

# Advanced Type Vertical Motorized Test Stand EMX2-500N

- Motorized Test Stand with a stable force application capacity of up to 500N
- Enable highly reproducible tests with uniform test conditions in speed/force direction
- Able to perform tension /compression tests set at travel distances in 0.1mm increments
- Force gauge interlinking functions equipped for contact / break detection and force control
- Supports variety of testing conditions with a wide speed range settings from 0.5 to 600 mm/min
- Dedicated downloadable software included for setting/saving/loading test conditions

## EMX2-500N for Advanced Force Measurement

EMX2-500N is an advanced type of motorized test stand with digital travel distance setting (in 0.1mm increments), contact / break detection, and operation control by force value (\*1).

EMX2-500N boasts one of the highest rigidities of IMADA's all models, minimizing deflection under load to achieve higher precision in force-displacement measurement. Accommodates a wide range of test speeds from 0.5 to 600 mm/min and enables repetitive durability testing with a set number of cycles under identical conditions.

EMX2-500N features a condition memory function up to 10 settings and downloadable software included for setting test conditions from PC (\*2). Setting and switching test conditions with simple operability.

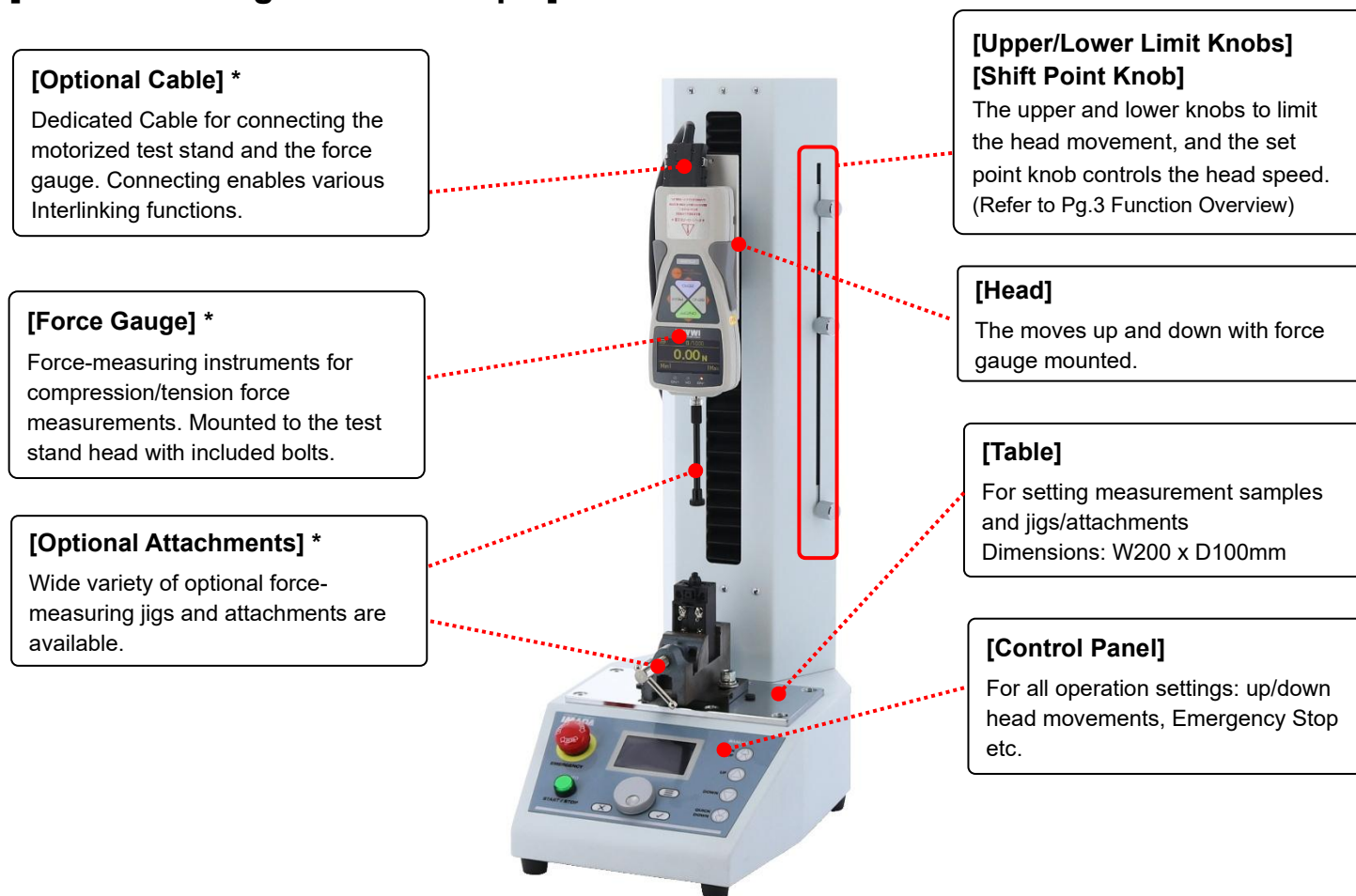


| Features                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Increased Measurement Reproducibility</b> <ul style="list-style-type: none"> <li>- Stable force application: Capacity up to 500N</li> <li>- Uniform Compression / Tension direction and speed</li> <li>- Highest rigidity / minimal deflection (max.0.25mm)</li> <li>- Smooth