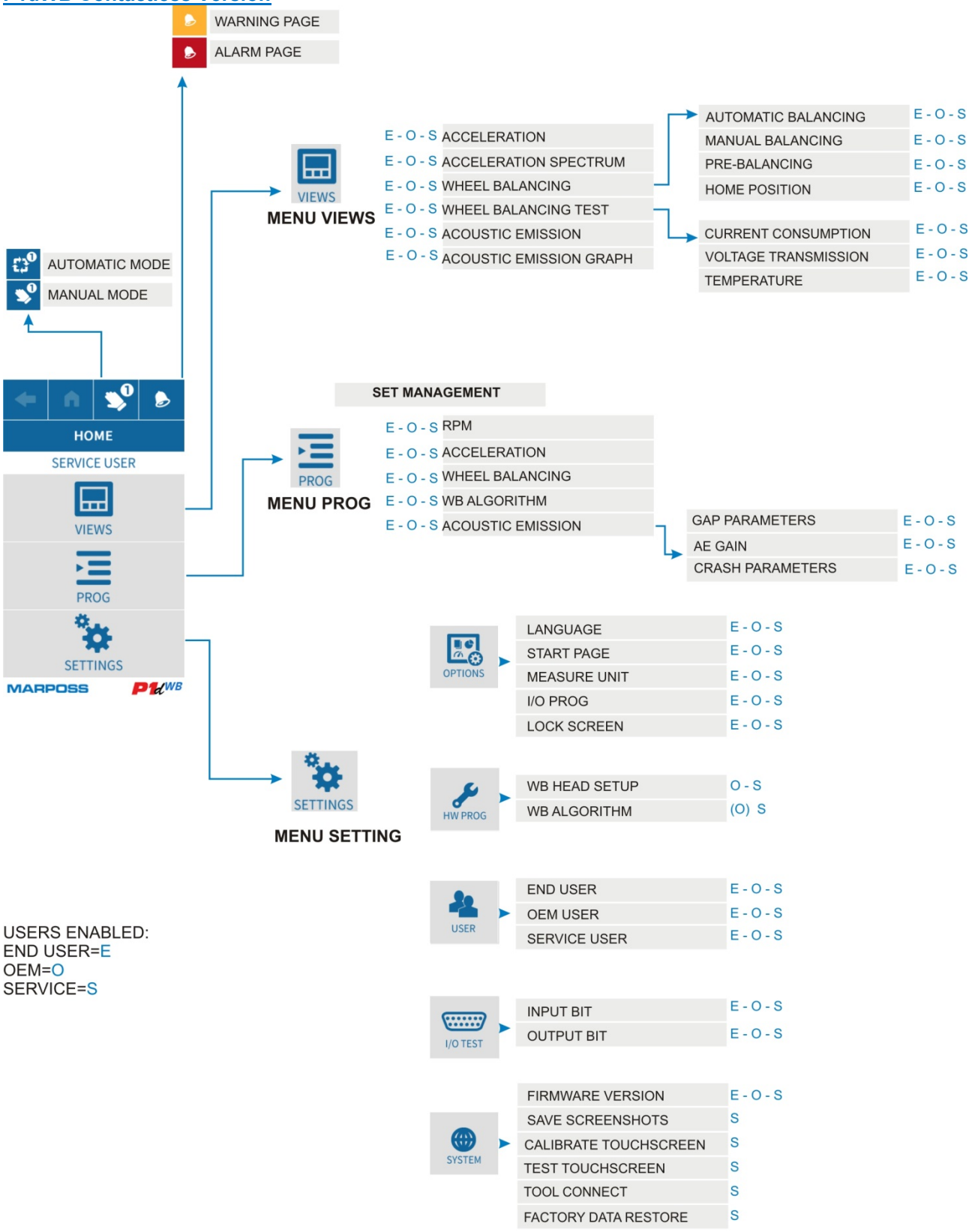
These check boxes may be used to select a parameter between two or more different data.

After modifying data, the page may also display some of the following softkeys, which are used to save/confirm the modifications, or exit without saving.

Index General Prog.

9.1.2 Panel flow chart

P1dWB Contactless Version



USERS ENABLED:
END USER=E
OEM=O
SERVICE=S

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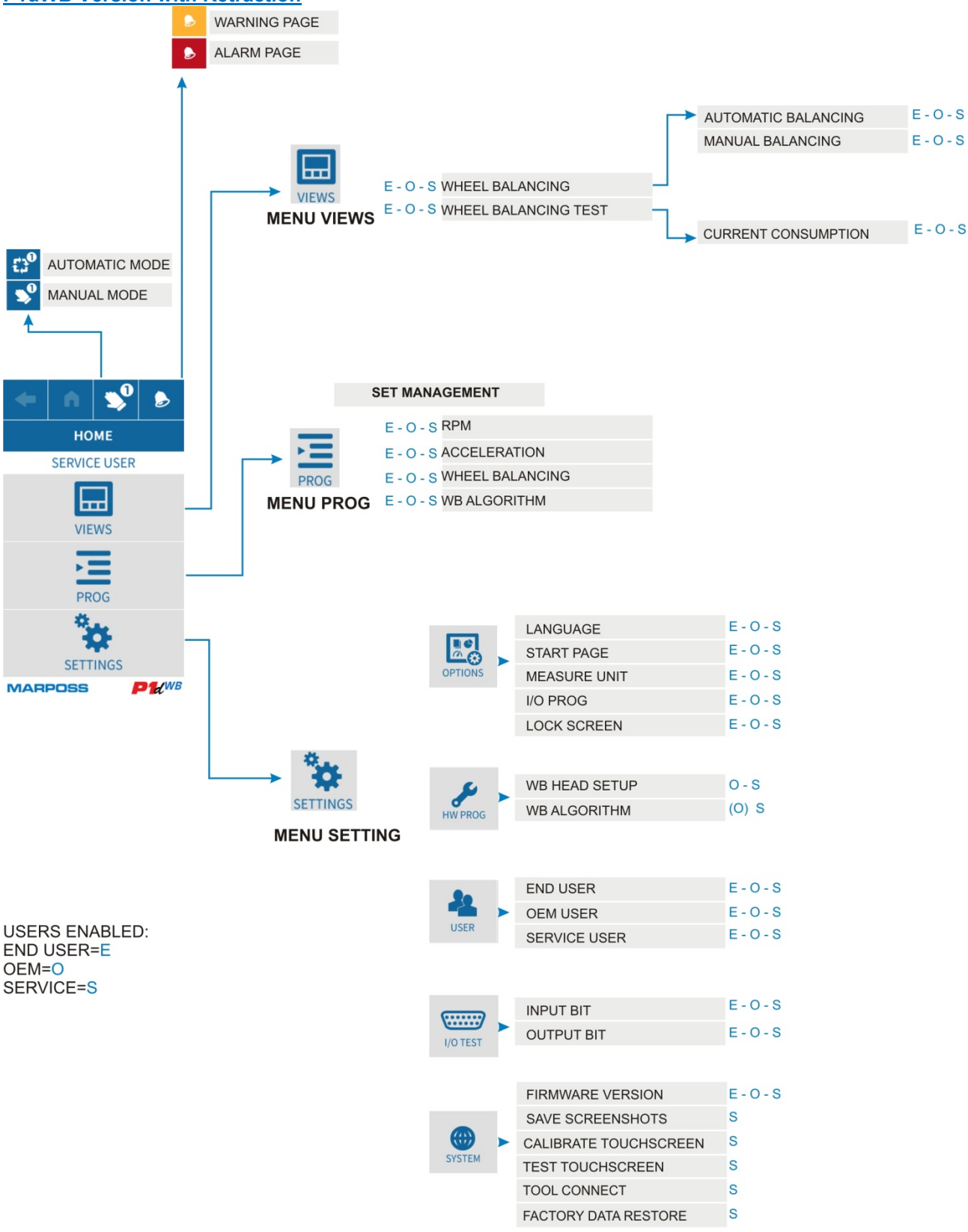
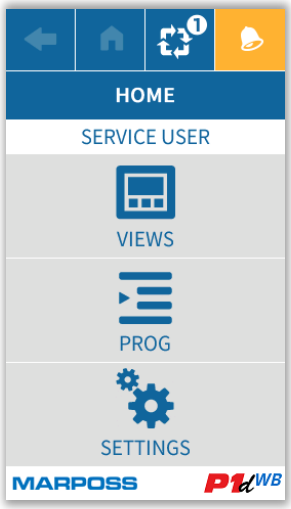
P1dWB Version with Retraction



USERS ENABLED:
END USER=E
OEM=O
SERVICE=S

Index General Prog.

9.1.3 Alarms and Warnings Menu



This icon indicates whether there are any active alarms or warnings.

Blue = no alarms

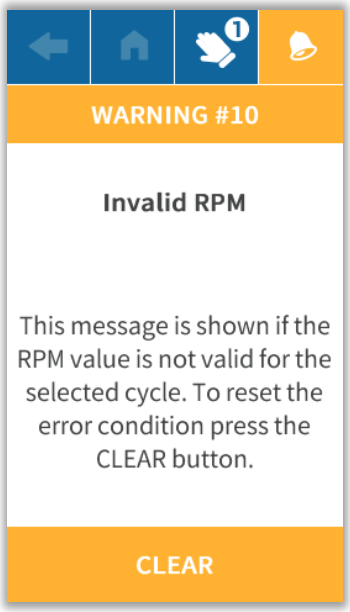
Yellow = Warning

Red = Alarm

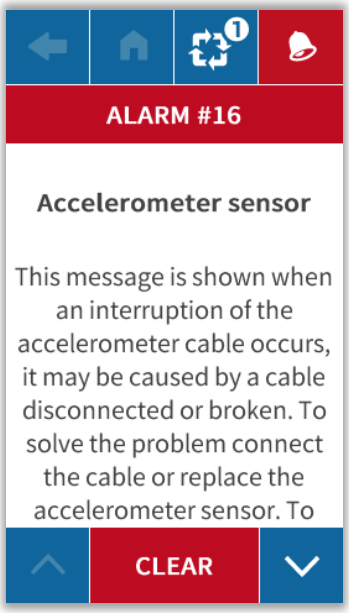
Consult the Alarms and Warnings chapter for a complete list of warnings and alarms.

If any warnings and/or alarms are active, press the softkey to view them and carry out the reset procedure.

SAMPLE WARNING:



SAMPLE ALARM:



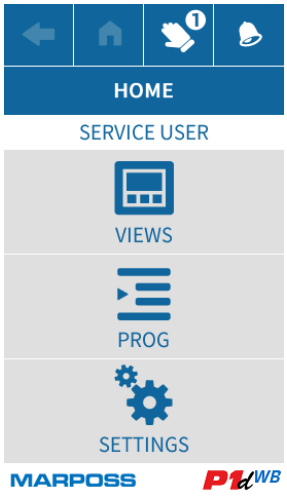
The page indicates the alarm or warning number, the title and message indicating the reason for the alarm, and how to correct it.

If necessary, use the arrows to scroll through the entire message

Use the CLEAR button to reset the alarm or warning.

Index General Prog.

9.1.4 Operating mode selection page



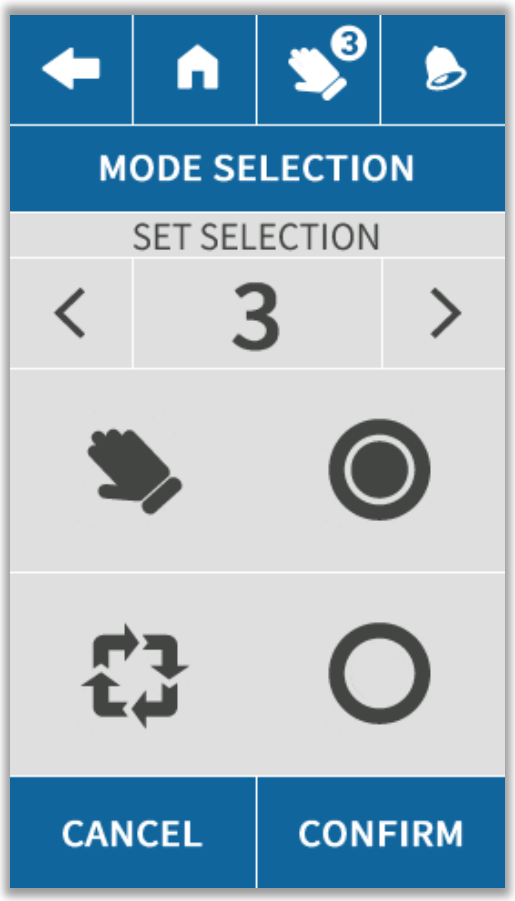
This icon indicates the operating mode and the number of the set that is currently in use.


Manual operating mode

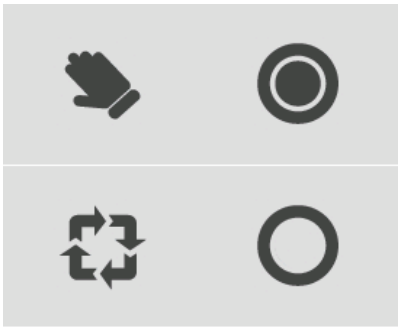

Automatic operating mode

The number at the top of the page indicates the currently selected set number.

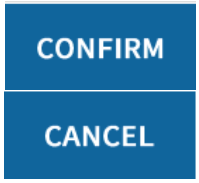
Press the softkey to access the selection page.



In this section it is possible to select the set by using the arrows to scroll back and forth through the available options.



Whereas in this section it is possible to select Manual or Automatic operating mode.

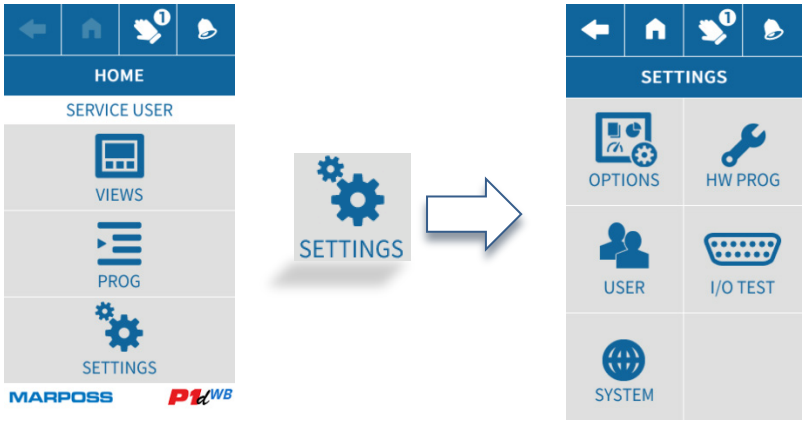


Press CONFIRM to save the modifications and leave the page

Press CANCEL to leave the page without saving the modifications.

Index General Prog.

9.2 SETTINGS MENU



OPTIONS

- LANGUAGE
- START PAGE
- MEASURE UNIT
- I/O PROG
- LOCK SCREEN

HW PROG

- WB HEAD SETUP
- WB ALGORITHM
  - NORMAL
  - SLOW
  - FAST

USER

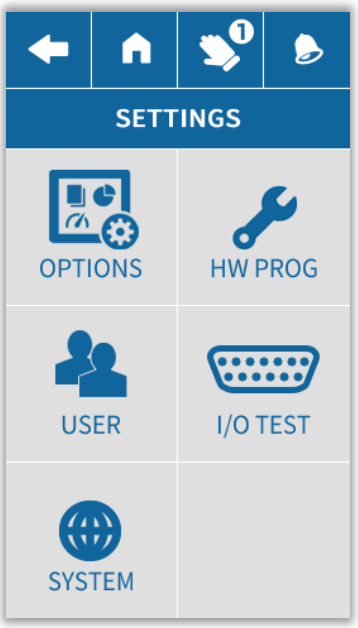
- END USER
- OEM USER
- SERVICE USER

I/O TEST

- INPUT BIT
- OUTPUT BIT

SYSTEM

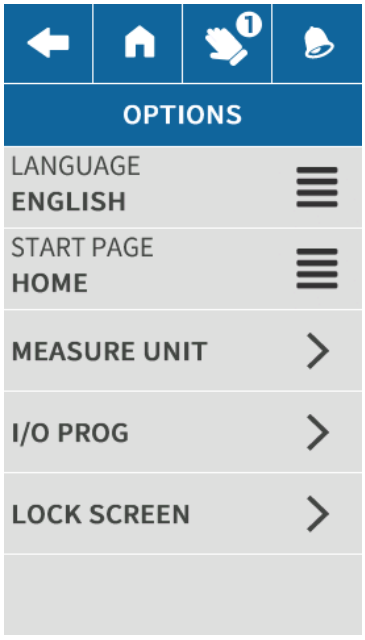
- FIRMWARE VERSION
- SAVE SCREENSHOT
- CALIBRATE TOUCHSCREEN
- TOOL CONNECT
- FACTORY DATA RESTORE



The SETTINGS Menu includes all the sub-menus used to program and set-up the device.

OPTIONS	OPTIONS MENU
HW PROG	HARDWARE PROGRAMMING MENU
USER	USER MENU
I/O TEST	I/O TEST MENU
SYSTEM	SYSTEM MENU

9.2.1 Options Menu

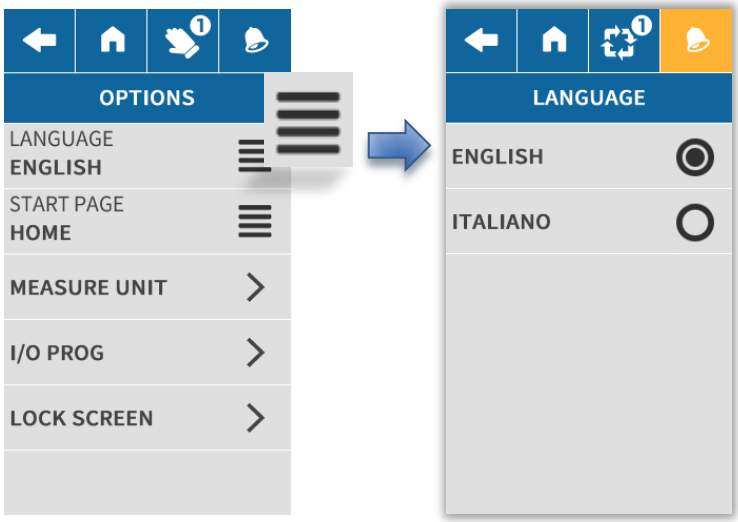


The options menu can be used for the following settings:

- Language
- Start page
- Measure unit
- I/O programming
- Lock screen

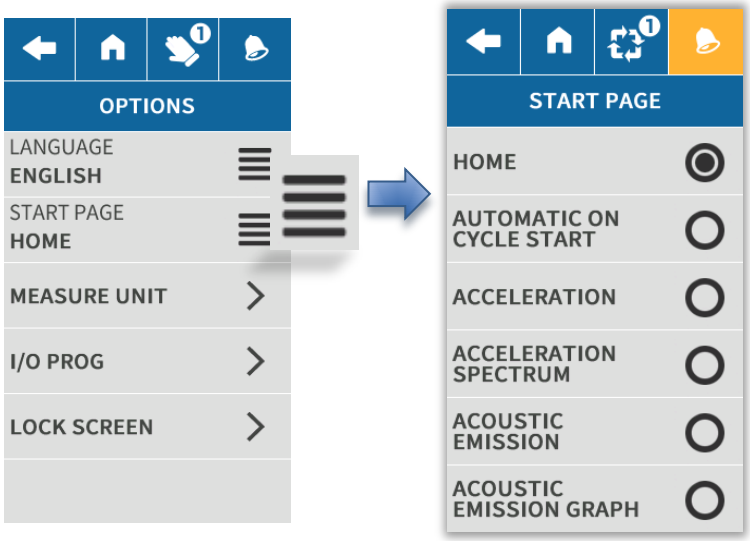
Index Setting

Select language



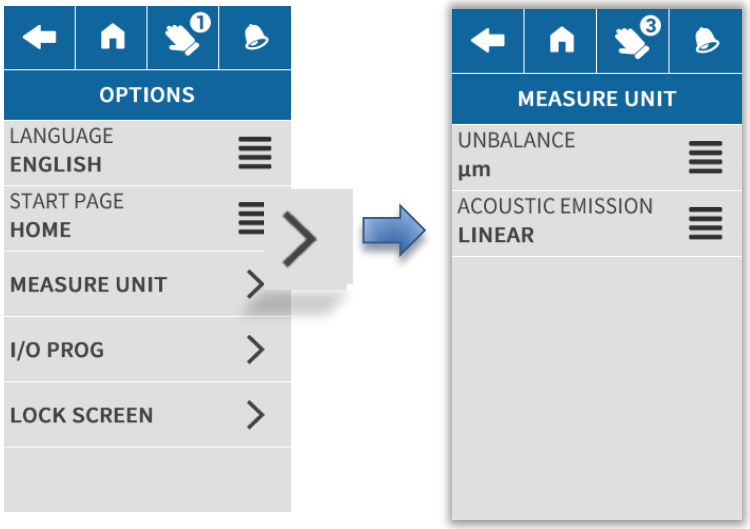
Use this page to select the panel display language from the available options.

