Technical data in this catalogue are subject to change without notice and become contractual only after written confirmation.
### Data Sheet Overview

<table>
<thead>
<tr>
<th>Waveguide</th>
<th>Acuator</th>
<th>Isolation</th>
<th>Type no</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR229/R40/WG11A</td>
<td>Latching</td>
<td>80</td>
<td>WS8286A/00</td>
<td>10</td>
</tr>
<tr>
<td>WR284/R32/WG10</td>
<td>Latching</td>
<td>80</td>
<td>WS8286S/00</td>
<td>12</td>
</tr>
<tr>
<td>WR187/R48/WG12</td>
<td>Latching</td>
<td>80</td>
<td>WS8286G/00</td>
<td>14</td>
</tr>
<tr>
<td>WR112/R84/WG15</td>
<td>Latching</td>
<td>80</td>
<td>WS8086H/00</td>
<td>16</td>
</tr>
<tr>
<td>WR112/R84/WG15</td>
<td>Fail-safe</td>
<td>80</td>
<td>WS8087H/00</td>
<td>18</td>
</tr>
<tr>
<td>WR112/R84/WG15</td>
<td>Latching</td>
<td>80</td>
<td>WS8186H/00</td>
<td>20</td>
</tr>
<tr>
<td>WR112/R84/WG15</td>
<td>Fail-safe</td>
<td>80</td>
<td>WS8186H/70</td>
<td>22</td>
</tr>
<tr>
<td>WR112/R84/WG15</td>
<td>Latching</td>
<td>75</td>
<td>WS8186J/00</td>
<td>24</td>
</tr>
<tr>
<td>WR112/R84/WG15</td>
<td>Latching</td>
<td>75</td>
<td>WS8186J/70</td>
<td>26</td>
</tr>
<tr>
<td>WR90/R100/WG126</td>
<td>Latching</td>
<td>90</td>
<td>WS8086X/00</td>
<td>28</td>
</tr>
<tr>
<td>WR90/R100/WG126</td>
<td>Fail-safe</td>
<td>90</td>
<td>WS8087X/00</td>
<td>30</td>
</tr>
<tr>
<td>WR90/R100/WG126</td>
<td>Fail-safe</td>
<td>60</td>
<td>WS8088X/00</td>
<td>32</td>
</tr>
<tr>
<td>WR90/R100/WG126</td>
<td>Latching</td>
<td>60</td>
<td>WS8089X/00</td>
<td>34</td>
</tr>
<tr>
<td>WR90/R100/WG126</td>
<td>Latching</td>
<td>60</td>
<td>WS8189X/00</td>
<td>36</td>
</tr>
<tr>
<td>WR75/R120/WG17</td>
<td>Latching</td>
<td>90</td>
<td>WS8086M/00</td>
<td>38</td>
</tr>
<tr>
<td>WR75/R120/WG17</td>
<td>Fail-safe</td>
<td>90</td>
<td>WS8087M/00</td>
<td>40</td>
</tr>
<tr>
<td>WR75/R120/WG17</td>
<td>Latching</td>
<td>60</td>
<td>WS8089M/00</td>
<td>42</td>
</tr>
<tr>
<td>WR75/R120/WG17</td>
<td>Latching</td>
<td>60</td>
<td>WS8189M/00</td>
<td>44</td>
</tr>
<tr>
<td>WR75/R120/WG17</td>
<td>Latching</td>
<td>60</td>
<td>WS8189M/70</td>
<td>46</td>
</tr>
<tr>
<td>WR62/R140/WG18</td>
<td>Latching</td>
<td>90</td>
<td>WS8086P/00</td>
<td>48</td>
</tr>
<tr>
<td>WR62/R140/WG18</td>
<td>Fail-safe</td>
<td>90</td>
<td>WS8087P/00</td>
<td>50</td>
</tr>
<tr>
<td>WR62/R140/WG18</td>
<td>Fail-safe</td>
<td>60</td>
<td>WS8088P/00</td>
<td>52</td>
</tr>
<tr>
<td>WR62/R140/WG18</td>
<td>Latching</td>
<td>60</td>
<td>WS8089P/00</td>
<td>54</td>
</tr>
<tr>
<td>WR62/R140/WG18</td>
<td>Latching</td>
<td>60</td>
<td>WS8189P/00</td>
<td>56</td>
</tr>
<tr>
<td>WR62/R140/WG18</td>
<td>Latching</td>
<td>60</td>
<td>WS8189P/70</td>
<td>58</td>
</tr>
<tr>
<td>WR42/R220/WG20</td>
<td>Latching</td>
<td>70</td>
<td>WS8189K/00</td>
<td>60</td>
</tr>
<tr>
<td>WR28/R320/WG22</td>
<td>Latching</td>
<td>60</td>
<td>WS8089Q/00</td>
<td>61</td>
</tr>
<tr>
<td>WRD580</td>
<td>Latching</td>
<td>50</td>
<td>WS8189D58/00</td>
<td>64</td>
</tr>
<tr>
<td>WRD650</td>
<td>Latching</td>
<td>50</td>
<td>WS8089D6/00</td>
<td>66</td>
</tr>
<tr>
<td>WRD750</td>
<td>Latching</td>
<td>40</td>
<td>WS8089D7/00</td>
<td>68</td>
</tr>
</tbody>
</table>

See also Sivers Standard Flange dimensions

---

### Other Models

On account of our module design we are prepared for modifications for any special requirements please contact us or look for your local dealer at www.siverslab.se

E-mail: switches@siverslab.se  Fax: +46 8 751 00 19  Phone:+46 8 477 68 00
Waveguide Switches

General

This catalogue describes the design of standard manual and automatic waveguide switches. Switches are available in frequencies ranging from 2.6 to 40 GHz.

Other models and special designs are available on request.

Waveguide switches are widely used in microwave systems:

• In radars for redundancy transmitters
• In radars for connection to high power dummy load
• In radars for test purposes
• In satellite communications for redundancy applications
• In test systems to select various signal paths etc.

Common to all Sivers Lab mechanical waveguide switches are:

• High isolation
• Low insertion loss
• High power capability
• Long life
General Design

The switches have a square stator with four waveguide ports. The rotor, which is fitted in the stator, has two or three channels. Electrical continuity between rotor and stator is achieved by means of quarter wave chokes. These chokes give extremely high isolation between the channels and also ensure unchanged high electrical performance throughout the lifetime of the switch.

All models have low VSWR and high power handling capacity. They withstand the full power rating of the waveguide and most models can be pressurised to 0.2 MPa (2 ATO) for high peak power applications.

All switches have E-plane bends for small dimensions.

The switches are made of copper-free aluminium alloy, which is chromated. The rotor is supported by stainless steel ball bearings.

The flange connections are, for most models, standard flat flanges with threaded holes. Special flange drilling and/or helicoil steel inserts are available on request.

Switches are available with:
- standard rectangular waveguides
- double-ridge waveguides
**Configuration**

All switches have a square stator with four ports. The rotor has two channels.

Four ports – two channels (transfer).

---

**Actuators**

Manual and automatic (electromagnetic) actuators are available.

The automatic types are fail-safe or latching. The fail-safe type returns to the de-energized position when the power is disconnected and requires a small holding current in the energized position. The latching type is stable in both positions without holding current.

In applications like safety-circuits, where it is required that the switch returns to its original position, if power supply fails, a fail-safe type is the natural choice. In other applications it might be an advantage to have low power consumption and no holding current.

Several models of automatic actuators are available for switches in the frequency range 4 to 40 GHz. All standard models operate at 28 Volts and have a maximum switch current of 1 Ampere and a maximum holding current of 0.3 Ampere.

For all latching models the current is automatically switched off when the rotor is in position. In fail-safe models the current is automatically reduced to holding current when the rotor is in position.

One or several sets of position indicators are available with all models of actuators.

Some models can be supplied with manual override knob for manual setting of position.

---

**Standard Model.** Type number 80-.
These models have the smallest dimensions. They have one set of position indicators and the electrical connection is via soldering pins or circular MIL-connector. Switch time is 100 to 250 ms (depending on frequency band). The models are in most cases specified for full temperature range.

**SatCom Model.** Type number 81-.
This model can be supplied with up to four sets of position indicators. One set of indicators can be arranged to have “inhibit” function, which is a closed contact at end positions and an open contact during transition. The actuator has manual override and cannot be pressurized. Switch time is 100 to 150 ms. The electrical connection is via a circular MIL-connector.
## Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSWR</td>
<td>1.05 to 1.08 for rectangular waveguides and 1.20 for double ridge models.</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td>&lt; 0.1 dB power capacity, except for double ridge models, which have 0.2 to 0.4 dB. See datasheets for each model.</td>
</tr>
<tr>
<td>Flanges</td>
<td>MIL-F-3299 for rectangular waveguides and MIL-F-39000 for double ridge waveguides.</td>
</tr>
<tr>
<td>Actuator voltage</td>
<td>28±3 V DC as standard. Some models may have a different voltage.</td>
</tr>
<tr>
<td>Actuator current</td>
<td>1 A for standard models.</td>
</tr>
<tr>
<td>Switch time</td>
<td>100 to 1000 ms depending on model.</td>
</tr>
<tr>
<td>Position indicators</td>
<td>60 V/500 mA rating.</td>
</tr>
<tr>
<td>Connectors</td>
<td>Soldering pins, flying lead or circular MIL connector according to datasheet.</td>
</tr>
<tr>
<td>Pressurization</td>
<td>Max. 0.2 MPa (not for 81- models).</td>
</tr>
<tr>
<td>Leakage</td>
<td>Max. 10 cc/minute.</td>
</tr>
<tr>
<td>Material</td>
<td>Stator and rotor; aluminium alloy copper free.</td>
</tr>
<tr>
<td>Finish</td>
<td>Stator and rotor; Chromate per MIL-C-5541C.</td>
</tr>
<tr>
<td>Life</td>
<td>250 000 actuations minimum.</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-40 to +85°C operating except 81- models which have 0 to 50°C.</td>
</tr>
<tr>
<td>Vibration</td>
<td>10 G for standard models. Up to 30 G for special models.</td>
</tr>
<tr>
<td>Duty</td>
<td>2 actuations/second at temperatures up to +40°C decreasing to one actuation/2 seconds at +85°C.</td>
</tr>
<tr>
<td>Reliability</td>
<td>All switches are actuated and the function monitored for 1 000 actuations at room temperature, highest and lowest specified temperature.</td>
</tr>
</tbody>
</table>
The Company

Sivers is a long-established European microwave product manufacturer located in Sweden’s largest high-tech area, Kista, in the northern part of Stockholm.

Carl von Sivers founded the company in 1951. With more than 50 years experience in microwaves, Sivers is a world-leading manufacturer of Waveguide Switches. The 2 000 sq. meters (20 000 sq. feet) facilities contain state-of-art technologies and equipment for development, engineering and production. These facilities allow the necessary activities in-house with short lead times and full quality control providing both standard and customised products.

Development and production are supported by CAD/CAM systems with highly automated production equipment for low as well as large quantity production. All activities are guided by a Quality System that complies with ISO-9001:2000.

In addition to common microwave and mechanical test equipment Sivers has also equipment for high power tests, random vibration, burn-in, temperature cycling, low noise measurements etc.

Sivers forms a part of the Chelton Group, a division of Cobham Plc.

Cobham Plc is a substantial British industrial group with companies in Europe and North America, employing over 8 900 people and with a turnover of 832 million GBP (2003). Cobham is internationally known as a key supplier to aeronautical and defence industries, particularly in the field of RF and microwave.

The capabilities of the group, particularly the very close co-operation with the leading slipring manufacturer Air Precision, allow Sivers to further improve its commercial technical performance and thus offer you an even better service.

Quality

Sivers is fully certified as per ISO-9001:2000 and quality remains one of Sivers’ main priorities.

With its qualified engineers and sophisticated test equipment Sivers constantly seeks to maintain and improve the quality of products by application of ISO 9001:2000 procedures and instructions.

