

BUEHLER®

OmniMet®

FULLY MODULAR IMAGING SYSTEM & SOFTWARE SOLUTION

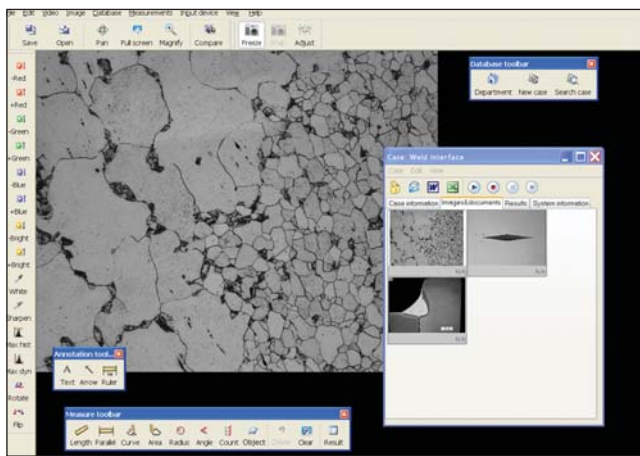
- **Engineered for Faster Results**
- **Linked Software Packages**
- **Choose Between Stand Alone Software Packages or a Complete System**
- **Full Database Flexibility: Store Multimedia, Written and Voice Annotations**
- **Additional Software Modules Allow the User to Modify a Software Package**
- **Securely Connect with Laboratories and Customers Around the Corner or Around the World**
- **Full Range of Hardware, Accessories and Cameras**



Fully Modular Imaging System & Software Solution

Buehler, the first name in material preparation and analysis continues to deliver the highest quality products to the materials market. Keeping with our tradition of innovation and reliability, Buehler is proud to present the new OmniMet® Modular Digital Imaging System.

Now OmniMet® can deliver a new level of imaging analysis. Utilizing a three tiered database to logically organize multiple users and images, OmniMet® is outfitted with user friendly functionality and programmable routines. OmniMet® has a customizable package that can meet the needs of a variety of laboratory situations and requirements.

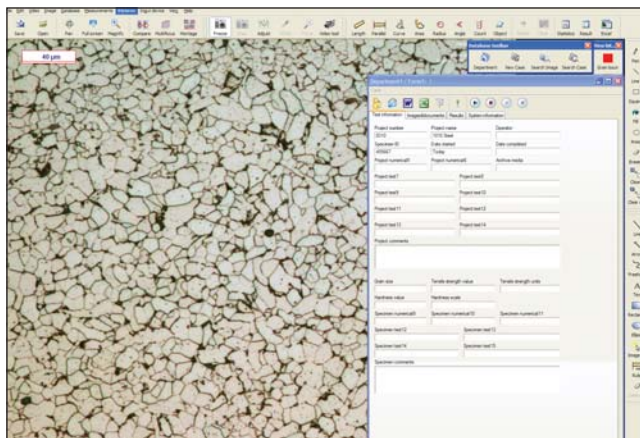


A sample case from the OmniMet Capture Advanced illustrating the user database where images, case information, documents, results and system information can be stored. The tool bars and windows can be placed anywhere on the desktop.

Organize - Capture - Report

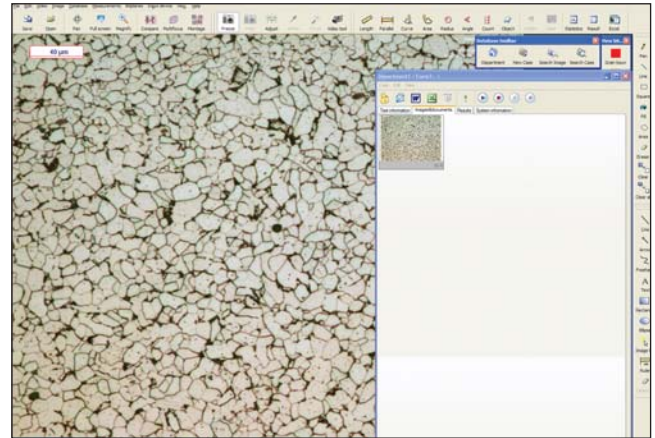
Organize

Create a file structure, set a user profile with administration rights, and organize your images data and reports. Use the OmniMet® database to create a hierarchy that meets your organization or department requirements.