operation enabled with ball screws</li> <li>- Digital travel distance setting in 0.1mm increments</li> </ul> | <b>Caters to Tests of wide variations</b> <ul style="list-style-type: none"> <li>- Supports speed range settings from 0.5-600 mm/min</li> <li>- Supports number of repetitions for durability tests</li> <li>- Supports keeping at specified load (*1) with timer function</li> <li>- Variety of practical attachments available for the table</li> <li>- External input/output function is included as standard</li> </ul> |
| <b>Easy Operation</b> <ul style="list-style-type: none"> <li>- Easy test condition setting with the dial</li> <li>- Easy test condition confirmation</li> <li>- Easy test condition setting with included software from PC (*2)</li> </ul>                                                                                                                                                    | <b>Improved Functions and Operation Safety</b> <ul style="list-style-type: none"> <li>- Save up to 10 test conditions in the stand</li> <li>- Shift Point Knob for Head movement speed changes</li> <li>- Equipped with contact / break detections (*1)</li> <li>- Equipped with settings lock function to save settings with password</li> </ul>                                                                           |

\*1 Force gauge connection required for force gauge interlinking function with a dedicated cable. Refer to Pg. 5 for details.

\*2 Software CS Test Preset Builder download version included. Refer to Pg. 6 for details.

## [Product Configuration Example]

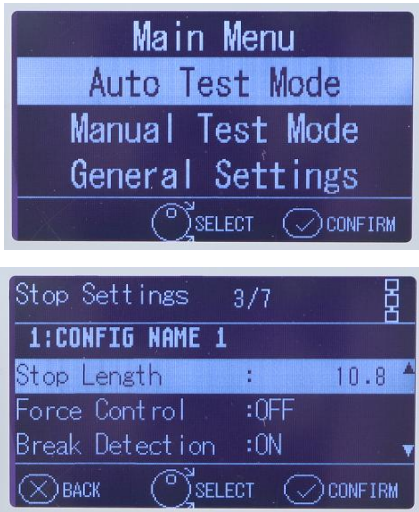
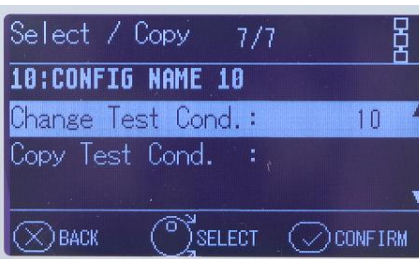


\*Force Gauges, Optional Attachments, and Optional Cables are sold separately.

