

# DATUM

## ROTARY LASER DUAL GRADE

MODEL NO.: DTR30R DTR30G



**TO PREVENT SERIOUS INJURY, READ  
AND UNDERSTAND ALL WARNINGS  
AND INSTRUCTIONS BEFORE USE**

## **OPERATING INSTRUCTIONS**

# TABLE OF CONTENT

|  |    |
|--|----|
| SPECIFICATIONS .....                     | 3  |
| HAZARD SIGNAL WORD DEFINITIONS .....     | 3  |
| GENERAL SAFETY RULES FOR OPERATION ..... | 4  |
| CONTENT CHECKLIST .....                  | 5  |
| COMPONENT OVERVIEW .....                 | 6  |
| LASER CONTROL DESCRIPTION .....          | 7  |
| DETECTOR CONTROL DESCRIPTION .....       | 8  |
| PRE-OPERATION SET UP .....               | 9  |
| OPERATION - LASER INSTRUMENT .....       | 10 |
| USING REMOTE.....                        | 12 |
| OPERATION - LASER DETECTOR.....          | 12 |
| CALIBRATION CHECK.....                   | 13 |
| MAINTENANCE AND SERVICE.....             | 13 |
| TROUBLESHOOTING .....                    | 14 |
| OPTIONAL ACCESSORIES .....               | 15 |
| WARRANTY INFORMATION .....               | 16 |

# ABOUT YOUR LASER LEVEL





Thank you for purchasing this DATUM Dual Grade Rotary Laser. Your instrument features extra bright laser technology, motorised self-levelling, manual dual grade on both X and Y axis and much more.

Please read and understand the content of this instruction manual before using this product. Save this manual for future reference.

| SPECIFICATIONS                  |   |                           |
|---------------------------------|---|---------------------------|
| MODEL                           | DTR30R  | DTR30G                    |
| BEAM COLOUR                     | Red   | Green                     |
| LASER CLASS                     | Class 2   | Class 3R                  |
| LASER WAVELENGTH                | 635nm   | 520nm                     |
| ACCURACY                        | ±2 mm at 30m  |                           |
| OPERATING RANGE (WITH DETECTOR) | Ø300m   |                           |
| AUTO LEVELLING RANGE            | ±5°   |                           |
| BATTERY LIFE (CONTI. OPERATION) | 20 Hours  | 15 Hours                  |
| POWER SUPPLY                    | 4 x C-cell 1.5V batteries<br>4 x Ni-MH 1.2V 4000 mAh rechargeable batteries |                           |
| NI-MH BATTERY CHARGER (INDOOR)  | Input:100-240V~, 50/60Hz    Output: 5.6V, 900mA                             |                           |
| LINE PATTERN                    | 360° Rotating Line  |                           |
| PLUMB DOTS                      | Up and Down (Red)   | Up (Green) and Down (Red) |
| IP RATING                       | IP65  |                           |
| TRIPOD THREADS                  | 5/8" on side and base for horizontal and vertical operations                |                           |
| REMOTE CONTROL                  | DT20RM  |                           |
| DETECTOR                        | DT03REC   | DT04REC                   |

DATUM is constantly improving its products. All information in this manual is based on the latest product information available at the time of printing. The specifications outlined herein are subject to change without prior notice or obligation.

## HAZARD SIGNAL WORD DEFINITIONS

|  |  |
|--|--|
|                 | Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Obey all safety messages that follow this symbol to avoid possible injury or death. |
|  <b>DANGER</b>  | Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.   |
|  <b>WARNING</b> | Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.  |
|  <b>CAUTION</b> | Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.   |
| <b>CAUTION</b>   | Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.   |

# GENERAL SAFETY RULES FOR OPERATION



## WARNING

Read all safety warnings, instructions, illustrations and specifications provided with this instrument. Failure to follow all instructions listed below may result in personal injury.

