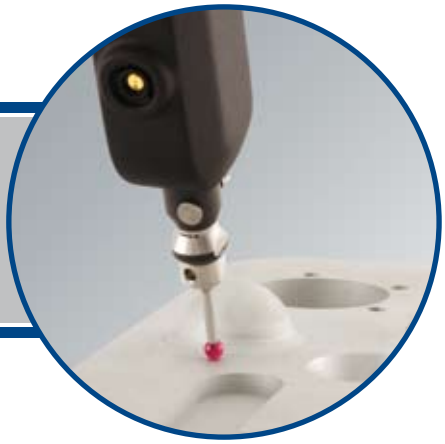
PRODUCT CATALOG

METRONOR PORTABLE COORDINATE MEASUREMENT SYSTEMS



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SOLO SYSTEM

Based on a patented principle allowing accurate 3D measurement with just one single camera and a hand-held probe, SOLO is a uniquely portable and affordable coordinate measurement system offering full CMM capability including comparison of just about any geometry to CAD data or blueprint.

Ideally suited where fast setup, ease of use and high portability is critical, SOLO offers a superior working volume and can be operated through a wireless connection - without cumbersome arms to balance or cables to untangle.

Highly affordable, SOLO provides excellent return on investment in industries as diverse as automotive, casting, energy and aerospace – as well as in numerous special applications such as high-radiation nuclear power plant maintenance or custom-fit boat decks. A special MIL-STD version of SOLO is also in operational use with several air forces as part of the ground support kit for maintenance of military jets, this adding to its credibility as being highly versatile and adaptable.

- **Complete and truly portable: One case (with wheels and pull-out handle for easy maneuvering), weighing 24kg for the complete system, including computer and tripod.**
- **Extended probing capabilities including hidden features (450mm plus probe length)**
- **Operator friendly: Probing without beams, wires or arms**
- **Fast and easy set-up and use**
- **No warm-up, initialization or leap-frogging**
- **No moving parts eliminate re-calibration**
- **Can be upgraded to a DUO or a DUET system**
- **Price/performance winner**

SOLO in transport case

Part number: 1-00-3-01

SOLO system comes with:

Sensor system:
- 1 CCD camera with field of view 38°x32°
- 1 Pan/tilt head with quick camera attach feature
- 1 Tripod with large adjustment range

Probing system:
- 1 CLP8900 carbon fiber Light pen
- 1 Probe kit with straight and angled probes
- 1 RadioLink24 system

Computer System:
- 1 Laptop computer
- Metronor PowerINSPECT
- Set of cables and chargers

The complete system is housed in a single transport case with wheels and pull-out handle that will transport equally well around a factory, by car or commercial airline.

Probe kit

DUO SYSTEM

A complete and truly portable measurement system consisting of a dual sensor, a probing and a computer system.

The industry-proven solution has been fused with new technology and design to produce the 3rd generation Metronor portable CMM system. More accurate, more portable and even easier and faster to use than ever. New technology and innovations has allowed the price to be reduced and thereby making it the most cost-effective portable CMM available in the market today.

Whether building the best possible aircraft, the highest quality car bodies or a new turbine blade the need for exact measurements is crucial. Metronor has delivered portable CMM systems to the most demanding industries for well over a decade and proven that the systems will deliver excellent accuracy and functionality.

- **High accuracy portable CMM**
- **Complete and truly portable: One box, 30kg, for complete system including computer and tripods**
- **Extended probing capabilities including hidden features (450mm with optional Light pen).**
- **Operator friendly: Probing without beams, wires or arms**
- **Fast and easy set-up and use.**
- **No warm-up or leap-frogging required**
- **No moving parts eliminate re-calibration**
- **Can be upgraded to a DUET system**
- **Flexible and extendable**

DUO system comes with:

Sensor system:
- 2 CCD camera with field of view 38° x 32°
- 2 Pan/tilt heads with quick camera attach feature
- 2 Tripods with large adjustment range
- 1 CRB6800 Carbon fiber reference bar

Probing system:
- 1 CLP5500 carbon fiber Light pen
- 1 Probe kit with straight and angled probes
- 1 RadioLink24 system

Computer System:
- 1 Laptop computer
- Metronor PowerINSPECT
- Set of cables and chargers

The complete system is housed in a single transport case with wheels and pull-out handle that will transport equally well around a factory, by car or commercial airlines.