## [Control Panel]



## [Basic Operations]

| Test Modes: Automatic and Manual                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Test Mode Setting from Main Menu and Auto Test Mode Setting Display</p> | <p><b>[Auto Test Mode]</b></p> <p><b>Auto Test Mode</b> settings enable automatic movement of the head within the set stroke limits / at specified travel distance, operation controls by force value (with specified force values: stop, reverse, hold, etc.) *1, and repeat settings, which can be configured with the required number of repeats and stops.</p> <p>■ Speed Settings for Auto Test Mode</p> <p>The speed settings are available within the range of 0.5 to 600 mm/min for the measurement Forward, Measuring, and Return. Refer to the [Product Specifications] for details on setting resolution and other specifications.</p> <p><b>[Manual Test Mode]</b></p> <p><b>Manual Test Mode</b> for up and down moves and controlling the force gauge (Test-Stand Head) by pressing the Control Panel buttons. Separate up and down buttons for adjusting head movement and maximum speed settings. <b>JOG MOVE</b> for minor up/down adjusting with the dial turning.</p> |
| Auto Test Mode Function                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                            | <p><b>[Speed Switching Function]</b></p> <p>Automatically switches the head movement speed when the <b>shift point knob</b> is passed. The Head moves at high speed until the shift point and when passed, switches to low speed automatically. Helps with measurement efficiency improvement. (*2)</p> <p><b>[Test Condition Memory Function]</b></p> <p>Allows saving up to 10 test conditions in memory and recalled.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Lock Setting                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                           | <p>Settings locked to protect settings from accidental operation. Passcode settings are available for lock setting changes.</p> <p><b>[General Settings]</b> Lock the general settings in the <b>Main Menu</b><br/> <b>[Auto Test Number]</b> Lock the test numbers selection in the <b>Auto Test Mode</b><br/> <b>[Auto Test Conditions]</b> Lock the test conditions in the <b>Auto Test Mode</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

\*1 For operation control by force value, connect a compatible force gauge with a dedicated cable. Refer to Page 5 for details.

\*2 The Head speed settings before passing the Shift-Point must be the same or faster than after passing.

## [EMX2-500N Options]

| Long Stroke (-L)                                                                                                                                                        | Linear Scale Unit (-FA)                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The long stroke options for extended test stand column and the stroke distances. Designed for testing longer material samples or long, highly stretchable samples, etc. | <p>This option allows a linear scale unit to be installed on the test stand column for measuring head displacement.</p> <p>*A compatible force gauge with displacement I/O, such as the ZTA series, and an optional cable are required.</p> |

- Refer to the [Specifications] for details of options.

- Customer-installable linear scale unit is also available. Refer to the [Accessories] for details.

