DVBus 8350-16 and 8350-24

Multiplexer and demultiplexer assemblies for 16-24 video channels, with bidirectional audio and data

USER MANUAL

1. Description

DVBus 8350 systems transmit 10-bit digitized video signals unidirectionally over one optical fibre in point-to-point configurations; additionally, they will bidirectionally transmit audio, data and contact closure signals. The systems feature a modular construction, with each video module handling 8 signals; the maximum attainable number of video signals is 56; DVBus 8350 systems with 8, or with 32-56 video channels, are described in separate manuals. You will find a description of the data facilities in the DVBus Data Manual.

Each multiplexer/demultiplexer module pair uses one optical fibre channel or pipe, running in parallel with others sharing the same optical fibre, with separate access (transmitter) and exit/return (receiver) fibres. Therefore, a DVBus 8350 system may be regarded as a number of superimposed point-to-point links sharing a common fibre segment. A minimum optical attenuation is required (see table 4). Return data use a separate wavelength.
All optical and power supply equipment needed for a given configuration is built into the packages. DVBus 8350 systems with 16 or 24 video channels come in the form of 19", 3 HU power supply cabinets (MC 11 EB-2) with 7TE and 14TE (8050 and 8350) components installed; only optical fibres (included), power supply cords (included) and video signal cabling need to be connected to a get a system working (see section 3 and the Appendix).
Table 1 below lists the standard 16-24 video channel DVBus 8350 systems available, with their building blocks. For extended ranges, a high-sensitivity RX model (/HS option) is available.

The MC 11 EB-2 power supply cabinet allows for SNM management, for instance using the SNA (SmartNet Agent). For a description of the power supply cabinets themselves, please refer to the MC 11 EB-2 manual.

2. Indicators and system connections

The external connection facilities and indicators on the DVBus 8350 TX (transmitter assemblies) and RX (receiver assemblies) are listed in table 2.

The TX front panels also indicate the optical channel used by each transmitter. Return data will use channel f.
OFC units carry type/model identification on their cassette labels.

DVBus 8050&8350 TX units			
(SC connector)			Optical video out
(BNC connector) 1-8			Composite video in
DVBus 8050&8350 RX units			
(SC connector)			Optical video in
(BNC connector) 1-8			Composite video out
DVBus 8350 TX units			
(SC connector)			Optical data return in
DVBus 8350 RX units			
(SC connector)			Optical data return out
Data features on 8350 TX and RX units			
see DVBus Data Manual			
Status indicator LEDs			
***SYNC**			
	(red)		No sync from opt. in or no internal sync
on 8350:	(orange)		No sync on remote
	(green)		All sync OK
[on 8050 TX:	(red)		Unit faulty]
***DC**	(green)		DC power good
***NV**	(red)		TX: no video on input RX: no video on output
OFC M and D			
	Port	*Wavelength*	
	1	c	(24-channel)
	2	d	(16&24-channel)
	3	e	(16&24-channel)
	4	f	(16&24-channel)
COMMON			common optical input or output (all wavelengths)
EB-2			
see MC 11 EB-2 manual			

Table 2. DVBus 8350-16-24 system front panel features. Return data use channel f (in standard systems).

Type/no of video chans.	No. of optical sublinks	Optical transmitters (Tx) used	Other equipment	Figures (in Appendix)
16	2	8050 Td; 8350 Te (8350 Te receives f)	8050 RX[/HS], 8350 Rf [/HS], 2x MC 11 EB-2, OFC4-M, OFC4-D	1
24	3	8050 Tc,Td; 8350 Te (8350 Te receives f)	2x8050 RX[/HS], 8350 Rf [/HS], 2x MC 11 EB-2, OFC4-M, OFC4-D	2

Table 1. DVBus 8350-16/24 components; []= optional. For optical wiring see the relevant figures in the Appendix.

3. Installation

Figures 1-2 (Appendix) show the internal optical cabling for DVBus 8350-16 and -24 assemblies.

- Install the DVBus assemblies in 19" racks.
- *To avoid eye injury, please connect all optical cabling before powering the as follows:*
- Install the optical interconnection cabling supplied as shown in the relevant figures mentioned in table 1 (figures in Appendix).
- Connect optical cabling for the optical link to the COMMON I/O ports on the OFC units.
- Connect the power supply cords supplied to the units and to power outlets.

Please manage slack optical cable carefully, so as to avoid mechanical load on the optical connectors.

The multiplexer system now should be active, as shown by DC LEDs glowing green (they may initially flash for a short period of time). The LEDs should appear as follows (table 3):

LED	***Color***
DC	green
SYNC TX, RX	green
NV	red: no good video signal, off: good signal

Table 3. LEDs with modules operating correctly.

SYNC LEDs glowing green indicate correct synchronization information in the optical signal. If a DVBus 8050 TX SYNC LED glows red, that unit is faulty.
Data/audio/contact closure interface cabling and configuration details will be found in the DVBus Data Manual.

4. Technical Specifications (video)

Table 4 below lists video/optical and general specifications of DVBus 8350 systems and modules. Data specifications will be found in the DVBus Data Manual.