Select start page



Use this page to select the page that is displayed when the device is switched on from the list of available options.

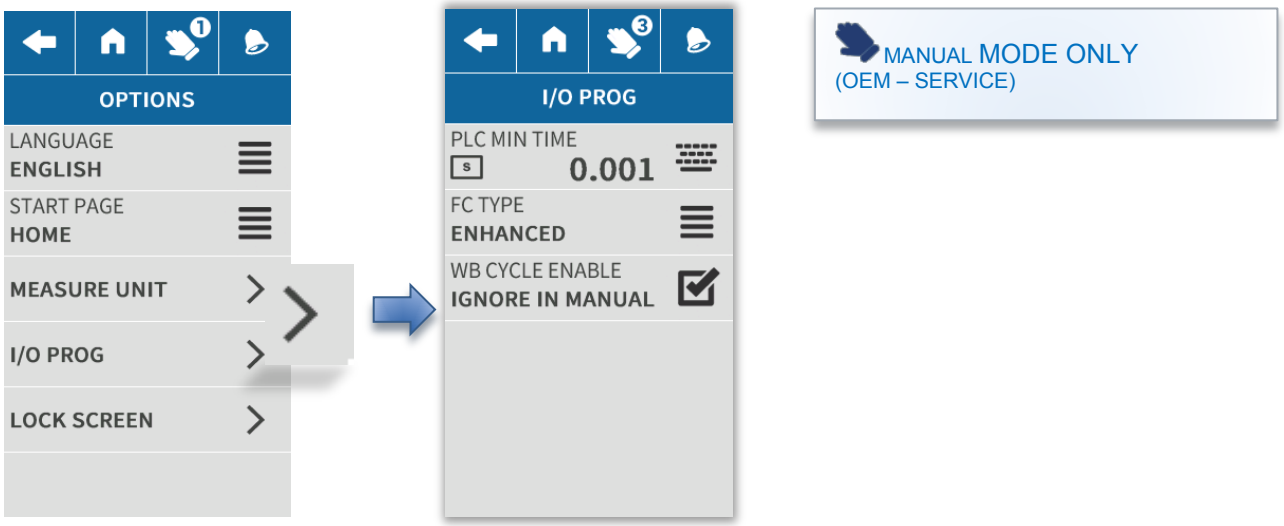
Select unit of measurement



Use this page to select the unit of measurement for the acoustic and balancing measurements.

In the case BALANCING it is possible to select µm or mm/s, whereas ACOUSTIC may be set to Linear or Decibel.

I/O programming page



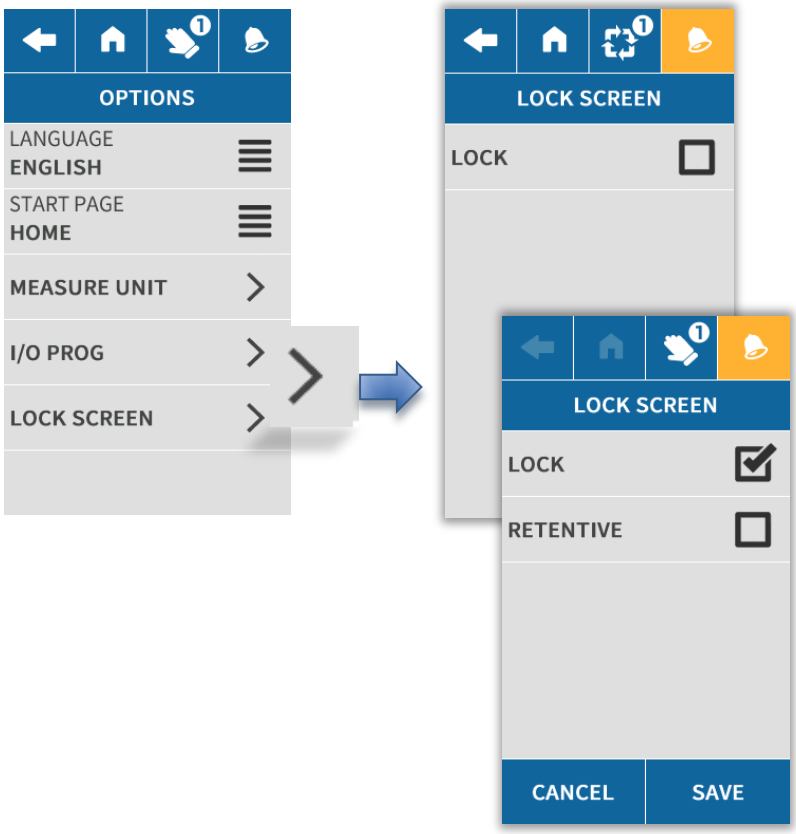
PLC MIN TIME
Defines the minimum activation time for each output bit, with respect to the threshold check, expressed in seconds. (range 0.0001 to.999s)

FC TYPE
Defines the type of Flow Control to be used.

- ENHANCED mode
- LEGACY mode for compatibility with E78 and E82 electronic units.

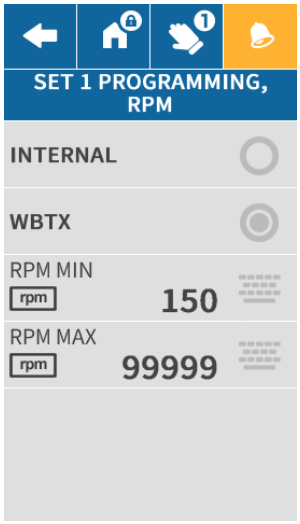
WB CYCLE ENABLE
Only when in ENHANCED mode, this option enables the operator to perform the balancing head movements (Manual balancing, Automatic balancing, and home cycle), even in the absence of the WB cycle enable signal.

Lock screen



This function can be used to activate or deactivate the lock screen; when active, the operator can view the data and measurement values, but is prevented from modifying any of the parameters.

When the LOCK function is active, the RETENTIVE parameter also appears. If enabled, the lock screen can be maintained even after restarting the panel.

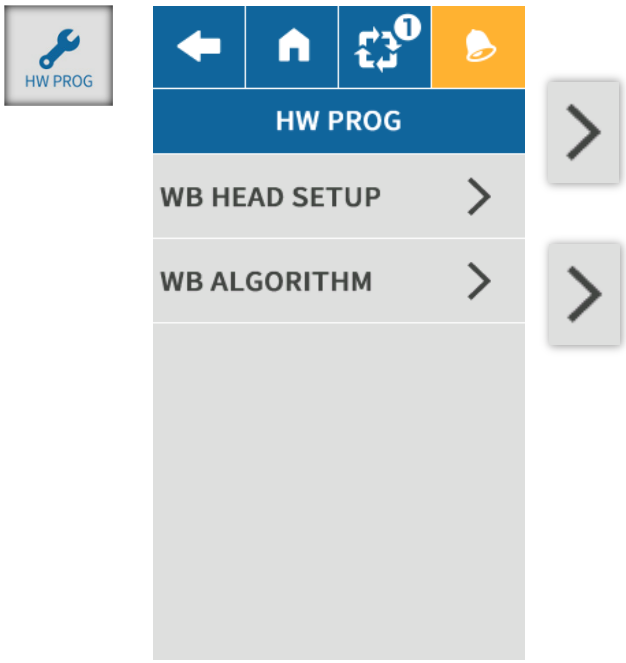


When the LOCK SCREEN function is active, a padlock symbol will be present in the HOME icon.

As can be seen from the adjacent example, it is not possible to modify the parameters.

Index Setting

9.2.2 HW Prog Menu



WB HEAD SETUP

[OEM-SERVICE]

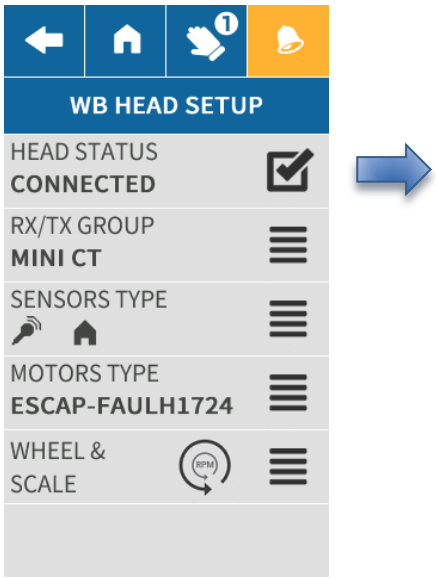
Enables access to the balancing heads programming menu.

WB ALGORITHM

[OEM-SERVICE]

This menu may be used to program the balancing algorithm parameters.

9.2.2.1 WB Head Setup Menu

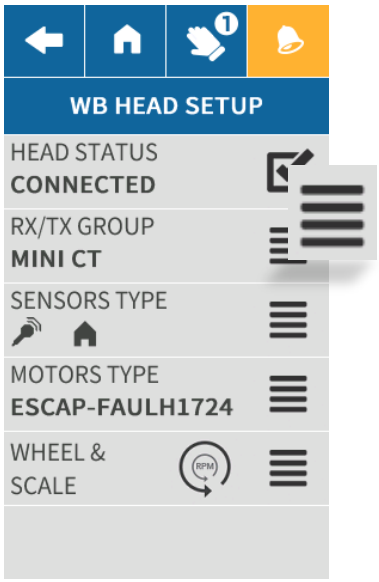


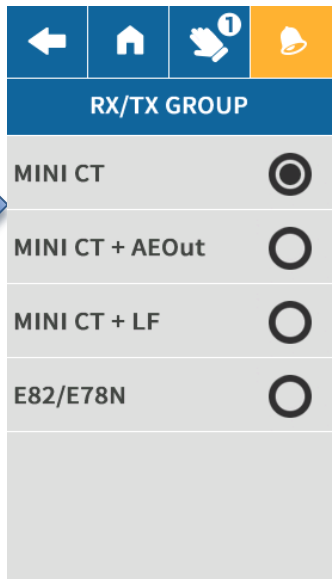
HEAD STATUS

Indicates the presence of the balancing head connection

☐ head connection NOT enabled

☑ head connection enabled

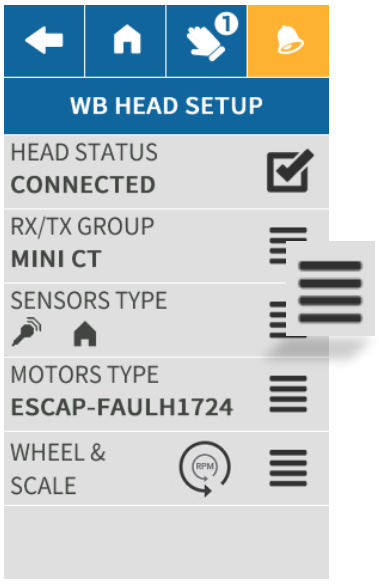


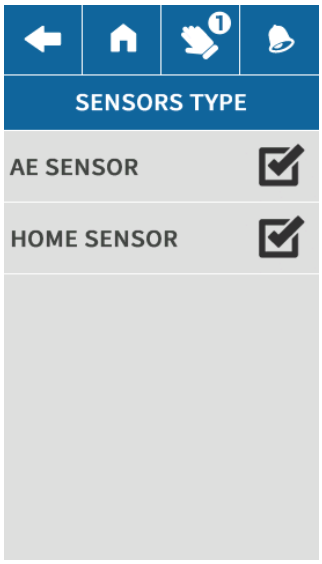


RX/TX GROUP

Use this function to select the receiver/transmitter group connected to the **P1dWB**.

"**E82/E78N**" IS DISPLAYED ONLY IF THE I/O ARE PROGRAMMED IN LEGACY ON THE I/O PROGRAMMING PAGE





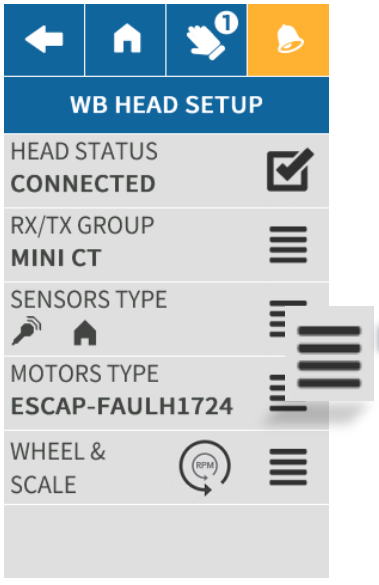
SENSOR TYPE

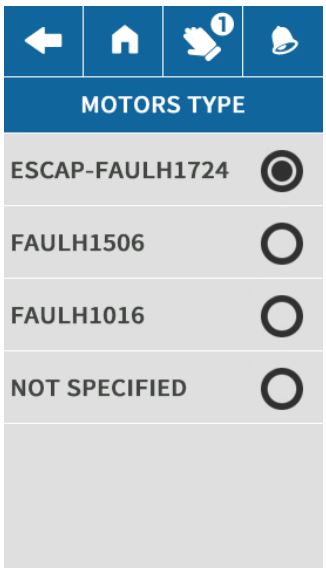
Use this function to select the type of sensor integrated into the balancing head.

Acoustic sensor

Home sensor

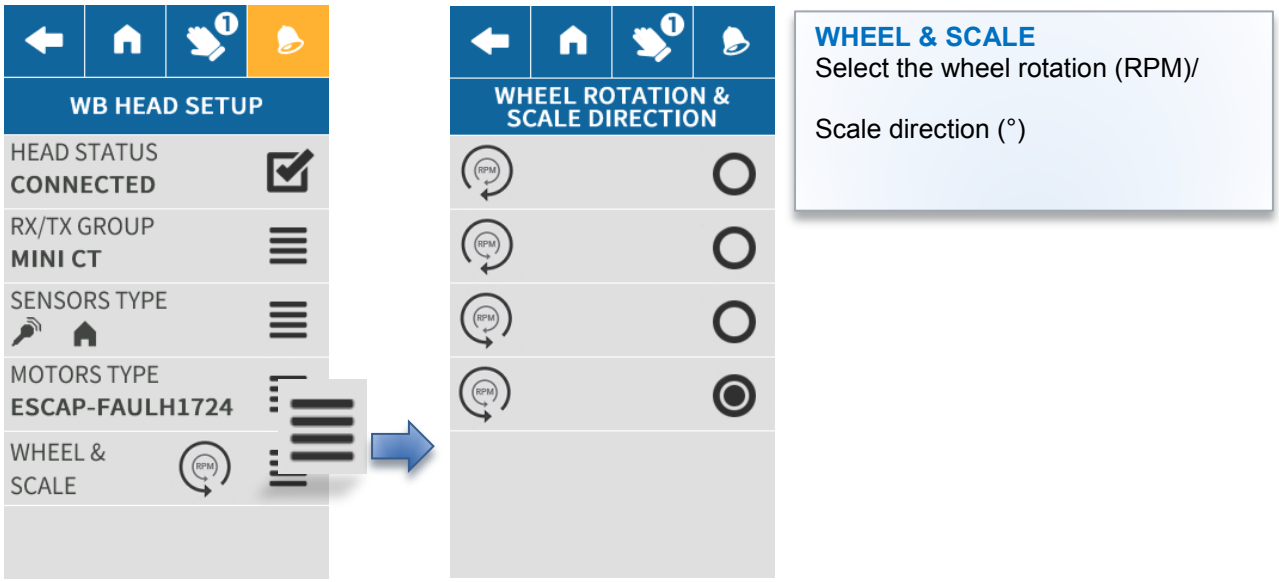
NONE No sensor present





MOTOR TYPE

Select the type of motor used on the balancing head.
Set this value according to the type of head in use.



Wheel rotation (RPM)/ Scale direction (°)

"Angle evaluation direction" corresponds to:

- a graduated scale on the grinding wheel support flange, which is used to set the balancing weight angular positions in the case of the manual "fixed weights/variable angles" pre-balancing procedure

Possible combinations:

Wheel rotation → counter-clockwise
Scale direction → clockwise

Wheel rotation → clockwise
Scale direction → clockwise

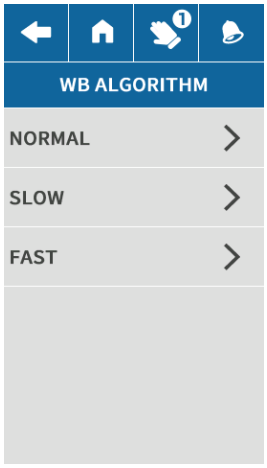
Wheel rotation → clockwise
Scale direction → counter-clockwise

Wheel rotation → counter-clockwise
Scale direction → counter-clockwise

Index Setting

9.2.2.2 WB Algorithm Menu

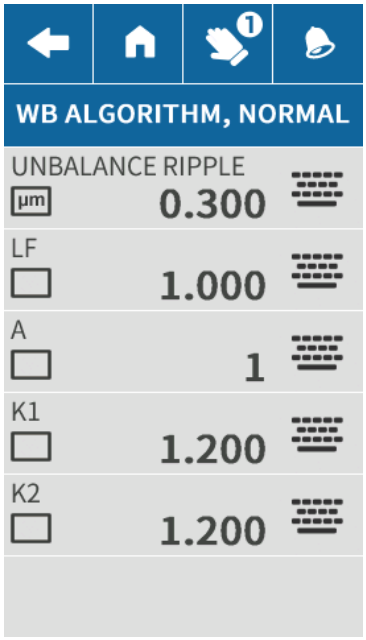
[Service – OEM "Unbalance Ripple" only]



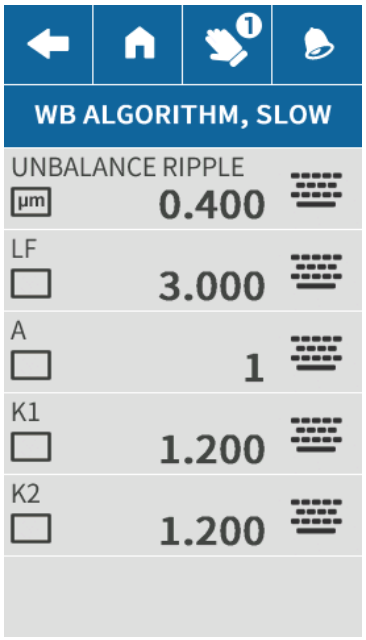
WB ALGORITHM MENU
This menu can be used to access the parameter programming windows for the various types of balancing algorithms: NORMAL, SLOW, FAST.

Press to return to the previous page.

