WHEEL ALIGNMENT

CCD2.0WIFI

**INSTALLATION AND ASSISTANCE MANUAL
FOR TESTING AND CALIBRATIONS**

**RESERVED TO AUTHORISED
ASSISTANCE CENTRES**

0 INTRODUCTION

This manual is intended to provide the installer with complete instructions for the connections and calibration of the "Aligner CCD2.0WiFi" wheel alignment equipment
The instructions regarding use and maintenance, reserved for the end user, are collected in the specific manual supplied with the machine or downloadable from the manufacturer's website.

Attention!

The "CALIBRATION" procedure is reserved for specialist technical assistance personnel; for this reason, access to them is password-protected.
This password, which must not be communicated to other persons, is determined by the sequence of the keys "**F8; F7; F6; F8**".

CONTENTS

1 ASSEMBLY

It is necessary to fix the frames supplied with the equipment on the wall in advance.
Use the M8 anchors supplied (4 per frame), fixing them level at a height that is considered practical and functional, as illustrated in Figure 1.

It is possible to fix the panels side by side or on two opposite walls, as indicated in chap. 2.

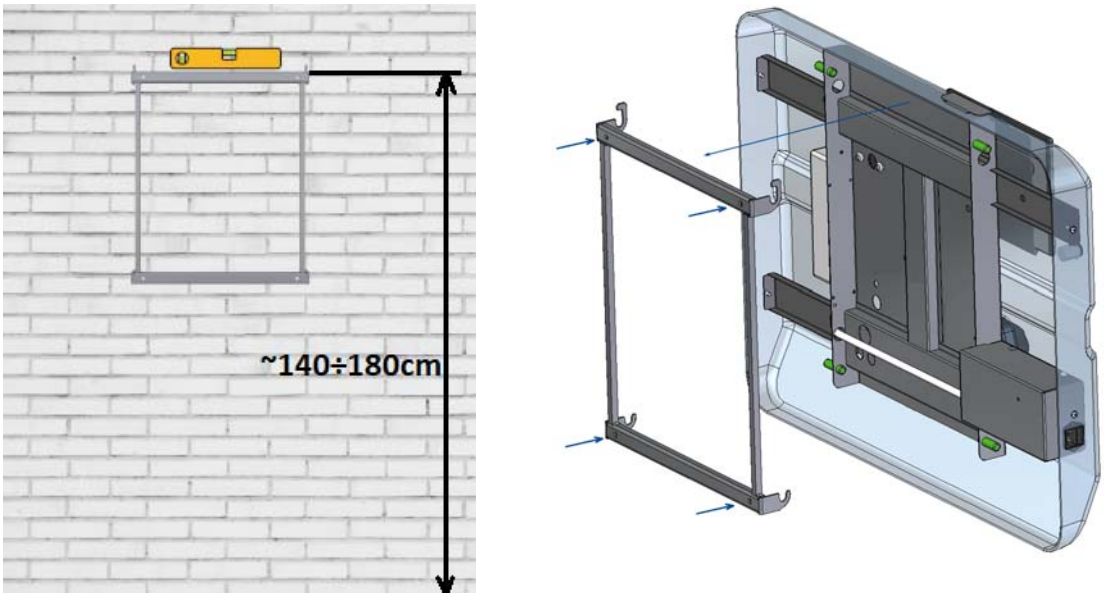


Figure 1

Attention: The frames suitable for attachment of the detector panels and those of the bracket panels (optional STDA156) are different from each other. To identify them easily consider that those for detectors have wide vertical strips while those for brackets have narrow vertical strips, as illustrated in Figure 2

Figure 2

2 CONNECTIONS

2.1 Power line connection

The alignment sensor panels must be connected to the 115/230Vac 50/60Hz power line; the maximum power used is 100W.
Use the power outlet located on the side of the panels.
The panels can be connected to the network separately (on two different walls) or the right panel can be powered on the power strip behind the left panel, as in the example in Figure 3.

ATTENTION: The power line should not be turned off during the night as the detectors must be recharged.

