PRODUCT OVERVIEW 2023

PROFESSIONAL SATCOM FREQUENCY CONVERTERS & COMPONENTS

PLL LNB, BDC/TLT AND
LNA & RF OVER FIBER PRODUCTS

SMW®
SWEDISH MICROWAVE AB

ABOUT SWEDISH MICROWAVE

Professional LNB, LNA, BDC, TLT and RF-over-Fiber products for demanding applications in VSAT, SNG, TVRO, Broadcast, Earth Stations, Marine VSAT, HTS, SOTM, Earth Observation (EO), Remote Sensing (SRS) and many more.

High Stability PLL circuitry, available with optional External 10 MHz Reference input, for the most demanding applications. Our LNBs even outperform traditional LNA – BDC systems. With low phase noise and excellent dynamic range to meet the demands of HTS symbol/data rates, most of our products meet the DVB-S2X standard.

All in-house design and manufacturing, quality components, robust and proven hardware and units 100% tested prior to shipment. These are some of the steps we take to enable a high degree of customization and to ensure the well-known SMW Quality. This also enables our generous warranty terms and provide our customers with hassle-free operation.

For detailed product information, options and datasheets and drawings, please contact our sales team sales@smw.se or visit our website smw.se.

Scan the QR-code for a direct link to our website www.smw.se. Browse all our products and request a quick quote, read the latest news, find resources and contact our sales team.

Designed and Manufactured IN SWEDEN

sbcert SCANDINAVIAN BUSINESS CERTIFICATION ISO 9001 / ISO 14001 ISO 45001

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10 MHz Recovery Oscillator / DC Inserter
100 MHz External Reference and Recovery Oscillator
Bias Tee / DC Inserter
10 MHz Diplexer
10 MHz & DC Multiplexer
Gain adjustable Line Amplifiers
AGC Line Amplifier
DC Power Supply Unit
Waveguide Isolators Low Loss
OMT / Depolarizer
Depolarizer

Single LO PLL LNB

With Internal Interference mitigating filters
Models between 3.60 – 4.80 GHz

- Internal Interference mitigating filters
- Low phase noise to meet DVB-S2X VSAT profile
- High P1dB and IP3
- Choose between Internal Ref. or External Ref. input models
- Lower gain versions for larger antennas
- Wide operating temperature range
- Versa-Link for Fiber optic RF link

DVB S2X

Single LO PLL BDC

Models between 3.40 – 4.80 GHz

The C-Band PLL block down converter is intended for receiving C-Band transmissions within the frequency range 3.40 to 4.80 GHz. Fixed gain configurable between 0 dB and 50 dB (factory set). It's normally used together with an external C-band low noise amplifier. RF input is SMA female. IF output is standard L-Band inverted spectrum via N-, F- or SMA- connector.

- Internal Interference mitigating filters
- Low phase noise to meet DVB-S2X VSAT profile
- Choose between Internal Ref. or External Ref. input models
- Compact size and light weight
- Wide operating temperature range
- For outdoor use, IP 67 classed
- Low profile to fit 1U for build-in applications
- Versa-Link for Fiber optic RF link

Single LO PLL BDC

Models between 5.70 – 7.25 GHz

The C-Band PLL block down converter is intended for monitoring C-Band uplink transmissions within the frequency range 5.70 to 7.25 GHz. Fixed gain between 0 dB and 55 dB. RF input is SMA female. IF output is standard L-band non inverted spectrum via N-, F- or SMA-connector.

- Low phase noise to meet DVB-S2X VSAT profile
- Choose between Internal Ref. or External Ref. input models
- Compact size and light weight
- Wide operating temperature range
- For outdoor use, IP 67 classed
- Low profile to fit 1U for build-in applications
- Versa-Link for Fiber optic RF link

Single LO PLL LNB Satcom & TLT

Rx reception & Tx monitoring with optional fiber optic output
Models between 7.25 – 8.50 GHz

With optional
CPR 112G adapter

With optional direct fiberoptic output

- Very Low Noise Figure
- Excellent Input VSWR
- Low phase noise meets DVB-S2X VSAT profile
- High P1dB and IP3
- Choose between Internal Ref. or External Ref. input models
- Low gain versions for large antennas
- Wide operating temperature range
- Optional direct fiberoptic output
- Internal Filtering (LO 6.30 model)

Single LO PLL LNB Earth Observation (EO) & Satellite Remote Sensing (SRS)

EO–band Models between 7.68 – 8.50 GHz

With optional
CPR 112G adapter

Optimized for Earth Observation and Remote Sensing technical requirements. It reduces cost and complexity greatly compared to a traditional LNA + Rack BDC system and it's ideal for smallsat or any LEO, MEO and GEO X-Band applications.

