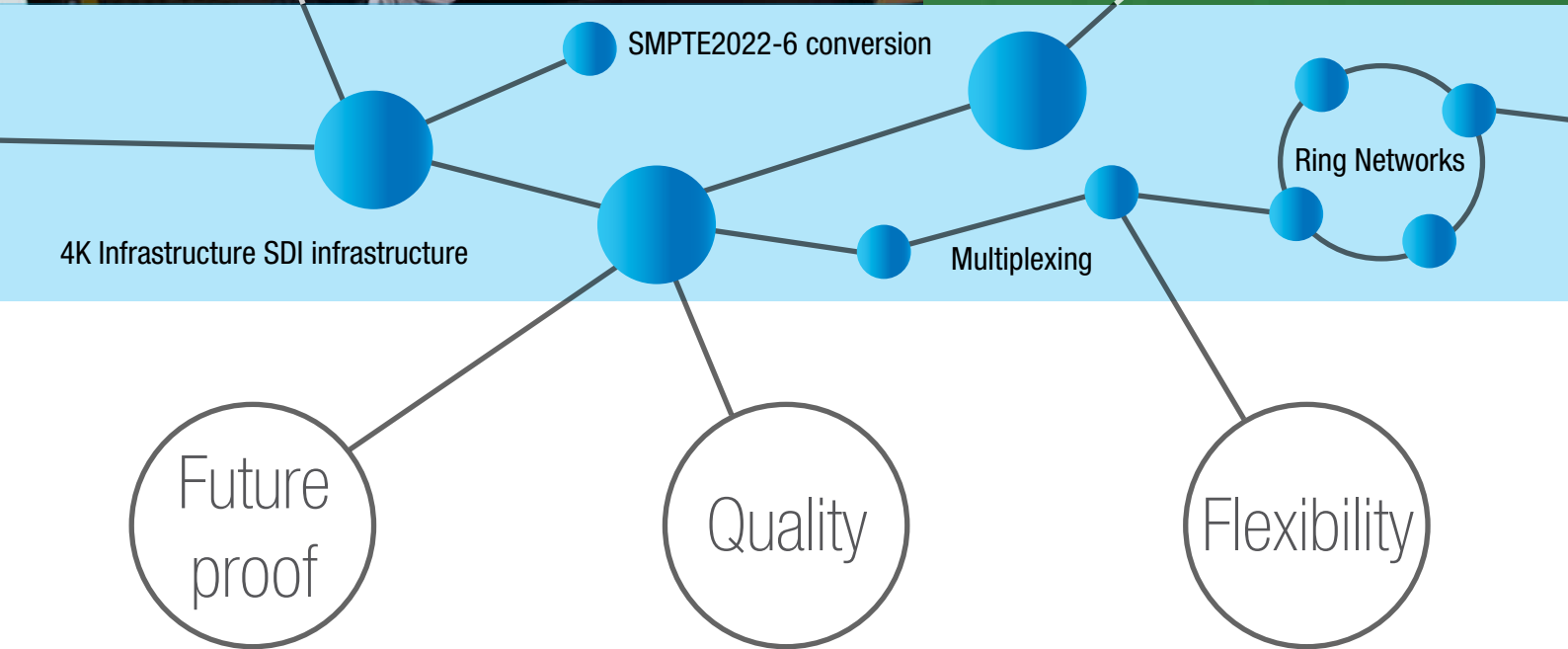
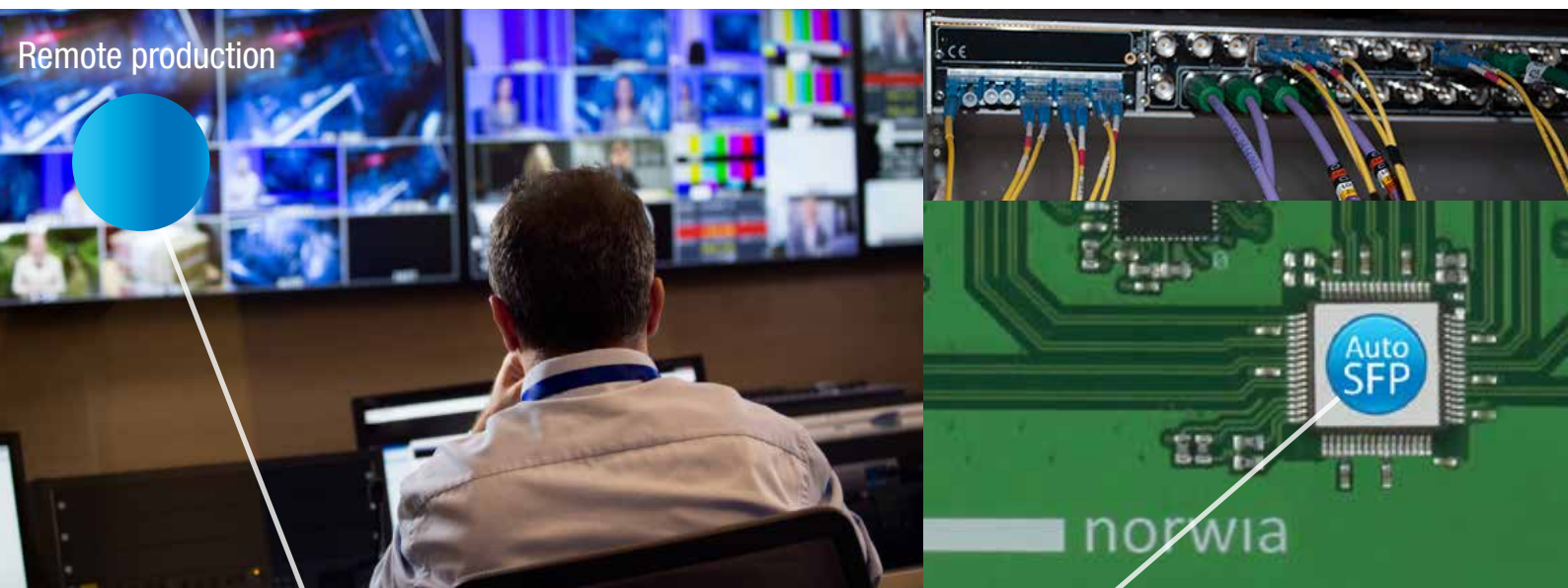