The Quality Assurance Department is completely involved in all stages of the design, development and manufacturing of our products.

Each product delivered can be accompanied by an individual test document. Our Quality Manager certifies the quality by a Certificate of Conformance.
Specifications
UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions: ISO 2768-c

Dimensions in mm

190
120
60,3
87,63

4x M6
Depth min 6
ϕ 0,2

MANUAL OVERRIDE

Drawing principle
SS 1902

Tolerancing principle
ISO 8015

EUROPEAN PROJECT

CAUTION!
ESD SENSITIVE

Opened during VSWR >1,2

60,3
120
190
70
70
87,63

Position indicator
Three sets of C-form contacts and
one set of inhibit contact, opened
during VSWR >1.2

18 – 2000 Hz, 15 g

FAR DATA

Frequency range 3.3 – 4.9 GHz
VSWR 1.05
Insertion loss 0.1 dB
Isolation 80 dB
Peak power 500 kW at 0.1 MPa abs., +25 °C
Average power 4 kW

FLANGE INTERFACE
MIL-DTL-3922/52C-012

MODIFIED WITH M6, THREAD DEPTH MIN 8

ACTUATOR DATA

Operating voltage 28 ± 3 VDC
Operating current 1 A
Switching time 200 ms
Duty (min time between 500 ms -20 °C to +40 °C to successives operations) linearly increasing to 1 s at +85 °C

Connector MS 3112E 14-19P
Mating connector MS 3116F 14-19S or eq.

POSITION INDICATOR

Position indicator current 30 V Max, 100 mA Max
Resistive load

POSITION INDICATOR

One set of inhibit contacts, opened during VSWR >1.2

MECHANICAL DATA

Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpr. Max
Air leakage 10 cm3/min (0.1 MPa overpr.) Max
Weight 2 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA

Ambient temperature -20 °C to +85 °C
Vibration 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g

This document is our property and shall not without our written permission be altered, copied or communicated to a third party.

SIVERS LAB AB
**RF DATA**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>3.3 – 4.9 GHz</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.05</td>
</tr>
<tr>
<td>Insertion loss</td>
<td>0.1 dB</td>
</tr>
<tr>
<td>Isolation</td>
<td>80 dB</td>
</tr>
<tr>
<td>Peak power</td>
<td>500 kW at 0.1 MPa abs., +25°C</td>
</tr>
<tr>
<td>Average power</td>
<td>4 kW</td>
</tr>
<tr>
<td>Flange interface</td>
<td>MIL-DTL-3922/52C-012</td>
</tr>
</tbody>
</table>

Modified with M6, thread depth min 8

**ACTUATOR DATA**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>28±3 VDC</td>
</tr>
<tr>
<td>Operating current</td>
<td>1 A</td>
</tr>
<tr>
<td>Switching time</td>
<td>200 ms</td>
</tr>
<tr>
<td>Duty (min time between successive operations)</td>
<td>500 ms -20°C to +40°C linearly increasing to 1 s at +85°C</td>
</tr>
<tr>
<td>Connector</td>
<td>MS 3112E 14-19P</td>
</tr>
<tr>
<td>Mating connector</td>
<td>MS 3116F 14-19S or eq.</td>
</tr>
</tbody>
</table>

**POSITION INDICATOR**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position indicator current</td>
<td>30 V Max, 100 mA Max Resistive load</td>
</tr>
<tr>
<td>Position indicator</td>
<td>Three sets of C-form contacts and one set of inhibit contact, opened during VSWR &gt;1.2</td>
</tr>
</tbody>
</table>

**MECHANICAL DATA**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Aluminium alloy, Cu free</td>
</tr>
<tr>
<td>Finishing</td>
<td>Chromate per MIL-C-5541 and black painted</td>
</tr>
<tr>
<td>Air pressure</td>
<td>0.1 MPa overpr. Max</td>
</tr>
<tr>
<td>Air leakage</td>
<td>10 cm³/min (0.1 MPa overpr.) Max</td>
</tr>
<tr>
<td>Weight</td>
<td>2 kg Max</td>
</tr>
<tr>
<td>Life</td>
<td>250 000 actuations</td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL DATA**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>-20°C to +85°C</td>
</tr>
<tr>
<td>Vibration</td>
<td>5 – 18 Hz, 3 mm amplitude</td>
</tr>
<tr>
<td></td>
<td>18 – 2000 Hz, 15 g</td>
</tr>
</tbody>
</table>
UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions: ISO 2768-c

Dimensions in mm

Title
WAVEGUIDE SWITCH
WR284/R32/WG10  Latching

Scale 1:2
Issue A
Doc. no. WS8286S/00
RF DATA

Frequency range: 2.6 – 3.95 GHz
VSWR: 1.05
Insertion loss: 0.1 dB
Isolation: 80 dB
Peak power: 1 MW at 0.1 MPa abs., +25°C
Average power: 8 kW
Flange interface: MIL-DTL-3922/52C-032
Modified with M6, thread depth min 8

ACTUATOR DATA

Operating voltage: 28±3 V DC
Operating current: 1 A, Self cut off
Switching time: 200 ms
Duty (min time between successive operations): 500 ms -20°C to +40°C linearly increasing to 2 s at +70°C
Connector: MS 3112E 10-6P
Mating connector: MS 3116F 10-6S or eq.

POSITION INDICATOR

Voltage / Current: 30 V Max, 100 mA Max Resistive load

MECHANICAL DATA

Material: Aluminium alloy, Cu free
Finish: Chromate per MIL-C-5541 and black painted
Air pressure: 0.1 MPa overpr. Max
Air leakage: 10 cm³/min (0.1 MPa overpr.) Max
Weight: 2.5 kg Max
Life: 250 000 actuations

ENVIRONMENTAL DATA

Ambient temperature: -20°C to +70°C
Vibration: 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity: 100%RH if dry air in waveguide
UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions: ISO 2768-c

1. Dimensions in mm

Title

SIVERS

WAVEGUIDE SWITCH

WR187/R48/WG12 Latching

Dimensions:

- 4x M5
- Depth min 8
- Ø 0.2

CAUTION!

ESD SENSITIVE

Top view

Shown in Pos I (A actuated)

 Modifications
### RF DATA

- **Frequency range**: 3.95 – 5.85 GHz
- **VSWR**: 1.05
- **Insertion loss**: 0.1 dB
- **Isolation**: 80 dB
- **Peak power**: 500 kW at 0.1 MPa abs., +25°C
- **Average power**: 4 kW
- **Flange interface**: MIL-DTL-3922/52C-014 Modified with M6, thread depth min 8

### ACTUATOR DATA

- **Operating voltage**: 28±3 V DC
- **Operating current**: 1 A, Self cut off
- **Switching time**: 500 ms
- **Duty (min time between successive operations)**: linearly increasing to 2 s at +70°C
- **Connector**: MS 3112E 10-6P
- **Mating connector**: MS 3116F 10-6S or eq.

### POSITION INDICATOR

- **Voltage / Current**: 30 V Max, 100 mA Max Resistive load

### MECHANICAL DATA

- **Material**: Aluminium alloy, Cu free
- **Finishing**: Chromate per MIL-C-5541 and black painted
- **Air pressure**: 0.1 MPa overpr. Max
- **Air leakage**: 10 cm³/min (0.1 MPa overpr.) Max
- **Weight**: 1.5 kg Max
- **Life**: 250 000 actuations

### ENVIRONMENTAL DATA

- **Ambient temperature**: -20°C to +70°C
- **Vibration**: 5 – 18 Hz, 3 mm amplitude
  18 – 2000 Hz, 15 g
- **Humidity**: 100%RH if dry air in waveguide

---

WS 8286G/00
CAUTION!
ESD SENSITIVE
RF DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>7.05 – 10.0 GHz</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.10</td>
</tr>
<tr>
<td>Insertion loss</td>
<td>0.1 dB</td>
</tr>
<tr>
<td>Isolation</td>
<td>80 dB</td>
</tr>
<tr>
<td>Peak power</td>
<td>350 kW at 0.1 MPa abs., +25°C</td>
</tr>
<tr>
<td>Average power</td>
<td>4 kW</td>
</tr>
<tr>
<td>Flange interface</td>
<td>MIL-DTL-3922/53D-004 Modified with M4, thread depth min 5</td>
</tr>
</tbody>
</table>

ACTUATOR DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>28±3 V DC</td>
</tr>
<tr>
<td>Operating current</td>
<td>1 A, Self cut off</td>
</tr>
<tr>
<td>Switching time</td>
<td>300 ms</td>
</tr>
<tr>
<td>Duty (min time between</td>
<td>500 ms -40°C to +40°C</td>
</tr>
<tr>
<td>successive operations)</td>
<td>linearly increasing to 2 s at +85°C</td>
</tr>
<tr>
<td>Connector</td>
<td>MS 3112E 10-6P</td>
</tr>
<tr>
<td>Mating connector</td>
<td>MS 3116F 10-6S or eq.</td>
</tr>
</tbody>
</table>

POSITION INDICATOR

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage / Current</td>
<td>30 V Max, 100 mA Max Resistive load</td>
</tr>
</tbody>
</table>

MECHANICAL DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Aluminium alloy, Cu free</td>
</tr>
<tr>
<td>Finishing</td>
<td>Chromate per MIL-C-5541 and black painted</td>
</tr>
<tr>
<td>Air pressure</td>
<td>0.1 MPa overpr. Max</td>
</tr>
<tr>
<td>Air leakage</td>
<td>10 cm³/min (0.1 MPa overpr.) Max</td>
</tr>
<tr>
<td>Weight</td>
<td>0.5 kg Max</td>
</tr>
<tr>
<td>Life</td>
<td>250 000 actuations</td>
</tr>
</tbody>
</table>

ENVIRONMENTAL DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Vibration</td>
<td>5 – 18 Hz, 3 mm amplitude</td>
</tr>
<tr>
<td></td>
<td>18 – 2000 Hz, 15 g</td>
</tr>
<tr>
<td>Humidity</td>
<td>100%RH if dry air in waveguide</td>
</tr>
</tbody>
</table>
CAUTION!
ESD SENSITIVE

RF DATA
Frequency range 7.05 – 10.0 GHz
VSWR 1.10
Insertion loss 0.1 dB
Isolation 80 dB
Peak power 350 kW at 0.1 MPa abs., +25°C
Average power 4 kW
Flange interface MIL-DTL-3922/53D-004

ACTUATOR DATA
Operating voltage 28 ± 3 V DC
Operating current 1 A, Auto switch on to holding current after 200 ms
Holding current 300 mA
Switching time 300 ms
Duty (min time between 500 ms -40°C to +40°C successive operations) linearly increasing to 2 s at +85°C
Connector MS 3112E 10-6P
Mating connector MS 3116F 10-6S or eq.

POSITION INDICATOR
Voltage / Current 30 V Max, 100 mA Max Resistive load

MECHANICAL DATA
Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpr. Max
Air leakage 10 cm³/min (0.1 MPa overpr.) Max
Weight 0.5 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA
Ambient temperature -40°C to +85°C
Vibration 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide
RF DATA

Frequency range  7.05 – 10.0 GHz
VSWR  1.10
Insertion loss  0.1 dB
Isolation  80 dB
Peak power  350 kW at 0.1 MPa abs., +25°C
Average power  4 kW
Flange interface  MIL-DTL-3922/53D-004
Modified with M4, thread depth min 5

ACTUATOR DATA

Operating voltage  28±3 V DC
Operating current  1 A, Auto switch on to holding current after 200 ms
Holding current  300 mA
Switching time  300 ms
Duty (min time between successive operations)  linearly increasing to 2 s at +85°C
Connector  MS 3112E 10-6P
Mating connector  MS 3116F 10-6S or eq.