Probe kit

DUO in transport case

Part number: 1-00-4-01

SOLO TWIN SYSTEM

The SOLO solution has been expanded by new software and calibration techniques. By adding an extra camera the total field of view has doubled to 70°x32°, opening up for a variety of new applications.

Short object-to-camera distances allow for easy setup in crowded environments and with excellent accuracy. Just point the cameras in the direction of the object to be measured and immediately capture 3D coordinates of the probe touch point.

New technology has made it possible to reduce the price and thereby making it the most cost-effective portable CMM available on the market today.

Metronor has delivered portable CMM systems to the most demanding industries for well over a decade and proven that the systems will deliver superior accuracy where and when required.

SOLO TWIN system comes with:

Sensor system:
- 2 CCD cameras with field of view 70°x32°
- 1 Pan/tilt head with quick camera attach feature
- 1 Tripod with large adjustment range

Probing system:
- 1 CLP8900 composite Light pen
- 1 Wireless remote control
- 1 Probe kit with straight and angled probes

Computer System:
- 1 Laptop computer
- Metronor PowerINSPECT
- Set of cables and chargers
- Transport case

Carbon fiber Light pen,CLP8900

- **High accuracy on large objects**
- **No setup - just measure**
- **Handheld Wireless/armless/beamless probing**
- **Tool certification within minutes**
- **Facilitating 100% assembly line up-time**
- **Flexible and versatile**
- **Affordable capability**
- **Exceptional 70° field of view**
- **Unique solution for shaft alignment**
- **Ideal for narrow and crowded environments**

Industries:

- Automotive manufacturing
- Aerospace manufacturing
- Casting/Forging/Milling
- Die & mold

Applications:

- In-process inspection
- Tool building and certification
- Assembly alignment
- Excess material verification in casting and forging
- On-machine alignment of parts for milling/ machining

Part number: 1-00-2-01

DUET

The DUET option for DUO systems significantly increases the flexibility and value of a DUO system. The DUET option allows a DUO to be used as two independent SOLO systems for speed and capacity, or as one DUO system when ultimate accuracy is required.
DUET capability provides operational flexibility like no other measurement system.

The DUET option includes everything you need: One extra laptop computer with Metronor PowerINSPECT, one CLP8900 Light pen, one RadioLink24 system, one RadioLink24 I/O base unit, one Probe kit, one Transport case and power cables.

Part number: 1-00-5-01

MIL-SPEC SYSTEMS

Metronor's DUO and SOLO systems are rugged measurement systems designed for reliable use in tough industrial environments like off-shore and explosive atmospheres.

If truly extreme conditions are expected, Metronor can deliver any SOLO or DUO system with specially designed MIL-SPEC cameras, light pen and/or computers. These are based on Metronor's military Harmolign systems that have been tested and certified for most temperature/humidity/corrosive/explosive environments according to MIL-STD-810 and other standards. For more information please contact us to discuss your requirements.

METRONOR POWERINSPECT

Metronor PowerINSPECT is a complete CAD based inspection solution. With a simple user interface it provides results that makes it intuitive and easy to use. The learning curve is short, allowing the operator to get the most from the measuring device in the shortest possible time.

PowerINSPECT's on screen feedback and detailed graphical displays give immediate feedback for each measured point. Inspection reports can be generated automatically in a customized format to include pictorial, tabulated and statistical data, meeting the demands of design requirements and agreed International Standards.

Metronor PowerINSPECT comes as standard with the Metronor SOLO and DUO systems.

