

# INSTALLATION GUIDE

# OCX 0200

# **DVB-C** Cable Processor



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- 2. Unpacking the unit
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# 1. Introduction

Thank you for purchasing an WISI product. The OCX 0200 is a revolutionary solution for reception and modification of QAM transmitted TV-content into various transmission formats for cable-TV and SMATV.

The OCX 0200 is delivered with hardware and software that supports DVB-T reception, MPEG2/MPEG4 H.264 AVC, ASI output, VSB RF modulation with NICAM audio, IP control and management. All hardware needed for upgrade with software options is available from the start. See section 7 for more information.

OCX 0200 can be upgraded for enhanced functionality and various formats for transmission and processing of digital-TV content by upgrade of its firmware. Software options will be available from WISI, please ask us for the specifications and complete price list of all options.

# 2. Unpacking the unit

Following components are included in the package:

<u>Amount</u>	Description
1	OCX 0200 Cable Processor
1	Installation guide
2	Front panel screws

Every unit is quality controlled by us before delivery. Should any items be missing when unpacking please contact our support service (see page 3 for contact info).



# Important information about power supply to OCX 0200

To avoid problems with OCX 0200 and/or OPP 0100 it is very important that both DC plugs on the OCX power cord are inserted into the OPP 0100, i.e. each OCX unit needs to be fed from two DC outputs at the rear end of OPP 0100.

(See picture to the right).



# 3. Connections and indications



Front panel view of

OCX 0200



Rear panel view of OCX 0200

Common Interface	Insert your Common Interface Conditional Access module into this slot
Power on indicator	Green light indicates that power is on.
Rx error	Red light indicates that the receiver is not locked to the QAM transmission.
Access/Tx error missii	Red light indicates that the smart card is not authorised or analogue output signal is ng.
Ethernet port	Ethernet for connection to a PC or handheld device with web browser
Antenna in Conne	ect your outdoor aerial to this input.
RF out	Connection to Cable TV or SMATV network.

## 3. Connections and indications (continued)

A/V out *)	Connection for monitoring or to an RF modulator.
ASI in *)	Input for ASI (Asynchronous Serial Interface) for high speed transport stream reception.
ASI out	Output for ASI (Asynchronous Serial Interface) for high speed transport stream transmission.
DC in	Connect a DC voltage to this input (6-10V).

\*) Optional function

**NOTE!** We recommend to use only WISI original power supply for correct functionality and life cycle. Warranty will be void in case of damages caused by power supplies not supplied by WISI.

## 4. Settings

OCX 0200 has an embedded web server allowing standard web browsers

(Internet Explorer, Firefox, Opera etc.) to connect to the unit for settings and management. No controller software is needed. The OCX 0200 has by default a static IP address for connecting your PC to the unit.

The OCX 0200 is delivered with IP address: 192.168.0.20. First time installation requires that you set a static IP address on your computer. For example set your PC to IP address: 192.168.0.19 and Net mask: 255.255.255.0



## 4.1 TCP/IP settings for Windows XP (setting your PC to 192.168.0.19)

Click "Start", select "Control panel" and select "Network connections" and then select "Network and Internet settings"."Right click" on [Settings for local network] and select [Properties].



In Properties click [Internet protocol (TCP/IP)] and select [Properties].

Select [Use this IP adress] and write: 192.168.0.19 and select [Net mask] 255.255.255.0. Click [OK] and then click [Close].

**NOTE!** For PC with other Operating Systems (OS) than Windows, please consult the Owners manual for your PC for [IP/Network settings].



-inställningar kan tilldelas autor nktion. Annars måste du fråga -inställningar.	natiskt om nätverket stöder denna nätverksadministratören om rätt
C Erhåll en IP-adress automat	iskt
Använd <u>följande</u> IP-adress:	
IP-adress:	192 . 168 . 0 . 19
N <u>ä</u> tmask:	255 . 255 . 255 . 0
Standard-gateway:	
(**) Erhåll adress till DNS.serve	m automatield
<ul> <li>Använd följande <u>D</u>NS-serve</li> </ul>	eradresser:
Onskad DNS-server:	]
Alternativ DNS-server:	

## 4.2 Connecting your PC to OCX 0200

Connect the OCX 0200 to a DC power supply (OPP 0100). See section 6 for installation.