POSITION INDICATOR

Voltage / Current  30 V Max, 100 mA Max Resistive load

MECHANICAL DATA

Material  Aluminium alloy, Cu free
Finishing  Chromate per MIL-C-5541 and black painted
Air pressure  0.1 MPa overpr. Max
Air leakage  10 cm³/min (0.1 MPa overpr.) Max
Weight  0.5 kg Max
Life  250 000 actuations

ENVIRONMENTAL DATA

Ambient temperature  -40°C to +85°C
Vibration  5 – 18 Hz, 3 mm amplitude
          18 – 2000 Hz, 15 g
Humidity  100%RH if dry air in waveguide
This document must not be copied without our written permission, and the contents thereof must not be imparted to a third party.

**Title**: WAVEGUIDE SWITCH

**Ref.**: WS8186H/00

**Dimensions in mm**:
- 4x M4
- Depth min 4
- Ø 0.2

**Manual Override**

**Actuator Data**
- Operating voltage: 28 ± 3 V DC
- Operating current: 1 A, Self cut off
- Switching time: 250 ms
- Duty (min time between 500 ms -20 °C to +40 °C successive operations) linearly increasing to 2 s at +70 °C

**Connector**: MS 3112E 14-19P

**Mating connector**: MS 3116F 14-19S or eq.

**Position Indicator**
- Voltage / Current: 30 V Max, 100 mA Max Resistive load
- Position indicator: Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1,2

**Mechanical Data**
- Material: Aluminium alloy, Cu free
- Finishing: Chromate per MIL-C-5541 and black painted
- Air pressure: 0.1 MPa overpr. Max
- Air leakage: 10 cm³/min (0.1 MPa overpr.) Max
- Weight: 0.7 kg Max
- Life: 250 000 actuations

**Environmental Data**
- Ambient temperature: -20 °C to +70 °C
- Vibration: 5 – 18 Hz, 3 mm amplitude
- 18 – 2000 Hz, 15 g
- Humidity: 100%RH if dry air in waveguide

**Drawing principle**: SS 1902

**Tolerancing principle**: ISO 8015

UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:
- General tolerances, linear and angular dimensions: ISO 2768-c
- Europ. proj.
<table>
<thead>
<tr>
<th><strong>RF DATA</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency range</strong></td>
</tr>
<tr>
<td><strong>VSWR</strong></td>
</tr>
<tr>
<td><strong>Insertion loss</strong></td>
</tr>
<tr>
<td><strong>Isolation</strong></td>
</tr>
<tr>
<td><strong>Peak power</strong></td>
</tr>
<tr>
<td><strong>Average power</strong></td>
</tr>
<tr>
<td><strong>Flange interface</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ACTUATOR DATA</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating voltage</strong></td>
</tr>
<tr>
<td><strong>Operating current</strong></td>
</tr>
<tr>
<td><strong>Switching time</strong></td>
</tr>
<tr>
<td><strong>Duty (min time between successive operations)</strong></td>
</tr>
<tr>
<td><strong>Connector</strong></td>
</tr>
<tr>
<td><strong>Mating connector</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>POSITION INDICATOR</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage / Current</strong></td>
</tr>
<tr>
<td><strong>Position indicator</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>MECHANICAL DATA</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Material</strong></td>
</tr>
<tr>
<td><strong>Finishing</strong></td>
</tr>
<tr>
<td><strong>Air pressure</strong></td>
</tr>
<tr>
<td><strong>Air leakage</strong></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td><strong>Life</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ENVIRONMENTAL DATA</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ambient temperature</strong></td>
</tr>
<tr>
<td><strong>Vibration</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
</tr>
</tbody>
</table>
**Title**: WAVEGUIDE SWITCH

**Model**: WR112/R84/WG15

**Description**: Latching with COAX DPDT

**Dimensions in mm**

- **Height**: 109
- **Width**: 101
- **Limb**: 125
- **Depth min**: 4
- **Diameter**: 40
- **Inner Diameter**: 57.15
- **Thread Depth**: 0.2

**CAUTION!**
**ESD SENSITIVE**

**General tolerances, linear and angular dimensions**: ISO 2768-c

**UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:**

- **Drawing principle**: SS 1902
- **Tolerancing principle**: ISO 8015

**Technical Specifications**

- **Frequency range**: 7.05 – 10.0 GHz
- **VSWR**: 1.1
- **Insertion loss**: 0.1 dB
- **Isolation**: 75 dB
- **Peak power**: 350 kW at 0.1 MPa abs., +25°C
- **Average power**: 4 kW
- **Coax connector**: SMA-female
- **Isolation, waveguide-coax**: 120 dB
- **Operating voltage**: 28 ± 3 V DC
- **Operating current**: 1 A, Self cut off
- **Switching time**: 250 ms
- **Connector**: MS 3112E 14-19P
- **Mating connector**: MS 3116F 14-19S or eq.
- **Position indicator**: Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

**Mechanical Data**

- **Material**: Aluminium alloy; Cu-free
- **Finishing**: Chromate per MIL-C-5541
- **Air pressure**: 0.1 MPa overpr. Max
- **Air leakage**: 10 cm³/min (0.1 MPa overpr.) Max
- **Weight**: 0.7 kg Max
- **Life**: 250 000 actuations

**Environmental Data**

- **Ambient temperature**: -20°C to +70°C
- **Vibration**: 5 – 18 Hz, 3 mm amplitude
- **18 – 2000 Hz, 15 g
- **Humidity**: 100%RH if dry air in waveguide

**CAUTION!**
**ESD SENSITIVE**

This document must not be copied without our written permission, and the contents thereof must not be imparted to a third party nor be used for any unauthorized purpose. © Sivers Lab AB, Sweden
RF DATA

Waveguide
Frequency range: 7.05 – 10.0 GHz
VSWR: 1.1
Insertion loss: 0.1 dB
Isolation: 75 dB
Peak power: 350 kW at 0.1 MPa abs., +25°C
Average power: 4 kW
Flange interface: MIL-DTL-3922/53D-004
Modified with 10 – 32 UNC-2B, thread depth min 8

Coax
Frequency range: 7.05 – 10.0 GHz
VSWR: 1.3
Insertion loss: 0.5 dB
Isolation: 60 dB
Peak power: 5 kW
Average power: 15 W max
Coax connector: SMA-female
Isolation, waveguide-coax: 120 dB

ACTUATOR DATA
Operating voltage: 28±3 V DC
Operating current: 1 A, Self cut off
Switching time: 250 ms
Connector: MS 3112E 14-19P
Mating connector: MS 3116F 14-19S or eq.

POSITION INDICATOR
Voltage / Current: 30 V Max, 100 mA Max
Resistive load: Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

MECHANICAL DATA
Material: Aluminium alloy; Cu-free
Finishing: Chromate per MIL-C-5541
Air pressure: 0.1 MPa overpr. Max
Air leakage: 10 cm³/min (0.1 MPa overpr.) Max
Weight: 0.7 kg Max
Life: 250 000 actuations

ENVIRONMENTAL DATA
Ambient temperature: -20°C to +70°C
Vibration: 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity: 100%RH if dry air in waveguide
**WAVEGUIDE SWITCH**

**WR137/R70/WG14**  Latching

---

**Dimensions in mm**

- **4x M4**
- Depth min 5

**35**

**124.4**

**165**

**57.15**

---

**Title**

**WAVEGUIDE SWITCH**

**Ref.** 001012  **Sign.** CEL

**Chkd.** 001018  **Sign.** AK

**Designed** 001018  **Sign.** HW

**Scale** 1:1.5

**Doc. no.** WS8186J/00

---

**General tolerances, linear and angular dimensions:**

- **ISO 2768-c**

---

**Reference**

- Approved Origin date Issue date Issue Page Document

- HNg HW 2000-01-12 2003-11-05 D 2 (2) WS 8186J/00

---

**RF DATA**

- **Frequency range** 5.85 – 8.2 GHz
- **VSWR** 1.1
- **Insertion loss** 0.1 dB
- **Isolation** 75 dB
- **Peak power** 350 kW at 0.1 MPa abs., +25 °C
- **Average power** 4 kW

---

**Flange interface** MIL-DTL-3922/52C-040

- Modified with 10-32 UNF, thread depth min 8

---

**ACTUATOR DATA**

- **Operating voltage** 28 ± 3 V DC
- **Operating current** 1 A, Self cut off
- **Switching time** 250 ms
- **Duty (min time between)** 500 ms -20 °C to +40 °C
  - linearly increasing to 2 s at +70 °C
- **Connector** MS 3112E 14-19P

---

**POSITION INDICATOR**

- **Voltage / Current** 30 V Max, 100 mA Max Resistive load
- **Position indicator** Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

---

**MECHANICAL DATA**

- **Material** Aluminium alloy, Cu free
- **Finishing** Chromate per MIL-C-5541 and black painted
- **Air pressure** 0.1 MPa overpr. Max
- **Air leakage** 10 cm³/min (0.1 MPa overpr.) Max
- **Weight** 0.7 kg Max
- **Life** 250 000 actuations

---

**ENVIRONMENTAL DATA**

- **Ambient temperature** -20 °C to +70 °C
- **Vibration**
  - 5 – 18 Hz, 3 mm amplitude
  - 18 – 2000 Hz, 15 g
- **Humidity** 100%RH if dry air in waveguide

---

**This document must not be copied without our written permission, and the contents thereof must not be imparted to a third party nor be used for any unauthorized purpose.**

© Sivers Lab AB, Sweden
### RF DATA

- **Frequency range**: 5.85 – 8.2 GHz
- **VSWR**: 1.1
- **Insertion loss**: 0.1 dB
- **Isolation**: 75 dB
- **Peak power**: 350 kW at 0.1 MPa abs., +25°C
- **Average power**: 4 kW
- **Flange interface**: MIL-DTL-3922/52C-040
  Modified with 10-32 UNF, thread depth min 8

### ACTUATOR DATA

- **Operating voltage**: 28±3 V DC
- **Operating current**: 1 A, Self cut off
- **Switching time**: 250 ms
- **Duty (min time between successive operations)**: 500 ms -20°C to +40°C
  linearly increasing to 2 s at +70°C
- **Connector**: MS 3112E 14-19P
- **Mating connector**: MS 3116F 14-19S or eq.

### POSITION INDICATOR

- **Voltage / Current**: 30 V Max, 100 mA Max Resistive load
- **Position indicator**: Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

### MECHANICAL DATA

- **Material**: Aluminium alloy, Cu free
- **Finishing**: Chromate per MIL-C-5541 and black painted
- **Air pressure**: 0.1 MPa overpr. Max
- **Air leakage**: 10 cm³/min (0.1 MPa overpr.) Max
- **Weight**: 0.7 kg Max
- **Life**: 250 000 actuations

### ENVIRONMENTAL DATA

- **Ambient temperature**: -20°C to +70°C
- **Vibration**: 5 – 18 Hz, 3 mm amplitude
  18 – 2000 Hz, 15 g
- **Humidity**: 100%RH if dry air in waveguide
**Title:** Waveguide Switch

**Description:**
- WR137/R70/WG14
- Latching with COAX DPDT

**Dimensions in mm:**
- Depth min 5
- Diameter Φ0.2
- Diameter Φ40

**CAUTION! ESD SENSITIVE**

**General tolerances, linear and angular dimensions:**
- ISO 2768-c

**Environment:**
- Ambient temperature: -20°C to +70°C
- Vibration: 5 – 18 Hz, 3 mm amplitude
- Humidity: 100%RH if dry air in waveguide

**Specifications:**
- Frequency range: 5.85 – 8.2 GHz
- VSWR: 1.1
- Insertion loss: 0.1 dB
- Isolation: 75 dB
- Peak power: 350 kW at 0.1 MPa abs., +25°C
- Average power: 4 kW
- Flange interface: MIL-DTL-3922/52C-040
- Coax frequency range: 5.85 – 8.2 GHz
- VSWR: 1.3
- Insertion loss: 0.5 dB
- Isolation: 60 dB
- Peak power: 5 kW
- Average power: 15 W max
- Coax connector: SMA-female
- Isolation, waveguide-coax: 120 dB

**Mechanical Data:**
- Material: Aluminium alloy; Cu-free
- Finishing: Chromate per MIL-C-5541
- Air pressure: 0.1 MPa overpr. Max
- Air leakage: 10 cm³/min (0.1 MPa overpr.) Max
- Weight: 0.7 kg Max
- Life: 250 000 actuations

**Environmental Data:**
- Ambient temperature: -20°C to +70°C
- Vibration: 5 – 18 Hz, 3 mm amplitude
- Humidity: 100%RH if dry air in waveguide

**Additional Information:**
- This document must not be copied without our written permission, and the contents thereof must not be imparted to a third party nor be used for any unauthorized purpose. © Sivers Lab AB, Sweden
**RF DATA**

**Waveguide**
- Frequency range: 5.85 – 8.2 GHz
- VSWR: 1.1
- Insertion loss: 0.1 dB
- Isolation: 75 dB
- Peak power: 350 kW at 0.1 MPa abs., +25°C
- Average power: 4 kW
- Flange interface: MIL-DTL-3922/52C-040
- Modified with 10 – 32 UNF-2B, thread depth min 8

**Coax**
- Frequency range: 5.85 – 8.2 GHz
- VSWR: 1.3
- Insertion loss: 0.5 dB
- Isolation: 60 dB
- Peak power: 5 kW
- Average power: 15 W max
- Coax connector: SMA-female
- Isolation, waveguide-coax: 120 dB

**ACTUATOR DATA**
- Operating voltage: 28±3 V DC
- Operating current: 1 A, Self cut off
- Switching time: 250 ms
- Connector: MS 3112E 14-19P
- Mating connector: MS 3116F 14-19S or eq.

