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Instruction Manual Adjustment Tool R58/135

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Instruction Manual
Adjustment Tool R58/135

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Author:	Ralf Utzig
Check:	07.03.2022 Chantal Schmuecker
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1 General

1.1 Overview of changes

Stand	Editor	Date	Auditor	Date	Reason for changes
00	JL	10.01.2019			New creation
0A	JL	12.05.2020			Version 2.01
0A	JL	09.06.2020			Revision
0B	JL	26.11.2020			Logging added, DSS250-45 split into CU and CI.
0C	RU	03.02.2022			Translation UK

Table 1: Overview of changes

1.2 Safety instructions

The safety instructions used in this document are listed here. Please note that it is essential to follow these instructions in order to avoid possible property damage or personal injury.

Symbol	Signal word	Explanation
	Tip	Useful recommendations are given at this point.
	Attention	Such warnings indicate possible personal injury and/or damage to property. Follow the instructions carefully to prevent such dangers being caused by the unit.
	Hint	At this point attention is drawn to possible problems.

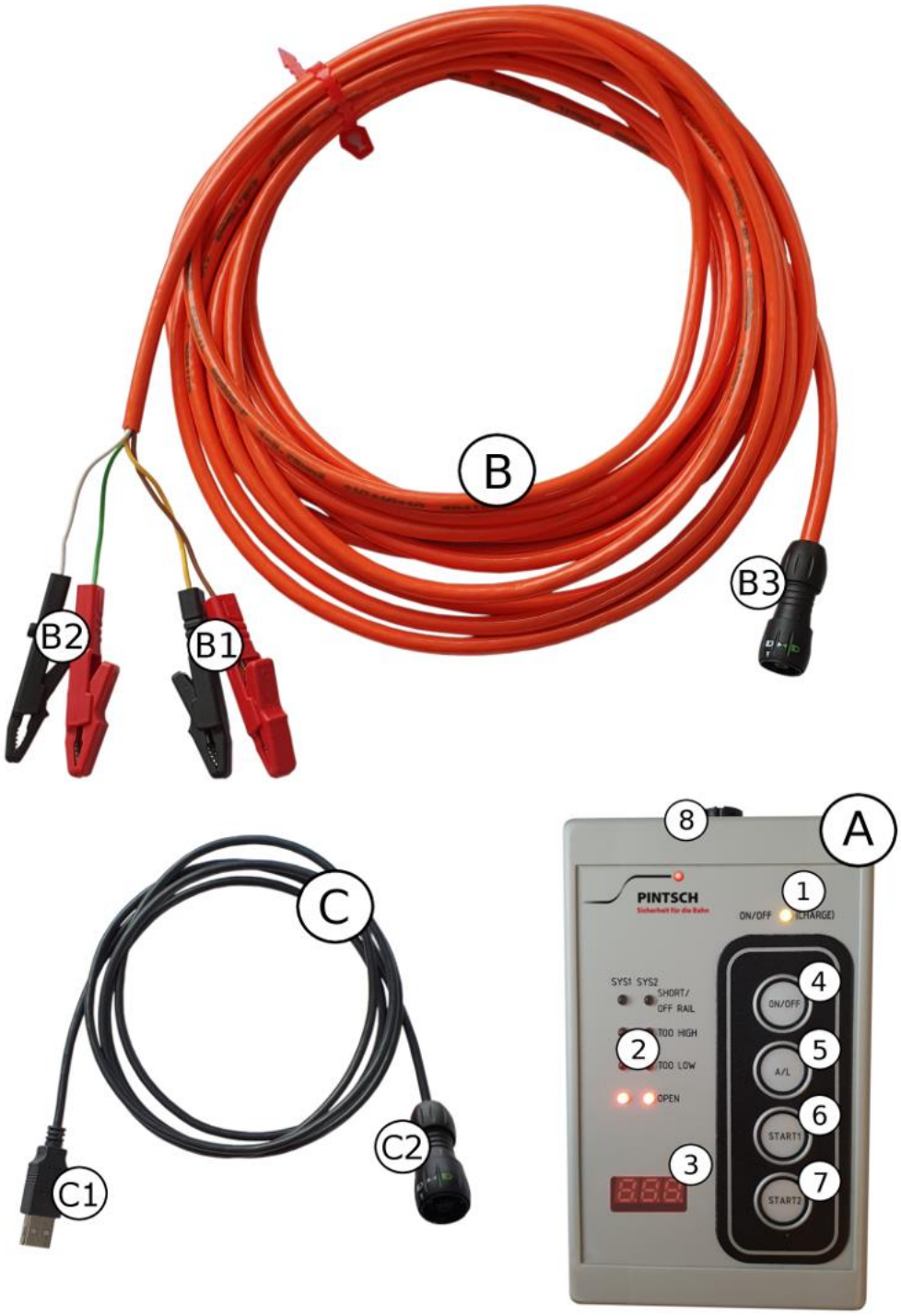
Table 2: Safety instructions

1.3 Firmware Version

	This instruction manual for the R58/135 is only valid for firmware version **V2.04**. The firmware version is shown on the 7-segment display for about 1 second when the R58/135 is started.