### Save all warnings and instructions for future reference.

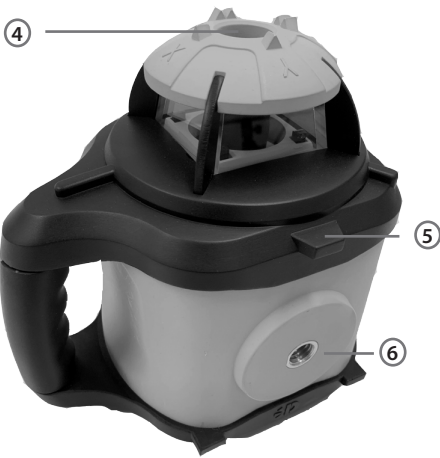
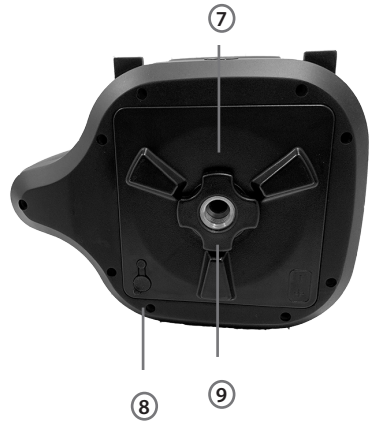
- Do not stare into beam regardless of distance.
- Do not use the laser intensive glasses as safety goggles, sunglasses or when driving.
- Do not point laser in the direction of other people or animals.
- Do not point laser in the direction of mirrors or other reflective surfaces.
- Store in a secure location when not in use.
- This is a quality precision measuring device and is 100% factory adjusted within the stated tolerance.
- Laser should not be used as a toy or by children.
- Do not view beam through optical instruments such as theodolites, binoculars, cameras or magnifying lenses.
- Avoid using laser in darkened areas. Ensure sufficient light levels to avoid damage to eyes.
- Set up the instrument to ensure laser beam path is above or below eye level.
- Ensure the instrument is securely set up to avoid accidental movement.
- Always ensure the laser beam is aimed at a sturdy work piece without reflective surface. Bright shiny reflective sheet steel or the like is not suitable for laser use as the reflective surface could direct the beam back at the operator.
- Do not break up or throw the battery into fire, please recycle the battery after use.
- Turn the instrument off when it is not in use. Leaving the laser on increases the risk of staring into the laser beam.
- Do not use or store the instrument in locations where the temperature may reach or exceed 40°C.
- Never use supplied charger to charge alkaline batteries. It's only designed for charging the Ni-MH battery pack supplied with the unit.
- Never set laser level on a surface with heavy vibrations or in territories where heavy apparatus is being worked.
- High mechanical stress, high ambient temperatures or immersion into fluids can cause leakage, fire or explosions of the batteries.
- Do not disassemble the instrument or attempt to perform any internal servicing as this will void your warranty. No user serviceable parts included. Only approved and authorised service technicians can carry out warranty repairs.
- Avoid direct eye exposure. Consult your laser safety officer or IEC 60825.14:2011 Part 14 for best operating practice.

# CONTENT CHECKLIST



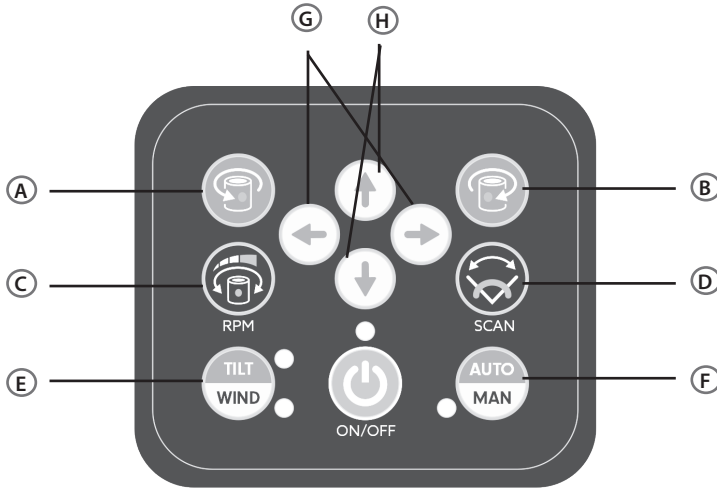
- 1. Heavy duty tool case with EVA foam
- 2. 20m Wireless remote control
- 3. Wide band laser detector
- 4. Dual grade rotary laser
- 5. Ni-MH battery charger (indoor only)
- 6. Alkaline battery pack
- 7. Staff mounting bracket for detector
- 8. Laser glasses
- 9. Laser target
- 10. Ni-MH battery pack