miniHUB

Optical fiber distribution platform



Norwia has decades of expertise in the broadcast industry and is the inventor of unique AutoSFP technology which advances broadcast and network fibre optic communications. The high quality, flexible multifunctional products improve reliability, provide unsurpassed flexibility while reducing cost.



Sandefjord, Norway is the headquarter for all corporate functions of Norwia. The company is owned by active shareholders.

Manufactured and Developed in Norway to preserve quality and reliability.

Solid growth ensuring stability and longevity.

Superior logistics with on time product delivery and high quality products.

Quality assurance through external certification.

(SMPTE, IEC, ITU, FCC, ATIS)

miniHUB is a format flexible, application flexible and holds the title “lowest cost of ownership on the market today”.

Engineering excellence designed into the entire miniHUB product line.

Formats supported IP SMPTE 2022-6, 4K/12G-SDI, Dual and Quad Link 4K, 3G-SDI, HD-SDI, SD-SDI, RS422, GPIO, DVB-ASI, MADI, AES Audio, Analogue Video, HDMI input, HDMI output, 1/10 Gbit Ethernet, Intercom AES and Sony Optical /Electrical remote CCU.



compact miniHUB-1RU-2-0



Extreme Temperature versions of the miniHUB are available for abnormal operating conditions including Telecommunications and outdoor use.

AutoSFP® technology is an integrated part of the core phabrix of the miniHUB concept and can only be found in Norwia products.