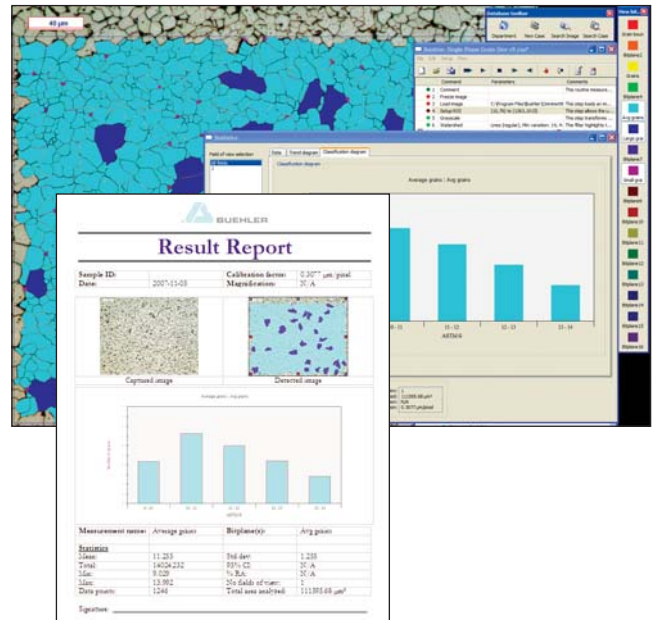
Capture

Use digital or analog cameras to capture and then store your image.



Report

Analyze your image with one of our preprogrammed routines or create your own using the OmniMet® Script Builder. Analyze an image with the OmniMet® spreadsheet function. Generate statistical information, create and store the results in a customized report.



Part Numbers:

Systems*	Software**	
86-0008	86-2200	OmniMet® Viewer Module OmniMet Viewer Module allows network users to easily view stored images, databases, and measurements completed on any networked OmniMet system
86-0005	86-2100	OmniMet® Capture Basic System OmniMet Capture Basic enables image capture, calibration and calibration of input devices. Support for analog, TWAIN and DirectX compatible cameras is included.
86-0006	86-4100	OmniMet® Capture Advanced System OmniMet Capture Advanced enables image capture, calibration of both images and input devices. Support for analog, TWAIN and DirectX compatible cameras is included. Basic measurements include length, parallel width and area. Includes interactive measurements for radius angle and counting functions.
86-3001	87-3005	OmniMet® Express System OmniMet Express software allows for the selected OmniMet image analysis routines to be run for the automated quantification of microstructures for such measures as; grain size, phase area and area percent, coating thickness, particle size distribution, etc. with analysis reports automatically generated. Application routines are available from an extensive list and may be edited in the OmniMet Express to tailor them to the needs of the analysis application. Manual measurement tools are also provided via the mouse for; linear point to point distance, curvilinear distance, parallel line distance, circle radius and angle measurements. Automated report generation of these manual measurements is given with the "Manual Interactive" measuring tool. Additionally, measurement of hardness indentations for Vickers, Knoop and Brinell is included with automated report generation for effective case depth.
86-1005	87-1002	OmniMet® Enterprise System OmniMet Enterprise software provides a powerful set of analysis tools for the automated quantification of microstructures for such measures as; grain size, phase area and area percent, coating thickness, particle size distribution, etc. with analysis reports automatically generated. Manual measurement tools are also provided via the mouse for; linear point to point distance, curvilinear distance, parallel line distance, circle radius and angle measurements. Automated report generation of these manual measurements is given with the "Manual Interactive" measuring tool. Additionally, measurement of hardness indentations for Vickers, Knoop and Brinell is included with automated report generation for effective case depth. Images, associated data from the specimen and measured data may be saved in the included database for archival purposes and subsequent retrieval. The OmniMet database has a logical folder structure which includes search tools and an automated report generator with a selection of preloaded templates. Images may be imported into the OmniMet in any of the standard formats, or fed directly to the OmniMet from the calibrated microscope source.