**POSITION INDICATOR**
- Voltage / Current: 30 V Max, 100 mA Max Resistive load
- Position indicator: Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

**MECHANICAL DATA**
- Material: Aluminium alloy; Cu-free
- Finishing: Chromate per MIL-C-5541
- Air pressure: 0.1 MPa overpr. Max
- Air leakage: 10 cm³/min (0.1 MPa overpr.) Max
- Weight: 0.7 kg Max
- Life: 250 000 actuations

**ENVIRONMENTAL DATA**
- Ambient temperature: -20°C to +70°C
- Vibration: 5 – 18 Hz, 3 mm amplitude
- 18 – 2000 Hz, 15 g
- Humidity: 100%RH if dry air in waveguide
CAUTION!
ESD SENSITIVE

Dimensions in mm

Top view

- A Pos I
- B Com
- C Pos II
- D Pos
- E Ind
- F

Shown in Pos I (A actuated)

NAME LABEL

4x M4
Depth min 5
Φ 0.2

WS8086X/00

SIVERS

EUROPEAN PROJECTIONS

WAVEGUIDE SWITCH
WR90/R100/WG16 Latching

UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions: ISO 2768-c

Drawing principle SS 1902
Tolerancing principle ISO 8015

SIVERS LAB AB

This document is our property and shall not, without our written permission, be copied or communicated to a third party.
RF DATA

- Frequency range: 8.2 – 12.4 GHz
- VSWR: 1.08
- Insertion loss: 0.1 dB
- Isolation: 90 dB
- Peak power: 250 kW at 0.1 MPa abs., +25°C
- Average power: 3 kW
- Flange interface: MIL-DTL-3922/53D-016 modified with M4, thread depth min 5

ACTUATOR DATA

- Operating voltage: 28±3 V DC
- Operating current: 1 A
- Switching time: 300 ms, Self cut off
- Duty (min time between successive operations): 500 ms -40°C to +40°C linearly increasing to 2 s at +85°C
- Connector: MS 3112E 10-6P
- Mating connector: MS 3116F 10-6S or eq.

POSITION INDICATOR

- Voltage / Current: 30 V Max, 100 mA Max Resistive load

MECHANICAL DATA

- Material: Aluminium alloy, Cu free
- Finishing: Chromate per MIL-C-5541 and black painted
- Air pressure: 0.1 MPa overpr. Max
- Air leakage: 10 cm³/min (0.1 MPa overpr.) Max
- Weight: 0.5 kg Max
- Life: 250 000 actuations

ENVIRONMENTAL DATA

- Ambient temperature: -40°C to +85°C
- Vibration: 5 – 18 Hz, 3 mm amplitude
  18 – 2000 Hz, 15 g
- Humidity: 100%RH if dry air in waveguide

WS 8086X/00
UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions: ISO 2768-c

Dimensions in mm

- 255
- 71.4
- 57.15
- 4.3

CAUTION!
ESD SENSITIVE

Top view

- A
- B
- C
- D
- E
- F
- NC
- Com
- Pos II
- Pos.
- Ind.

Shown in de-energized position

NAME LABEL

4x M4
Depth min 5
\( \phi 0.2 \)

Ref. C703
Chkd. HW
Appvd. HW

WAVEGUIDE SWITCH
WR90/R100/WG16 Fail-safe

SIVERS

This document is our property and shall not without our written permission be altered, copied or communicated to a third party.

RF DATA

- Frequency range: 8.2 – 12.4 GHz
- VSWR: 1.08
- Insertion loss: 0.1 dB
- Isolation: 90 dB
- Peak power: 250 kW at 0.1 MPa abs., +25°C
- Average power: 3 kW
- Flange interface: MIL-DTL-3922/53D-016

ACTUATOR DATA

- Operating voltage: 28 ± 3 V DC
- Operating current: 1 A, Auto switch on to holding current after 200 ms
- Holding current: 300 mA
- Switching time: 300 ms, Self cut off
- Duty (min time between 500 ms -40°C to +40°C successive operations) linearly increasing to 2 s at +85°C
- Connector: MS 3112E 10-6P
- Mating connector: MS 3116F 10-6S or eq.

POSITION INDICATOR

- Voltage / Current: 30 V Max, 100 mA Max Resistive load

MECHANICAL DATA

- Material: Aluminium alloy, Cu free
- Finishing: Chromate per MIL-C-5541 and black painted
- Air pressure: 0.1 MPa overpr. Max
- Air leakage: 10 cm³/min (0.1 MPa overpr.) Max
- Weight: 0.5 kg Max
- Life: 250 000 actuations

ENVIRONMENTAL DATA

- Ambient temperature: -40°C to +85°C
- Vibration: 5 – 18 Hz, 3 mm amplitude
- 18 – 2000 Hz, 15 g
- Humidity: 100%RH if dry air in waveguide

This document must not be copied without our written permission, and the contents thereof must not be imparted to a third party.
### RF DATA

- **Frequency range**: 8.2 – 12.4 GHz
- **VSWR**: 1.08
- **Insertion loss**: 0.1 dB
- **Isolation**: 90 dB
- **Peak power**: 250 kW at 0.1 MPa abs., +25°C
- **Average power**: 3 kW
- **Flange interface**: MIL-DTL-3922/53D-016
  - Modified with M4, thread depth min 5

### ACTUATOR DATA

- **Operating voltage**: 28±3 V DC
- **Operating current**: 1 A, Auto switch on to holding current after 200 ms
- **Holding current**: 300 mA
- **Switching time**: 300 ms, Self cut off
- **Duty (min time between successive operations)**: linearly increasing to 2 s at +85°C
- **Connector**: MS 3112E 10-6P
- **Mating connector**: MS 3116F 10-6S or eq.

### POSITION INDICATOR

- **Voltage / Current**: 30 V Max, 100 mA Max Resistive load

### MECHANICAL DATA

- **Material**: Aluminium alloy, Cu free
- **Finishing**: Chromate per MIL-C-5541 and black painted
- **Air pressure**: 0.1 MPa overpr. Max
- **Air leakage**: 10 cm³/min (0.1 MPa overpr.) Max
- **Weight**: 0.5 kg Max
- **Life**: 250 000 actuations

### ENVIRONMENTAL DATA

- **Ambient temperature**: -40°C to +85°C
- **Vibration**: 5 – 18 Hz, 3 mm amplitude
  - 18 – 2000 Hz, 15 g
- **Humidity**: 100%RH if dry air in waveguide
**CAUTION!**
**ESD SENSITIVE**

Top view

- Ctrl. circ.
- NC
- B
- Con
- A
- Pos. II
- F
- E
- Pos. Ind.
- D

Shown in de-energized position

4x M4
Depth min 5

Φ 0.2

**RF DATA**

- Frequency range: 8.2 – 12.4 GHz
- VSWR: 1.08
- Insertion loss: 0.1 dB
- Isolation: 60 dB
- Peak power: 250 kW at 0.1 MPa abs., +25°C
- Average power: 3 kW
- Flange interface: MIL-DTL-3922/53D-016

**ACTUATOR DATA**

- Operating voltage: 28 ± 3 VDC
- Operating current: 1 A, Self cut off
- Holding current: 0.3 A
- Switching time: 150 ms
- Duty (min time between 500 ms - 40°C to +40°C successive operations): linearly increasing to 2 s at +85°C

**Connector**

Soldering pins

**POSITION INDICATOR**

- Position indicator current: 60 V Max, 50 mA Max Resistive load

**MECHANICAL DATA**

- Material: Aluminium alloy, Cu free
- Finishing: Chromate per MIL-C-5541 and black painted
- Air pressure: 0.1 MPa overpr. Max
- Air leakage: 10 cm³ /min. (0.1 MPa overpr.) Max
- Weight: 0.35 kg Max
- Life: 250 000 actuations

**ENVIRONMENTAL DATA**

- Ambient temperature: -40°C to +85°C
- Vibration: 5 – 18 Hz, 3 mm amplitude 18 – 2000 Hz, 15 g
- Humidity: 100%RH if dry air in waveguide

---

This document is our property and shall not without our written permission be altered, copied or communicated to a third party.

© Sivers AB

---

**SIVERS**

**DRAWING**

- Title: WAVEGUIDE SWITCH
- Ref: WS8088X/00
- Doc. no: 1/2
- Scale: 1:1
- Sheet: 1
- Designed: HNg
- Chkd: HW
- Approved: HNg
- Issue date: 2004-04-26
- Origin date: 1997-09-12
- Issue: C

---

**Ref.**

- 03-11-19
- HNg

**Sign.**

- HNg

---

**NOTE**

- Dimensions in mm
- UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:
- General tolerances, linear and angular dimensions: ISO 2768-c
- Europ. proj.
RF DATA

Frequency range 8.2 – 12.4 GHz
VSWR 1.08
Insertion loss 0.1 dB
Isolation 60 dB
Peak power 250 kW at 0.1 MPa abs., +25°C
Average power 3 kW
Flange interface MIL-DTL-3922/53D-016
Modified with M4, thread depth min 5

ACTUATOR DATA

Operating voltage 28±3 VDC
Operating current 1 A, Self cut off
Holding current 0.3 A
Switching time 150 ms
Duty (min time between successive operations) 500 ms -40°C to +40°C linearly increasing to 2 s at +85°C
Connector Soldering pins

POSITION INDICATOR

Position indicator current 60 V Max, 50 mA Max Resistive load

MECHANICAL DATA

Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpr. Max
Air leakage 10 cm³/min. (0.1 MPa overpr.) Max
Weight 0.35 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA

Ambient temperature -40°C to +85°C
Vibration 5 – 18 Hz, 3 mm amplitude 18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide

WS 8088X/00
WAVEGUIDE SWITCH
WR90/R100/WG16  Latching

CAUTION!
ESD SENSITIVE

CAUTION!
Never connect supply voltages to pins A and C simultaneously. Severe damage will result.

