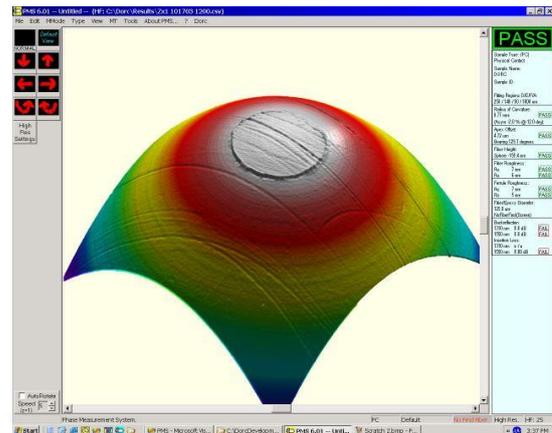


Used primarily to measure single fibre PC and APC connectors, DORC's fifth generation "ZX-1 micro PMS+" is the result of 24 years of hardware and software product development. DORC's patented design is based on a variant of the Michelson configuration, and provides BOTH 2D and 3D high resolution images of the sample under test - in as little as 3 seconds - including auto-focus.



The ZX-1 micro PMS+ is a modular system allowing many different configurations and price points. Unlike our competitors, this allows customers on a budget to purchase a system that can grow with their needs/budget - and eventually upgraded to become the most advanced system we offer. The key to achieving this is that the "base design" is the same for all configurations. Competitors typically use a different base design on their low end/lower cost systems which means they can never become more advanced systems in the future.



The innovative design leaves nothing for the operator to do other than insert and remove connectors. Focus, centring and reference mirror calibration adjustments are all available fully automated – no user mechanical adjustments required! The system is very compact and controlled by a laptop computer (desktop or tablet PC's optional) using a single USB 2.0 or 3.0 interface cable. The fan-less, hermetically sealed design is vibration insensitive and impervious to ingress of dust and contamination - making the ZX-1 micro PMS+ feel equally at home in both production and field based applications.

DORC's novel Patented RFID "Connect ID" Sensor is the most significant system enhancement in many years. It allows many innovative new features:

1. Instant apex offset calibration of the interferometer when changing chucks. Inserting a "Connect ID" Reference Connector instantly initiates the calibration process using a single measurement. Unique characteristics about the end-face geometry of the reference connector being measured are automatically transferred to the ZX-1 micro PMS+. This unique information allows the calibration process to be completed instantly, without the need to perform multiple rotations of the reference connector – a process that could take several minutes using current methods. The autofocus option is highly recommended when using this feature.
2. The Z stage will back itself away from the front panel automatically when a "Connect ID" enabled chuck removal tool approaches the system. This removes the possibility of damaging the interferometer's primary optical window when removing or installing chucks. This feature requires the autofocus option to work!!
3. Chucks that are "Connect ID" enabled transfer information about their capabilities to the ZX-1 micro PMS+ automatically, as soon as they are installed. This allows the system to become "context sensitive" to its configuration. For example, if a single fibre chuck is installed on a ZX-1 micro Array+, it can automatically change to single fibre mode and all software menus will become truncated to include features only applicable to single fibre measurements.

A variety of standard and custom ferrule diameter chucks are available to support all types of single fibre connector diameters and even bare fibres. Only one screw is used to secure a chuck to the interferometer and changing chucks can be accomplished in just seconds - with less than 30 seconds required overall, INCLUDING the apex offset calibration.