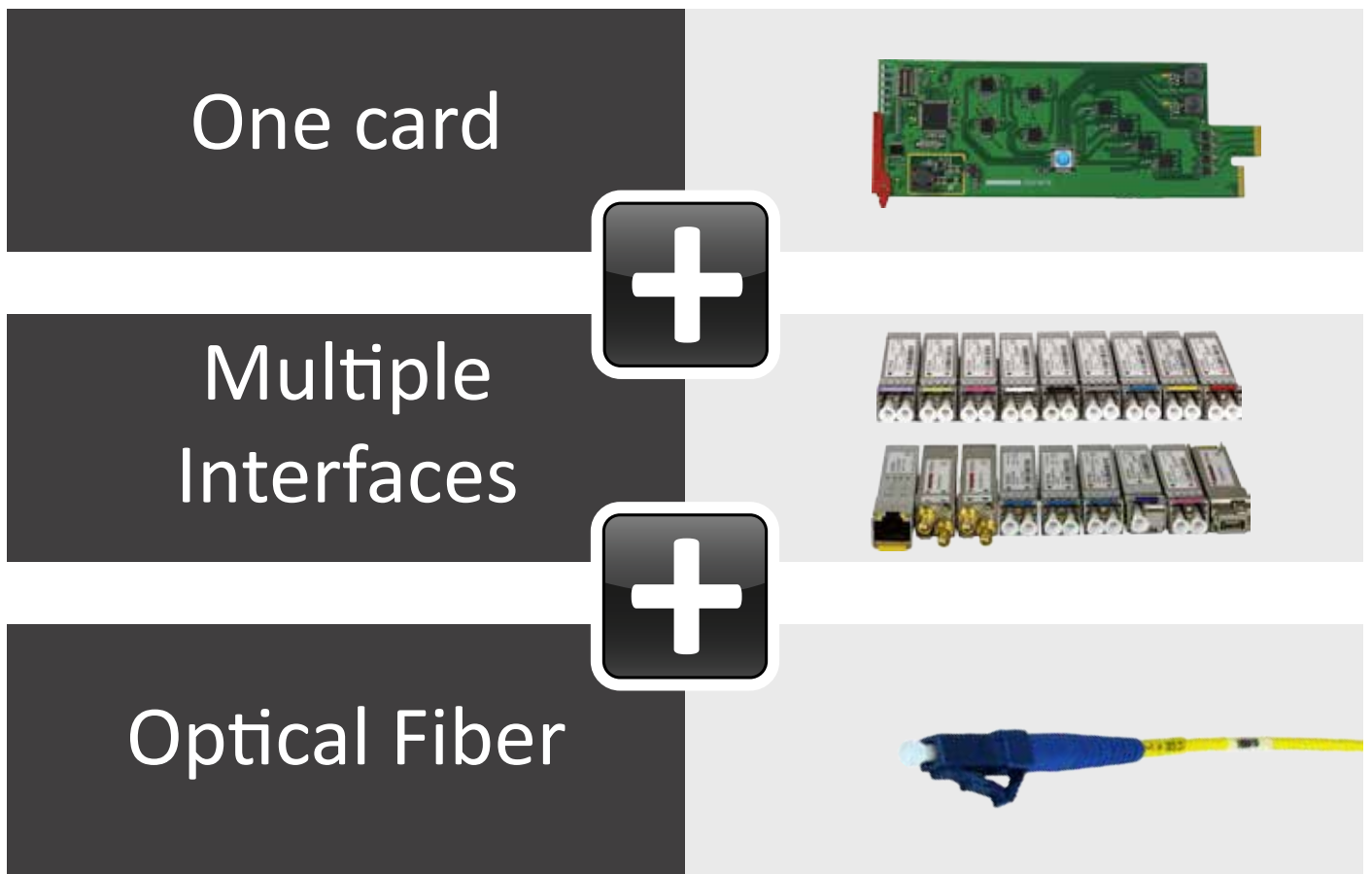
Optical Technology

Think of the Optical interface card (OC-4B-SDI) as being a one stop optical shop, and by using a simple key (SFP) you can unlock the card to be anyone of the more then 200 combinations that are available to you.



Insert a dual optical transmitter SFP, then you will have a 2 channel transmission card. Take the same Optical interface card and remove the dual optical transmitter SFP and replace this with a dual channel receiver, then Norwia's AutoSFP® technology will automatically setup the Optical interface card as a dual channel optical receiver.

Norwia makes its so simple and so easy!



THE power of choice with flexibility not seen before in this next generation optical distribution platform.

giving value ...

Mass signal distribution

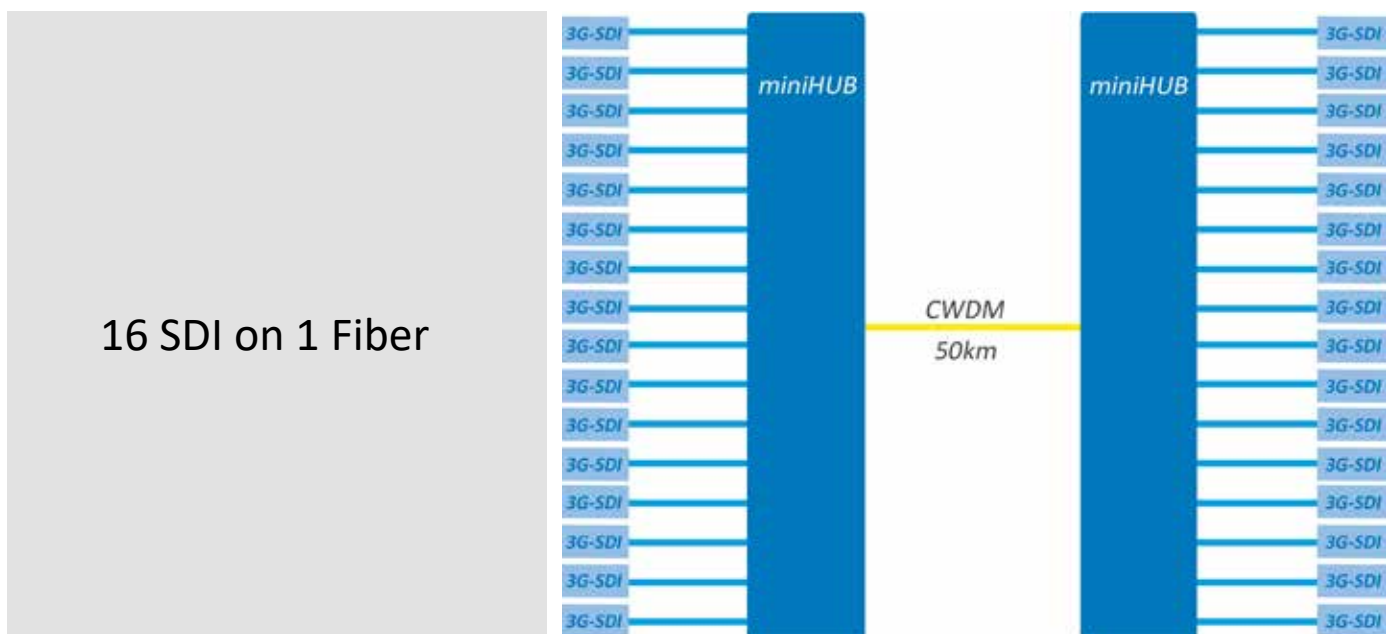
miniHUB has the best density for 'Frame/Card Based systems' on the market today. Compared to general 2RU system miniHUB can provide 32 reclocked point to point (P to P) 3G-SDI signals.

Compared to Compact based systems you also gain the benefits of having mixed signal formats, easy maintenance and quick replacement of spares. Also adding Norwia's exclusive AutoSFP® technology the customer gains a flexible and easy way of distributing signal where users can change signal direction in the matter of seconds.



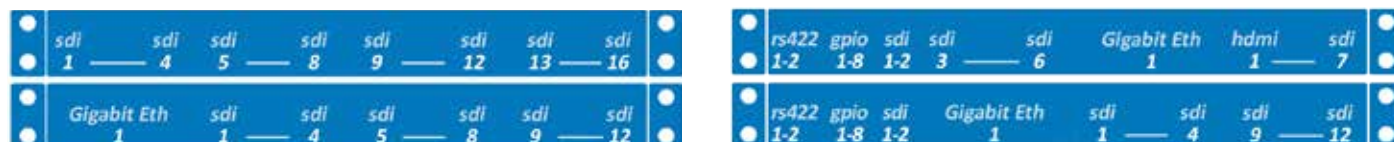
CWDM signal distribution

CWDM or Course Wave Division Multiplexing in the MiniHUB platform can have up to 18 channel but more commonly 16 channels is used within the miniHUB CWDM system. CWDM brings signal density when customers don't have the necessary fiber count or maybe the distance is too large and compared to fiber cost makes CWDM a viable solution. The miniHUB system delivers un-compressed signal 'Bit for bit' quality with virtually zero latency.