4x M4
Depth min 5
Ø 0.2

Dimensions in mm

RF DATA
Frequency range  8.2 – 12.4 GHz
VSWR   1.08
Insertion loss  0.1 dB
Isolation   60 dB
Peak power   250 kW at 0.1 MPa abs., +25° C
Average power  3 kW
Flange interface MIL-DTL-3922/53D-016

ACTUATOR DATA
Operating voltage  28 ± 3 VDC
Operating current  1 A, Self cut off
Switching time  150 ms
Duty (min time between 500 ms -40° C to +40° C successive operations)  linearly increasing to 2 s at +85° C
Connector   Soldering pins

POSITION INDICATOR
Position indicator current 60 V Max, 50 mA Max Resistive load

MECHANICAL DATA
Material   Aluminium alloy, Cu free
Finishing   Chromate per MIL-C-5541 and black painted
Air pressure   0.1 MPa overpressure Max
Air leakage   10 cm³ /min. (0.1 MPa overpr.) Max
Weight   0.35 kg Max
Life   250 000 actuations

ENVIRONMENTAL DATA
Ambient temperature  -40° C to +85° C
Vibration   5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity   100%RH if dry air in waveguide

This document is our property and shall not without our written permission be altered, copied or communicated to a third party.
RF DATA
Frequency range 8.2 – 12.4 GHz
VSWR 1.08
Insertion loss 0.1 dB
Isolation 60 dB
Peak power 250 kW at 0.1 MPa abs., +25°C
Average power 3 kW
Flange interface MIL-DTL-3922/53D-016
Modified with M4, thread depth min 5

ACTUATOR DATA
Operating voltage 28±3 VDC
Operating current 1 A, Self cut off
Switching time 150 ms
Duty (min time between successive operations) linearly increasing to 2 s at +85°C
Connector Soldering pins

POSITION INDICATOR
Position indicator current 60 V Max, 50 mA Max Resistive load

MECHANICAL DATA
Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpressure Max
Air leakage 10 cm³/min. (0.1 MPa overpr.) Max
Weight 0.35 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA
Ambient temperature -40°C to +85°C
Vibration 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide
WAVEGUIDE SWITCH
WR90/R100/WG16  Latching

Dimensions in mm

REF.  Chkd.
Appvd.
Sign.
Sign.
Sign.
Sheet
Scale  Issue
Doc. no

This document is our property and shall not without our written permission be altered, copied or communicated to a third party.

© Sivers Lab AB, Sweden

Ref. 02-11-19  Sign. CEL
Chkd.  Sign. HW
Appvd.  Sign. HW

CAUTION!
ESD SENSITIVE

Dimensions in mm

MANUAL OVERRIDE

INHIBIT

Open during VSWR >1.2

CAUTION!
ESD SENSITIVE

Top view

A  Pos I
B  Com
C  Pos II
D  Pos. Ind. 1
E
F
G  Pos. Ind. 2
H
J
K  Pos. Ind. 3
L
M
N
INHIBIT

Shown in Pos I (A actuated)

4x M4
Depth min 5
∅ 0.2

MANUAL OVERRIDE

RF DATA

Frequency range  8.2 – 12.4 GHz
VSWR   1.08
Insertion loss  0.1 dB
Isolation   60 dB
Peak power   250 kW at 0.1 MPa abs., +25
°
Average power  3 kW
Flange interface MIL-DTL-3922/53D-016

ACTUATOR DATA

Operating voltage  28 ± 3 V DC
Operating current  1 A, Self cut off
Switching time  100 ms
Duty (min time between  500 ms -20
°
successive operations)  linearly increasing to 2 s at +70
°

Connector   MS 3112E 14-19P
Mating connector  MS 3116F 14-19S or eq.

POSITION INDICATOR

Voltage / Current  30 V Max, 100 mA Max Resistive load
Position indicator  Three sets of C-form contacts and
one set of inhibit contact, opened

during VSWR >1.2

MECHANICAL DATA

Material   Aluminium alloy, Cu free
Finishing   Chromate per MIL-C-5541 and black painted
Air pressure   0.1 MPa overpr. Max
Air leakage   10 cm3/min (0.1 MPa overpr.) Max
Weight   0.45 kg Max
Life   250 000 actuations

ENVIRONMENTAL DATA

Ambient temperature  -20
°
C to +70
°
C
Vibration   5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity   100%RH if dry air in waveguide
RF DATA
Frequency range 8.2 – 12.4 GHz
VSWR 1.08
Insertion loss 0.1 dB
Isolation 60 dB
Peak power 250 kW at 0.1 MPa abs., +25°C
Average power 3 kW
Flange interface MIL-DTL-3922/53D-016
 Modified with M4, thread depth min 5

ACTUATOR DATA
Operating voltage 28±3 V DC
Operating current 1 A, Self cut off
Switching time 100 ms
Duty (min time between successive operations) linearly increasing to 2 s at +70°C
Connector MS 3112E 14-19P
Mating connector MS 3116F 14-19S or eq.

POSITION INDICATOR
Voltage / Current 30 V Max, 100 mA Max Resistive load
Position indicator Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

MECHANICAL DATA
Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpr. Max
Air leakage 10 cm³/min (0.1 MPa overpr.) Max
Weight 0.45 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA
Ambient temperature -20°C to +70°C
Vibration 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide
UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions: ISO 2768-c

Dimensions in mm:

- Depth min 5
- \( \phi 0.2 \)
- 4x M4
- 25,5
- 71,4
- 92
- 57,15

**CAUTION!**

ESD SENSITIVE

**Modification Date Sign.**

020828 CEI

**Issue**

B

**Doc. no.**

WS8086M/00

**Title**

WAVEGUIDE SWITCH

WR75/R120/WG17    Latching

**Scale**

1:1,5

**Issue Page**

1 (2)

**CAD-dokument**

Får ej revideras manuellt

**Dimensions in mm**

1 234 5

**Version**

1 (2)

**Issue**

B

**Sheet**

1 (2)

**Issue Page**

1 (2)

**Drawing principle**

SS 1902

**Tolerancing principle**

ISO 8015

**Ref.**

020828

**Sign.**

CEI

**Chkd.**

HW

**Appvd.**

HW

**Designed**

SIVERS LAB AB

**Reference Approved Origin date Issue date Issue Page Document**

HNg HW 2002-08-28 2003-11-04 B 2 (2)
### RF DATA

- **Frequency range**: 10 - 15 GHz
- **VSWR**: 1.08
- **Insertion loss**: 0.1 dB
- **Isolation**: 90 dB
- **Peak power**: 250 kW at 0.1 MPa abs., +25°C
- **Average power**: 2 kW
- **Flange interface**: MIL-DTL-3922/70B-005
  - Modified with 6-32 UNC-2B, thread depth min 5

### ACTUATOR DATA

- **Operating voltage**: 28±3 V DC
- **Operating current**: 1 A, Self cut off
- **Switching time**: 300 ms
- **Duty (min time between successive operations)**: linearly increasing to 1 s at +85°C
- **Connector**: MS 3112E 10-6P
- **Mating connector**: MS 3116F 10-6S or eq.

### POSITION INDICATOR

- **Voltage / Current**: 30 V Max, 100 mA Max Resistive load

### MECHANICAL DATA

- **Material**: Aluminium alloy, Cu free
- **Finishing**: Chromate per MIL-C-5541 and black painted
- **Air pressure**: 0.1 MPa overpr. Max
- **Air leakage**: 10 cm$^3$/min (0.1 MPa overpr.) Max
- **Weight**: 0.5 kg Max
- **Life**: 250 000 actuations

### ENVIRONMENTAL DATA

- **Ambient temperature**: -40°C to +85°C
- **Vibration**: 5 – 18 Hz, 3 mm amplitude
  - 18 – 2000 Hz, 15 g
- **Humidity**: 100%RH if dry air in waveguide
UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions: ISO 2768-c

Dimensions in mm:

CAUTION!
ESD SENSITIVE

This document must not be copied without our written permission, and the contents thereof must not be imparted to a third party nor be used for any unauthorized purpose. © Sivers Lab AB, Sweden
RF DATA

Frequency range: 10 - 15 GHz
VSWR: 1.08
Insertion loss: 0.1 dB
Isolation: 90 dB
Peak power: 250 kW at 0.1 MPa abs., +25°C
Average power: 2 kW
Flange interface: MIL-DTL-3922/70B-005
Modified with 6-32 UNC-2B, thread depth min 5

ACTUATOR DATA

Operating voltage: 28±3 V DC
Operating current: 1 A, Auto switch on to holding current after 200 ms
Holding current: 300 mA
Switching time: 300 ms
Duty (min time between successive operations): 500 ms -40°C to +40°C
linearly increasing to 2 s at +85°C
Connector: MS 3112E 10-6P
Mating connector: MS 3116F 10-6S or eq.

POSITION INDICATOR

Voltage / Current: 30 V Max, 100 mA Max Resistive load

MECHANICAL DATA

Material: Aluminium alloy, Cu free
Finishing: Chromate per MIL-C-5541 and black painted
Air pressure: 0.1 MPa overpr. Max
Air leakage: 10 cm³/min (0.1 MPa overpr.) Max
Weight: 0.5 kg Max
Life: 250 000 actuations

ENVIRONMENTAL DATA

Ambient temperature: -40°C to +85°C
Vibration: 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity: 100%RH if dry air in waveguide

WS 8087M/00
CAUTION! ESD SENSITIVE

Never connect supply voltages to pins A and C simultaneously. Severe damage will result.

CAUTION!

4x M4
Depth min 5
Φ 0.2

Shown in Pos I (A actuated)
RF DATA
Frequency range: 10 – 15 GHz
VSWR: 1.08
Insertion loss: 0.1 dB
Isolation: 60 dB
Peak power: 200 kW at 0.1 MPa abs., +25°C
Average power: 3 kW
Flange interface: MIL-DTL-3922/70B-005
Modified with 6-32 UNC-2B, thread depth min 5

ACTUATOR DATA
Operating voltage: 28±3 VDC
Operating current: 1 A, Self cut off
Switching time: 150 ms
Duty (min time between successive operations): 500 ms -40°C to +40°C linearly
increasing to 2 s at +85°C
Connector: Soldering pins

POSITION INDICATOR
Position indicator current: 60 V Max, 50 mA Max Resistive load

MECHANICAL DATA
Material: Aluminium alloy, Cu free
Finishing: Chromate per MIL-C-5541 and black painted
Air pressure: 0.1 MPa overpressure
Air leakage: 10 cm³/min. (0.1 MPa overpr.) Max
Weight: 0.35 kg Max
Life: 250 000 actuations

ENVIRONMENTAL DATA
Ambient temperature: -40°C to +85°C
Vibration: 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity: 100%RH if dry air in waveguide
UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions: ISO 2768-c

Dimensions in mm

SIVERS

Title

Drawing principle SS 1902
Tolerancing principle ISO 8015

CAUTION!
ESD SENSITIVE

NOMENCLATURE

A Pos I
B Com
C Pos II
D Pos. Ind. 1
E Pos. Ind. 2
F Pos. Ind. 3
G INHIBIT
H
I
J
K
L
M

Opened during VSWR >1.2

Shown in Pos I (A actuated)

MANUAL OVERRIDE

CAUTION!
ESD SENSITIVE

INHIBIT

Opened during VSWR >1.2

MANUAL OVERRIDE

SUMMARY

RF DATA

Frequency range 10 – 15 GHz
VSWR 1.08
Insertion loss 0.1 dB
Isolation 70 dB
Peak power 250 kW at 0.1 MPa abs., +25 °C
Average power 2 kW
Flange interface MIL-DTL-3922/70B-005

ACTUATOR DATA

Operating voltage 28 ± 3 V DC
Operating current 1 A, Self cut off
Switching time 100 ms
Duty (min time between 500 ms -20 °C to +40 °C successive operations) linearly increasing to 2 s at +70 °C
Connector MS 3112E 14-19P
Mating connector MS 3116F 14-19S or eq.

POSITION INDICATOR

Voltage / Current 30 V Max, 100 mA Max Resistive load
Position indicator Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

MECHANICAL DATA

Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpr. Max
Air leakage 10 cm³/min (0.1 MPa overpr.) Max
Weight 0.45 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA

Ambient temperature -20 °C to +70 °C
Vibration 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide

This document must not be copied without our written permission, and the contents thereof must not be imparted to a third party nor be used for any unauthorized purpose.

