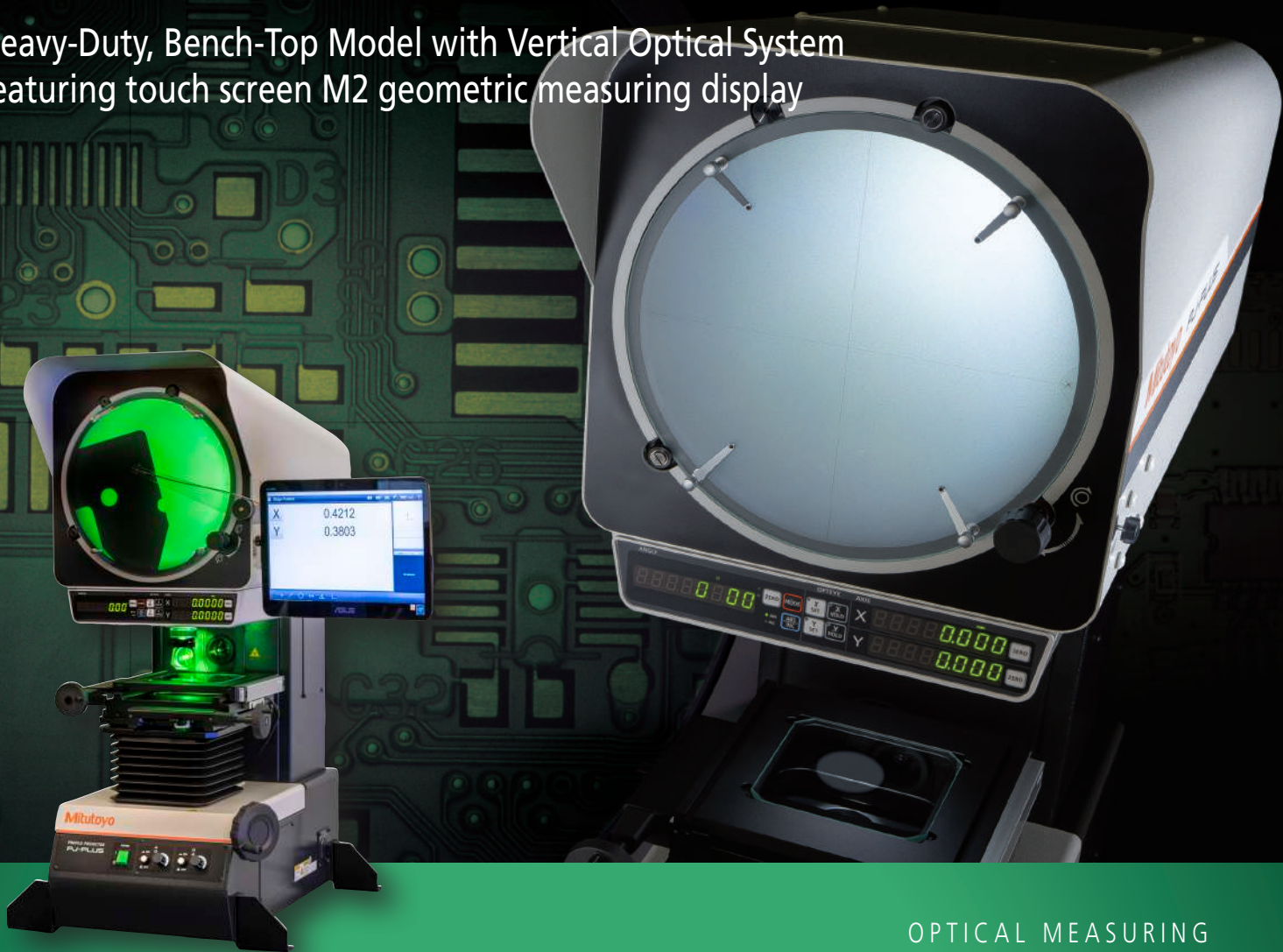


# PJ-Plus

## Profile Projector and 2D Processor Packages

Heavy-Duty, Bench-Top Model with Vertical Optical System featuring touch screen M2 geometric measuring display



OPTICAL MEASURING



The Mitutoyo PJ-Plus is a new series of profile projectors that utilize LED lighting and provides reliable measurements in manufacturing site environments. The PJ-Plus provides stable dimension and angle measurements in harsher environments conventional models can't handle, such as manufacturing and processing lines.

