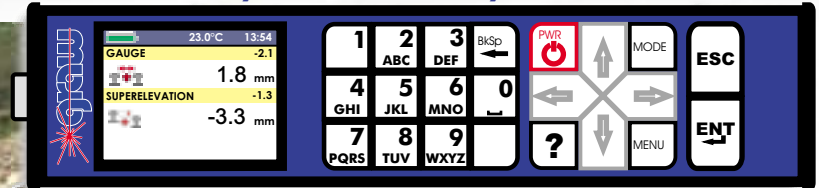


# Digital Track and Turnout Gauge DTG - 1435

*As easy to use as your mobile ...*



Digital  
Lightweight  
Accurate  
Reliable  
Rain and frost resistant



23.0°C		13:54	
GAUGE		-2.1	
1.8 mm			
SUPERELEVATION		-1.3	
-3.3 mm			

Track measurement

23.0°C		13:54	
RIGHT GROOVE		44.0	
44.8 mm			
RIGHT CHECK RAIL WIDTH		1395.2	
1395.1 mm			

Turnout measurement

## Measures track and turnouts:

- Track gauge: -20mm +55 mm
- Cant: 200 mm
- Right and left grooves, switch point gap: up to 200 mm
- Guiding gauge and width of guides - entire range
- Accuracy: 0.3 mm
- Weight: 2.4 kg
- Memory capacity: 500 km of track or 1000 turnouts
- Operation temperature: -20 , +45°C; temperature compensation of readings
- Backlit display; readable even in direct sunlight
- Instrument is insulated; ready to work immediately after switching on
- Operation time when fully charged: 24 h

Software delivered with the instrument makes it possible to download the readings to the PC and generate measurement reports.

**P.U.T. GRAW sp. z o.o.**

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tel./fax +48 (32) 231 70 91, e-mail: info@graw.com, www.graw.com



# How to measure

## Measure track and turnouts ... day and night ...

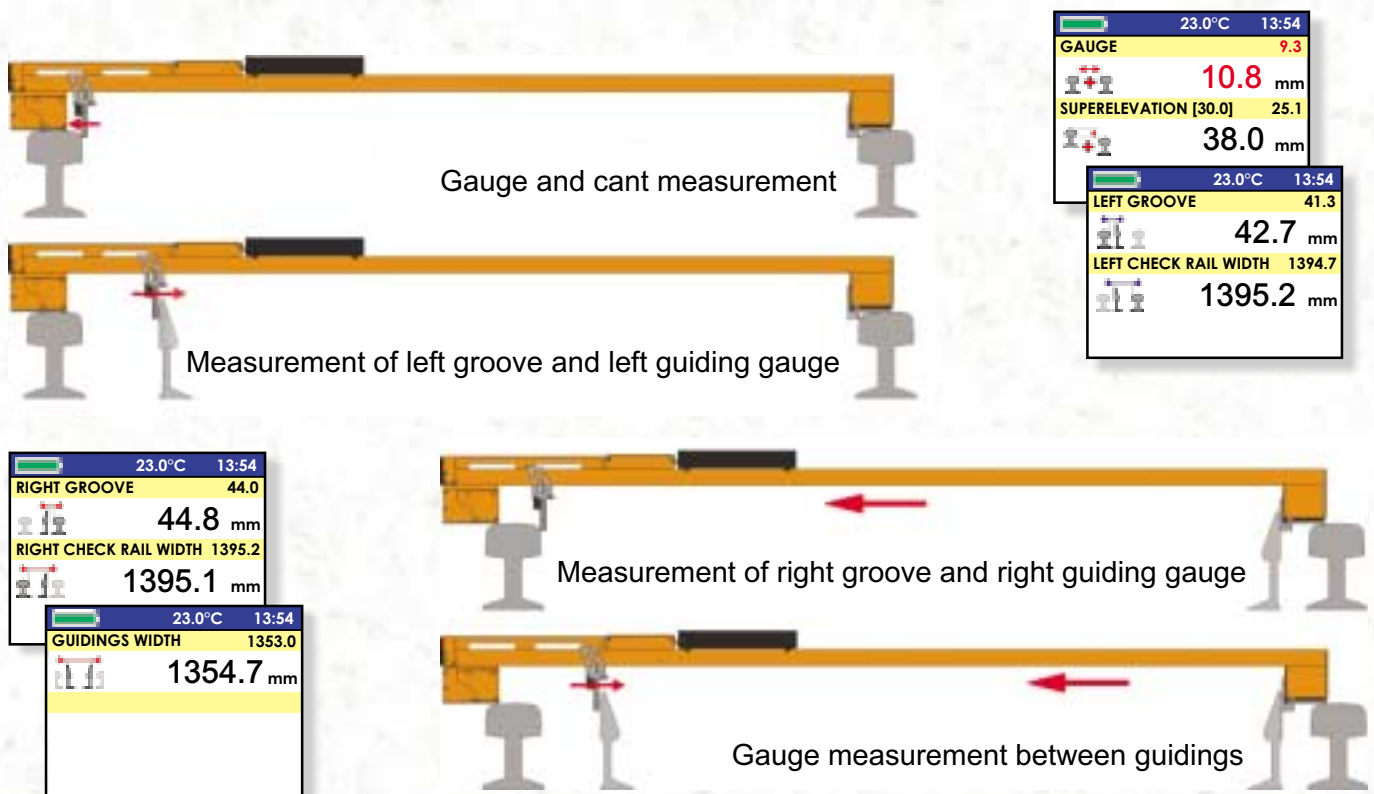
The gauge is designed for measurement of track and turnouts. All measured values are displayed on the bright display, the information is legible even in the sunshine, and its backlight makes it possible to use the gauge at night also. The device does not need any calibration and has the temperature compensation.

