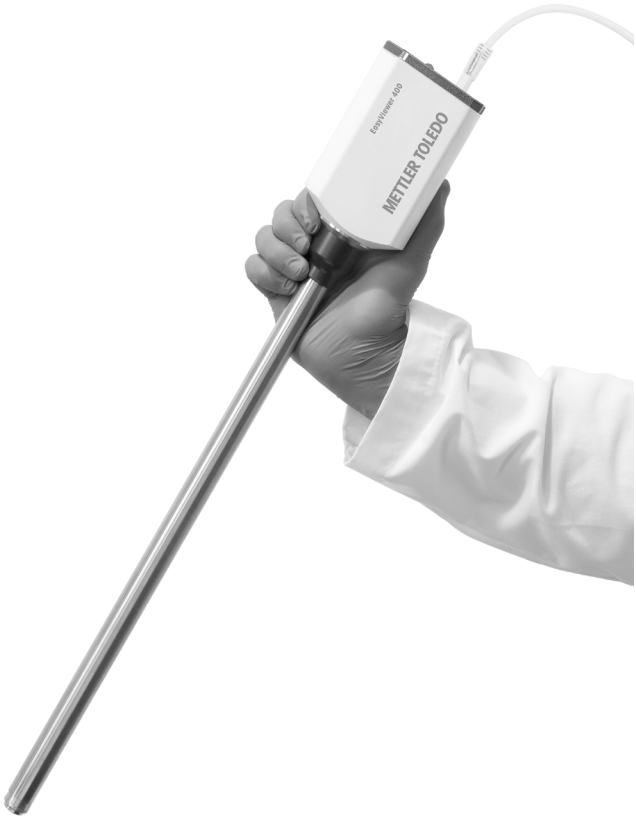
Hardware Manual

EasyViewer™ 400

View and Measure Particles *In Situ* and in Real Time



METTLER TOLEDO

For technical support, email: AutoChemCustomerCare@mt.com

For updates, webinars, and the latest documents: http://community.autochem.mt.com

Mettler-Toledo AutoChem, Inc.
6708 Alexander Bell Drive
Columbia, MD 21046

www.mt.com/AutoChem

Tel: + 1 866.333.6822

Fax: +1 410.910.8600

Contents

1 Introduction

This manual covers specific safety and quality information relating to the EasyViewer™ 400.

EasyViewer 400 is a probe-based imaging tool that captures high-resolution images of crystals, particles and droplets, as they exist in process. Combined with iC Vision™, an easy-to-use image analysis software, EasyViewer becomes a powerful particle size analyzer that can monitor process changes and quantify particle size and shape in real time. EasyViewer can characterize particle processes across scales, supporting process scale-up, transfer and production. Exceptional information combined with broad usability makes EasyViewer a compelling tool that scientists will enjoy using to accelerate decision-making and expedite process development and scale-up.

www.mt.com/EasyViewer400

2 Intended Use

The system includes a lighting system (laser diodes), an imaging system, a camera, PCBs, and a USB cable. The probe back end is designed to protect against ingress when dust, humidity, and wet conditions are present.

The system may only be used in safe locations. EasyViewer 400 is not certified for use in hazardous settings.

3 Technical Data

Certifications	CE/NRTL-C Approved, Class 1 Laser Device, Compliant with 21CFR1040.10 and 1040.11 and IEC 60825-1; Low Voltage Directive 2014/35/EU IEC/EN 61010-1 2010 EMC Directive 2014/30/EU EN 61326-1 2013 RoHS Directive 2011/65/EU
Functional Specifications	
Method of Measurement	Imaging and Image Analysis
Field of View	1100 um x 800 µm (± 50 µm)
Optical Resolution	> 980 nm
Illumination	8 pulsed laser diodes (4 on the front; 4 on the back)
Laser Wavelength	450nm

