## TRACK SURVEY

- Track marking
- Bolts
- Ground marking
- Prisms
- Adjustable holder
- Rail shoe
- Track measuring bar

## TRIMBLE GEDO

- Hardware
- Accessories
- Field software
- Office software
- Data processing
- Data analysis

## MONITORING

- Prisms
- Console and instrument shelter
- Convergence bolt

## TUNNEL SURVEY

- Marking systems
- Prisms
- Targets

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We are offering track marking bolts for mounting or catenary poles, walls, structures and building according to the Deutsche Bahn rules. All bolts are made from stainless steel DIN 1.4305. Special tools are available for survey work.

1. **M16 thread**
   Track marking bolt with M16 thread for span concrete catenary poles.
   Order number 5 280 000

2. **M8 thread incl. nut and lock ring**
   Track marking bolt with M8 thread for steel catenary poles. Including nut and lock ring.
   Order number 5 280 011

3. **M8 thread for plugs**
   Track marking bolt with short M8 thread for mounting in walls and structures. The bolt is mounting at a M8 plug.
   Order number 5 280 012

4. **M8 thread inside**
   Track marking bolt with M8 thread inside for steel catenary poles. Used at M8 bolts mounted with a bolt gun.
   Order number 5 280 013

Example: Adjustable holder with prism at track marking bolt
**TRACK SURVEY**

**TRACK MARKING BOLTS**

1. **Expansion plug M8**
   Plastic with brass inlet. For mounting at concrete structures. Screw for expansion. Including plastic screw for protection.
   Order number 1 416 000

2. **Bolt for wall mounting, M8 thread inside, „MESS-PUNKT“**
   Mounting by tap in or glueing. Drilling hole of 9-10 mm necessary. Including screw for protection.
   Order number 1 326 000

3. **Tap in plug M8/M16**
   Galvanized plug M8/M16 for tap in mounting.
   Order number
<table>
<thead>
<tr>
<th>M8</th>
<th>M16</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 110 010</td>
<td>5 282 016</td>
</tr>
</tbody>
</table>

4. **Tap in tool**
   Tap in tool for mounting tap in plugs. Protects the hand during tap in.
   Order number
<table>
<thead>
<tr>
<th>M8</th>
<th>M16</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 110 011</td>
<td>5 283 016</td>
</tr>
</tbody>
</table>

5. **Adapter M8/M16 to Leica socket, for wall distance 100 mm**
   The adapter is used in combination with the plugs above. All prisms for Leica socket can be used (e.g. page 7). Wrench size 22.
   Order number
<table>
<thead>
<tr>
<th>M8 - Leica socket</th>
<th>M16 - Leica socket</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 113 100</td>
<td>5 113 200</td>
</tr>
</tbody>
</table>

6. **Adapter M8 to Leica socket, UK type, for wall distance 100 mm**
   The adapter is used in combination with the plugs above. All prisms for Leica socket can be used (e.g. page 7). Wrench size 19.
   Order number 5 113 110
### Cross anchor

<table>
<thead>
<tr>
<th>Length</th>
<th>Order number</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 mm</td>
<td>5 211 060</td>
<td>5 210 060</td>
</tr>
<tr>
<td>800 mm</td>
<td>5 211 080</td>
<td>5 210 080</td>
</tr>
<tr>
<td>1000 mm</td>
<td>5 211 100</td>
<td>5 210 100</td>
</tr>
<tr>
<td>1200 mm</td>
<td>5 211 120</td>
<td>5 210 120</td>
</tr>
<tr>
<td>1500 mm</td>
<td>5 211 150</td>
<td>5 210 150</td>
</tr>
</tbody>
</table>

### Mounting tool for cross anchor

For safe tap in of the cross anchor. Afterwards the final cap can be mounted easily.

Order number 5 213 000

### Round cap, incl. level point

For mounting at top of the cross anchor; painted yellow.

<table>
<thead>
<tr>
<th>Height</th>
<th>Order number</th>
</tr>
</thead>
<tbody>
<tr>
<td>54 mm</td>
<td>5 212 001</td>
</tr>
<tr>
<td>65 mm</td>
<td>5 212 004</td>
</tr>
</tbody>
</table>

### Round cap for rail mounting

For mounting on top of a vertical installed rail piece, painted yellow.