* System includes workstation, keyboard and mouse. Cameras and printers sold separately.

** Minimum computer specifications are listed on the Buehler website <http://www.buehler.com>

License Upgrades[®]:

86-0002 Workstation Upgrade

86-4201 License upgrade to OmniMet® Express

86-4202 License upgrade to OmniMet® Capture Basic

86-4203 License upgrade to OmniMet® Enterprise

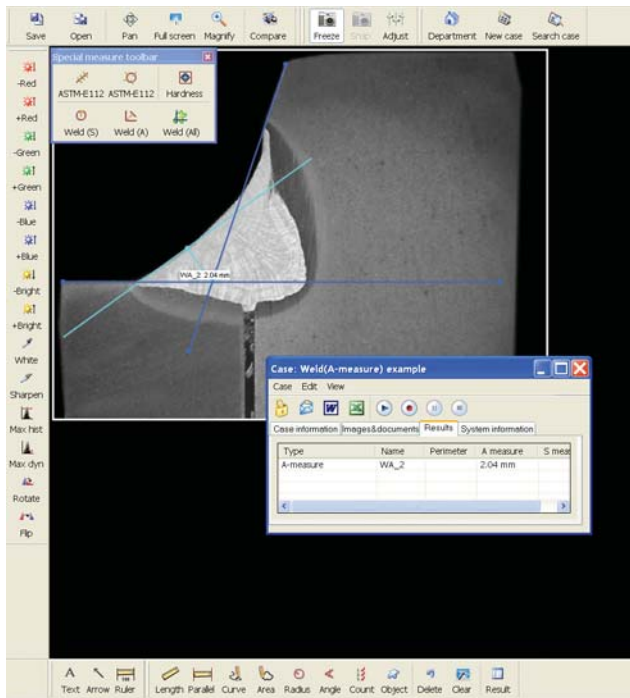
86-4204 License upgrade to OmniMet® Capture Advanced

[®] Customer must provide license number of current unit with purchase order.

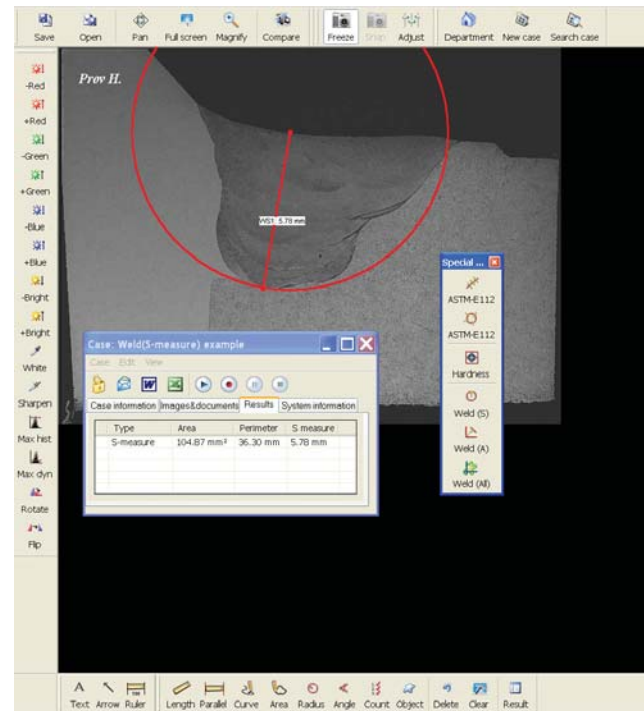
Modules:

Augment your OmniMet® package by adding a Buehler module to improve performance and meet your laboratory criteria.