Table 1. System Certifications and Functional Specifications

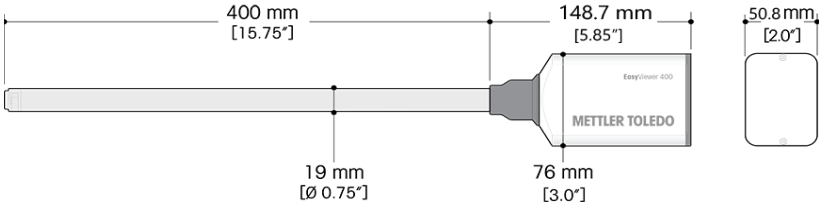


Figure 1. Probe Dimensions

Wetted Materials and Materials of Construction	
Wetted Probe Tip	Alloy C22
Wetted Probe Window	Sapphire
Probe Back End	Aluminum, anodized and powder-coated, Stainless Steel
Cover (flexible mounting)	Delrin, Kalrez O-ring
Clamp-on Reflector	Alloy C22 and PTFE
Probe Tip Environment	
Operating Temperature Range	–80 to 100 °C
Operating Pressure Range	0 to 10 barg [0 to 145 psig]
Back End Environment	
Humidity Range	0 to 95% RH
Operating Temperature Range	0 to 25 °C (full probe submersion) 0 to 40 °C (< 300mm submersion) At full probe submersion at 100 °C, the operating range is 0 to 25 °C. If the probe is only submerged to 300mm, then it is 0 to 40 °C.
Note: Probe operating temperatures below the dew point temperature of the environment require purged air, described on page 10.	
Installation	
Weight (approximate), Probe and cables	1.45 kg [3.20 lb]
Power	
Power (via USB 3.0 on control PC)	+5 VDC, 1.7 A (maximum)
Power (USB 3.0 powered extender)	100-240 VAC (auto-switching), 50/60 Hz, 1.7 A
Communication	
USB Cable	3m, Type C male (instrument side) Type A male (PC side)
Optional USB cable, Extender (powered)*	10 m, Type A, male and female
* Disclaimer: USB 3 extenders are sensitive to power disruptions. When using an extender, be aware that loss of communication can occur.	
Purge (Optional)	
Air inlet on interface unit	3.18 mm [1/8 in], quick-connect
Air tubing (supplied)	1.8 m [6 ft] of 3.18 mm [1/8 in] dia.
Adapter, tubing to purge controller, (supplied)	6 mm to 1/8 in

Table 2. Probe Specifications

Site preparation for the METTLER TOLEDO EasyViewer 400 system is the end user's responsibility. The following should be considered to ensure successful installation of the EasyViewer 400.

Power Requirements

Verify that a USB 3.0 port on the control PC is accessible in the area of intended use for the EasyViewer 400. The EasyViewer 400's power and communication is via the USB port on the control computer. An optional powered USB extender can be used to reach far-away PCs, but is not considered part of the system.

Area of Intended Use

The area of intended use must provide adequate space to manipulate the probe and cable to avoid kinks in the cable. The probe back end should be located with access at eye level to view LEDs. The USB cable provides 3 meters [9.84 feet] of distance between the probe back end and the control computer. The optional extender can increase that distance to 13 meters [42.65 feet].

The EasyViewer 400 system is designed for indoor use. The probe back end contains sensitive electronic components, including a precision camera that should be protected from severe environmental conditions. Direct, intense sunlight can raise the internal temperatures above operating specifications. Refer to *Section 3 - Technical Data* for the temperature and humidity specifications of the system along with size and weight specifications. Exceeding environmental specification limits can damage the instrument. The maximum working altitude is 2000m above sea level, the pollution degree is 2, and the overvoltage is category (I).

Air/Gas Requirements (If Applicable)

To prevent condensation when operating below the dew point of the environment, the EasyViewer 400 should be purged for at least one hour before starting an experiment. The probe requires a source of clean, dry, and pressure-regulated instrument air or inert gas. The quality of the air or gas supply must meet the specifications of the American National Standards Institute/Instrument Society of America (ANSI/ISA) S7.0.01- 1996 Quality Standard for Instrument Air. Inadequate purge air can damage the instrument. Air/gas must:

- Have a dew point at least 10 °C [50 °F] lower than the minimum temperature to which any part of the system will be exposed.
- Contain less than 1 ppm total oil or hydrocarbons
- Contain less than 1 ppm particulates at a maximum size of 3 microns
- Be free of any corrosive contaminants and flammable or toxic gases.