Order number 5 212 002

### Mini-ground plate with level

For precise setup of a prism about the round cap. The plate can be leveled by two screws. In combination with the precise prism in holder (page 7) the height is 100 mm.

Order number 5 212 003
**TRACK SURVEY**

**PRISMS**

1. **Prism in holder**, prism diameter 42 mm

Precise prism in aluminium holder. The prisms can be tilted vertical und rotated horizontal based on the 10 mm socket. The measurement point stays in the center (except for prism constant 0 mm).

Available with prism constants 0 mm, -30 mm, -34 mm, -35 mm.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Prism height</th>
<th>Prism constant</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 520 001 - 0</td>
<td>40 mm</td>
<td>0 mm</td>
<td>10 mm socket</td>
</tr>
<tr>
<td>4 520 002 - 0</td>
<td>70 mm</td>
<td>0 mm</td>
<td>for Leica socket</td>
</tr>
<tr>
<td>4 520 001 - 30</td>
<td>40 mm</td>
<td>-30 mm ($)</td>
<td>10 mm socket</td>
</tr>
<tr>
<td>4 520 002 - 30</td>
<td>70 mm</td>
<td>-30 mm ($)</td>
<td>for Leica socket</td>
</tr>
<tr>
<td>4 520 001 - 34</td>
<td>40 mm</td>
<td>-34 mm (Y)</td>
<td>10 mm socket</td>
</tr>
<tr>
<td>4 520 002 - 34</td>
<td>70 mm</td>
<td>-34 mm (Y)</td>
<td>for Leica socket</td>
</tr>
<tr>
<td>4 520 001 - 35</td>
<td>40 mm</td>
<td>-35 mm (Z)</td>
<td>10 mm socket</td>
</tr>
<tr>
<td>4 520 002 - 35</td>
<td>70 mm</td>
<td>-35 mm (Z)</td>
<td>for Leica socket</td>
</tr>
</tbody>
</table>

Example: Prism in holder at Leica socket

2. **Mini prism in holder**, prism diameter 25 mm

Precise mini prism in aluminium holder. Prism constant -17 mm.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Prism height</th>
<th>Prism constant</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 520 020</td>
<td>30 mm</td>
<td>0 mm</td>
<td>10 mm socket</td>
</tr>
</tbody>
</table>

3. **Extension** 10 mm socket

Used to extend the height for prisms in holder with 10 mm socket.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 520 130</td>
<td>10 cm</td>
</tr>
<tr>
<td>4 520 131</td>
<td>20 cm</td>
</tr>
</tbody>
</table>

4. **Ball prism**

Measurement point stays in the center of the ball.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Diameter</th>
<th>Prism constant</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 312 001</td>
<td>50 mm</td>
<td>-17 mm</td>
</tr>
<tr>
<td>5 312 002</td>
<td>20 mm</td>
<td>-7 mm</td>
</tr>
</tbody>
</table>

5. **Active target**, 10 mm socket, prism constant + 2 mm

Active single prism for Trimble S-series total stations. Power supply by two AAA batteries. The diode is in line with the prism.

Attention: steep vertical angles will cause distance errors because of the parallactic aiming.

Order number 4 530 005
1 Active target in frame complete, PK: +2 mm
Active target in frame for Trimble S-series total stations. 5/8" threads inside and circular level at both ends. Power supply by two AAA batteries. As the prism can be tilted it is possible to avoid distance measurement errors.
Order number 4 530 006

2 Prism in frame
Prism with 42 mm diameter mounted in a robust aluminium frame. 5/8" thread inside and circular level at both ends. Prism height 50 mm. Available with prism constants 0 mm, -30 mm, -34 mm, -35 mm.
Order number 4 520 101

3 Extension for prism in frame, 5/8" thread, stainless steel
Order number Length
4 520 119 20 cm
4 520 120 30 cm
4 520 122 50 cm
4 520 121 - 5/8" 100 cm