## PJ-Plus Summary

- LED illumination
- Stepless illumination adjustment
- Improved durability
- Intuitive operation
- Built-in digital XY counter
- Available with M2 or QM-Data 2D processor



## LED Illumination

The PJ-Plus implements LED illumination, a brand-new feature and design on profile projectors, replacing traditional halogen lighting. The adoption of the LED illumination source eliminates the need for a cooling fan in the main unit, drastically decreasing the entry of oil, mist, dust, etc. into the measuring instrument. LED Illumination offers many benefits as well, including:

- Better durability & longer service life, greatly reducing lamp burnout
- Lower main unit power consumption, from 400W to 60W (about 85%)
- Drastically reduces oil adhesion to internal mirror, lens and light source
- Prevents rate of decline in illumination by about 50%
- Maintains high optical performance even in harsh environments
- Requires less frequent maintenance, resulting in lower maintenance costs
- Better color reproducibility, consistency for improved on-screen image
- Very little color change in illumination when intensity is adjusted

Thanks to the LED light source, lamp burnout is greatly reduced.



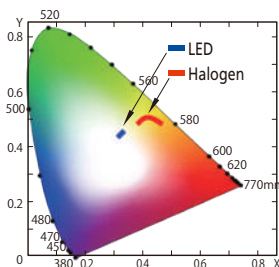
## Stepless Illumination Adjustment

The PJ-Plus uses a much more efficient and effective stepless illumination control instead of the conventional 2-step illumination adjustment system. This allows for the level of lighting to be set precisely to suit the surface texture and color of the workpiece. These options include:

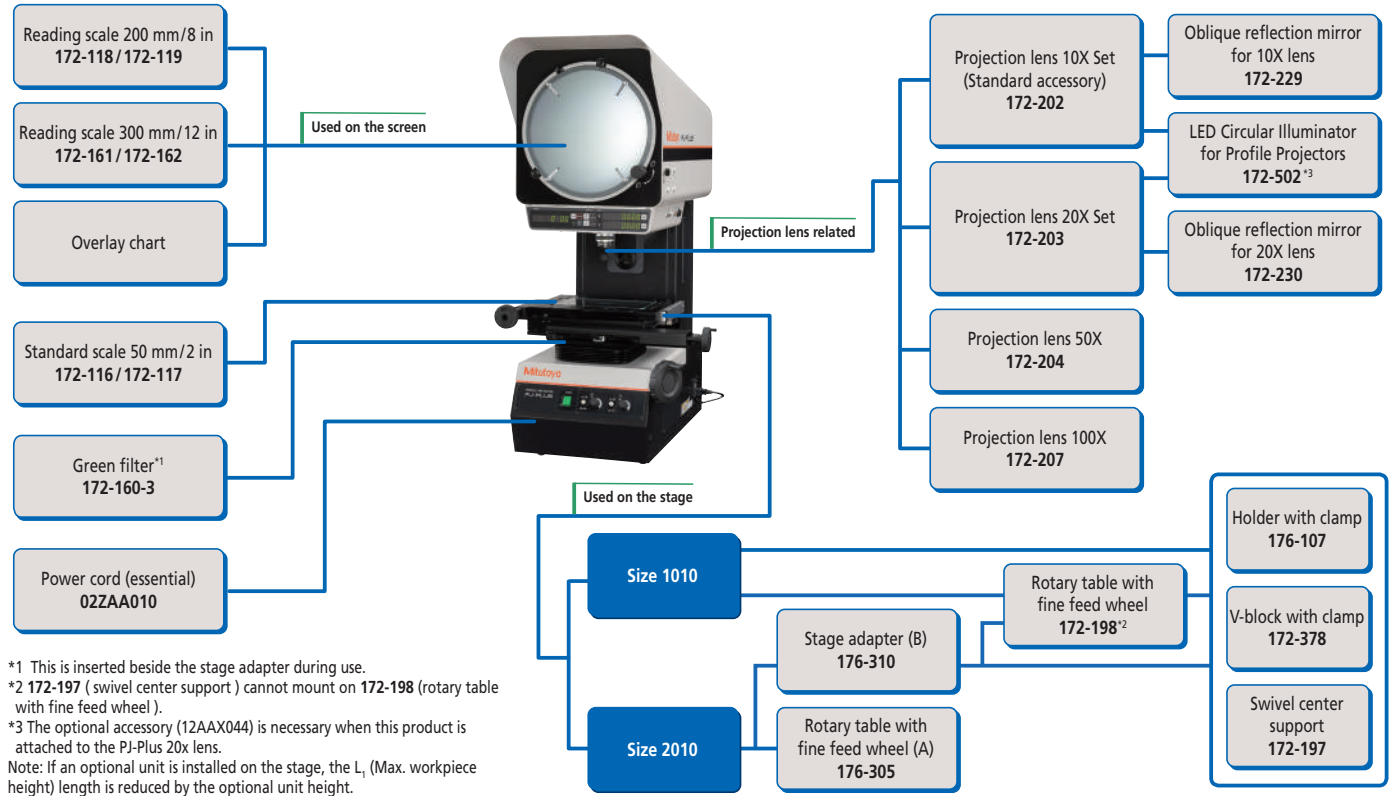
- Color temperature varies much less with LED illumination as compared to halogen illumination
- Projected image under LED illumination is sharper, easier to inspect



Above: A knob on the front of the machine allows for easy stepless light intensity control.  
Right: Color temperature change with illumination level



## System Diagram



\*1 This is inserted beside the stage adapter during use.  
 \*2 172-197 (swivel center support) cannot mount on 172-198 (rotary table with fine feed wheel).  
 \*3 The optional accessory (12AAX044) is necessary when this product is attached to the PJ-Plus 20x lens.  
 Note: If an optional unit is installed on the stage, the L<sub>1</sub> (Max. workpiece height) length is reduced by the optional unit height.  
 Stand for PJ-Plus is 64PMI167

## PJ-Plus Specifications

| Order No.                  | 302-801-10  | 302-802-10   |
|----------------------------|---|--|
| Projected image            | Inverted  |  |
| Protractor screen          | Effective diameter  | ø315mm / 12.4"   |
|                            | Screen rotation   | ±360° (The counter displays up to ±370°)   |
|                            | Angle reading   | Digital counter (ABS/INC mode switching), Zero Set   |
|                            | Resolution  | 1' or 0.01° (switchable)   |
|                            | Cross-hairs   | 90° solid lines  |
| Projection lens            | Magnification   | 10X (Standard accessory), 20X, 50X, 100X<br>External half-reflecting mirror for surface illumination (only for 10X, 20X) |
|                            | Lens mount  | Bayonet mount  |
| Magnification accuracy*    | Contour illumination  | ±0.1 % or less of nominal magnification  |
|                            | Surface illumination  | ±0.15 % or less of nominal magnification   |
| Maximum workpiece height   | Refer to the projection lenses L <sub>1</sub> right                                       |  |
| Contour illumination       | White LED light source, Telecentric, Variable brightness adjustment                       |  |
| Surface illumination       | White LED light source, With an adjustable condenser lens, Variable brightness adjustment |  |
| Resolution for X/Y counter | 0.0001 in/0.001 mm  |  |
| Power supply               | 100 V to 240 V AC, 50/60 Hz   |  |
| Mass                       | 114kg / 251lbs (PJ-P1010A), 118 kg / 260lbs (PJ-P2010A)                                   |  |
| Stage Size                 | 4 x 4" / 100mm x 100mm  | 8 x 4" / 200mm x 100mm   |
| Power consumption          | 60 W  |  |

