Customer guideline for Fixture Customisation

INGUN Prüfmittelbau GmbH
Max-Stromeyer-Straße 162
78467 Konstanz
Germany

Tel. +49 7531 8105-0
Fax +49 7531 8105-65
info@ingun.com
www.ingun.com

In order to plan and custom manufacture test fixtures, we require the test object data (test points and wiring) and information about specific requirements on the test fixture. When this information is fully available to us, you receive your detailed quote within the shortest time possible.

Subsequently, we have compiled an overview of the most important of this required information:

Type of test fixture:
Manual / vacuum / pneumatic / inline / specialised

Test voltage:
Up to 24 VAC and 60 VDC (safety extra low voltage) and higher (hazardous voltage).

Test system interface:
Yes / No. When yes, which test system, and when required the special interface allocation.

Version:
- single stage or dual stage fixture
- single or tandem fixture
- one-sided or double-sided contacting
- single or panel PCB, additional individual test area
- definition of the position of the PCB on the fixture (top, bottom, operator side)

Other requirements:
Describe the further requirements in as much detail as possible. For example, marking unit, screwing unit, key and button operators, side contacting, changes to housing and back panel, assembly of additional electronics as required. Please include sketches.

Customer supplied parts / additional electronics:
Final versions of loaded and bare PCBs will be required, at the latest, upon commissioning, and earlier for other provisions (for example, additional electronics, scanner, and so on) as required. Customising can also be done based on a finalised 3D CAD file (PCB including components). As function tests including contact pattern and collision check cannot be done in this case, INGUN does not assume any liability for any functional issues.

PCB data:
- plan of component positioning in ‚.dxf' / ‚.pdf'
- preferred 2D formats in ‚.dxf' / ‚.dwg' / ODB++ oder IPC2581-Daten
- preferred 3D formats in ‚.stp' / ‚.iges' / ‚.x_t' / Solidworks
  (only necessary when the fixture needs to be designed or when there are no sample boards available)

Test points and wiring data:
The data can either be generated as either Export from test system or PCB development software, or as a file created by the customer. Wiring data should be given when ordering. If this cannot be provided until a later point in time, the customising can begin in advance. Additional costs for extra effort and expense incurred by the data processing department must be covered.

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1. Data export from the test system

The following data formats can be read by our CAM/CAD system:

Accel (Tango Pro) PCAD 2000	Aperture Read	Atribute Bom Read	Autocad ADI Read
Barco DPF Read	Board Station Read	Cadence Allegro IPF Read	Cadence Allegro Read
CADStar / Visula Read	CALAY Prisma Read	Case Plot Read	Excellon Drill Read
FabMaster Device Read	FabMaster FATF Read	FabMaster Nail Read	Gerber Read
HP EGS ARC Read	HPGL/HPGL2 Read	IGES Read	Mentor Neutral Read
OrCAD Layout Plus Read	Pads Power/Perform Read	PCAD (PDIF) Layout Read	Protel PCB Read
Sci Cards/Encore Read	Supermax DDE Read	Theda Read	Unidat (emPWR) Read
VeriBest (EIF) Read	Zuken CR 3000/5000 Read	Zuken CR 5000 BD Read	ODB++

Useful information about Gerber format:
We often receive data in Gerber format which is, however, not suitable for the analysis/planning of a test fixture, because Gerber is not an "intelligent" format. Essential information, for example the relationship between the mesh and components cannot be included in the Gerber format.

In order to use Gerber data, the additional information is necessary:
- Test point plan or a single layer containing only the necessary test points
- Wiring information as an Excel table (also possible as ASCII – File)

A content list in the data file is very helpful for data preparation at INGUN. This should describe what each file contains, and which programmes the files can be opened with.

2. Customer created test point and wiring file

For the test point and the 1:1 wiring, an Excel table with the following format has proven to be practical.

Name
Test point description consisting of customer's test point name and test point number, for example, TP12, together with the description of other points, such as tooling pin, key button, test jet.

X-position
Give the corresponding X co-ordinate for the test point name in **mil** or **mm**. The position of the zero point on the PCB must be visable.

Y-position
Give the corresponding Y co-ordinate for the test point name in **mil** or **mm**. The position of the zero point on the PCB must be visable.

Contacting side
State whether the test points should be contacted from the **top** or the **bottom**.

Tip style
If specialized tip styles are required, (e.g. 006), please specify here.

Wired to
Wiring guidelines, where the test points have to be wired to (e.g. interface pin).

Remarks:
Additional information about drilling (e.g. diameter of the tooling pin) or wiring (colour, diameter of wire, specific wire length, and so on).

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Example:

Name	X-Position	Y-Position	Contacting side	Tip style	Wired to	Remarks
TP01	136,781	112,035	bottom		IB1.14	drill hole for GKS100-Tip006
TP02	57,500	229,900	bottom		IB4.22	wire wrap, long wire 50 cm
TP14	347,300	170,700		TIP217	IB1.35	Coax cable
tooling pin	5	10,500				mounting hole 3mm in DUT

The data can also be processed in .asc or .txt format.

In the case of non-standard wiring, a detailed wiring diagram will be necessary.

Design recommendations:

In order to realise a reliable, cost-effective test solution, the following points should be taken into consideration during PCB development:

- Two boreholes with a diameter of 3 mm (or larger) should be available to position the PCB on the test fixture. These should have as large a distance as possible from each other and a position and size tolerance of ± 0,05 mm.
- Test pads must be larger than 0,6 mm in diameter, more cost-effective contacting is possible with test pads of more than 0,8 mm diameter.
- The distance between test points (grid size) should be larger than 50 Mil (1,27 mm), more cost-effective contacting is possible with grid sizes of 75 Mil (1,91 mm) and larger.
- Test points should be arranged at least 1,5 mm from components in order to avoid them being damaged.