© Sivers Lab AB, Sweden

WS 8189M/00
RF DATA
Frequency range 10 – 15 GHz
VSWR 1.08
Insertion loss 0.1 dB
Isolation 70 dB
Peak power 250 kW at 0.1 MPa abs., +25°C
Average power 2 kW
Flange interface MIL-DTL-3922/70B-005
Modified with 6-32 UNC-2B, thread depth min 5

ACTUATOR DATA
Operating voltage 28±3 V DC
Operating current 1 A, Self cut off
Switching time 100 ms
Duty (min time between successive operations) 500 ms -20°C to +40°C
linearly increasing to 2 s at +70°C
Connector MS 3112E 14-19P
Mating connector MS 3116F 14-19S or eq.

POSITION INDICATOR
Voltage / Current 30 V Max, 100 mA Max Resistive load
Position indicator Three sets of C-form contacts and
one set of inhibit contact, opened
during VSWR >1.2

MECHANICAL DATA
Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpr. Max
Air leakage 10 cm³/min (0.1 MPa overpr.) Max
Weight 0.45 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA
Ambient temperature -20°C to +70°C
Vibration 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide
**CAUTION!**
**ESD SENSITIVE**

**UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:**

General tolerances, linear and angular dimensions: ISO 2768-c

**GENERAL DATA**

**Title**
WAVEGUIDE SWITCH

**Type**
WR75/R120/WG17 Latching

**Description**
with COAX DPDT

**Dimensions in mm**

- Width: 94 mm
- Height: 118 mm
- Depth: 102 mm
- Diameter: 40 mm

**Drawing principle**
SS 1902

**Tolerancing principle**
ISO 8015

**Ref.**
030317

**Sign.**
CEL

**Chkd.**
030710

**Sign.**
HW

**Appvd.**
2003-1015

**Sign.**
HW

**Scale**
1:1.5

**Doc. no.**
WS8189M/70
RF DATA

Waveguide
Frequency range 10 – 15 GHz
VSWR 1.08
Insertion loss 0.1 dB
Isolation 70 dB
Peak power 250 kW at 0.1 MPa abs., +25°C
Average power 2 kW
Flange interface MIL-DTL-3922/70B-005
Modified with 6 – 32 UNC-2B, thread depth min 6

Coax
Frequency range 10 – 15 GHz
VSWR 1.5
Insertion loss 0.5 dB
Isolation 50 dB
Peak power 5 kW
Average power 15 W max
Coax connector SMA-female

Isolation, waveguide-coax 120 dB

ACTUATOR DATA

Operating voltage 28±3 V DC
Operating current 1 A, Self cut off
Switching time 100 ms
Connector MS 3112E 14-19P
Mating connector MS 3116F 14-19S or eq.

POSITION INDICATOR

Voltage / Current 30 V Max, 100 mA Max Resistive load
Position indicator Tree sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

MECHANICAL DATA

Material Aluminium alloy; Cu-free
Finishing Chromate per MIL-C-5541
Air pressure 0.1 MPa overpr. Max
Air leakage 10 cm³/min (0.1 MPa overpr.) Max
Weight 0.6 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA

Ambient temperature -20°C to +70°C
Vibration 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide
UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions: ISO 2768-c

Dimensions in mm

Title: WAVEGUIDE SWITCH
   WR62/R140/WG18     Latching

Drawing principle: SS 1902
Tolerancing principle: ISO 8015

Dimensions:
- 57.15 mm
- 43 mm
- 57.15 mm
- 92 mm
- 71.4 mm
- 25.5 mm

CAUTION!
ESD SENSITIVE

NAME LABEL

4x M4
Depth min 5
Ø 0.2

Shown in Pos I (A actuated)

Top view

A Pos I
B Com
C Pos II
D Pos
E Pos
F Ind.

This document is our property and shall not without our written permission be altered, copied or communicated to a third party.

© Sivers Lab AB, Sweden
RF DATA
Frequency range 12.4 – 18.0 GHz
VSWR 1.08
Insertion loss 0.1 dB
Isolation 90 dB
Peak power 125 kW at 0.1 MPa abs., +25°C
Average power 2 kW
Waveguide size WR62 / R140 / WG18
Hole dimensions according to MIL-DTL-3922/53D-018 (6-32 UNC-2B)
thread depth min 5

ACTUATOR DATA
Operating voltage 28±3 V DC
Operating current 1 A, Self cut off
Switching time 300 ms
Duty (min time between -40°C to +40°C successive operations) linearly increasing to 2 s at +85°C
Connector MS 3112E 10-6P
Mating connector MS 3116F 10-6S or eq.

POSITION INDICATOR
Voltage / Current 30 V Max, 100 mA Max Resistive load

MECHANICAL DATA
Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpr. Max
Air leakage 10 cm³/min (0.1 MPa overpr.) Max
Weight 0.5 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA
Ambient temperature -40°C to +85°C
Vibration 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide

WS 8086P/00
**Title:** WAVEGUIDE SWITCH  
**Ref.:** 030214  
**Chkd.:** HW  
**Sign.:** HW  
**Draw. date:** 2003-10-16  
**Iss. date:** 2003-11-04  
**Doc. no.:** WS8087P/00

**Dimensions in mm:**
- Height: 57.15
- Depth: min 5
- Width: 92
- Depth min 5
- Width: 25.5
- Height: 71.4

**EUROPEAN PROJECTION:**

1. **General tolerances, linear and angular dimensions:** ISO 2768-c
2. **References:** SS 1902, SS 1902, ISO 8015
3. **Drawing principle:** SS 1902
4. **Tolerancing principle:** ISO 8015

**CAUTION! ESD SENSITIVE**

**NAME LABEL**

**SIVERS**

** jPanel**

**FAIL-SAFE**
RF DATA

Frequency range 12.4 – 18.0 GHz
VSWR 1.08
Insertion loss 0.1 dB
Isolation 90 dB
Peak power 125 kW at 0.1 MPa abs., +25°C
Average power 2 kW
Flange interface MIL-DTL-3922/53D-005
Modified with 6-32 UNC-2B, thread depth min 5

ACTUATOR DATA

Operating voltage 28±3 V DC
Operating current 1 A, Auto switch on to holding current after 200 ms
Holding current 300 mA
Switching time 300 ms
Duty (min time between successive operations) linearly increasing to 2 s at +85°C
Connector MS 3112E 10-6P
Mating connector MS 3116F 10-6S or eq.

POSITION INDICATOR

Voltage / Current 30 V Max, 100 mA Max Resistive load

MECHANICAL DATA

Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpr. Max
Air leakage 10 cm³/min (0.1 MPa overpr.) Max
Weight 0.5 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA

Ambient temperature -40°C to +85°C
Vibration 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide
WAVEGUIDE SWITCH
WR62/R140/WG18  Fail-safe

Modification
Date
Sign.
Chkd.

C  ECO  2004-0426  HNg  HW

Dimensions in mm

CAUTION!
ESD SENSITIVE

4x M4
Depth min 5
Ø 0.2

47.6 ±0.3

This document must not be copied without our written permission,
and the contents thereof must not be imparted to a third party
nor be used for any unauthorized purpose.
© Sivers Lab AB, Sweden

WS8088P/00

Drawing principle
Tolerancing principle
Dimensions in mm

28 ±3 VDC
1A, Self cut off
0.3 A
150 ms
500 ms -40 °C to +40 °C
successive operations)
linearly increasing to 2 s at +85 °C
Soldering pins

Material
Finishing
Air pressure
Air leakage
Weight
Life

Aluminium alloy, Cu free
Chromate per MIL-C-5541 and black painted
0.1 MPa overpressure Max
10 cm3/min. (0.1 MPa overpr.) Max
0.35 kg Max
250 000 actuations

-40 °C to +85 °C

Water data
Frequency range
VSWR
Insertion loss
Isolation
Peak power
Average power

12.4 – 18.0 GHz
1.08
0.1 dB
60 dB
125 kW at 0.1 MPa abs., +25 °C
2 kW

Flange interface MIL-DTL-3922/53D-018

UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:
General tolerances, linear and angular dimensions:
ISO 2768-c

(C) Sivers Lab AB

SIVERS

HW

C ECO 2004-0426 HNg HW

HNg

03-11-19

Sign.

Ref.

Sign.

Chkd.

Sign.

Designed

Sheet

1:1

Issue

Doc. no.

1/21

C

WS8088P/00

C ECO 2004-0426 HNg HW

1(2)
40
40
POS.IND.
CB
FED
ACTUATOR
COM II
SHOWN DE-ENERGIZED

F
E
D
C
B
A
1
2
3
4
5

Ref.

Chkd.

Sign.

Sign.

Sheet

Scale  Issue

Doc. no.
### RF DATA

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>12.4 – 18.0 GHz</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.08</td>
</tr>
<tr>
<td>Insertion loss</td>
<td>0.1 dB</td>
</tr>
<tr>
<td>Isolation</td>
<td>60 dB</td>
</tr>
<tr>
<td>Peak power</td>
<td>125 kW at 0.1 MPa abs., +25°C</td>
</tr>
<tr>
<td>Average power</td>
<td>2 kW</td>
</tr>
<tr>
<td>Flange interface</td>
<td>MIL-DTL-3922/53D-018, Modified with 6-32 UNC-2B, thread depth min 5</td>
</tr>
</tbody>
</table>

### ACTUATOR DATA

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>28±3 VDC</td>
</tr>
<tr>
<td>Operating current</td>
<td>1A, Self cut off</td>
</tr>
<tr>
<td>Holding current</td>
<td>0.3 A</td>
</tr>
<tr>
<td>Switching time</td>
<td>150 ms</td>
</tr>
<tr>
<td>Duty (min time between successive operations)</td>
<td>500 ms -40°C to +40°C</td>
</tr>
<tr>
<td>Connector</td>
<td>Soldering pins</td>
</tr>
</tbody>
</table>

### POSITION INDICATOR

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position indicator current</td>
<td>60 V Max, 50 mA Max Resistive load</td>
</tr>
</tbody>
</table>

### MECHANICAL DATA

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Aluminium alloy, Cu free</td>
</tr>
<tr>
<td>Finishing</td>
<td>Chromate per MIL-C-5541 and black painted</td>
</tr>
<tr>
<td>Air pressure</td>
<td>0.1 MPa overpressure Max</td>
</tr>
<tr>
<td>Air leakage</td>
<td>10 cm³/min. (0.1 MPa overpr.) Max</td>
</tr>
<tr>
<td>Weight</td>
<td>0.35 kg Max</td>
</tr>
<tr>
<td>Life</td>
<td>250 000 actuations</td>
</tr>
</tbody>
</table>

### ENVIRONMENTAL DATA

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Vibration</td>
<td>5 – 18 Hz, 3 mm amplitude</td>
</tr>
<tr>
<td></td>
<td>18 – 2000 Hz, 15 g</td>
</tr>
<tr>
<td>Humidity</td>
<td>100%RH if dry air in waveguide</td>
</tr>
</tbody>
</table>
CAUTION!
Never connect supply voltages to pins A and C simultaneously. Severe damage will result.

**CAUTION!**
ESD SENSITIVE

Top view:
- A: Pos II
- B: Com
- C: Pos II
- D: Pos
- E: Ind
- F: Shown in Pos I (A actuated)

Dimensions in mm:
- Depth min 5
- 47.6 ±0.3
- 40
- 73
- 21

WAVEGUIDE SWITCH
WR62/R140/WG18
Latching

SIVERS

Ref. 03-11-19
Sign. HNg

DESIGNED SHEET ISSUE

WS8089P/00

This document is our property and shall not without our written permission be altered, copied or communicated to a third party.