4 Point for prism in frame, 5/8" thread, stainless steel
Order number Length Order number Length
4 520 110 - 050 50 mm 4 520 110 - 100 100 mm
4 520 110 - 065 65 mm

5 Mini prism in frame
Prism with 25 mm diameter mounted in a aluminium frame. M8 thread inside and circular level at both ends. Prism height 30 mm. Prism constant - 17 mm.
Order number 4 520 112

6 Extension for mini prism in frame, M8 thread, stainless steel
Order number 30 cm
4 520 113 - 300

7 Point for mini prism in frame, M8 thread, stainless steel
Order number 30 mm
4 520 114 - 030
**TRACK SURVEY**

**PRISMS**

1. **Universal ground plate**
   For quick and high precise positioning of a prism without tripod and prism pole. Comes with three different adapters fitting to various reference points.
   - Point for marking bolt with centering
   - Adapter for humped bolts without centering
   - Angle adapter for wall edges

   The groundplate can be rotated around all three adapters and leveled by using two spin-dels. A circular level shows the levelling. Adapters not used can be screwed at the upper side of the plate.

   Order number Height 90 mm 4 610 000

2. **Prism adapter for ground plate**
   Adapter for different prism systems.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Version</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 410 000 - 010</td>
<td>5/8”</td>
<td>10 mm</td>
</tr>
<tr>
<td>4 410 001</td>
<td>Leica socket</td>
<td>40 mm</td>
</tr>
<tr>
<td>4 410 002</td>
<td>10 mm socket</td>
<td>20 mm</td>
</tr>
</tbody>
</table>

3. **Ground plate for 10 mm socket**
   Ideal for quick and high precise positioning of a prism without using a pole or a tripod. Including a point for bolts with centering. For all prisms with 10 mm socket.

   Order number Height 90 mm 4 610 100

4. **Point for stakeout**
   Point for stakeout with circular level for vertical positioning. Available for all standard prism systems. Hardened point available as an option.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Version</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 611 001</td>
<td>5/8”</td>
<td>60 mm</td>
</tr>
<tr>
<td>4 611 011</td>
<td>5/8”, hardened point</td>
<td>60 mm</td>
</tr>
<tr>
<td>4 611 002</td>
<td>Leica socket</td>
<td>80 mm</td>
</tr>
<tr>
<td>4 611 012</td>
<td>Leica socket, hardened point</td>
<td>80 mm</td>
</tr>
<tr>
<td>4 611 003</td>
<td>10 mm socket</td>
<td>60 mm</td>
</tr>
<tr>
<td>4 611 013</td>
<td>10 mm socket, hardened point</td>
<td>60 mm</td>
</tr>
</tbody>
</table>

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Trimble
1 **Adjustable holder** with circular level

Developed for quick and precise survey work at Deutsche Bahn railway tracks. The adjustable holder is placed at the DB track marking bolt. The prism on top is leveled by using the circular level. The position is fixed by two screws. The holder turns exactly around the coordinate reference point of the bolt. Extensions are available at page 7.

Order number

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 220 000</td>
<td>Adjustable holder</td>
</tr>
<tr>
<td>5 220 001</td>
<td>Adjustable holder incl. prism in holder</td>
</tr>
</tbody>
</table>

2 **Transport case** for holder with prism (w/o illustration)

Aluminium case with foam inlet for six adjustable holders with prism.

Order number 5 220 002

3 **Adjustable holder** with side arm

Special adjustable holder for track marking bolts with excentric prism position. An additional screw is used to stabilize the arm. Eccentricity amount is 30 cm.

Order number 5 220 005

Information about German Track Marking System

The coordinate reference point at marking bolts mounted at catenary poles and structures is defined in height by the upper side at the front end and in horizontal by the front end of the bolt.

4 **Adjustable holder** for Austrian track marking system

Special adjustable holder for track marking bolts.