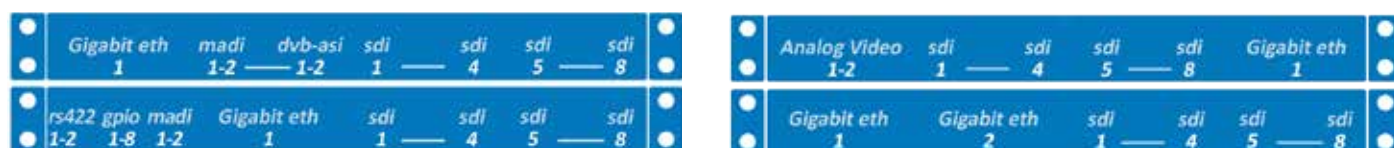


CWDM signal distribution with multiple formats

Norwia's miniHUB Platform can be adapted to perform different signal format without removing the main optical cards. The main optical cards can be removed from the front of the unit for maintenance purposes. Signal configuration can be changed on the fly by changing the SFP types and letting Norwia's AutoSFP® technology take care of the configuration automatically. Below is just a few of the many different configurations that can be achieved so that your investment can be used more frequently or changed later on in your organizations development.



Same card, just change the SFP and let AutoSFP® do the work!



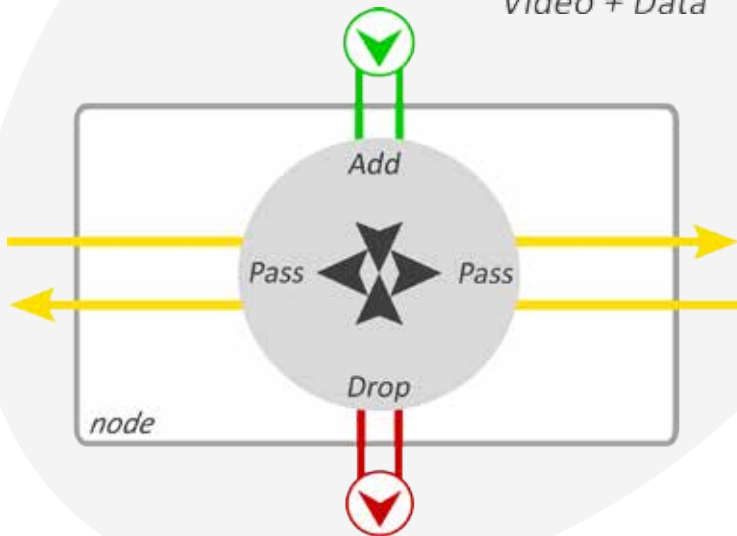
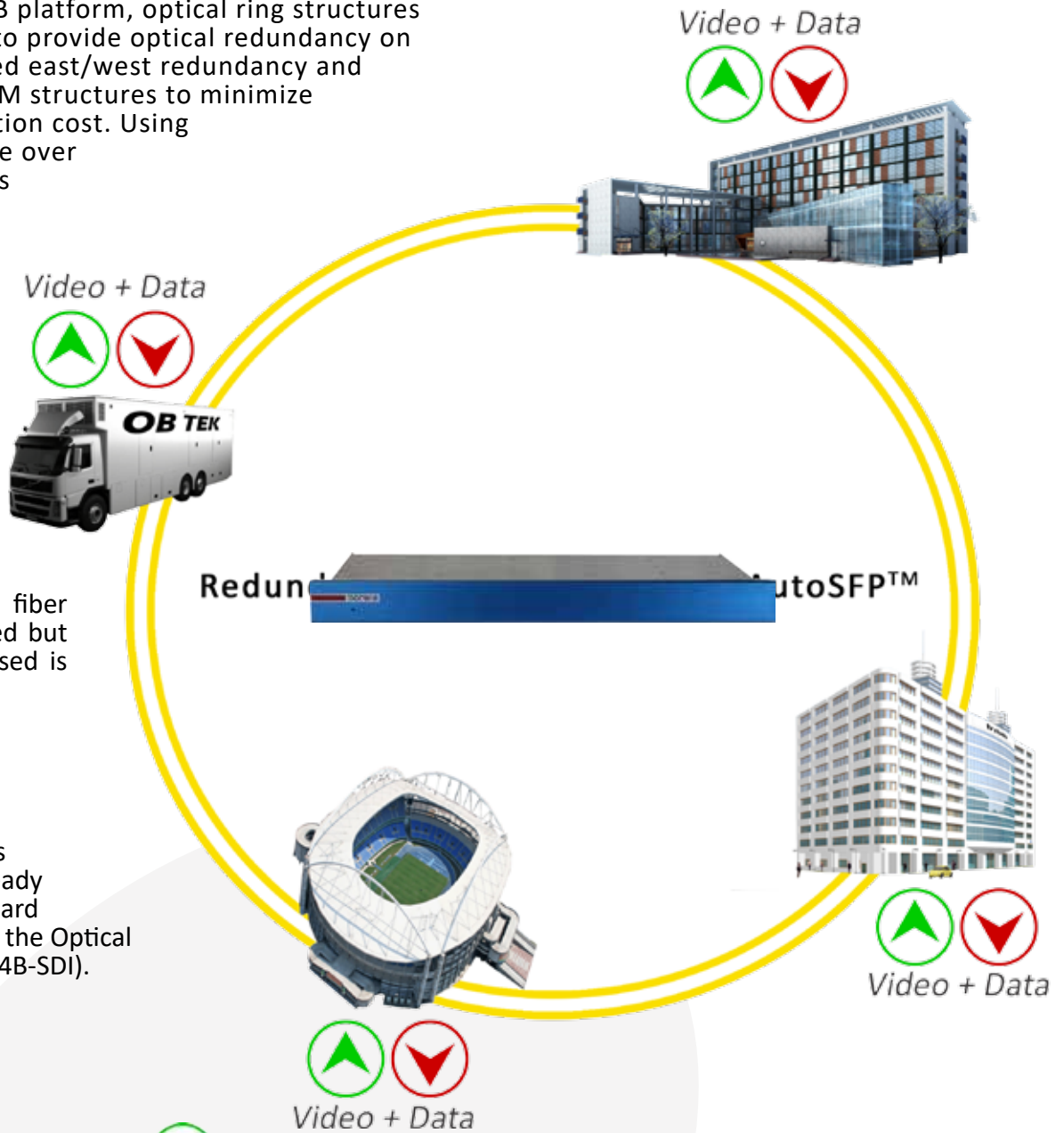
Fiber Rings