## [Specifications]

| Model                          | EMX2-500N                                                                                                                                                                                                                          |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Capacity                       | 500N                                                                                                                                                                                                                               |
| Speed Range (*1, *2)           | Digital 0.5 to 600 mm/min [Settings: 0.1mm /min units]                                                                                                                                                                             |
| Max. Sample Height             | [Standard Model] Approx. 280mm (*3)<br>[Long Stroke Option (-L)] Approx. 580mm (*3)                                                                                                                                                |
| Rigidity                       | [Standard Model] 0.25 mm or less<br>[Long Stroke Option (-L)] 0.6 mm or less                                                                                                                                                       |
| Stroke Limit Setting           | Limit knobs (Upper/Lower Limits)<br>Digital Travel Distance Limit (0.1mm increments)                                                                                                                                               |
| Test Mode                      | Auto Test Mode / Manual Test Mode                                                                                                                                                                                                  |
| Counter/Timer Function         | Counter: Maximum 99,999 times (Auto Repeat Number Counts)<br>Timer: Maximum 99 minutes 59 seconds 9 (in 0.1 second increments)                                                                                                     |
| Test Condition Memory Function | Maximum 10 patterns / Test Condition Copy Function                                                                                                                                                                                 |
| Operation Control              | Emergency Stop Button, Force Control (*4) / Overload Stop Function (*4, *5)<br>Specified Travel Distance (*6) / External Signal Input/Output<br>Contact detection (*4, *7) / Break Detection (*4, *7)                              |
| Lock Function                  | General Settings Lock, Auto Test Number Lock, Auto Test Condition Lock                                                                                                                                                             |
| Operating Environment          | Ambient Temperature: 0 to +40 °C / Relative Humidity: 85% or less (no condensation)                                                                                                                                                |
| Power Supply                   | AC100-240V, 50/60Hz (Please specify 100 /120 / 230V: Accessories vary on the Voltages)                                                                                                                                             |
| Power Consumption              | 50W                                                                                                                                                                                                                                |
| Dimensions                     | Refer to [Dimensions]                                                                                                                                                                                                              |
| Weight                         | [Standard specification] Approx. 19kg<br>[Long Stroke Option (-L) specification] Approx. 24kg                                                                                                                                      |
| Supplied Accessories           | Operating Manual, Power Cable, Spare Fuse, Tools, Grip Mounting Adaptor (GF-1),<br>Fall prevention attachments (For Long Stroke Option -L Model), USB cable /<br>Test Stand Operation Setting Software CS Test Preset Builder (*8) |
| Available Options (*9)         | -L: Stroke extended by 300mm / -FA: Linear-Scale pre-installed                                                                                                                                                                     |
| Mountable Force Gauge          | See [Mountable Force Gauges] on page 5                                                                                                                                                                                             |

\*1 When applying force to highly elastic samples such as springs, the speed may decrease by a few percent.

\*2 The speed unit: in/min is also available only in international model. (0.02 to 23.60 in/min [**Setting in 0.01 in/min increments**])

\*3 This value is the distance between the test stand table and the tip of force gauge measuring shaft when the head is in the uppermost position. (When up to 1000N model of ZTS/ZTA series is mounted.)

\*4 Connection with a compatible force gauge by a dedicated cable is required. Refer to the [Force gauge Interlinking function]

\*5 It does not guarantee complete prevention of failures due to overloads.

\*6 Due to the mechanical characteristics of this product, a cumulative error may occur between the set displacement and the actual displacement. These errors may vary depending on operating conditions (e.g., applied force, test speed, and temperature changes).  
Adjust test parameters as required.

\*7 Use of CONTACT / BREAK DETECTION at the same time unable

\*8 Test Stand Operation Setting Software: CS Test Preset Builder: Refer to Page 6 for details.

\*9 Add the Option Code; (-L)/(-FA) to the Model number for the option models

E.g. For the EMX2 -500N long stroke option → Model number: EMX2 -500N-L

## [Accessories] Sold separately

| Linear Scale Unit: OP-0.5KE2-FA (-L)                                                                        |
|-------------------------------------------------------------------------------------------------------------|
| Self-installable linear scale unit for the measurement of Head movements for displacement data analysis. *1 |

- Dedicated linear scale only for the EMX2-500N/EMX2-500N-L.

\*1 For displaying and outputting the Linear Scale Unit values, a compatible force gauge and a dedicated cable connection required.  
Linear Scale Unit pre-installed Test Stand -FA option is also available.

## [Mountable Force Gauges]

|                         | EMX2-500N |
|-------------------------|-----------|
| DST/DSV-2N to 1000N     | ✓         |
| ZTS/ZTA-2N to 1000N     | ✓         |
| ZTS/ZTA-2500N to 5000N  | N/A       |
| DPU-2N to 500N          | ✓         |
| DPUH-1000N to 5000N     | N/A       |
| FB/FS/PS/PSS/PSM series | ✓         |
| PSH series              | N/A       |

- Load cells not listed cannot be mounted on any of our test stands.
- Ensure to use within the capacity of force gauge and test stand regardless of the mountable models.