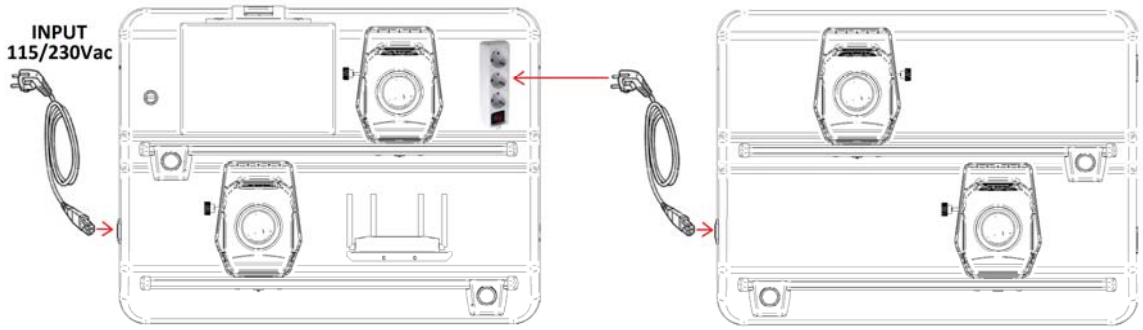


Figure 3

The batteries of the detectors are recharged when they are placed on the dedicated charging supports on the panel. These supports carry 7.5V DC power supply.
Attention: The +/- poles must be correct, check them when the detector is being charged.
If the +/- poles are correct, the battery is charged (the green LED is on); if they are inverted it will NOT charge.
Figure 4 shows the schematic diagrams of the two detector panels.
Note: the power supply board of the charging supports code 18878 has 4 0/7.5V outputs, but only 2 are used.

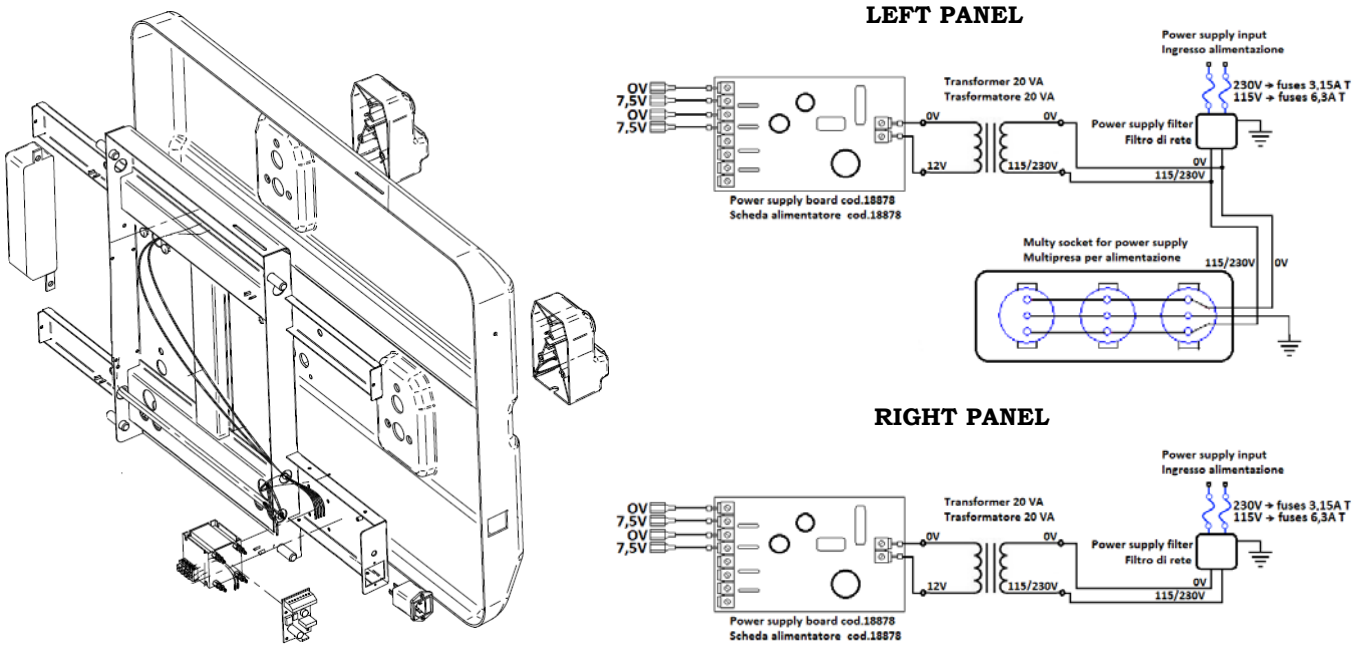


Figure 4

3 ASSOCIATION OF DETECTORS TO THE SERVICE PC

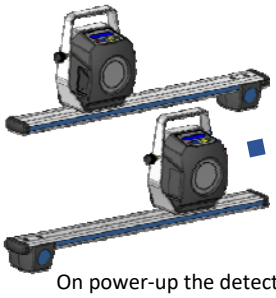
To perform the configuration and calibration of the CCD2.0WiFi detectors, a PC (*) must be used if necessary, with the service SW installed **CCD20Config** .
The **CCD20Config** service SW can be downloaded from the manufacturer's support site.