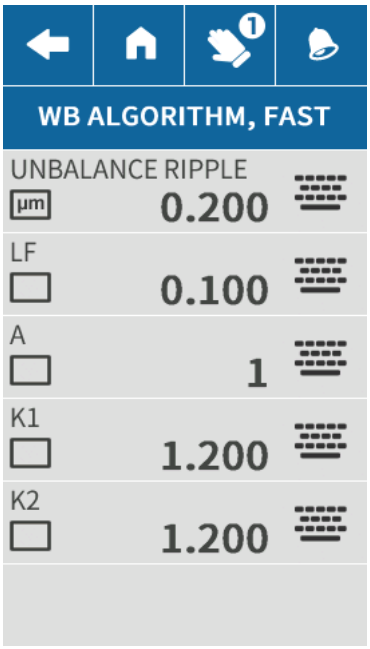
NORMAL



ALGORITHM TYPE SLOW



FAST



The following types of balancing algorithm are available, corresponding to parameters pre-defined based on the type of grinder.

Normal	Normal balancing: recommended for "normal" grinding machines
Slow	Slow balancing: recommended for "elastic" grinding machines
Fast	Fast (aggressive) balancing: recommended for "rigid" grinding machines

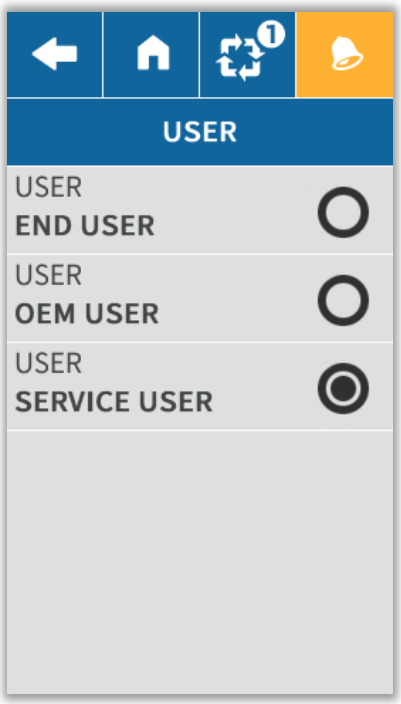
UNBALANCE RIPPLE: The entity of the ripple must determined and entered in this parameter in order to optimise the balancing algorithm for the application.

LF – A – K1 –K2 these are the balancing algorithm parameter values, and may only be modified by Marposs personnel.

Index Setting

9.2.3 User Menu

Use this page to set-up the user level.



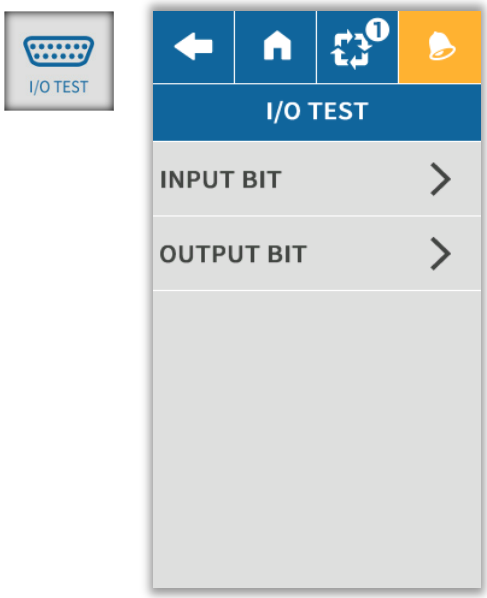
Depending on the user currently logged in, the **P1dWB** equipment offers various operative levels. These range from simply viewing the data and measurement processes, through programming Sets, to modifying the configuration of the associated electronic unit.
Since not all users can, or should, use the same options, there are three different **P1dWB** user levels:

- **END USER (E)** level users can view the measurements and sensor monitoring, in automatic mode. During measurements the user can also make corrections to the processing cycle. In addition, he/she can view the data programmed for the electronic unit. The END USER can also perform certain Set-up operations. Default condition.
- **OEM (O)** level users can program, modify or cancel sets. These users can access the permitted Set-up and Prog operations. For this reason, this user level is intended primarily for the machine manufacturer and its service personnel and it is password protected.
- lastly, **SERVICE (S)** level users can modify configuration data, and program, modify or delete sets, provided the hardware present permits it. Such users have access to all the Setup and Prog operations. For this reason this user level is intended primarily for Marposs personnel and is password protected.

The Panel Flow Chart indicates the which pages and functions are accessible to the various user level.

Index Setting

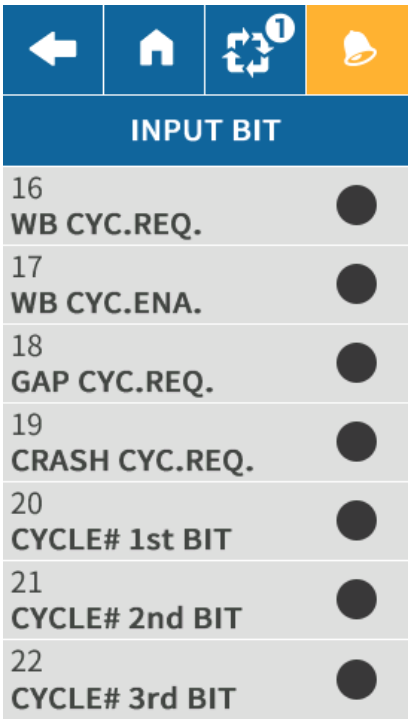
9.2.4 I/O Test Menu



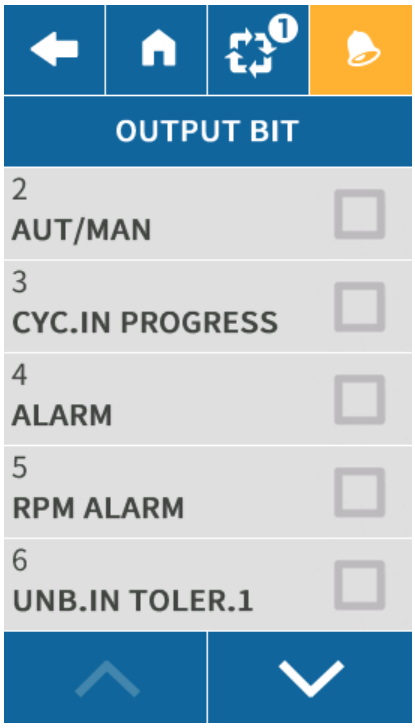
The I/O tests can be performed in Manual and Automatic mode:

- Manual mode: View the state of the Inputs
  View and/or modify the state of the Outputs
- Automatic mode: View the state of the Inputs and Outputs

INPUT BIT



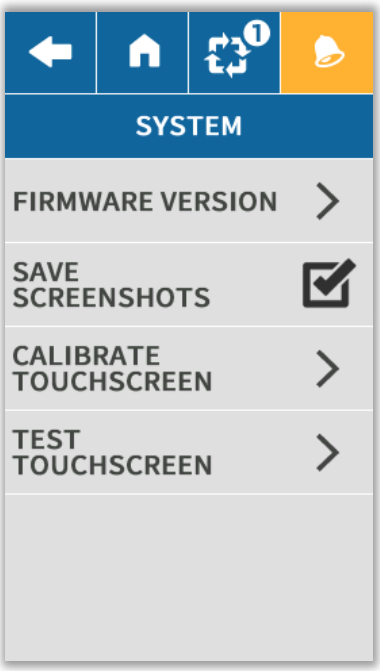
OUTPUT BIT



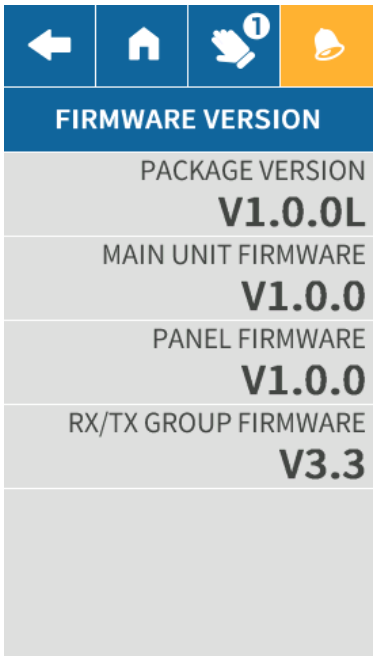
Index Setting

9.2.5 System Menu

Manual and Automatic operating mode



FIRMWARE VERSION



WB HEAD SETUP

[OEM-SERVICE]

This page may be used to display the firmware versions of the various components of the application.

THE **"TX/TX GROUP FIRMWARE"** PARAMETER IS DISPLAYED ONLY IF A MINICT HEAD IS CONNECTED

Index Setting

SAVE SCREENSHOT

Manual and Automatic. [Service]

Use this function to save screenshots.

☐ function disabled

☑ function enabled

CALIBRATE/ TEST TOUCHSCREEN

Manual and Automatic. [Service]

Access this function in order to calibrate and test the touch screen. In order to carry out these tests, follow the instructions provided on the test and calibration pages.

TOOL CONNECT

Manual [Service]

Press this softkey to activate the connection with the **P1dWB** tool.
This will open the window shown on the left, which indicates that service serial link mode is active.

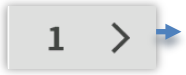
FACTORY DATA RESTORE

Manual. [Service]

This function may be used to reset the device and restore the original factory settings.

Index Setting

9.3 PROG Menu

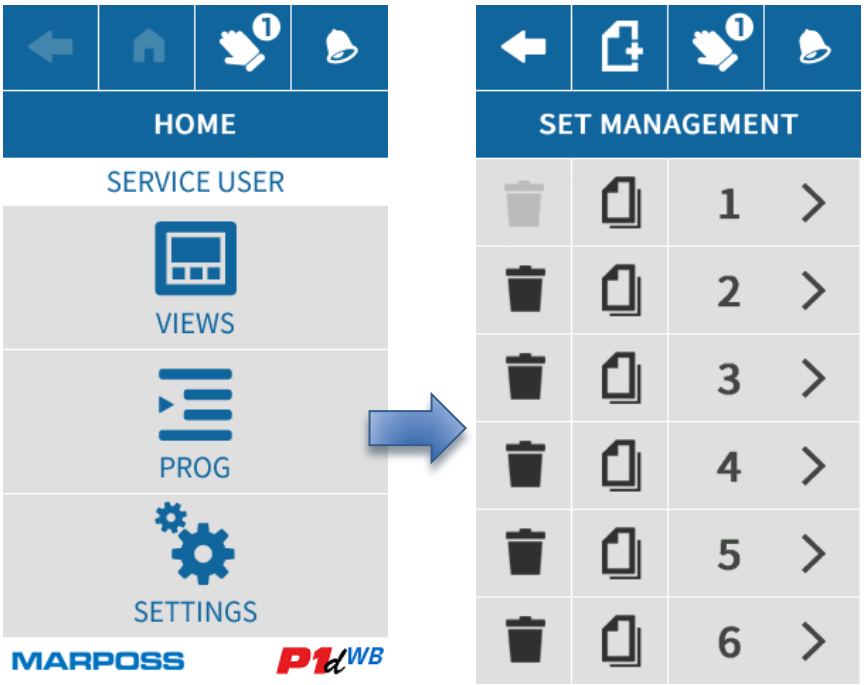


SET MANAGEMENT

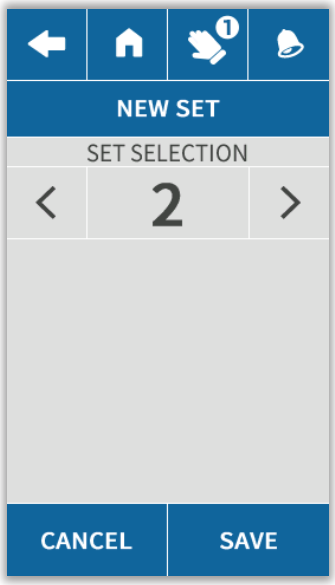
- RPM
- ACCELERATION
- WHEEL BALANCING
- WB ALGORITHM
- ACOUSTIC EMISSION
  - GAP PARAMETERS
  - AE GAIN
  - CRASH PARAMETERS

Manual and Automatic operating mode

[End User – OEM – Service]

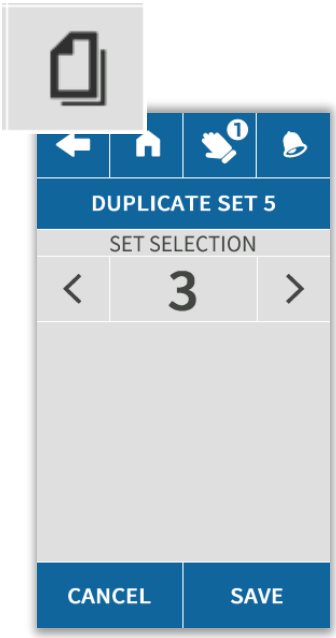


The working data are associated with a Set number, up to a maximum of 8 sets in the case of **P1dWB_CG**, whereas there is only one available set in the case of the **P1dWB_R** version.
The start page lists all the sets that have already been set-up and saved; to create a new one, press



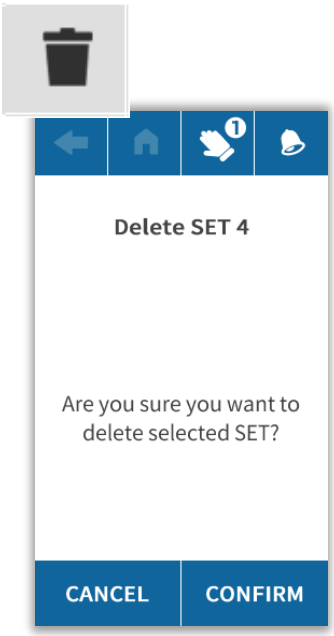
Use the arrows to select the desired set number (from 1 to 8)
Press SAVE to save the new set, or CANCEL to exit without saving.

Once they have been created, the sets must be programmed.
To program a new set, or modify an existing one, press the arrow corresponding to the desired set.



It is possible to copy an existing set:

- select the set to be copied
- press the “Copy" button.
- Select the number of the set that it is to be copied to
- Press “Save” to save.

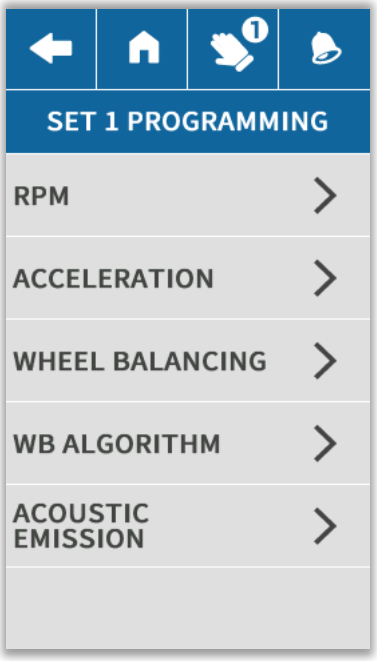


To cancel a set

- Press the “Cancel” button
- A message appears requesting the operator to confirm the action
- Press “Confirm” to confirm, or “Cancel” to cancel the action

Index Prog

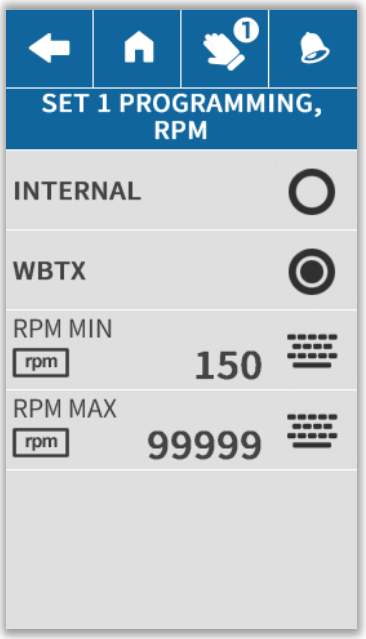
9.3.1 Set Management Menu



Set Programming Menu:

- RPM MENU
- ACCELERATION MENU
- WHEEL BALANCING MENU
- WB ALGORITHM MENU
- ACOUSTIC EMISSION MENU

9.3.1.1 RPM MENU



Selecting the source of the RPM signal:

INTERNAL: Select INTERNAL to use the programmed RPM values

WBTX Select WBTX to use the signal from the internal balancing head RPM sensor.

Programming the RPM thresholds

RPM MIN: use this parameter to set-up the minimum RPM threshold
[Range 60 to 99999 RPM]

RPM MAX: Use this parameter to set-up the maximum RP threshold
[Range 60 to 99999 RPM]

Index Prog

9.3.1.2 ACCELERATION MENU

Acceleration is a signal directly coming from the vibration sensor (accelerometer) and allows improving the system reaction in case of alarm conditions (excessive vibration).

THRESHOLD

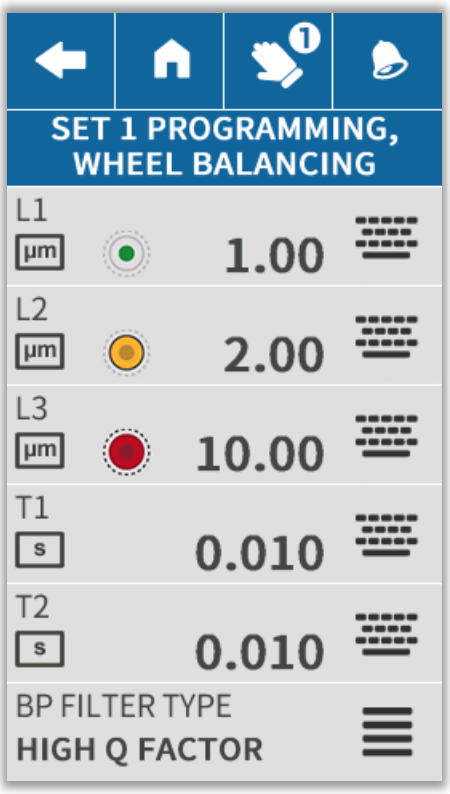
Acceleration threshold: when the acceleration exceeds this value, the *Vibration Alarm* signal is activated.
[Range 0.00g and 4.00g]

MINIMUM TIME

The length of time the acceleration value must remain higher than the acceleration “THRESHOLD” limit in order to activate the *Vibration Alarm* signal output.
[Range 0 to 9.999 s]

Index Prog

9.3.1.3 WHEEL BALANCING



The grinding wheel vibration tolerance limit value may be programmed as amplitude of the oscillation (unit of measurement *"microns"* or *"inches"*) or speed (unit of measurement *"mm/sec"* or *"inches/sec"*), depending on the mode defined during the application configuration phase.

