



DYNAMOMETER CS

Technical manual



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CE



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Declaration of Conformity

Declaration of Conformity

Manufacturer: EHP-Wägetechnik GmbH

Address: Dieselstrasse 8

D-77815 Bühl (Baden)

hereby declares that the product: Digital Tensile Force Transducer Type CS

Plant number:

Year of manufacture:

with all options complies with the following harmonized standards:

Machinery Directive 2006/42/EC;

EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11 according to directive 2004/108/EC (electromagnetic compatibility)

EN 61010-031 Part 1/ Safety requirements for electrical equipment for measurement, control and laboratory use

EN 62368-1 Communication equipment - Part 1: Safety requirements

EN 1677-1 Components for slings - Safety - Part 1: Forged components, Grade 8

EN 1677-2 Components for slings - Safety - Part 2: Forged hooks with safety latch, Grade 8

EN 1677-4 Components for slings - Safety - Part 4 Grade 8 forged components

For use as a non-automatic weighing instrument with EC type approval, the requirements according to the DIN EN 45501 guideline are met.

Machinery Directive 2006/42/EC

The crane scale complies with the requirements of the standard EN 13155:2009-08 "Cranes-safetyloose load handling attachments". The following national standards and technical specifications have also been applied: DGUV Rule 100 - 500 Chapter 2.08

The product is marked with the CE mark.

Markus Ebel / Head of Engineering

Bühl, February 2021

This declaration has been prepared in accordance with DIN EN ISO/IEC 17050-1.



Notes on the manual

In this technical manual you will find the necessary information for operating the **CS digital tensile** force transducer.

► Read the operating instructions before operating your crane scale. This will protect you and prevent damage to your device.

► Always keep this manual in a place where employees, service personnel, etc. can view it. Present this manual to the inspector or the contracted specialist company at each recurring inspection.

Design features of this guide

Various elements of this guide have specified design features. This way you can easily distinguish the following elements:

Normal text

- Enumerations
- Action steps

Table titles and figures are in bold.

i) Tips contain additional information.

Figure design features

If elements of a figure are referred to in a legend or in the running text, they are assigned a number (1). The numbers in the running text always refer to the figure shown.



Figure 1 - Explanation design features



Safety instructions

TO NOTE

- Device may only be opened by a specialist!
- Device must be protected from heat and moisture!

Read the operating instructions before operating your crane scale. This will protect you and prevent damage to your equipment. Further notes and warnings can be found at the appropriate place in the text.

Before commissioning:

-Do not set up your device in rooms with a high frost risk (below -10°C) or in rooms with a high temperature (above +40°C). In this temperature range, the balance may be outside its verification error limits.

-Convince yourself that the scale is securely hooked in.

-Obey the accident prevention regulations.

-Keep these operating instructions in a safe place.

When use

-Always make sure that the scale and load are securely attached.

-Never use cleaning agents containing solvents. There is a risk that parts of the device may be damaged.

-Staying under suspended or lifted loads is strictly prohibited!

In case of malfunctions

-Repairs may only be carried out by qualified personnel.

-see chapter 'Troubleshooting' and 'Error detection'.

The electronic digital crane scales operate on the principle of a mechanical-electronic precision measuring system (DMS) with subsequent signal processing. The operator is responsible for the safety of the device. Crane scales are load suspension devices in the sense of DIN EN 13155 and, including accessories such as hooks, shackles and eyes, must be inspected regularly, at the latest,



however, after one year, whereby, in particular, in 3-shift operation, this inspection rhythm must be designed appropriately in accordance with the Operational Safety Ordinance §11; in 3-shift operation, this then results in 4-monthly monitoring, whereby a crack inspection using the electromagnetic crack detection method or the red-white method is appropriate after every 3rd monitoring.

Warranty

The warranty is void in the event of:

- Non-intended use of the manufacturer's specifications in this operating manual
- Application outside the use as a crane scale
- mechanical damage, damage due to moisture and liquids
- mechanical modification of the crane scale
- Wear and tear
- Use of non-original EHP batteries, chargers and mains supplies.
- Manipulation of the loading device
- Sensor overload
- Modification or replacement of the supporting parts



Scope of delivery

• CS digital tensile force transducer (factory calibrated)



Figure 2- Scope of delivery: Digital tensile force transducer incl. accessories in protective case

The following accessories are included as standard:

- 2x shackle
- DRC 433 radio remote control
- Charger for DRC 433 radio remote control
- Charger for CS tensile force transducer
- Protective case