## [Force gauge Interlinking function] Applicable with the dedicated force gauge and cable connections.

| Function                              | Compatible Force Gauges           | Dedicated Cable  | Description                                                                                                                                                                                                                 |
|---------------------------------------|-----------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Overload Stop (*1)</b>             | ZTS/ZTA/eZT<br>FA Plus2/eFA Plus2 | CB-528<br>CB-718 | Automatically stops the operation when an overload signal is received from the force gauge. Note: This function does not guarantee complete prevention of failures due to overloads.                                        |
|                                       | Q SMA-400                         | QCB-ST01         |                                                                                                                                                                                                                             |
| <b>Force Control</b>                  | ZTS/ZTA/eZT<br>FA Plus2/eFA Plus2 | CB-528<br>CB-718 | Test stand operation control with the force gauge (Stop/Reverse movement directions, force value Keep) according to the force value (limited for the Auto Test Mode operation).                                             |
|                                       | Q SMA-400                         | QCB-ST01         |                                                                                                                                                                                                                             |
| <b>Contact Detection (*2)</b>         | ZTA/eZT<br>FA Plus2/eFA Plus2     | CB-528<br>CB-718 | With the force gauge function, automatically detects the sample contact. For displacement measurement, the displacement resets to zero when contact is detected. (in the Auto Test Mode only)                               |
| <b>Break Detection (*2)</b>           | ZTA/eZT<br>FA Plus2/eFA Plus2     | CB-528<br>CB-718 | With the force gauge function, automatically detects sample breakage and stops or reverse the Test Stand operation (in the Auto Test Mode only).                                                                            |
| <b>Speed Switch</b>                   | ZTS/ZTA/eZT<br>FA Plus2/eFA Plus2 | CB-528<br>CB-718 | Automatically switches the head speed from the forward speed to the measuring speed by the Set Point of force gauge (limited for the Auto Test Mode operation). (*3)                                                        |
|                                       | Q SMA-400                         | QCB-ST01         |                                                                                                                                                                                                                             |
| <b>Displacement Input/Output (*4)</b> | ZTA/eZT<br>FA Plus2/eFA Plus2     | CB-718           | Displays and Outputs the stand head movement measured with the Linear Scale Unit in displacement value. The force-displacement graphing software (sold separately) enables the graphing of the force-displacement relation. |
|                                       | Q SMA-400                         | QCB-ST01         |                                                                                                                                                                                                                             |
| <b>Record Trigger</b>                 | ZTS/ZTA/eZT<br>FA Plus2/eFA Plus2 | CB-528<br>CB-718 | Generates trigger signals at the start/end of auto tests. With the graphing software (sold separately), automatic recording of Start / Stop in response to a trigger signal.                                                |
|                                       | Q SMA-400                         | QCB-ST01         |                                                                                                                                                                                                                             |
| <b>ZERO Singal</b>                    | ZTS/ZTA/eZT<br>FA Plus2/eFA Plus2 | CB-528<br>CB-718 | ZERO signal transmission at the start of a forward move in the Auto Test Mode and reset the force gauge to Zero. It is possible to reset only the peak value to zero by setting on the force gauge.                         |
| <b>SEND Signal</b>                    | ZTS/ZTA/eZT<br>FA Plus2/eFA Plus2 | CB-528<br>CB-718 | Transmits a SEND signal at the end of the forward/return operation in the Auto Test Mode. The measurement data memory is saved in the force gauge.                                                                          |

\*1 Overload Stop function does not guarantee complete prevention of failure/damage due to overload.

\*2 Use of CONTACT / BREAK DETECTION at the same time unable.

\*3 Shift Point knob for Speed switching enable with no force gauge connection.

The Head speed settings before passing the Shift-Point must be the same or faster than after passing.