Order number

<table>
<thead>
<tr>
<th>Order number</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 220 010</td>
<td>for 10 mm socket</td>
</tr>
<tr>
<td>5 220 030</td>
<td>Leica socket (w/o illustration)</td>
</tr>
</tbody>
</table>

Information about Austrian Track Marking System

Coordinate reference point is the forward, upper edge of the grooved part.
**TRACK SURVEY**

**RAIL SHOE**

The rail shoe is optimized for survey of a rail. The reference for the side attachment is 14 mm below top of the rail. A notch helps to mark the measured position at the rail. The prism position is perpendicular above the reference edge.

1. **Rail shoe standard**

<table>
<thead>
<tr>
<th>Order number</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 260 000</td>
<td>5/8&quot;, turnable</td>
</tr>
<tr>
<td>5 260 001</td>
<td>Leica socket</td>
</tr>
<tr>
<td>5 260 002</td>
<td>for 10 mm socket</td>
</tr>
</tbody>
</table>

2. **Rail shoe with magnet and tubular level**

   Two magnets for easy and safe positioning at the rail. Level across to the rail for levelling the prism. Available with standard or strong magnets.

<table>
<thead>
<tr>
<th>standard magnet</th>
<th>strong magnet</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 262 000</td>
<td>5 262 001</td>
<td>5 262 002</td>
</tr>
<tr>
<td>5/8&quot;, turnable</td>
<td>5/8&quot;, turnable</td>
<td>Leica socket</td>
</tr>
<tr>
<td>5 262 003</td>
<td>5 262 004</td>
<td>for 10 mm socket</td>
</tr>
</tbody>
</table>

3. **Rail shoe for tram lines**

   This rail shoe has a shorter leg to enable measurements at grooved rails. Level across to the rail for levelling the prism. With strong magnet.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 263 000</td>
<td>5/8&quot;, turnable</td>
</tr>
<tr>
<td>5 263 001</td>
<td>Leica socket</td>
</tr>
<tr>
<td>5 263 002</td>
<td>for 10 mm socket</td>
</tr>
</tbody>
</table>

4. **Track adapter for track marking bolts**

   The front end of a tape (zero at the front end) can be mounted at the adapter. By attaching and clamping the adapter at a track marking bolt the horizontal reference point is identical with the front end of the tape to enable measurements for the side offset.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 270 000</td>
<td></td>
</tr>
</tbody>
</table>

5. **Tape** stainless steel, plastic coating, 30 m

   A steel tape with thick plastic coating for usage at railway lines to ensure isolation between the rails.

<table>
<thead>
<tr>
<th>Order number</th>
<th></th>
</tr>
</thead>
</table>
TRACK SURVEY

TRACK MEASURING BAR

The standard track measuring bar can be extended by additional prism holders and a mechanical cant measuring device. Depending on the additional options just the center line, the center line plus the cant or a full 3D survey of the track can be done.

1 Track measuring bar, standard

Track measuring bar to survey the center line of a railway track. The prism holder is tiltable to position the prism exactly above the center line. By using the precise prism in holder the prism height above the center line is 100 mm. The bar is isolated at one end to avoid an electrical short between the two rails. The attachment enable a precise positioning of the bar. The edge of the attachment is 14 mm below top of the rail. All track measuring bar are manufactured for the gauge 1435 mm. Track measuring bar for other gauges are available on request.

Order number | Version
---|---
5 230 000 - 1435 | 5/8" thread
5 230 001 - 1435 | Leica socket
5 230 002 - 1435 | for 10 mm socket

2 Track measuring bar for tram lines

This track measuring bar is elevated by 50 mm to be used at track with gras or paving stones between the rails. A shorter attachment enables the use at narrow curves. The bar can be ordered for 1000 mm and 1435 mm gauge. Other gauges on request. Similar to the standard bar other options can be added.

Order number | Gauge | Version
---|---|---
5 235 000 - 1000 | 1000 mm | 5/8" thread
5 235 000 - 1435 | 1435 mm | 5/8" thread
5 235 001 - 1000 | 1000 mm | Leica socket
5 235 001 - 1435 | 1435 mm | Leica socket
5 235 002 - 1000 | 1000 mm | 10 mm socket
5 235 002 - 1435 | 1435 mm | 10 mm socket
### Additional prism holder above inner edge of the rail

The prism holder is mounted exactly above the inner edge of the rail at the attachment side.