Part number: 3-31-0-00

CABLES

Metronor systems comes delivered with one of the following sets of power cables:

Power cable kit, EUR — **Part number: 1-12-6-00**

Power cable kit, UK — **Part number: 1-12-6-20**

Power cable kit, US — **Part number: 1-12-6-10**

BATTERY OPERATION MODULE

Enables DUO or SOLO system operation independent of electrical outlets.

Powers the system for approximately 9 hours, and recharges in 2 hours using the included charger.

Part number: 1-14-8-56

LED APPLICATION KIT (for DUO)

Metronor DUO is unique in measuring many points simultaneously. The LED application kit enables a wide range of unique benefits such as vibration stability control, float mode, alignment, deformation and repeatability studies.

Vibration stability control:
Cancel out vibrations and movement up to 100Hz
Float Mode:
Enable accurate measurement in moving assembly line environments
Part position and aligment:
Align or position parts without expensive jigs or tooling
Deformation:
Capture deformation information in automotive and aerospace
Repeatabilty:
Check repeatabiltiy in robots, mechanical systems or parts in tooling.

Part number: 1-00-9-03

Options

RadioLink24 system	**Part number: 1-14-8-30**
Connection cable 8m	**Part number: 7-12-2-04**
Connection cable 15m	**Part number: 7-12-2-03**

ADDITIONAL LED HW

Set containing LED junction box, 8 adjustable mount LEDs with 8m cables and magnetic bases.

Requires LED Application kit (1-00-9-03).

Part number: 1-00-9-04

Options

RadioLink24 system	**Part number: 1-14-8-30**
Connection cable 8m	**Part number: 7-12-2-04**
Connection cable 15m	**Part number: 7-12-2-03**

LIGHT PENS

Carbon fiber Light pen, CLP5500

This Light pen has 5 embedded light sources, and the sensor system uses the observed position of the Light pen to calculate the position of the probe in space. The Light pen is made from stable carbon fiber, and has a quick-release chuck for attachment of probes.

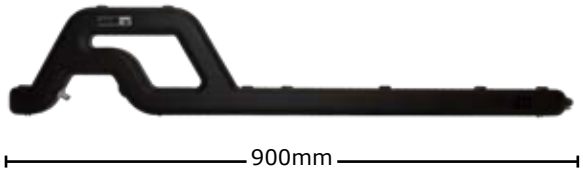
The Light Pen is 500mm long and has 5 embedded LEDs and is delivered with a transport case. The CLP5500 comes as a standard with the DUO system.

Part number: 1-16-1-01

*(systems produced **BEFORE** Oct. 2007)*

Part number: 1-16-1-11

*(systems produced **AFTER** Oct. 2007)*



Carbon fiber Light pen, CLP8900

A version of the standard CLP5500 Light pen with a 400mm extension to the probe chuck. Increases the ability to accurately probe features outside direct line-of-sight. Recommended if the objects to be measured contain features more than 100mm away from direct line-of-sight .

The CLP8900 also offers an additional mode of operation that provides increased accuracy, but no extension for points outside line-of-sight, in volumes up to 25 meters from the camera. This is particularly significant in SOLO mode.

The Light Pen is 900mm long and has 8 embedded LEDs. The CLP8900 comes as a standard with the SOLO system.

Part number: 1-16-1-06

*(systems produced **BEFORE** Oct. 2007)*

Part number: 1-16-1-16

*(systems produced **AFTER** Oct. 2007)*

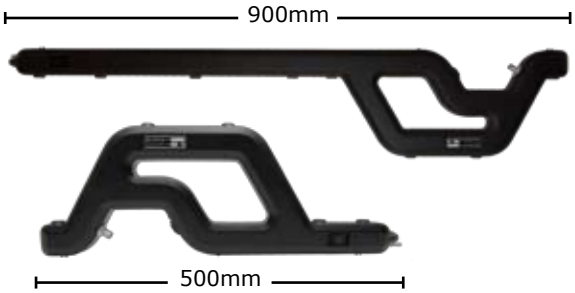
LIGHT PENS

Carbon fiber Light pen, CLP81500

The CLP81500 Light pen provides up to 1000mm offset plus the length of the stylus and is the Light pen of choice where extreme deep probing is required. The Light pen is made from stable carbon fiber, and has a quick-release chuck for attachment of probes.

