

SWEDISH MICROWAVE

Manual

KU and KA SYSTEMS
General Guidelines

Table of Content

1. Description	3
2. Safety warnings.....	3
3. Installation instructions	3
4. Alarm, Monitoring & Control.....	7
5. Troubleshooting.....	8
6. Maintenance and Repair	8
7. Technical specifications	9
8. Warranty and Legal	9
9. Contact details	9



Scan the QR-code to access our website. Explore our product range, request a quote, read recent news, discover useful resources, and get in touch with our sales team.



All technical specifications are typical, for specific part number specifications, please contact us. Specifications are subject to change without prior notice. Products from Swedish Microwave AB are made for commercial use.

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Thank you for choosing products from Swedish Microwave

1. Description

Swedish Microwave products are a vital component in land, maritime and earth stations in the ground infrastructure for satellite systems.

Our professional LNB, BDC, LNA and RF over Fiber products are designed for outdoor use to enable reliable communications even under the toughest conditions worldwide.

2. Safety warnings



CAUTION!

Make sure that the antenna system is grounded to earth to avoid potential voltage that can be discharged through the device.

3. Installation instructions

Unpacking

Please compare the contents of your shipment with the packing list supplied.

Mounting

Remove the adhesive waveguide protector before installation. It's very important to always use the supplied screws and conductive O-ring gasket when mounting the device to the antenna feed system. The conductive O-ring gasket may have custom dimensions to fit flange groove, additional gaskets can be ordered free of charge. Any other means of mounting may void the warranty.



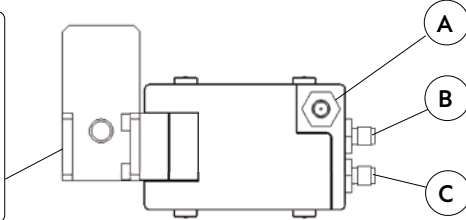
CAUTION!

Power the device with the recommended DC voltage. Too high voltage can damage the device. Connect everything properly before switching on DC voltage. Please consider the voltage drop in a long coaxial cable as too low voltage can affect the functionality.



CAUTION! Protect against water penetration. The components are designed for operation in temperatures between -40 to $+80^{\circ}\text{C}$. However waveguide input is not waterproof and **MUST BE** protected from moisture and water. In extreme environments such as close to corrosive sea water or installation in antenna towers where IP67 class protection can be deemed insufficient, it is recommended that appropriate action is taken to ensure reliable operation and longevity.

Waveguide input.
Type and size of waveguide and flange will be specific to input frequency range.
Never mount waveguide flanges with O-ring groove facing each other. One flange must be flat and without O-ring groove.



LNA, actual product may differ from illustration

Unused connector(s) should remain protected with cover.

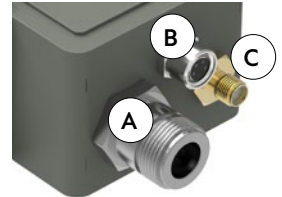
Protect the coaxial cable connector with rubber seal tape.

LNA

Connector A – SMA (female) 50 Ω , power input
Normally connected to BDC#1 with DC out to LNA

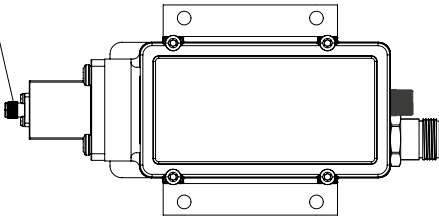
LNA Connector B – SMA (f) 50 Ω , RF out
To BDC#1 or to splitter in a Triple or Quad system

LNA Connector C – SMA (f) 50 Ω , RF out
To BDC#2 or to splitter in a Triple or Quad system



BDC Examples of connectors illustrated

RF input from LNA



BDC, actual product may differ from illustration

BDC

Connector A – N (female) 50 Ω IF out, power input, external reference. Types available: F (female) 75 Ω or SMA (female) 50 Ω

Optional

Connector B – M8 (RS485, 4 pin, A-key coded) for Alarm, M&C

Connector C – SMA (f) for separate external reference and/or power input.