Next connect your PC to the OCX 0200 with a network cable. Start your web browser (IE, Firefox, Opera etc.) and write the IP address 192.168.0.20 in the address field in your browser.

## 4.3 OCX Web Control Interface

## 4.3.1 System menu

The following **[System]** menu should appear when you connect to the OCX 0200. The **[System]** menu contains basic information about current settings and entitlements.

Menu buttons for [Input], [Output], [IPTV], [Service management], [CI] and [Upload] are available in top of the menu.

## EXM Web Control Interface



## Current settings

Contains information of current input and output signals, if the tuner is locked to a signal, serial number and firmware revision.

## Entitlements

Entitlements are software options that are available in this unit (e.g. output signal format, input signal entitlements etc.)

Reset unit

## System options

This menu contains current IP address for the OCX 0200.

[Reset unit] gives a possibility to restart the unit at any time.

## 4.3.2 IP address settings

The OCX 0200 is set to an default IP address from factory (192.168.0.20). However, it is possible to change the IP address and/or the Netmask and/or the Gateway. This is an important function when you install two or more OCX units in a Head End and want to connect all units together through a switch or a router.

## IP address settings (continued)

# Setting new static IP address in the OCX 0200

Connect your PC to each OCX unit after that you have done all other settings in the units and change to a specific IP address for every unit.

A recommendation is to use from 192.168.0.21 and higher.

**NOTE!** Almost every switch/router use 192.168.0.1 as default IP address so make sure you don't use the same IP address in any OCX 0200 unit.

## EXM Web Control Interface

System Input Output IPTV Service management CI Upload

#### Current settings

Tuner: DV8-C Output: COFDM IPTV out: disabled Tuner locked: yes Firmware revision: EXX-200 version 1.15-RC3 Serial number: 0350009061500012

#### Entitlements

A2
ASI-in
Audio/Video
COFDM
IP-in
IP-out
Multidecrypt
NDS
OAM
Remux
VSB+NICAM

#### System options

To continue installation press [Input]

## 4.3.3 Input settings

Select Baudrate, Constellation and the channel number according to CCIR or enter the correct frequency (in MHz). Press [Set] to enter the frequency to the OCX 0200.

A list of the available services from the multiplex you tuned to, will be shown on the right hand side and also available services via the ASI input.

Below [Tuner settings] information of the received signal is displayed.

## EXM Web Control Interface



We suggest that you consult your service provider for correct parameters for each multiplex you want to receive.

Click [Output] to continue with the output settings.

## 4.3.4 Output settings

### ASI

The output selection ASI disables all RF modulation on the outputs and all selected services will be transmitted only through the ASI output connector. ASI is a high speed interface for digital TV transport streams. Use this output mode if you run IPTV out.

Under **[ASI options]** you can select the output bitrate which is the same bitrate as for IPTV out.

### Analogue

The selection **[Analogue]** is set as factory default as RF output .

You can select output [Channel name] (E2 to E69) or [Frequency] within steps of 1 kHz (for example 306,167 MHz). Country specific settings can be done by selecting [Country]. By selecting a specific country, transmission standard and languages are automatically preset. [Audio language] gives you the choosen language if there is more than one language in the received signal. [Audiolevel] can be adjusted between 0 to -12 dB.

Subtitling type, subtitle priority and subtitle charset can be selected as well as Subtitle conversion and Subtitle WSS.