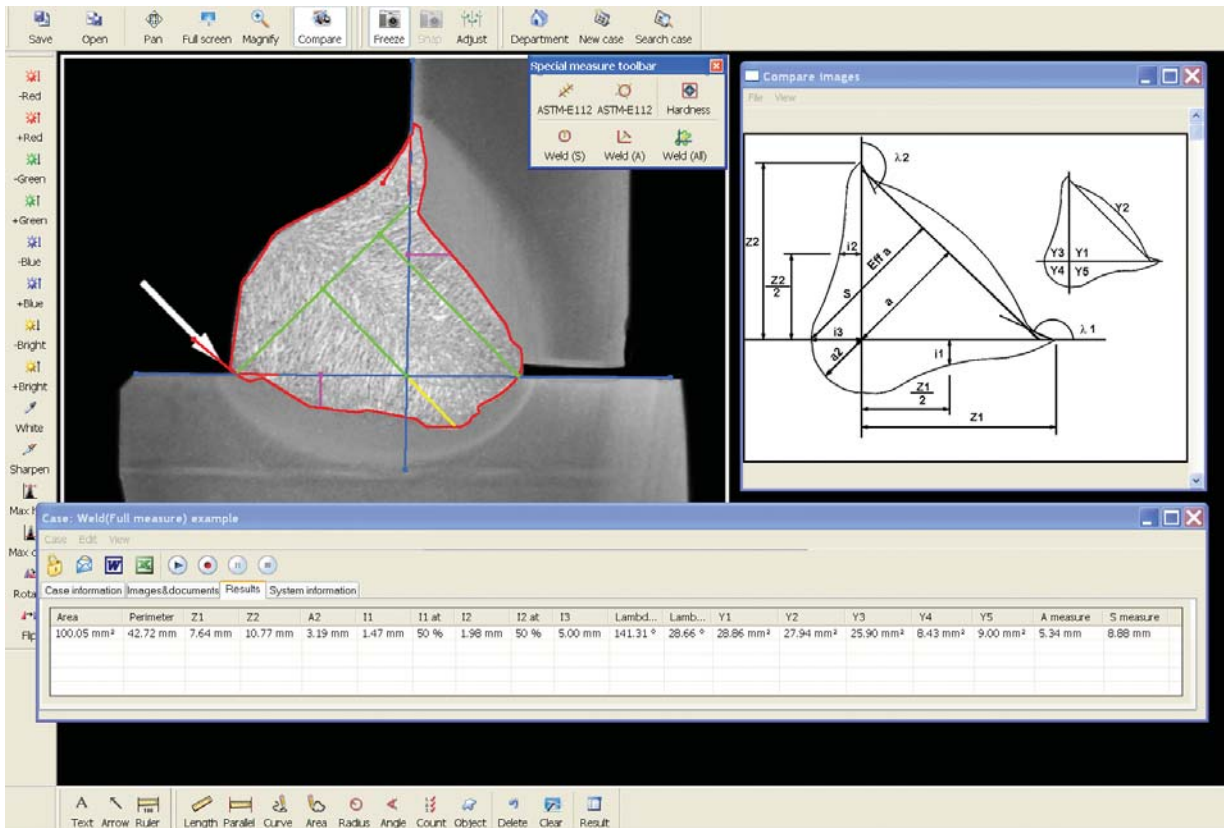
Weld Measurement Techniques



A Measure Method: Use the mouse to align two reference lines parallel to the base material. The A measure line will automatically bisect the angle. Click the mouse to determine the distance to the weld surface.