- Low phase noise
- High P1dB and IP3
- Choose between Internal Ref. or External Ref. input models
- Lower gain versions for larger antennas
- Wide operating temperature range
- Optional direct fiberoptic output
- The LNB has the IF output centered at 720, 1200 or 1500 MHz which is Industry standard

Single LO PLL BDC

Models between 7.25 – 7.75 GHz

The X-Band PLL block down converter covers X-band within the frequency range 7.25 to 7.75 GHz. Fixed gain between 0 dB and 55 dB. The BDC has some built in filtering for improved TX and IF margin, high IP3 and Low power consumption. RF input is SMA female. IF output is standard L-band non inverted spectrum via N-, F- or SMA-connector.

- Built-in filtering
- Low phase noise
- Choose between Internal Ref. or External Ref. input models
- Compact size and light weight
- Wide operating temperature range
- For outdoor use, IP 67 classed
- Low profile to fit 1U for build-in applications

LNA

Single or Dual output 10.70 – 12.75 GHz

Optional Low loss isolator

All LNA (Low Noise Amplifier) units are individually hand tuned for the very best performance available. Quality and long term reliability is also essential. Therefore are all LNA's are tested according to a very extensive test program. The SMW waveguide Ku-Band LNA cover 10.70-12.75 GHz and is available with one or two outputs. Low input VSWR with optional Waveguide Isolator.

- Single or Dual output models available
- Optional Low Loss Isolator
- Wide operating temperature range
- Compact size and light weight

High Gain LNA with Alarm

Gain 50 dB min. Single or Dual output 10.70 – 12.75 GHz

Illustrated with Low loss isolator

The LNA monitors current through the alarm output users can ensure full system functionality and trigger redundancy switching. Other features include Excellent input and output Return loss/VSWR, High Output P1dB and IP3, Wide operating temperature range, Compact size and light weight.

- Gain 50 dB min.
- Available as Single or Dual Output (option)
- Temperature compensated absolute Gain
- Monitoring of key LNA parameters;
  Input stage current
  Total LNA current
- Alarm interface: Open collector

Single LO PLL LNB

Single sub-band Models between 10.70 – 12.75 GHz

The professional PLL has Low Phase Noise, High IP3 and Low Noise Figure.

- Auto switching LO ref: Internal / Ext. 10 MHz
- Several LO frequencies
- Low phase noise
- High P1dB and IP3
- Available as TWIN for H/V reception including OMT and weather protection
- Lower gain versions for large antennas
- Wide operating temperature range
- Alarm and Monitoring & Control as option

Optional Low loss isolator

M&C monitoring and control interface

Modbus

DVB S2X

Wideband PLL LNB

Extended IF, output for simultaneous reception of full Ku-Band 10.70 – 12.75 GHz

The Wideband output LNB supports reception of full Ku-Band with 1 LO and 1 Extended IF IF out 950-3000 MHz, 950-2750 MHz or 290 - 2340 MHz.

- Full Ku-Band coverage with 1 LO and 1 IF output
- Standard Ultra Low Phase Noise meets all profiles of DVB-S2X
- High P1dB and IP3
- Choose between Internal Ref. or External Ref. input models
- Available as TWIN for H/V reception including OMT and weather protection
- 10.41 model acc. to ASTRA Wideband spec.
- Lower gain versions for large antennas
- Wide operating temperature range

Optional Low loss isolator

DVB S2X

WDL Dual output PLL LNB

For simultaneous reception of Low & High
Ku-Band 10.70 – 12.75 GHz or 10.95 – 12.75 GHz

- Full Ku-Band coverage, simultaneous Low and High band outputs
- Ultra-low phase noise meets all profiles of DVB-S2X
- Low gain versions for large antennas
- Choose between Internal Ref. or External Ref. input models

DVB S2X

Quattro WDL PLL LNB

2x Dual for Low / High Ku-Band & Vertical / Horizontal
polarization 10.70 – 12.75 GHz or 10.95 – 12.75 GHz

- Full Ku-Band and both polarizations, include OMT, bend and Weather protection
- High cross polarization isolation
- Ultra-low phase noise model meets all profiles of DVB-S2X
- Low gain versions for larger antennas
- Choose between Internal Ref. or External Ref. input models

DVB S2X

Multi LO PLL LNB

Switchable 2–, 3– or 4–band
Models between 10.70 – 12.75 GHz

The Multi LO PLL LNB is ideal for installation in e.g. maritime VSAT or SNG applications where change of Satellite Band is common.

- Auto switching LO ref: Internal / Ext. 10 MHz
- Several LO frequencies available
- LO switching by voltage and/or 22kHz
- Low phase noise
- High P1dB and IP3
- Available as TWIN for H/V reception including OMT and weather protection
- Low gain versions for large antennas
- Wide operating temperature range
- Alarm and Monitoring & Control as option

Optional Low loss isolator

M&C monitoring and control interface

Modbus

DVB S2X

Dual BDC PLL System

System for cover Ku–Band
10.70 – 12.75 GHz

Professional Solution to receive two sub-bands simultaneously with high LO Stability and Low Phase Noise. Any LO frequencies can be combined without spuriouses e.g. Low band 10.00 GHz & High band 11.30 GHz. The standard solution consists of one LNA and two BDC including HF and DC cables 4-6 meter. All parts are optimized, adjusted and tested as a complete matched unit.

