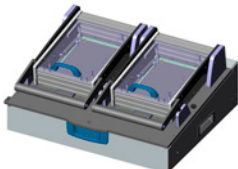
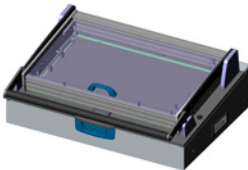


MA 20xx

Manual stand-alone test fixture for series testing

Size
 MA 2011
 MA 2012
 MA 2013
 MA 2013T
 MA 2014

Usage

Test fixtures of the MA 20xx series are suitable for contacting electronic units such as printed circuit boards (PCBs) with medium quantities (series testing) and a small number of versions. The test fixtures are designed as a single system without an internal interface, are connected to an existing test system, and are operated with permanently installed exchangeable kits that are specially designed for the electronic unit to be tested.

Features

- Single system without internal interface
- High contact force of up to 2,000 N
- Energy-saving, shock-absorbing opening mechanism
- Permanently mounted exchangeable kit
- Available with and without test system interface

Life span

- 500,000 load cycles (laboratory conditions)
- The life span is determined in the laboratory using fully automatic, computer-controlled endurance test stations under full load. Since the life span depends on many different factors and in particular on the individual test application, INGUN does not guarantee the actual duration of use in the test field.

Functional units

Stiffener bars and numerous other functional units for extension of functionality as required can be found from page 64 onwards.



Customisation

INGUN provides customising documents for customisation. The exchangeable kits are to be customised according to the customising guidelines **info 1317**.



Starter kits for customising on site and other customising accessories, such as pushrods, PCB support pins, tooling pins, pre-centring pins, marking units, and test plugs, can be found from page 153 onwards.

MA 20xx - Test fixture

MA 2011	30
MA 2012	30
MA 2013	30
MA 2013T	30
MA 2014	30

Note

See pages 32 to 33 for overview and comparison table.

MA 20xx

Manual stand-alone test fixture for series testing without test system interface

Series: MA xxxx

Contact force: 2,000 N

Parallel stroke: 15 mm

Load cycles: 500,000 (laboratory conditions)

ingun®

Test fixture incl.
exchangeable kit ATS MAxx
with **standard housing**

Test fixture incl.
exchangeable kit ATS MAxx
with **tall housing**

Features

- Fully closed pressure frame
- Test fixture without internal interface, incl. exchangeable kit ATS MAxx
- Single-sided, double-sided, dual-stage contacting

Technical specifications

Basic unit

- Outer dimensions, closed (W x D x H):
 - MA 2011/D/H: approx. 320 x 515 x 270 mm
 - MA 2012/D/H: approx. 492 x 515 x 270 mm
 - MA 2012/D/H/HG: approx. 492 x 515 x 370 mm
 - MA 2012/D/H/HF: approx. 492 x 515 x 270 mm
 - MA 2013/D/H: approx. 647 x 584 x 270 mm
 - MA 2013/D/H/HG: approx. 647 x 584 x 370 mm
 - MA 2013T/D/H: approx. 647 x 533 x 270 mm
 - MA 2014/D/H: approx. 745 x 584 x 270 mm
- Outer dimensions, open (W x D x H):
 - MA 2011/D/H: approx. 320 x 461 x 583 mm
 - MA 2012/D/H: approx. 492 x 461 x 583 mm
 - MA 2012/D/H/HG: approx. 492 x 461 x 688 mm
 - MA 2012/D/H/HF: approx. 492 x 461 x 583 mm
 - MA 2013/D/H: approx. 647 x 532 x 656 mm
 - MA 2013/D/H/HG: approx. 647 x 532 x 750 mm
 - MA 2013T/D/H: approx. 647 x 533 x 591 mm
 - MA 2014/D/H: approx. 745 x 532 x 650 mm
- Pressure frame unit opening angle: approx. 75 °
- Pressure frame unit clamping force: approx. 120 N (at full load)