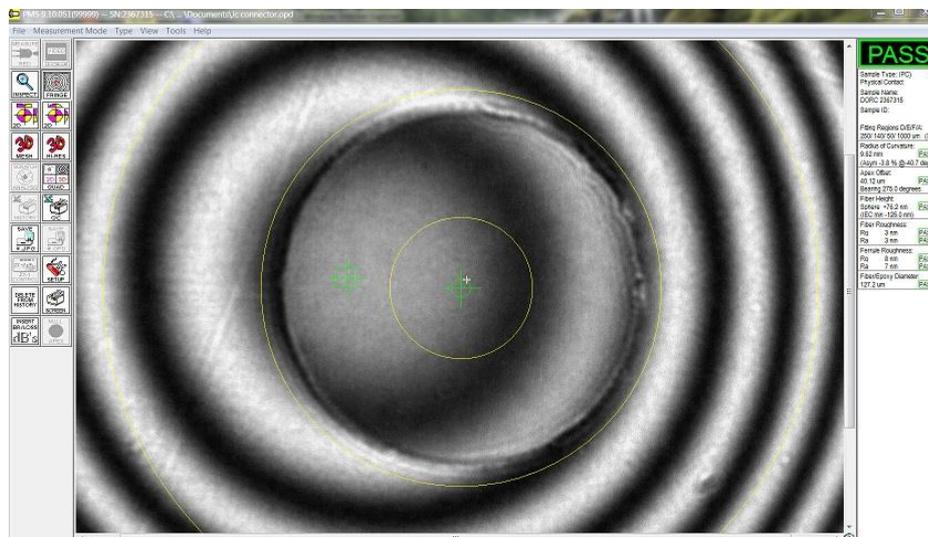
Once a connector is measured, all results are automatically saved in the industry standard Microsoft Excel® format. The operator has a wide variety of display, printing and saving options for both measurement

“History” and “Quality Control” reports. The Patented design provides the ability to simultaneously provide 3D geometry, 2D microscope image and automated scratch analysis of the connector under test - removing the requirement for separate instruments to provide this additional functionality.

The ZX-1 micro PMS+ stores all calibration, the PMS (Phase Measuring System) software and even a complete image of the system controller’s hard drive (if supplied), on the instrument itself. This not only makes the system PC independent, but also means that the system can recover itself from virus attacks, Windows file corruption, deleted files, malicious employees and potential PC failures in just minutes. The system also has a “factory restore” capability, returning the unit to its shipped state at the press of a button. Add to this the fact that software updates can be downloaded directly from our web site and there is NO scheduled maintenance whatsoever, and you end up with a maintenance technicians “dream machine”.

Key Benefits:

- Measures single fibre connectors and fibre cleaves.
- Patented RFID interface allows instant apex offset calibration in a single measurement.
- Very small footprint – supplied by default with a laptop computer. Desktop and Tablet PC's available upon request.
- Modular design allows the system to grow with your needs and budget.
- Automatic reference mirror calibration – NO manual adjustments!!
- Automatic connector centring – NO manual adjustments!!
- Fast automatic focus, manual focus or BOTH!!
- Hermetically sealed optical module – a dusty production environment is no longer a problem.
- High resolution camera and optics – results in improved repeatability and reproducibility.
- Simple interface – just a single power cord and USB 3.0 port on the rear.
- No anti-vibration table required. Fan-less design removes any system induced vibration.
- Patented inspection mode and scratch analysis.
- Fast measurement <1 second (depending on model, excluding focus).
- “Auto Sense” technology, initiates a measurement automatically as soon as the connector is inserted.
- Simple operation centring, focus and initiating the scan itself can all be completely automatic.
- Calibration is held on the instrument itself, eliminating the need to keep the interferometer and PC as a matched pair.
- Software backup, calibration and an image of the PC itself (if supplied), are all stored on the instrument itself, in non-volatile memory – making lost disks, viruses, deleted files, corrupted Windows and PC failures easy to fix.
- System design lends itself to integration in automated production lines.
- Manufactured by a vendor that has sold more automated connector measuring interferometers than any other.
- Complete system ships in a single 16”x16”x20” box when configured with a laptop or tablet PC.
- 1 Year Warranty included.



DORC's ZX-1 micro PMS+ Configurations and Options

The ZX-1 micro PMS+ is DORC's fifth generation of fibre optic connector measuring interferometers! Everything we have learned over the last 25 years has been implemented into this design - and although our products have always been very reliable, any points of prior failure have been redesigned and incorporated into this new version. The ZX-1 micro PMS+ is a modular system allowing many different configurations and price points. Unlike our competitors, this allows customers on a budget to purchase a system that can grow with their needs/budget - and eventually upgraded to become the most advanced system we offer. The key to achieving this is that the "base design" is the same for ALL configurations. Competitors typically use a different base design on their low end/lower cost systems which means they can never become more advanced systems in the future.

A great deal of thought was given to which features should be made "optional" and which should remain "standard". We have decided to keep some of the most important features "standard" - such as completely automatic adjustment of the reference mirror for apex offset calibration. Although we could have made this optional, it is fundamentally important in terms of performance and ease of use, that we felt it was a disservice to customers to make it a manual adjustment.