HF cables and DC cable included

Optional Low loss isolator

- Wide frequency range
- Choose between Internal Ref. or External Ref. input models
- Several LO frequencies
- Low phase noise
- High P1dB and IP3
- Wide operating temperature range
- For outdoor use
- Option Low profile to fit 1U for indoor build-in applications

Single LO PLL BDC

Single sub-band
Models between 10.70 – 12.75 GHz

The Single LO BDC has a selection of several frequency sub-bands. The BDC is ideal for installation in various professional applications with low symbol rate carriers.

- Wide Frequency range
- Low phase noise to meet the VSAT profile of DVB-S2X
- High P1dB and IP3
- Choose between Internal Ref. or External Ref. input models
- Compact size and light weight
- Wide operating temperature range
- For outdoor use
- Option Low profile to fit 1U for indoor build-in applications

DVB S2X

Multi LO PLL BDC

Switchable 2-, 3- or 4-band
Models between 10.70 – 12.75 GHz

The Multi LO BDC can be remotely switched across 2-4 bands by voltage and/or 22 kHz tone control. The BDC is ideal for installation in various professional applications with low symbol rate carriers.

- Frequency range 10.70-12.75 GHz
- Several LO frequencies available
- LO switching by voltage and/or 22kHz
- Choose between Internal Ref. or External Ref. input models
- High P1dB and IP3
- Compact size and light weight
- Wide operating temperature range
- Option Low profile to fit 1U for indoor build-in applications

DVB S2X

Wideband PLL BDC

Reception of full Ku-Band with extended IF 10.70 – 12.75 GHz

The Wideband output BDC supports reception of full Ku-Band with 1 LO and 1 Extended IF IF out 950-3000 MHz, 950-2750 MHz or 290 - 2340 MHz. The Wideband BDC is ideal for installation in various applications with low symbolrate carriers. Low Loss Isolator included.

- Full Ku-band coverage
- Standard Ultra Low Phase Noise meets all profiles of DVB-S2X
- High P1dB and IP3
- Choose between Internal Ref. or External Ref. input models
- Compact size and light weight
- Wide operating temperature range
- Low gain option
- For outdoor use

Dual LO PLL BDC

Simultaneous Low & High Ku-Band 10.70 – 12.75 GHz or 10.95 – 12.75 GHz

The Dual LO BDC cover full Ku-Band Frequency range simultaneously on Low and High Band outputs. Ideal for installation in various professional applications with Low Symbol Rate carriers. Low Loss Isolator included.

- Full Ku-band coverage
- Standard Ultra Low Phase Noise meets all profiles of DVB-S2X
- High P1dB and IP3
- Choose between Internal Ref. or External Ref. input models
- Compact size and light weight
- Wide operating temperature range
- Low gain option
- For outdoor use
- Option Low profile to fit 1U for indoor build-in applications

9-10 GHz PLL LNB

Single sub-band Models between 9.90 – 10.70 GHz

The 9-10 GHz PLL LNB has Low Phase Noise, High IP3 and Low Noise Figure.

- Auto switching LO ref: Internal / Ext. 10 MHz
- Several LO frequencies
- Low phase noise
- High P1dB and IP3
- Available as TWIN for H/V reception including OMT and weather protection
- Compact size and light weight
- Wide operating temperature range
- Alarm and Monitoring & Control as option

13-15 GHz PLL LNB/BDC/TLT

Monitoring uplink transmissions
Models between 12.70 – 15.50 GHz

The LNB / BDC is a cost effective alternative to monitor the Satellite Uplink Transmissions with L-Band measurement equipment. The unit covers several uplink bands within the Range of 12.70–15.50 GHz.

- Auto switching LO ref: Internal / Ext. 10 MHz
- Wide frequency range
- Several LO frequencies
- Low phase noise
- Compact size and light weight
- Wide operating temperature range
- For outdoor use
- Option Low profile BDC to fit 1U for indoor build-in applications
- Alarm and Monitoring & Control as option

LNA

17.30 – 22.30 GHz

All LNA units are individually hand tuned for the very best performance available. Quality and long term reliability is also essential. Therefore are all LNA's tested according to a very extensive Test Program. The SMW Waveguide Ka-Band LNA cover 17.30-22.30 GHz and has two SMA-connector outputs. Separate DC SMA connector.

- Compact size and light weight
- Two outputs
- Low Input VSWR with Low loss Isolator as standard
- Wide operating temperature range
- Compact size and light weight

SES O3b mPOWER

3 sub-band switchable LNB 17.70 – 20.20 GHz

- Auto switching LO ref: Internal / Ext. 10 MHz
- DVB-S2X VSAT profile compliant
- High P1dB and IP3
- Wide operating temperature range
- Alarm and Monitoring & Control as option

M&C monitoring and control interface

Modbus

DVB S2X

Wide IF PLL LNB

Extended IF output
Simultaneous reception
2 GHz Ka-Band within
17.70 – 22.20 GHz

The Wideband output LNB supports reception of wide range of Ka-Band with 1 LO and extended IF output 950 - 2950 MHz. The LNB features Low Phase Noise to meet the DVB-S2X Professional Services profile. Ideal for installation in various applications with Low Symbol Rate carriers including HTS.