<table>
<thead>
<tr>
<th>5/8” thread</th>
<th>Leica socket</th>
<th>10 mm socket</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 234 000</td>
<td>5 234 001</td>
<td>5 234 002</td>
</tr>
</tbody>
</table>

### Additional prism holder above the inner edge of the rail, opposite side

The prism holder is mounted at the theoretical position of the inner edge according to the design gauge at the opposite side.

<table>
<thead>
<tr>
<th>5/8” thread</th>
<th>Leica socket</th>
<th>10 mm socket</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 234 003</td>
<td>5 234 004</td>
<td>5 234 005</td>
</tr>
</tbody>
</table>

### Additional prism holder, moveable, opposite side

A spring loaded prism holder is mounted at the opposite side. Therefore the prism is always position about the inner edge of the rail. Together with the prism at the attachment side the gauge can be measured.

<table>
<thead>
<tr>
<th>5/8” thread</th>
<th>Leica socket</th>
<th>10 mm socket</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 234 006</td>
<td>5 234 007</td>
<td>5 234 008</td>
</tr>
</tbody>
</table>

Example below:
Track measuring bar equipped with an additional holder at the attachment side and an additional moveable holder at the opposite side.
**TRACK SURVEY**

**MECHANICAL GAUGE AND CANT MEASUREMENT DEVICE**

1. **Mechanical cant measuring device**, open frame

   A central precise wheel is used to level the tubular level. The cant is shown at a scale at the wheel. The robust tubular level has an accuracy of 0.7 mm/m. Measurement range for cant: -40 mm up to +200 mm, 1 graduation mark is equal 1 mm. For gauge 1435 mm.

   Order number 5 240 000

   Example: Track measuring bar with mechanical cant measuring device (open frame)

2. **Mechanical cant measuring device**, closed housing

   A screw at the side is used to level the tubular level. The cant is shown at a small window on top. The robust tubular level has an accuracy of 0.7 mm/m. Measurement range for cant: -35 mm up to +195 mm, 1 graduation mark is equal 1 mm. Available for gauge 1000 mm and 1435 mm. Ideal for usage in construction environment.

   Order number for gauge
   
   - 5 240 001 - 1000 1000 mm
   - 5 240 001 - 1435 1435 mm

3. **Mechanical gauge measurement device**

   For the gauge measurement a spring loaded attachment is used. The gauge value is visible through a window on top of the device. The attachment is isolated. The device is available for 1000 mm and 1435 mm gauge. Measurement range: -10 mm to +40 mm. 1 graduation mark is equal 1 mm.

   Order number for gauge
   
   - 5 250 000 - 1000 1000 mm
   - 5 250 000 - 1435 1435 mm

4. **Mechanical cant and gauge measurement device**

   Cant measuring device with integrated gauge measurement. Measurement range for gauge: -20 mm to +40 mm. Measurement range for cant: -200 mm to +200 mm. For gauge 1435 mm and 1000 mm. Is available as a partable version (only 1435 mm) for easy transport as well.

   Order number for gauge
   
   - 5 250 100 - 1000 1000 mm
   - 5 250 100 - 1435 1435 mm

   Order number partable version for gauge
   
   - 5 250 101 1435 mm
TRIMBLE GEDO CE 2.0

HARDWARE

The track measuring system Trimble GEDO is a Module system. The base unit Trimble GEDO CE 2.0 can be used stand alone or in combination with different geodetic sensors and prisms. The system is certified for using as an official measurement tool in several countries (e.g. Deutsche Bahn, Network Rail) or has a type approval in these countries.
The Trimble GEDO CE 2.0 measurement trolley consists of a main frame which carries the sensors (gauge, cant, odometer) and electronics, the cross beam with the brake system and the pushing rod. The base version can be used for the 1000 mm gauge. A mounting tool is used to lock and unlock a central screw to mount and dismount the trolley. For other gauges an according gauge adapter is needed. At a two trolley system the base trolley can be used as a prism trolley or a total station trolley.

Order number | Version
--- | ---
7 600 400 - 00 | standard
7 600 400 - 20 | elevated

There are adapters for all standard gauges available. Adapter for other gauges can be manufactured on request.