Based on this line of thinking, we therefore made a conscious decision to limit performance and features in other areas on less expensive versions - in exchange for significant cost savings. In particular, some missing price reducing features can be enabled in the future through software upgrades alone. In some cases/markets we may even include related hardware, hedging our bets that customers will appreciate the feature enough in the future to purchase the option.

One significant benefit to this approach is that software enabled features create the possibility of a "try before you buy". Some features such as faster measurement speeds or inspection mode/scratch analysis can be enabled periodically for the customer to experience the benefit of upgrading.

Pricing and configuration on this system is more complex and therefore requires some explanation detailed below:

Common Considerations:

1. ALL systems must have at least 1 chuck to create a valid configuration. The ZX-1 micro PMS+ PRO includes 1 standard chuck and the corresponding "Connect ID" Reference Connector.
2. The ZX-1 micro PMS+ PRO is a standard configuration including all standard options, except extended range. NO options can be deleted on this "package" configuration. There are some cost savings in purchasing this package, compared to adding all the included PRO options to the base configuration of a ZX-1 micro PMS+.
3. "Connect ID" Reference Connectors can ONLY be used with "Connect ID" Chucks. The use of older chucks on a ZX-1 micro PMS+ will not allow this feature to be used as the "Connect ID" Reference Connector cannot physically be inserted into older chucks. This is due to the inclusion of dowel pins that protect the delicate endface of the "Connect ID" Reference Connector if it is dropped.

Extended Range (+/- Sum): Extended range is an option on all systems except the ZX-1 micro Array+ where it is always standard. Extended range is a rare option typically only required in special cases, such as the measurement of Diamond style connectors having large fibre heights. Extended range CANNOT be installed on systems without autofocus.

Premium PC Included and Loaded with Backup: The PC option includes a premium laptop by default, with desktops and even Windows tablets available as alternative options. Currently we typically ship Intel i7 processors, 16GB RAM, 256GB SSD drive, Dedicated Graphics, Windows 10 Professional/Home (64bit), Microsoft Office 2016 (32bit) and PMS 14.xx - preinstalled and configured as a "turn-key" solution. The PC also comes with multiple clones of the hard drive - one installed on the PC and one installed on the ZX-1 itself. This configuration provides the greatest level of protection from hard drive failure, viruses, deleted files and file corruption.

This is also the first time we have allowed customers to supply their own PC (by not choosing this option), however, it is not without risk and PMS is not guaranteed to work on all customer supplied PC configurations. The PMS software will be delivered on the ZX-1 micro PMS+ system itself, and can be installed on a customer's PC that meets our minimum specifications. These specifications are currently as follows:

- **Intel i7 Processor.**
- **16GB RAM.**
- **SSD Hard Drive.**
- **Dedicated Graphics.**
- **Windows 10 Professional/Home (64bit - US Version and language settings).**
- **Office 2013 or 2016 (32bit - US Version and language settings).**
- **Available USB 3.0 SuperSpeed Port.**
- **Full HD display (1920x1080).**
- **ALL CPU Power Saving modes disabled in the system BIOS.**
- **Minimum overall Windows Rating of 5.5.**
- **Internet access for product upgrades, activation and remote support.**

Having PMS available for installation from the ZX-1 itself, is also a useful feature that could be used by customers that initially purchase a DORC PC - in the event it should ever fail down the road. Customers are no longer forced to purchase a replacement PC from DORC. **It is important to understand that if we do not supply the PC, we cannot be expected to support it!!**

Automatic Focus/Auto Sense: There have been many requests over the years to allow manual focus again. Although autofocus is fast and reliable, some operators become so experienced that they can do it manually - as fast, if not faster! The ZX-1 micro PMS+ was therefore designed to support manual focus, auto focus or BOTH. Manual focus is standard on all models except the ZX-1 micro Array+. Both manual and autofocus are standard on the ZX-1 micro PMS+ PRO. Customers may add autofocus as an option to lower end ZX-1 micro PMS+ configurations - either initially or as an upgrade in the future.