- Wide Ka-Band coverage with 1 LO and 1 output
- Ultra Low Phase Noise
- High P1dB and IP3
- Choose between Internal Ref. or External Ref. input models
- Compact size and light weight
- Wide operating temperature range
- Low gain option

DVB S2X

Gateway Superwide IF PLL LNB

17.70 – 20.20 GHz
IF 1250 – 3750 MHz

- Auto switching LO ref: Internal / Ext. 10 or 100 MHz
- DVB-S2X VSAT profile compliant
- High P1dB and IP3
- Wide operating temperature range
- Alarm and Monitoring & Control

In the era of High Data Rate satellites – Superwide IF is a key. As a well known manufacturer of high quality, high performance, cost effective Professional Satcom Block Downconverter products, we applied our knowledge and experience in this new LNB with Super-wide IF, 1250-3750 MHz. Enclosure fixing points is available as option.

M&C monitoring and control interface
Modbus
DVB S2X

Single LO PLL LNB

models between 17.30 – 22.30 GHz

The Ka-Band PLL LNB is a family of single LO LNB that covers the wide frequency range 17.30-22.30 GHz with several sub-bands and LO frequencies. The LNB features Low Phase Noise meets all profiles of DVB-S2X.

- Auto switching LO ref: Internal / Ext. 10 MHz
- Several LO frequencies available
- Low Phase Noise
- High P1dB and IP3
- Compact size and light weight
- Wide operating temperature range
- Alarm and Monitoring & Control as option

M&C monitoring and control interface
Modbus
DVB S2X

Dual LO PLL LNB

Two switchable LO Models between 17.30 – 22.30 GHz

The Ka-Band PLL LNB is a family of dual LO LNB that covers the wide frequency range 17.30-22.30 GHz with several sub-bands and LO frequencies. Low Phase Noise meets all profiles of DVB-S2X.

- Auto switching LO ref: Internal / Ext. 10 MHz
- Frequency range 17.30-22.30 GHz
- Several LO frequencies available
- Low Phase Noise
- High P1dB and IP3
- Compact size and light weight
- Wide operating temperature range
- Alarm and Monitoring & Control as option

Multi LO PLL LNB

3 to 8 sub-bands switchable between 17.30 – 22.30 GHz

Optional enclosure fixing points

The Ka-Band Multi LO PLL LNB is a family of LNBs that covers the wide frequency range 17.30-22.30 GHz with several sub-bands and LO frequencies. The LNB features Low Phase Noise meets all profiles of DVB-S2X.

- Auto switching LO ref: Internal / Ext. 10 MHz
- Low phase noise
- High P1dB and IP3
- Customized LO
- Wide operating temperature range
- Monitoring & Control switching or by Voltage/Tone
- Alarm and Monitoring & Control as option

Earth Observation / Remote Sensing (SRS) PLL LNB / BDC

Models between 25.50 – 27.00 GHz

- Auto switching LO ref: Internal / Ext. 10 MHz
- High P1dB and IP3
- Wide operating temperature range
- Enclosure fixing points
- Alarm and Monitoring & Control standard

Drawing on our experience from our successful X-Band Earth Observation LNBs, our Ka-Band Earth Observation band for remote sensing (SRS) device provides an uncomplicated approach to frequency block conversion with excellent price/performance ratio and includes our Monitoring & Control functionality. It is available as LNB with waveguide input with standard gain and or as BDC with lower gain for applications that include a separate LNA in the downlink path. Standard output is 2400 MHz CF suitable for most EO receivers on the market. Also available with 950-2450 MHz IF.

Tx monitoring PLL LNB / BDC / TLT

Uplink monitoring. Models between 27.00 – 31.00 GHz

- Single or Multi LO
- Auto switching LO ref: Internal / Ext. 10 MHz
- Low Phase Noise
- High P1dB and IP3
- Wide operating temperature range
- Alarm and Monitoring & Control standard

For applications where Ka-Band uplink monitoring is required, we now offer a flexible and cost-effective multi-LO switchable solution. The device includes our Monitoring & Control functionality which enables switching LO, setting Gain and a comprehensive range of parameters that can be monitored or set to trigger the alarm output.