You can set three grinding wheel vibration tolerance thresholds: L1, L2 or L3

Limit L1

When the value is below the limit **L1** the grinding wheel vibration value is considered OPTIMUM,

Limit L2

If the value is between **L1** and **L2** the grinding wheel vibration is considered ACCEPTABLE,

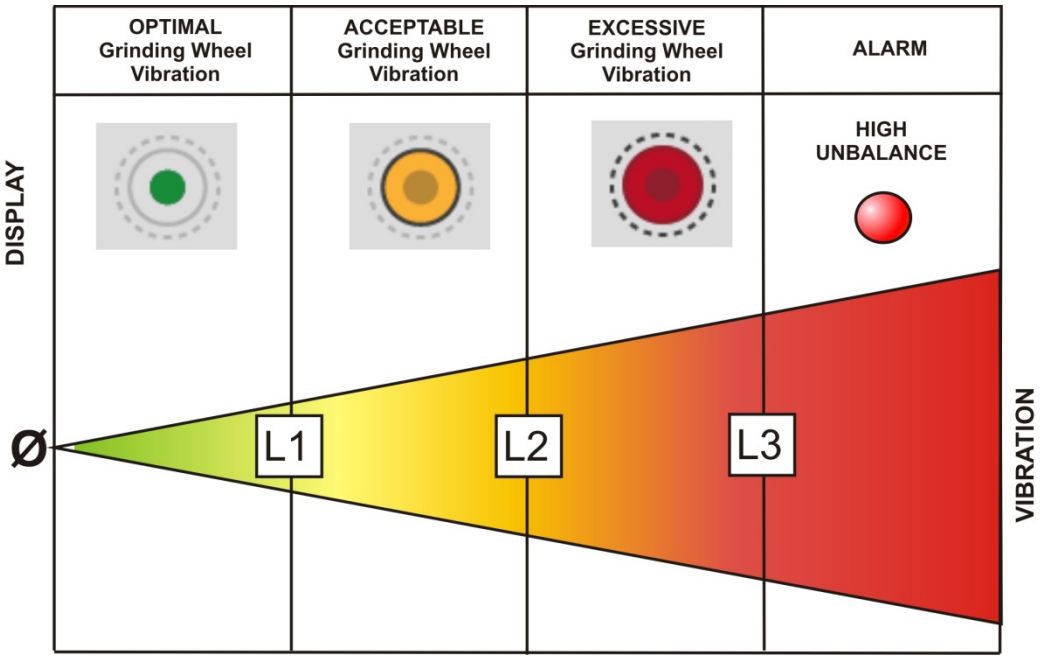
Limit L3

If the value is between **L2** and **L3** the grinding wheel vibration is considered EXCESSIVE.

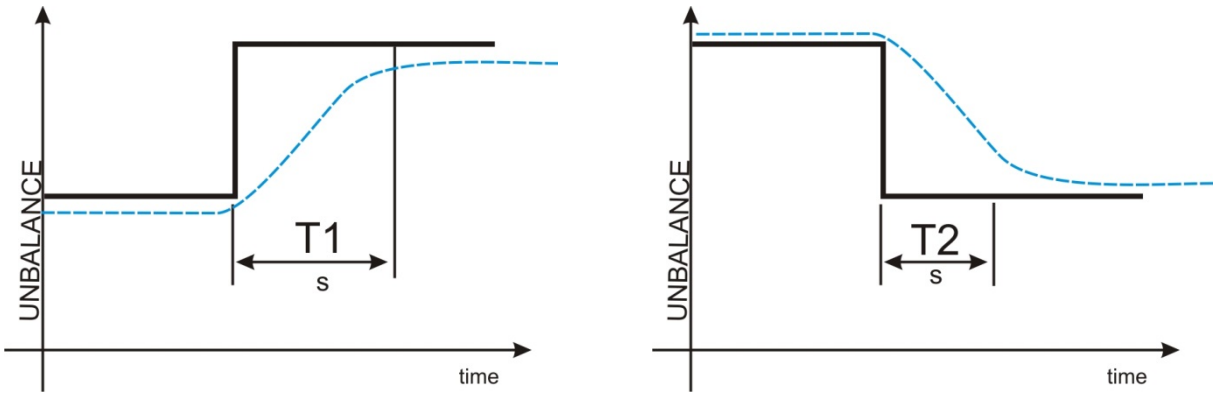
In this case it is necessary to carry out a balancing cycle in order to bring the values back within the acceptable limits (<L1 Optimum, <L2 Acceptable)

Values that exceed the limit **L3** represent a malfunction, and A potentially hazardous condition, which is indicated by the *Vibration Alarm* output signal on the I/O.

The set values must comply with the following condition:
Limit L1 < Limit L2 < Limit L3 (between 0 and 50 µm or 0 and 50mm/sec):



The asymmetrical filter on the vibration signal is used to adequately stabilise the vibration value shown on the display.
The vibration value is filtered in all operating modes, but is never active during the balancing procedure (movement of balancing weights).



T1 - Rise time: The programmed value represents the filter response time to a sudden increase in vibration. You can set a value between 0.01 s and 10.00 s with a resolution of 0.01 s. The default value is T1 = 9.990 seconds.

T2 - Fall time: The programmed value represents the filter response time to a sudden decrease in vibration. You can set a value between 0.01 s and 10.00 s with a resolution of 0.01 s. The default value is T1 = 0.010 seconds.

BP FILTER TYPE

(Band pass filter type)
This parameter may be used to vary the selectivity of the band pass filter used to filter the vibration component corresponding to the grinding wheel speed.
A high Q Factor will result in maximum selectivity, and is recommended for most applications.
A medium Q Factor will render the filter less selective and may be advantageous in the case of applications where the grinding wheel rotates slowly, provided there are no interference components in the vicinity of the grinding wheel rpm frequency.

Index Prog

9.3.1.4 WB ALGORITHM

The following types of balancing algorithm are available, corresponding to parameters that have pre-defined based on the type of grinder.

The available options are as follows:

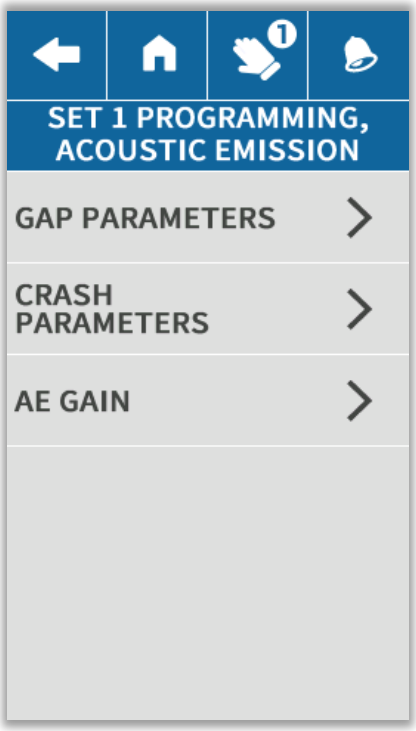
NORMAL
Normal balancing: recommended for "normal" grinding machines (default condition)

SLOW
Slow balancing: recommended for “elastic” grinding machines

FAST
Fast (aggressive) balancing: recommended for “rigid” grinding machines

9.3.1.5 ACOUSTIC EMISSION

THIS FUNCTION IS AVAILABLE ONLY WITH P1DWB CONTACTLESS VERSIONS.



It is possible to program the GAP, Monitoring and Crash checks on this page. The electronic unit uses an AE (ACOUSTIC EMISSION) sensor to detect the ultrasound energy generated by the contact between the grinding wheel and the work piece or other parts of the machine (for example, the dressing wheel).

GAP Check:
The GAP check is used principally to carry out the contact check between the grinding wheel/work piece or grinding wheel/dressing wheel. A noise threshold is defined, which enables the system to detect the contact between the grinding wheel and the work piece, or the grinding wheel and the dressing wheel.
It may also be used for other purposes, for instance, by using a pre-defined noise threshold it is possible to determine the position of the grinding wheel with respect to a known reference.

CRASH CONTROL
Definition of a correct noise threshold allows detection of accidental grinding wheel collisions.

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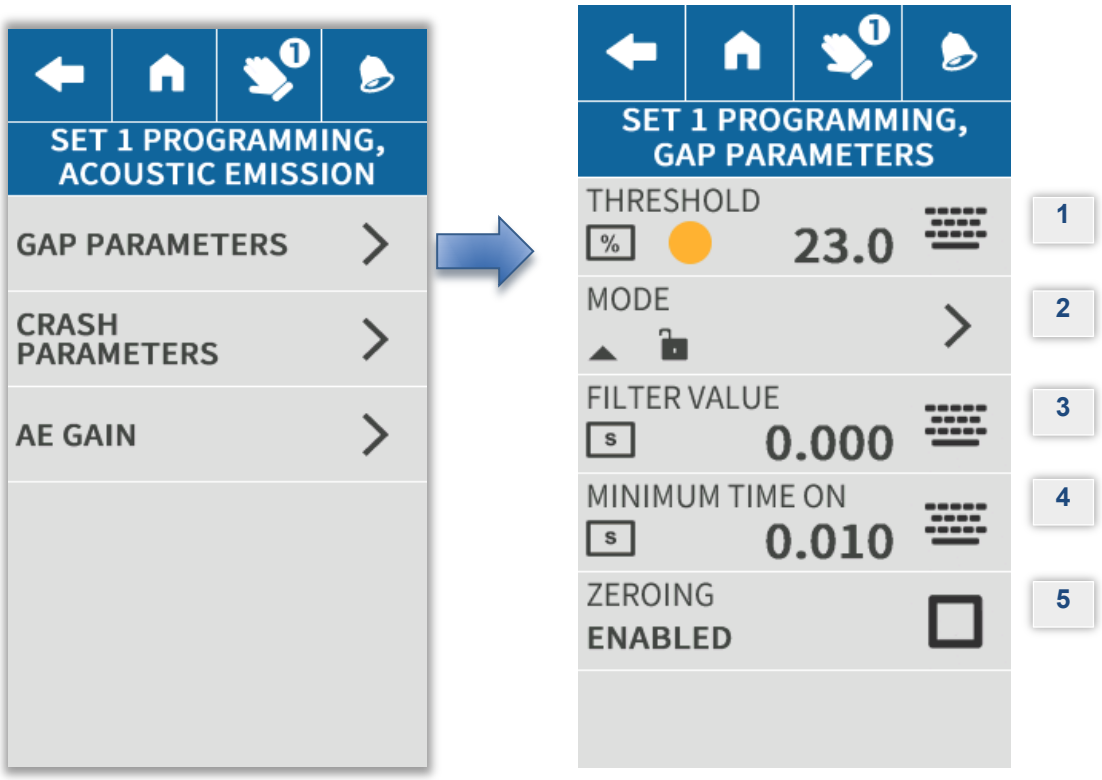
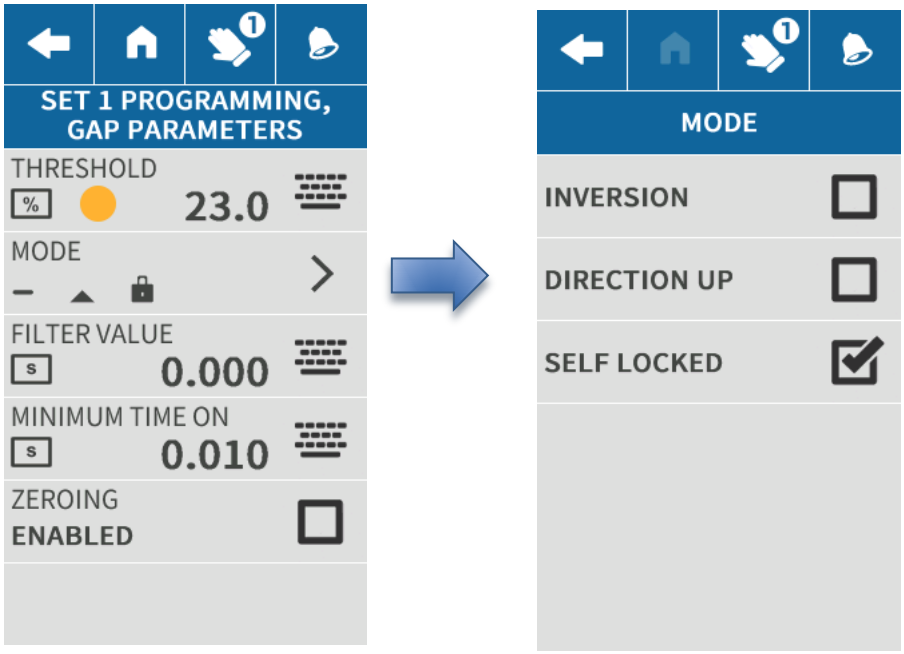
ACOUSTIC EMISSION - GAP PARAMETERS



1) THRESHOLD

Use this parameter to set-up the trigger threshold for the GAP command used to determine the contact between the grinding wheel and work piece, or grinding wheel and dressing wheel.

2) MODE



Use this section to define a series of aspects of the GAP function

INVERSION
If activated, this function inverts the state of the output signal with respect to the control logic condition.

DIRECTION UP
If this function is activated, the Gap output command is triggered when the noise level exceeds the threshold S1.

If the function is disabled, the Gap output command is triggered when the noise level drops below the threshold S1.

SELF LOCKED

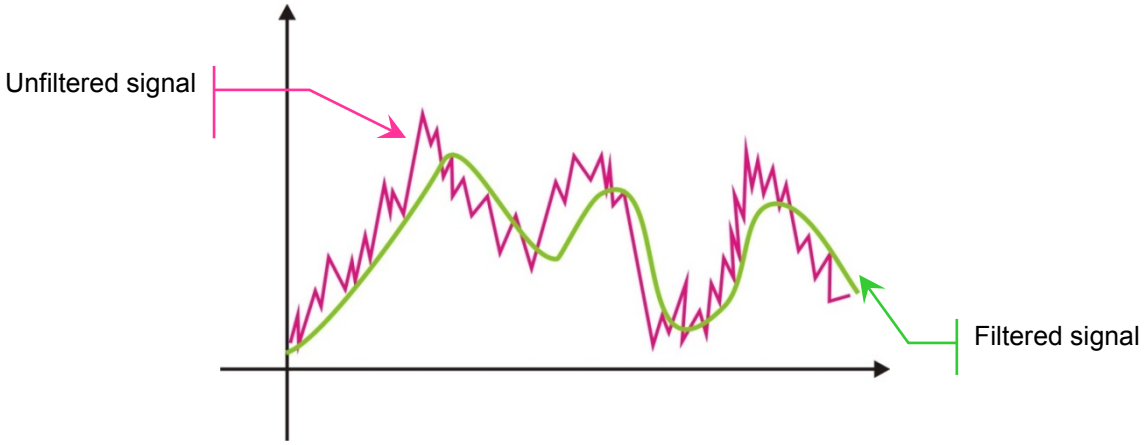
GAP signal self locked: as soon as the machine control starts the cycle, the GAP signal is reset. When contact between the grinding wheel and the part or the abrasive dressing wheel is detected, the machine is supplied with the signal, which remains set until the next cycle start. This mode is recommended for the end of air gap check.

GAP signal not self locked: as soon as the machine control starts the cycle, the GAP signal is reset. The signal supplied to the machine remains while there is contact detected between the grinding wheel and the part or the abrasive dressing wheel. As soon as contact ends, the GAP signal is switched off again. This mode is recommended for the dressing control.

3) FILTER VALUE

GAP Noise filtering

Value of the filter on the GAP background noise. The advantage of this filter is that it can be used to clean the signal by eliminating any ripple, although, naturally, this delays the point at which the GAP command is triggered.

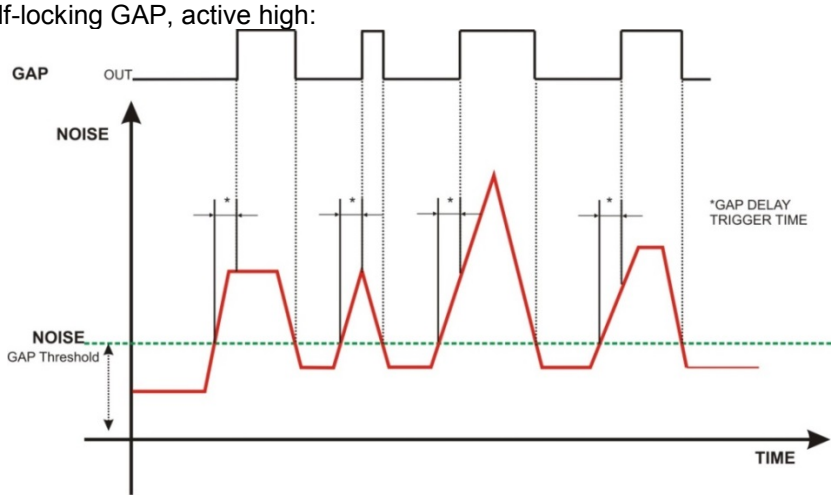


Programmable range for F: between 0.000 and 0.060 seconds

4) MINIMUM TIME ON

This parameter may be used to define the minimum length of time that the GAP condition must be present before the corresponding command (activate GAP output) is triggered; this means that the Gap command will not be triggered until the noise level has exceeded the pre-set threshold value for a period greater than that set-up during this phase. In this way it is possible to filter out any impulse noise that might generate false GAP events, although this function will also delay the point at which the command is triggered.

Example of non self-locking GAP, active high:



Setting range between 0 and 9.999 seconds (resolution 0.001 seconds).

5) ZEROING ENABLED

The GAP channel may be processed in Absolute or Differential mode. If the “Zeroing enabled” function is enabled, differential mode is enabled so that zeroing is carried out automatically at the start of the GAP cycle.

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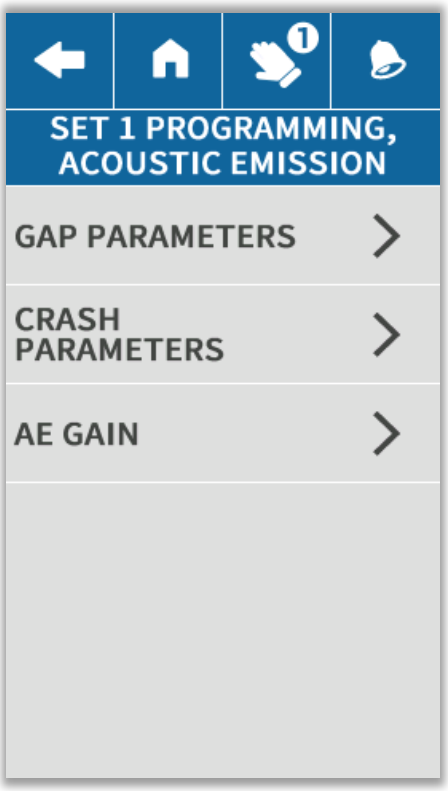
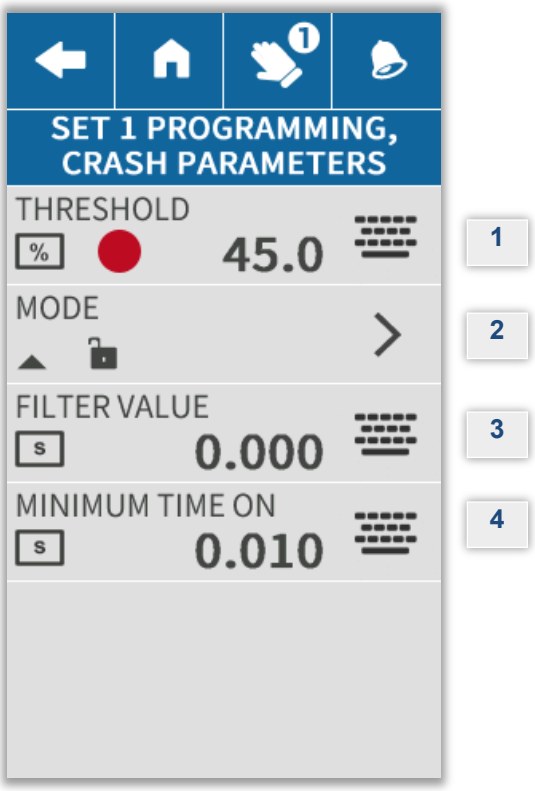
ACOUSTIC EMISSION - CRASH PARAMETERS





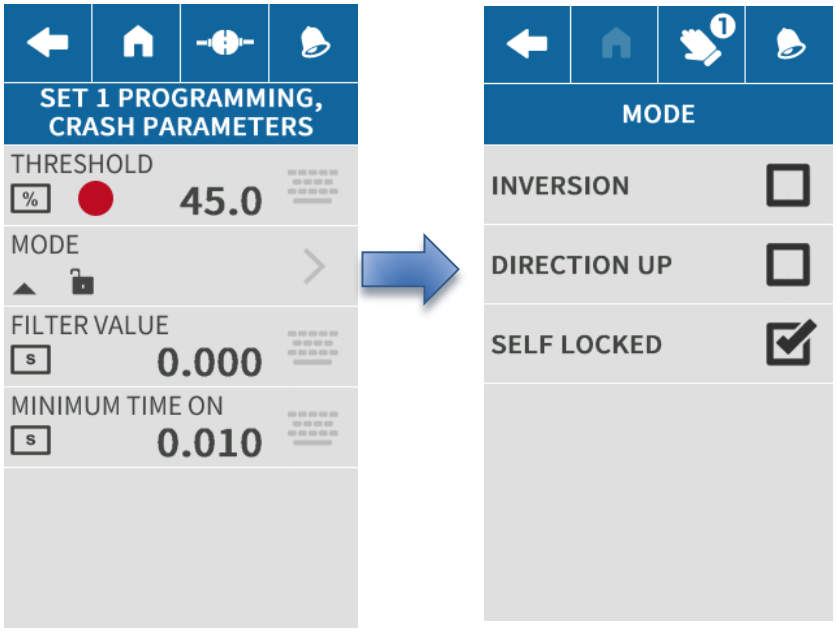
1) CRASH COMMAND THRESHOLD

This parameter is used to set-up the Crash command trigger threshold. The value set is always an absolute value.