RFID "Connect ID" Sensor: DORC's novel **Patented** RFID "Connect ID" Sensor is the most significant system enhancement in many years. It allows many innovative new features:

1. Instant apex offset calibration of the interferometer when changing chucks. Inserting a "Connect ID" Reference Connector instantly initiates the calibration process using a single measurement. Unique characteristics about the end-face geometry of the reference connector being measured are automatically transferred to the ZX-1 micro PMS+. This unique information allows the calibration process to be completed instantly, without the need to perform multiple rotations of the reference connector - a process that could take several minutes using current methods. The autofocus option is highly recommended when using this feature.
2. The Z stage will back itself away from the front panel automatically when a "Connect ID" enabled chuck removal tool approaches the system. This removes the possibility of damaging the interferometers primary optical window when removing or installing chucks. This feature requires the autofocus option to work!
3. Chucks that are "Connect ID" enabled transfer information about their capabilities to the ZX-1 micro PMS+ automatically, as soon as they are installed. This allows the system to become "context sensitive" to its configuration. For example, if a single fibre chuck is installed on a ZX-1 micro Array+, it can automatically change to single fibre mode and all software menus will become truncated to include features only applicable to single fibre measurements.

Measurement Speed (Single Fibre - Phase Shifting) = <5 seconds from focus: 5 seconds is the standard measurement speed for lower end configurations of the ZX-1 micro PMS+. Although the system can perform much faster using current algorithms, after careful consideration, we decided it was more important to keep things like automated apex calibration - and make this speed limitation available, in exchange for significant cost savings. We expect both algorithms to be installed by default, so that the customer can periodically experience the much faster measurement speed option below. Rated speeds are tested with DORC's minimum recommended PC configuration.

Measurement Speed (Single Fibre - Phase Shifting) = <1 second from focus: Current optimized algorithms can unwrap the 3 dimensional topography much faster than previous versions - even with the higher resolutions obtained with current cameras. The ZX-1 micro PMS+ PRO and ZX-1 micro Array+ use these faster algorithms by default. Customers may add the faster measurement speed as an option to lower end ZX-1 micro PMS+ configurations - either initially or as an upgrade in the future. Rated speeds are tested with DORC's minimum recommended PC configuration. Even faster speeds are possible with premium PC's.

Inspection Mode/Scratch Analysis: Now that International standards are finally being published for scratch analysis, this is an area we expect to invest considerable time, effort and money into supporting. Since not all customers need this feature, it can therefore be omitted to create additional cost savings. Customers may add the Inspection Mode/Scratch Analysis on to lower end ZX-1 micro PMS+ configurations - either initially or as an upgrade in the future.

ZX-1 micro PMS+ PRO (ALL Standard Options Included in a Package Price)

ZX-1 micro PMS+ PRO	<p>ZX-1 micro PMS+ PRO Interferometer. PRO package price INCLUDES: ZXPC, ZXAF, ZXRfid, ZXFAST & ZXINSPECT options, as well as a 2.50WT chuck and a REF2.50PMSRFID "Connect ID" Reference Connector. NOTE: NO CONFIGURATION CHANGES ARE PERMITTED ON THIS PACKAGE PRICE!!</p>
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ZX-1 micro PMS+ (Base configuration and System Options)

ZX-1 micro PMS+	ZX-1 micro PMS+ Interferometer. At least 1 chuck must be purchased with each interferometer.
ZXXR+	<p>ADD Extended Range to PMS + (Fibre height + 5um). XR is mandatory for measuring DIAMOND style connectors.</p> <p>Notes: a) Extended Range is also known as "White Light". b) ZX-1 micro PMS+ MUST have ZXAF (Autofocus) to use this option. c) This option is NOT usually required for most applications!!</p>
ZXPC	ADD Premium PC loaded with PMS, MS Office & Hard Drive Clone. LAPTOP is default PC - MUST specify Desktop option on PO!!
ZXAF	ADD Auto Focus/Auto Sense. Recommended if using "Connect ID" RFID.
ZXRfid	ADD RFID "Connect ID" Sensor. Required for ALL "Connect ID" Features.
ZXFAST	ADD Measurement Speed (Single Fibre - Phase Shifting) = <1 second from focus.
ZXINSPECT	ADD Inspection Mode/Scratch Analysis.