Table 3: Firmware version

2 Delivery contents and overview



Number	Name	Order number
A	Adjustment tool R58/135	
B	DSS connection cable 2-092097	
C	USB charging cable 2-092098	

Table 4: Delivery contents

Number	Description
1	ON/OFF LED
2	System LEDs
3	7-segment display
4	ON/OFF button
5	A/L button
6	START1 button
7	START2 button
8	Connectors for DSS / USB connection
B1	DSS connection terminals system 1
B2	DSS connection terminals system 2
B3	Connection plug to R58/135
C1	USB A plug
C2	Connection plug to R58/135

Table 5: Overview of connections, buttons and displays

3 Instruction manual

3.1 Initial operation

For initial operation, please follow the steps below first:

1. Before using the R58/135 for the first time, fully charge the battery. A detailed description of how to charge the battery can be found in chapter 3.9 "Charging the R58/135".

2. Press the ON/OFF button to switch on the R58/135.

a)

> 2 seconds

b)

c)

> 2 seconds

3. Set the desired wheel sensor type.

   To set the desired wheel sensor type, please proceed as follows:

   a. Press the **START1** (6) and **START2** (7) buttons simultaneously for about 3 seconds. After releasing both buttons, the currently set wheel sensor type is shown on the 7-segment display (3).

   b. Press the **START1** button (6) repeatedly until the correct wheel sensor type is displayed. The wheel sensor types that can be set are:

Name	Type
DSS250-40 (DSS-200-40*)	8V, 3,2mA, constant current
DSS250-45CU (DSS-200-45CU*)	8V Namur
DSS250-45C I(DSS-200-45CI*)	8V, 3,2mA, constant current
DSS500-40 (DSS-400-40*)	10V, 5,0mA, constant current

   * The R58/135 can also be used to adjust 200 and 400 series wheel sensors. For details please refer to chapter 3.4 "Adjusting wheel sensors of the 200 and 400 series".

   On the DSS250-45, "CU" stands for constant voltage (NAMUR) and "CI" for constant current operation.

   c. Press the **START2** button (7) until "**STO**" appears on the 7-segment display (3). After releasing the button, the new wheel sensor type is set.

	The set wheel sensor type is stored in the R58/135 even after it is switched off. If you always calibrate the same wheel sensor type, it is only necessary to set the wheel sensor type once.
	The setting of the wheel sensor type is not accessible during manual adjustment or when automatic adjustment is running.

If another wheel sensor type is to be calibrated, repeat steps a) to c) to set the desired type.

Now the R58/135 is ready for operation and can be used for automatic or manual adjustment of the set wheel sensor type. For details, please refer to chapters 3.2 "Automatic wheel sensor adjustment", 3.3 "Manual wheel sensor adjustment" and 3.4 "Adjusting wheel sensors of the 200 and 400 series".

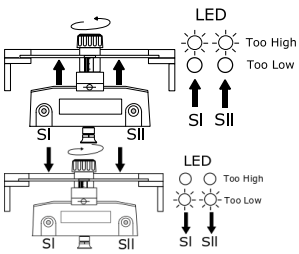
3.2 Automatic wheel sensor adjustment

Automatic adjustment is only possible with wheel sensors of the 250 and 500 series.

To automatically align the two systems of a wheel sensor, please proceed as follows:

1. Connect the wheel sensor to be calibrated to the corresponding connection on the R58/135 (8).

⚠	Never connect the R58/135 to a mounted wheel sensor during a thunderstorm or in general when there is a risk of lightning striking the rail.



2. Dampen the wheel sensor at the desired switching distance, e.g. with an SSPV (for more information on the switching distance to be set and the SSPV to be used, please refer to the installation instructions of the corresponding wheel sensor).
   The SSPV must be placed centrally on the wheel sensor (observe the marking on the wheel sensor) and be in contact with the rail head.
   Then turn the adjusting wheel of the SSPV until the desired switching distance is set.

⚠	The instructions in the wheel sensor installation manual must always be followed.

3. Press the **START1** button (6) to automatically calibrate system 1. At the end of the automatic adjustment, one of the following messages is displayed on the 7-segment display (3):

Message	Description
iO	The automatic adjustment was successful. The set calibration value is then shown on the 7-segment display and the R58/135 changes to the default state.
ERR CAL, niO	The automatic adjustment was not successful. Check that the correct wheel sensor type is set and, if necessary, change the set damping a little within the permitted tolerance range (see step 2).
ERR COM	No connection could be made to the wheel sensor. Check that the wheel sensor is correctly connected to the R58/135.