## Stay informed about any tolerance exceedings

One can enter tolerances for all measured parameters, so that each reading is automatically categorized as correct or out of specs, which is also denoted by displaying them with red font. Gauge screen has also several controls, like battery condition icon, and current temperature and time display.

## Store your visual inspection results

All gauge readings can be memorised along with the additional information acquired from the visual inspection, like broken bolts, bridges, platforms, etc. Each visual inspection entry selected from the list can be annotated - the text is entered using the control unit keyboard.



## Let your PC do the reporting for you - if you need it ...

The gauge may be used in two modes - the read only mode and the save mode. The gauge in the read only mode displays all measured parameters and does not store them in the memory. The save mode, lets the user to store all time-stamped measured values for further use and processing with the included PC software.



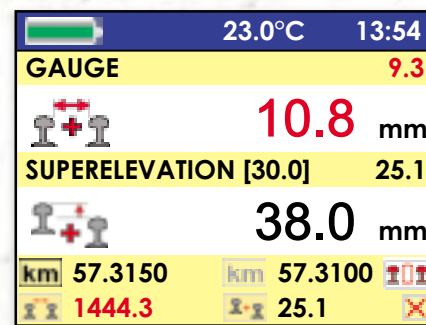
# Track

save mode

## Advanced track measurement features

The track measurement display may show not only the current parameters values but also their recent readings along with the mileage where they were taken. Icons depict the geometric interpretation of the measured parameters in addition to their names. The display shows also the continuous defects flag set by the operator, moreover the control unit calculates the twist and signals if its value is exceeded.

The cant nominal value is also displayed for reference. It is possible to specify the design values for cant and track gauge on transition curves, so that the real superelevation ramp may be compared to the design data. The PC software provided may be used for printing detailed measurement reports.



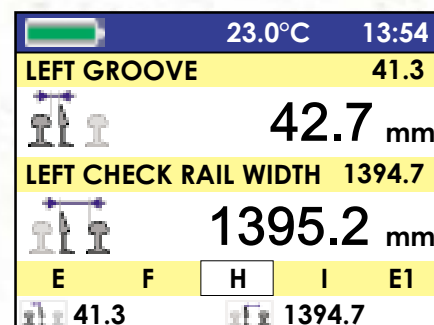
# Turnouts

## Turnout measurements made easy

Turnout measurement mode provides the possibility to enter the nominal standard values and their particular allowable deviations for all characteristic points. Characteristic points for many turnout types are predefined in the control unit. Moreover, additional turnout definitions can be made when needed. The actually measured turnout characteristic point is marked on the display.