Product overview

Control panel



Figure 3 -Control panel of the CS digital tensile force transducer

The crane scale can be operated via the integrated control panel below the LED display.

| Кеу | Function | | |
|-----|--|--|--|
| | Fower-On Turns on the scale Activates the automatic segment control of the display The scale then automatically sets itself to "0". Always switch on the scale 5 minutes before the first weighing operation. If the preload (sling) is greater than 20%-30% of the nominal load, only the + sign lights up. The scale then switches off again. The normal operating mode is only reached again by reducing the preload and switching on again. | | |
| 0 | Power-Off Turns off the scale Switching the balance on and off resets temporary errors (reset function). | | |



| ŤĘSŤ | Test The test key is only relevant for service activities performed by the EHP repair service. This key has no function for the end customer. |
|------|--|
| | TARA (subtractive) is activated Scale stores the current weight value in the tare memory The display shows "0" Net LED lights up Pressing the TARE key again resets the tare function, clears the tare memory and the display shows the gross weight again. Net LED goes out |
| +0+ | Zero key Sets display to "0" (semi-automatic zeroing device) Zero setting range: -1 to +3% of nominal load (model LDN - calibratable); max. zero setting range: -99 to +99% of nominal load (model LD - non-calibratable) Zeroing" is not possible outside the zeroing range and in tare mode. The sign symbol only lights up outside the 1/4d range. |





| Display indication | Explanation |
|-----------------------|--|
| | Display general The display consists of a 5-digit, 7-segment LED. |
| | Standstill display The illuminated symbol means that the load is hanging steady on the scale and a valid weight value is displayed. |
| | Net weight symbol This symbol lights up when a tare value has been entered. The weight value displayed is a net weight. |
| | Symbol for battery control When the battery indicator lights up, the scale's rechargeable batteries or batteries must be changed. |
| • - | Sign symbol Each weight value is displayed together with its sign. |



Operation DRC radio remote control



The DRC 433 is equipped with an infrared transmitter, USB port and a charging socket on the top (1). The OLED display (2) and the input keypad (3) are located on the front.

Connections



Figure 4 - Top side DRC 433

The infrared transmitter (1), the USB port (2) and the charging socket (3) are located on the top.

Via the USB connection (2), weighing data can be transferred to the PC and processed further using optionally available software. As long as the DRC 433 is connected via the USB port, power is also supplied via this port.

The DRC 433 can be charged using the supplied power supply unit. Plug the power supply unit into the socket, the internal spar plug fits into the charging socket (3) on the front of the DRC433 with reverse polarity protection. The charging process is started automatically.



When the DRC 433 is switched on, a charging animation is shown in the display as long as the battery is being charged. As soon as the battery is fully charged, the animation stops. The remote control can also be charged when it is switched off.

The charger is equipped with overcharge protection and charge retention. You can therefore leave the charger connected for a longer period of time. The capacity of the supplied batteries is sufficient for approx. 8-16 operating hours. The standby time is approx. 2 weeks.

NOTE

Instead of the supplied rechargeable batteries, commercially available batteries can also be used as an alternative.

When using batteries, the supplied charger must not be connected. This may cause damage to the DRC 433!

OLED display

There are 2 displays available on the DRC 433. Display A is the detailed view, which shows all important values. Display B is the simplified operator view (net display).

| Display A (de | tail view) | Display B (operat | tor view) |
|-----------------|-------------------|-------------------|-----------|
| B: 5 T: + 0; | ····· 14:07:03 | B 14:07:19 23:09: | 19 📖 |
| N: 5 ; | 23:09:19 | | |

In the detail view, the display shows the following values:





In addition, the following icons can be displayed:

| Υ | flashes during data reception |
|-----------|--|
| P A T | Indicates whether weighing data is stored via Print, Add or Tare key |

In the operator view, the display shows the following values:



Input keyboard

Switch the DRC 433 on or off by pressing and holding the "Tara | 1 | ψ" key on the input keypad (**Figure** 5). The operation of the DRC 433 is divided into 3 key levels.



Figure 5 - Key levels

- The **black key level (1) is** reached by briefly pressing the operating keys. This allows you to operate the basic functions of the balance.



- The **blue key level (2)** is active for code entry on the scale, as well as for the entry of accompanying data. Numeric and alphanumeric input of the code of the balance and/or the setpoint specifications of the balance (see also operating instructions of the balance).