Add, Drop and Pass circuits can be designed and implemented for more complex applications. Metro ring systems, Inter building networks, Stadiums and Outside Broadcast are perfect applications for ring based networks using the Norwia miniHUB platform.

With the miniHUB platform, optical ring structures can be designed to provide optical redundancy on two fiber, so called east/west redundancy and incorporate CWDM structures to minimize fiber and installation cost. Using the optical change over function networks can be easily managed in case of fiber breakage.

Any amount of fiber circuits can be used but most commonly used is a fiber pair.

The Add/Drop/Pass functionality is already built into the standard product offering of the Optical interface card (OC-4B-SDI).

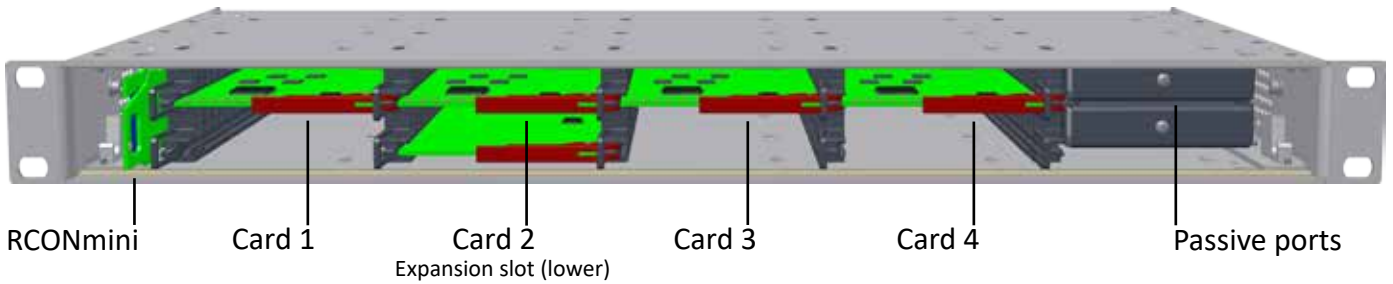


The miniHUB node will allow you to add signals or drop signals coming from another node in the ring. You can also decide to just pass signal through a node if required.

Remote production can be achieved over the same miniHUB optical distribution system.
Consult the "Remote Production" brochure.

giving value ...

miniHUB-1RU-4-2



Optical Interface card (OC-4B-SDI)

This is the most versatile card on the market today for fiber optical distribution, from point to point links to optical distribution, optical transponding, add/drop networking, Ethernet, RS422, GPIO's and optical/electrical changeover. This card is a multipurpose tool made for any outside venue broadcaster, fiber network operator or broadcast production station.



The Optical interface card can be configured in seconds for new applications by Norwia's unique AutoSFP® functionality, which makes this an uniquely innovative product.

Over 200 combination in one card that are easily adaptable out in the field makes the miniHUB's optical interface card a truly remarkable product that gives value day in and day out!

AutoSFP® technology from Norwia is integrated into the optical interface card hardware, Software and our range of SFP's. This combination provides a very powerful platform for system design. It also give an intuitive and EASY automatic way of setting the unit up for a particular operation. This innovation provides immense cost saving to users and is unique to Norwia.

Card Locking system

Click & Go card locking is a secure and sure way of knowing that your signal path will not be interrupted by cards accidentally slipping during transportation or coming loose over time. The "Click" sound is heard once the card is securely positioned.



Web and data interface (RCONmini)

RCONmini is the web and data interface for the miniHUB system.

RCONmini comes free with the miniHUB frame and provides a robust control and monitoring platform independent of the OC-4B-SDI operations. Software upgrades are also free.

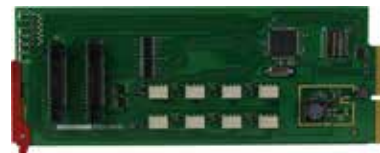


SNMP

The miniHUB platform is SNMP enabled via the RCONmini. SNMP comes as a integrated function in all miniHUB frames and is also available for users that have existing systems. A simple no cost upgrade is available on RCONmini.

Expansion Slot

miniHUB has one slot for special applications. This slot is located under Card 2 in the miniHUB-1RU-4-2 subrack and when using the EX-8B-422 provides 2 x RS422 and 8 GPI's or 8 GPO's to the optical interface cards (OC-4B-SDI) in the upper card slot one. The expansion slot is an unique way of interfacing signals onto a fiber connections.