Order number | Version
--- | ---
7 600 401 - 10 | for Gauge 1067 mm
7 600 401 - 12 | for Gauge 1100 mm
7 600 401 - 20 | for Gauge 1435 mm
7 600 401 - 30 | for Gauge 1520 mm
7 600 401 - 40 | for Gauge 1600 mm
7 600 401 - 50 | for Gauge 1668 mm
7 600 401 - 60 | for Gauge 1676 mm
7 600 401 - 70 (*) | for gauge from 1000 to 1800 mm

(*) Please specify when ordering

Adapter to use the prisms at the trolley. The short version is recommended at slab track project which require highest accuracy. The longer version can be used for all standard applications.

Order number | Version
--- | ---
7 600 402 - 10 | 60 mm
7 600 402 - 11 | 300 mm
Trimble GEDO CE 2.0

1. **Prism in holder**, prism diameter 42 mm

Precise prism in aluminium holder. The prisms can be tilted vertical and rotated horizontally based on the 10 mm socket. The measurement point stays in the center (except for prism constant 0 mm).

Available with prism constants 0 mm, -30 mm, -34 mm, -35 mm.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Prism height</th>
<th>Prism constant</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 520 001 - 0</td>
<td>40 mm</td>
<td>0 mm</td>
<td>10 mm socket</td>
</tr>
<tr>
<td>4 520 002 - 0</td>
<td>70 mm</td>
<td>0 mm</td>
<td>for Leica socket</td>
</tr>
<tr>
<td>4 520 001 - 30</td>
<td>40 mm</td>
<td>-30 mm ($)</td>
<td>10 mm socket</td>
</tr>
<tr>
<td>4 520 002 - 30</td>
<td>70 mm</td>
<td>-30 mm ($)</td>
<td>for Leica socket</td>
</tr>
<tr>
<td>4 520 001 - 34</td>
<td>40 mm</td>
<td>-34 mm (Y)</td>
<td>10 mm socket</td>
</tr>
<tr>
<td>4 520 002 - 34</td>
<td>70 mm</td>
<td>-34 mm (Y)</td>
<td>for Leica socket</td>
</tr>
<tr>
<td>4 520 001 - 35</td>
<td>40 mm</td>
<td>-35 mm (Z)</td>
<td>10 mm socket</td>
</tr>
<tr>
<td>4 520 002 - 35</td>
<td>70 mm</td>
<td>-35 mm (Z)</td>
<td>for Leica socket</td>
</tr>
</tbody>
</table>

2. **Trimble GEDO CE 2.0 GNSS Pole Set**

Consisting of two robust carbon fiber extensions. Each 750 mm long.

Order number 7 600 402 - 20

3. **Trimble GEDO CE 2.0 Total station pillar**

Necessary to use the Trimble S-Series total station at the trolley. A special clamp system for the 3-pin system ensures a safe and robust fixation of the instrument.

Order number 7 600 403 - 10

4. **Trimble GEDO CE 2.0 reference point prism**

The Reference point prism can be used at various marking bolts. It consists of a prism in a frame, an extension 30 cm and two points 50 mm.

Order number 4 520 100 - 30

5. **Holder for reference point prism**

The holder for the reference point prism can be mounted at the total station trolley and carries the reference point prism.

Order number 7 600 403 - 15
TRIMBLE GEDO CE 2.0

HARDWARE

1 Trimble GEDO CE 2.0 Transport case

There are two difference cases available. One very robust case for transport in harsh environment and a very compact case for the daily standard use.

<table>
<thead>
<tr>
<th>Order number</th>
<th>Dimensions (L x W x D)</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 600 404 - 10</td>
<td>120 x 70 x 50 cm</td>
<td>standard (w/o illustration)</td>
</tr>
<tr>
<td>7 600 404 - 20</td>
<td>120 x 70 x 50 cm</td>
<td>standard for elevated trolley</td>
</tr>
<tr>
<td>7 600 404 - 12</td>
<td>106 x 55 x 47 cm</td>
<td>kompakt</td>
</tr>
</tbody>
</table>

2 Trimble GEDO CE 2.0 Scanner adapter

The adapter is necessary to use a laser scanner (Trimble TX5, Faro Focus 3D, X130 or X330) at the trolley. The adapter comes with the helical adapter which will be attached to the scanner.

