



**BUILDERS' LEVELS / THEODOLITES**

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## Focus on Precision

Nedo offers an attractive range of optical surveying instruments. In order to meet differing needs in terms of robustness and accuracy, Nedo has three different level series with different magnifications. All Nedo levels have high-quality optical systems with plenty of light-gathering power. Our electronic theodolites are optionally available with an optical plummet or a laser plummet. Each Nedo surveying instrument is thoroughly inspected and precisely adjusted before shipment, and each comes with a test report.





## The Principles of Optics

The magnification of an optical instrument indicates how much closer a target appears to the user when looking through the instrument compared when looking to the target without instrument. The larger the magnification is chosen, the smaller the field of vision and the light intensity get. The objective aperture also has a great influence on the light intensity. The larger the objective aperture, the better is the light intensity of the object, i.e. the brighter the image.



## Automatic Levels

Levelling instruments are used to create a horizontal line of sight in order to determine differences in height. The main components include a telescope with crosshair which can rotate around the vertical axis, a horizontal circle for marking off the angles, and the bubble which helps to keep the instrument in a horizontal position with a tribrach. Automatic levels also feature a compensator mechanism which will adjust the level to an exactly horizontal position within a small working range. The compensators are equipped with a damping system. In practice, air-damped and magnetically damped compensators have become generally accepted. The air-damped compensators are of better quality whereas magnetically damped compensators are more favourably priced.



## Theodolites

A theodolite is an instrument used for precise measurements of vertical and horizontal angles. On construction sites, theodolites are further used for making exact alignments, e.g. when foundations are cast and for checking if formwork and facades are perfectly vertical. The precision of a theodolite is given in arcseconds. Electronic theodolites with digital displays have become generally accepted as they provide easy read-offs.



## Selecting the Right Nedo Levelling Instrument

Nedo offers a range of various automatic levelling instruments:

- **F Series:** State-of-the-art builders' levels with powerful optical systems. Sturdy and reliable for tough jobs on construction sites.
- **X Series:** Premium builders' levels that meet the highest quality standards.
- **Z Series:** Engineers' levels that meet the highest quality standards. Protected against dust and jet water as per IP X6.



Each Nedo levelling instrument is carefully checked and adjusted before dispatch. All Nedo automatic levels are accompanied by an inspection record as part of the scope of delivery.



## Selecting the Right Magnification

As a rule of thumb, the magnification should be the target distance in metres. Levels with a 24x magnification are ideal for applications on the construction site. Levels with a 28x or 32x magnification are used mainly for engineering and surveying purposes.

	Working environment		
	tough	extremely tough	extremely tough/moist environment
<b>Builders' Levels F-Series</b>	✓		
<b>Builders' Levels X-Series</b>	✓	✓	
<b>Engineers' Levels Z-Series</b>	✓	✓	✓



**Levelling set with F-level consisting of:**

- 5 m levelling staff, clip on bubble and bag  
No. 345 122-637
- Aluminium tripod No. 200 215-637

## Nedo Builders' Levels F-Series

The **F-levels** feature first-class optics with 24x, 28x or 32x magnification, a top-quality magnetic-damped compensator and a modern design. Just right for use under tough conditions.

**Features:**

- Automatic builders' level with 24x, 28x or 32x magnification
- Bright optics with large objective aperture
- Sturdy, reliable magnetic-damped compensator
- Rugged metal housing
- High-contrast image
- Inspection record
- Comes with plumb bob, adjusting pin and robust case
- Also available as a set

**Nedo Builders' Levels F-Series**

	F24	F28	F32
<b>Ref.-No.</b> (horizontal circle gon)	460 777-613	460 795-613	460 797-613
<b>Ref.-No.</b> (horizontal circle degrees)	460 778-613	460 796-613	460 798-613
<b>Ref.-No. Set</b> (horizontal circle gon)	463 105	465 105	466 105
Image	upright	upright	upright
Magnification	24x	28x	32x
Clear objective aperture	30 mm	30 mm	40 mm
Shortest focusing distance	0.6 m	0.6 m	0.6 m
Multiplication factor	100	100	100
Compensator operating range	± 15'	± 15'	± 15'
Setting accuracy	± 0.5"	± 0.3"	± 0.3"
Horizontal circle	400 gon / degrees	400 gon / degrees	400 gon / degrees
Sensitivity of circular bubble	8'2 mm	8'2 mm	8'2 mm
Standard deviation per km	± 2.5 mm	± 2.0 mm	± 1.5 mm
double-run levelling			
Protection class	IP 54	IP 54	IP 54
Weight	1.26 kg	1.26 kg	1.26 kg
Connecting thread	5/8"	5/8"	5/8"

**Calibration certificate for Nedo builders' levels**

<b>Ref.-No.</b>	<b>399 558</b> Calibration certificate for builders' levels series F, X and Z
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**Levelling set with X-level consisting of:**

- 5 m levelling staff, clip on bubble and bag  
No. 345 122-637
- Aluminium tripod No. 200 215-637

## Nedo Builders' Levels X-Series

Nedo **X-levels** are top-quality builders' levels which meet the very highest demands. These builders' levels feature particularly bright optics, a large objective aperture, a sturdy air-damped compensator and quality workmanship – just right for use under extremely tough conditions.