Air supply pressure, maximum	3.4 barg [50 psig]
Operating pressure, normal	2.0 barg [30 psig]
Operating flow rate, starting one (1) hour before use	0.5 SLPM [0.02 SCFM]

Table 3. Probe Air/Gas Specification

4 Safety Information

CE	The CE Mark applies only to unmodified instruments as supplied by Mettler-Toledo AutoChem, Inc. Modifications may require on-site testing for compliance verification. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
	**Caution** — Read all safety warnings before installing or operating this equipment. Failure to follow the instructions and caution/warning statements could result in personal injury and/or product damage that could void the warranty.
	**Caution** — There are no user-serviceable parts in the system. Contact a METTLER TOLEDO Field Service Engineer (FSE) for all service needs.
	**Warning** — This equipment is approved for indoor use only.
	**Warning** — Visible laser radiation.

Table 4. Safety Cautions and Warnings

Laser Classification

All standard-model EasyViewer 400 instruments are in compliance with the U. S. Department of Health and Human Services (DHHS) Radiation Performance regulations and with International Standards.

THE EasyViewer 400 IS A CLASS 1 LASER PRODUCT COMPLIANT WITH
DHHS 21 CFR 1040.10 AND 1040.11
EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE 50, DATED JUNE 24, 2007.
THE EasyViewer 400 IS A CLASS 1 LASER PRODUCT COMPLIANT WITH IEC 60825-1.

Laser de Classe 1
Conforme à la norme 21 CFR 1040.10 et 1040.11
À l'exception des écarts conformement à l'avis Laser 50 en du 24 Juin 2004
et conforme à la norme IEC 60825-1.

5 Supplementary Documentation

An electronic EasyViewer 400 Hardware Documentation Portfolio, shipped with the instrument, includes the following documents in addition to this manual:

- *Positioning the ParticleTrack or EasyViewer Probe Quick Reference* (MK-PB-0050-AC)
- *Using the PSC Purge Controller Quick Reference* (MK-PB-0120-AC)

Please refer to the iC Vision user assistance for software documentation.

6 Product Installation

EasyViewer 400 system installation involves connection of the USB power and communication between the instrument and the control PC. If the optional purge controller is purchased for applications where the operating environment temperature is below the dew point, a third connection to instrument-quality air is also required on the instrument back end. The system connections are completed by a METTLER TOLEDO-qualified FSE. Details on the system connections are provided below should the system be relocated following the initial installation.

Owing to the complex nature of multi-phase flow, proper installation is very important for successful application of inline particle- and droplet-measurement techniques. Installation and mounting of probe-based instruments for particle characterization should consider multiple factors including:

- Existing or planned laboratory or process equipment
- Expected ranges of process variables such as temperature, pressure, flow rates, and/or flow patterns
- Expected range of particle/droplet size and concentration
- Probe location and orientation as shown in Figure 2.

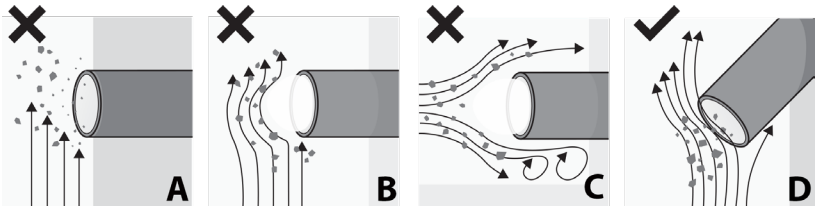


Figure 2. Implementation of an EasyViewer instrument:
(A) flush with wall of vessel or pipeline;
(B) inserted tangentially to process flow;
(C) inserted perpendicular to process flow at an elbow;
(D) inserted at optimal angle (45°) relative to process flow.

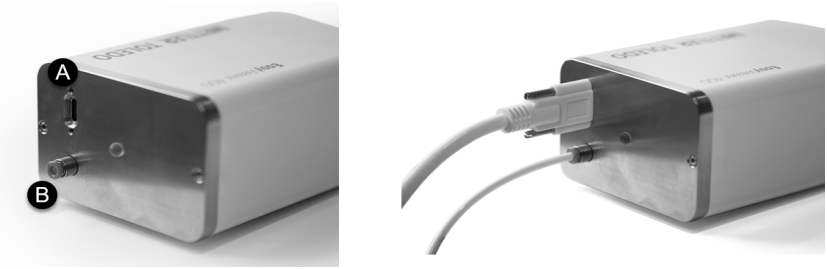


Figure 3. Instrument Connections:
(A) USB cable
(B) Purge Inlet

Connecting Power and Communications

The supplied USB cable provides power and communication to the probe.