# COMPONENT OVERVIEW



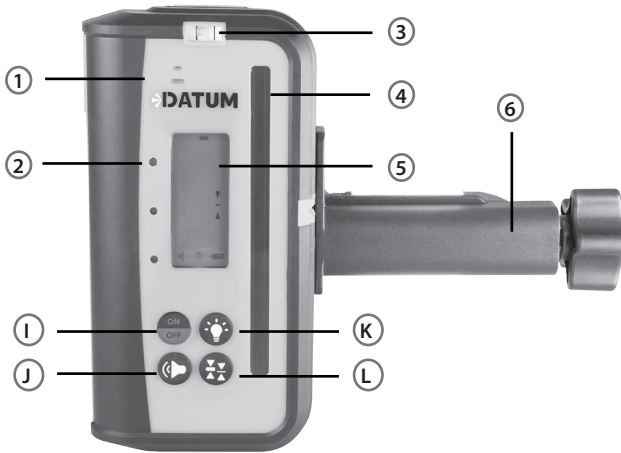
- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>1. Light house</li> <li>2. Rotating laser module</li> <li>3. Laser control panel</li> <li>4. Up plumb dot output window</li> <li>5. Rubber feet - for vertical operation without tripod</li> <li>6. 5/8" Tripod thread - for vertical operation</li> <li>7. Battery compartment</li> </ul> | <ul style="list-style-type: none"> <li>8. Battery charging jack (for Ni-MH battery only)</li> <li>9. Down plumb dot output window with 5/8" tripod thread - for horizontal operation</li> <li>10. Infrared signal output window</li> <li>11. Signal sending indicator light</li> <li>12. Remote control panel</li> </ul> |
|---|--|

# LASER CONTROL DESCRIPTION



| BUTTON                                 | DIRECTION OF USE  |
|--|---|
| A - Counter-clockwise Rotation Control | In scanning mode, press this button to move the scanning beam in a counter-clockwise motion.  |
| B - Clockwise Rotation Control         | In scanning mode, press this button to move the scanning beam in a clockwise motion.  |
| C - RPM Mode                           | When a slower speed is required for visibility, adjust the speed by pressing RPM button. There are 5 rotation speeds to choose from: 0 - 60 - 120 - 300 - 600   |
| D - Scan Mode                          | The scan mode allows the laser beam to emit only in a restricted radius forming a horizontal line. There are 5 width of scanning motions choose from: 0° - 10° - 45° - 90° - 180°<br><br>To move the line, press Rotation Control button (A and B).<br>To exit the scan mode, press the RPM button (C). |
| E - Tilt Alarm/Wind Mode               | Press once to activate Tilt Alarm mode.<br>Press again to switch to Wind Mode.  |
| F - Manual/Auto Control                | When the power is on, the laser starts with Automatic Mode. Switch to Manual Mode for grading slopes. The LED indicator light is on when Manual Mode is active.   |
| G - Grade Adjustment                   | In Manual Mode, these two buttons allow you to adjust grade on X axis.  |
| H - Grade Adjustment                   | In Manual Mode, these two buttons allow you to adjust grade on Y axis.  |
| Power Button                           | Press the On/Off button to turn on the laser.<br>The instrument always starts up in Automatic mode and begins self-levelling if it's set up within 5° range (horizontal or vertical). Switch to Manual mode by pressing button (F).   |

# DETECTOR CONTROL DESCRIPTION



1. Speaker
2. LED indicator lights
3. Bubble level
4. Laser sensor panel
5. LCD screen (front/back)
6. Staff mounting bracket

| BUTTON               | DIRECTION OF USE  |
|----------------------|---|
| I - On/Off           | Detector On/Off button.   |
| J - Volume Control   | Off-Medium-High   |
| K - Screen Backlight | Press this button to activate the backlight for extra visibility.             |
| L - Accuracy Setting | Change detection bandwidth.   |
| LED INDICATOR        | DESCRIPTION   |
|                      | These 3 LED indicator lights display the relative position of the laser beam: |
| ORANGE               | Indicates the laser beam is above the leveled line                            |
| GREEN                | Indicates the laser beam is on grade with the leveled line                    |
| RED                  | Indicates the laser beam is under the leveled line                            |



# PRE-OPERATION SET UP

## POWER SUPPLY

### Alkaline Battery Pack

- Your instrument requires 4 C-cell batteries. Use only new, high-quality battery for best results.
- Locate battery compartment at the bottom of the laser. Insert batteries into the carrier according to the symbols and polarity then place it into the battery compartment.
- When the battery voltage is low, the power indicator light will start flashing in which the batteries must be replaced.
- Once the voltage is below 3.9V, the unit will shut off automatically due to low battery.