The Light Pen is 1500mm long and comes delivered with a transport case.

Part number: 1-16-1-17



Replace Light pen in standard SOLO/DUO system (specify desired Light pen - CLP5500/CLP8900)

Use this order number whenever the standard Light pen (CLP8900 for SOLO and CLP5500 for DUO) is to be replaced by any other pen in a SOLO or DUO order.

Part number: 2-16-1-03

HARDWARE OPTIONS & PARTS

RadioLink24 system (additional)

The Radiolink24 can connect a Light pen, a Reference bar, a LED application kit or a Stability control bar to the computer over a wireless 2.4GHz RadioLink. Comes delivered with:

- 1 RadioLink24 operator unit
- 1 Spiral cable
- 1 Battery charger
- 1 Carrying pouch.

Up to 4 RadioLinks can be connected to a single SOLO or DUO system.

Part number: 1-14-8-30

RadioLink operator unit battery

A second battery enables continuous RadioLink operation by switching between batteries. The charging cradle (shown gray in the picture) is required to use the system charger. For spare part battery only, use part 7-15-8-56.

Part number: 7-14-8-55

Camera clamp

An alternative to the camera tripod when measuring e.g. in tight or crowded areas. Compatible with the system pan/tilt head.

Part number: 1-11-2-00

HARDWARE OPTIONS & PARTS

Stability control bar

For precise measurements on unstable parts or in environments with rapid temperature variations or vibration, attaching the Stability control bar to the measurement object helps 'lock' measurements to the object even if the object moves relative to the camera. Compatible with SOLO and DUO systems.

Includes Carbon fiber bar and 4 adjustable mount LEDs, and can be operated either through a cable or RadioLink24 connection (optional). Comes delivered with a transport case.

Part number: 1-17-0-10

Options:

RadioLink24 system	**Part number: 1-14-8-30**
Connection cable 8m	**Part number: 7-12-2-04**
Connection cable 15m	**Part number: 7-12-2-03**

Voice command module

The Voice command module makes single-user system operation even more efficient. With the headset and associated software, the user can use voice command to carry out common operations like 'Probe change', 'Probe mode', 'Next', 'Delete last', etc. The Voice command module includes software that enables simple adaptation to the operator's pronunciation and also works well in environments with background noise.

The Voice command module includes a headset with rechargeable battery, charging cradle, receiver, system software and associated cables. The battery life is approximately 9 hours per charge.

Compatible with all systems running Metronor 7.0 or higher and PowerINSPECT.

Part number: 1-14-6-00

HARDWARE OPTIONS & PARTS

Edge stylus, D: 3.0mm

Part number: 7-16-3-00

Edge stylus, D: 5.0mm

Part number: 7-16-3-01

Edge stylus calibration plate

Part number: 7-16-4-10

Probe kit (additional)

Standard SOLO/ DUO Probe kit containing 7 probes of which 4 are angled. Comes delivered with a transportation case.

Part number: 1-16-2-00

SOFTWARE OPTIONS

Metronor PowerINSPECT Tubing Module

Designed for tube, hose and cable applications in industries such as oil, gas, chemical and food-processing, the Metronor PowerINSPECT Tubing Module integrates custom tubing functions into the general measurement software for a single, seamless solution.

The user enters the number of straight sections and their points of intersection, and the other features and nominal values are automatically calculated. The module creates the overall design within PowerINSPECT and sets the nominal values to be measured. The inspection can then be done as usual.

Part number: 3-31-0-02

Metronor POWERInspect Part Aligner

This software module permits the Metronor system to use the results of e.g. an excess material best-fit to update a project in Delcam's PowerMILL CAM system by adjusting the datum position and orientation. Alternatively the data can be applied directly to change the offsets in the machine-tool control so that they reflect the measured position of the component rather than the nominal value in the programming software. This module therefore simplifies transferring the results from Metronor's unique exces amterial best fit to a CNC machine.