**Features:**

- Automatic builders' level with 24x and 32x magnification
- Bright optics with large objective aperture
- Rugged metal housing
- Sturdy, reliable air-damped compensator
- High-contrast image
- Inspection record
- Comes with plumb bob, adjusting pin and robust case
- Also available as a set

### Nedo Builders' Levels X-Series

	X24	X32
<b>Ref.-No.</b> (horizontal circle gon)	460 759	460 760
<b>Ref.-No.</b> (horizontal circle degrees)	460 759-633	460 760-633
<b>Ref.-No. Set</b> (horizontal circle gon)	464 245	464 325
Image	upright	upright
Magnification	24x	32x
Clear objective aperture	40 mm	40 mm
Shortest focusing distance	0.6 m	0.6 m
Multiplication factor	100	100
Compensator operating range	± 15'	± 15'
Setting accuracy	± 0.5"	± 0.3"
Horizontal circle	400 gon / degrees	400 gon / degrees
Sensitivity of circular bubble	8'/2 mm	8'/2 mm
Standard deviation per km double-run levelling	± 2.0 mm	± 1.0 mm
Protection class	IP 54	IP 54
Weight	1.6 kg	1.6 kg
Connecting thread	5/8"	5/8"

### Calibration certificate for Nedo builders' levels

<b>Ref.-No.</b>	<b>399 558</b> Calibration certificate for builders' levels series F, X and Z
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## Nedo Engineers' Levels Z-Series

Nedo **Z-Series levels** are premium engineers' levels that meet the most exacting demands. The levels in this series have an especially large aperture to provide plenty of light-gathering power, a rugged, air-damped compensator and a jet-water proof metal housing rated IP X6. Perfect for extreme conditions like dust and rain.

### Features:

- Automatic engineers' level with 24x or 32x magnification
- Bright optics with large objective aperture
- Rugged metal housing
- Jet water and dust proof; IP X6
- Large objective aperture: 36 mm
- Sturdy, reliable air-damped compensator
- High-contrast image
- Inspection record
- Comes with plumb bob, adjusting pin and robust case
- Also available as a set



### Levelling set with Z-level consisting of:

- 5 m levelling staff, clip on bubble and bag  
No. 345 122-637
- Aluminium tripod No. 200 215-637

### Nedo Engineers' Levels Z-Series

	Z24	Z32
<b>Ref.-No.</b> (horizontal circle gon)	460 756	460 758
<b>Ref.-No.</b> (horizontal circle degrees)	460 756-633	460 758-633
<b>Ref.-No. Set</b> (horizontal circle gon)	465 245	465 325
Image	upright	upright
Magnification	24x	32x
Clear objective aperture	36 mm	36 mm
Shortest focusing distance	0.65 m	0.65 m
Multiplication factor	100	100
Compensator operating range	± 15'	± 15'
Setting accuracy	± 0.5"	± 0.3"
Horizontal circle	400 gon / degrees	400 gon / degrees
Sensitivity of circular bubble	8'/2 mm	8'/2 mm
Standard deviation per km double-run levelling	± 2.0 mm	± 1.0 mm
Protection class	IP X6	IP X6
Weight	1.75 kg	1.75 kg
Connecting thread	5/8"	5/8"

### Calibration certificate for Nedo builders' levels

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**Batter board holder for theodolite**

Sturdy aluminium batter board holder with four clamping screws.  
Ref.-No. 461 051



**Diagonal eyepiece**

Designed for measuring steep vertical angles.  
With bag.  
Ref.-No. 460 813-613



## Nedo ET-5 Electronic Theodolite with Optical Plummet or Laser Plummet

Robust builders' theodolite with digital display and automatic vertical compensator. The Nedo ET-5 stands out thanks to its precision, reliability and simple and intuitive handling.

**Features:**

- Bright optics with 30x magnification
- 2 large, easy-to-read LCD illuminated displays
- 2 clearly arranged control panels
- Automatic vertical compensator; Working range  $\pm 3'$
- Horizontal circle with right/left function
- Horizontal circle can be set to zero in any position
- Hold function for horizontal circle
- Automatic switch-off after 30 minutes; can be deactivated
- Robust tribrach with 5/8" connecting thread
- Incl. rechargeable batteries, charger, plumb bob, weather protection, tools and robust case
- Available with optical plummet or with laser plummet



### Nedo Electronic Theodolite ET-5 with Optical Plummet or Laser Plummet

	ET-5 with optical plummet	ET-5 with laser plummet
Ref.-No.	460 812-613	460 814-613
Magnification	30x	30x
Shortest focusing distance	1.35 m	1.35 m
Clear objective aperture	45 mm	45 mm
Minimum reading	1" or 5"	1" or 5"
Accuracy	5"	5"
Angle units	degrees(0-360) / gon(0-400) / mil (0-6400)	degrees(0-360) / gon(0-400) / mil (0-6400)
Spirit level	30"/2 mm	30"/2 mm
Circular bubble	8'/2 mm	8'/2 mm
Connecting thread of tribrach	5/8" BSW	5/8" BSW
Operating temperature	-20°C to +50°C	-20°C to +50°C
Power supply	4 x 1.5 V AA or rechargeable batteries	4 x 1.5 V AA or rechargeable batteries
Operation duration	batteries 36 h, rechargeable batteries 18 h	batteries 36 h, rechargeable batteries 18 h
Weight	4.7 kg	4.7 kg
Magnification optical plummet	3x	
Accuracy optical plummet	$\pm 0.5$ mm/1.5 m	
Accuracy laser plummet		$\pm 1.5$ mm/1.5 m
Laser plummet		<1 mW, laser class 2, 650 nm
Protection class	IP 54	IP 54