(*) A PC with S.O. is required Win7 or Win10 with common 802.11b/g/n WLAN Wireless Network card

Figure 5

Firstly connect the service PC to the "connect" Wi-Fi network of the CCD2.0WiFi system, which is generated by the Access Point supplied with the equipment, to which the front detectors and the Tablet are also connected.

the Tablet must not be used



On power-up the detectors automatically connect to the

Access Point Wifi

SSID = **connect**
Password = **123connect**

Figure 6

After the PC and the detectors have been switched on and connected to the “connect” network, it is necessary to “associate” the detectors with the service PC, following the procedure described below.
Press F2 from the home page, the Figure 7 page appears, then select "WIFI search”

Figure 7

The Figure 8page appears. Pressing the F5 key  will start the WIFI search.

Figure 8

At the end of the search the references of the detectors found are reported; press F4  to confirm.

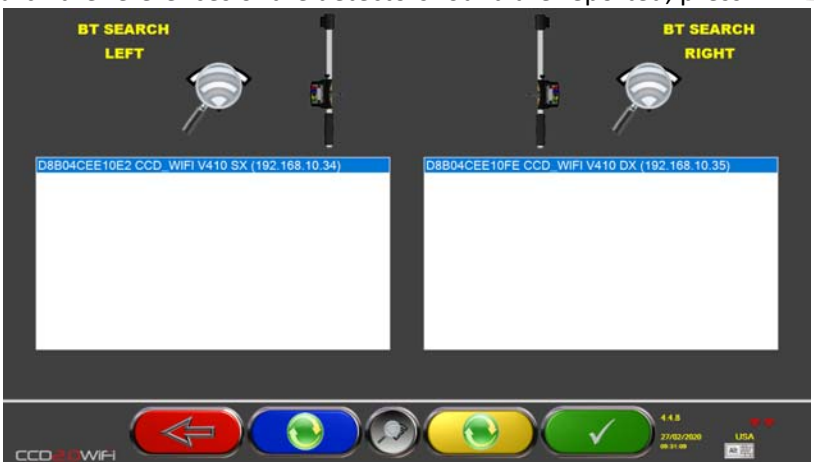


Figure 9

Attention: *if the WiFi search of the detectors does not generate results, try to enable/disable the broadcasting setting; pressing the Alt+F2 keys shows the appearance as set out below:*

 → *Broadcasting enabled* /  → *Broadcasting disabled (default selection)*

Note: with the access point normally supplied, Zyxel NBG6604, the search is carried out with broadcasting disabled.

When the WIFI association is completed, the two icons in the lower right corner turn BLUE.
Instead, if the association has not been carried out (or the front detectors are off) these icons are GREY.

Note: the Bluetooth icons highlighted in RED indicate that the SW driver that manages the system is not already running

Important: to test the actual connection with the detectors, use the communication test (FW release) described in para. 6.1

At this point it is possible to carry out the calibration and test procedures (chap. 5 and chap. 6).

4 THE "connect" WIFI NETWORK

4.1 Description and Configuration

The WiFi network of the CCD2.0WiFi set-up essentially consists of the 2 front detectors connected to the "connect" SSID generated by the access point and the tablet also connected to the "connect" SSID.

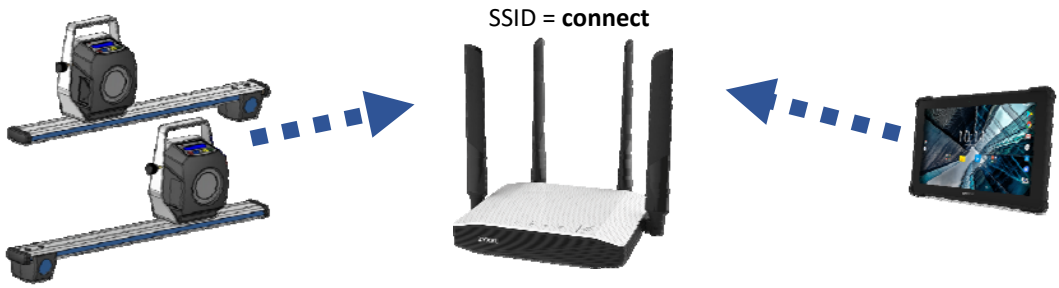


Figure 10

It is possible to connect the Detectors and the Tablet to a different SSID, useful if for example there are multiple CCD2.0WiFi settings in the same room.

To change the name of the SSID on the Access Point, refer to the instructions provided by the manufacturer.