© Sivers Lab AB, Sweden
### RF DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>12.4 – 18.0 GHz</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.08</td>
</tr>
<tr>
<td>Insertion loss</td>
<td>0.1 dB</td>
</tr>
<tr>
<td>Isolation</td>
<td>60 dB</td>
</tr>
<tr>
<td>Peak power</td>
<td>125 kW at 0.1 MPa abs., +25°C</td>
</tr>
<tr>
<td>Average power</td>
<td>2 kW</td>
</tr>
<tr>
<td>Flange interface</td>
<td>MIL-DTL-3922/53D-018 Modified with 6-32 UNC-2B, thread depth min 5</td>
</tr>
</tbody>
</table>

### ACTUATOR DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>28±3 VDC</td>
</tr>
<tr>
<td>Operating current</td>
<td>1 A, Self cut off</td>
</tr>
<tr>
<td>Switching time</td>
<td>150 ms</td>
</tr>
<tr>
<td>Duty (min time between</td>
<td>500 ms -40°C to +40°C linearly increasing to 2 s at +85°C</td>
</tr>
<tr>
<td>successive operations)</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>Soldering pins</td>
</tr>
</tbody>
</table>

### POSITION INDICATOR

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position indicator current</td>
<td>60 V Max, 50 mA Max Resistive load</td>
</tr>
</tbody>
</table>

### MECHANICAL DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Aluminium alloy, Cu free</td>
</tr>
<tr>
<td>Finishing</td>
<td>Chromate per MIL-C-5541 and black painted</td>
</tr>
<tr>
<td>Air pressure</td>
<td>0.1 MPa overpressure Max</td>
</tr>
<tr>
<td>Air leakage</td>
<td>10 cm³/min. (0.1 MPa overpr.) Max</td>
</tr>
<tr>
<td>Weight</td>
<td>0.35 kg Max</td>
</tr>
<tr>
<td>Life</td>
<td>250 000 actuations</td>
</tr>
</tbody>
</table>

### ENVIRONMENTAL DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Vibration</td>
<td>5 – 18 Hz, 3 mm amplitude</td>
</tr>
<tr>
<td></td>
<td>18 – 2000 Hz, 15 g</td>
</tr>
<tr>
<td>Humidity</td>
<td>100%RH if dry air in waveguide</td>
</tr>
</tbody>
</table>
WAVEGUIDE SWITCH
WR62/R140/WG18    Latching

UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions:  ISO 2768-c

SIVERS

CAUTION!
ESD SENSITIVE

DIMENSIONS IN mm

4x M4
Depth min 5
Ø 0.2
RF DATA
Frequency range 12.4 – 18.0 GHz
VSWR 1.05
Insertion loss 0.1 dB
Isolation 60 dB
Peak power 125 kW at 0.1 MPa abs., +25°C
Average power 2 kW
Flange interface MIL-DTL-3922/53D-018
Modified with 6-32 UNC-2B, thread depth min 5

ACTUATOR DATA
Operating voltage 28±3 VDC
Operating current 1 A, Self cut off
Switching time 100 ms
Duty (min time between successive operations) 500 ms -20°C to +40°C linearly increasing to 2 s at +70°C
Connector MS 3112E 14-19P
Mating connector MS 3116F 14-19S or eq.

POSITION INDICATOR
Voltage / Current 30 V Max, 100 mA Max Resistive load
Position indicator Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

MECHANICAL DATA
Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpr. Max
Air leakage 10 cm³/min (0.1 MPa overpr.) Max
Weight 0.45 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA
Ambient temperature -20°C to +70°C
Vibration 5 – 18 Hz, 3 mm amplitude 18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide
**Title**: WAVEGUIDE SWITCH  
**Ref.**: WS8189P/70  
**Issue**: 1 (2)  
**Scale**: 1:2  

**Dimensions in mm**

- **Material**: Aluminium alloy; Cu-free  
- **Finishing**: Chromate per MIL-C-5541  
- **Air pressure**: 0.1 MPa overpr. Max  
- **Air leakage**: 10 cm³ /min (0.1 MPa overpr.) Max  
- **Weight**: 0.6 kg Max  
- **Life**: 250 000 actuations  
- **Ambient temperature**: -20 °C to +70 °C  
- **Vibration**: 5 – 18 Hz, 3 mm amplitude  
- **Humidity**: 100%RH if dry air in waveguide  

**General tolerances, linear and angular dimensions**: ISO 2768-c

**General information**

- **Drawing principle**: SS 1902  
- **Tolerancing principle**: ISO 8015  

**UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:**

- **General tolerances, linear and angular dimensions**: ISO 2768-c

**Modification History**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Modification</th>
<th>Date</th>
<th>Sign.</th>
<th>Chkd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Coax connectors twisted 45°</td>
<td>030710</td>
<td>MTr</td>
<td>HW</td>
</tr>
<tr>
<td>D</td>
<td>Paragraphs added</td>
<td>2003-1015</td>
<td>HNg</td>
<td>HW</td>
</tr>
</tbody>
</table>

**Dimensions**

- **Height**: 102 mm  
- **Width**: 47.6 mm  
- **Depth**: 47.6 mm  
- **Diameter**: ø 40 mm  

**Position Indicators**

- **Positive 1**: Pos I
- **Positive 2**: Pos II
- **Positive 3**: Pos III
- **Indication 1**: Pos. Ind. 1
- **Indication 2**: Pos. Ind. 2
- **Indication 3**: Pos. Ind. 3

**Inhibit**

- **INHIBIT**

**Manual Override**

- **Controlled by**: Ctrl. circ.

**CAUTION!**  
**ESD SENSITIVE**
RF DATA

Waveguide
Frequency range  12.4 – 18.0 GHz
VSWR  1.05
Insertion loss  0.1 dB
Isolation  60 dB
Peak power  125 kW at 0.1 MPa abs., +25°C
Average power  2 kW
Flange interface  MIL-DTL-3922/53D-018
Modified with 6 – 32 UNF-2B, thread depth min 6

Coax
Frequency range  12.4 – 18.0 GHz
VSWR  1.5
Insertion loss  0.5 dB
Isolation  40 dB
Peak power  5 kW
Average power  15 W max
Coax connector  SMA-female
Isolation, waveguide-coax  120 dB

ACTUATOR DATA
Operating voltage  28±3 V DC
Operating current  1 A, Self cut off
Switching time  100 ms
Connector  MS 3112E 14-19P
Mating connector  MS 3116F 14-19S or eq.

POSITION INDICATOR
Voltage / Current  30 V Max, 100 mA Max Resistive load
Position indicator  Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

MECHANICAL DATA
Material  Aluminium alloy; Cu-free
Finishing  Chromate per MIL-C-5541
Air pressure  0.1 MPa overpr. Max
Air leakage  10 cm³/min (0.1 MPa overpr.) Max
Weight  0.6 kg Max
Life  250 000 actuations

ENVIRONMENTAL DATA
Ambient temperature  -20°C to +70°C
Vibration  5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity  100%RH if dry air in waveguide
<table>
<thead>
<tr>
<th>Issue</th>
<th>Modification</th>
<th>Date</th>
<th>Sign.</th>
<th>Chkd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Tapped holes changed to 4-40 UNC-2B</td>
<td>030311</td>
<td>CEL</td>
<td>HW</td>
</tr>
<tr>
<td>C</td>
<td>ECO</td>
<td>2003-1015</td>
<td>HNg</td>
<td>HW</td>
</tr>
</tbody>
</table>

**RF DATA**
- **Frequency range**: 18.0 – 26.5 GHz
- **VSWR**: 1.10
- **Insertion loss**: 0.1 dB
- **Isolation**: 70 dB
- **Peak power**: 30 kW at 0.1 MPa abs., +25°C
- **Average power**: 500 W

**Flange interface**: MIL-F-3922/70B-028

**ACTUATOR DATA**
- **Operating voltage**: 28 ± 3 V DC
- **Operating current**: 1 A, Self cut off
- **Switching time**: 100 ms
- **Duty (min time between)**: 500 ms - 20°C to +40°C, linearly increasing to 2 s at +70°C

**Connector**: MS 3112E 14-19P

**Mating connector**: MS 3116F 14-19S or eq.

**POSITION INDICATOR**
- **Voltage / Current**: 30 V Max, 100 mA Max Resistive load
- **Position indicator**: Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

**MECHANICAL DATA**
- **Material**: Aluminium alloy, Cu free
- **Finishing**: Chromate per MIL-C-5541 and black painted
- **Air pressure**: 0.1 MPa overpr. Max
- **Air leakage**: 10 cm³ /min (0.1 MPa overpr.) Max
- **Weight**: 0.5 kg Max
- **Life**: 250 000 actuations

**ENVIRONMENTAL DATA**
- **Ambient temperature**: -20°C to +70°C
- **Vibration**: 5 – 18 Hz, 3 mm amplitude
- **18 – 2000 Hz, 15 g
- **Humidity**: 100%RH if dry air in waveguide

---

**CAUTION! ESD SENSITIVE**

---

**Title**: WAVEGUIDE SWITCH
- **WR42/R220/WG20**
- **Latching**

**Dimensions in mm**
- **4x M4**
- **Depth min 5**
- **Ø 0.2**

**MANUAL OVERRIDE**
- **Ctrl. circ.**
- **Top view**
- **Pos I**
- **Pos II**
- **Pos. Ind. 1**
- **Pos. Ind. 2**
- **Pos. Ind. 3**
- **INHIBIT**
- **Shown in Pos I (A actuated)!

---

**Drawing principle**: SS 1902
**Tolerancing principle**: ISO 8015

---

© Sivers Lab AB, Sweden
### RF DATA

- **Frequency range**: 18.0 – 26.5 GHz
- **VSWR**: 1.10
- **Insertion loss**: 0.1 dB
- **Isolation**: 70 dB
- **Peak power**: 30 kW at 0.1 MPa abs., +25°C
- **Average power**: 500 W
- **Flange interface**: MIL-F-3922/70B-028
  - Modified with 4-40 UNC-2B, thread depth min 7.5

### ACTUATOR DATA

- **Operating voltage**: 28±3 V DC
- **Operating current**: 1 A, Self cut off
- **Switching time**: 100 ms
- **Duty (min time between successive operations)**: 500 ms -20°C to +40°C
  - linearly increasing to 2 s at +70°C
- **Connector**: MS 3112E 14-19P
- **Mating connector**: MS 3116F 14-19S or eq.

### POSITION INDICATOR

- **Voltage / Current**: 30 V Max, 100 mA Max Resistive load
- **Position indicator**: Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

### MECHANICAL DATA

- **Material**: Aluminium alloy, Cu free
- **Finishing**: Chromate per MIL-C-5541 and black painted
- **Air pressure**: 0.1 MPa overpr. Max
- **Air leakage**: 10 cm³/min (0.1 MPa overpr.) Max
- **Weight**: 0.5 kg Max
- **Life**: 250 000 actuations

### ENVIRONMENTAL DATA

- **Ambient temperature**: -20°C to +70°C
- **Vibration**: 5 – 18 Hz, 3 mm amplitude
  - 18 – 2000 Hz, 15 g
- **Humidity**: 100%RH if dry air in waveguide

---

**WS 8189K/00**
**WAVEGUIDE SWITCH**

**WR28/R320/WG22**  Latching

---

**Dimensions in mm**

Ref. 02-11-28  Sign. CEL

Chkd. Sign. HW

Appvd. Sign. HW

Ref. 02-11-28  Sign. CEL

Chkd. Sign. HW

Appvd. Sign. HW

---

**Drawing principle** SS 1902

**Tolerancing principle** ISO 8015

**General tolerances, linear and angular dimensions:** ISO 2768-c

**Europ. proj.**

**Ref.**

**Chkd.**

**Appvd.**

**Title**

**Scale**

**Issue**

**Doc. no.**

---

**CAUTION!**

Never connect supply voltages to pins A and C simultaneously. Severe damage will result.

**CAUTION!**

ESD SENSITIVE

---

**Specifications:**

- **Frequency range:** 26.5 – 40.0 GHz
- **VSWR:** 1.1
- **Insertion loss:** 0.1 dB
- **Isolation:** 60 dB
- **Peak power:** 20 kW at 0.1 MPa abs., +25 °C
- **Average power:** 0.5 kW
- **Flange interface:** MIL-F-3922/54C-00

---

**Mechanical Data:**

- **Material:** Aluminium alloy, Cu free
- **Finish:** Chromate per MIL-C-5541 and black painted
- **Air pressure:** N/A
- **Air leakage:** N/A
- **Weight:** 0.35 kg Max
- **Life:** 250 000 actuations

---

**Environmental Data:**

- **Ambient temperature:** -40 °C to +85 °C
- **Vibration:** 5 – 18 Hz, 3 mm amplitude
- **Humidity:** 100% RH if dry air in waveguide

---

This document must not be copied without our written permission, and the contents thereof must not be imparted to a third party nor be used for any unauthorized purpose.