Interchangeable kit

- Usable area test fixture MA 20xx (W x D):
 - MA 2011/D/H: approx. 150 x 240 mm
 - MA 2012/D/H/HG: approx. 285 x 240 mm
 - MA 2012/D/H/HF: approx. 215 x 180 mm
 - MA 2013/D/H/HG: approx. 440 x 310 mm
 - MA 2013T/D/H: approx. 2x 150 x 240 mm
 - MA 2014/D/H: approx. 540 x 310 mm
- Free height above PCB: approx. 58 mm
- Pushrod length: 60 mm
- GKS installation height, bottom: 10.5 mm
- GKS installation height, top: 16.0 mm
- GKS installation height 2-stage, bottom: 10.5 | 16.0 mm
- GKS theoretical working stroke: 3 mm (bottom), 3.5 mm (top)

General

- Operating temperature range: + 10 °C to + 60 °C

* MA 2012/D/H/HF

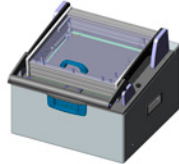
- Dual-stage contacting is not possible with the MA 2012/D/H/HF.
- You will find further information about RF exchangeable kits starting on page 58.



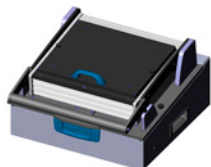
MA 2011/D/H



MA 2012/D/H



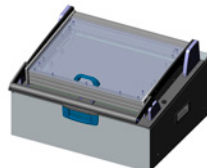
MA 2012/D/H/HG



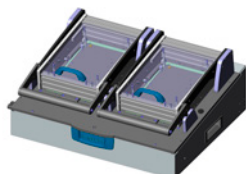
MA 2012/D/H/HF (*)



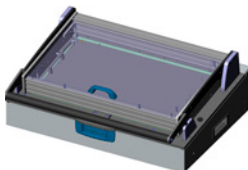
MA 2013/D/H



MA 2013/D/H/HG



MA 2013T/D/H



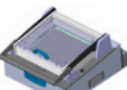
MA 2014/D/H

Ordering information

Manual stand-alone test fixture (including exchangeable kit without internal interface)

Part no.:	48590	MA 2011/D/H	Manual stand-alone test fixture (incl. ATS MA11 - Part 45900-KIT)
Part no.:	48530	MA 2012/D/H	Manual stand-alone test fixture (incl. ATS MA12 - Part 45904-KIT)
Part no.:	101930	MA 2012/D/H/HG	Manual stand-alone test fixture (incl. ATS MA12 – Part 45904-KIT)
Part no.:	54818	MA 2012/D/H/HF (*)	Manual RF stand-alone test fixture (incl. ATS MA12/HF - Part 54012)
Part no.:	48620	MA 2013/D/H	Manual stand-alone test fixture (incl. ATS MA13 - Part 45980-KIT)
Part no.:	100720	MA 2013/D/H/HG	Manual stand-alone test fixture (incl. ATS MA13 - Part 45980-KIT)
Part no.:	100985	MA 2013T/D/H	Manual tandem stand-alone test fixture (incl. 2x ATS MA11 - Part 45900-KIT)
Part no.:	100690	MA 2014/D/H	Manual stand-alone test fixture (incl. ATS MA14 - Part 45985-KIT)

The delivery of the manual stand-alone test fixture MA 20xx contains two separate units, 1x basic unit GG MA 20xx and 1x replacement set ATS MAxx (not assembled, except ATS MA12/HF).