Accessories for all ZX-1 micro PMS+ Systems

BFH-WT	Bare fibre holder chuck (125um) with tilt.
2.50-WT	Universal 2.50mm V-groove connector chuck with tilt.
2.00-WT	Universal 2.00mm V-groove connector chuck with tilt.
1.58-WT	Universal 1.58mm V-groove connector chuck with tilt.
1.25-WT	Universal 1.25mm V-groove connector chuck with tilt.
REF2.50PMSRFID	2.50mm "Connect ID" RFID "Mapped" reference connector for PMS+ systems. PMS+ System MUST have ZXRfid to use this option!!

REF1.25PMSRFID	1.25mm "Connect ID" RFID "Mapped" reference connector for PMS+ systems. PMS+ System MUST have ZXRfid to use this option!!
REF2.50APCRfid	2.50mm "Connect ID" RFID APC "Mapped" reference connector for PMS+ systems. PMS+ System MUST have ZXRfid to use this option!!
REF1.25APCRfid	1.25mm "Connect ID" RFID APC "Mapped" reference connector for PMS+ systems. PMS+ System MUST have ZXRfid to use this option!!
REF2.50PMS	2.50mm "Mapped" reference connector for PMS systems.
REF1.25PMS	1.25mm "Mapped" reference connector for PMS systems.
REF2.50APC	2.50mm SC/APC "Mapped" reference connector for PMS systems.
REF1.25APC	1.25mm LC/APC "Mapped" reference connector for PMS systems.
RECERTIFY	Recertify an existing "PMS" reference connector. NOTE: Reference Connectors can ONLY be recertified if they are still in pristine condition - NO visible scratches on the surface.
FC/APC AP	FC/APC connector adapter plate.
SC/APC AP	SC/APC connector adapter plate.
DIN/APC AP	DIN/APC connector adapter plate.
E2K/APC AP	E2000/APC connector adapter plate.
LC/APC AP	LC/APC connector adapter plate.
MU/APC AP	MU/APC connector adapter plate.
BSC/APC AP	BSC/APC connector adapter plate.
FER/APC AP	FERRULE/APC adapter plate.
BARCODE	USB Bar code CCD reader for PMS Systems.
TOOLRFID	Replacement "Connect ID" RFID Enabled Chuck Removal Tool. PMS+ System MUST have ZXRfid to use this option!!
FIXCHUCK	Fixed charge to repair a worn out chuck - Current style only.

ZX-1 micro PMS+ Specifications

Reproducibility and Repeatability

Measured Parameter	Reproducibility - One Sigma	Repeatability - One Sigma
Radius of Curvature	0.15%	0.05%
Apex Offset	1.0µm	0.2µm
Fibre Height	1.5nm	1.0nm

Reproducibility based on 50 measurements re-inserting connector between measurements
 Repeatability based on 100 measurements without disturbing the connector between measurements