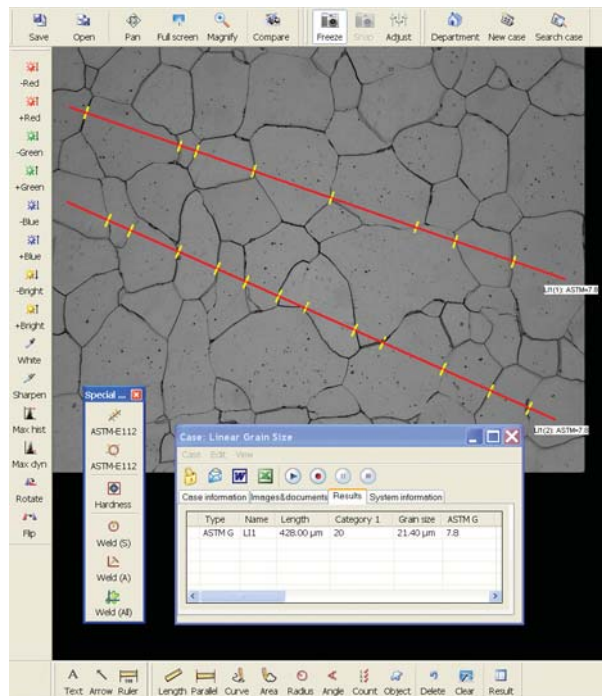


S Measure Method: Click on the surface of the weld and drag the mouse to increase the radius. Use the reference circle for alignment.

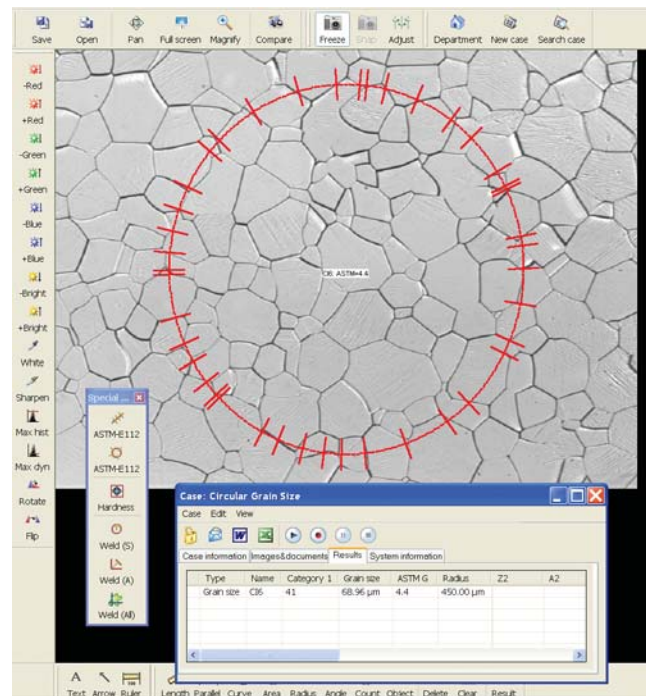


Full Measure Method: Use the mouse to outline the weld nugget and draw two intersecting lines that follow the original base material. A series of measurements will be calculated as shown in the diagram above.

Grain Size Measurement Techniques

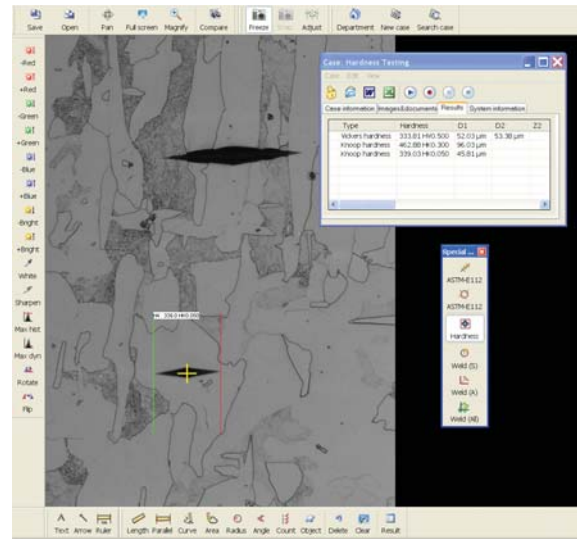
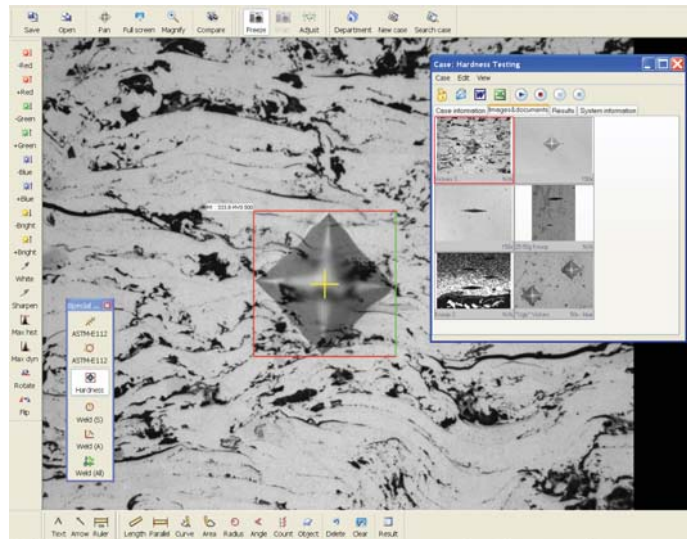