- You reach the **red key level (3)** by pressing the keys for a longer time. If you are in the setup menu of the DRC 433, the red key level controls the menu functions.

| Key | Function |
|--------------|--|
| | Black: Activates and deactivates the tare function of the scale |
| Tara 1 | Blue: The numerical values can be used for weight, code value or for delivery note number input |
| | Red: Long press switches the DRC 433 on or off. |
| Print 2 | Black : Activates the printout on auxiliary devices, starts the storage process on the DRC 433 and other weighing data receiving devices. |
| | Blue: The numerical values can be used for weight, code value or for delivery note number input |
| | Red: Control key Setup, value upwards |
| | Black: Resets the scale display to 0 kg |
| >0< 3 Num | Blue: The numerical values can be used for weight, code value or for delivery note number input |
| | Red : Press and hold to open delivery bill editing (see also section Fehler! Verweisquelle konnte nicht gefunden werden. on page Fehler! Textmarke nicht definiert.) |
| | Black : Starts the adding function on the DRC 433 and on other weighing data receiving devices. |
| Add 4 🖛 | Blue: The numerical values can be used for weight, code value or for delivery note number input |
| | Red: Control key Setup, exit menu without saving |
| | Black: Range selection 1/2 Weighing range of the scale |
| 1/2 | Blue: The numerical values can be used for weight, code value or for delivery note number input |
| | Red: Control key Setup, Saves menu value |
| | Black : Activates the save/print operation of the added weighing data acquired with the Add key. |
| Total 6 • | Blue: The numerical values can be used for weight, code value or for delivery note number input |
| | Red: Control key Setup, open submenu |



| Key | Function |
|--------------------------|---|
| | Black: Activates the test function of the scale |
| Test 7 _{Esc} | Blue: The numerical values can be used for weight, code value or for delivery note number input |
| | Red: Control key Setup, Setup abort |
| | Black : Switches the scale off. Note: If the scale is switched off, the DRC 433 also switches off automatically. Press key longer Switches the scale on. |
| Off 8 | Blue: The numerical values can be used for weight, code value or for delivery note number input |
| | Red: Control key Setup, value down; Long press turns the scale on. |
| | Black : Activates and deactivates the peak value display on the scale or activates and deactivates the pouring rate display on the scale |
| Peak 9 Menu | Blue: The numerical values can be used for weight, code value or for delivery note number input |
| | Red: Long press opens the setup menu |
| | Black: Activates the PT function of the scale |
| рт 0 | Blue: The numerical values can be used for weight, code value or for delivery note number input |
| Shift | Black: Opens the 2nd operating level of the scale |
| Display A | Red: Long press, change to detailed view. |
| Enter | Black: Closes the 2nd operating level of the scale |
| Display B | Red: Long press, change to operator view. |

Menu

The settings of the DRC 433 are intuitive:

| Open the settings menu by pressing and holding the (Menu) key. | Peak 9 Menu |
|---|------------------------|
| The desired menu item can be selected using the arrow keys ($\uparrow \mid \downarrow$). | Print Off 2 1 8 4 |
| Press (\rightarrow) to open the respective menu item. Press (\leftarrow) to exit the menu item without making any changes. | Total Add 6 + 4 + |
| With (OK) changed values are saved and the main menu is closed. Press (ESC) to exit the menu without saving. | Test 1/2 7 Esc 5 OK |



| Menu list | Setting values | Function |
|---|---|---|
| Language | GermanEnglish | Changing the menu language |
| Clock | Format: • DD/MM/YY • MM/DD/YY • YY/MM/DD Time: hh : mm : ss Date: xx : xx : xx | Setting the date/time values. |
| Scale no. | 0199 | Setting the scale number. The scale number on the DRC433 must correspond to the number of the crane scale. |
| Channel no. | 01 28 High Range Radio 30 39 Low Range Radio | Setting the radio channel number. The channel number on the DRC433 must correspond to the number of the crane scale. |
| Display type | Display ADisplay B | Selection of the preferred display view to be shown when the DRC 433 is switched on. |
| SD card | • Yes • No | Selection whether an SD card must be inserted in the DRC433. If the setting value is set to Yes and no SD card is inserted, an error message appears |
| PAT waiting time (Print, Add, Total) | Min: 00:00 Max: 60:00 | Print, Add, Total (PAT) is transmitted only after the time set here. If a waiting time value is entered, the activated timer is symbolized by flashing "P" in the display of the DRC 433 when the Print, Add or Total function is activated. |
| Radio response | YesNo | Select setting value "Yes" if DRC 433 is used as the only receiving device. |



| Menu list | Setting values | Function |
|-----------------|--|---|
| | | Select the "No" setting if other weighing data receiving devices are used in addition to DRC 433 (e.g. Telebox SPS, USB Box, Teledata, etc.). |
| Contrast | UPDOWN | UP: Increase display brightness DOWN: Decrease display brightness |
| Firmware > | V2.01.0 06 01.03.16 | Display of firmware and firmware release date |
| Commands per | RadioInfrared | Selection of the transmission mode to the scale |