To set the front detectors so that they automatically connect to the different SSID, it is necessary to proceed as follows:

- Initialise the detectors with the Reset procedure - see chap. 4.2
- Configure the chosen SSID on the detectors - see chap. 4.3

4.2 Initialisation of the front WIFI detectors

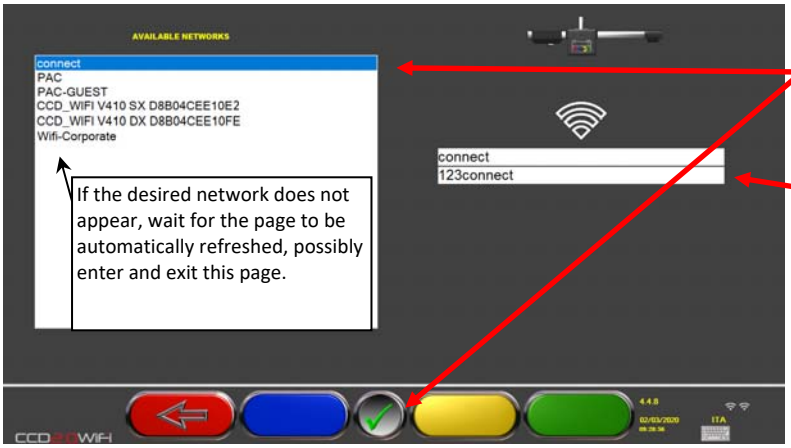
To initially set up the “CCD-WIFI” front detectors (Reset WIFI procedure), operations must be carried out manually using the appropriate keypad.

The operations to be performed are illustrated in sequence below:

- Press the F2 and F3 keys simultaneously
- Press the F4 key **3 times;** the red LED in this phase flashes.
- Press the F5 key to confirm, wait a few seconds for Reset of the WIFI module; during this phase the red LED flashes faster, at the end the LED stays on permanently.
- Switch off the detector with the F1 and F4 keys.

4.3 Configuration of the default SSID on the front WIFI detectors

After connecting the service PC to the WiFi network to be used as default (normally connect) press the Alt + F3 key  from the WiFi search page (see Figure 8); access is given to the advanced configuration page, illustrated in Figure 11



Choose the default SSID (normally connect) and confirm with the F5 key.  .

The SSID is shown on the right side, and below is the password.
Check that the password is correct.
Normally for SSID connect it is "123connect"
If necessary correct it.

Figure 11

Select the detector from the listed items and confirm with the F5 key  .
The chosen detector is shown in the upper right part.

N.B. the detector must have been previously initialised - see chap.4.2 and
it can be recognised by its name:
CCD_WIFI V410 SX XXXXXXXXXXXX o
CCD_WIFI V410 DX XXXXXXXXXXXX
SX is the left detector; **DX** is the right detector
XXXXXXXXXXXX is the Mac address that differs for each detector.

Press the F4 key to  confirm the configuration.

Figure 12

Wait for the detector configuration to complete and check that at the end the tick symbol  indicating success of the operation appears.

Repeat the configuration (Figure 12) also for the other front detector.

ATTENTION: sometimes it may be the case that completion of the detector configuration is not successful and a symbol "  *" appears in place of the tick "✓".*

Try again to press F4  *a few times, if necessary repeat the procedure from the beginning (Figure 11),*

Figure 13

4.4 Connection of sensors and internal devices of the detectors

The connections inside the detector are already made at the factory, so there is no need to open the detector itself, except to replace components.
However, it is advisable not to remove the detector cover; in the event of malfunctions, it is preferable to contact the manufacturer. However, when it is necessary to intervene for simple maintenance operations, e.g. when replacing the battery, it is advisable to pay particular attention to returning the removed parts to their original position.
Below is a brief description of the connections of the boards mounted on the detectors.

CPU 20624 board - mounted on the FRONT "wireless" detectors with WIFI transmission

CPU board 20177 - mounted on the REAR detectors:

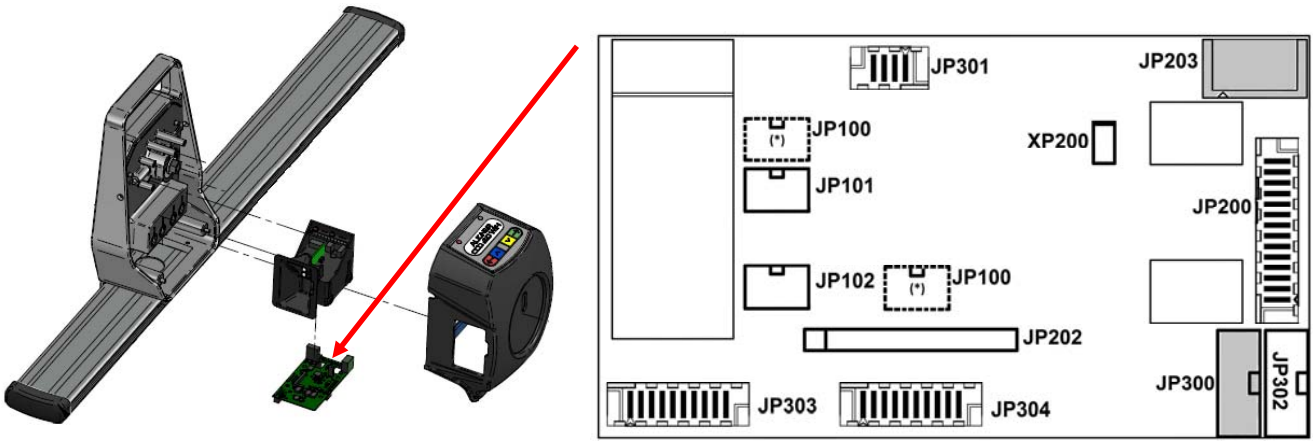
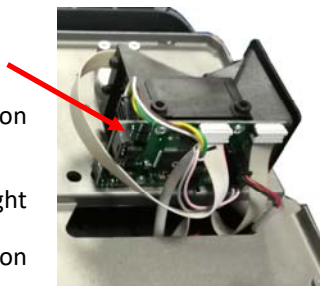


Figure 14

JP100	Battery charger cable - **(*)** *note: this connector can be above JP101 or alongside JP102, depending on the board version*
JP101	Battery charger cable (with serial cable also connected to JP300) - Wiring code 18390
JP102	Battery Cable (where provided) - Wiring cod. 14144 (label JP11)
JP300	Enclosure data connection cable (LOWER SIDE) - Wiring code 18390
JP303	Convergence CCD signal cable - Wiring code 18286
JP304	CCD alignment signal cable - Wiring code 18926
JP301	Detector encoder signal cable (provided only on the rear right detector) Wiring code 18284
JP202	Keypad
JP200	Alphanumeric display (not provided on CCD2.0WiFi models) Wiring code 18282
JP302	Service connector
XP200	Programming jumper

The CPU 20624/20177 board is already integrated with the inclinometer device.



A detector equipped with the CPU 20624/20177 can be recognised from the FW version which is 4.0 (or later) - see chap. 6.1.

The CPU 20624/20177 can be updated with the FW or configured (as Left/Right front/rear model type etc.) through the dedicated SW tool "F.Al.Co.", available on the technical support site.

5 CALIBRATION

5.1 Detectors calibration

The wheel alignment detectors are already calibrated at the factory; moreover, the calibration values are stored in the CPU memory of the detector itself. Therefore, when installing or replacing a detector, it is not necessary to calibrate or configure the equipment with calibration data.
The calibration is performed only in case of replacement of transducers or following ascertained repetitive errors due to movements of transducers (consequently to falls, impacts etc.). Use the following calibration systems according to the models supplied:

1) STDA14 calibration system

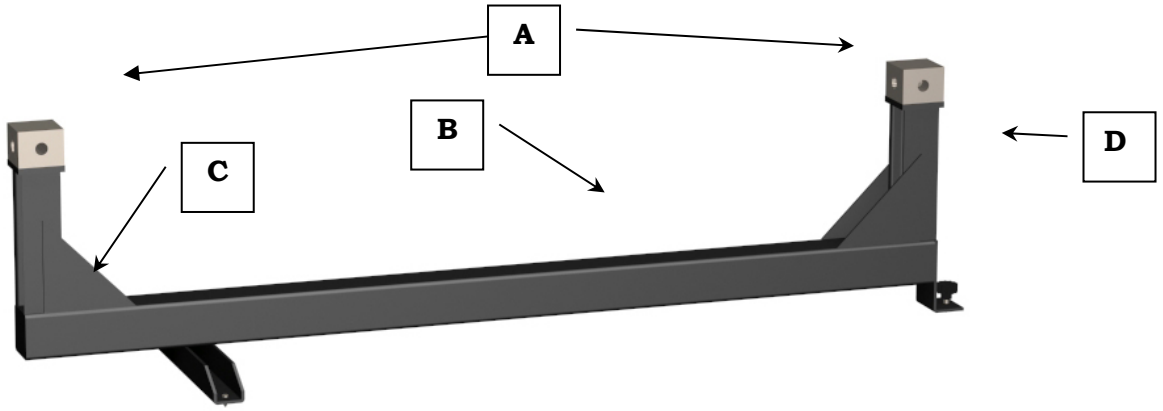


Figure 15

2) STDA14T transportable calibration system

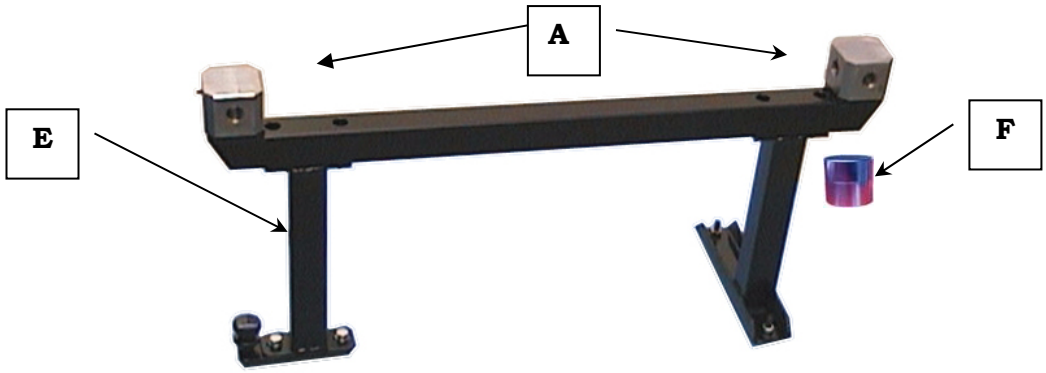


Figure 16

Legend Figure 15, Figure 16

A) Detector fixing knobs
B) Spirit level
C) Standard calibration tool
D) Thickness 3° for standard calibration stand
E) Transportable calibration tool
F) Thickness 3° for transportable calibration stand

Starting from the home page, press the F2 key to enter the Service Menu.

Figure 17

Use the F2/F3 keys to select the "Calibration Menu" option, then confirm with F4.
Access through the following password:
"F8; F7; F6; F8".

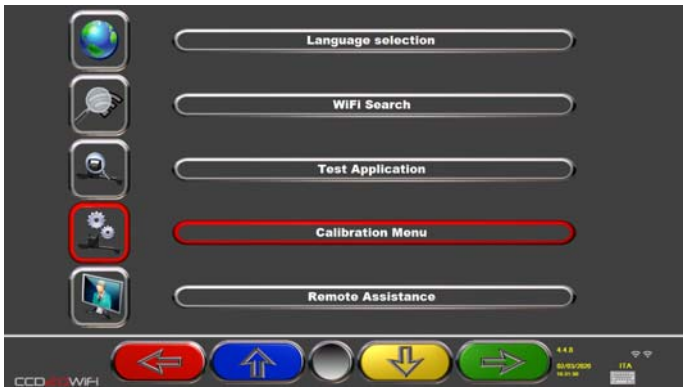


Figure 18

Select, using the F3/F2 keys, the "Detector Calibration" option and confirm with the F4 key.

Figure 19

If required, press F3 to be able to enter the serial numbers of the detectors so that they can eventually be mentioned in the print report.
If necessary, also enter the serial number of the tool and the name of the operator.

Continue by pressing F4.

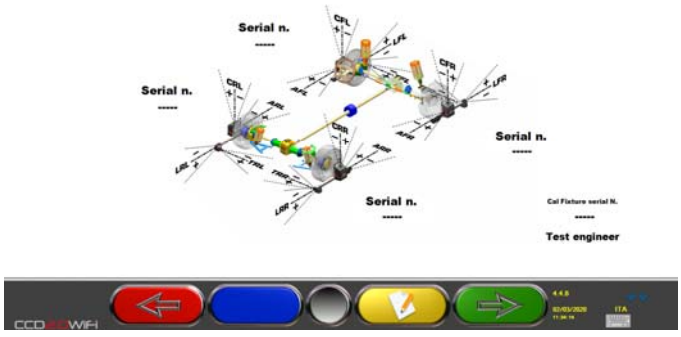


Figure 20

The angles that are calibrated are indicated by the following abbreviations, (see Figure 21).

AFL	Alignment Front Left
AFR	Alignment Front Right
ARL	Alignment Rear Left
ARR	Alignment Rear Right
CFL	Camber Front Left
CFR	Camber Front Right
CRL	Camber Rear Left
CRR	Camber Rear Right
TFL	Toe Front Left
TFR	Toe Front Right
TRL	Toe Rear Left
TRR	Toe Rear Right
LFL	Level Front Left
LFR	Level Front Right
LRL	Level Rear Left
LRR	Level Rear Right