Single LO PLL BDC

Models between 17.30 – 22.30 GHz

- Auto switching LO ref: Internal / Ext. 10 MHz
- Frequency range 17.30-22.30 GHz
- Several LO frequencies available
- Low Phase Noise
- High P1dB and IP3
- Compact size and light weight
- Wide operating temperature range
- Alarm and Monitoring & Control as option

Dual LO PLL BDC

Models between 17.30 – 22.30 GHz

- Auto switching LO ref: Internal / Ext. 10 MHz
- Frequency range 17.30-22.20 GHz
- Several LO frequencies available
- Low Phase Noise
- High P1dB and IP3
- Compact size and light weight
- Wide operating temperature range
- Alarm and Monitoring & Control as option

Wideband PLL BDC

Extended IF output 950 - 2950 MHz. Simultaneous reception 2 GHz.
Models between 17.70 – 22.30 GHz

- Wide Ka-Band coverage, 1 LO and 1 output
- Ultra Low Phase Noise
- High P1dB and IP3
- Choose between Internal Ref. or External Ref. input models
- Compact size and light weight
- Wide operating temperature range

Multiband PLL BDC

3 to 8-Band switchable
Models between 17.30 – 22.30 GHz

The Ka-Band Multi LO PLL BDC is a family of BDCs that covers the wide frequency range 17.30-22.30 GHz with several sub-bands and LO frequencies. The BDC features Low Phase Noise meets all profiles of DVB-S2X.

- Auto switching LO ref: Internal / Ext. 10 MHz
- Low Phase Noise
- High P1dB and IP3
- Wide operating temperature range
- Customizable switching, Voltage/Tone
- Alarm and Monitoring & Control as option

M&C monitoring and control interface
Modbus
DVB S2X

LNA + Dual / Triple / Quad BDC PLL System

Receives 2, 3 or 4 Ka-bands simultaneously
Models between 17.30 – 22.30 GHz

The Ka-Band Systems consists of Ka LNA with waveguide isolator, Ka BDC (Dual: x2 BDC, Triple: x3 BDC Quad: x4 BDC) with waveguide isolators and matched Ka cables. Comes standard with Low Phase Noise to meet DVB-S2X Professional services.

HF cables and DC cable included

- Auto switching LO ref: Internal / Ext. 10 MHz
- Wide frequency range
- Low Phase Noise
- High P1dB and IP3
- Wide operating temperature range
- Alarm and Monitoring & Control as option

M&C monitoring and control interface
Modbus
DVB S2X

Active Electronically Scanned Array (AESA) Frequency Converter Modules, designed for integration in flat AESA antennas. In the era of New Space – LEO, MEO and GEO HTS satellite constellations and addressing the New Ground segment – AESA antennas are believed to be key. This is a range of State-of-the-Art Frequency Blockdown and Upconverters featuring unique functionality.

AESA Active Array BDC Modules

Models between 17.30 – 22.30 GHz

M&C monitoring and control interface

Modbus

- Available for Ka-Bands
- LO / Sub-band switchable
- Customizable design
- DVB-S2X VSAT profile compliant
- High P1dB and IP3
- Compact 25.4 mm (1 inch) height
- Lightweight
- Alarm and Monitoring & Control

AESA Active Array BUC Modules

Models between 27.50 to 31.00 GHz

M&C monitoring and control interface

Modbus

- Available for Ka-Bands
- LO / Sub-band switchable
- Customizable design
- DVB-S2X VSAT profile compliant
- High P1dB and IP3
- Compact 25.4 mm (1 inch) height
- Lightweight
- Alarm and Monitoring & Control

Q/V–band LNB / BDC

37.50 – 42.50 GHz

- Alarm and Monitoring & Control standard
- Low noise figure
- Low phase noise
- Single or Switchable Local Oscillator frequency via the Monitoring and Control Interface.
- Superwide or standard IF frequency output range fully field configurable
- High output level and dynamic range

The Q/V-Band LNB of the future, today. Packed full of our latest technology, our device provides coverage the full Q/V-Band satcom downlink frequency range in one unit. Standard features include Monitoring and Control via Modbus allowing a multitude of unique field configurable features and functions making this device both versatile and future proof.

M&C monitoring and control interface

Modbus

Monitoring & Control Interface

- Allows Monitoring & Control of LNB, BDC and Systems
- Standard Fieldbus RS 485 electrical and MODBUS RTU interface

Example USB transceiver

M&C monitoring and control interface

Modbus

Please contact us for information about a complete hardware startkit.

Monitoring examples

Alarm, Persistent alarm, Selected band, IF out level, LNA current, Total current, Input voltage, Temperature, LO locked, External 10MHz detected, External 10MHz locked, Active LO ref (int/10MHz), 22kHz detect, Days of operation, Serial number, Software version

Control examples

Band switching, Gain offset, Alarm trigger, Persistent alarm, Alarm output, Temperature unit °C or F, GPO output, Modbus RTU parity mode

Fiber output LNB optical Quattro Receiver

Fiber optic output Receiver System

Fiber Output LNB are available for X-band, Ku-band and Ka-band

Highest RF and Optical performance

- Top performing LNBs with optional Ultra Low Phase Noise and Internal ±10kHz or Ext. 10MHz reference.
- Single frequency conversion and direct modulated 1310 nm DFB lasers.
- Up to 20 km single mode fiber cable distance depending on link budget. Link distance up to 40 km with optional 1550 nm laser.
- Fully Outdoor Proof IP67
- Fully sealed high quality Q-ODC fiber connectors.
- Operating temperature range -40° to +70°C.
- All parts designed to withstand outdoor environmental conditions long term.