Part number: 3-31-3-00

SOFTWARE OPTIONS, 3rd PARTY

Metronor Rhinoceros 4.0 Plug-in Pen Digitizer 6.5

The Metronor Pen Digitizer Plug-in for Rhinoceros 4.0 allows you to receive measurements from the Metronor system into the Rhinoceros application (http://www.rhino3d.com/). The Metronor Pen Digitizer Plug-in for Rhinoceros 4.0 communicates with the Metronor System and receives pen measurements through a tcp/ip communication protocol.

Part number: 3-31-3-00

Metronor software bridge (required for all 3rd party SW)

The Metronor Software Bridge provides the interface between the Metronor Basic Software (for either SOLO or DUO) and any supported 3rd party software application. Supported 3rd party applications today include CAM2, Calypso, Metrolog XG, Metrosoft, Prelude, Spatial Analyzer, Verisurf and many other popular software applications.

The Software bridge is required in order to run any 3rd party application. Check for latest list of 3rd party software supported by the Software bridge.

Part number: 3-30-9-00

SPARE PARTS

Probe extension titanium, 20mm

Part number: 7-16-2-20

Probe extension titanium, 50mm

Part number: 7-16-2-21

Probe extension titanium, 75mm

Part number: 7-16-2-22

Probe extension titanium, 100mm

Part number: 7-16-2-23

Probe extension titanium, 90 degree angle

Part number: 7-16-2-30

Probe tightening tool for M5 styli

Part number: 7-16-2-52

Probe tool adapter

Part number: 7-16-2-00

SPARE PARTS

Ruby stylus, D: 3.0mm — **Part number: 7-16-2-61**

Ruby stylus, D: 5.0mm — **Part number: 7-16-2-60**

Carbon fiber reference bar CRB6800

The Reference bar is made from very stable carbon fiber, and has 6 embedded light sources. The distances between pairs of these are known, and this information is used when setting up the system and at any time to check accuracy.

The CRB6800 comes delivered as a standard with the DUO system.

Part number: 1-15-1-00
*(systems produced **BEFORE** Oct. 2007)*

Part number: 1-15-1-10
*(systems produced **AFTER** Oct. 2007)*

Pointer stylus, D: 0.2mm — **Part number: 7-16-2-62**

Probe calibration block, magnetic, 3mm — **Part number: 7-16-4-01**

Probe calibration block, magnetic, 5mm — **Part number: 7-16-4-00**

SPARE PARTS

Pan/tilt head

Part number: 7-11-0-00

Tripod (Pan/tilt head not included)

Part number: 7-11-1-00

Metronor camera 8.5
(systems produced **AFTER** Oct. 2007)

Part number: 7-10-0-01

Metronor camera 8.2
(systems produced **BEFORE** Oct. 2007)

Part number: 7-10-0-00

Calibrated camera for SOLO and DUO.

RadioLink24 I/O base unit

Part number: 7-14-8-62

RadioLink I/O base unit cable

Part number: 7-12-2-10

SPARE PARTS

RadioLink24 operator unit w/pouch (additional)

Part number: 1-14-8-01

RadioLink spiral cable

Part number: 7-12-3-01

Battery Charger
for RadioLink operator unit

Part number: 7-14-8-02

Connection cable,8m

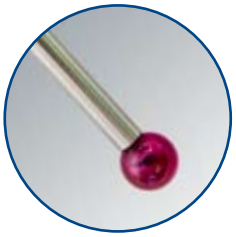
Part number: 7-12-2-04

Connection cable,15m

Part number: 7-12-2-03

Camera cable,10m

Part number: 7-12-1-10



Next Generation Portable CMMs

Metronor delivers the most versatile, efficient and affordable tools you need to improve your process and exceed your management and program requirements. Metronor systems are specifically developed to streamline time-to-market and reduce costs. The result – a low-cost, value rich product brought more rapidly to market than ever before – enabled by the most versatile and affordable portable measurement system available.

The realization of tomorrow’s goals, today.

METRONOR