Order number

| 7 600 403 - 20 |

3 Trimble GEDO CE 2.0 Profiler

The profiler is used to measure specific objects and points along the track. Side offsets and height differences can be measured quick and easily. Therefore the profiler can be used for as-built survey at reference points as well for platform gauging. By using the profiler in combination with geodetic sensors, absolute coordinates for the measured points are calculated.

Order number

| 7 600 406 - 00 |

4 Trimble GEDO CE 2.0 Extension for profiler

To elevate the profiler by 300 mm.

Order number

| 7 600 403 - 30 |
1 Trimble 5-slot charger
Charger for five Trimble S-Series Total Station oder Trimble GNSS batteries. Including power supply.
Order number 51693-00

2 Trimble Lithium-Ionen battery, 5 Ah
Trimble S-Serie batteries for total station and trolley.
Order number 99511-00

3 Holder for Trimble TSC3
Holder for control unit Trimble TSC3 at pushing rod of the trolley.
Order number 82758-00

4 Holder for Trimble Tablet PC and Trimble Yuma 2
Order number

<table>
<thead>
<tr>
<th>Version</th>
<th>Order number</th>
</tr>
</thead>
<tbody>
<tr>
<td>fix, quick release</td>
<td>91487-00</td>
</tr>
<tr>
<td>twin ball joint</td>
<td>93315-00</td>
</tr>
</tbody>
</table>

5 Trimble GEDO CE 2.0 antenna, short
Bluetooth antenna for communication between trolley and control unit.
Order number 110-0003

6 Trimble GEDO CE 2.0 antenna, long
Bluetooth antenna for communication between two trolleys (GEDO Vorsys configuration).
Order number 110-0015

7 Cap for bluetooth connector
Protection cap if the trolley is used as a single trolley system.
Order number 4000-0516-01-12
GEDO Rec

Order number Version
7 601 001 - 00 for TSC2 / TSC3
7 601 001 - 90 for Tablet PC

GEDO Doc
GEDO Doc wird in Verbindung mit dem Gleismesswagen GEDO CE 2.0 für die Messung und Protokollierung von Gauge, Überhöhung und Verwindung eingesetzt.

Order number Version
7 601 005 - 00 for TSC3
7 601 005 - 90 for Tablet PC

GEDO Rec Module Scan
Das GEDO Rec Module Scan ist ein Zusatzmodule zur GEDO Rec Software und wird in Verbindung mit dem Gleismesswagen Trimble GEOD CE 2.0 und einem Laserscanner (Trimble TX5 oder Faro) zur Steuerung des Scanvorganges im Feld eingesetzt. Durch den so durchgeführten Helicalscan entsteht bei der Prozessierung im Büro eine dreidimensionale Punktwolke.

Order number Version
7 601 001 - 02 for Tablet PC

TRIMBLE GEDO CE 2.0
FIELD SOFTWARE SOLUTIONS
All Trimble GEDO software solutions are supporting railway specific requirements. Special transition bend design elements (e.g. clothoid, Bloss, cubic parabula, Cosinoid, etc.) are supported as well as a chainage line and elevated rails at reversal transition bends.
1 TRIMBLE GEDO CE 2.0

1 GEDO Track Survey
Software for several survey tasks at railway lines. It support Trimble total stations as well Trimble GNSS receivers. Based on the measurements the differences between design and as-built are calculated and visualized online in the field. These are calculated horizontal in the elevated track system. Beside the current chainage the distance to the next track main point is shown. The software comes with GEDO Office Base for data preparation.