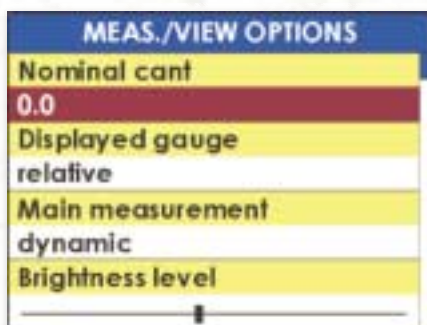
The PC software delivered with the gauge makes possible printing of turnout inspection reports. The reports include a drawing of the turnout and all measurement values.

save mode

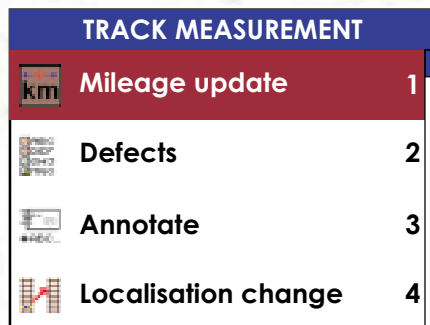


# User interface

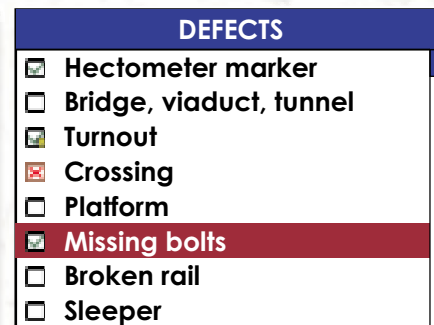
Customising the gauge

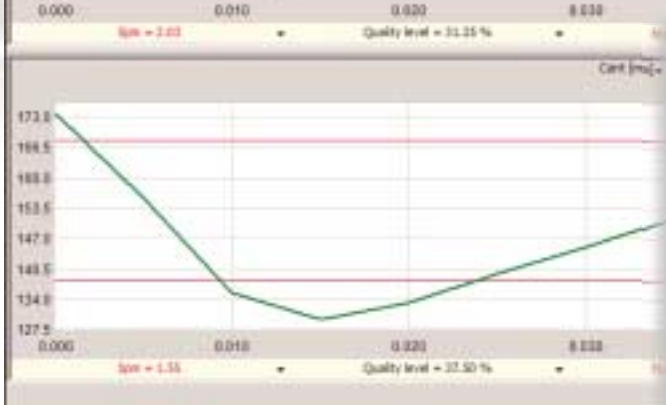


Example of the system menu



Exemplary defects and events in track





KILOMETER [km]	GAUGE [mm]	CANT [mm]	GROOVE L [mm]
0.000 (00)	1.4	173.8 #	
0.005 (00)	0.1	175.6	
0.010 (00)	-2.8	178.4 #	
0.015 (00)	-1.7	179.7 #	
0.020 (00)	2.4	181.4 #	
0.025 (00)	0.1	183.5	
0.030 (00)	0.2	185.2	
0.035 (00)	7.6	191.4	
0.040 (00)	0.9	195.1	

Page 1

01.02.2006 - Track : 2 - Assessment class : 160 km/h

Limits class: 160 km/h  
 Limits: mm <Gauge<mm  
 Limits: mm <Gauge<mm  
 Limits: mm <Gauge<mm  
 Limits: mm <Gauge<mm  
 Limits: mm <Gauge<mm  
 Limits: mm <Gauge<mm

Event and defect filter: PNRH U - curve  
 H - hectometer B - bolts missing  
 M - bridge, flyover, tunnel P - broken rail  
 R - crossover W - sleeper replacement necessary  
 D - crossing S - flash  
 E - platform Y - rails flat  
 F - precise measurement + - joint  
 L - bench

/ - skewed sleepers  
 Z - side wear  
 ~ - broken weld joint  
 ~ - corrugation  
 % - greenery  
 Q - Pause

