The high performance mechanical stage (optional) can accommodate a wide range of flasks and cell culture chambers. The new stage design also directly accommodates microplates. In addition, the sample holder is easily removed to accommodate large flasks.

Easy to work with

- Efficient and comfortable observation
  LED light sources and built-in Diascopic/Epi-fluorescence illumination systems reduce setup time and allow users to concentrate on their research.

- New streamlined operation
  Control buttons on the Ts2 microscope are intuitively located for a streamlined workflow. Commonly used controls such as the on/off and diascopic/epi-fluorescence switching buttons are located at the front panel for easy reach. Buttons pertaining to either diascopic or epi-fluorescence control are zoned to the left and right sides of the microscope body, respectively, to eliminate confusion and improve workflow efficiency.

- Faster, brighter images with LED illumination
  LED light source is alignment-free resulting in faster setup and consistent results. LEDs also eliminate frequent bulb replacements, saving the user time and money. Moreover, The new Contrast Shield (optional) provides high signal-to-noise fluorescence observation even in brightly lit culture rooms.

- Easy-to-use Mechanical Stage
  The high performance mechanical stage (optional) can accommodate a wide range of flasks and cell culture chambers. The new stage design also directly accommodates microplates. In addition, the sample holder is easily removed to accommodate large flasks.
Two models are available to meet your needs: a diascopic illumination model, the Ts2, and an epi-fluorescence illumination model, the Ts2-FL. High-intensity LED sources are employed for both diascopic and epi-fluorescence illumination. The built-in fly-eye lens ensures uniform brightness across the entire field of view. A wide range of wavelengths is available to choose from for Epi-fluorescence LED illumination.

Compact, streamlined body for efficient observation

LED-based high-quality diascopic and epi-fluorescence observation

Two models are available to meet your needs: a diascopic illumination model, the Ts2, and an epi-fluorescence illumination model, the Ts2-FL. High-intensity LED sources are employed for both diascopic and epi-fluorescence illumination. The built-in fly-eye lens ensures uniform brightness across the entire field of view. A wide range of wavelengths is available to choose from for Epi-fluorescence LED illumination.

Compact and highly stable body

Illumination modules including the epi-fluorescence light source have been seamlessly incorporated into the microscope main body, resulting in a compact and simple design form that’s also durable. The compact structure is also vibration-resistant to provide highly stable sample observations. The camera port is located on the side of the microscope to provide unimpeded viewing of the stage even when placed inside a culture hood.
Highly optical performance with diascopic observation

Diascopic observation with high-intensity LED (Eco-illumination)

Eco-illumination provides high-intensity light suitable for phase contrast observation. With the built-in fly-eye lens, uniform brightness is provided across the entire field of view. LEDs are an environmentally friendly, low-power-consumption light source. Eco-illumination provides a long lifetime of 60,000 hours and reduces the frequency of lamp replacement.

Phase contrast observation

Phase contrast is an optical contrasting technique that typically utilizes a phase contrast objective lens and condenser annulus. The use of a high-intensity LED light source results in clear images even at high magnifications.

Apodized Phase Contrast (APC) observation

APC observation is a type of phase contrast microscopy which minimizes unwanted halos in thick specimens. For example, APC technique provides clearer details of thick samples such as dividing cells.

New contrasting technique, "Emboss Contrast"

Emboss Contrast is a cost-effective optical technique which does not require costly optics. Utilizing just a bright-field objective lens and two contrast sliders, Emboss Contrast provides pseudo-three dimensional and glare-free images for thick specimens such as iPSC cells which would normally suffer from halos with conventional phase contrast methods. Additionally, Emboss Contrast is compatible with both glass and plastic culture chambers, making it a very versatile observation technique.
The new Contrast Shield accessory (optional) blocks room light, providing an easy and cost-effective method for achieving high signal-to-noise fluorescence observation in a brightly lit culture room. With a built-in fly-eye lens, uniform brightness is provided across the entire field of view.

Epi-fluorescence observation made easy with LED

Fly-eye lens for uniform illumination

With a built-in fly-eye lens, uniform brightness is provided across the entire field of view.

Accurately reproduce illumination power every time

The Ts2 can be configured with up to three fluorescent filter cubes. The illumination power previously defined by the user is replicated when the same wavelength is used again, thus eliminating the need for manual adjustment of light intensity when switching between wavelengths. The Ts2 also incorporates a noise terminator mechanism which allows high signal-to-noise fluorescent images to be captured.

High S/N epi-florescence observation in bright rooms

The new Contrast Shield accessory (optional) blocks room light, providing an easy and cost-effective method for achieving high signal-to-noise fluorescence observation in a brightly lit culture room.
Accessories

Camera Port
Optional camera port is available for image capturing. Digital Cameras utilizing C- or F-mounts can be attached.

ThermoPlate® TPI-TS2X (for the Mechanical Stage)
ThermoPlate® TPI-TS2X provides accurate and stable temperature control for the specimen from room temperature to 50 degrees Celsius. Proprietary treatment methods ensure that the glass surface of the Termo Plate is breakage-free.
Manufacturer: Tokai Hit., Co, Ltd.

Emboss Contrast Slider
Both condenser-side slider and eyepiece-tube-side slider are available. Contrast modules for 10X, 20X, 40X objective lenses are arranged on the same slider so switching between magnifications is easily achieved by simply sliding the contrast slider.

Cameras for Microscopes
All cameras of the digital sight series can be directly connected to a PC via a fast USB3.0 interface.

*The optional camera port is required to attach the digital camera to the microscope.

F-mount CMOS Camera

Microscope camera
DS-Ri2

16.25 megapixel
Color
High-resolution

Capable of expressing images as is, this microscope digital camera offers high resolution, superior color reproduction and fast frame rate.