Features

- Compact size and low power consumption.
- AGC - Automatic Gain Control and optional Fixed Gain for large antennas and Beacon applications.
- RF monitor out on LNB for antenna setup and DC supply via choice of N-, F- or SMA-connectors.
- Fiber output LNBs are compatible with both SMW Quattro Rx and Versa-Link Rx receivers.
- SMW Fiberoptics are compatible with many other manufacturer's corresponding indoor devices.

Application example

- Two Ku-Band WDFL PLL LNB in Quattro configuration and the Quattro receiver receives full Ku-Band and both H- and V-polarizations and virtually no loss from antenna to receiver via optical fiber.

Versa-Link System

The versatile Single RF channel, RF over Fiber System for LNB, BUC and more

- Cost effective
- Wideband & Multi-role
- Outdoor proof IP67
- Stackable for Multichannel & VSAT applications
- Integrated Bias Tees for LNB and BUC power
- Integrated 10 MHz inserter for LNB and BUC

Dual DC Inserter

Dual DC Inserter with DC cable for Fiber LNB

The Dual DC Inserter is mainly used for DC feed to our Fiber LNBs.

The DDCI is delivered with a 15 meters of 3 lead DC cable that allows to be used together with one PSU or with two PSUs for Redundancy.

Together with the TDK Lambda PSU it can supply one or two Fiber LNBs.

Quad-Link System

Four channel Transmitter / Receiver System

High RF and Optical performance

- 4x L-band forward channels + 10MHz return channel over a single fiber using a direct modulated 1550 nm laser and CWDM
- AGC - Automatic Gain Control and optional Fixed Gain for large antennas and Beacon applications.
- Up to 40 km link distance, depending on link budget, with very high C/N maintained.
- SMW Fiberoptics are compatible with many other manufacturer's corresponding indoor devices.
- Free Link budget calculation support available on request.

Fully Outdoor Proof, IP67

- Both the transmitter and the receiver unit packaged in a compact outdoor rugged aluminium enclosure.
- Ideal to mount on the satellite antenna or structure, without using a bulky separate outdoor enclosure.
- -40° to +80°C fully operating temp. range.
- Highly rugged push on, quick connect, Q-ODC fiber connector on both units.

Versatility

- 4 x L-band fiber link in any direction simply by swapping location of the receiver/transmitter pair.
- Carries any 290 - 3000 MHz (Opt. 50 - 2750 MHz) RF signal - Satcom, Terrestial TV, GPS, etc.
- Built in Bias-tees and 10MHz ref. diplexer.
- Available with custom options.

System Components

Power Supply
The TDK-Lambda PSU is a AC/DC PSU series recommended for SMW RF over Fiber products. Available as 15VDC or 24VDC version.

10 MHz Reference Oscillator
The SMW Outdoor proof 10 MHz Reference Oscillator provides up to ±30 ppb LO stability and low phase noise.

10 MHz Recovery Oscillator
The SMW Outdoor proof 10 MHz Recovery oscillator cleans up 10 MHz Reference Phase Noise and provides ±30 ppb LO stability.

Adjustable Gain Amplifier
Our adjustable Gain, Low power, Line Amplifier have very high IP3 and P1dB that allows installing directly after or close to the LNB. Available with F-, N- or SMA-connectors. DC, 22 kHz and 10 MHz bypass, is standard. Options on request.

Dual DC Inserter
Our Dual DC Inserter couples supplied DC power to coax outputs for a convenient way to power two fiber optic LNBs. It is delivered as standard with 15 meter DC cable

Cleaning Tool
Cleaning of Fiber optic connectors is essential to maintain trouble-free operation and full specification of RF over Fiber systems. The Fiber Connector Cleaning Tool or "Click pen" is used to clean Fiber optic ends in Q-ODC connectors.

Fiber Optic Cable

• Q-ODC to SC-APC (patch)	3, 15, 25, 50, 100 meter
• Q-ODC to LC-APC (patch)	3, 15, 25, 50, 100 meter
• Q-ODC to FC-APC (patch)	3, 15, 25, 50, 100 meter
• Q-ODC to Q-ODC (TX to RX)	50, 100, 150, 200, 300, 500, 1000 meter
• Q-ODC to E2000-APC (patch)	3, 25 meter

10 MHz Reference Oscillator with Diplexer

Very Low Phase Noise

The LREF series 10 MHz Reference Oscillator is used for control of the local oscillator in LNBs or BUCs when a very high LO stability and very low phase noise is needed.

The SMW 10 MHz Ref. oscillator gives a LO stability of ±20 ppb = ±20 x 10E-9 (ppb=parts per billion). Very Low power consumption OCXO.

10 MHz Recovery Oscillator / DC Inserter

10 MHz Recovery Oscillator enhances Phase Noise Performance

The LREC series 10 MHz Recovery oscillator is used to enhance the Phase Noise Performance of a 10 MHz Reference Signal, thus ”cleaning” a noisy incoming 10 MHz signal. Ideal for use together with LNB or BUC. L-Band loopthrough, separate DC input and dual 10 MHz outputs.