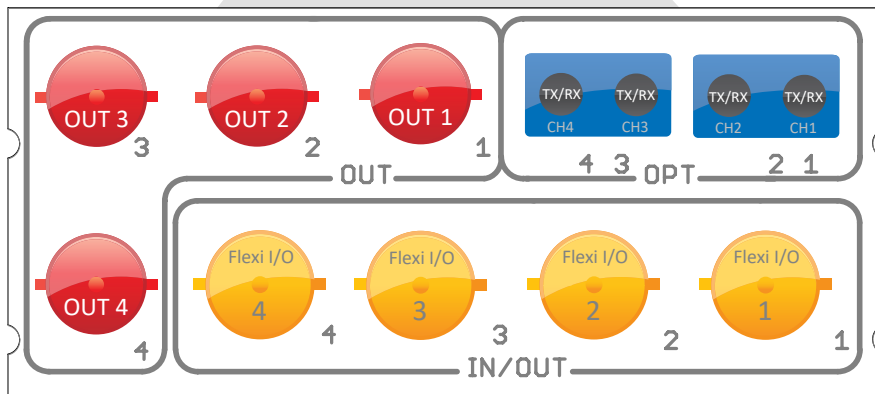
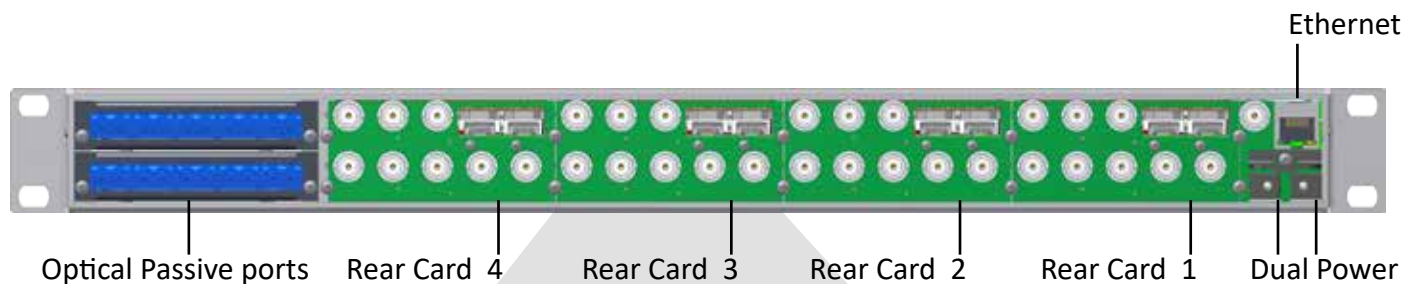
The EX-8B-422 card can be also optioned for TCIP transfer through the RCONmini for GPIO connections.

Optical Changeover

The Optical changeover card comes in three choices, 2x1, 2x2 and a 2x1 with optical signal level detection.

The changover card can be used for redundancy in CWDM systems or for protecting fiber circuits in a by-pass mode.





Optical passive modules

The miniHUB 1RU-4-2 Frame has options for 2 additional optical passive modules that extend the possibilities of the platform by giving the user the ability of adding multiple 4 channel CWDM filters or 2, 8 channel CWDM modules or an 18 channel filter.

Other passive optical products can be inserted to give even more flexibility to the miniHUB platform, these include WDM and Optical splitters.

Change your point to point Norwia fiber system into a CWDM system by adding CWDM SFP's and a CWDM multiplexer while keeping the rest of your investment. 4 & 8/16/18 channel systems available.



Addition to the product line is Norwia's Ultra low loss CWDM multiplexer. The Ultra low loss multiplexer is perfect for extended distance application or high loss fiber circuits.

Norwia provides a full suite of multiplexers including 18 channel version and multi-mode version for specialized applications.

Power Supplies

A robust power supply solution has been designed into the miniHUB system to give ultimate flexibility, stability and reliability to critical fiber networks.

All miniHUB systems include a single external supply with the option of a second supply. One supply is enough for a fully populated frame to operate while still running at 70% of its capacity.

Two supply inputs are accessible from the rear of the unit with each input totally independent in case of short circuit. A large range of +12Vdc to +24Vdc is allowed so users can choose their own power plan. This could be a DC battery supply or a common plant DC supply.

Optional a rackmountable frame is available for the external supplies.



Also supplied is a cable retention bracket to make sure the power cable is not disconnected during operation accidentally and LED power indication from the front of the miniHUB subrack.



S F P O p t i o n s

Norwia has a wide range of SFP's that have undergone extensive selection and testing procedures. Norwia SFP's are selected for their performance and price level to give the best possible solution for your critical applications. All Norwia SFP's have AutoSFP® technology built in.

All Norwia SFP'S have passed a rigorous quality control process that includes measurement and documentation procedures to ensure quality standards that are at the highest possible levels.



HDMI INPUT HDMI OUTPUT

Application: HDMI Input SFP for encoding onto optical fiber for distribution via a fiber circuit. The HDMI output SFP can be used for Monitoring via a cost effective high definition PC monitor for proof monitoring or sending HDMI formatted signals via a fiber circuit.

**NV30-HDMI-IN
NV30-HDMI-OUT**

ANALOG VIDEO INPUT ANALOG VIDEO OUTPUT

Application: The Dual SD-SDI to analog composite video convertor for delivering analog output from a fiber circuit. Dual Analog composite video to SD-SDI video convertor for distribution over a fiber circuit. Analog Standards include NTSC M, NTSC J, NTSC 4.43, PAL B/G/H/I/D, PAL M, PAL N, PAL 60.