Measurement Range

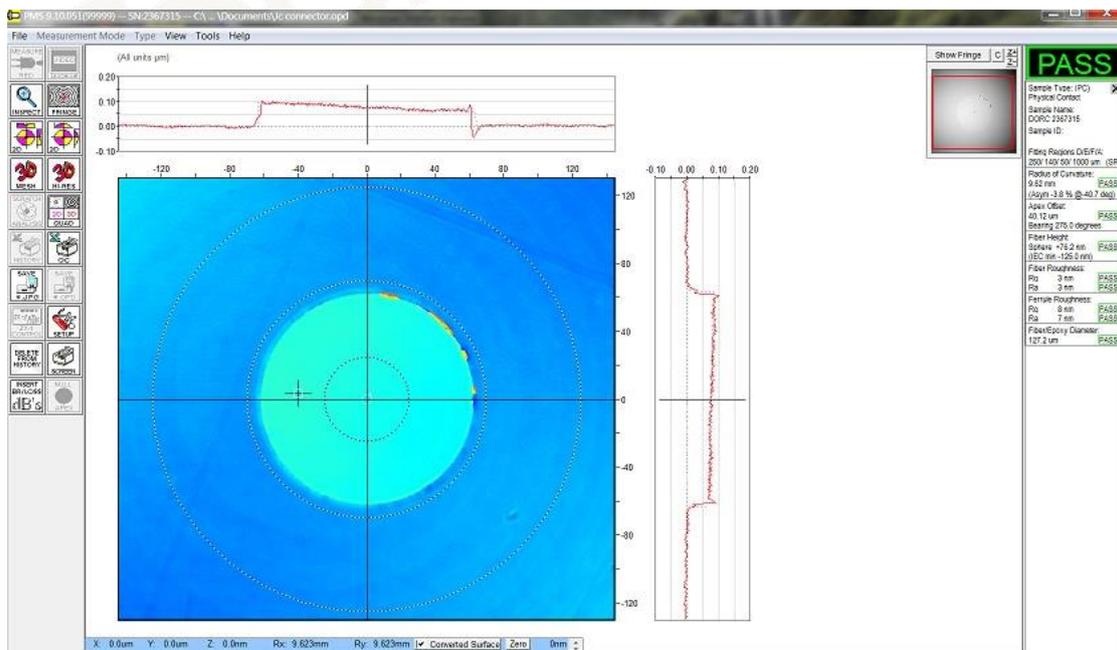
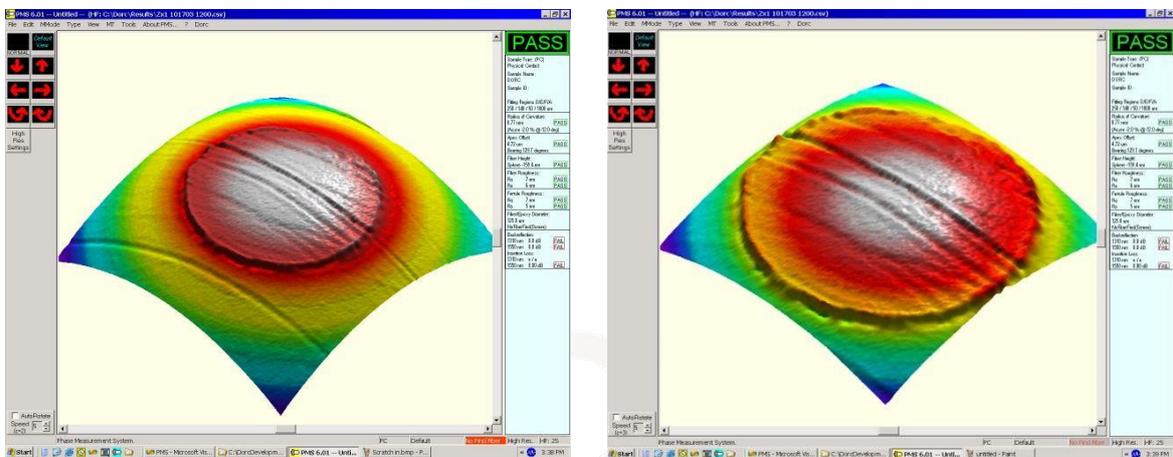
Radius of Curvature	3mm - Flat
Apex Offset	0-500µm (value calculated if outside of captured field of view)
Fibre Height	± 6µm (with extended range option)