KILOMETER [km]	GAUGE [mm]	CANT [mm]	GROOVE L [mm]	GROOVE R [mm]	CHKCR.L [mm]	CHKCR.R [mm]	CHRLS.WIDTH [mm]	EVENTS [mm]
15.520 (00)	-6.5	-2.9						
15.555 (00)	1.1	3.8						
15.560 (00)	-3.3	-4.0						
#15.565 (00)	-4.5 #	-3.6						
15.570 (00)	-2.8	-3.4						N
15.575 (00)	1.2	3.2						
15.600 (00)	-2.0	6.2						
#15.600 (00)	-2.3	8.9 #						
#15.610 (00)	-3.7	11.0 #						
#15.615 (00)	-2.8	10.5 #						
#15.620 (00)	-2.1	8.8 #						
15.625 (00)	-2.0	5.8						
15.630 (00)	-1.9	4.7						
15.635 (00)	-0.7	2.4						
#15.640 (00)	-1.3	-1.9						P
15.645 (00)	1.0	-2.8						
15.650 (00)	-1.3	-2.8						
#15.655 (00)	-5.6 #	-2.7						
#15.660 (00)	-6.0 #	-2.7						
#15.665 (00)	-7.9 #	-2.8						
#15.670 (00)	-4.5 #	-2.8						
15.675 (00)	-2.0	-2.8						
15.680 (00)	1.0	-2.9						R
15.685 (00)	2.0	2.7						R
15.750 (00)	-2.7	-2.6						H
#15.755 (00)	-3.0	-2.9						
#15.760 (00)	-4.2 #	-2.9						
#15.765 (00)	-4.6 #	-2.8						
#15.770 (00)	-3.2	-2.8						
15.775 (00)	-1.3	-2.9						
15.780 (00)	0.0	-2.9						
15.785 (00)	1.5	-2.9						
15.790 (00)	1.2	-1.3						

Track measurement reports

SWITCH ASSESSMENT RESULT FORM

Station Station name

Area area name

Switch ID 45a

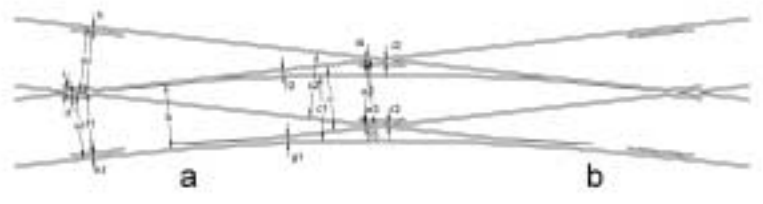
Design Half English

Type S49-300-1-9

Manufacturer \_\_\_\_\_

Built in 1990

Taken out 2015



1	2	3																			4	5									
Measurement date		Gauge nominal value and limits [mm]																			Defects, parts for replacement and additional remarks	Signature									
		A	A1	B	B1	C	C1	D1	E	E1	E2	E5	E6	F	F1	F2	F4	G	G1	H			H1	H2	I1	I5	I6	I7	I8	I9	
		1446	1435	1446	1440	1435	1435	1435	1435	1435	1435	1435	1435	1394	1394	1394	1353	61	65	41			41	41	44	43	48	44	48	41	
		+5	+5	+5	+5	+5	+5	+8	+6	+6	+6	+6	+6	+2	+2	+2	+2	+5	+5	+4			+4	+4	+4	+4	+4	+4	+4	+4	
		-3	-3	-3	-3	-3	-3	-3	-2	-2	-2	-2	-2	-2	-2	-2	-2	-3	-3	0			0	0	0	0	0	0	0	0	
		Cant nominal value and limits [mm]																													
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0		
		+5	+5	+5	+5	+5	+5	+5	+5	+5	+5	+5	+5																		
		-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5																		
				Checked dimensions [mm]																			temperature -9°C								
h	1445			1437	1445	1439	1439	1436	1440	1439	1436	1435	1436	1437	1393	1395	1396	1354	63	64	43	44			43	44	45	52	47	54	43
1	-24			1	1	0	0	1	1	1	0	0	0																		
i	1449			1439	1445	1438	1439	1437	1440	1435	1439	1436	1437	1438	1395	1394	1392	1353	62	68	42	41			43	46	46	49	47	49	45
1	1			0	0	0	1	1	0	0	1	0	0																		

Turnout inspection report hardcopy