**NV03-COMP-2-IN
NV03-COMP-2-OUT**

GIGABIT ETHERNET

Application: Gigabit ethernet distribution over optical fiber. Paired with an optical transceiver distribution can be over one fiber using the BiDi SFP or two separate fibers using a transceiver.

ND12-GBE1000

MADI OPTICAL

Application: Conversion between multimode optical MADI sources to incorporate into the correct level matching in readiness for inclusion into a Single mode fiber system or frequency shifting to a CWDM system.

ND01-T1300-R30-MM

BiDi OPTICAL

Application: Built in WDM filter allows for Gigabit ethernet distribution over 1 fiber. Paired with ND12-T1550-R20-BiDi for WDM operation.

ND12-T1310-R20-BiDi

DUAL OPTICAL RECEIVER

Application: Dual optical receive SFP for receiver two channel from a point to point or CWDM system. (CWDM requires CWDM TX SFP's and Multiplexers) Also available in a single channel version.

NV30-R20-R20

DUAL OPTICAL TRANSMITTER

Application: Dual TX SFP for point to point optical systems. Also available in a single channel version.

NV30-T1310-T1310-10

OPTICAL TRANSCEIVER

Application: Two channel SFP including TX and RX optical function in one SFP package. Good when you need bi-directional distribution.

NV30-T1310-R20-10

CWDM DUAL OPTICAL TRANSMITTER

Application: Dual CWDM TX SFP for CWDM based optical systems. Can be used for point to point systems. Choose from 9 different pairs of frequencies.

NV30-CXXXX-CXXXX-40

CWDM TRANSCEIVER

Application: CWDM TX/RX SFP for CWDM based optical systems. Can be used for point to point systems. Choose from 18 different frequencies.

NV30-CXXXX-R20

OTHER SPECIALIZED SFP'S

Norwia also provide specialized SFP's on a project application basis, call for more information. IP SMPTE2022-6, RS422, GPO's & GPI's are also available for interface onto Optical distribution via the EX-8B-422 card.

Optical Passive Options

Norwia's point to point system can be upgraded by just replacing the transmitter SFP's to CWDM SFP's plus the appropriate multiplexer. This has not been seen in the optical distribution market before!

The ease of use and flexible format features make the miniHUB platform the best choice for all advanced installations.

Simplify with easier
cable installation

Multiple uncompressed
signals on 1 fiber

Using fiber reduces
production cost

WDM 2 CHANNEL

Application: Combines two signals onto one fiber and double the usability of your fiber system. The WDM 2 channel is provided in 1 filter package, but also is available in 2 and 3 filters per package.

WDM-2-1310-1550-1

CWDM 4 CHANNEL

Application: Combines 4 channels onto one fiber for smaller multiplexed applications. All CWDM filters are supplied in matched pairs. The 4 channel CWDM filter can be expanded by the Express port to 12 channels via a 8 channel filter.

CWDM-4E-1550-1610

CWDM 8 CHANNEL

Application: Combines 8 channels onto one fiber with ability to expand to 16 channels via the Express port. This module can also be use to combine 8 optical signals onto one fiber with the addition of the 1310 Express port for a legacy fiber systems. This module can also be provided in a Multimode version as well. All CWDM filters are supplied in matched pairs.

CWDM-8E-1470-1610

CWDM 16 CHANNEL

Application: Combines 16 optical signals onto one fiber with two modules via the express port.

CWDM-8E-1470-1610

CWDM-8E-1270-1410

CWDM 8 CHANNEL ULTRA LOW LOSS

Application: Combines 8 optical signals onto one fiber. This multiplexer is a high quality low loss filter and used when extra reach is required. This module can also be use to combine 8 optical signals onto one fiber with the addition of a 1310 Express port for a legacy fiber systems.

CWDM-8ULE-1470-1610

CWDM 16 CHANNEL ULTRA LOW LOSS

Application: Combines 16 optical signals onto one fiber with two modules via the express port when extra reach is required.

CWDM-8ULE-1470-1610

CWDM-8ULE-1270-1410

CWDM 18 CHANNEL

Application: Combines 18 optical signals onto one fiber for maximum channel count for CWDM systems.

CWDM-18-1270-1610

OPTICAL SPLITTER (2 WAY & 4 WAY)

Application: Split your optical signal in two direction with the OS-2-50-3, Package include 3 x 2 way splitters or split your optical signal in four direction with the OS-4-25-2, Package includes 2 x 4 way splitters.

OS-2-50-3 & OS-4-25-2

FIBER PATCH CABLES

Application: High quality class C2 fiber patch cable kits for CWDM systems that conforms to IEC 61655-1 classification.



Norwia's CWDM solution is the most cost effective frame based system on the market today. This coupled with quality and next generation technology, makes the miniHUB system a best of breed product that is used world wide.