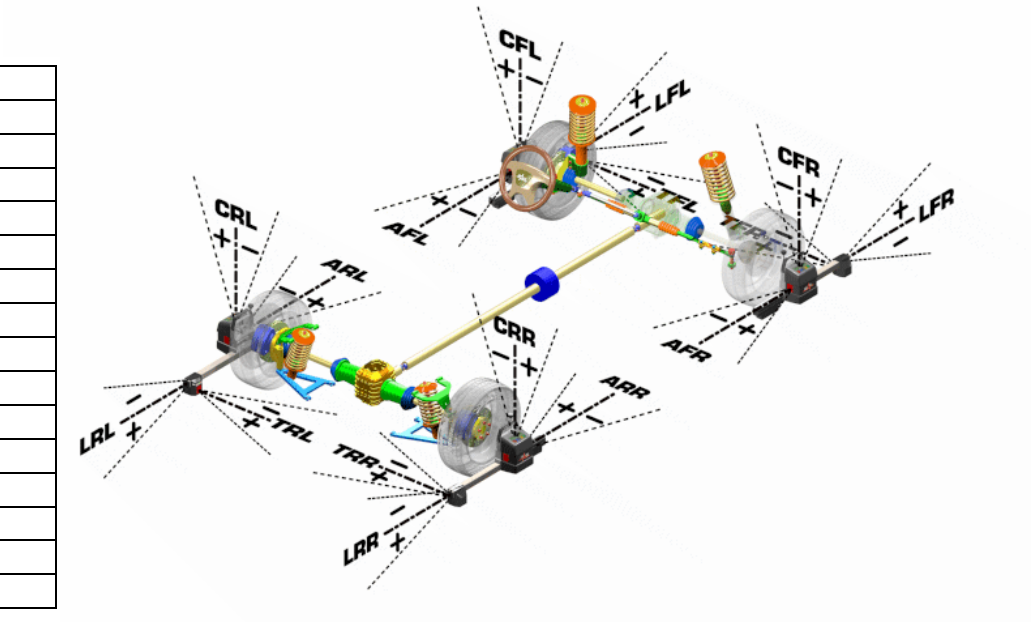


Figure 21

The calibration of the detectors is divided into 8 phases, which are described in detail, also graphically, in the calibration program.

In phases 1 and 2 the front and rear left detectors are mounted and the Alignment and Left Level Gauge angles are calibrated (AFL, ARL, LFL, LRL).

In phases 3 and 4 the front and rear detectors are mounted and the Right Alignment and Level Gauge angles are calibrated (AFR, ARR, LFR, LRR).

In phases 5 and 6 the front left and front right detectors are mounted and the front convergence and inclination angles are calibrated (TFL, TFR, CFL, CFR).

In phases 7 and 8 the rear left and rear right detectors are mounted and the rear convergence and inclination angles are calibrated (TRL, TRR, CRL, CRR).

Figure 22

Legend of the Figure 22:

1 - Detectors calibrated in the current phase
2. Current calibration phase
3 - Calibration phases already acquired
4 - Angle calibrated in the current phase with the relative tolerance
5 - Currently read angular value
6 - Graphical description of the positioning of the detectors on the stand
7- Keys used to perform the calibration phase (F5 or the central key on the detector); it is shown and flashes when it can be pressed.

Press F5 to store the values and then F4 to continue to the next phase.

ATTENTION: the rear transmission always passes through the front ones.

When calibrating the rear sensors (phases 7 and 8) it is necessary to position the front sensors in correspondence, so that data transmission passes through them.

Figure 23

6 TEST PROCEDURES

Through the TEST program it is possible to verify the correct operation of all the devices of the wheel alignment system.
It is necessary to access the TEST procedures menu by pressing the F2 key from the home page, then selecting the "Test Application" option, the Figure 24 page appears.

