
Mycronic Prexision-MMS™ **Display mask metrology system**

Setting a new standard for registration
measurement through generation 8



Mycronic Prexision-MMS

For high end display photomask through generation 8

Mycronic has supported the display technology evolution for more than a decade by supplying state of the art mask writers and metrology systems. The industry approaching the limitation for enabling next generation displays due to nonexistence of a metrology system supporting the latest pattern generator generation, the Prexision-80. Thus Mycronic has decided to introduce the next generation metrology system, Prexision-MMS based on the latest version of the Prexision platform. The system will be a critical component supporting the development of future displays and supports the trend producing advanced displays in larger generation fabs.

SETTING A NEW STANDARD FOR REGISTRATION MEASUREMENTS

The Prexision-MMS is a registration measurement system for advanced display photomasks up to 1 400 x 1 620 mm sufficient for generation 8 masks. The Prexision-MMS takes registration measurements to a new level meeting the requirements of the latest and coming generation photomasks. The system can also be used for CD measurements.

INNOVATIVE AND IMPROVED PLATFORM

By adopting our latest innovative platform, Prexision-MMS ensures superior performance in registration and overlay measurement. This is enabled by a complete re-design of the X-carriage and the optical head and a new Y-movement concept, all controlled with new servos. The system is enclosed in a climate chamber to eliminate errors caused by variations in temperature. The stage is made of Zerodur, a highly temperature stable material, which reduces the effects of any remaining temperature variations. To further improve registration performance the system is also equipped with different new features such as, new optic head and new electronics together with other improvements. The innovative improvements enables much more accurate and trustable 1st round measurement result

which enable not only better measurements but also turn-around time, which simplifies planning at the mask shop.

LARGE FLEXIBILITY AND AUTOMATION POSSIBILITIES

The system is capable of measuring crosses, star shape but also any general pattern shapes that fit into the measurement window. It also has scripting capabilities to allow automated measurements. The results can be displayed graphically in grid graphs. Extensive post processing and analysis functions are included to assist in interpreting the measurement results. The measurement data can be exported for use in external software.

IMPROVED REGISTRATION MEASUREMENTS WITH TWO UNIQUE TECHNIQUES

The system offers two unique techniques enabling improved registration measurements, which are system registration calibration and Z-correction. System registration calibration will deliver the absolute registration reference. Z-correction ensures outstanding performance in placement measurement regardless of mask flatness and presence of particles or loading stress. With these two unique techniques in combination with Prexision-80 will become the industry role model to create the most advanced masks.

KEY SPECIFICATIONS

Registration, 0-90-180-270 degrees (3 σ) (calibrated area)	65 nm
Overlay mask-to-mask (3 σ)	40 nm
CD repeatability (3 σ)	50 nm
CD linearity (range/2)	30 nm

KEY BENEFITS COMPARED TO MMS15000

Superior accuracy
Improved short and long term stability
Faster measurements since no initial thermal drifts
Needed to enable the full registration performance of the Prexision based mask writers

SWEDEN
Mycronic AB
PO Box 3141
Nytorpsvägen 9
SE-183 03 Täby
Sweden
Tel: +46 8 638 52 00
Fax: +46 8 638 52 90

GERMANY
Mycronic GmbH
Tel: +49 89 4524248-0
Fax: +49 89 4524248-80

UK
Mycronic Ltd.
Tel: +44 1202 723 585
Fax: +44 1202 723 269

FRANCE
Mycronic S.A.S.
Tel: +33 1 41 80 15 80
Fax: +33 1 46 86 77 89

NETHERLANDS
Mycronic B.V.
Tel: +31 402 62 06 67
Fax: +31 402 62 06 68

USA
Mycronic Inc.
Tel: +1 978 948 6919
Fax: +1 978 948 6915

SOUTH KOREA
Mycronic Co. Ltd.
Tel: +82 31 387 5111
Fax: +82 31 388 0087

CHINA
Mycronic Co., Ltd.
Tel: +86 21 3252 3785/86
Fax: +86 21 3252 3780

SINGAPORE
Mycronic Pte Ltd.
Tel: +65 6281 7997
Fax: +65 6281 7667

JAPAN
Mycronic Technologies Corporation
Tel: +81 42 354 1320
Fax: +81 42 354 1321

www.mycronic.com

Mycronic, Prexision, LRS, FPS, MMS, Sigma and Omega are registered trademarks or trademarks of Mycronic AB. Mycronic is ISO 9001:2008 certified.

Mycronic's Prexision laser pattern generators are protected by several patents including, but not limited to, the following patents:
US Patents No. 5 495 279, US 5 517 349, US 5 635 976, US 6 448 999, US 6 529 266, US 6 624 878, US 6 700 600, US 6 844 123, US 6 883 158, US 7 148 971, US 7 709 165, US 7 912 671, US 7 919 218, US 8 137 875 and Chinese Patents No. CN 00807832.7, ZL00814427.3, ZL200480031019.7, CN 101194208, CN 102037312, and other corresponding national patents and patent applications pending.

MYCRONIC