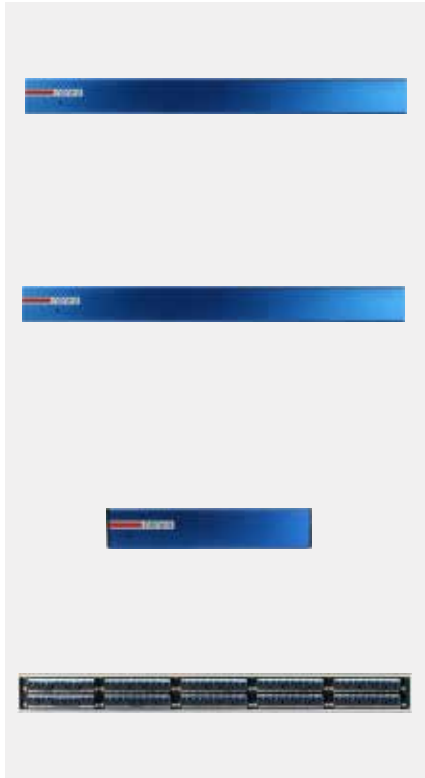
giving value ...

Norwia's frame and power options are designed to suit the needs of today's broadcasters and telecommunication operators.

Flexibility was also a factor in the design of the frame and power system for the miniHUB and delivers a professional solution for mission critical applications.

All frames can be powered redundantly and independently to allow for fault proof operation and easy change out. Multiple solutions are possible from battery to 3rd party solutions and the miniHUB's own robust solution.

Frame options



miniHUB

This miniHUB Frame can mount 4 optical interface cards (OC-4B-SDI), 2 passive modules plus 1 expansion slot card solution. Dual power inputs that delivery a wide range of +12 to +24V dc on each input. Frame includes RCONmini for control, upgrades and SNMP functions.

miniHUB-1RU-4-2

miniHUB extended temperature

This miniHUB Frame is the Extended temperature range product. All point to point applications are guaranteed at -40 to +65 Deg C. 4 optical interface cards (OC-4B-SDI), 2 passive modules plus 1 expansion slot card solution. Dual power inputs that delivery a wide range of +12 to +24V dc on each input. Frame includes RCONmini for control, upgrades and SNMP functions. Anti-corrosion protection is included for extreme environments and conforms to ATIS-0600010.01.2008 temperature specifications.

miniHUB-1RU-4-2

miniHUB compact + 8ch CWDM miniHUB compact

miniHUB compact is designed and built for 're-engineered' applications. Pelicase and non-rack mountable cases are ideal for the miniHUB compact. A maximum of 2 x optical interface cards (OC-4B-SDI) are allowed and includes the RCONmini for control, upgrades and SNMP functions. 8ch CWDM version now avialable.

miniHUB-1RU-2-0

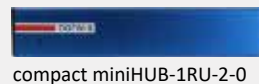
miniHUB passive

The passive rack mount unit is designed for mounting a large amount of WDM/CWDM and 2/4 way splitters in to a compact space. A maximum of 10 passive slots are available.

miniHUB-1RU-0-10

Frames

	OC-4B-SDI Cards	Passive Slots	Expansion Slots
miniHUB-1RU-4-2	4	2	1
compact miniHUB-1RU-2-0	2	0	1
miniHUB-1RU-0-10	0	10	0



Power options



Power External

Professional grade 24V dc power supply for use with the miniHUB optical distribution platform. 100,000 hrs MTBF and certified to all relevant specifications. 90-264V ac with 60W capacity.

24 volt

Power Subrack

1 RU power supply frame for the 10653 24volt power supplies. A maximum of 6 supply can be mounted in a sturdy frame that includes mechanisms for DC and AC power cable clamping. Power supply LED are readable from the front of the frame via optical means.

1 RU

Other Power Option

The miniHUB frame has standard 24volt inputs that are redundant. Because of this design there are a wide range of 3rd party external options at every level available for the users of miniHUB. Enquire with Norwia sales for options.

Technical Data Sheets

A comprehensive selection of technical data sheets for SFP, Optical interface card, expansion slots cards, Multiplexers and power options can be found on the Norwia website.



Customer Experience Documents

Customer Experience (CE Documents) documents are written from the customers point of view. Read how miniHUB has given huge benefits to all of its users and why the miniHUB is the most preferred optical distribution system in the world.

Technical Solution Documents

Technical Solution (TS Documents) documents include a technical layout of the miniHUB optical distribution system in a particular configuration that solve some of todays challenges.



Easy Start guide

New users that require a quick start introduction into the Norwia optical distribution system should read this for the most important information. The EASY setup of the miniHUB is due to Norwia's new technology called AutoSFP™.

Remote production brochure

miniHUB opens up some exciting possibilities into the full remote production over fiber optics. This proven technology is already in use today and gives enormous benefits to broadcasters.

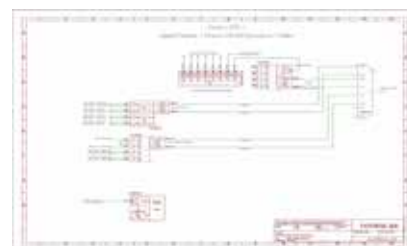


Press Releases

Success stories and product development news can be found on Norwia's website. Read about the innovative miniHUB platform and how users are solving their challenges with modern infrastructures.

Solution Architects

Norwia has many years of experience with Optical fiber distribution systems. Contact us today and we will show you how to solve your challenges with the innovative miniHUB platform.



<http://www.norwia.no/buynow.html>
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Contact us

Norwia or one of our distribution network dealers can help you via email or phone on how we can solve the challenges that you are fronted with today. Click the 'Buy Now' tab on Norwia's website.

Norwia holds unique core technologies such as AutoSFP® which is incorporated into the next generation miniHUB optical distribution platform.



miniHUB is a Format flexible, Application flexible and holds the title “lowest cost of ownership on the market today”

Visit www.norwia.no for more information on the miniHUB optical distribution system, representative around the world, news on new product releases, product data sheets, customers stories and technical solutions.

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