



- Compact 3-port T-junction ferrite isolator including water load
- High-performance ferrites from in-house production
- Excellent power capability covering operation into 100% reflective load, any phase
- Low insertion loss and high isolation
- Robust and reliable design
- RoHS compliant

| Parameter | Value |
|--|---|
| Footprint Drawing No. | 3-126917-FP |
| Product Type | Isolator |
| Configuration | 3-port |
| RF Transmission Line | Waveguide |
| Set-up | Ferrite circulator with integrated water load |
| Orientation of Rotation | Clockwise |
| Center Frequency f_0 | 2450 MHz |
| Bandwidth BW | ± 25 MHz |
| Forward Power (cw) | 10 kW |
| Reverse Power | 100% of forward power, at any phase |
| Insertion Loss (Port 1-2) | ≤ 0.2 dB at f_0 ≤ 0.2 dB in BW |
| Return Loss (Port 1,2) | ≥ 23 dB @ f_0 ≥ 20 dB in BW |
| Isolation (Port 2-1) | ≥ 23 dB @ f_0 ≥ 20 dB in ± 15 MHz ≥ 16 dB in full BW |
| FWD RF Power Coupling Probe at Port 1 | -60 dB ± 2 dB, non-directional, SMA, female, 50 Ω |
| REV RF Power Coupling Probe at Load | -60 dB ± 2 dB, non-directional, N-type, female, 50 Ω |
| RF Waveguide | WR340 |
| RF Flange (Input and Output) | CPR340F, flat, 10x M6 |
| Cooling System | Water or water-glycol mixture |
| Materials | stainless steel and copper |
| Coolant Connectors (Inlet & Outlet) | 2x G 3/8", female thread |
| Coolant Inlet Temperature (nominal) | selectable between 20°C and 25°C |
| Coolant Inlet Temperature Range | $\pm 5^\circ\text{C}$ |

| | |
|----------------------------|--|
| Coolant Flow Rate | ≥ 600 l/h |
| Coolant Pressure Drop | < 0.8 bar |
| Coolant Input Pressure | ≤ 6 bar |
| Coolant Leak Test Pressure | 15 bar for 10min |
| Waveguide Dielectric Gas | clean, dry air |
| Ambient Temperature | |
| Operational Temperature | 10°C to 45°C, no condensation |
| Storage Temperature | 0°C to 60°C |
| Relative Humidity | < 80%, no condensation |
| RF Stray Field | < 5 mW/cm ² in 5 cm distance from the surface |
| Magnetic Stray Field | < 5 G in 1m distance |
| Body Material | Aluminum |
| Dimensions L x B x H | see footprint drawing |
| Weight (net) | 4.8 kg ± 10% |
| Mounting Orientation | any |

Ordering Code

I3-WR340-06-2450-10 - Xw

| Variable | Description | Value Options |
|----------|------------------------|-------------------------|
| Xw | Water Temperature [°C] | value between 20 and 25 |

Notes:

- Circulator Characteristic Power Capability:** The circulator is designed to offer lowest loss and highest peak power capability by using AFT premium microwave ferrites. The device is designed to handle full forward power into a 100% reflective short-circuit at port 2, covering all phase angles, without breakdown.
- Water Cooling:** There is a water cooling circuit with a designated water inlet and outlet connector. Water quality, temperature, flow, and input pressure need to be controlled carefully according to the specified values. Air bubbles in the cooling channel have to be avoided. The requirement for demineralized water is based on the exclusion of deposition and agglomeration of mineral salts, calcium carbonate or rust in the cooling channels. There are no specific requirements for the water resistivity. The cooling channels must not be contaminated by sealants such as PTFE tape or hemp fibers. These can decrease cooling significantly or even block cooling channels. For reason of protection, the device requires sensorics with RF interlocks for specified water temperature, water flow, and water inlet pressure. The corresponding equipment is to be provided by the customer.
Note: Water has to be carefully drained from the cooling circuit before transport and storage, in order to avoid possible damage by freezing of water.

- 3 Low-Power Factory Tests: The following tests will be performed at the AFT factory before shipment:
- (1) Electrical tests: small-signal network analyzer measurements of insertion loss, isolation, and return loss vs. frequency at the nominal water inlet temperature and at an ambient room temperature of $22^{\circ}\text{C} \pm 4^{\circ}\text{C}$, for all ports and signal paths.
 - (2) Water leak test at specified test pressure.
 - (3) Visual inspection.
- 4 Documentation: An owner’s manual is available for providing information on the installation, operation and maintenance of the device. The documentation will also include specification, footprint drawing, an inspection report, and the RF test results as viewgraphs of S-parameters vs. frequency.
The documentation is limited to digital format (no hardcopy) and is available on request.

| Rev | Remark | Date | Name |
|-----|---------|------------|-------------|
| 00 | initial | 11.03.2025 | N. Pavlovic |