### Ni-MH Battery Pack

- Your laser is supplied with a rechargeable Ni-MH battery pack and a battery charger.
- Place Ni-MH battery pack into the battery compartment. Charge the battery via charging port (one on base and one on the side) with the supplied charger (indoor only).
- Battery indicator light on charger will be in red when it's charging. Once the battery is charged in full, the indicator light will turn into green.
- Remove the charger once the battery is full.
- When the battery is running low, all LED indicator lights on the control panel will start flashing in which the battery pack must be recharged.

|  |  |
|--|--|
|  <b>WARNING</b> | <p>Only use charger supplied by DATUM to charge the Ni-MH batteries. Using a battery charger not recommended by DATUM can destroy the batteries.</p> <p>The charger supplied is indoor use only. Do not charge alkaline batteries.</p> |
|--|--|

## LOCATION

- Keep the location clear of possible obstructions that could block or reflect the laser beam.
- Place the instrument on stable ground. Ground vibration and extremely windy conditions can affect the operation.

Note: Dusty environment can affect the working range.

## SETTING UP ON TRIPOD

- Attach the instrument securely to a tripod or wall mount on a stable level surface. See "Optional Accessories" for recommendations.
- Be sure to secure the tripod or wall mount to avoid windy conditions.

## LASER PLACEMENT

- HORIZONTAL OPERATION - set up the instrument up right on a stable flat surface, tripod or wall mount. Ensure the instrument is set up within  $\pm 5^\circ$ .
- VERTICAL OPERATION - lay the instrument on its back on a stable flat surface, tripod or wall mount. Ensure the instrument is set up within  $\pm 5^\circ$ . This can be used for vertical alignment of form work, pipelines and etc.

# OPERATION - LASER INSTRUMENT

## ON/OFF

Press the power button to turn on the instrument. Once it's on:

- The instrument always starts up in automatic mode and begins self-levelling if it's set up within 5° range (horizontal or vertical). During self-levelling, laser beam flashes before it starts spinning.
- Once it's self-levelled, laser head will start to spin, emitting a rotating laser beam pattern.
- If the instrument is bumped or senses interference, the laser head will stop spinning and re-level. Once unit has re-levelled, the laser head will begin to spin again, emitting a rotating laser beam pattern.
- If the instrument is outside of the 5° range, it will not level causing the laser beam to flash continuously. Reposition your instrument within the range until the instrument can re-level.

Note: If the unit has been bumped or moved and the laser recommences spinning the instrument may not be at the original level position. Please recheck your RL/datum point.

## RPM SPEED CONTROL

Rotation speed can be controlled by pressing RPM button on the instrument. In automatic mode, laser rotation speed starts at 600rpm. Adjust the speed from 600rpm - 0rpm - 60rpm - 120rpm - 300rpm - 600rpm.

## SCAN MODE

The scanning mode allows the laser beam to emit only in a restricted radius forming a horizontal line within 180°. There are 5 levels to choose from: 0° - 10° - 45° - 90° - 180°.

- Turn on the instrument and allow self level.
- Press the SCAN button to active scan mode. Laser starts with 0° when entering scan mode.
- Adjust the scan width by pressing scan button.
- To move the scan line, utilise the rotation control buttons.
- To exit the scan mode, press RPM button and the laser will begin to self-level and rotate again.

## ROTATION CONTROL

In scan mode:

- Press the counter-clockwise rotation button to move the laser line to the left.
- Press the clockwise rotation button to move the laser line to the right.

## MANUAL MODE - GRADE SLOPE MODE

Your rotary laser has an incorporated grade slope function to manually set grades/slopes up to 8% on X and Y axis.

- Turn on the instrument and allow self level. Then press AUTO/MAN button on either the instrument or remote to active manual mode.
- Manual mode indicator light is on when it's activated.
- In manual mode, the self-levelling will be deactivated for grading slope.
- Press AUTO/MAN button again to turn off manual mode and return to automatic self-levelling mode.

### HOW TO USE MANUAL MODE

Once laser is levelled and spinning, press the AUTO/MAN button to activate manual mode.

- Use the left and right arrows to adjust the slope of the laser along the X axis
- Use the top and down arrows to adjust the slope of the laser along the Y axis
- To return to the auto-level mode, press the AUTO/MAN button again.

Note: When in manual mode, the laser will not self level.