\* Our magnification accuracy standard only checks contour illumination (that it is ±0.1 % or less). (If the magnification accuracy under contour illumination is a permissible value, that under surface illumination is also guaranteed to be within ±0.15 % of our standard.)

Refer to Bulletin No. 2300 for more information.

## Built-in Digital XY Counter

The PJ-Plus features a built-in digital XY counter on the front of the machine. The digital counter displays XY axes and angle readings using high-intensity LEDs and a large character display for easy visibility unaffected by the environment. The operator can use the machine and view the readout directly on the projector as opposed to looking at an auxiliary DRO.

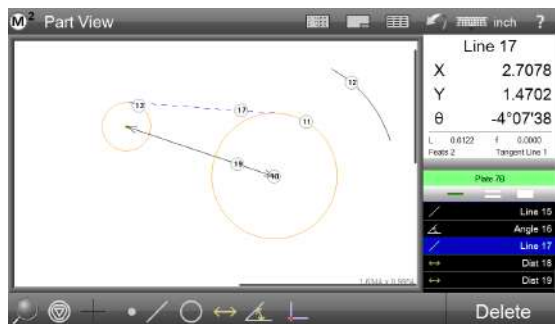
- Provides improved ergonomic benefits & faster readings
- Eliminates the need to use a DRO unit
- Data output of each counter value adopts the highly versatile RS-232C interface
- Resolution: 0.001mm/.0001"



An XY axis digital counter is built into the PJ-Plus

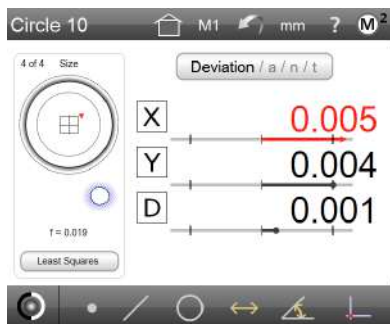
# Optional Accessories

## Optional M2 2D Processor



### Graphics-based "Part View" constructions

Generate popular construction types, like Distances and Tangent Lines, from within the graphical part view.



### Geometric tolerancing

Measure features, set nominals, apply tolerances and view deviation results with only a few quick clicks.



**Reports** Flexibility for report contents and formatting allows for full customization of the data format, header information, and header and footer graphics.

| Package #      | Description         | Edge Detection |
|----------------|---------------------|----------------|
| 302-801-10PKA1 | PJ Plus 4 x 4 stage | Yes            |
| 302-801-10PKA2 | PJ Plus 4 x 4 stage | No             |
| 302-802-10PKA1 | PJ-Plus 8 x 4 Stage | Yes            |
| 302-802-10PKA2 | PJ-Plus 8 x 4 Stage | No             |

### PJ-Plus with M2 2D processor packages

The PJ-Plus is available in packages with the Mitutoyo M2 software, touch screen tablet with or without edge detection. Mitutoyo installation and calibration is included with the purchase of one of the packages.

## Optional QM-Data / Optoeye



### QM-Data200

2-D data processing unit.  
**264-155A:** Stand mount type  
**264-156A:** Arm mount type



### 332-151: Optoeye\*

Edge detection system for QM-Data 200  
**12AAE671:** Detector attachment (A)  
 \*bracket 12AAW463 required for optoeye

## New Optional Ring Light

Part number **172-502** is a new optional ring light for 10x and 20x objectives\*



\* Damping ring 12AAX044 is required for connecting ring light to a 20x objective.



Example of attaching the LED circular illuminator on the PJ-Plus



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