Linear Intercept Method: Draw a line across the image and mark each intersection. As additional lines are added to the image the grain size is recalculated.



Circle Intercept Method: Overlay a circle in the center of the image and mark each intersection. The radius of the circle can be set in the user preferences to accommodate any magnification.

Hardness Measurement Techniques



Vickers (left) and Knoop (right) Indentations: Align the yellow crosshair and click on any of the four corners for Vickers indentations and the two longest points for Knoop indentations. The measurement box will automatically be generated. The lines can be further adjusted as needed. Any load force value (gf or kgf) can be entered in the user preferences.

Buehler Individual Software Modules & Features

	Viewer	Basic	Advanced	Express	Enterprise
DATABASE FUNCTIONALITY					
Database Creation	●	●	●	●	●
Database Interface	●	●	●	●	●
Database Administration		●	●	●	●
IMAGE CONTROL					
Load and Save	●	●	●	●	●
Image Control (Brightness, Auto-White Balance, Rotate, Color Correction)	●	●	●	●	●
Image Capture and Storage		●	●	●	●
Image Presentation, Calibration & Annotation	●	●	●	●	●
Digital Zoom	●	●	●	●	●
Mosaic Multiple Image View	○	○	○	○	○
3D Multi-Focal Images	○	○	○	○	○
DATA PRESENTATION					
Report Data	●	●	●	●	●
Report Generator (MS Office Programs)	●	●	●	●	●
16 Report and Measure Bit planes				●	●
Color Threshold (size, intensity)				●	●
HARDWARE					
Motorized Stage Controller		●	●	●	●
Camera Interface (Twain, USB, IEEE 1394, Capture Cards, Direct X etc.)		●	●	●	●
BASIC MEASUREMENTS					
Length	●	●	●	●	●
Parallel Width	●	●	●	●	●
Area	●	●	●	●	●
Exterior Curve Length	●	●	●	●	●
Circle Radius			●	●	●
Angles			●	●	●
Object Counting			●	●	●
PREMIUM MODULES					
Premium Measurement Modules			○	○	○
Premium Analysis Modules				○	○
ADVANCED MEASUREMENTS					
Area Fraction			○	○	●
Perimeter			○	○	●
Compactness			○	○	●
Feret Diameter & Length			○	○	●
Center of Gravity			○	○	●
Inclusion & Exclusion of Objects by Size			○	○	●
Phase Area & Area Percent				○	●
Coating Layer Thickness				○	●
Nodularity in Cast Iron				○	●
Particle Size Analysis				○	●
Porosity Assessment				○	●
Dendritic Arm Assessment				○	●
Grain Size				○	●
ADVANCED FUNCTIONS					
Preprogrammed Routines				●	●
Custom Routines				○	○
Routine Builder					●
OMNIMET WAN					
OmniMet WAN compatible	●	●	●	●	●

● Included with package ○ Add on module

Add On Modules:

Image Control Modules:

86-4130 OmniMet 3D Multi-Focal Images

86-4140 OmniMet Mosaic Multiple Image View

Advanced Measurement Modules:

86-3050 Manual Interactive Line Draw - Automated determination of the length of lines for distance and thickness measurement. Operator superimposes lines over distances to be measured and OmniMet automatically detects and measures the lines.