Setting range: from 0 to 99.9 expressed as a linear value (default) or in decibels.

2) MODE

Use this section to define a series of aspects of the CRASH function



INVERSION
If activated, this function inverts the state of the output signal with respect to the control logic condition.

DIRECTION UP
If this function is activated, the Crash output command is triggered when the noise level exceeds the programmed threshold.

If the function is disabled, the Crash output command is triggered when the noise level drops below the programmed threshold.

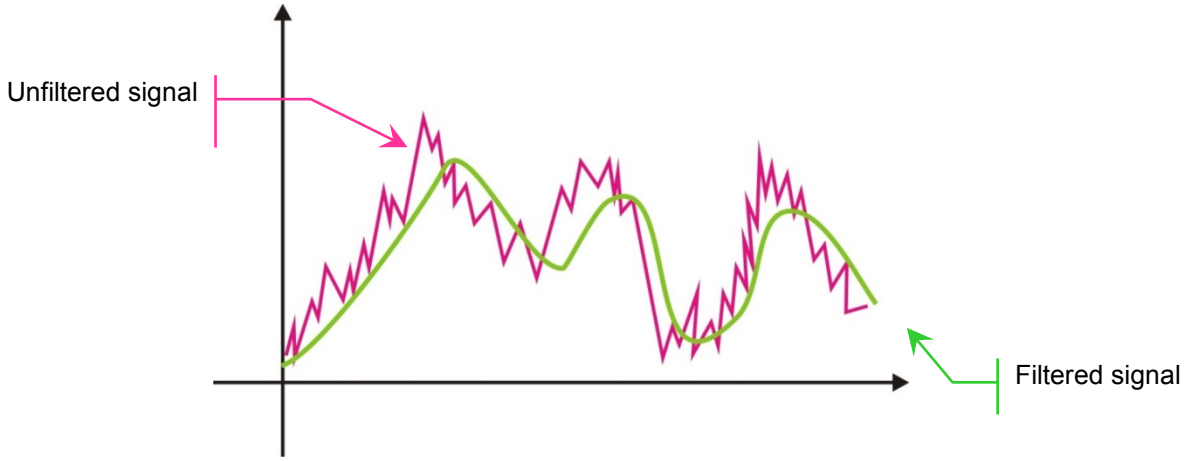
SELF LOCKED

Self-locked control. Once supplied the Crash output check is reset only at the successive Crash check enabling.

NON self-locked control. The Crash output control is reset when the noise level drops below the trigger threshold.

3 CRASH NOISE FILTERING

Value of the filter on the CRASH background noise. The advantage of this filter is that it can be used to clean the signal by eliminating any ripple, although, naturally, this delays the point at which the CRASH command is triggered.

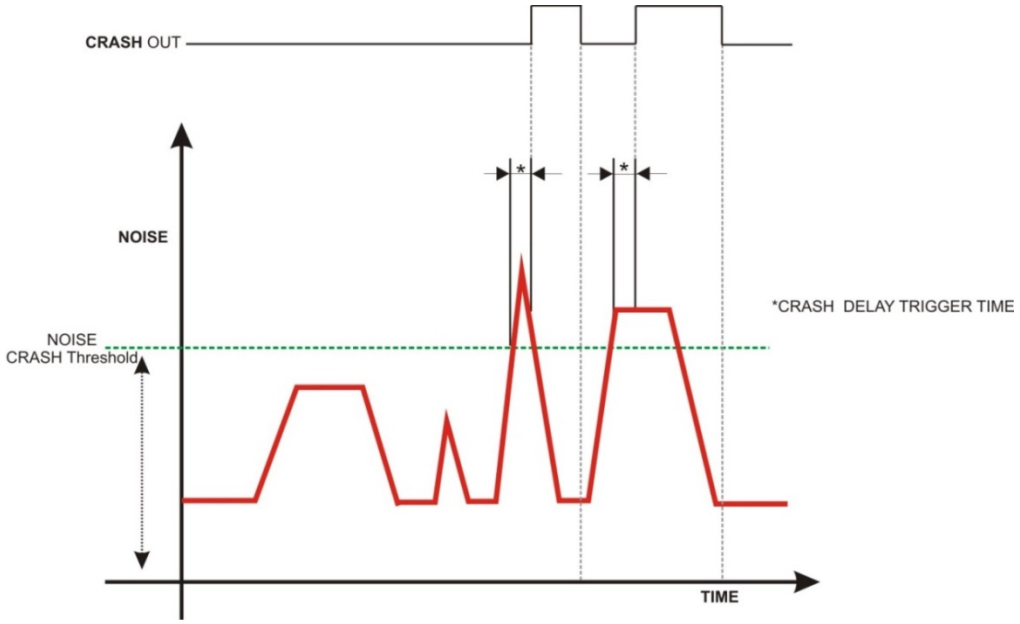


Programmable range for F: between 0.000 and 0.060 seconds

4) MINIMUM TIME ON

This parameter may be used to define the minimum length of time that the CRASH condition must be present before the corresponding command (activate CRASH output) is triggered; this means that the Crash command will not be triggered until the noise level has exceeded the pre-set threshold value for a period greater than that set-up during this phase. In this way it is possible to filter out any impulse noise that might generate false Crash events, although this function will also delay the point at which the command is triggered.

Example of non self-locking CRASH, active high:



Setting range between 0 and 9.999 seconds (resolution 0.001 seconds).

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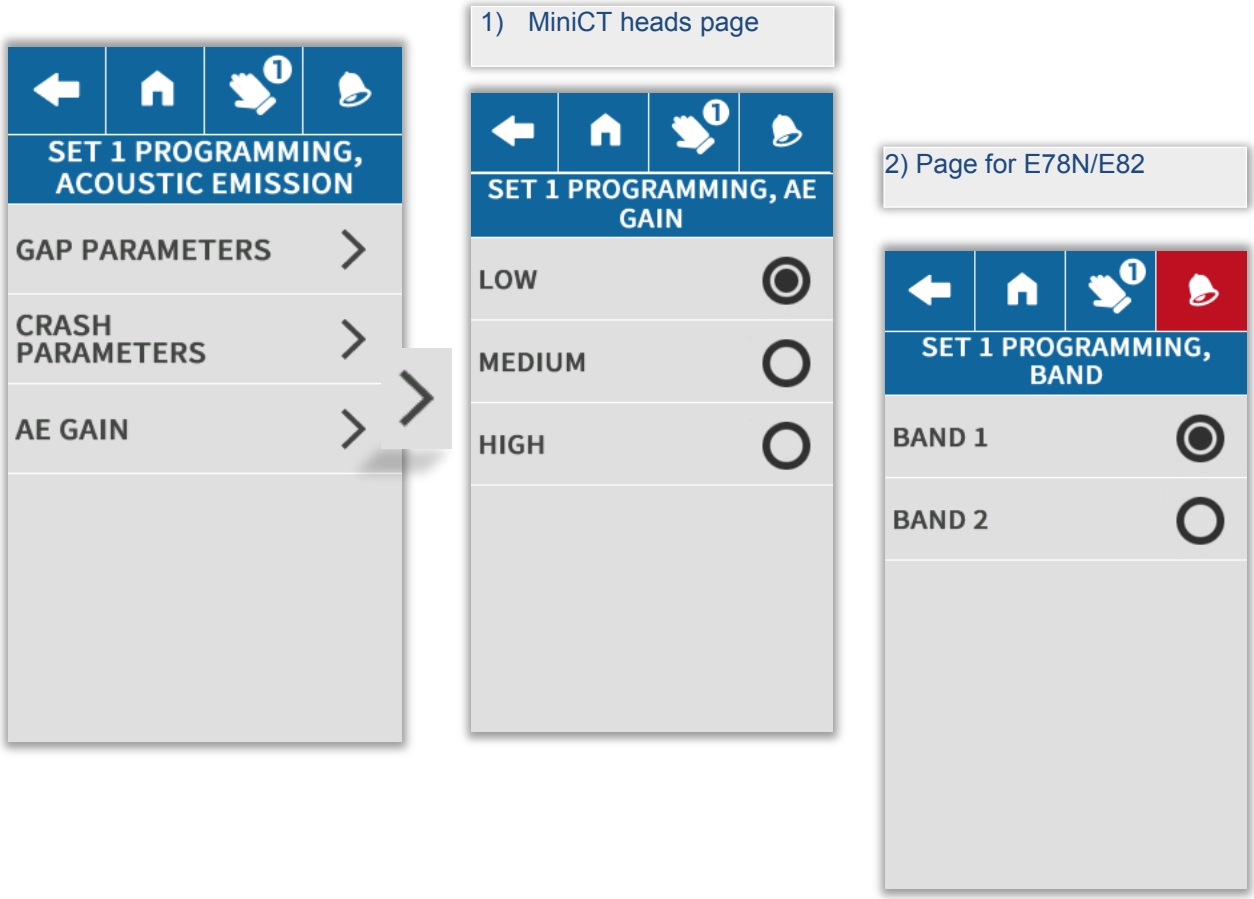
ACOUSTIC EMISSION - AE GAIN



1) If the unit is equipped with MiniCT measurement heads, the **select gain value** window is opened
   - Low
   - Medium
   - High

Increasing the gain value increases the sensitivity of the acoustic application, provided the background noise permits it.
Gain = amplification factor applied to the noise measurement acquisition.

2) If the unit is equipped with E78N/E82 measurement heads, the **select Frequency Band** window is opened

Hardware filtering within the rotor of the signal acquired at high frequency.
- Band 1: between 50 and 100 kHz
- Band 2: between 100 and 200 kHz

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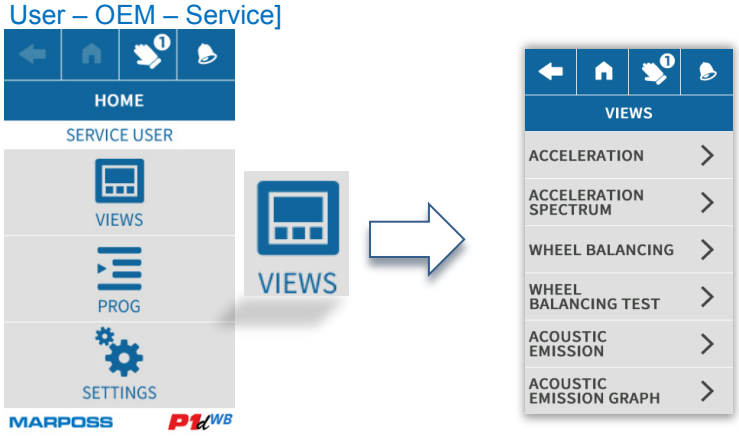
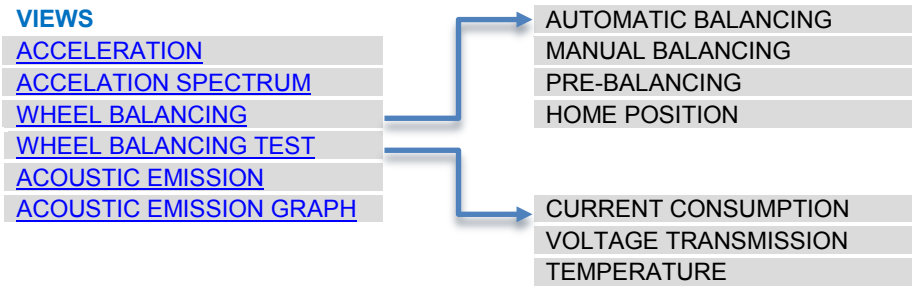
9.4 Menu Views

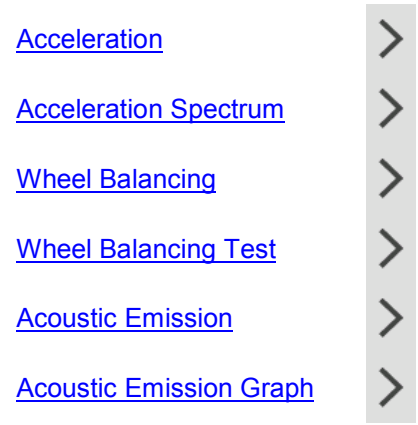
Manual and Automatic operating mode

[End User – OEM – Service]





This menu can be used to access the various balancing and acoustic measurement display pages.



N.B.
The display pages described in the following paragraphs include various LEDs that indicate when the thresholds set-up during the programming phase have been exceeded.

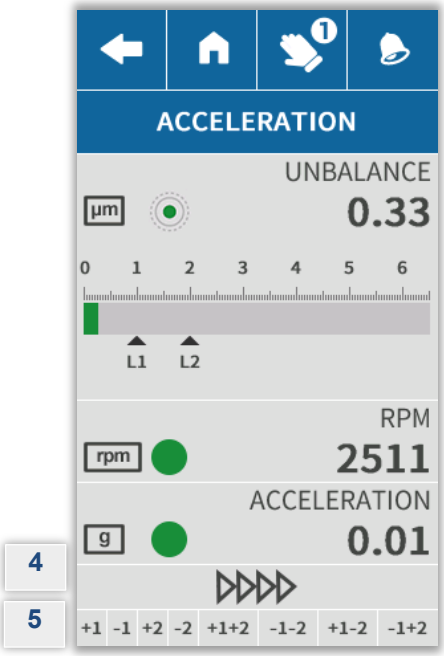
Green LED = optimum

Yellow LED = acceptable

Red LED = excessive

9.4.1 Acceleration menu

The acceleration value is a signal that directly comes from the vibration sensor (accelerometer).



1) UNBALANCE
Measured vibration value

2) RPM
Grinding wheel rotation speed.

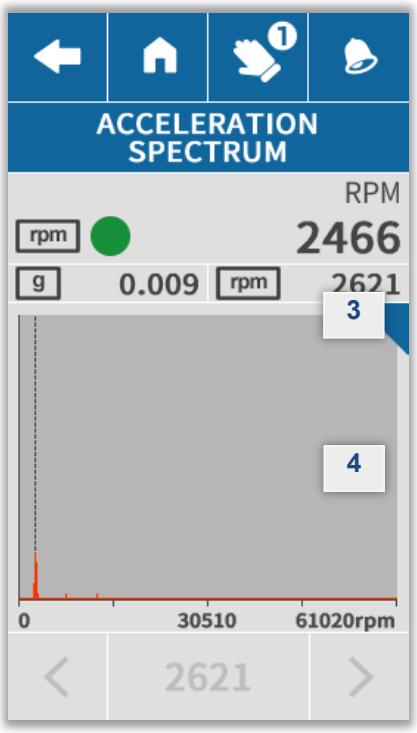
3) ACCELERATION
Vibration measurement displayed as a numerical value and a bargraph.

4)
Motor speed display

5)
Balancing weights movement display

9.4.2 Acceleration Spectrum Menu

The procedure for frequency spectral analysis makes it possible to gauge the unbalance due to frequencies different from the wheel rotation ones (noise frequencies).



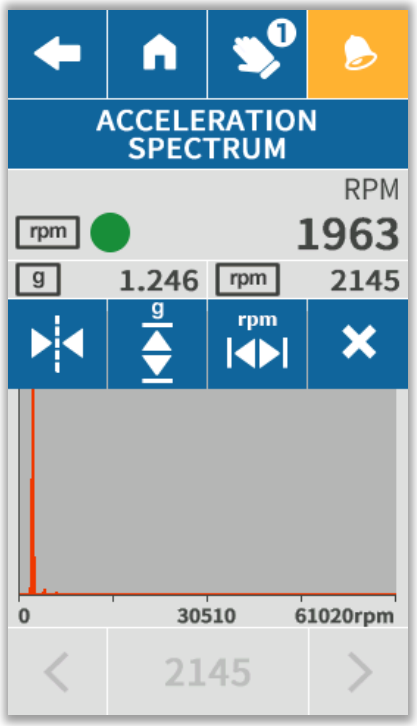
1) RPM
Grinding wheel rotation speed.

2) acceleration value display (g)

3) Press this button to open the options window

4) Spectrum display

[Options window](#)



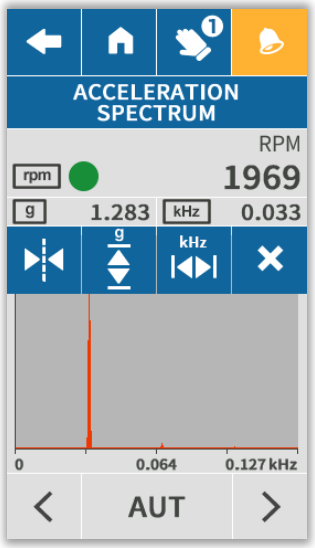
Vertical cursor

Vertical scale

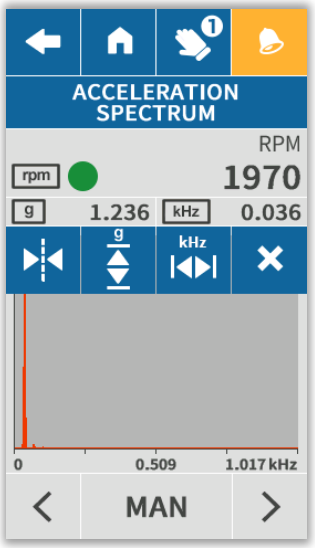
Horizontal scale

Close options window

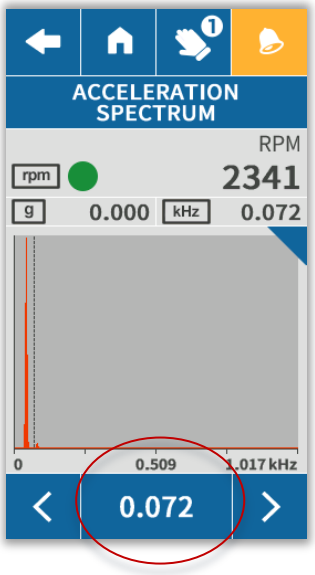
Vertical cursor that may be either automatic or manual:



AUTOMATIC indicates the current maximum value on the graph

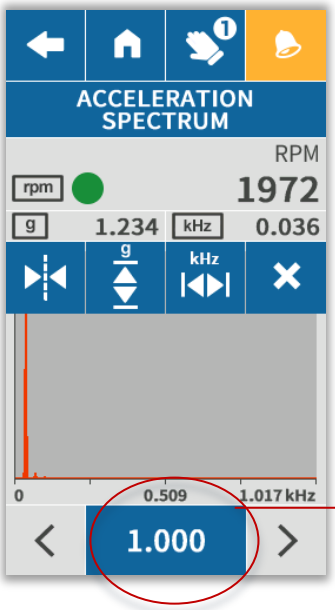


MANUAL: The user positions the cursor by means of a selector located under the graph, which is enabled only once the options window has been closed.



the cursor may be moved to any given position by opening the virtual keypad and entering the corresponding value.