Frame rate
6 fps (4908 × 3264), 45 fps (1636 × 1088)

Max recordable pixels
4908 × 3264

C-mount CMOS Camera

Microscope camera
DS-Fi3

5.9 megapixel
Color
High-resolution

A high-definition 5.9-megapixel color CMOS image sensor captures fine-textured images in faithful color. For image acquisition, NIS-Elements imaging software is required.

Frame rate
15 fps (2880 × 2048), 30 fps (1440 × 1024)

Max recordable pixels
2880 × 2048

Simply installing NIS-Elements L on a tablet PC enables setting and control of DS-Fi3/DS-Ri2 microscope cameras, live image display, and image acquisition.

*For information about compatible tablet PCs, contact Nikon.
System diagram

Dimensions (Unit: mm)

The values in the ( ) represent those for Ts2 E50L50.
## Ts2 / Ts2-FL Specifications

<table>
<thead>
<tr>
<th></th>
<th>Ts2</th>
<th>Ts2-FL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Optical System</strong></td>
<td>CFI® Infinity Optical System</td>
<td></td>
</tr>
<tr>
<td><strong>Observation Method</strong></td>
<td>Brightfield, Apodized Phase Contrast*, Phase Contrast, Emboss Contrast*[^1]</td>
<td>Brightfield, Apodized Phase Contrast*, Phase Contrast, Emboss Contrast*, Epi-Fluorescence</td>
</tr>
<tr>
<td><strong>Illumination</strong></td>
<td>High luminous white LED illuminator (Eco-illumination), Built-in Fly eye lens</td>
<td>LED illuminator, built-in Fly eye lens, Can be configured with up to 3 different fluorescence LED units; available wavelengths: 385, 455, 470, 505, 525, 560, 590, 625 nm</td>
</tr>
<tr>
<td><strong>Tube</strong></td>
<td>Ts2 and Ts2-FL: Inclination: 45 degree, Pupillary distance: 50 - 75 mm, Siedentopf type, Attachable camera port, Eyepiece/Port: 100/0/100</td>
<td>Ts2 E50L50: Inclination: 45 degree, Pupillary distance: 50 - 75 mm, Siedentopf type, Fixed camera port, Eyepiece/Port: 50/50 only</td>
</tr>
<tr>
<td><strong>Eyepiece (F.O.V.)</strong></td>
<td>10X (22), 15X (16), 20X (12.5)</td>
<td></td>
</tr>
<tr>
<td><strong>Focusing</strong></td>
<td>Via nosepiece up/down movement, Stroke (manual): Up 7 mm down 1.5 mm</td>
<td>Coarse stroke: 37.7 mm per rotation, Fine stroke: 0.2 mm per rotation, Coarse motion torque adjustable</td>
</tr>
<tr>
<td><strong>Nosepiece</strong></td>
<td>Quintuple nosepiece</td>
<td></td>
</tr>
<tr>
<td><strong>Condenser</strong></td>
<td>ELWD Condenser (NA 0.3, W.D. 75 mm)</td>
<td></td>
</tr>
<tr>
<td><strong>Slider</strong></td>
<td>• Precentered or Centering PH Slider, 10X, 20X, 40X Objectives available for phase contrast</td>
<td>• Emboss Contrast sliders (both condenser-side slider and eyepiece-tube-side slider must be mounted), 10X, 20X, 40X objectives available for Emboss Contrast</td>
</tr>
<tr>
<td><strong>Stage</strong></td>
<td>• Plain Stage, stage size: 170(X)×247(Y) mm, With 2 Acrylic Types of Stage Ring</td>
<td>• Mechanical stage (optional), stroke:126(X)×78(Y) mm, Accepts 5 types of micro-testplate, well clamper and stage clip</td>
</tr>
<tr>
<td><strong>Holder</strong></td>
<td>• C-S-HP35 Petri dish Holder 35 mm</td>
<td>• C-S-HLP100 Petri dish Holder 100 mm</td>
</tr>
<tr>
<td><strong>Epi Fluorescence attachment</strong></td>
<td>—</td>
<td>Epi-fluorescence filter turret (with main body), Filter cubes with noise terminator mechanism Configure with up to 3 Epi-fluorescence filter cubes, Additional positions for bright-field observation, Attachable Contrast Shield (optional)</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>236(W)×548(D)×471(H) mm</td>
<td>236(W)×564(D)×471(H) mm</td>
</tr>
<tr>
<td><strong>Weight (approx.)</strong></td>
<td>13kg</td>
<td>14.5kg</td>
</tr>
<tr>
<td><strong>Rated Voltage/Electric Current</strong></td>
<td>100 V-240 VAC±10 %, 50/60 Hz, 0.35 A</td>
<td>115 V±10 %, 50/60 Hz, 0.35 A</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>15 W</td>
<td>15 W</td>
</tr>
</tbody>
</table>

[^1]: APC (Apodized Phase Contrast) is a type of phase contrast observation with reduced halo, thanks to Nikon’s unique lens coating.

[^2]: *Emboss contrast is Nikon’s unique contrast observation method. It provides pseudo-three-dimensional images using focal illumination, which gives high contrast to samples.

### Related Products

**ECLIPSE TS2R/TS2R-FL**

A compact inverted microscope for your basic research needs. Ts2R/Ts2R-FL provides a wide range of observation methods and applications in a compact body that can easily fit in limited laboratory spaces while providing streamlined operation.

Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. March 2020 ©2016-2020 NIKON CORPORATION

**WARNING**

TO ENSURE CORRECT USAGE, READ THE CORRESPONDING MANUALS CAREFULLY BEFORE USING THE EQUIPMENT.