86-3100 Grain Sizing - Provides automated grain size determination to give average grain size per field by the intercept method, and individual grain size by equivalent circular diameter method per ASTM E112. Additional processing identifies ALA grain size and Duplex populations of grain size where appropriate to ASTM E930 and ASTM E1181 methodologies respectively. 86-3100 includes 86-3150 Intercept Grain Size Modules.

86-3200 Phase Area & Area Percent - Generates measurements of phase area and area percentage versus field of measurement for multiple phases per ASTM E562.

86-3300 Coating Layer Thickness - Automated measurement of the thickness of cross-sectioned coating and plating layers. Statistics on the minimum, maximum and average thickness with standard deviation given

86-3400 Nodularity in Cast Iron - Automated analysis of graphite in cast iron to ASTM A247. Provides nodularity assessment for the degree of nodularization and size class count of graphite nodules in ductile cast Iron as well as area percentage measurements of ferrite graphite and pearlite. For gray iron grades, graphite length is provided.

86-3500 Particle Size Analysis - Automated detection and measurement of particles in the field of view to provide statistics on the size distribution and quantity of particles present. Can be used to quantify non-agglomerated particulates, precipitates, and powders.

86-3550 Porosity Assessment

86-3750 Dendritic Arm Spacing - Provides measurements on the distance between dendrite arms in cast aluminum alloys following manual interactive drawing of measure lines across and perpendicular to the dendrite arms.

Advanced Functions:

86-3010 Custom Routine - One Buehler built routine specifically for the customer's sample. Customer supplies sample for design of routine specific to the required application.

Premium Modules:

Premium Measurement Modules (for Capture Advanced to Enterprise):

86-4110 OmniMet Object Measurements - Automated "single phase" image analysis for field of view measurements for image features and field characteristics: Area Fraction Area Position, Number of Objects, Perimeter, Compactness, Length, Feret Diameter, Center of Gravity, Inclusion and Exclusion Objects by Size.

86-4115 OmniMet Weld Module - Includes three measurement tools used to determine effective weld depth with a circle radius or use the full measure method for effective weld depth, weld penetration, weld area and the angle between the main axis and the weld area.

86-4120 OmniMet Hardness Module - Interactive Hardness Measurement Tool: Measure Vickers and Knoop indentations quickly and easily. Set the load force in gf or kgf and align the measure lines. Accurate HV/HK values are reported along with the diagonals.

86-4125 OmniMet Grain Size Module - Interactive ASTM E112 Grain Size Measurements Tools: Measure grain size interactively using ASTM-E112 methodology. Linear intercept and circle intercept methods are both included.

Premium Analysis Modules (for Express to Enterprise):

86-3310 Surface Roughness Assessment Module - provides analysis of the roughness of surfaces according to the requirements of ASME N46.1-95

86-3350 Decarburization Depth - provides guidance on the determination of the depth of both total and partial decarburization according to the relative amount of free ferrite present in the microstructure according to the requirements of ASTM E1077-07

86-3525 Cleanliness Assessment Module - provides automatic cleanliness assessment of particles on filter paper according to the requirements of ISO 4406.

86-3600 E384 Indentation Measurement - Provides the capability to capture, detect, analyze and measure Knoop or Vickers indentations with built-in export to Microsoft® Excel for reporting of the hardness in HK, HV HRC and HRB as appropriate, data tables, hardness graphs and effective case depth

86-3700 Banding in Structures - Automated determination of the degree of microstructural banding to ASTM E1268. Provides information on the degree of orientation, the anisotropy index and mean feature spacing.

86-3850 Inclusion Rating - Automated determination by image analysis of statistical data for oxide and sulfide stringers in ferrous metals per ASTM E1245. Data generated includes area percent measures, mean free path distances and the average number of intercepts.