Test system	Part number Description Outer dimensions (W x D x H)			
	MA 2012 (incl. ATS MA12 - 45904-KIT)		MA 2013 (incl. ATS MA13 - 45980-KIT)	
TERADYNE TESTSTATION GR 2270/71		53350 MA 2012/D/H/GR 2270/71 approx. 501 x 548 x 262 mm (closed) approx. 501 x 494 x 576 mm (open)		
Dr. ESCHKE ROHDE & SCHWARZ Pylon		51865 MA 2012/D/H/Pylon approx. 501 x 548 x 262 mm (closed) approx. 501 x 494 x 576 mm (open)		53230 MA 2013/D/H/Pylon approx. 654 x 618 x 262 mm (closed) approx. 654 x 564 x 649 mm (open)
VIRGINIA PANEL VPC-G12-12		59830 MA 2012/D/H/VPC-G12-12 approx. 493 x 565 x 262 mm (closed) approx. 493 x 510 x 576 mm (open)		57325 MA 2013/D/H/VPC-G12-12 approx. 654 x 618 x 262 mm (closed) approx. 654 x 564 x 649 mm (open)
VIRGINIA PANEL VPC-G12x-18		53388 MA 2012/D/H/VPC-G12x-18 approx. 493 x 548 x 262 mm (closed) approx. 493 x 494 x 576 mm (open)		53390 MA 2013/D/H/VPC-G12x-18 approx. 649 x 618 x 262 mm (closed) approx. 649 x 564 x 649 mm (open)

Description	MA 2011/ D/H	MA 2012/ D/H	MA 2012/ D/H/HG	MA 2012/ D/H/HF	MA 2013/ D/H	MA 2013/ D/H/HG	MA 2013T/ D/H
Part number MA	48590	48530	101930	54818	48620	100720	100985
Version	Incl. ATS MA11 (Part. 45900-KIT)	Incl. ATS MA12 (Part. 45904-KIT)	Incl. ATS MA12 (Part. 45904-KIT)	Incl. ATS MA12/HF (Part. 54012)	Incl. ATS MA13 (Part. 45980-KIT)	Incl. ATS MA13 (Part. 45980-KIT)	Incl. 2x ATS MA11 (Part. 45900-KIT)
	Without test system interface	Without test system interface	Without test system interface	Without test system interface	Without test system interface	Without test system interface	Tandem, without test system interface
Maximum contact force	2.000 N	2.000 N	2.000 N	2.000 N	2.000 N	2.000 N	2.000 N
Parallel stroke	15 mm	15 mm	15 mm	15 mm	15 mm	15 mm	15 mm
Outer dim, closed (W x D x H mm)	320 x 515 x 270	492 x 515 x 270	492 x 515 x 370	492 x 515 x 270	647 x 584 x 270	647 x 548 x 370	647 x 533 x 270
Outer dim., open (W x D x H mm)	320 x 461 x 583	492 x 461 x 583	492 x 461 x 688	492 x 461 x 583	647 x 532 x 656	647 x 532 x 750	647 x 533 x 591
Usable area (W x D mm)	150 x 240	285 x 240	285 x 240	215 x 180	440 x 310	440 x 310	2x 150 x 240
Pressure frame opening angle	75 °	75 °	75 °	75 °	75 °	75 °	75 °
Pressure frame clamping force (at full load)	120 N	120 N	120 N	120 N	120 N	120 N	120 N
Free overall height above PCB	58 mm	58 mm	58 mm	58 mm	58 mm	58 mm	58 mm
Pushrod length	60 mm	60 mm	60 mm	60 mm	60 mm	60 mm	60 mm
Installation height GKS, bottom	10,5 mm	10,5 mm	10,5 mm	10,5 mm	10,5 mm	10,5 mm	10,5 mm
Installation height GKS, top	16,0 mm	16,0 mm	16,0 mm	16,0 mm	16,0 mm	16,0 mm	16,0 mm
Installation height GKS dual- stage, bottom	10,5 16,0 mm	10,5 16,0 mm	10,5 16,0 mm	-	10,5 16,0 mm	10,5 16,0 mm	10,5 16,0 mm
GKS theoretical working stroke, bottom	3 mm	3 mm	3 mm	3 mm	3 mm	3 mm	3 mm
GKS theoretical working stroke, top	3,5 mm	3,5 mm	3,5 mm	3,5 mm	3,5 mm	3,5 mm	3,5 mm
Operating tem- perature range	+ 10 °C to + 60 °C	+ 10 °C to + 60 °C	+ 10 °C to + 60 °C	+ 10 °C to + 60 °C	+ 10 °C to + 60 °C	+ 10 °C to + 60 °C	+ 10 °C to + 60 °C
Spec. features/ test system manufacturer	-	-	-	Outstanding shielding in the frequency range up to 6 GHz	-	-	-