Troubleshooting

| Malfunction | Cause | Remedy |
|--|---|---|
| Display dark | No power | Check that the scale is switched on. |
| | | Check if the accumulator is charged. |
| | | Check the condition of the fuse. |
| Display briefly shows the "+" sign after switching on and then switches off automatically. | The balance is outside the switch-on zero setting range | Switch off the balance, unload it and switch it on again. |
| Display flashes | Balance overload | Reduce the weight to a value below the maximum load of the scale (see load plate on the right side of the scale). |
| Display shows OL | Severe overload of the scale | Immediately reduce the weight to a value below the maximum load of the scale (see load plate on the right side of the scale). |
| Scale can no longer be switched off. | Negative weight value recorded outside the zero setting range (3% of the load on verified scales). | Turn the fuse out and back in and switch the device on again. |
| Balance cannot be 'zeroed | Balance is out of zeroing range (only with LDN - verified balance) | Reduce the load within the zeroing range of the verified scale. |
| | The balance is in TARE mode, the Net LED is lit. | Press the TARE key again to exit the TARE mode of the balance. |
| | Load oscillates and exact weight value cannot be recorded | Allow the load to settle / carefully pick up the load again, wait for the standstill display. |
| Weight display fluctuates very strongly. | Load restless | Pick up load more carefully. |



| Malfunction | Cause | Remedy | | | | | |
|--------------------------------------|---|---|--|--|--|--|--|
| | Balance has been subjected to very strong heat fluctuations, condensation | Turn off balance and let it adjust to ambient temperature for several hours. | | | | | |
| The battery can no longer be charged | Charger | Check power supply charger. | | | | | |
| | Battery / LED charger remains green | The battery has been deeply discharged, leave the battery on the charger for 48 hours, if the battery still does not take a charge, it is defective. | | | | | |
| | Battery gets hot during charging | Battery worn out. | | | | | |



Error detection

Automatic error detection routines cyclically check the proper functioning of the crane scale and ensure error-free operation. A constant visual check is no longer necessary.

If an error occurs, it is automatically indicated on the display in the form of an error code (see table). Weighing operation is then no longer possible. The balance switches off automatically after approx. 5 seconds.

| Error code | Cause | Remedy | | | | | |
|------------|--|--|--|--|--|--|--|
| Err O2 | The input voltage of the measuring amplifier is too small. | Switch the scale off and on again. Notify customer service. | | | | | |
| Err O3 | The input voltage of the measuring amplifier is too high. | Switch the scale off and on again. Notify customer service. | | | | | |
| Err 04 | AD converter error | Switch the scale off and on again. Notify customer service. | | | | | |
| Err 05 | Radio modem error | An incorrect channel has been set or the modem is defective. | | | | | |



| | | 10 | | | | | | | | | | | |
|---|--------------------------------|------------|---|-------|--|---|--|--|--|------|--|--|---|
| Fabrication Number: Inspector Company Scale without defect | | See | | | | | | | | | | | |
| | it defect | 9 | | | | | | | | | | | |
| | cale withou | 2 S | | | | | | | | | | | |
| | Š | ye | - | _ | | | | | | | | | _ |
| | Company | | | | | | | | | | | | |
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| | Ins Acc | Ja | | | | | | | | | | | |
| | ection | 8 | | | | | | | | | | | |
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| _ | Inspe Load | Ja | | | | | | | | | | | |
| | ttion of rts anded | No | | | | | | | | | | | |
| | Inspec pa demá on sti | Yes | | | | | | | | | | | |
| | ration/ ML roval | No | | | | | | | | | | | |
| | Calib OI appi | Yes | | | | | | | | | | | |
| C. | Order number | | | | | | | | | | | | |
| Increction | Inspection date | | | | | | | | | | | | |



EHP service hotline

Do you need our support in the fastest way? No problem - just call us free of charge.



Hotline: +49 7223 9366-0

You can reach us Monday through Thursday between 8:00 am and 4:00 pm and Friday between 8:00 am and 12:00 pm.





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