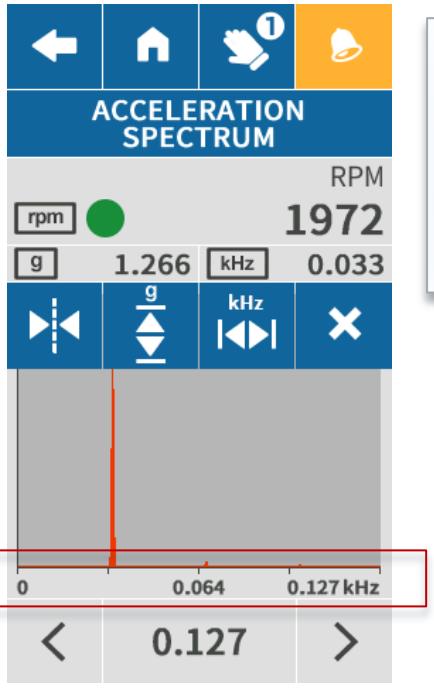
Automatic/manual vertical scale



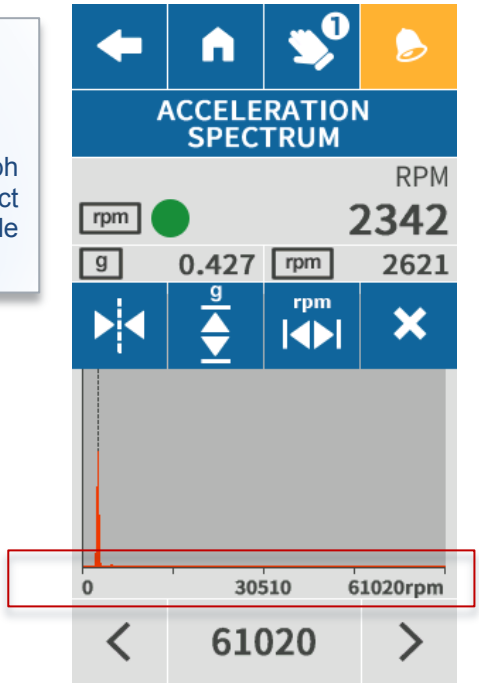
AUTOMATIC: the y-axis is rescaled automatically so that it always covers the available area.

MANUAL: the graph is displayed with a maximum value that the user sets up by entering a value using the selector located under the graph. It is possible to define a value directly by clicking on this button and opening the numerical keypad.

Horizontal scale kHz/rpm



Press once to change the X axis scale from kHz to rpm, once the desired scale has been selected.
The selector under the graph may be used to select between the various full scale values.



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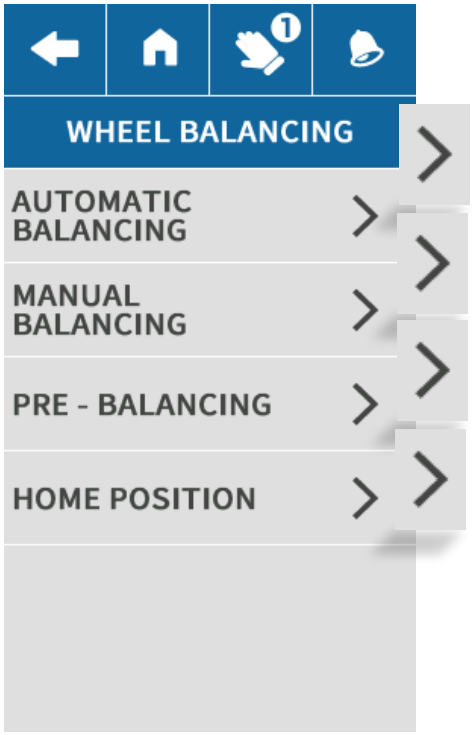
9.4.3 Wheel Balancing menu



This menu may be used to access the balancing pages

AUTOMATIC BALANCING

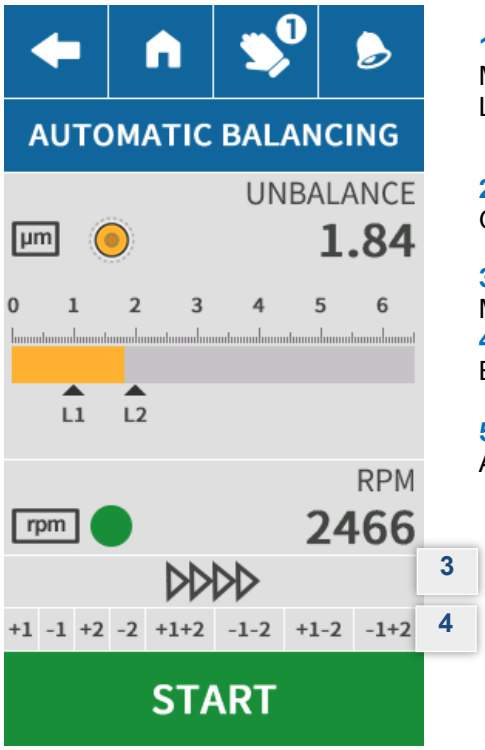
MANUAL BALANCING

PRE-BALANCING

HOME POSITION

AUTOMATIC BALANCING PAGE

Automatic wheel balancing cycle with manual or automatic start cycle control (function possible only when the proper logic enabling signal is present).



1) UNBALANCE
Measured vibration value
L1 and L2 indicate the pre-set threshold values

2) RPM
Grinding wheel rotation speed.

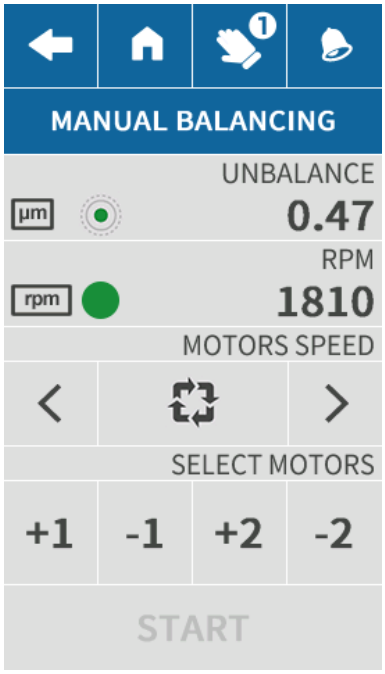
3)
Motor speed display

4)
Balancing weights movement display

5) START /STOP
Automatic balancing cycle start and stop

MANUAL BALANCING PAGE

Wheel balancing with manual control of the motors that actuate the balancing heads weights.



1) UNBALANCE

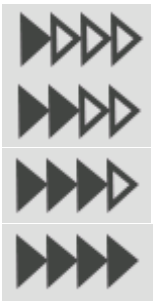
Measured vibration value

2) RPM

Grinding wheel rotation speed.

3) MOTOR SPEED

Automatic speed chosen by the system based on the vibration value



Lowest speed

Highest speed

Pre-defined fixed speeds

4) SELECT MOTORS

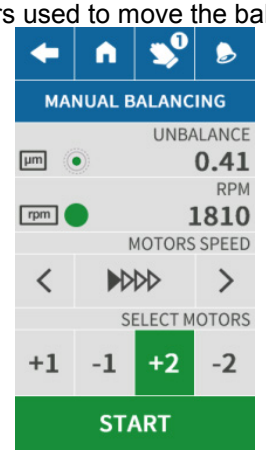
These softkeys are used to operate the motors used to move the balancing head weights manually:

Weight 1 forward motor

Weight 1 back motor

Weight 2 forward motor

Weight 2 back motor



When the operator presses the weights movement button, it enables the START button, which is used to start the manoeuvre.

The weights may also be moved simultaneously, and in opposing directions.

5) START /STOP

Manual balancing cycle start and stop

PROCEDURE:

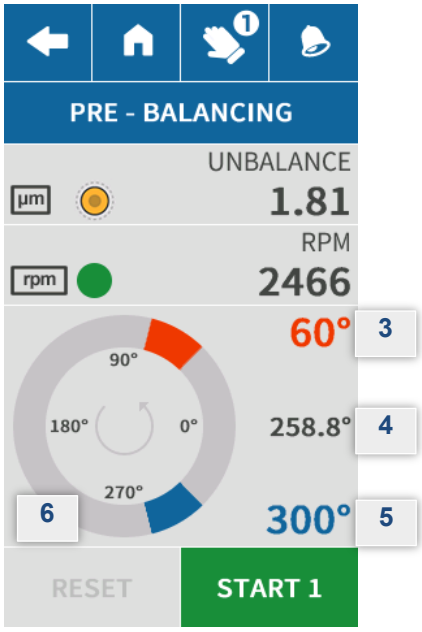
- ✓ Select the speed for the balancing weight movement motors **(3)**
- ✓ Wheel rotating at the work speed
- ✓ Use the appropriate softkeys **(4)** to control the movement of the motors relevant to the masses movement to the desired direction, bringing the vibration value **(1)** within the desired limit.

PRE-BALANCING PAGE

THIS FUNCTION IS ONLY ACTIVE IN THE CASE OF MINICT BALANCING HEADS

This procedure involves balancing the grinding wheel by positioning two identical weights on the flange.

Balancing is achieved through a series of measurement steps, which are indicated on the following page:



1) UNBALANCE
Measured vibration value
L1 and L2 indicate the pre-set threshold values

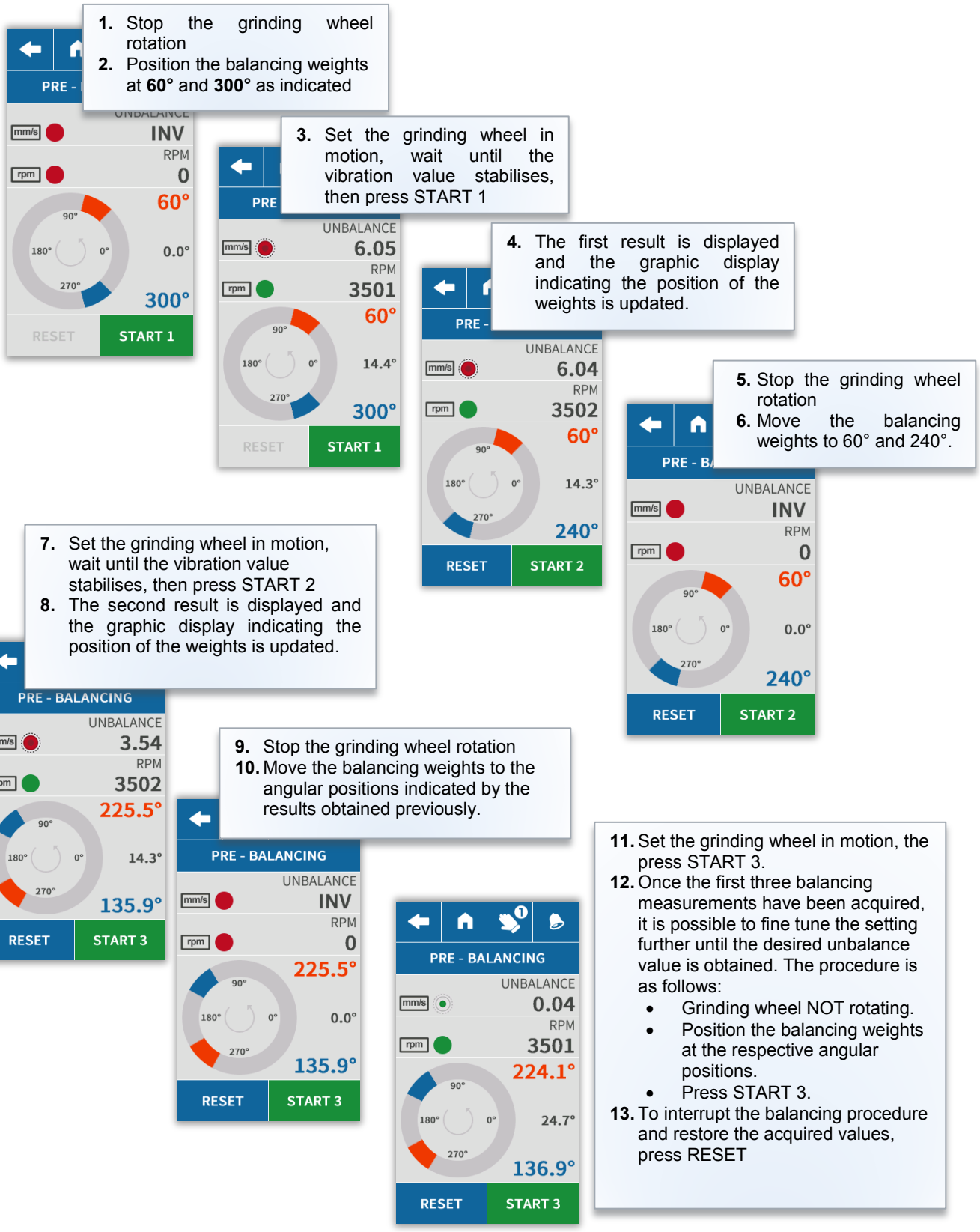
2) RPM
Grinding wheel rotation speed.

3) Indicates the angular position of weight 1
4) result
5) Indicates the angular position of weight 2

6) Graphic display indicating the angular positions of the weights

Procedure

a) Move the balancer to the Home Position
b) Perform the pre-balancing steps

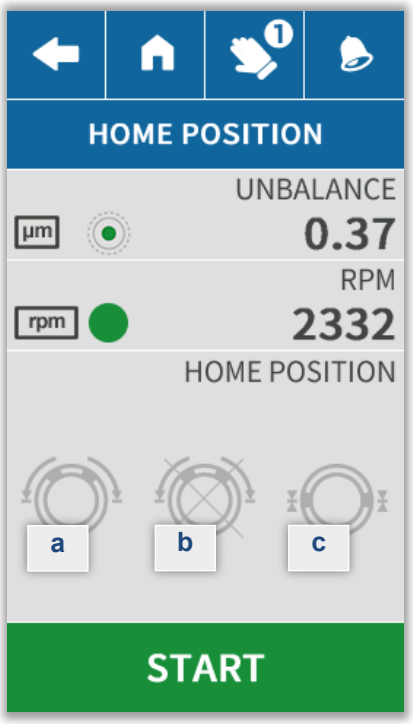


c) Carry out the manual or automatic balancing procedure

HOME POSITION PAGE

The balancing head is in the Home (or Neutral) Position when the weights are in counter-position to each other; this function is used to eliminate any imbalance introduced by the balancing head itself.

Once the Home cycle is complete, the residual vibration is mainly attributable to the imbalance in the machine rotating components (grinding wheel, spindle, etc.)



1) UNBALANCE
Measured vibration value

2) RPM
Grinding wheel rotation speed.

3) HOME POSITION
Home cycle process indicators

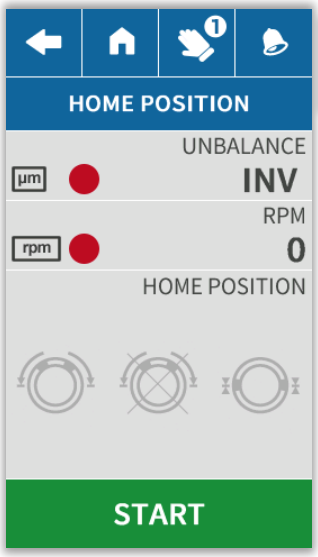
a) When active it indicates that the Home position search is in progress
b) When active it indicates that the search has been interrupted and that the Home position was not reached.
c) When active it indicates that the Home position has been reached

(See the following pages for description of the procedure)

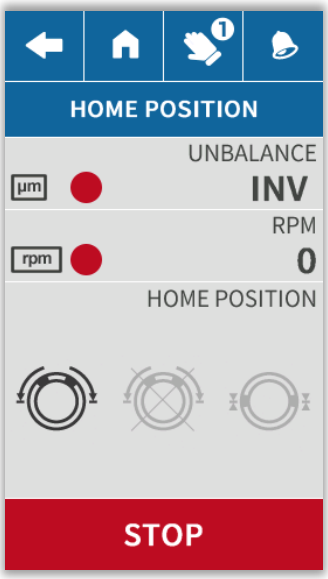
4) START/STOP
Press START to initiate the Home position search
In order to complete the procedure before the weights reach the neutral position, press STOP

N.B.
The grinding wheel must be stationary when performing the Home cycle

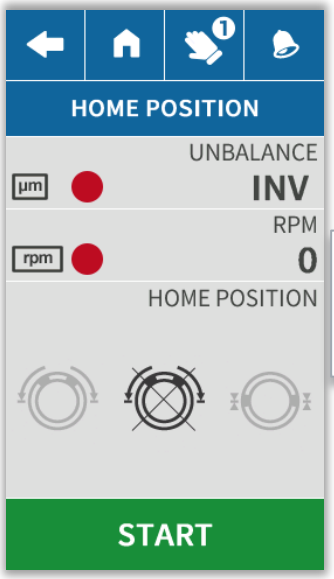
PROCEDURA



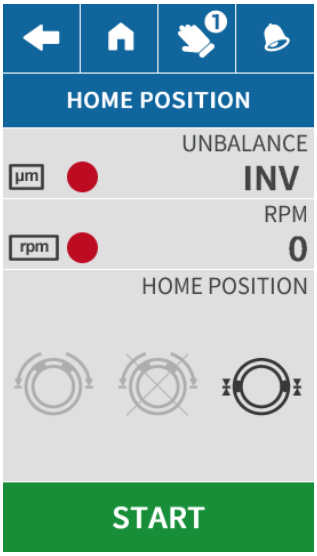
1. Press **START** to initiate the Home cycle



2. The icon that indicates that the Home position search is in progress is activated



If the search is interrupted by pressing the **STOP** button, or it is not possible to reach the Home position, the following icon is activated.



If the **Home** position is reached correctly, the following icon is activated.

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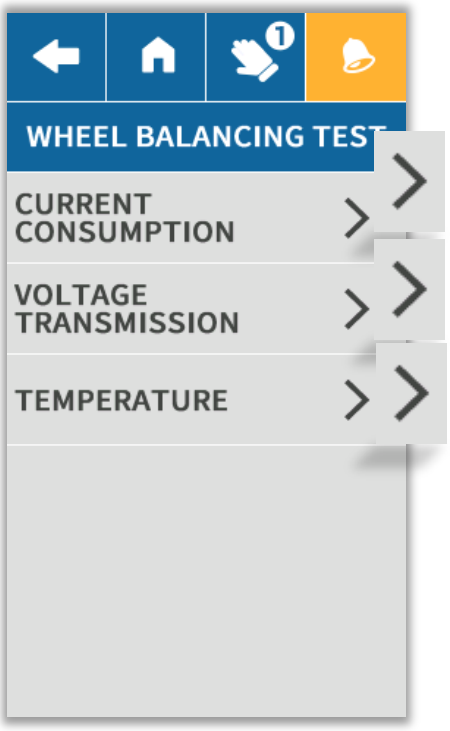
9.4.4 Wheel Balancing Test menu



Current Consumption – access this page to monitor the current consumption

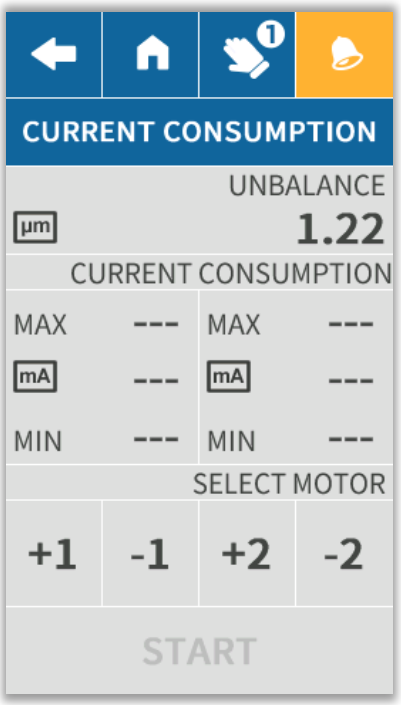
Voltage Transmission – access this page to monitor the voltage value between the receiver and transmitter

Temperature – access this page to monitor the temperature between the receiver and transmitter

CURRENT CONSUMPTION

This function allows viewing the instant value, maximum and minimum, of current absorbed by the motors that actuate the balancing weights, while moving to the selected direction.
The current input value is expressed in mA.
During the motors movement the following appears:

N.B.
This check may be carried out while the grinding wheel is stationary or rotating.