The Recovery Oscillator latches on to the incoming 10 MHz and it will not take care of stability issues of the incoming signal. Hence the feedback loop filtering characteristics is set up to give a ”cleaning effect” of 50% at 10 Hz and 100% from 100 Hz and above.
Very Low power consumption OCXO.

100 MHz External Reference and Recovery Oscillator

Next generation Satcom. Monitoring & Control. Ultra Low Phase Noise (OCXO)

This product has two software-controlled modes.
It can either be used as a 100 MHz reference source which is factory calibrated digitally, or it can be used as a recovery oscillator where it takes a 10 MHz reference signal as input and converts to a 100 MHz reference output with superb phase noise.

This allows you to use frequency converters that require 100 MHz reference signal to be used together with existing 10 MHz reference systems, distributed via coax or RF over Fiber.

The recovery mode also has a built-in fallback that put the oscillator in pre-calibrated reference mode if the input signal disappears for any reason, which provides redundancy and robustness to your reference system.

M&C monitoring and control interface

Modbus

Bias Tee / DC Inserter

Diplexer for insertion of DC with bypass of 10 MHz & 22 kHz

The LBIT series Bias-Tee is used when a external DC input is needed ie Receiver / Modem don't have DC out or the installation require an external DC feed.

10 MHz Diplexer

Diplexer for insertion of 10 MHz with bypass of 22 kHz and DC

The LDIP series L-Band / 10 MHz diplexer is used when a external 10 MHz reference signal input is needed for an LNB or BUC. Used together with SMW 10 MHz ref. oscillator or other 10 MHz signal source.

10 MHz & DC Multiplexer

Diplexer for insertion of 10 MHz and DC with bypass of 22 kHz

The LDIP series L-Band DC Inserter / 10 MHz diplexer (LNB or BUC) is used when an external 10 MHz reference signal input is needed for an LNB or BUC. Recommended to use with SMW 10 MHz ref. oscillator or another 10 MHz signal source.

Separate DC insertion (max. 1A) via connector or DC cable (pigtail).

Gain adjustable Line Amplifiers

Line amplifiers, Slope 18 – 25 dB or Flat 24 dB gain

Our gain adjustable LILA series Low power Line Amplifiers have very high IP3 and P1dB to allow to be installed direct after or close to the LNB. Available with F-, N- or SMA-connectors. DC, 22 kHz and 10 MHz bypass, is standard. Options include Separate DC power input via connector (F, N or SMA) or via cable (pigtail).

- Gain adjustable
- High IP3 and P1dB
- 22 kHz and 10 MHz bypass
- Compact and light weight
- IP67 classed
- Wide operating temperature range
- Equivalent with previous version, ILA 18-24

AGC Line Amplifier

Line amplifiers Automatic gain control 0 – 30 dB

The LILA series AGC (Automatic Gain Control) Line Amplifier 0-30 dB is intended for situations where you need a constant level output from a LNB. Due to it's very high IP3 together with the AGC it is usually possible to place the unit very close to the LNB. Available with F-, N- or SMA-connectors. DC bypass is standard. Options include Separate DC power input via connector (F, N or SMA) or via cable (pigtail).

- AGC 0-30 dB
- High IP3 and P1dB
- Compact and light weight
- Wide operating temperature range

DC Power Supply Unit

Power supply for RF over Fiber and more

The TDK Lambda PSU is a AC/DC PSU series recommended for SMW RF over Fiber products.
Standard is made for mounting indoors on a DIN rail.
Available as 15VDC or 24VDC version.
For outdoor rated (IP 67) PSU, please contact us.

Waveguide Isolators Low Loss

For Ku- and Ka-Band

Our waveguide isolator/circulator transfers RF signals in only one direction on the waveguide with very low loss. This is very useful in cases where a very low input SWR is needed or to reduce reverse direction interfering signals.

All isolators are designed and tested to work seamlessly together with Swedish Microwave products. All isolators have high operating temperature range, are waterproof and corrosion resistant for use in outdoor environments.

OMT / Depolarizer

Optional E-bend pn_200140

Swedish Microwave's OMT is used to separate two orthogonal linearly polarized signals simultaneously.

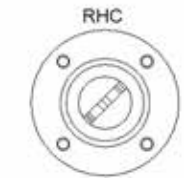
The OMT can also support circular wpolarizations with a depolarizer.

Greater than 31.5 dB isolation between the two linear polarizations is achieved.

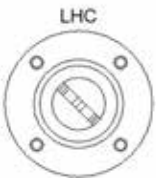
Accessories:
- E-Bend for the vertical polarization.
- Waveguide cover for H-pol port.
- Depolarizer for circular polarizations.