© Sivers Lab AB, Sweden
**RF DATA**

Frequency range  
26.5 – 40.0 GHz

VSWR  
1.1

Insertion loss  
0.1 dB

Isolation  
60 dB

Peak power  
20 kW at 0.1 MPa abs., +25°C

Average power  
0.5 kW

Flange interface  
MIL-F-3922/54C-003

Modified with 4-40 UNC-2B, thread depth min 5

**ACTUATOR DATA**

Operating voltage  
28 ± 3 V DC

Operating current  
1 A, Self cut off

Switching time  
150 ms

Duty (min time between successive operations)  
500 ms -40°C to +40°C

linearly increasing to 2 s at +85°C

Connector  
Soldering pins

**POSITION INDICATOR**

Voltage / Current  
60 V Max, 50 mA Max Resistive load

**MECHANICAL DATA**

Material  
Aluminium alloy, Cu free

Finish  
Chromate per MIL-C-5541 and black painted

Air pressure  
N/A

Air leakage  
N/A

Weight  
0.35 kg Max

Life  
250,000 actuations

**ENVIRONMENTAL DATA**

Ambient temperature  
-40°C to +85°C

Vibration  
5 – 18 Hz, 3 mm amplitude

18 – 2000 Hz, 15 g

Humidity  
100% RH if dry air in waveguide
UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions: ISO 2768-c

MANUAL OVERRIDE

CAUTION!
ESD SENSITIVE

CAUTION!
ESD SENSITIVE

SIVERS

WAVEGUIDE SWITCH
WRD 580     Latching

Dimensions in mm

Title

Drawing principle  SS 1902
Tolerancing principle  ISO 8015

Scale  1:1

This document is our property and shall not without our written permission be altered, copied or communicated to a third party.

© Sivers Lab AB, Sweden
RF DATA

Frequency range 5.8 – 16.0 GHz
VSWR 1.2
Insertion loss 0.4 dB
Isolation 50 dB
Peak power 30 kW at 0.1 MPa abs., +25°C
Average power 750 W
Flange interface WRD 580
Modified with 6-32 UNC-2B, thread depth min 5

ACTUATOR DATA

Operating voltage 28±3 VDC
Operating current 1 A, Self cut off
Switching time 100 ms
Duty (min time between successive operations) 500 ms -20°C to +40°C
linearly increasing to 2 s at +70°C
Connector MS 3112 E14-19P
Mating connector MS 3116F 14-19S or eq.

POSITION INDICATOR

Voltage / Current 30 V Max, 100 mA Max Resistive load
Position indicator Three sets of C-form contacts and one set of inhibit contact, opened during VSWR >1.2

MECHANICAL DATA

Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpressure
Air leakage 10 cm³/min. (0.1 MPa overpr.) Max
Weight 0.45 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA

Ambient temperature -20°C to +70°C
Vibration 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide
RF DATA

Frequency range 6.5 – 18.0 GHz
VSWR 1.2
Insertion loss 0.4 dB
Isolation 50 dB
Peak power 20 kW at 0.1 MPa abs., +25°C
Average power 500 W
Flange interface See page 2

ACTUATOR DATA

Operating voltage 28 ±3 VDC
Operating current 1 A, Self cut off
Switching time 150 ms
Duty (min time between 500 ms -40°C to +40°C) linearly increasing to 2 s at +85°C
Connector Soldering pins

POSITION INDICATOR

Position indicator current 60 V Max, 50 mA Max Resistive load

MECHANICAL DATA

Material Aluminium alloy, Cu free
Finishing Chromate per MIL-C-5541 and black painted
Air pressure 0.1 MPa overpressure Max
Air leakage 10 cm³/min. (0.1 MPa overpr.) Max
Weight 0.35 kg Max
Life 250 000 actuations

ENVIRONMENTAL DATA

Ambient temperature -40°C to +85°C
Vibration 5 – 18 Hz, 3 mm amplitude
18 – 2000 Hz, 15 g
Humidity 100%RH if dry air in waveguide

UNLESS OTHERWISE STATED THE FOLLOWING APPLIES:

General tolerances, linear and angular dimensions: ISO 2768-c

Dimensions in mm

CAUTION!

Never connect supply voltages to pins A and C simultaneously.
Severe damage will result.

CAUTION!

ESD SENSITIVE
**RF DATA**

Frequency range: 6.5 – 18.0 GHz  
VSWR: 1.2  
Insertion loss: 0.4 dB  
Isolation: 50 dB  
Peak power: 20 kW at 0.1 MPa abs., +25°C  
Average power: 500 W  
Flange interface: See page 2

**ACTUATOR DATA**

Operating voltage: 28±3 VDC  
Operating current: 1 A, Self cut off  
Switching time: 150 ms  
Duty (min time between successive operations): linearly increasing to 2 s at +85°C  
Connector: Soldering pins

**POSITION INDICATOR**

Position indicator current: 60 V Max, 50 mA Max Resistive load

**MECHANICAL DATA**

Material: Aluminium alloy, Cu free  
Finishing: Chromate per MIL-C-5541 and black painted  
Air pressure: 0.1 MPa overpressure Max  
Air leakage: 10 cm³/min. (0.1 MPa overpr.) Max  
Weight: 0.35 kg Max  
Life: 250 000 actuations

**ENVIRONMENTAL DATA**

Ambient temperature: -40°C to +85°C  
Vibration: 5 – 18 Hz, 3 mm amplitude  
18 – 2000 Hz, 15 g  
Humidity: 100%RH if dry air in waveguide

---

WS 8089D6/00
**CAUTION!**

Never connect supply voltages to pins A and C simultaneously. Severe damage will result.

**ESD SENSITIVE**

**CAUTION!**

Never connect supply voltages to pins A and C simultaneously. Severe damage will result.

- **Top view**
  - A: Pos II
  - B: Com
  - C: Pos I
  - D: Pos.
  - E: Ind.
  - F: Shown in Pos I (A actuated)

**RF DATA**

- **Frequency range**: 7.5 – 18.0 GHz
- **VSWR**: 1.2
- **Insertion loss**: 0.4 dB
- **Isolation**: 40 dB
- **Peak power**: 30 kW at 0.1 MPa abs., +25°C
- **Average power**: 750 W
- **Flange interface**: MIL-F-39000/3-074

**ACTUATOR DATA**

- **Operating voltage**: 28 ±3 VDC
- **Operating current**: 1 A, Self cut off
- **Switching time**: 150 ms
- **Duty (min time between 500 ms -40°C to +40°C)**: linearly increasing to 2 s at +85°C

**Connector**: Soldering pins

**POSITION INDICATOR**

- **Position indicator current**: 60 V Max, 50 mA Max
- **Resistive load**

**MECHANICAL DATA**

- **Material**: Aluminium alloy, Cu free
- **Finishing**: Chromate per MIL-C-5541 and black painted
- **Air pressure**: 0.1 MPa overpressure Max
- **Air leakage**: 10 cm³/min. (0.1 MPa overpr.)
- **Weight**: 0.35 kg Max
- **Life**: 250 000 actuations

**ENVIRONMENTAL DATA**

- **Ambient temperature**: -40°C to +85°C
- **Vibration**: 5 – 18 Hz, 3 mm amplitude
- **18 – 2000 Hz, 15 g**
- **Humidity**: 100%RH if dry air in waveguide
### RF DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range</td>
<td>7.5 – 18.0 GHz</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.2</td>
</tr>
<tr>
<td>Insertion loss</td>
<td>0.4 dB</td>
</tr>
<tr>
<td>Isolation</td>
<td>40 dB</td>
</tr>
<tr>
<td>Peak power</td>
<td>30 kW at 0.1 MPa abs., +25°C</td>
</tr>
<tr>
<td>Average power</td>
<td>750 W</td>
</tr>
<tr>
<td>Flange interface</td>
<td>MIL-F-39000/3-074, Modified with 6-32 UNC-2B, thread depth min 5</td>
</tr>
</tbody>
</table>

### ACTUATOR DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>28 ± 3 VDC</td>
</tr>
<tr>
<td>Operating current</td>
<td>1 A, Self cut off</td>
</tr>
<tr>
<td>Switching time</td>
<td>150 ms</td>
</tr>
<tr>
<td>Duty (min time between successive operations)</td>
<td>500 ms -40°C to +40°C linearly increasing to 2 s at +85°C</td>
</tr>
<tr>
<td>Connector</td>
<td>Soldering pins</td>
</tr>
</tbody>
</table>

### POSITION INDICATOR

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position indicator current</td>
<td>60 V Max, 50 mA Max Resistive load</td>
</tr>
</tbody>
</table>

### MECHANICAL DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Aluminium alloy, Cu free</td>
</tr>
<tr>
<td>Finishing</td>
<td>Chromate per MIL-C-5541 and black painted</td>
</tr>
<tr>
<td>Air pressure</td>
<td>0.1 MPa overpressure Max</td>
</tr>
<tr>
<td>Air leakage</td>
<td>10 cm³/min. (0.1 MPa overpr.)</td>
</tr>
<tr>
<td>Weight</td>
<td>0.35 kg Max</td>
</tr>
<tr>
<td>Life</td>
<td>250 000 actuations</td>
</tr>
</tbody>
</table>

### ENVIRONMENTAL DATA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Vibration</td>
<td>5 – 18 Hz, 3 mm amplitude</td>
</tr>
<tr>
<td></td>
<td>18 – 2000 Hz, 15 g</td>
</tr>
<tr>
<td>Humidity</td>
<td>100%RH if dry air in waveguide</td>
</tr>
</tbody>
</table>
## Sivers Standard Flange Dimensions

![Diagram of Sivers Standard Flange Dimensions]

<table>
<thead>
<tr>
<th>W/G Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E (10 x)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR 284</td>
<td>29,57</td>
<td>14,68</td>
<td>48,62</td>
<td>32,54</td>
<td>M6, Depth min 8</td>
</tr>
<tr>
<td>WR 229</td>
<td>26,67</td>
<td>12,7</td>
<td>41,15</td>
<td>27,18</td>
<td>M6, Depth min 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W/G Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E (8x)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WR 187</td>
<td>22,22</td>
<td>9,52</td>
<td>32,33</td>
<td>12,7</td>
<td>M6, Depth min 8</td>
</tr>
<tr>
<td>WR 137</td>
<td>17,26</td>
<td>7,95</td>
<td>27,79</td>
<td>11,12</td>
<td>10-32 UNF-2B, Depth min 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W/G Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>WR 112</td>
<td>18,72</td>
<td>17,17</td>
<td></td>
<td>M4, depth min 5 or 10-32 UNC-2B, depth min 8</td>
<td></td>
</tr>
<tr>
<td>WR 90</td>
<td>16,26</td>
<td>15,49</td>
<td></td>
<td>M4, depth min 5</td>
<td></td>
</tr>
<tr>
<td>WR 75</td>
<td>14,25</td>
<td>13,21</td>
<td></td>
<td>6-32 UNC-2B, depth min 5</td>
<td></td>
</tr>
<tr>
<td>WR 62</td>
<td>12,14</td>
<td>12,62</td>
<td></td>
<td>6-32 UNC-2B, depth min 5</td>
<td></td>
</tr>
<tr>
<td>WR 42</td>
<td>8,51</td>
<td>8,13</td>
<td></td>
<td>4-40 UNC-2B, depth min 5</td>
<td></td>
</tr>
<tr>
<td>WR 28</td>
<td>6,73</td>
<td>6,35</td>
<td></td>
<td>4-40 UNC-2B, depth min 5</td>
<td></td>
</tr>
</tbody>
</table>