1. Connect the male type C end of the USB cable to the back end of the EasyViewer instrument.
2. Tighten the locking screws of the USB cable to ensure a secure seal and prevent ingress of solvent or debris.
3. Optional if using the USB Extender:

   3. 1 Plug the male end of the USB cable into the female end of the powered extender, and

   3.2 Plug the extension cable into a power outlet. The use of a surge protector power strip is recommended.

4. Plug the male end of the USB cable (or powered extender) into a USB 3.0 port on the control computer. Assuming the computer is powered ON, the LED indicator on the probe back end illuminates flashing yellow to indicate that the instrument is powered on.
5. When connection is established with the control PC, the LED indicator on the probe backend will change to solid yellow.

Optional: Connect Air Supply (**B**)

When operating below the dew point temperature of the environment, purge air is required. The Purge Controller should be used to regulate the purge air flow.

1. Clean/purge all air lines and tubes before connecting to the EasyViewer 400 instrument.
2. Connect the air supply to the air inlet on the purge controller (B in Figure 3). The required tubing from the air supply to the Purge Controller is user-supplied (6.35 mm [1/4-inch], rated for 120 psig, may be made of polypropylene, PVC, or nylon).
3. Connect the adapter (6 mm to 1/8 inch, supplied with the Purge Controller) to the outlet on the Purge Controller. On the outlet of the adapter (not shown), connect the supplied 3.18 mm [1/8 inch] purge tubing to the EasyViewer 400 interface unit quick- connect purge inlet.
4. Adjust the purge controller pressure and set it to the pre-purge flow rate for one hour (Table 3). After the one hour pre-purge, the system is ready to run an experiment.
5. Refer to the quick reference guide for further details—"QuickRef-Using the PSC Purge Controller" (MK-PB- 0120-AC).

Figure 4. Purge Controller

Figure 5. Purge Exhaust

Note: The exhaust hole for the purge air is located below the probe back end near the delrin cover. Take care during installation and cleaning of the system to ensure the exhaust hole is not blocked or submerged in liquid.

7 Flexible Probe Mounting Options

A common laboratory configuration is an EasyViewer 400 probe mounted in a METTLER TOLEDO EasyMax™ or OptiMax™ workstation.

Lab-joint adapters are manufactured from PTFE (polytetrafluoroethylene) with O-ring seals, and are designed for the installation of EasyViewer 400 probes in a range of standard laboratory glass joints on round-bottomed flasks or jacketed lab reactors.

EasyViewer 400 probes include the Flexible Mounting System that enables the easy attachment of industry-standard flange adapters and fittings, without permanent modification of the probe. Length reducers are an option for use with flange adapters and other flexible mounting kits to provide a practical means of decreasing the probe wetted length when a shorter insertion depth is required. This innovative design from METTLER TOLEDO allows probes with this feature to be easily moved from one installation point to another at a lower overall cost.

All installation requirements should be discussed with your METTLER TOLEDO Technology and Applications Consultant.

8 Operating Instructions

During system installation, a trained METTLER TOLEDO FSE makes all system connections and verifies the system is ready for use.

If required, begin the pre-purge at least one hour before experiment start.

1. Power ON the iC Vision computer and verify the EasyViewer 400 is connected to a USB 3.0 port on the control computer.

   The EasyViewer 400 is powered via the USB connection. After connecting, the instrument LED will be solid yellow.
2. Launch the iC Vision software. 

   After launching iC Vision, the instrument LED will be solid green.
3. Observe the indicator LEDs on the back end of the EasyViewer 400 for an indication of the system status.
4. Once the iC Vision software is launched, the probe motorized focus will automatically adjust to the home position (set to the window at the factory). A user is immediately presented with a live image.
5. Clean the probe window, if required, and install the probe in the process to be monitored.

Indicators	Color	LED State	Status
Power	None	OFF	Instrument does not have power.
Power	Pulsing Yellow	ON	Instrument has power, but is not communicating with the control PC.
Communication	Solid Yellow	ON	Instrument has established communication with the control PC.
Communication	Solid Green	ON	Instrument is communicating with the iC Vision software but is not recording.
Recording	Pulsing Green	ON	Instrument is collecting and saving images in iC Vision.
Error	Pulsing Red	ON	Software error. Refer to "Errors" on pg 16.
Error	Solid Red	ON	Hardware error. Refer to "Errors" on pg 16.