Depolarizer

Circular to linear polarization



RHC @ Vertical output
LHC @ Horizontal output

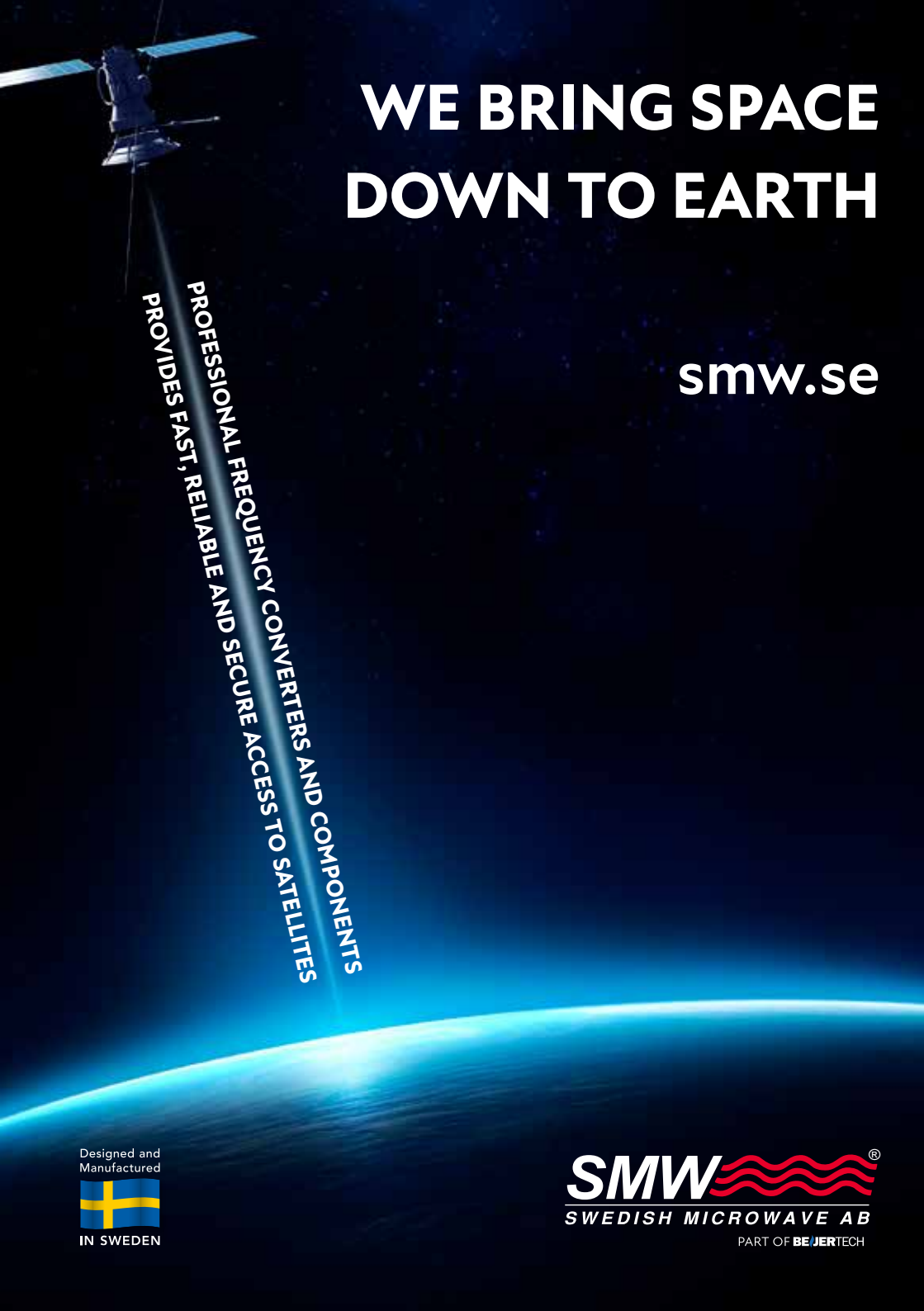


LHC @ Vertical output
RHC @ Horizontal output

The SMW depolariser is to be used together with the SMW OMT to convert from circular to linear polarisation. It has waveguide C-120 on both input and output to fit feed horn with C-120 waveguide flange.

Customize to your need

Some examples of options available for customization. Options in **blue color** are remote adjustable, if the Monitoring and Control option is enabled.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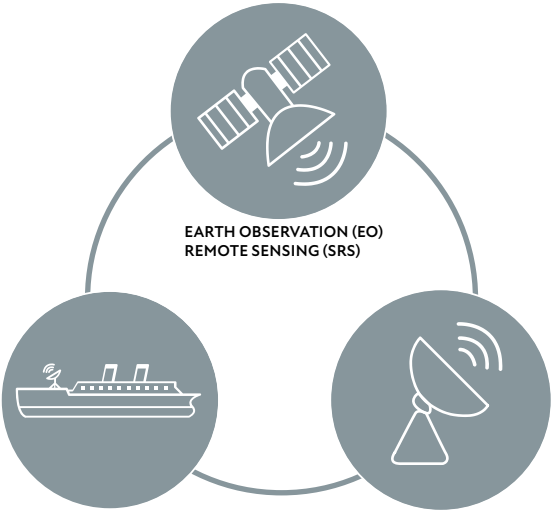
TYPICAL APPLICATIONS INCLUDE:



C2X411-003 rev2301

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Designed and Manufactured IN SWEDEN