4. Press the **START2** button (7) to automatically calibrate system 2.
   Proceed as in step 3.

	The automatic adjustment by the R58/135 is only a pre-setting of the wheel sensor. The correct adjustment of the wheel sensor must always be checked at the corresponding interface module. If necessary, change the adjustment value manually until the adjustment is correct according to the interface module.
	The automatic adjustment cannot be started during the manual adjustment of the wheel sensor or while changing the wheel sensor type.

3.3 Manual wheel sensor adjustment

Manual calibration is only possible with wheel sensors of the 250 and 500 series.

To correct the automatic adjustment or to manually adjust a wheel sensor, please proceed as follows:

1. Connect the wheel sensor to be calibrated to the corresponding connection on the R58/135 (8).

	Never connect the R58/135 to a mounted wheel sensor during a thunderstorm or in general when there is a risk of lightning striking the rail.

2. Press the **A/L** button (5) repeatedly until the adjustment value of the desired system is displayed on the 7-segment display (3). It may take a few seconds for the adjustment value to be retrieved from the wheel sensor and displayed on the R58/135.

	For details on switching the 7-segment display, please refer to chapter 0 "Display modes of the 7-segment display"

If the error message "**ERR**" appears, no connection to the wheel sensor could be established. In this case, check whether the wheel sensor is correctly connected to the R58/135.

> 2 seconds

3. Press the **A/L** button (5) until "**CHA**" is displayed on the 7-segment display (3) and then release it. The adjustment value starts flashing after a few seconds.

4. Press the **START1** button (6) to increase the adjustment value or **START2** (7) to decrease the adjustment value. The maximum adjustment value is 255, the minimum adjustment value is 0.
   Please note that an increase of the adjustment value leads to a decrease of the switching distance and vice versa.

	Press the START1 button for more than 5 seconds to set the adjustment value to 255. Press the START2 button for more than 5 seconds to set the adjustment value to 0.

> 2 seconds

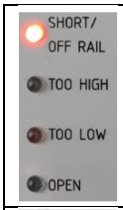
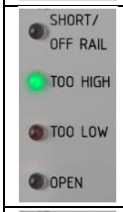
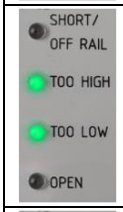
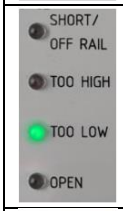
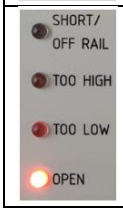
5. When the adjustment value is set as desired, press the **A/L** button (5) until "**STO**" is displayed on the 7-segment display (3) to save the adjustment value and return to the adjustment value display.

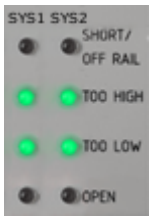
3.4 Adjusting wheel sensors of the 200 and 400 series

Wheel sensors of the 200 and 400 series can also be calibrated with the R58/135. However, neither the automatic nor the manual adjustment of the wheel sensor can be used.
Instead, the R58/135 serves as an indicator for the switching point of the wheel sensor.
To adjust a wheel sensor of the 200 or 400 series with the R58/135, please proceed as follows:

Follow the installation instructions for the corresponding wheel sensor.

Here, the system status LEDs (2) of the R58/135 serve as an aid for aligning the individual systems of the wheel sensor. The following states are possible for each system independently of each other:

	**Short / Off Rail**	There is a short circuit in the system, or the looseness detection has been activated.
	**Too High**	SSPV is set too high.
	**OK**	SSPV is set to the height of the switching point.
	**Too Low**	SSPV is set too low.
	**Open**	There is a wire break in the system, or no wheel sensor is connected.

	The wheel sensor is correctly calibrated when the SSPV is set to the correct switching distance and both green LEDs are illuminated in both systems.

	The system LEDs only serve as an aid when calibrating the wheel sensor. The correct adjustment of the wheel sensor must always be checked on the corresponding interface module.

3.5 Switching on and off

	To **switch on** the R58/135, press the **ON/OFF** button (4). After switching on, the firmware version is displayed on the 7-segment display for about one second. The R58/135 is ready for operation as soon as the firmware version on the 7-segment display disappears.
 > 2 seconds < 5 seconds	To **switch off** the R58/135, press the **ON/OFF** button (4) until "**OFF**" appears on the 7-segment display (3) and then release it.

3.6 Display modes of the 7-segment display

Various information can be displayed on the 7-segment display.

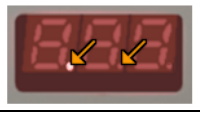
- No display
- Voltage on system 1
- Voltage on system 2
- Adjustment value system 1
- Adjustment value system 2
- Battery voltage

	To select a display mode, press the **A/L** button (5) repeatedly until the desired information is displayed.