## TILT ALARM

Once the instrument is automatically levelled. Tilt Alarm can be activated by pressing the tilt alarm button (E). This function becomes active and monitors the movement of the laser 30 seconds after it's completely levelled and starts rotating.

This is used to prevent incorrect work or readings caused by movement.

- When activated, tilt alarm indicator light flashes continuously.
- If the instrument is knocked or interfered with while the alarm is activated, the laser will stop rotating and start flashing. In this case, check and adjust the instrument set up. It's also recommended to check DATUM point when the unit re-levels.
- Reset the instrument by turning it off then back on. Or press TILT/WIND button twice to deactivate the alarm.

## WIND MODE

Your instrument comes with a built in Wind Mode feature to assist with levelling in high wind conditions. When Wind Mode is activated, the laser will continue to self-level without cutting out when interfered by high wind, vibration or slight movement.

- To active wind mode, press TILT/WIND button twice. When activated, the indicator light right next to WIND will light up.
- To turn off wind mode, press the button again to deactivate this function and return to self-levelling mode.

Note: Tilt Alarm and Wind Mode cannot be used simultaneously as they function in the opposite way.

## USING REMOTE

Your instrument comes with an infrared remote allows you to operate the laser at a distance up to 20m. The remote is used to control the same functions as on the laser control panel except on/off, tilt alarm and wind mode.

To operate your laser with the remote:

- Ensure the laser is turned on and self-levelled.
- The LED indicator flashes when the remote is sending a signal to the instrument.
- Follow the operation instructions in previous section.

## OPERATION - LASER DETECTOR

Your detector uses 4 x AA 1.5V batteries. Locate battery compartment at the back of the detector and insert batteries according to the symbols and polarity.

Mounting the staff clamp to the detector via the 1/4" thread on the back.

- Switch the detector on by pressing the power button.
- The LCD screen will display the battery level, accuracy setting and speaker mode.
- Press button (L) to change between different accuracy settings.
- Move the detector into the path of the laser beam.
- Hold the detector upright for horizontal beam or rotate the detector 90° for vertical beam.
- The direction arrows or level line on the LCD screen will indicate the position of the laser beam. The detector will emit a constant beep once the level position has been located.



### WARNING

If the product is used with accessories, for example masts, staves, poles, you may increase the risk of being struck by lightning.

Do not operate the product in a thunderstorm.

# CALIBRATION CHECK

It's possible for you to check the calibration of the laser. It's recommended to check the calibration of the laser before performing any levelling task. Calibration by yourself is only approximate and the accuracy of the calibration will depend on the care with which you proceed.

- Place the instrument on a flat, level surface or a tripod 30m away from a wall or staff with a detector.
- Align the first axis so that it's square to the wall or staff. Allow the laser to self level completely.
- Mark the position of the beam on wall or note the position of the beam from staff (P1).
- Rotate the instrument 180° and allow the instrument to self level again.
- Mark or note the position of the beam (P2).
- Rotate the instrument 90° and align the second axis so that it's square to the wall and allow the laser to self level completely.
- Mark the position of the beam on wall or note the position of the beam from staff (P3).
- Rotate the instrument 180° and allow the instrument to self level again.
- Mark or note the position of the beam (P4).
- The instrument is within its accuracy specification if the 4 parts are within  $\pm 2$  mm from the centre.

# MAINTENANCE AND SERVICE

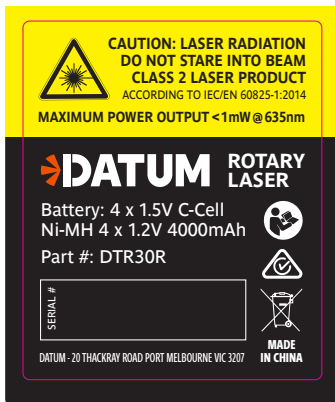
- The instrument is a precision measuring device and should always be handled with care.
- Do not attempt to open the device. To ensure product SAFETY and RELIABILITY, repairs, maintenance and adjustment should be performed by authorized service centres. Contact your dealer for more details.
- Do not drop, knock or shake the laser level as this will affect precision.
- Remove batteries when the instrument is not in use.
- Keep the instrument clean at all times. Use a soft lint-free cloth for the body and lens tissue for glass windows. Do not use abrasive cleaners or solvents.
- Do not store the instrument in the hot areas, hot temperatures can short the life of electronic device, damage battery, and warp or melt certain plastics.
- Do not store the laser level in the cold areas. When the unit warms up to its normal operating temperature, moisture can form inside where it may damage circuit board.
- Avoid shock, vibrations, extreme heat and humidity.
- Do not immerse the instrument in water.
- Always turn the instrument OFF when storing, transporting or moving around the job site.
- Calibration is recommended at least once a year or as needed.
- When transporting the instrument, always make sure that it's carried in its original tool case. Never carry the product loose in a road vehicle.

