

MUST SYSTEM II

This new purpose-designed system enables fast, accurate solderability testing of both SMT and through-hole components, plus laboratory tests of fluxes and other soldering materials

- Integral computer control for accuracy and ease of operation
- Stores and recalls component data, test parameters and results
- Colour graphic display of test results
- Automatic component alignment and testing of multi-lead components
- Performs standard solderability tests

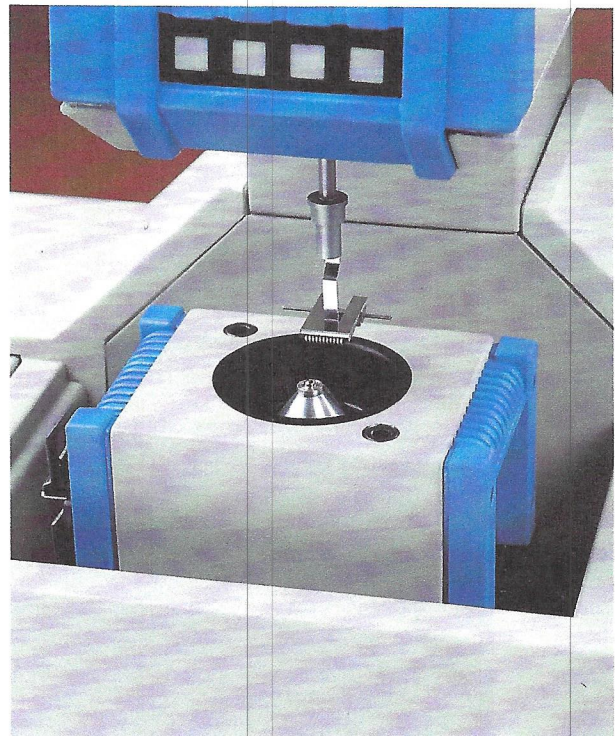
MUST System II has been developed by a Project Team from Multicore Solders, Philips, Siemens and the UK National Physical Laboratory, with the assistance of the BRITE Research Award from the European Community.

TESTING SOLDERABILITY

Accurate testing of component solderability as a routine part of soldering process control enhances product quality and reduces defect rates. It also facilitates the use of cheaper environmentally-friendly soldering materials such as Multicore 'No-clean' Fluxes and Solder Creams.

Quantitative solderability test methods for leaded components have been in use for a number of years, but attempts to produce a reliable quantitative test method for surface mounted components have been hindered by the design of existing wetting balance instruments and difficulties in handling and aligning these small components.

MUST System II is a purpose-built instrument designed to test both surface mount and leaded components. Its development draws on more than 25 years of experience in solderability testing and eliminates the problems associated with existing test equipment.



Microwetting balance test using solder globule.

MICROWETTING BALANCE TEST FOR SMT COMPONENTS

The standard wetting balance test measures the forces of buoyancy and surface tension as a component lead is immersed in a bath of molten solder. By observing the change in these forces during wetting the solderability of the component lead can be assessed.

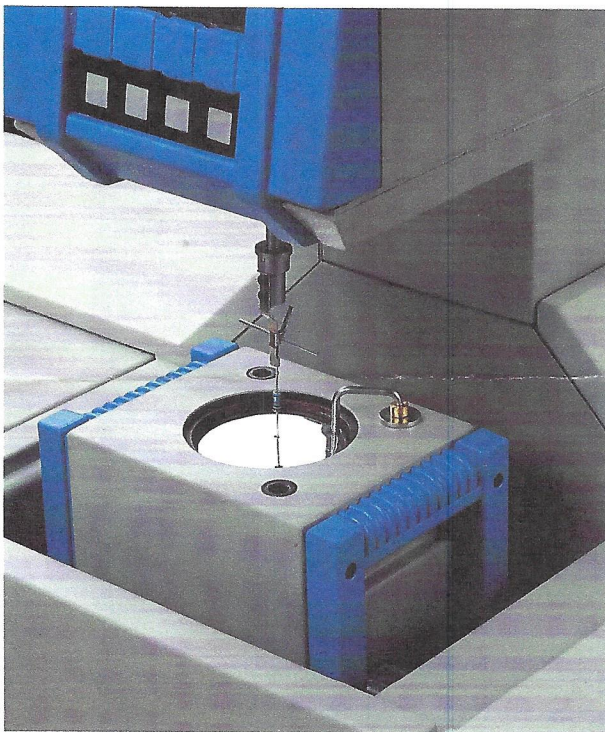
The solder bath can be used to test SMT components, but the test is often difficult to perform and produces rather poor resolution. Much greater resolution can be obtained by utilising the 'microwetting balance' procedure, in which the solder bath is replaced with a small solder globule. This produces a larger wetting signal for analysis and also allows individual leads to be tested on a multi-leaded component. The microwetting balance method is currently being developed as an International Standard.