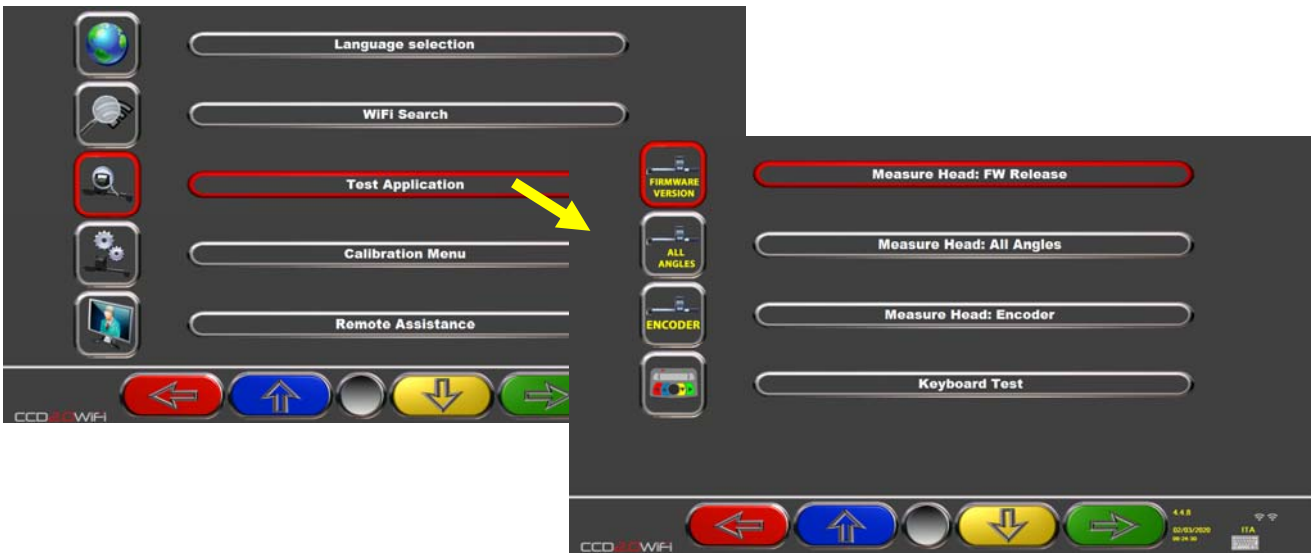


Figure 24

6.1 Reading the FW release (communication test)

The screen shows all the FW versions read by the detectors.
With this test it is possible to verify the communication between the rear and front sensors and between the front sensors and the enclosure.
Press F1 to exit.

Figure 25

Note: The detectors must be equipped with CPU 20624 and 20177 with FW ver.>= 4.1

If possible, always update the detectors to the latest version of FW available.

6.2 Horizontal/vertical angles reading testi

The screen shows all the angle readings from the detectors divided into 5 blocks as follows:

1- Alignment angles (see Figure 27);
2- Convergence angles;
3- Front level gauge and inclination
4- Rear level gauge and inclination
5- All levels with tolerance

Figure 26

Pressing the F5 key displays a figure with a graphic representation of the meaning of the various angles (see Figure 21).
Press F1 to exit.

Figure 27

6.3 Encoder test on detectors

The screen shows the readings of the angular transducers (encoders) mounted on the detector pins. Turning the pin, it is possible to check that the value read corresponds to the rotation angle made (see Figure 28).
The F5 key or grey key on the detector is used to reset the value indicated on the screen.

***ATTENTION: The** CCD2.0WiFi models have the angular transducer (encoder) mounted only on the rear right detector.*

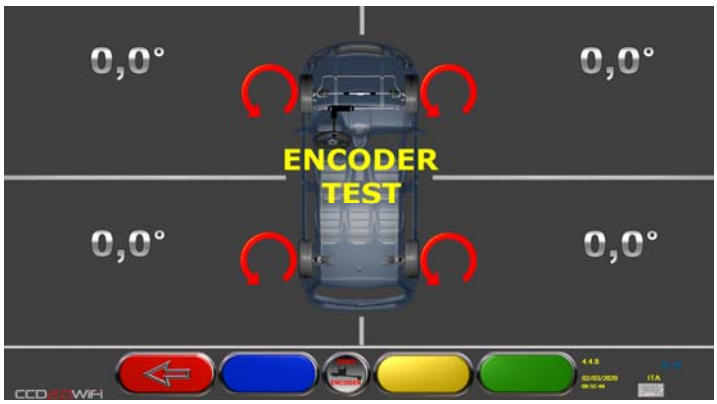


Figure 28

6.4 Test Keypads

The keypads of the 4 detectors are shown on the screen. If a key is repeatedly pressed, the one associated on the screen is coloured and de-coloured alternately (see Figure 29).
Press the F1 key on the PC keyboard to exit.

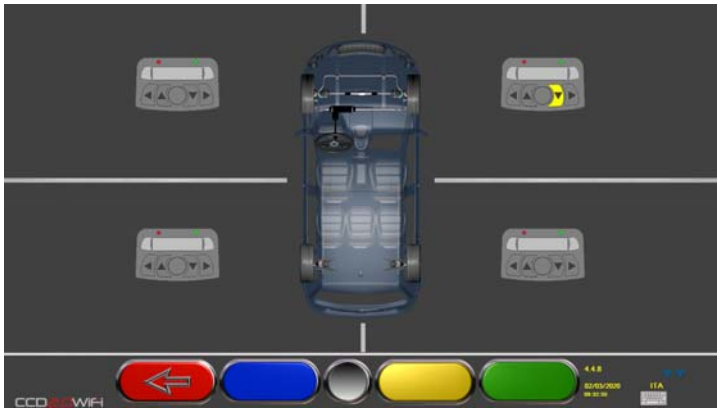


Figure 29