The decimal points of the 7-segment display indicate which information is currently being displayed:

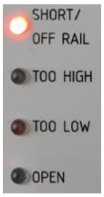
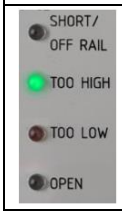
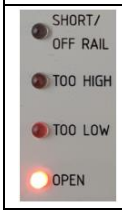
	System 1	The right decimal point indicates the system displayed. If the right decimal point is lit, system 2 is displayed; if it is not lit, system 1 is displayed.
	System 2	

The two decimal points on the left indicate the type of value.

	Adjustment value	If neither of the two left decimal points is illuminated, an adjustment value is involved.
	System voltage	If one of the two left decimal points is illuminated, a system voltage value is involved.
		
	Battery voltage	If all three decimal points are illuminated, the battery voltage is involved.

3.7 System status LEDs

The system status LEDs serve as an aid for adjusting the wheel sensor. The set switching distance is shown here for each system in each case:

	**Short / Off Rail**	There is a short circuit in the system, or the looseness detection has been activated.
	**Too High**	SSPV is set too high.
	OK	SSPV is set to the height of the switching point.
	Too Low	SSPV is set too low.
	**Open**	There is a wire break in the system, or no wheel sensor is connected.

	The system LEDs only serve as an aid when calibrating the wheel sensor. The correct adjustment of the wheel sensor must always be checked on the corresponding interface module.

3.8 ON/OFF LED

The ON/OFF LED (1) indicates the operation of the R58/135. In addition, the status of the battery and Bluetooth are displayed. The LED can be yellow or red. The following light patterns are possible:

Colour	Flashing frequency	Meaning
Yellow	Permanently on	R58/135 is in operation.
Yellow	Slow	R58/135 is off and charging.
Yellow	Fast	R58/135 is in operation and Bluetooth is switched on.
Red	Slow	The battery voltage is low. The R58/135 needs to be recharged.
Red	fast	An error occurred during charging.

Table 6: Possible states of the ON/OFF LED

3.9 Charging the R58/135

To charge the R58/135, connect the enclosed USB cable (C2) to the connector (8) provided on the R58/135. The R58/135 can thus be charged at any standard 5V USB connection (C1).

4 Advanced functions

4.1 Service interface

The R58/135 is equipped with a service interface that can be controlled via USB and/or Bluetooth.

4.1.1 Logging

With each automatic adjustment, the process is saved in the internal flash memory of the R58/135. The following values are logged in each case:

Value	Description
Date	The date set in the R58/135 during adjustment
Time	The time set in the R58/135 during adjustment
Serial number	The serial number of the wheel sensor
System	The adjusted sensor system (1 or 2)
Adjustment value	The adjusted adjustment value (0 to 255)
Voltage	The voltage at the sensor system after adjustment
Error	Any errors that may have occurred. If an error has occurred, the voltage and adjustment value are always 0.

The memory is limited to 256 log entries. Therefore, it is strongly advised to clear the log memory before use and to read out the log data immediately after operation.

4.1.2 Communication with the R58/135

All commands to the R58/135 via the serial interface must be terminated with a carriage return. Please set your terminal program accordingly.

To send commands to the R58/135 via the serial interface, please proceed as follows:

1. Connect the R58/135 to the USB interface of a PC using the enclosed cable.
2. Start a common terminal programme (e.g. Putty or HTerm) and connect serially to the corresponding COM port of the R58/135.
3. Enter the command **#E**.

Now you are in expert mode. The following commands can be executed here:

Command	Description
#R	Read out log memory
#@	Delete log memory
#i	Read out status information of the R58/135

4.2 Bluetooth

> 5 seconds

Bluetooth can be activated and deactivated by pressing and holding the ON/OFF button (4). When Bluetooth is activated, all service functions can also be used via Bluetooth as with a connection via USB.

	Make sure to switch on Bluetooth only when it is really needed, as the battery life is significantly reduced when Bluetooth is switched on. You can see whether Bluetooth is switched on by the ON/OFF LED (see chapter 0). Equipping the R58/135 with the corresponding Bluetooth module is optional.

4.3 E.g. Manufacturer Information

PINTSCH GmbH
Hünxer Str. 149
D – 46537 Dinslaken
Postfach 10 04 20
D – 46524 Dinslaken

Telefon +49 (0) 2064 / 602-0
Telefax +49 (0) 2064 / 602-266

info@pintsch.net
www.pintsch.net

PINTSCH
Safety for Rail

PINTSCH GmbH
Hünxer Str. 149
46537 Dinslaken
Germany

T +49 20 64 602-0
F +49 20 64 602-266

info@pintsch.net
www.pintsch.net