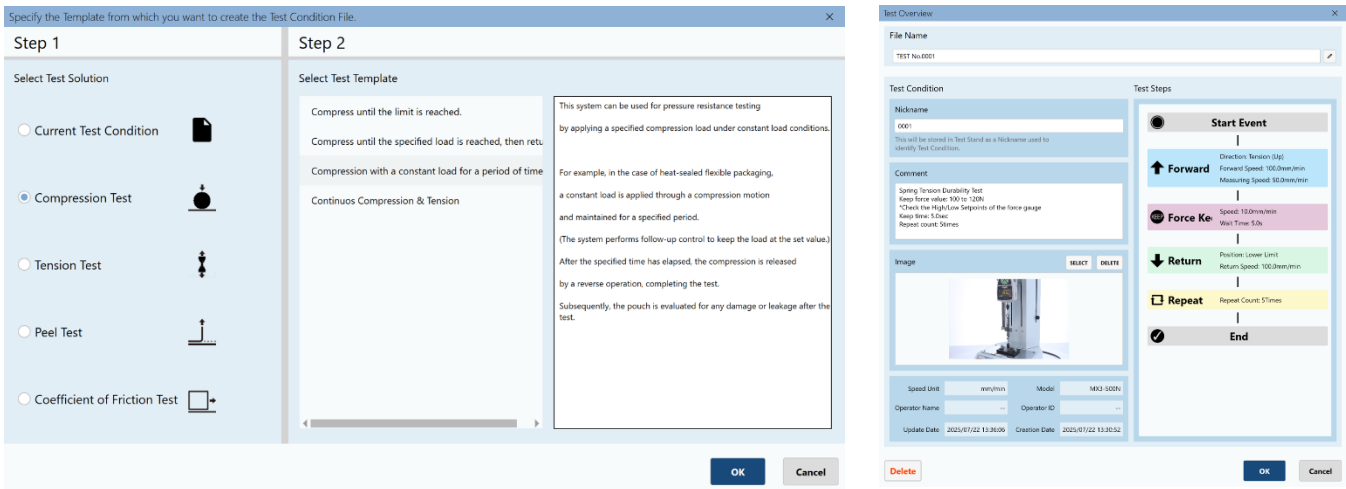
\*4 Displacement measurement requires a motorized test stand with a linear scale.

## [Dedicated Cables]

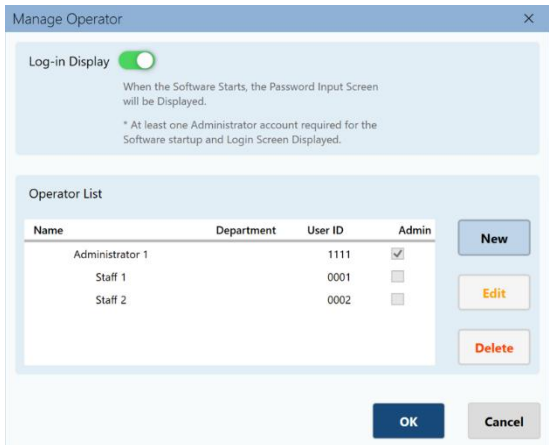
|               |                                                                                                                                                                                      |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CB-528</b> | For connecting the Force Gauge to the Test Stand to enable Interlinking functions.                                                                                                   |
| <b>CB-718</b> | For -FA option: Connects the dedicated Force Gauge to the Test Stand and the Linear Scale for force-displacement measurement. (Force gauge Interlinking functions are also enabled.) |
| <b>CB-716</b> | Open-Ended Cable for connection with the Interlock Cover or other peripheral devices.                                                                                                |

[CS Test Preset Builder: Set Up Software For Test Stands]

The software allows the Auto Test Mode testing condition settings from PC or Tablet devices. (\*1, \*2)



Presets for Auto Test Mode (\*3) can be easily created and reflected to the test stand by following simple procedures. For work efficiency, presets are saved and loaded to a PC or tablet device for easy test switching.



The Operator Management Function, used in conjunction with the lock function of the test stand, prevents other users from changing set testing conditions.

- \*1 EMX2-500N enables test condition settings without using CS Test Preset Builder.
- \*2 CS Test Preset Builder: a download version for downloads from IMADA Connected with a user and the applicable product registration. Internet connection required for registration, downloading, and installing the CS Test Preset Builder.
- \*3 Preset is to compile the test speed, reversal/stop conditions, etc. Images and comments added for each measurement preset; sample setting processes and measurement precautions can be saved as notes. Presets created when connected to an EMX2 series stand cannot be sent to MX3 series test stand.