Table 5. EasyViewer 400 LED Indicators

9 Best Practices for Routine Operation

Ensure Reliable Instrument Performance

- Follow preventative maintenance guidelines for your EasyViewer instrument.
- Check probe window cleanliness as part of routine SOP.
- Check probe performance as part of routine SOP.

Ensure Measurement Sensitivity by Optimizing Probe Location and Positioning

- The probe should be positioned in the process where it can obtain maximum sensitivity to changes in the particle or droplet system.
- Orient the probe to ensure the particle system flows optimally across the probe window surface.
- The tip must remain fully immersed to provide measurements of the particle/droplet system.
- Probe location is more critical under the following conditions:
  - Lower rheology
  - Larger median particle dimension
  - Greater deviation between average particle shape and a sphere (more irregular particles or particle structures).
- The location is less critical under the following conditions:
  - Smaller difference between particle density compared to carrying solution density.
  - Higher solids concentration (or higher dispersed phase in liquids)
  - Smaller median particle dimension.
  - Smaller deviation between average particle shape and a sphere (fewer irregular particles or particle structures)

Monitor Particle Systems Reliably

- iC Vision is recommended as the reliable SOP for routine monitoring of particle and droplet systems during the laboratory and scale-up processes.
- Use iC Vision for further improvement and optimization of templates to be used in application-specific SOPs.

Develop a Standard Operating Procedure (SOP)

- Select or create an appropriate iC Vision template for each given application based on the desired measurements and trends. A well-designed template will simplify the statistical-defining procedure.
- Define the default lighting scheme (front or back lighting). The factory default lighting scheme is front lighting, which provides a "backscattered" image. With back lighting mode, a "transmission illuminated" image is produced. For back lighting, it is strongly recommended to use the Clamp-On Reflector.
- Each time an experiment is started, the probe will automatically select a good focus position and optimize lighting conditions for the system.

Save Experiment Settings as a Template. Make sure to select the right template for a specific particle or droplet system.

Check Probe Window Cleanliness. The probe window must be clean before mounting the particle or droplet system.

10 Troubleshooting

Refer to the following table and investigate the possible cause to determine if the error persists. Otherwise, please contact the AutoChem Market Support Group for assistance.

Note: In the iC Vision software, the error appears in the LIVE Experiment Toolbar and is logged in the System Evens and Log section of the *FILE menu > Info* page. The control software LIVE tab and LIVE experiment toolbar change to red when an error occurs.

Tips

If this happens...	Do this...
iC Vision software is unable to connect to the instrument. Probe LED flashes red. Allow a few moments for the system to reestablish communications. If issues continue...	1. Shut down computer. 2. Disconnect USB cable. 3. Reconnect USB cable (verify connection to USB 3.0 port) 4. Start control computer and launch iC Vision software.
Condensation is forming inside the probe window. If the probe is inserted in a particle/droplet system with processing conditions below the dew point temperature, the optional Purge Controller must be used. *NOTE*: A 'High Relative Humidity' warning appears in the software.	1. Ensure inlet air supply is ccording to specifications before using instrument. 2. Run the purge for at least one hour before using the system.
HOME focus position is not at the window.	1. Start an experiment in iC Vision. 2. From the LIVE ribbon Focus group, adjust the motorized focus to be at the window using a fingerprint or Kimwipe® as a reference. 3. Set this to be the HOME position.
Probe LED is flashing red. Could indicate: • Loss of communication with iC Vision. • USB powered extender cable has become disconnected from power source (or the fixed USB has become disconnected from the extender cable.)	1. Check iC VISION for reported instrument fault on the *FILE > Instrument* page. 2. If fault is loss of communication, check USB connection. 3. Reconnect power supply to the powered USB extension cable. 4. Allow a few moments for the system to reestablish communication (bright yellow LED, followed by flashing green). If this issue continues, please contact METTLER TOLEDO Service.
Probe LED is solid red. Could indicate: • Laser fuse blown • Laser power supply blown • Bad focus motor • Damaged electronics	Contact METTLER TOLEDO Service.