Other Specifications

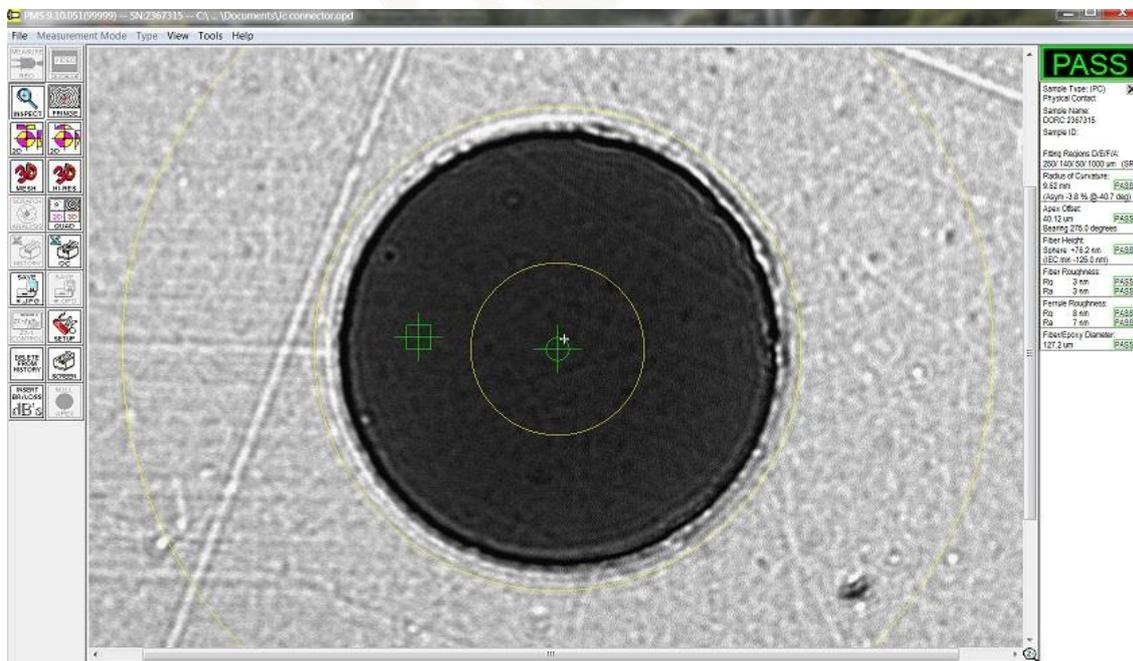
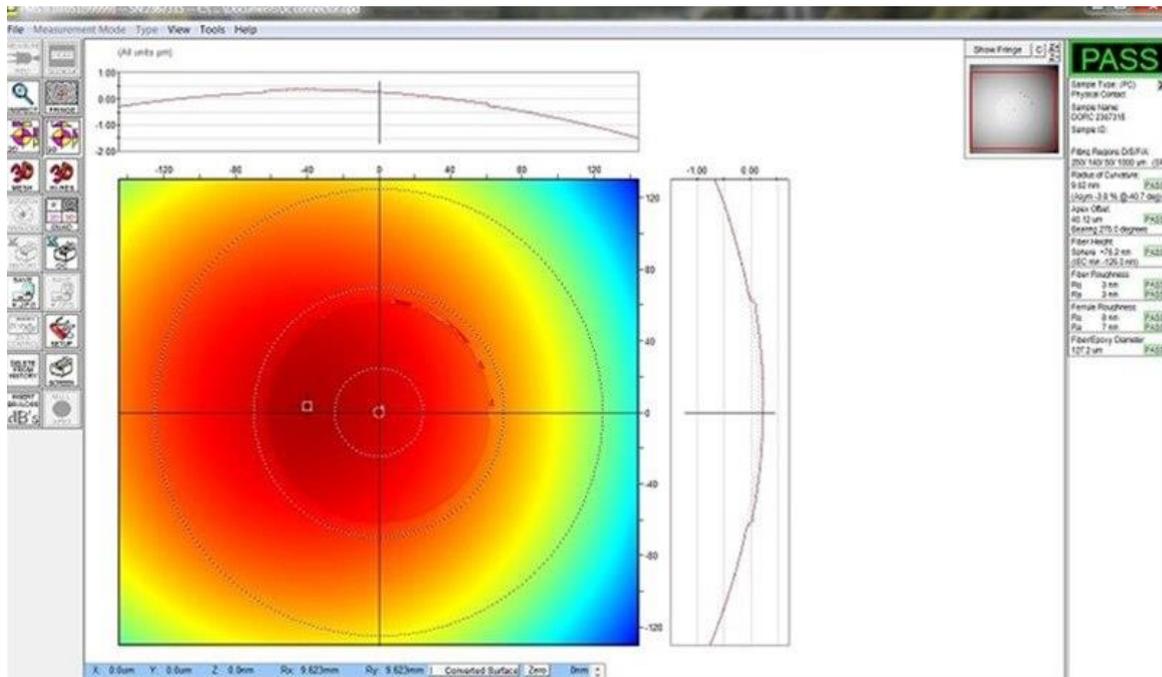
Principle of Operation	Michelson Interferometer (non-contact system)
Measurement Speed	Less than 1 second (excluding manual or auto-focus)
Field of View	275µm nominal - with the ability to view over 1mm diameter of the connector end-face
Operating Wavelengths	645nm/460nm and 545nm with extended range (solid state sources)
Power requirements	100-120V and 210-250V AC 50/60Hz auto sensing

Due to continued product improvement, specifications are subject to change without notice.

Sample Images



Sample Images



For further information and to discuss your application please contact:-

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TechOptics

Specifications subject to change without notice.

Interferometer DORC ZX-1 micro PMS+ – December 2018

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products and the
manufacture of
fibre optic
assemblies.



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