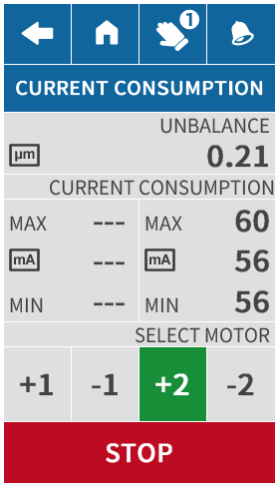


1) UNBALANCE
Measured vibration value

2) CURRENT CONSUMPTION
Current consumed by the weight 1 and 2 motors.
MAX= Maximum current consumption value
mA= Instantaneous current consumption value
MIN= Minimum current consumption value

3) SELECT MOTORS
Use the +1 , -1 , +2 , -2 buttons to control the movement of the motors used to move the weights in the desired direction.

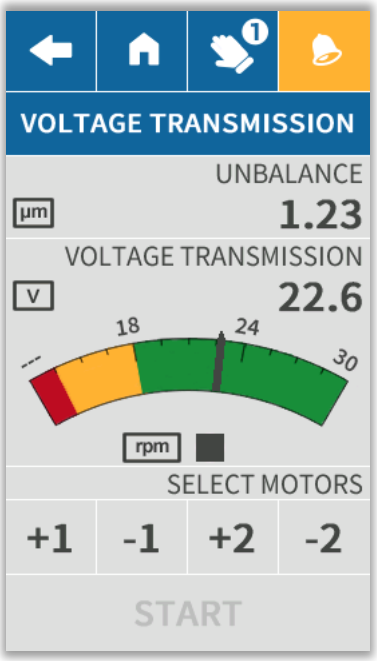
+1	Weight 1 forward motor
-1	Weight 1 back motor
+2	Weight 2 forward motor
-2	Weight 2 back motor



When the operator presses the weights movement button, it enables the START button, which is used to start the manoeuvre.
It is possible to control just one movement at a time.

VOLTAGE TRANSMISSION

This page displays the value of the voltage between transmitter and receiver (receiver supply voltage) while the motors are stationary and running.



1) UNBALANCE

Measured vibration value

2) VOLTAGE TRANSMISSION

Value of the voltage between transmitter and receiver [(1)]

3)RPM

On this page a virtual LED warns when the RPM sensor is aligned with the slot on the rotary portion of the balancing head. This LED can be used to verify the efficiency of the RPM sensor (LED on/off).

4) SELECT MOTORS

This page displays the value of the voltage between transmitter and receiver while the weights are moving (both the motors of the balancing head are moving).
The aim of this check is verifying whether there are irregular voltage drops during the maximum absorption of the remote actuator.

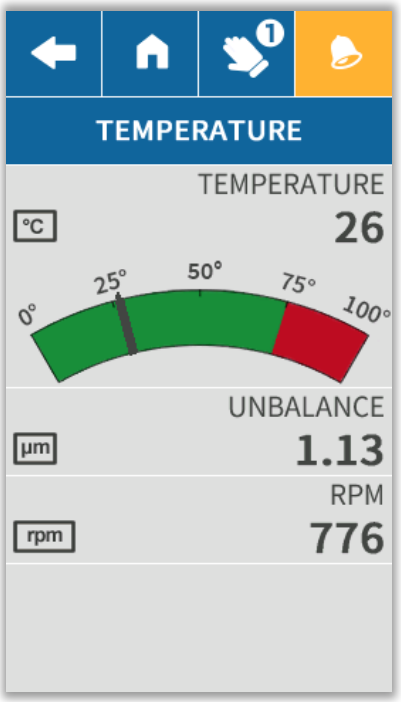
+1	Weight 1 forward motor	+2	Weight 2 forward motor
-1	Weight 1 back motor	-2	Weight 2 back motor

[(1)] the optimum value of the voltage between transmitter and receiver (receiver supply voltage) differs based on the type of transmitter/receiver unit:

- E78N/E82 type transmitter/receiver unit: voltage between 12.2 V and 15.0 V when motors are stationary
- MINI CT type transmitter/receiver unit: voltage between 18.0 V and 30.0 V when motors are stationary

TEMPERATURE

THIS PAGE IS DISPLAYED ONLY IF A MINICT HEAD IS CONNECTED



1) TEMPERATURE
Value of the temperature (# °C) between transmitter and receiver

N.B.:
The internal temperature of the rotor is usually 5-10°C higher than the temperature of the spindle that it is fitted on

2) UNBALANCE
Measured vibration value

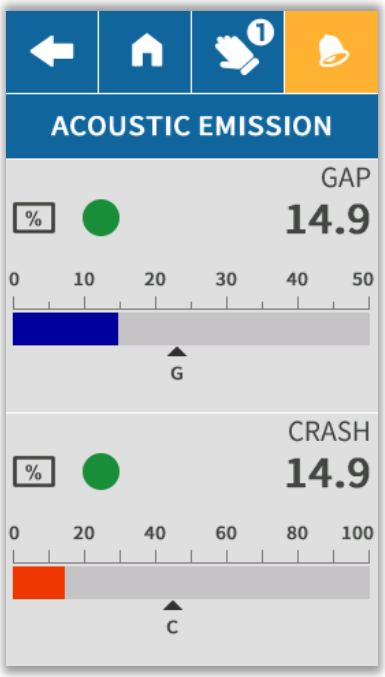
3) RPM
Grinding wheel rotation speed.

N.B.
If the temperature is too high and alarm message appears.

Index Views

9.4.5 Acoustic Emission menu

Displays the Gap and Crash check noise values
The values are displayed in numerically format and on a bargraph.



Gap check noise value

G= GAP command trigger threshold

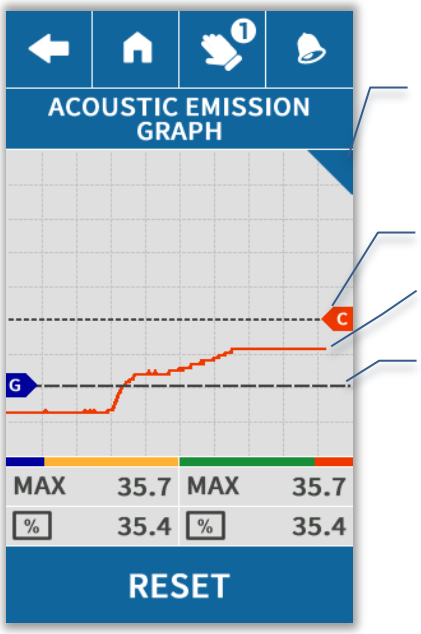
Crash check noise value

C= CRASH command trigger threshold

Index Views

9.4.6 Acoustic Emission Graph menu

This page is used to display the Gap and Crash function oscilloscope

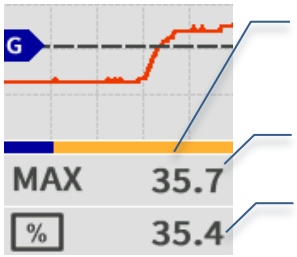


Click on this triangle to open the options window.

Crash signal threshold

Measured noise level

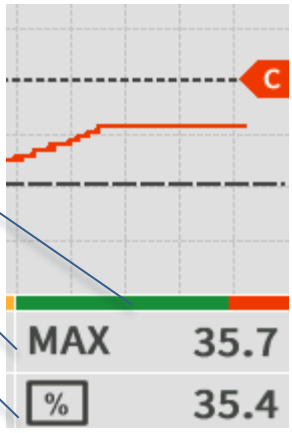
Crash signal threshold



The colours on the bar function as a status LED.

Maximum Gap measurement value

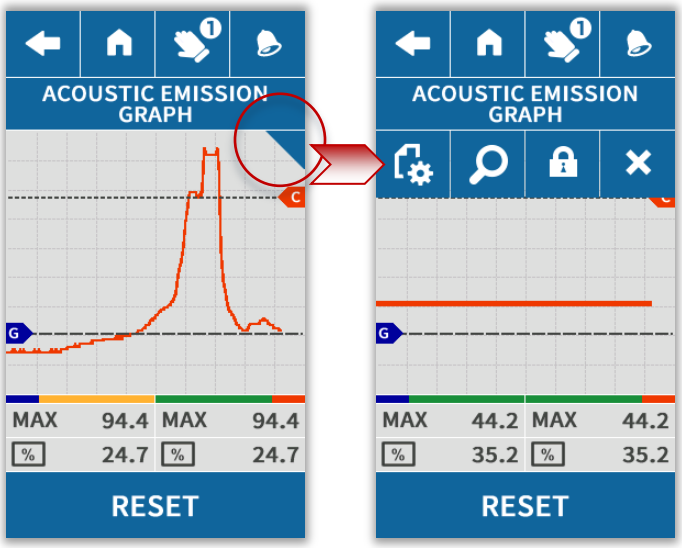
Gap current measurement value



The colours on the bar function as a status LED.

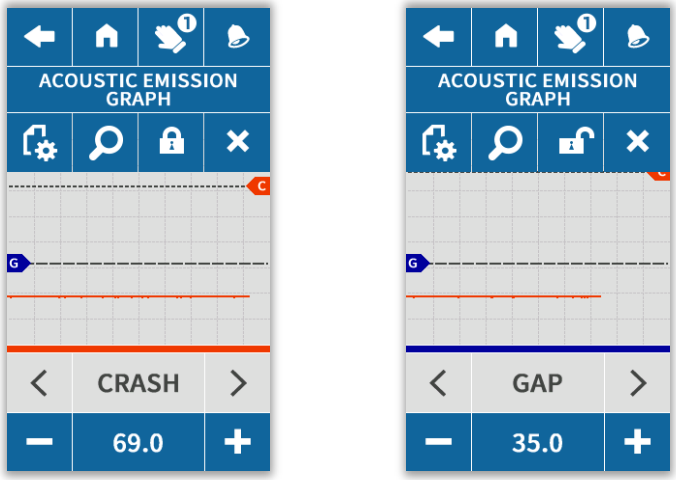
Maximum Crash measurement value

Crash current measurement value



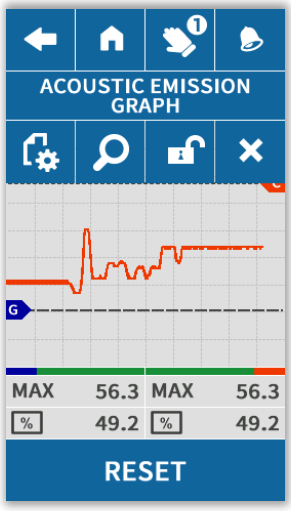
OPTIONS WINDOW

Press this button to reprogram the GAP and CRASH threshold values.

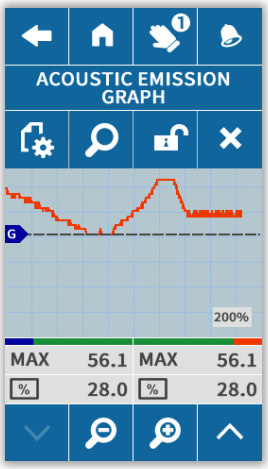


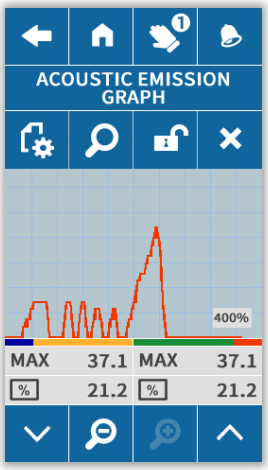
Use the arrow buttons to select Gap or CRASH and the + and - buttons to modify the value of the threshold.
The modifications in the threshold value are displayed in real time on the graph.

Press this button to freeze the screen and block the trace. When the block is active the padlock is displayed in the position, as shown in the example.
To release it, press the button again.




Press this button to zoom the trace.






decreases the zoom %


increases the zoom %



this two buttons may be used to scroll up and down the page when the zoom function is enabled.

Index Views

10 ALARMS AND WARNINGS

10.1 List of Warnings

NUM	NAME	DESCRIPTION
1	I/O supply check	This message appears when the I/O card is not connected or there is no external power supply. Check the I/O card and external power supply connections If this does not solve the problem, there is a hardware problem in the I/O module, call Marposs service. To reset the error condition press the CANCEL button.
2	Low transfer level	This message appears when the voltage between stator and rotor is becoming too low. Check that the stator and rotor are properly interfaced and make sure that the transmitting and receiving surfaces are clean. To reset the error condition press the CANCEL button.
3	Voltage not ok	This message appears when the voltage between stator and rotor is too low to drive the balancing head motors. Check that the transmitter and receiver are properly interfaced and make sure that the transmitting and receiving surfaces are clean. If the problem persists, it means that the problem is located inside the transmitter and/or receiver and it is necessary to request the assistance of authorized personnel. To reset the error condition press the CANCEL button.
4	RPM not constant	This message appears if the wheel rotation speed is not stable during a balancing cycle (in AUTOMATIC or MANUAL operating modes). The acceptable variation range is of +/- 4% of the value detected at the beginning of the balancing cycle To reset the error condition press the CANCEL button.
5	High Vibration	This message appears when the limit L3 is exceeded during a balancing cycle. To reset the error condition press the CANCEL button.
6	Bad selection	This message is appears when the PLC selects a cycle number that has not been programmed. To reset the error condition press the CANCEL button.
7	Flow Control Cycle	This message appears when a GAP/CRASH cycle is requested while a balancing cycle is in progress. To reset the error condition press the CANCEL button.
8	Wheel stopped	This message appears when a balancing cycle has started but the grinding wheel remains stationary The wheel must be rotating in order to perform a balancing cycle: check the machine logic. To reset the error condition press the CANCEL button.
9	Invalid RPM	This message appears when the RPM value is not valid for the selected cycle (Wheel stopped value different to the programmed RPM Min/RPM Max limits) To reset the error condition press the CANCEL button.
10	Insufficient balancing masses	This message appears when weights used for balancing are not correct. Recalculate and use different weights. To reset the error condition press the CANCEL button.
11	Motor type not supported	This message appears when the programmed motor type programmed is not supported by the connected RX/TX Unit. To reset the error condition press the CANCEL button.
12	Maximum cycle time	This message appears in AUTOMATIC or MANUAL mode when a balancing cycle has not been completed within the maximum allowed time (210 seconds). If the cycle was performed in AUTOMATIC mode, select MANUAL mode and press the CANCEL button to reset the error condition. Check the system operating conditions and make sure that there are no external vibrations that could affect the system.

10.2 List of Alarms

NUM	NAME	DESCRIPTION
14	Elaboration board error	This message indicates that there is a communication problem with the elaboration board. This alarm may be ignored during the firmware reprogramming session. Press the CANCEL button to reset the error condition
15	**RPM sensor**	This message appears when incorrect frequencies are detected on the signal from the RPM sensor. Possible causes of the alarm are: 1) RPM sensor connected incorrectly 2) RPM sensor not positioned correctly 3) RPM sensor malfunction 4) RPM sensor power supply incorrect The possible solutions are: 1) Check the RPM sensor connection 2) Check the position of the RPM sensor (distance between sensor and reference) 3) Replace the transmitter, in the case of contactless transmission, or the distributor, in the case of applications with retraction. 4) Replace the **P1dWB** electronic unit. To reset the error condition press the CANCEL button.
16	**Vibration Sensor**	This message appears when an interruption of the accelerometer cable occurs, it may be caused by a cable disconnected or broken. To solve the problem connect the cable or replace the accelerometer sensor. To reset the error condition press the CANCEL button.
17	**Home Position Sensor Alarm**	The Home Position sensor is missing or faulty To reset the error condition press the CANCEL button.
18	**Faulty data link**	This message appears when the data transmission between the rotor and stator is defective. Check that the stator and rotor are properly interfaced and make sure that the transmitting and receiving surfaces are clean. If the problem persists, it means that the problem is located inside the stator and/or rotor and it is necessary to request the assistance of authorized personnel. To reset the error condition press the CANCEL button.
19	**Remote actuator power failure**	This message appears when the power supply voltage to the rotor is too low. To reset the error condition press the CANCEL button.
20	**Remote Actuator Temperature failure**	This message appears when the temperature of the rotor is critical. The possible solutions are: 1) Check the electrical conditions of the rotor. 2) Check the mechanical conditions. To reset the error condition press the CANCEL button.
21	**Remote Actuator Noise Channel failure**	This message appears when a problem occurs during the communication between **P1dWB** and Balancing head, relating to the acoustic noise contact. To reset the error condition press the CANCEL button.
22	**Faulty Motors**	This message appears when the remote actuator (rotor) motors drive switches are faulty. In this case it is necessary to request the assistance of authorized personnel To reset the error condition press the CANCEL button.

23	**Motor not link**	This message indicates that there is an interruption on the motor power supply line. Check the cables and connectors. If the error condition persists, it means that the problem is located inside the balancing head and it is necessary to request the assistance of authorized personnel. To reset the error condition press the CANCEL button.
24	**Motor power limit**	This message appears when the load on balancing head weight motors is close to the maximum limit. Switch to TEST mode and power the balancing head weights in the various directions for a few seconds. If the error persists, it means that the problem is located inside the balancing head and it is necessary to request the assistance of authorized personnel. To reset the error condition press the CANCEL button.
25	**Wring data**	This message appears when the programmed values are not consistent with the relevant values for the balancing system. To reset the error condition press the CANCEL button and correct the data.
26	**Power failure**	This message appears in the event of a problem with the elaboration board power supply. To reset the error condition press the CANCEL button and correct the data.
27	**Faulty output**	This message indicates the presence of a short circuit between at least one of the output terminals and the external earth. Check the connections to the machine. If the alarm condition persists, it means that the problem is located in the electronic control unit and it is necessary to request the assistance of authorized personnel. To reset the error condition press the CANCEL button.
29	**RPM function failure**	Indicates that the **P1dWB** is unable to manage the RPM signal
31	**Balancing function failure**	The communication between **P1dWB** and Balancing head, relevant to the balancing function, fails to start.
32	**Acoustic Emission function failure**	The communication between **P1dWB** and Balancing head, relevant to the acoustic emission measurement, fails to start.