MUST System II has a number of features specifically designed to overcome the problems of testing very small surface mount components. The system includes a computer-controlled worktable, motor-driven in all three axes. Information from a database is used to align the

solder globule beneath the termination to be tested and to advance automatically along the terminations of a multi-leaded component. Purpose-designed mounting clips hold components firmly in the correct position for testing.

SOLDER BATH WETTING BALANCE TEST FOR THROUGH-HOLE COMPONENTS

The buoyancy and wetting forces produced by dipping a component in a solder bath are converted by **MUST System II** into a digital signal which is used to produce a force against time curve. This is automatically analysed to assess the solderability of the component lead, and pass/fail data is presented immediately.



Solder bath wetting test.

OPERATING METHOD

MUST System II software leads the operator through each test, ensuring that it is performed correctly, and analyses each curve or series of curves using previously stored test and evaluation parameters from its database.

Components are secured above the solder bath or globule block with the appropriate clip and the test is initiated simply by selecting the appropriate component code and a set of test parameters. The weight of differing component clips is measured automatically; calibration of

the system is not required during use. The parameter files may use metric or US units as required, and a wetting force sampling rate of 1000Hz provides great accuracy and sensitivity.

Test results may be evaluated after a single test, or an entire batch can be automatically evaluated after the series of tests is complete. Each wetting force curve is displayed in a separate colour for ease of identification, and failed components are highlighted on the results display screen. Graphs and test data can be sent to a suitable printer or stored on disk.

The software also controls the semi-automatic replacement of the solder bath or globule block and the movement of a safety cover which prevents the operator coming into contact with molten solder.

An optional Statistical Process Control software package enables **MUST System II** to be integrated into Quality Assurance systems such as ISO 9000, and space is available in the electronics rack for future system development.

EQUIPMENT AND ACCESSORIES

The system is supplied complete and ready for use. It includes the MUST unit, keyboard, monitor, all necessary connecting leads, fluxes and chemicals, solder pellets, a complete set of tools and a comprehensive manual describing the operation of the instrument and the theory of the test methods.

16 specimen clips are provided to enable most leaded and surface mount components to be tested. A 24-pin dot matrix printer is available as an optional extra.



INTERNATIONAL STANDARDS

The test parameters stored in the database have been set up in accordance with international standard methods: IEC 68-2-54, ANSI/J-STD-002, MIL-STD-883 Method 2022 and ANSI/J-STD-003.

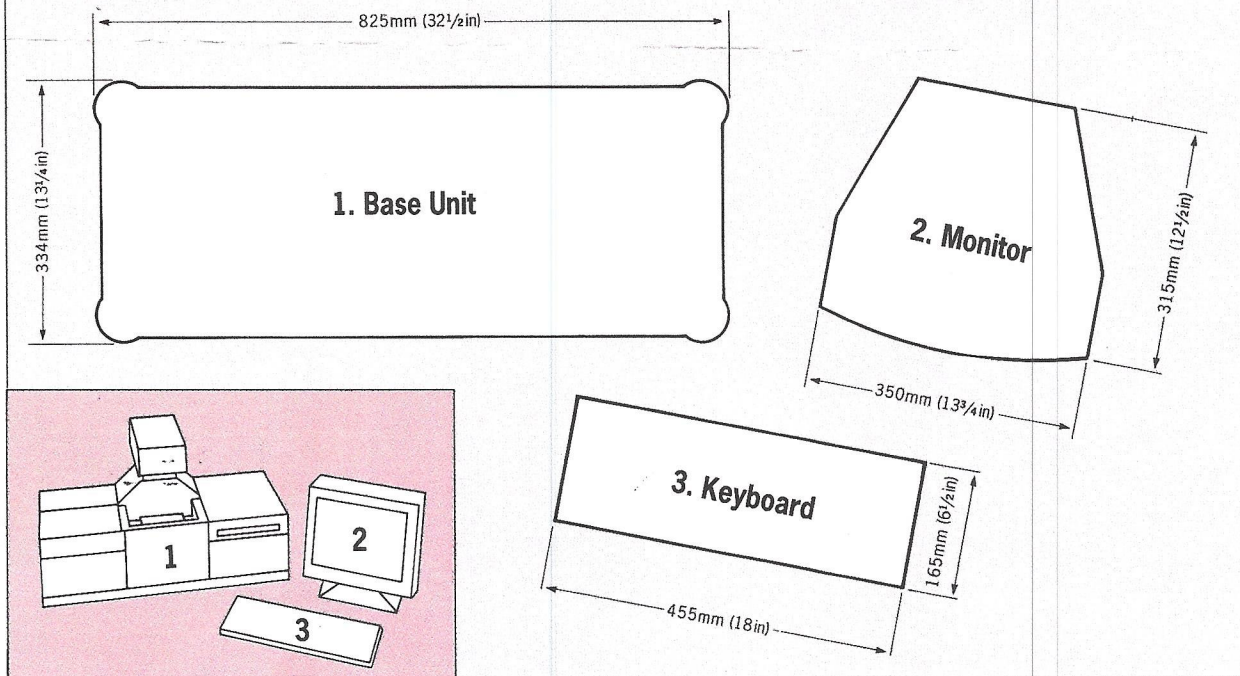
MUST System II software also allows the system to be used to perform the Edge Dip Test methods included in the following international standard methods: IEC 68-2-20, 68-2-58, ANSI/J-STD-002, MIL-STD 202 method 208F, ANSI/J-STD-003.