© Software operating environment

|                       |                                                                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Environment | Supported OS: Windows 10/11                                                                                                                                                          |
| Hardware              | CPU: Recommended Core i3 1GHz or higher,<br>Memory: Recommended 8GB or higher<br>Hard Disk: 10GB or more (data storage area)                                                         |
| Platform              | .NET 8                                                                                                                                                                               |
| Screen Size           | Resolution 1920 x 1080 pixels or higher                                                                                                                                              |
| Precautions           | - To download/ install/ use the software, Windows user account with the administrator rights is required.<br>- An internet connection is necessary for downloading and installation. |

## [Dimensions]

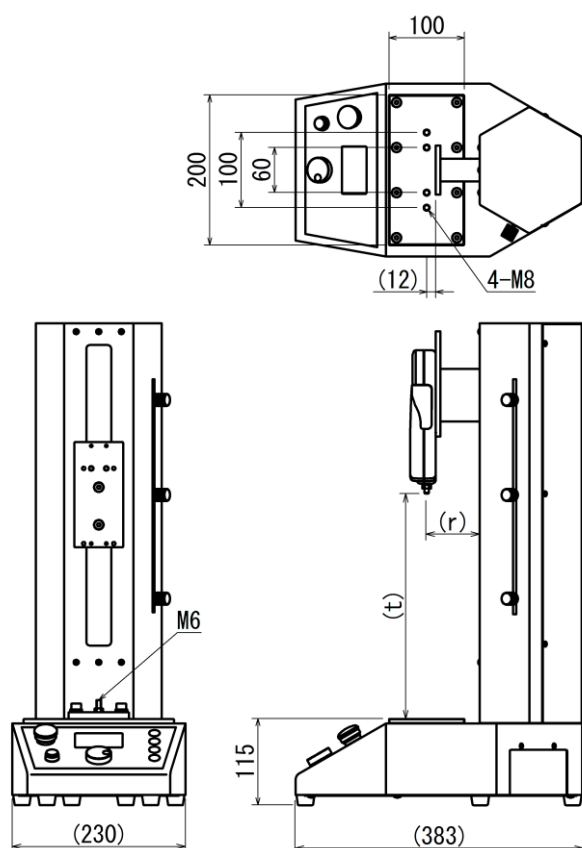
### [EMX 2 -500N External View Description]

**Front View:** the included **chuck mounting plate GF-1** attached

**Side View / Top View:** the included **GF-1** unattached.

**M8** in the Top View: the screw hole position for the **GF-1** on the Test Stand Table.

**M6** in the Front View: the attachment mounting screw of the included **GF-1**



|   |                                    | EMX2-500N | EMX2-500N-L |
|---|------------------------------------|-----------|-------------|
| H |                                    | 641       | 941         |
| r | With ZTS/ZTA (2N to 1000N) mounted | 70        |             |
|   | With DST/DSV mounted               |           |             |
|   | With DPU (2N to 500N) mounted      | 68        |             |
| t | With DST/DSV mounted               | 32 to 280 | 32 to 580   |
|   | With ZTS/ZTA (2N to 1000N) mounted | 40 to 290 | 40 to 590   |
|   | With DPU (2N to 10N) mounted       | 54 to 305 | 54 to 605   |
|   | With DPU (20N to 500N) mounted     | 48 to 295 | 48 to 595   |

Unit: mm

## [Cautions]

- Information in this document is subject to change without prior notice.
- This document is product descriptions and handling precautions, and do not guarantee various characteristics or safety.
- This product is designed for force measurement purpose only.
- Do not copy and use this content without authorization.
- A force gauge (sold separately) is required to use this product.
- Do not use this product in the environments including fierce temperature changes, high temperature, high humidity, near water, dusty place.

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