11 ACCESSORIES FOR UPGRADING E78 AND E82

As described earlier in this manual, it is possible to upgrade E78/E82 units to **P1dWB**. In order to upgrade these devices various accessories may be necessary

ELECTRICAL ACCESSORIES

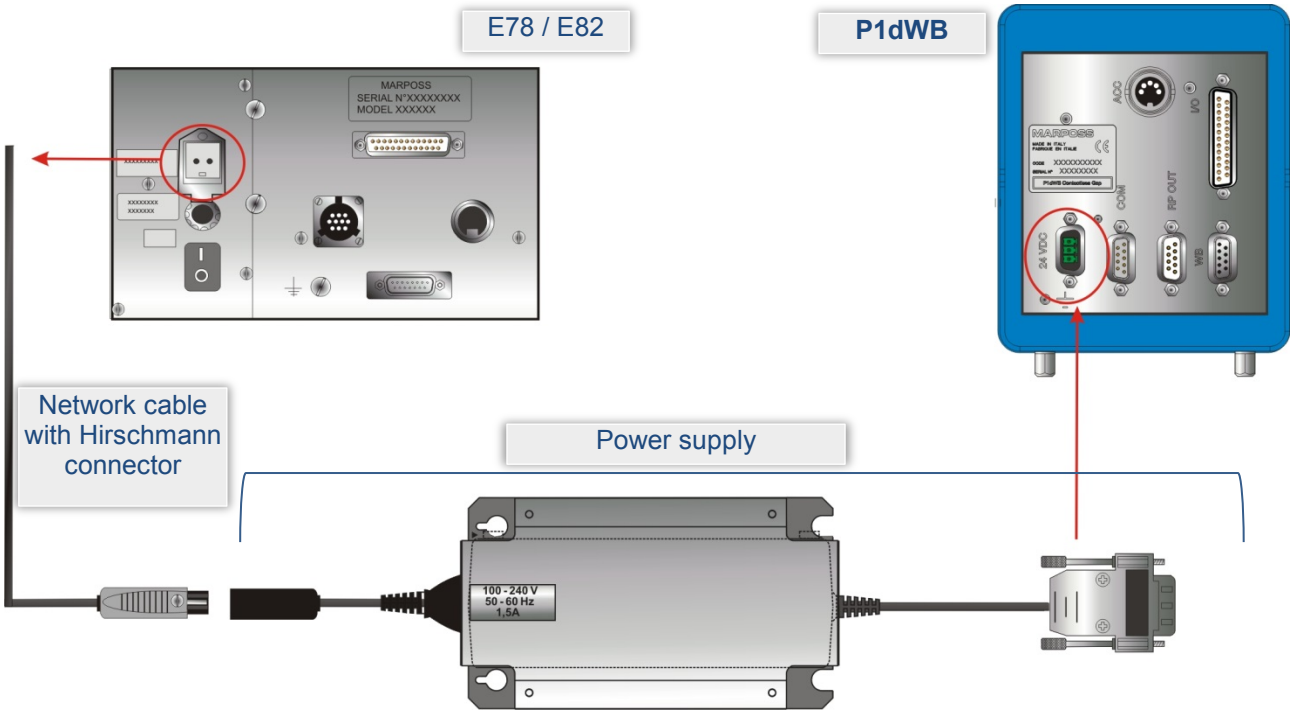
1) I/O adapters. An adapter may be necessary when upgrading an old electronic unit. (See table below)

ELECTRONIC UNITS	SOURCE	SINK
E78R	**P1dWB-R** Standard Connector	**P1dWB-R** + Adapter part n. **6336530100** 
E78N	**P1dWB-CG** + Adapter part n. **6336530200** 	**P1dWB-CG** + Adapter part n. **6336530201** 
E82	**P1dWB-CG** Standard Connector	**P1dWB-CG** + Adapter part n. **6336530000** 

2) 24 V power supply

Power supply kit (part n. 6871140203) for converting 110/220 VAC to 24 VDC so that the E78/E82 unit can be connected directly to the **P1dWB**.
The kit consists of:

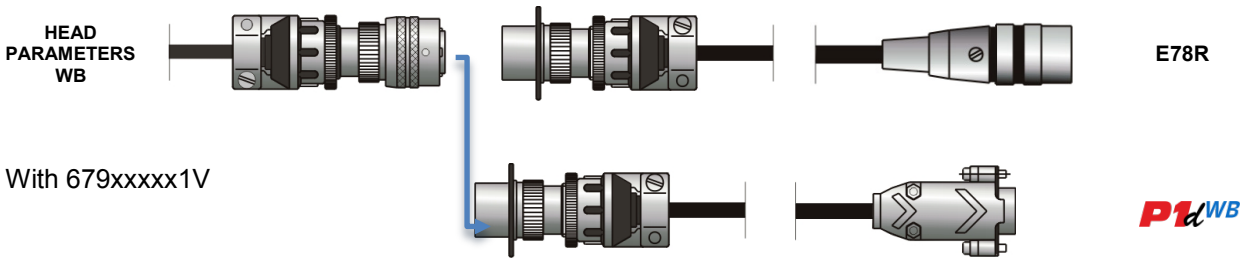
- Power supply
- 24 VDC cable and connector for **P1dWB**
- Network extension with HIRSCHMANN connector for connection to E78/E82



3) Extension cable for Balancing Heads

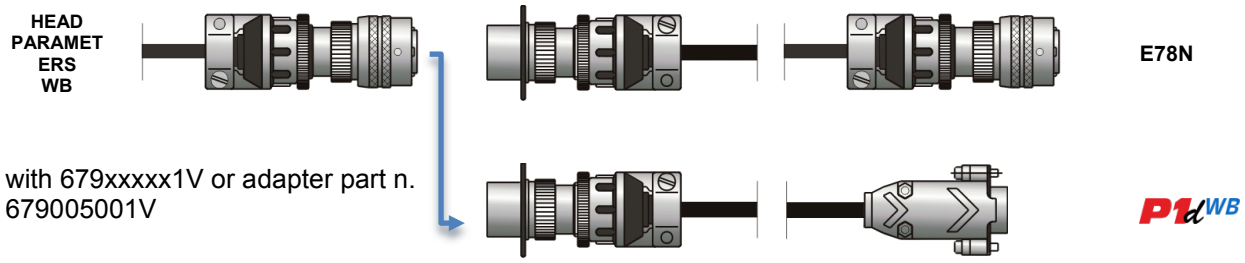
E78R

Replace cable 679xxxxx97



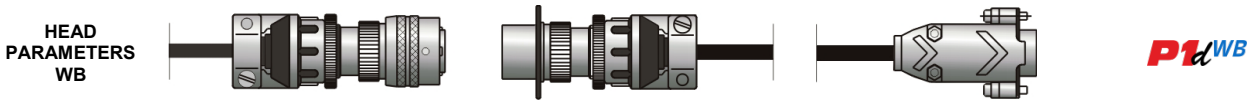
E78N

Replace cable 679xxxxx1C



E82

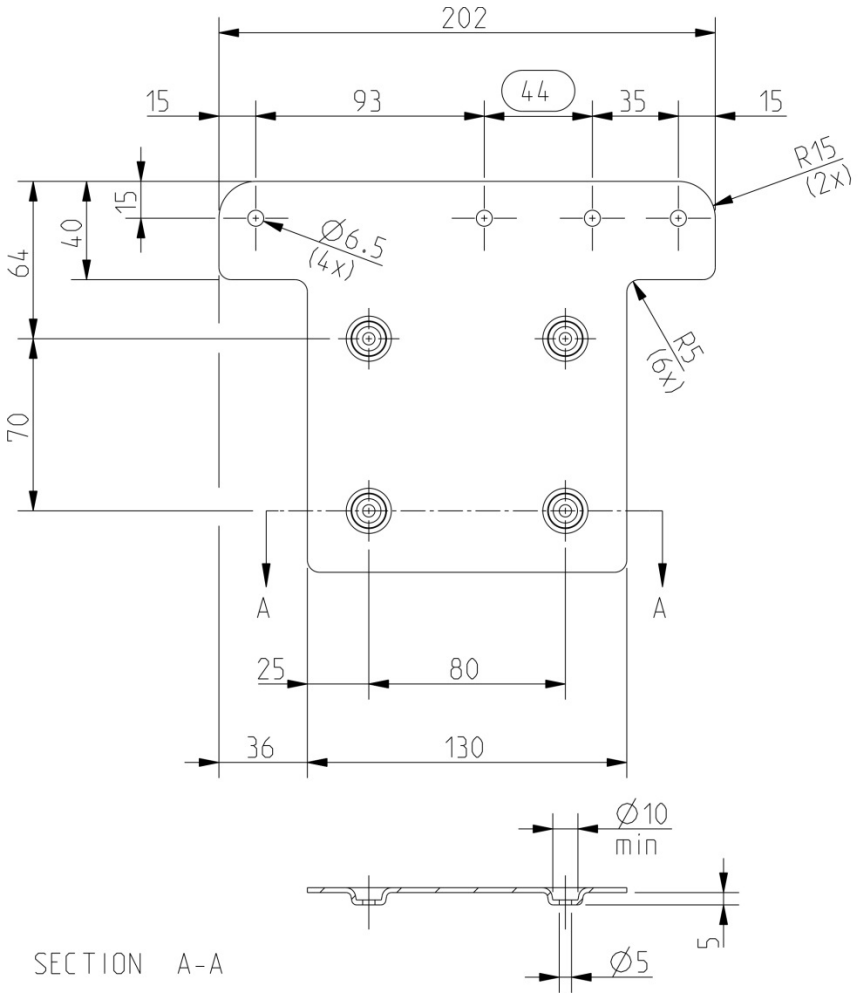
Cables 679xxxxx1D or 67xxxxx1V may be used

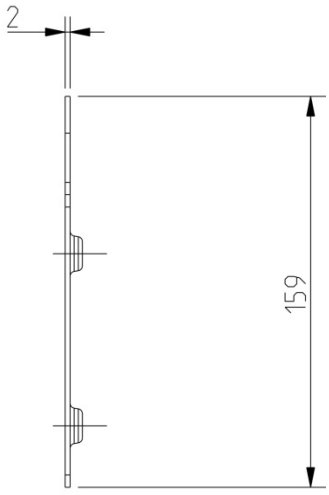


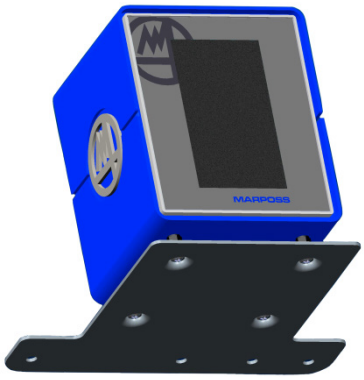
MECHANICAL ACCESSORIES

1) Support bracket
Mechanical **P1dWB** supporting interface that replaces the “T” bracket for E78/E82.

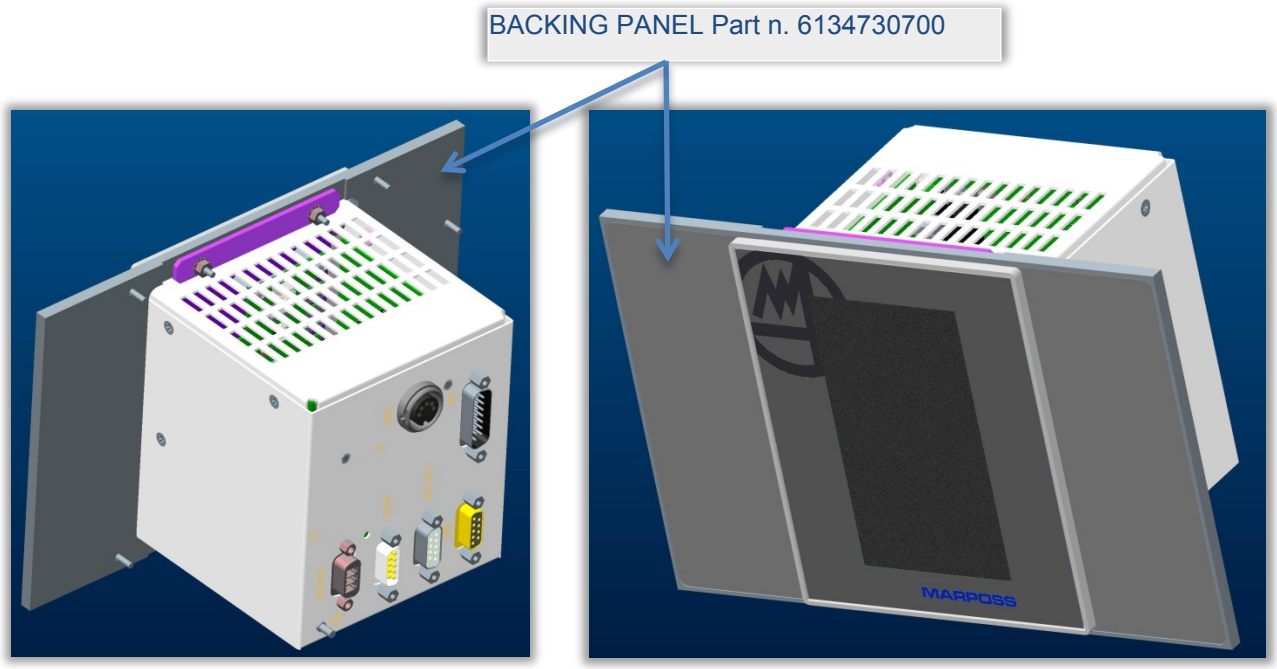
Kit containing bracket + screws part n. 6134730800



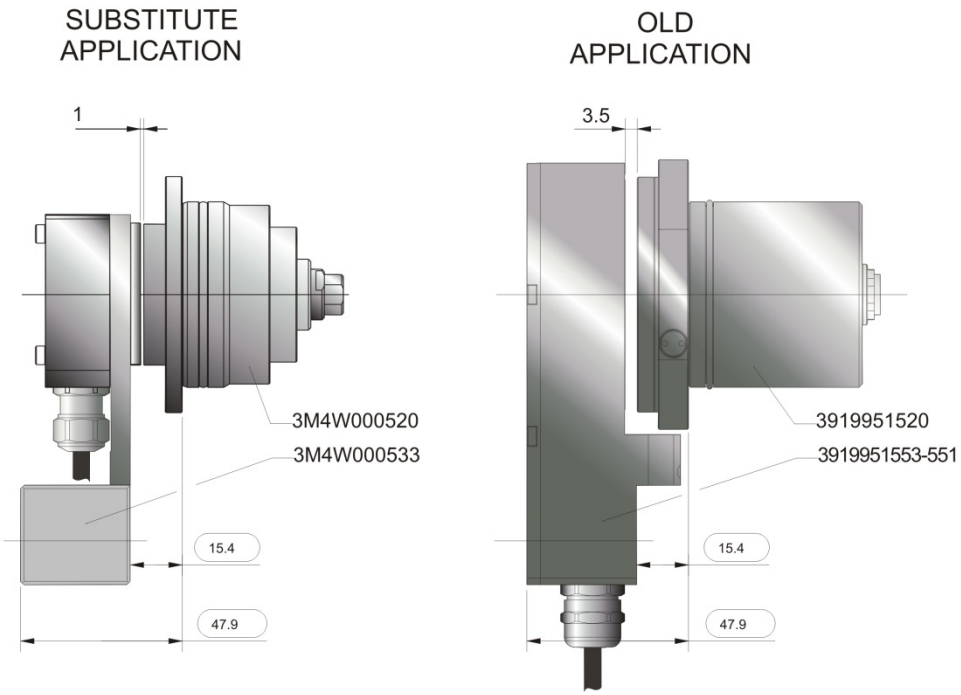




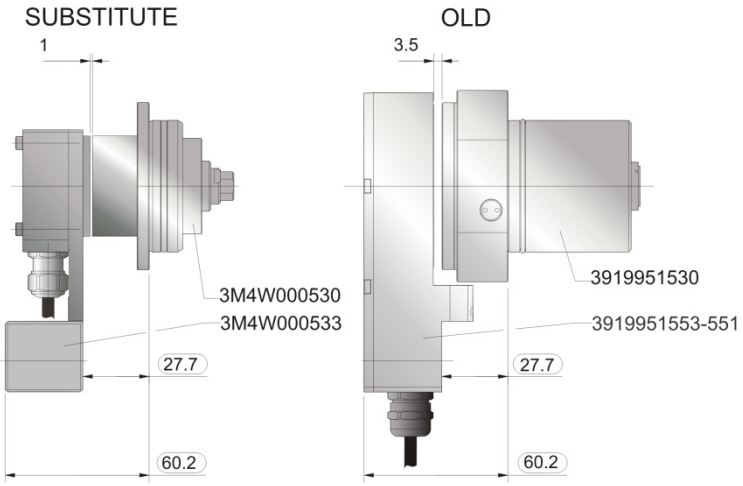
2) Backing panel for remote or rack panels, use when mounting **P1dWB** in place of E78/E82



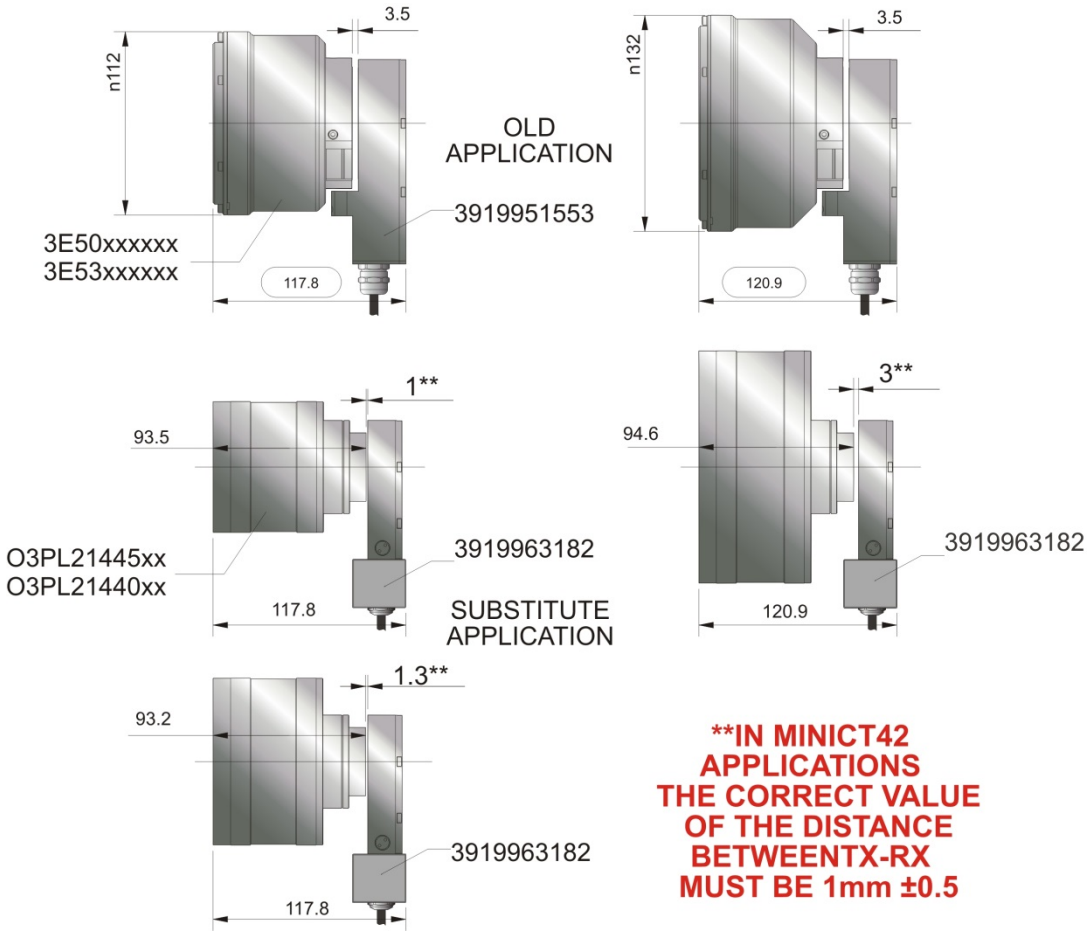
3) WBTX adapters for replacing the old MiniCT transmission systems.
Replace the “old” rotor/stator” pair with the new MiniCT version.



E78N/ST	New application	“Old” application
ROTOR	3M4W000520	3919951520
STATOR	3M4W000553	3919951553 / 551



E82/ST	New application	"Old" application
ROTOR	3M4W000530	3919951530
STATOR	3M4W000533	3919951553 / 551



E78N/E82/FT	New application	"Old" application
ROTOR	O3PL21445xx O3PL21440xx	3E50xxxxxx 3E53xxxxxx
STATOR	3919963182	3919951553

12 MAINTENANCE

Apart from cleaning the glass panel, the **P1dWB** does not require any special maintenance.

Use water and alcohol only when cleaning the glass panel, avoid acids and aggressive liquids.

End of Document