Table 6. Common Troubleshooting Tips

FAQs

Question	Answer
Can I install EasyViewer 400 in a hazardous location (ATEX, IECEx)?	No, the EasyViewer 400 system is not certified for operation in potentially explosive atmospheres.
Can EasyViewer 400 be used in a non-lab environment?	The EasyViewer 400 has flexible mounting options that make it suitable for use in many non-laboratory environments. EasyViewer 400 is not ATEX or Class I Div 1 rated, so cannot be used in such settings. The EasyViewer 400 should not be sprayed down without the air purge connected.
Where do I find product documentation?	• A Hardware Documentation Portfolio ships with the instrument and is installed on the desktop of the control computer during initial installation. • An iC Vision software Online Help System is embedded in the software. • Check the AutoChem Customer Community website for the latest product documentation.
How does focusing work?	EasyViewer 400 has an automated, motorized focus and the focal position is adjustable in the iC Vision software.
Does the probe need purging at low temperatures?	Yes. The EasyViewer 400 should be purged at temperatures below the dew point of the atmosphere in which the probe is located to prevent condensation from obscuring the light.
What is the maximum distance from probe back end to control computer?	3 meters with the supported USB cable. Up to 13 meters is possible with the optional powered USB extender.
Are different magnification options available?	No.
How many lasers are tthere?	There are eight (8) lasers in total— four (4) front lighting and four (4) back lighting.
Is there an RE Reflector attachment like the one for the ParticleView V19?	Yes, and it is included with the system.
How should the EasyViewer 400 be cleaned?	The EasyViewer probe wetted materials are designed for a wide range of applications and environments. The wetted materials can be wiped cleaned with solvent or sprayed with steam that does not exceed material or environmental specifications as listed above. The EasyViewer 400 backend should not be cleaned with harsh solvents. Water, wet wipes, and isopropyl alcohol should be used to clean the probe backend. Make sure the air purge is on before spraying the back end with any cleaning solvents or some ingress could damage the instrument.

Table 7. Frequently Asked Questions

Errors

Error Message	EasyViewer 400 LED	iC Vision LIVE toolbar	Description	Possible Cause
Instrument off-line	**OFF**	**RED**	Power to probe is lost.	• Check connection between the instrument USB cable and the powered USB extension. • Verify the power supply is connected to the powered USB extension cable and the wall outlet. • If error does not clear after a few moments, disconnect and reconnect the instrument to the PC USB 3.0 port. Wait for the solid yellow LED on the probe back end. Then, restart iC Vision and wait for the LED to turn green..
Instrument off-line	**YELLOW** (pulsing)	**RED**	• Communication between instrument and control software is lost. • Hardware watchdog timer can no longer communicate with iC Vision. • USB powered extension cable has become disconnected from the power source.	• Check connection between powered USB extender and the control computer. • If error does not clear after a few moments, disconnect and reconnect the instrument to the PC USB 3.0 port. Wait for the solid yellow LED to appear. Then, restart iC Vision and wait for the LED to turn green.
	RED (pulsing)		iC Vision has stopped unexpectedly.	• Using *Windows Task Manager > Processes,* shut down the *iCVision.exe* process. • Disconnect and reconnect the instrument to the control computer. • Restart iC Vision and wait for the solid green LED on the probe back end to appear.

Table 8. Possible System Errors

Warnings

Warning Message	EasyViewer 400 LED	iC Vision LIVE Toolbar	Description	Possible Cause/ Action
Power Supply	**RED** (Solid)	**GREEN**	• Power to laser board is lost. • Warning displays in software. • No interruption to image collection; but ALL images will be BLACK as there is no light.	Contact METTLER TOLEDO Service.
Fuse Blown			• Fuse blown on the laser board resulting in power loss. • Warning displays in software. • No interruption to image collection, but ALL images will be BLACK as there is no light.	
Focus Motor			• Motor cannot find its zero position. This can occur: - During instrument power up - When user sets motor to 'Go to Zero' in iC Vision. • No interruption to image collection; but image quality may be compromised if image cannot be focused.	

Warnings (Continued)

Warning Message	EasyViewer 400 LED	iC Vision LIVE Toolbar	Description	Possible Cause/Action
High Pressure	**GREEN** (Pulsing)	**GREEN**	• Pressure sensor in probe back end has reached 15 psig. • No interruption to image collection in iC Vision.	• Verify inlet purge pressure and flow do not exceed specifications. • Ensure probe exhaust hole is not blocked (Figure 5). • If problem persists, contact METTLER TOLEDO service
High Temperature			• Temperature sensor in probe back end has approached the 50 °C limit. Software communicates a warning at 50 °C. • No interruption to image collection, but image quality may be compromised as higher temperatures increase camera noise.	• Verify environment temperature is not exceeding specifications • If problem persists, contact METTLER TOLEDO service.
High Relative Humidity			• Relative humidity sensor in probe back end has approached 96% limit. Software communicates a warning at 80%. • No interruption to image collection, but image quality may be compromised as humidity can result in condensation inside probe.	• Verify the purge is supplying clean, dry instrument air or nitrogen per specifications (page 10). • Verify the inlet purge pressure and operating flow rate are set per specifications.