Order number | Version | for TSC2 / TSC3 | for Tablet PC
--- | --- | --- | ---
7 601 002 - 01 | 7 601 002 - 91

2 GEDO Track Bar
Software which is used in combination with the GEDO track measuring bar and a Trimble total station or a Trimble GNSS receiver. Based on the measurements from the geodetic sensor and the cant and gauge values from the trolley the differences between design and as-built are calculated and visualized online in the field. These are calculated horizontal and in the elevated track system for the complete track (left and right rail). The software can be used during slab track construction or for geodetic pre-measuring for tamping. The software comes with GEDO Office Base for data preparation.

Order number | Version | for TSC2 / TSC3 | for Tablet PC
--- | --- | --- | ---
7 601 002 - 03 | 7 601 002 - 93

3 GEDO Track Trolley
Software which is used in combination with the track measuring trolley GEDO CE 2.0 and a Trimble total station or a Trimble GNSS receiver. Based on the measurements from the geodetic sensor and the cant and gauge values from the trolley the differences between design and as-built are calculated and visualized online in the field. These are calculated horizontal and in the elevated track system for the complete track (left and right rail). The software can be used during slab track construction or for geodetic pre-measuring for tamping. The software comes with GEDO Office Base for data preparation.

Order number | Version | for TSC2 / TSC3 | for Tablet PC
--- | --- | --- | ---
7 601 002 - 02 | 7 601 002 - 92

4 GEDO Vorsys
Software for high productive pre-measurement for tramping utilizing two trolleys in combination with a Trimble S-Series total station. The alignment based measurement method guarantees high inner accuracy and very high productivity. Measurements can be taken based on classic paper plans or based on digital alignment data. All differences between design and as-built are shown in field. An optimized user interface enables the usage by non survey staff.

Order number | Version | for TSC2 / TSC3 | for Tablet PC
--- | --- | --- | ---
7 601 021 - 00 | 7 601 021 - 90
Several Trimble GEDO Office software Modulees are available for data preparation, data processing and data analysis.

1. **GEDO Office Module Base**
   Module for alignment data input and import of design data. Standard design data formats are supported (e.g. Verm.ESN, LandXML). Alignment data can be checked to ensure the use of the data in the field.
   Order number 7 601 004 - 10

2. **GEDO Office Module Rec**
   Module for processing GEDO Rec field data. Station setups can be re-calculated. Different matching algorithms are used to connect the overlapping areas. Coordinate export for the left rail, center line and right rail together with the cant and gauge values. Based on alignment data the differences between design and as-built are calculated.
   Order number 7 601 004 - 11

3. **GEDO Office Module Vorsys**
   Module for processing GEDO Vorsys field data. Measured data can be reprocessed based on another design or new reference point coordinates. Processing of measurements taken without alignment data for track survey purposes.
   Order number 7 601 004 - 13

4. **GEDO Office Module Tamp**
   Module for data preparation for tamping machines. Measured and processed data from GEDO Rec, GEDO Track and GEDO Vorsys measurements can be used. A graphical interface allows an easy ramp definition by taking care of minimum lift values, maximum lift and shift values and other constrains. The data are exported for various machine types (e.g. Plasser DosALC, Win ALC, WinBAO; Harsco, Plasser American, Matisa, etc.).
   Order number 7 601 004 - 14

5. **GEDO Office Module Quality**
   Module for quality report generation. Special reports like the MKS (Handersatzmessung für Deutsche Bahn) and other local reports (e.g. Speedraiser, Tucrail) can be generated as well as standard travel chord reports with free defined chord lengths.
   Order number 7 601 004 - 14
1. **GEDO Scan PreProcessing**

Software to match the scanner data and trolley measurements. So processed data can be used immediately for relative clearance analysis. Further synchronization based on geometry data generates a 3D point cloud. Cross sections generated at GEDO Scan Office can be thinned, vistorized and dimensions drawn automatically. Export to DXF and special clearance formats (WinLUE and Clearroute).

Order number 7 601 050 - 20

2. **GEDO Scan Office**

Software for railway track specific analysis of 3D point clouds. Track clearance can be checked based on static envelopes or a waggon model along the as-built track as well according to a new design. Measurement of distances between assets and the track and point registration. Cross section generation for further processing and analysis. Special functionality for clearance check and documentation at Deutsche Bahn (WinLUE for LIRA data base).

Order number 7 601 050 - 30