

# SO1000

## Tube-to-Tube Gravity Handler



Automotive



Mobility



IoT/IoV & Optoelectronics



Computing & Network



Industrial & Medical



Consumer

### Productivity

- Throughput up to 14,400 UPH
- Up to x4 test site parallelism
- Best in class total cost of ownership

### Flexibility

- QFN 3 mm to 12 mm
- MSOP118 to SO430 mil
- Single, dual, quad configuration
- Large variety of contactors

- Full tri-temp range -60°C to +175°C
- Highest reliability

- MEMS applications available
- Largest gravity handler installed base

# SO1000

## Tube-to-Tube Gravity Handler

### Specifications

#### Platform

##### Performance Characteristics

- Throughput Standard Kits<sup>1</sup>: up to 14,400 UPH
- Index Time (Belly Bar)<sup>2</sup>: down to 500 ms
- Index Time (Real Plunge-To-Board)<sup>3</sup>: 800 ms
- Bent Leads (±): 0.001 inch
- MTBF<sup>4</sup>: 500 h
- MTTR: 0.5 h
- MTBA<sup>5</sup>: 30 min
- Uptime: 95%

##### Jam Rates

- Down to 1:10,000 (under controlled conditions)

##### Temperature Characteristics

- Range: -60°C to +160°C
- Extended Version Range (optional): -60°C to +175°C
- Soak Track Accuracy: ±2°C
- Test Site Accuracy<sup>6</sup>: ±2°C
- Resolution: 0.1°C
- Stabilization Time<sup>7</sup>: 30 min
- Guard Band: down to ±0.1°C
- Soak Capacity (standard kits): 2 x 555 mm

##### Device Specifications

- Body width (SO types): 118 mil to 450 mil
- Body width (QFN types): 3 mm to 12 mm
- Body length: 3 mm to 18 mm
- Body height: 0.7 mm to 3 mm
- Length/width ratio: 0.8 (min.)

##### Input / Output Characteristics

- Input tube stack height<sup>10</sup>: 270 mm (max.)
- Output tube stack height: 270 mm (max.)
- Input tube stack capacity (MSOP): 34 tubes
- Input capacity tube loader<sup>11</sup>: 2720 devices
- Output capacity tube unloader<sup>11</sup>: 2720 devices

1 Quad asynchronous mode, e.g. 118 mil, depends on soak time and device dimensions  
2 Single mode, e.g. 150 mil/8 ld; 1.5 mm stroke  
3 Single mode, e.g. QFN 5;  
4 Includes any required scheduled maintenance  
5 Depends on tube capacity, test modes and test time  
6 Test site temperature accuracy can only be guaranteed with Rasco approved sockets  
7 Ambient (25°C) to set point  
8 For eSIP devices on request  
9 Data for SO and QFN devices, for eSIP, PDIP, and CDIP devices upon request

##### Tube Characteristics

- Width of tube: 4.5 mm to 18 mm
- Length of tube: 170 mm to 540<sup>12</sup> mm
- Height of tube: 2 mm to 7.2 mm

##### Facility Requirements

- Nominal supply voltage<sup>13</sup>: 208 - 230 VAC
- Air pressure<sup>14,15</sup>: 5 bar (72 psi) to 9 bar (130 psi)
- Air consumption<sup>16</sup>: 300 l/min (max.)
- LN<sub>2</sub> pressure: 1.1 bar (16 psi) to 6 bar (86 psi)
- LN<sub>2</sub> consumption: 10 l/hour

##### ESD Protection

- Field strength at device: 100 Volt (max)
- Ground strap jack: 2 x 1 M-Ohm to ground
- Device path: Conductive and grounded

##### Physical Dimensions

- Height: 1960 mm
- Width 800 mm
- Depth: 650 mm
- Weight: 210 kg

##### Electrical Interface

TTL parallel standard, RS 232 standard, IEEE 488 optional, network standard, USB at OPI standard

### Change Kit

##### Device Types

- SO118 mil (min.); SO450 mil (max.)
- QFN 3 x 3 mm (min.); 12 x 12 mm (max.)
- QFN thin down to 0.7 mm
- PDIP 300 mil, 400 mil, 600 mil<sup>17</sup>
- CDIP on request
- Conversion kits for other packages upon request

##### Kit Changeover

- 6h typical

##### Contactors

- Smart power, analog, RF, mixed signal

10 45° stack  
11 for MSO 8 pin (80 devices/tube, 3 x 3 mm body)  
12 510 mm if rotary kits are used  
13 1 x 16A, 50 - 60 Hz  
14 Kit dependent  
15 Minimum air pressure for rotary kits and devices ≥ 209 mil: 6 bar/68 psi  
16 Maximum consumption at hot and cold operation, if handler de-icing and heater pressure is adjusted according to the manual  
17 Device length 40 mm (max.)

Specifications subject to change without notice.  
For detailed performance specifications, please contact Cohu.