Connector for Alarm, Monitoring & Control



- Type: RS485, M8 (f), 4 pin, A-key coded
- Functions: Alarm, Monitoring & Control, power input
- Pin 1 = Alarm open collector (max. 200 mA)
- Pin 2 = A pos+ RS485
- Pin 3 = B neg- RS485
- Pin 4 = Common (GND)
- 5 = Shield

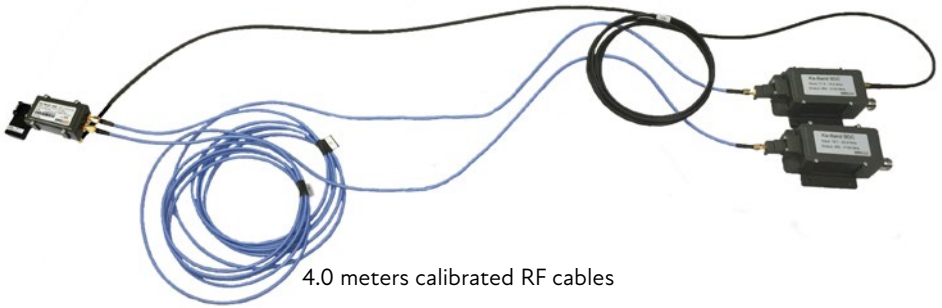


<https://modbus.org/>

i **NOTE!** BDCs and splitters shall be mounted close to the antenna or at back side of antenna though supplied cables are calibrated with the system and shall not be exchanged to any other cables. If other cable lengths are wanted you must contact SMW for consultation. Max bending radius of cables between LNA, splitters and BDCs are 50mm. If cables are bent more, this will decrease the performance of the system. Max. torque of the SMA connectors is 1 Nm.

RF cables shall be mounted according to the figure below regarding cable lengths to avoid mismatch between LNA, splitters and BDCs.

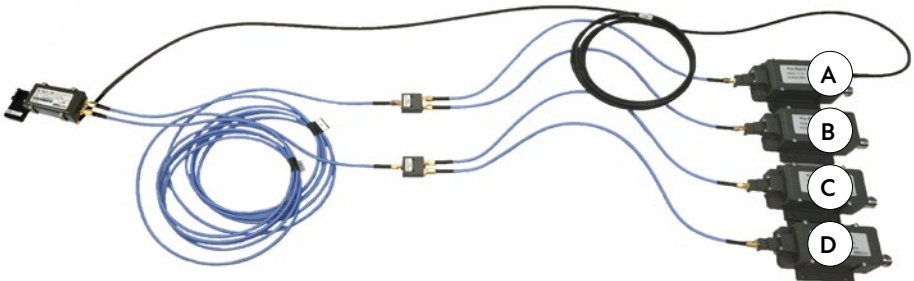
4.8 meters cable for DC feed from BDC to the LNA.



i **NOTE!** In a Triple and Quad system, to avoid risk of interference, the BDC's must be connected in a special sequence, often NOT in the same order as LO frequencies.

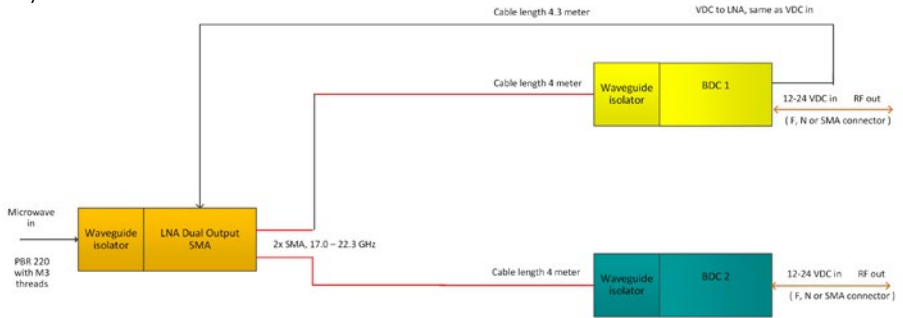
Example and image below:

- A - Frequency 17.30 - 18.55 GHz, LO 16.35 GHz
- B - Frequency 19.80- 21.05 GHz, LO 18.85 GHz
- C - Frequency 18.55 - 19.80 GHz, LO 17.60 GHz
- D - Frequency 21.05 - 22.30 GHz, LO 20.10 GHz