MA 2014/ D/H	MA 2012/D/H/ GR 2270/71	MA 2012/D/H/ Pylon	MA 2012/D/H/ VPC-G12-12	MA 2012/D/H/ VPC-G12x-18	MA 2013/D/H/ Pylon	MA 2013/D/H/ VPC-G12-12	MA 2013/D/H/ VPC-G12x-18
100690	53350	51865	59830	53388	53230	57325	53390
Incl. ATS MA14 (Part. 45985-KIT)	Incl. ATS MA12 (Part. 45904-KIT)	Incl. ATS MA12 (Part. 45904-KIT)	Incl. ATS MA12 (Part. 45904-KIT)	Incl. ATS MA12 (Part. 45904-KIT)	Incl. ATS MA13 (Part. 45980-KIT)	Incl. ATS MA13 (Part. 45980-KIT)	Incl. ATS MA13 (Part. 45980-KIT)
Without test system interface	Incl. test system interface GR2270/71	Incl. test system interface Pylon	Incl. test system interface VPC-G12-12	Incl. test system interface VPC-G12x-18	Incl. test system interface Pylon	Incl. test system interface VPC-G12-12	Incl. test system interface VPC-G12x-18
2.000 N	2.000 N	2.000 N	2.000 N	2.000 N	2.000 N	2.000 N	2.000 N
15 mm	15 mm	15 mm	15 mm	15 mm	15 mm	15 mm	15 mm
745 x 584 x 20	501 x 548 x 262	501 x 548 x 262	493 x 565 x 262	493 x 548 x 262	654 x 618 x 262	654 x 618 x 262	649 x 618 x 262
745 x 532 x 650	501 x 494 x 576	501 x 494 x 576	493 x 510 x 576	493 x 494 x 576	654 x 564 x 649	654 x 564 x 649	649 x 564 x 649
540 x 310	285 x 240	285 x 240	285 x 240	285 x 240	440 x 310	440 x 310	440 x 310
75 °	75 °	75 °	75 °	75 °	75 °	75 °	75 °
120 N	120 N	120 N	120 N	120 N	120 N	120 N	120 N
58 mm	58 mm	58 mm	58 mm	58 mm	58 mm	58 mm	58 mm
60 mm	60 mm	60 mm	60 mm	60 mm	60 mm	60 mm	60 mm
10,5 mm	10,5 mm	10,5 mm	10,5 mm	10,5 mm	10,5 mm	10,5 mm	10,5 mm
16,0 mm	16,0 mm	16,0 mm	16,0 mm	16,0 mm	16,0 mm	16,0 mm	16,0 mm
10,5 16,0 mm	10,5 16,0 mm	10,5 16,0 mm	10,5 16,0 mm	10,5 16,0 mm	10,5 16,0 mm	10,5 16,0 mm	10,5 16,0 mm
3 mm	3 mm	3 mm	3 mm	3 mm	3 mm	3 mm	3 mm
3,5 mm	3,5 mm	3,5 mm	3,5 mm	3,5 mm	3,5 mm	3,5 mm	3,5 mm
+ 10 °C bis + 60 °C	+ 10 °C bis + 60 °C	+ 10 °C bis + 60 °C	+ 10 °C bis + 60 °C	+ 10 °C bis + 60 °C	+ 10 °C bis + 60 °C	+ 10 °C bis + 60 °C	+ 10 °C bis + 60 °C
-	- TERADYNE	- Dr. ESCHKE - ROHDE & SCHWARZ	- VIRGINIA PANEL	- VIRGINIA PANEL	- Dr. ESCHKE - ROHDE & SCHWARZ	- VIRGINIA PANEL	- VIRGINIA PANEL