# TROUBLESHOOTING

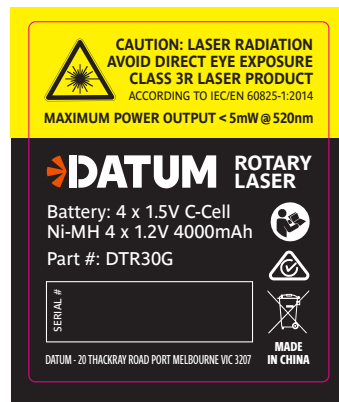
| ISSUE                                  | POSSIBLE CAUSE AND SOLUTIONS  |
|--|---|
| Laser does not turn on                 | Check batteries. Make sure batteries are installed according to the correct polarity.   |
|  | The batteries may be low or depleted. Make sure the batteries are in proper working condition. If in doubt, try installing new batteries. |
|  | If the laser has been stored in extremely hot temperatures, allow it to cool.   |
| Laser does not level                   | Instrument may be outside its levelling range. Position the instrument, tripod or the base surface.                                       |
|  | Instrument may have impact damage. Contact service centre for repair and calibration.   |
|  | Instrument may be outside its self-levelling range. Adjust the position within the self-levelling range.                                  |
|  | Instrument may be in Manual Mode. The laser must be in Automatic Mode to self level.  |
| Laser beam distance is reduced         | Dirt and dusty condition can reduce the visibility of the laser beam. Clean the laser output window.                                      |
| Laser head does not rotate             | Instrument may be levelling or in Wind Mode. Refer to "Direction of Use".   |
| Laser detector is not working properly | The detector may be low in battery. Replace batteries and install according to the correct polarity.                                      |
|  | The detector may be out of usable range. Move the detector closer to the instrument.  |

## PRODUCT LABELS

### DTR30R



### DTR30G



# OPTIONAL ACCESSORIES

DATUM offers a range of accessories that are compatible with our laser levels. They can be purchased separately and add more flexibility to get your job done.

## HEAVY DUTY WALL BRACKET (DT05AC)



## DOME HEAD LASER TRIPOD (DT1730D)



Maximum height:  
1730mm

Minimum Height:  
1010mm

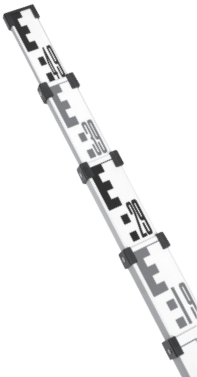
## FLAT HEAD LASER TRIPOD (DT1730F)



Maximum height:  
1730mm

Minimum Height:  
1010mm

## 5M E-FACE STAFF (DT5ME)



## 5MM-FACE 5 SECTION STAFF (DT5MCM)





## WARRANTY INFORMATION

This warranty is provided by DATUM of 20 Thackray Road, Port Melbourne VIC 3207.  
Phone: 1800 868 258.

### **Express Warranty**

Subject to the exclusions set out below, we warrant that this product will be free from defects in materials or workmanship for 3 years (90 days for accessories, batteries and chargers) from the date of purchase.

The benefits conferred by this warranty are in addition to all rights and remedies which you may be entitled to under the Australian Consumer Law, and any other statutory rights you may have under other applicable laws. This warranty does not exclude, restrict or modify any such rights or remedies.

### **Warranty exclusions**

This express warranty does not apply where a defect or other issue with the product is caused by normal wear and tear, misuse or abuse of the product.

### **Consumer guarantees**

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage.

You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

### **Warranty claims**

To make a claim under this warranty, you must bring the product along with the proof of purchase and any other documentary evidence which you think is relevant to the your place of purchase where the claim will be handled on our behalf during the warranty period specified above. Any cost incurred by you in bringing the product to the place of purchase will be borne by you.

### **Calibration and repair service**

Datum recommends to check instrument calibration at least once a year or on as needed basis. For calibration or repair service (not covered under warranty), please visit your place of purchase.