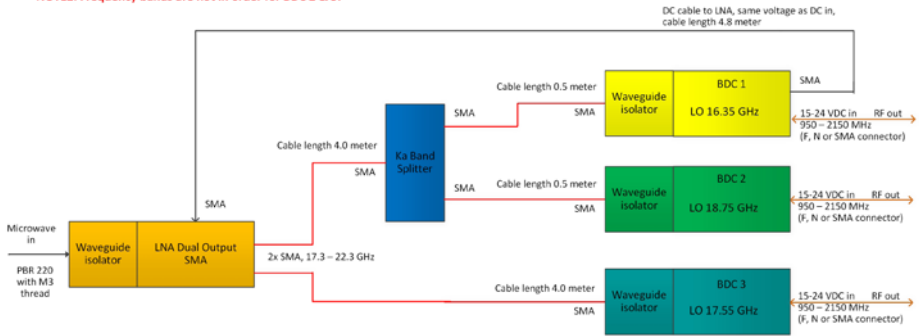
Installation examples

Dual System



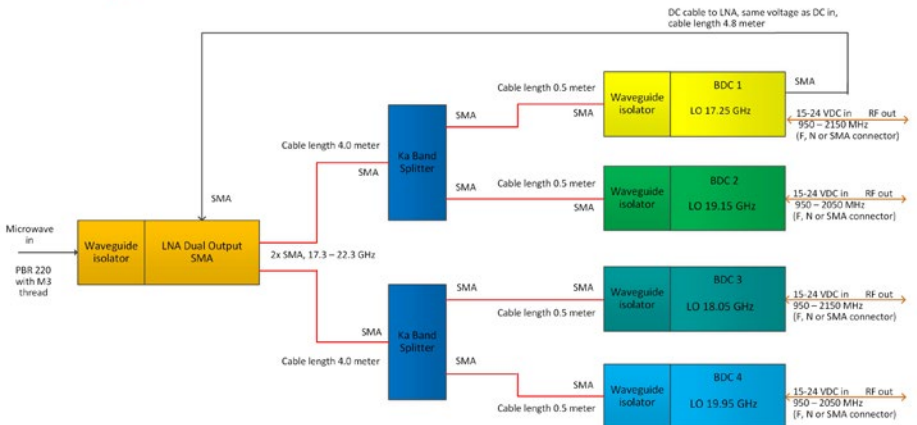
Triple System

NOTE: Frequency bands are not in order for BDC 2 & 3.



Quad System

NOTE: Frequency bands are not in order for BDC 2 & 3.



4. Alarm, Monitoring & Control

With remote monitoring and control features, operators can access real-time diagnostics and performance metrics.

Prerequisites

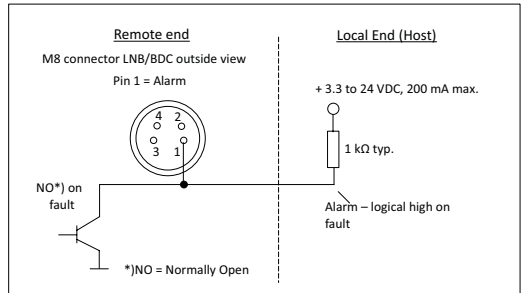
Monitoring & Control function is enabled on select products. The M&C Startkit contains M8 cable (RS-485) and USB Transceiver for connecting host (RTU). Register Map for available (R/W) parameters, please note that the register map is specific to each product model. Download the latest register map from smw.se. Modbus software or driver is not included, but for purposes of testing or troubleshooting the freeware Monitoring & Control (M&C) Evaluation Tool is available at request.

Alarm output

The Alarm output connector pin 1 is an Open collector, Open on fault. 3.3V to 24V max. 200mA. Factory setting is Normally Closed (NC). The alarm output is a sum alarm that trigger:

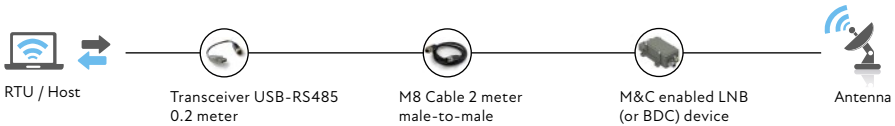
- LO; Locked, External LO reference detected, External LO reference lock
- Total current consumption (>600 mA)
- LNA (built in) failure
- RF power (IF) detector outside limit (outside -57 dBm to -5 dBm)

Alarm wiring



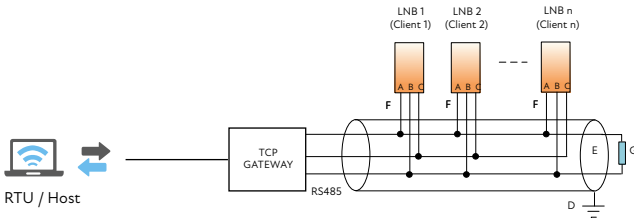
Direct connection

Schematic showing a direct connection using the M&C Startkit with USB transceiver.