TECHNICAL SPECIFICATION

Solder Temperature	0 - 400°C (32 - 752°F)
Dipping speed	0 - 30mm/sec (0 - 1.2in/sec)
Immersion depth	0 - 30mm (0 - 1.2in)
Dwell time	0 - 30 sec
Maximum component weight	40g (1.4oz) (Including clip)
Force sampling frequency	1000Hz
Globule sizes	2mm/25mg or 4mm/200mg
Solder bath diameter	60mm (2 ³ / ₈ in)
Solder bath capacity	1kg (2.2lb)
Power supply	240V 50Hz or 110V 60Hz
Power consumption	750 watts
Net weight	Machine 45kg (100lb) - Monitor 11kg (24lb)
Packed weight	Machine 52kg (115lb) - Monitor 13kg (29lb)
Packed size	Machine 945 x 485 x 685mm (37 ¹ / ₄ x 19 x 27in) Monitor 450 x 410 x 435mm (17 ³ / ₄ x 16 ¹ / ₄ x 17 ¹ / ₄ in)

ORDERING DETAILS			
Part No	Line Voltage	Line Cord	Language
STS20201	240v	UK	English
STS20202	240v	EUR	Eng/Fre/Ger
STS20203	110v	US	English
STS20204	240v	US	English
STS20205	110v	US	Eng/Jap
STS02630	Optional High Resolution Printer 240v		
STS02640	Optional High Resolution Printer 110v		
Printer: 24 Pin Dot Matrix Type Printer with Parallel Centronics Type Interface capable of printing on 256mm wide continuous form paper and emulating Epson LQ series Printers.			

SYSTEM FOOTPRINT



MULTICORE SOLDERS

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AUSTRALIA: 2 Hume Road, Smithfield, NSW 2164. Tel: (02) 725-1277 Telex: AA 176434MSAP Fax: (02) 725-2896.

CANADA: 12,320 April, Montreal, Quebec, H1B 5N5. Tel: (514) 645-2375 Fax: (514) 645-7574.

GERMANY: Oskarstrasse 3-7, 5600 Wuppertal 2. Tel: 0202-554047/8 Telex: 8591330 Fax: 0202-550431.

JAPAN: Hakua Building, 2-4-1 Akasaka, Minato-ku, Tokyo 107. Tel: 03-3586-8045 Telex: 2426738 HICON J Fax: 03-3586-5669.

MALAYSIA: Lot 62049 Jalan Portland, Tasek Industrial Estate, 31400 Ipoh. Tel: 05-576811 Telex: SOLDER MA 44059 Fax: 05-571868.

SINGAPORE: No. 2, Fan Yoong Road, Jurong, Singapore 2262. Tel: 02-2614766/2614768 Fax: 02-2615455.

TAIWAN: Multicore Soldering Technology, No. 22, Lane 57, Nan-Yang Street, Shih-Jyy Town, Taipei Hsien, Taiwan, R.O.C. Tel: (02) 647-4418 Fax: (02) 643-2434.

U.S.A.: 1751 Jay Ell Drive, Richardson, Texas 75081. Tel: 214-238-1224 Fax: 214-437-0288 Telex: 792451.

MULTICORE SOLDERS, INC.

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PHONE: 214-238-1224 • FAX 214-644-9309 • SALES FAX 214-437-0288

Factories also in Australia, Canada, Germany, Malaysia and UK



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MSI Quote #: 444

SN 265
② wetting balance analyzer
w/ digital display
① Universal Solderability Tester

In response to your request for a Multicore Solderability Tester, we are pleased to quote as follows:

1. ARS20303 MUST System II Solderability Tester

\$37,500.00

This system includes an integral computer with a 110 megabyte hard drive and one 3 1/2" floppy drive; test programs, two globule blocks for testing SMDs, a solder Bath, and all necessary connecting leads. Sixteen specimen holding clips designed for most SMDs and axial leaded components. Operating and maintenance manual which includes troubleshooting guide and spare parts list. One operating video to support the operating manual. Three jars of standard test fluxes, (2 oz. each) N/A-non activated, ACTIEC 2-RMA: ACTIEC 5-RA, One jar (1500 60/40, 25mg solder pellets, One jar (1500) 60/40, 200 mg solder pellets. One STS02640 High Resolution printer.

Quote valid for 30 days
Delivery: 4-6 weeks, ARO
F.O.B. RICHARDSON, TEXAS
Terms: Net 30 days

Thank you for allowing us to provide this quote.

Sincerely,

Ed Small
Manager, SPC Instrument Division

cc: Ron Rogers

FOR TECHNICAL INFORMATION PLEASE CALL:
ED SMALL - PHONE (609) 488-7191 - FAX: (609) 488-5417