High Resolution Digital Color Video Cameras

Part No.	Description
86-0270	uEye 1540C CMOS ½" color camera, 1.3 megapixel with up to 25 fps at 1280 x 1024 resolution, c-mount digital USB
86-0272	uEye 1450C CMOS ½" color camera, 1.92 megapixel with up to 18 fps at 1600 x 1200 resolution
86-0274	uEye 1460C CMOS ½" color camera, 3.15 megapixel with up to 11 fps at 2048 x 1024 resolution
86-0276	uEye 2230C CCD ⅓" color camera, .79 megapixel with up to 30 fps at 1024 x 768 resolution
86-0278	uEye 2240C CCD ½" color camera, 1.31 megapixel with up to 30 fps at 1024 x 768 resolution
86-0280	uEye 2250C CCD 0.55" color camera, 1.92 megapixel with up to 15 fps at 1280 x 1024 resolution
86-0282	Infinity X CMOS ½" color camera, up to 21 megapixel and 15 fps at 5120 x 4096 resolution

Accessories

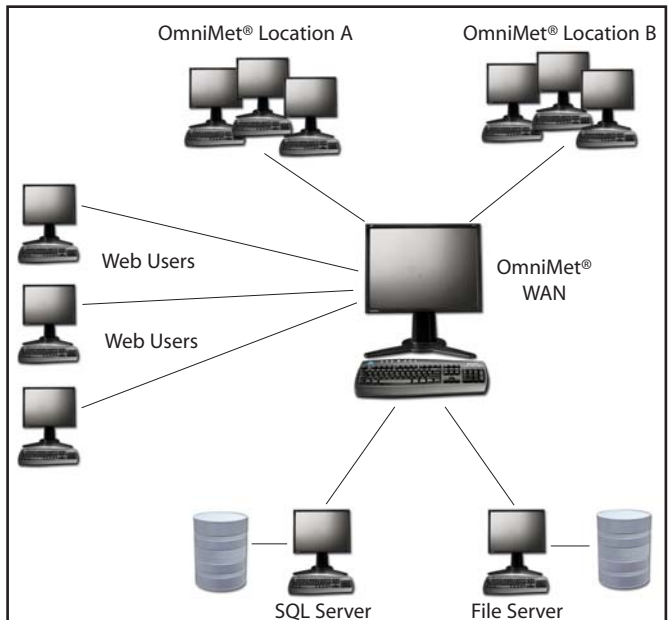
Part No.	Description
86-5105	OmniMet Image Acquisition Foot Pedal Switch, universal voltage and compatible with both RS-232 and USB ports.
86-5120	OmniMet Objective Identification System includes a reader head, universal voltage power supply, RS-232 to USB2 converter, a set of printed barcodes (15 for each objective 5X, 10X, 20X, 40X, 50X, 100X). Double sided psa pad mounting kit with flexible arm. Installation possible on most upright and inverted microscopes.
86-5110	OmniMet Smart Card Reader, Internal. For factory installation in OmniMet Systems Computers.
86-5125	OmniMet Bar Code Scanner

Motorized Stage and Focus Packages:

Part No.	Description
86-5405	Motorized stage and focus drive for Nikon Epiphot 200/300, 100mm x 100mm stage scan size
86-5415	Motorized stage and focus drive for Olympus PMG3, 100mm x 100mm stage scan size
86-5420	Motorized stage and focus drive for Zeiss Axiovert 40 MAT, 100mm x 100mm stage scan size

Motorized Stage and Focus Packages (cont):

Part No.	Description
86-5435	Motorized stage and focus drive for Nikon Eclipse ME600 and L150, 100mm x 100mm stage scan size
86-5440	Motorized stage and focus drive for Olympus BX60, 100mm x 100mm stage scan size
86-5450	Motorized stage and focus drive for Buehler DigiMet 2000, 100mm x 100mm stage scan size



86-3950 OmniMet® WAN

Store your images and information in a centralized database with the addition of OmniMet® WAN. Operators can securely share images and information with other areas of your company or with customers around the corner or around the world. Installed on a centralized server, OmniMet WAN delivers high security combined with high performance in managing large volumes of images and information. Designed to support many simultaneous direct or internet based users sharing information without compromising server performance.

For further information and availability in your area contact your local Buehler sales engineer. Buehler continuously makes product improvements; therefore, technical specifications are subject to change without notice.

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