Chain connection

Schematic showing a chain connection using a gateway to ethernet.



- A & B = RS 485 (Tx & Rx)
- C = Common
- D = Cable shield to ground. Only to be grounded at one point!
- E = TP cable (twisted pairs min CAT 5 shielded). Length max 200m.
- F = TP cable (twisted pairs min CAT 5 shielded). Length max 20m.
- G = 120 ohm resistor. Needed if cable E is longer than 30 m.

Chain connection accessories

- Adapter Cable 0.3 meter male-to-female
- M8 splitter / Y-adapter 2xfemale-to-male
- Cable M8 5 or 20 meter male-to-male or 10 meter male-to-pigtail

5. Troubleshooting

If the output L-band signal is not meeting the calculated specification, first thing to check is the HF cables and connectors.

- Make sure that bend radius is not less than the min. recommended (50mm).
- Check that all connectors are tightened correct according to max. torque (1Nm).

Ensure that the DC voltage of the power input aligns with the specifications provided in the product sheet. If there is a very long cable feeding the device with power, this may cause DC to drop below critical value, and cause the device to be unstable or not work at all.

If the DC voltage is confirmed to be correct, yet issues persist with the received signal, it is advisable to inspect any line amplifiers or other devices installed between the receiver and the device. Performing a bypass of the signal can help isolate whether any external equipment is contributing to the problem.

Furthermore, if the device is mounted on a large antenna, it may become saturated and fail to deliver the expected output level, or the outgoing signal could be distorted. It's crucial to consider the gain of the device, as larger antennas may require a device with a lower gain.

For troubleshooting the Alarm, Monitoring & Control functionality, please refer to our Q&A section on our website at www.smw.se, or reach out to us at support@smw.se for additional assistance.

6. Maintenance and Repair

The device does not contain any parts that can be serviced by the user. For any inquiries related to maintenance, warranty, or service, please request a Return Material Authorization (RMA) at www.smw.se or by sending an email to support@smw.se.

When submitting your request, please include your name, email address, and company details. Also specify the product, part number, or serial number in question and attach a photo of the device. Provide a detailed explanation of the issue and any other information that could be helpful.



NOTE!

Any device returned without an RMA number will be refused.

7. Technical specifications

Technical specifications are typical, specific part number specifications are available. Specifications are subject to change without prior notice.



For further details about each products technical specifications, please scan QR-code link to access website for complete **Documentation, Technical Specifications, Manuals** and **Register Maps**. Find your product at <https://smw.se/findproduct>



8. Warranty and Legal

General Terms & Conditions: ORGALIME S 2012 and Appendices.
Standard Warranty 36 Months. Read more at <https://smw.se/terms/>
Products from Swedish Microwave AB are made for commercial satcom use only.
Country of Origin: SWEDEN

All products from Swedish Microwave are CE compliant with the following EU directives as applicable, depending on when placed on the market. Declaration of Conformity is available on request.

- Low Voltage Directive (LVD) 2014/35/EU
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Radio Equipment Directive (RED) Directive 2014/53/EC
- Reduction of Hazardous Substances (RoHS 2) Directive 2011/65/EC
- Regulation (EC) No 1907/2006 (REACH Regulation)

Swedish Microwave is Assessed and Certified for:

- SS-EN ISO 9001:2015 Quality management
- SS-EN ISO 14001:2015 Environmental management
- SS-EN ISO 45001:2018 Occupational health and safety management



9. Contact details

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Contact the Sales Team: sales@smw.se.
Contact information is available on the company website at www.smw.se.



Feedback

Your opinion is important to us! Use the contact link at www.smw.se.





Welcome to contact the
Sales Team at sales@smw.se or
call us at +46 (0) 141 21 61 35



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