Property		Value	
Optical			
Wavelengths			
	8350-16 d,e,f	1530, 1550, 1570	nm
	8350-24 c,d,e,f	1510, 1530, 1550, 1570	nm
No. of fibres, fibre type		1, SM	
Optical budget		19 (/HS: 27)	dB
Output power TX, RX mod.		+3	dBm
Min. input power RX module		-20 (/HS: -28)	dBm
Min. input power 8350 TX m.		-28	dBm
Max. input power RX module		-1 (/HS: -10)	dBm
OFC-4 attenuation		<2	dB
Minimum link attenuation		4-2*Att_{OFC}	dB
		/HS:13-2*Att_{OFC}	dB
Video			
No. of channels		16 or 24	
Video format		PAL/SECAM/NTSC	
In-/output level		1 (±3 dB)	Vpp
DC restore(clamping)		On or off (software selectable)	
Bandwidth (-3 dB)		6	MHz
Sampling res @ freq.		10 bit @13.5 MHz (per channel)	
Differential gain		1	%
Differential phase		1	°
Group delay		<10	ns
SNR (wtd.)		>67	dB
Environmental and Safety			
Operating temp.		-40 to +74	°C
Full perf. temp.		-15 to +55	°C
Relative humidity		< 95 % (no condensation)	
Electrical safety		AL / IEC / EN 60950-1	
UL recognition file		E242498	
Laser safety		IEC 60825-1, IEC 60825-2	
EMC immunity		EN 55024, EN 50130-4, EN 61000-6-2	
EMC emission		EN 55022 (Class B) FCC 47 CFR 15 (Class B)	
Electrical			
Supply voltages modules		+15 (/HS: +15/- 15)	V_{DC}
Total power consumption		see MC 11 EB-2 manual	
Mechanical			
Optical connectors		SC/APC (others optional)	
Video connectors (16, 24x)		BNC 75 Ω	
Dimensions (hxwxd)		see MC 11 EB-2 manual	
Weight (approx.) per side		2 + 0.8*n *)	kg

*) n= number of TX or RX video modules

Table 4. DVBus 8350-16/24 video specifications

5. Safety, EMC, ESD

General

The safety information contained in this section, and on other pages of this manual, must be observed whenever this unit is operated, serviced, or repaired. Failure to comply with any precaution, warning, or instruction noted in the manual is in violation of the standards of design, manufacture, and intended use of the unit.

Installation, adjustment, maintenance and repair of this equipment are to be performed by trained personnel aware of the hazards involved. For correct and safe use of the equipment and in order to keep the equipment in a safe condition, it is essential that both operating and servicing personnel follow standard safety procedures in addition to the safety precautions and warnings specified in this manual, and that this unit be installed in locations accessible to trained service personnel only.

Siqura assumes no liability for the customer's failure to comply with any of these safety requirements.

UL/IEC/EN 60950-1: General safety requirements

The equipment described in this manual has been designed and tested according to the UL/IEC/EN 60950-1 safety requirements.

If there is any doubt regarding the safety of the equipment, do not put it into operation. This might be the case when the equipment shows physical damage or is stressed beyond tolerable limits (e.g. during storage and transportation).

Before opening the equipment, disconnect it from all power sources. The equipment must be powered by a SELV[*)] power supply.

When this unit is operated in extremely elevated temperature conditions, it is possible for internal and external metal surfaces to become extremely hot.

Optical safety

This optical equipment contains Class 1M lasers or LEDs and has been designed and tested to meet IEC 60825-1:1993+A1+A2 and IEC 60825-2:2004 safety class 1M requirements.

Optical equipment presents potential hazards to testing and servicing personnel owing to high levels of optical radiation. When using magnifying optical instruments, avoid looking directly into the output of an operating transmitter or into the end of a fibre connected to an operating transmitter, or there will be a risk of permanent eye damage**.** Precautions should be taken to prevent exposure to optical radiation when the unit is removed from its enclosure or when the fiber is disconnected from the unit. The optical radiation is invisible to the eye.

Use of controls or adjustments or procedures other than those specified herein may result in hazardous radiation exposure.

The installer is responsible for ensuring that the label depicted below (background: yellow; border and text: black) is present in the restricted locations where this equipment is installed.

The locations of all optical connections are listed in the Indications and Connectors section of this manual.

Optical outputs and wavelengths are listed in the Technical Specifications section of this manual.

Hazard Level 1M

EMC

Warning: Operation of this equipment in a residential environment could cause radio interference.

This device has been tested and found to meet the CE regulations relating to EMC and complies with the limits for a Class A device, pursuant to Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation. These limits are designed to provide reasonable protection against interference to radio communications in any installation. The equipment generates, uses, and can radiate radio frequency energy; improper use or special circumstances may cause interference to other equipment or a performance decrease due to interference radiated by other equipment. In such cases, the user will have to take appropriate measures to reduce such interactions between this and other equipment.

Note that the warning above does not apply to TKH Security products which comply with the limits for a Class B device. For product-specific details, refer to the EU Declaration of Conformity.

Any interruption of the shielding inside or outside the equipment could make the equipment more prone to fail EMC requirements.