Table 9. Troubleshooting Warnings

11 Product Maintenance

METTLER TOLEDO warranties its products against defects in materials and workmanship for twelve months from the date of installation or fifteen months from the date of shipment, whichever comes first. For details, please refer to the warranty provided with the instrument. For assistance, please email AutoChemCustomerCare@mt.com.

It is recommended that you retain the original packing materials if there is a need to return the EasyViewer system. If factory service is required, a METTLER TOLEDO FSE will issue a Return Material Authorization (RMA) form.

There are no user-serviceable parts inside an EasyViewer 400. Contact a METTLER TOLEDO FSE for all service needs.

Schedule the following maintenance tasks:

- Clean the probe window periodically. To clean the outside window, use a medium such as water, alcohol, or acetone to clear the surface. After cleaning, use a dry, clean Kimwipe® to remove cleaning solution. Probe window cleanliness can be verified in the software.
- Ensure the air/gas supply meets required standards, when using the optional purge.
- The EasyViewer 400 system is designed for indoor use, so only the base unit and probe back end can only be wiped clean. The wetted portion of the probe tip can be cleaned with solvent such as ethanol, IPA, or soap and water.
- Do not submerge the purge exhaust port located just under the back end.

METTLER TOLEDO has offices around the world. Contact the Mettler-Toledo AutoChem, Inc., headquarters in America for technical support or service. To arrange for specific application assistance from a METTLER TOLEDO Technology and Applications Consultant, or for general assistance, contact Customer Care through the toll-free number on page 2 of this manual.

Recommended Maintenance Schedule

A qualified METTLER TOLEDO Field Service Engineer should perform regular Preventive Maintenance (PM) on the system. Table 10 shows the normal life expectancy of several component parts. Use this information for planning potential cost of ownership.

It is also recommended that regular calibration and validation be a part of the instrument use and maintenance plans to ensure that high-quality data is always collected.
When an instrument is moved from one location to another location, we recommend performing an instrument validation using the reference tools that shipped with the instrument. Only a trained professional can perform an instrument calibration and make adjustments if necessary.

Replacement Interval	Parts
Annually (included in annual PM)	Calibration and adjustment
	Focus Motor
	Bearings
Recommended Every 5 Years	Lasers
	Camera

Table 10. Replaceable Parts

Relocation, Shipment, or Storage

To prevent and minimize damage to the EasyViewer 400, follow the instructions below to prepare the base unit and sampling technology for relocation, shipment, or storage.

1. Close the iC Vision software application and shutdown the computer according to normal operating procedures.
2. Disconnect the USB cable from the control computer.
3. Store the system and all components in the factory-supplied container in a secure, cool, dry location

12 Disposal

Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.

If you have any questions, please contact the responsible authority or the distributor from which this device was purchased.

Thank you for your contribution to environmental protection.

Learn More with our
Technical Webinar Program

Our on-demand webinars (online seminars) provide application and industry information relevant to you. These interactive presentations, provided by industry experts and our own applications team, give you an opportunity to learn more about your specific area of interest.

Topics include:

- Improving Crystallization and Precipitation Processes
- The Importance of Mixing in Process Development
- Avoiding Incidents During Scale-up
- Recent Advances in Organic Chemistry
- Calorimetry Best Practices
- Characterization of Catalytic Hydrogenations
- Plus other applications including green chemistry, organic synthesis, fermentation, high pressure chemistry and more

www.mt.com/ac-webinars

www.mt.com/EasyViewer400

Visit for more information

Mettler-Toledo AutoChem, Inc.
6708 Alexander Bell Drive
Columbia, MD 21046 USA
Telephone +1 410 910 8500
Fax +1 410 910 8600

Email autochem@mt.com
Internet www.mt.com/autochem

Printed in the USA MK-PB-0141-AC Rev A DCN 45

METTLER TOLEDO