

# InFlip – MEMS STRIP TEST MODULE

High Parallel Test of Inertial Sensors up to 6 DOF



## Inertial sensor test equipment

Standard strip handler



Physical stimulus module



Tilt axis / Rotation axis

### Applications:

- Inertial sensors such accelerometers with or without magnet, 3DOF & 6DOF combos
- Other MEMS applications on request

### Solution for:

- All leaded and leadless packages, including tiny and fragile devices
- Typical carrier size 215 mm x 65 mm
- Strip sizes from 48 mm x 150 mm to 70 mm x 230 mm
- Tri-temp test from -40 °C to +125 °C

### Facts:

- High parallel test in composites, i.e. strips, panels, or carriers
- Scalable modular architecture: convertible to various sensor applications and package types
- Support of a large variety of packages incl. tiny and fragile packages
- Robust handling with minimum number of device contacts and low jam rates
- Real-world (physical) sensor stimulus with high accuracy



# InFlip – MEMS STRIP TEST MODULE

## 1. Base System

- 1.1 InFlip Module compatible with:
  - InStrip test handler for automatic loading / unloading
  - Engineering bench test station for manual loading / unloading
- 1.2 Temperature Test Options:
  - Ambient / tri-temp (-40 °C to +125 °C)
  - Cooling standard: LN<sub>2</sub> at 1.5 to 6 bar
- 1.3 Test Interface:
  - Tester interface: IEEE 488.2 (TCP/IP optional)
  - Angle control from tester: via IEEE 488.2
  - Index step control from tester: via IEEE 488.2
- 1.4 Human Machine Interface:
  - Panel PC with 15" touch screen, Windows 7
  - Remote recipe management
  - User configurable menus and run-screen
  - Online help system

## 2. Conversion

- 2.1 Conversion Style:
  - InCarrier / strip style conversion
- 2.2 Conversion Time:
  - Package conversion time required: typically <30 min
- 2.3 Adjustment / Calibration after Conversion:
  - Semi-automatic adjustment at InStrip, e.g. width adjustment of conveyer system
  - Semi-automatic angle calibration with precision reference inclinometer (0.01°)

## 3. Packages

- 3.1 Possible Package Style:
  - Singulated packages (with InCarrier process)
  - Packages in strips (e.g. leadframes, BGA strips)
  - Package types: leaded and leadless devices (e.g. BGA, LGA, QFN, MLF, WLCSP, SOIC, SOT, QFT)
- 3.2 InFlip Panel Specification:
  - Panel size: min. 48 mm x 150 mm; max. 70 mm x 230 mm
  - Panel thickness: max. 6 mm

## 4. Contacting

- 4.1 Number of Contact Sites:
  - Number of signal lines: 1200
  - Typical contacting force: 0.3 N/pin
  - Indexing: ±55 mm in x-direction
- 4.2 Type of Contacting
  - Typical: spring probe
  - Lifetime contacting: typical >500k insertions
  - Max. contactor resistance: 2.5 Ω + resistance of cable dock

## 5. Performance

- 5.1 Strip/carrier Alignment and Motion:
  - 2x tilt axis ( $\alpha, \beta$ )

Tilt axes

  - Rotation angle:  $\alpha$ : -180° to +180°,  $\beta$ : -180° to +180°
  - Position accuracy  $\alpha, \beta$ :  $\leq \pm 0.1^\circ$
  - Time to reach stable position (e.g. 0° to 90°): <1.0 s
- 5.2 Temperature:
  - Range: -40 °C to +125 °C
  - Accuracy at contact site:  $\pm 2^\circ\text{C}$
  - Stability:  $\pm 1^\circ\text{C}$
  - Uniformity across strip/carrier:  $\pm 2^\circ\text{C}$
  - DUT reference sensor reading accuracy (optional): e.g. PT100 class A, PT 100/PT 1000 class Y (1/3B)
- 5.3 Throughput:
  - Depending on tester capability (number of parallel contact sites, number of devices, layout of a panel, test time)
  - Index time: 0.6 s
  - Strip exchange time: 11 s

## 6. Facility Requirements

- 6.1 Supply Requirements:
  - Power:
    - 398/416 Vac / 50 Hz / 3 phases /N /PE
    - 208 Vac / 60Hz /3 phases /PE
    - 230/240 Vac / 50/60 Hz /1 phase /N /PE
  - Air: 5 – 10 bar (73 – 145 PSI), max. air flow 900 l/minute
  - LN<sub>2</sub>: 1.5 - 6 bar (22 – 87 PSI), average consumption: 23l/h
- 6.2 Weight InFlip module/total system (incl. base unit, loader, unloader): 120 kg / 1250 kg
- 6.3 Size InFlip system (incl. base unit, loader, unloader):
  - 2.15 m (length) x 1.60 m (depth) x 1.60 m (height)
- 6.4 Mobility:
  - InStrip+InFlip+loader/unloader moveable on caster by 2 persons as one system

## 7. Compliance and Standards

- 7.1 Compliant to
  - CE, E142

This document is a general overview of the product capabilities. For actual use cases the detailed technical specifications apply. All information on this document about configurations and performance data are subject to the individual conditions of the actual use case. All performance figures such as MTBF, MTBA, Uptime, Yield, Jam Rate, Life Span, Cleaning Cycles etc. can vary with the actual use case / application. They assume that only original Cohu spare and consumable parts are used, recommended maintenance intervals and procedures are respected, operators/maintenance technicians have successfully participated in formal equipment training by Cohu to the appropriate level, and only Cohu approved software is used on the systems. Cohu assumes no warranty or liability if any of these requirements is not met. For application specific binding specification please contact your sales person.