To ensure EMC compliance of the equipment, use shielded cables for all signal cables including Ethernet, such as CAT5E SF/UTP or better, as defined in ISO IEC 11801. For power cables, unshielded three wire cable (2p + PE) is acceptable Ensure that *all* electrically connected components are carefully earthed and protected against surges (high voltage transients caused by switching or lightning).

ESD

Electrostatic discharge (ESD) can damage or destroy electronic components. Proper precautions should be taken against ESD when opening the equipment.

[*)] SELV: conforming to IEC 60950-1, <60V_{DC} output, output voltage galvanically isolated from mains. All power supplies or power supply cabinets available from Siqura comply with these SELV requirements.

6. Product disposal

Recycling

The unit contains valuable materials which qualify for recycling. In the interest of protecting the natural environment, properly recycling the unit at the end of its service life is imperative.

Accessories

- 2x power cords for power supply cabinets
- 2x2 (-16), or 2x3 (-24) SM optical patch cords

APPENDIX. DVBUS 8350-16 and -24 TX and RX optical connections

Figure 1. DVBus 8350-16 TX (left) and RX (right)

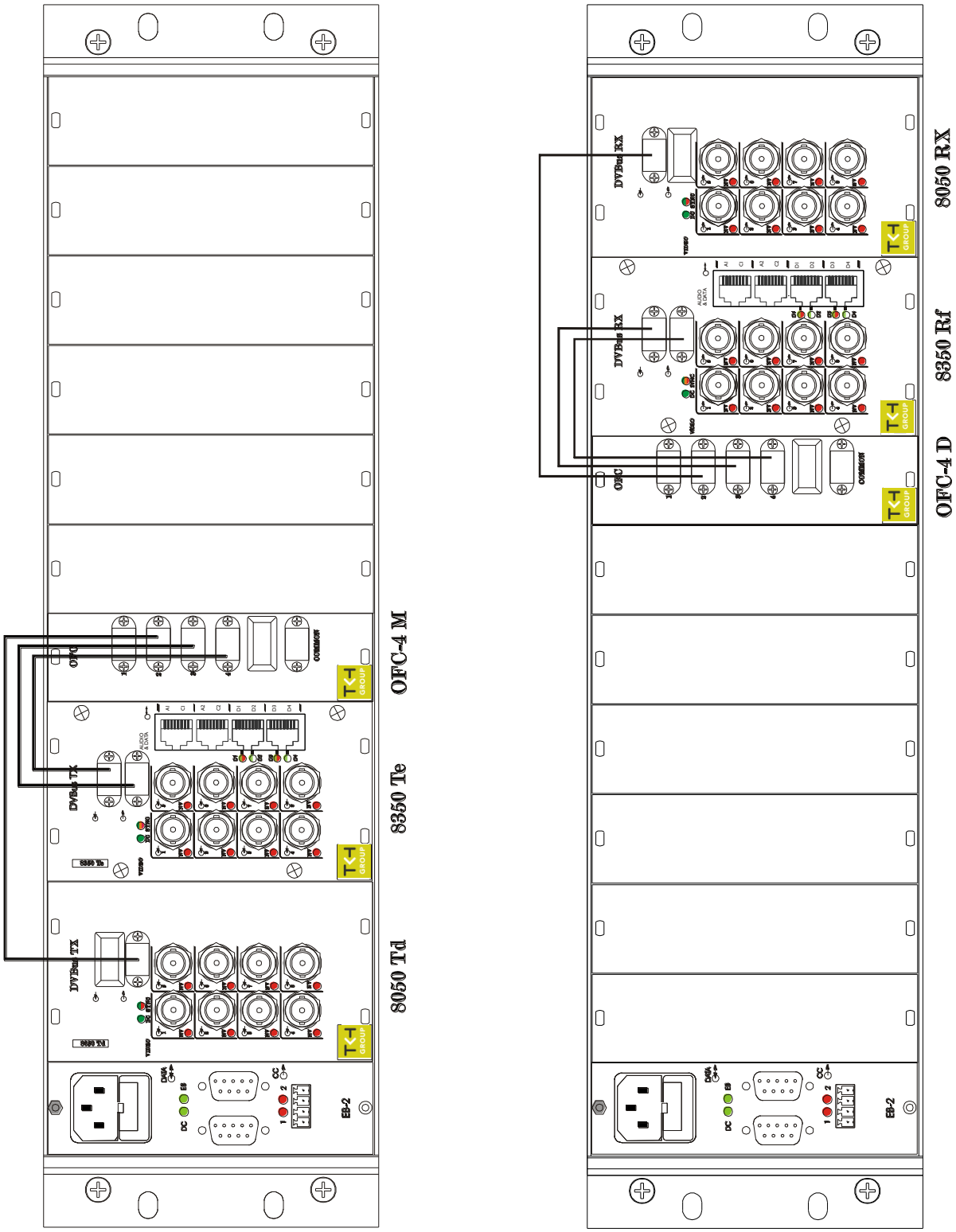

Figure 2. DVBus 8350-24 TX (left) and RX. See tables 2 and 4