#### EXM Web Control Interface

System	Input	Output	IPTV	Service management	CI	Opioad		
utput								
Dutput mo	de:							
• ASI								
Analogu	e							
QQAM								
CORDM								
Note: Switc	hing output	ut modes m	nay take a f	ew seconds.				
ASI opt	tions							
Bitrat	te (MBit):	38		Set				
System	ı In	put	Output	IPTV Service	e mana	gement	CI	Upload
System Outpu	ı In	put	Output	IPTV Service	e mana	gement	CI	Upload
System Output Output	ı In I <b>t</b> mode:	put	Output	IPTV Service	e mana	gement	CI	Upload
System Output Output Asi O Ana	n In It Mode:	put	Output	IPTV Service	e mana	gement	CI	Upload
System Output Output Output Asi O QAM	n In It Mode: logue	put	Output	IPTV Service	e mana	igement	CI	Upload

Country:	Sweden	
Audio language:	Swedish V	
Audio level (dB):	0 🛩	
/ideo Conversion:	Letterbox 16:9	~
Video WSS:	Automatic	~
Bitrate (MBit):	35 Set	
Subtitle:		
	Active	
Subtitle priority:	⊙ DVB	
	OTeletext	
Subtitle type:	Normal	
	O Hearing impaired	
Subtitle charset:	Latin 0 💌	
Subtitle language:	Swedish 💌	
ubtitle conversion:	None	~
Subtitle WSS:	Automatic	~
Attenuation (dB):	0 Set	
Channel name:	E21	

English

## 4.3.5 OUTPUT settings (continued)

It is possible to select scaling of the picture format to fit with connected TVsets. This is handled in the **[Video conversion]** drop down list where it's possible to choose between the different types. **[Video WSS]** (Wide Screen Signalling) is available in the video for signalling the aspect ratio to be displayed by the TV sets.

[Bitrate] can be set and this gives you what the bitrate will be at the ASI output. NOTE! Refer to the table in page 16 about correct values. [Attenuation] can be choosed between 0 to -31 dB

The **[Frequency]** can be set in steps of 1kHz (e.g. 306.167 MHz) in all three output modes (Analogue, COFDM or QAM). Click **[Set]** to save all settings.

### COFDM

For **[COFDM]** (DVB-T) output you can select Output channel (E2 to E69) or Frequency and Output signal attenuation (0 to -31dB). You can also select bandwidth (6,7 or 8 MHz). The maximum output TS bit rate in COFDM is 31,67 Mbps.

*Note!* Some of the choices may need optional software to be uploaded before they can be selected.

# System

Input

Output mode:	
OASI	
Analogue	
OQAM	
O COFDM	
Note: Switching output modes may take a few seconds.	
Analogue options	
Country: Sweden	
Audio language: Swedish	
Audio level (dB):	
Video Conversion: Lottorbox 16:9	
Leuelbox 10.5	
Video WSS: Automatic	
Bitrate (MBit): 35 Set	
	_
Subtitle: O Inactive	
<ul> <li>Active</li> </ul>	
Subtitle priority: ODVB	
OTeletext	
Subtitle type: 💽 Normal	
O Hearing impaired	
Subtitle charset: Latin 0	
Subtitle language: Swedish	
Subtitle conversion: None	
Subtitle WSS: Automatic	
Attenuation (dB): 0 Set	
Channel name: E21 🗸	
Frequency (MHz): 471.25 Set	

IPTV

Output

Service management CI Upload

#### EXM Web Control Interface



### QAM

When selecting [QAM] DVB-C output, there are settings for Output channel (E2 to E69) or Frequency, QAM-mode (16, 32, 64, 128 or 256QAM), Baud rate (kHz) and Output signal attenuation (0 to -31dB).

Click [Service management] to select service(s) and/or create new multiplexes.

#### EXM Web Control Interface

EXM Web Control Interface

Barn/Kunskapsk. Sveriges Television 870 Tuner

Remove selected Reset services Network settings

ttput mode: Ast Ast Janalogue J QAM CorDM te: Switching output modes may take a few seconds.	ystem	Input	Output	IPTV	Service management	CI	Upload
<b>stput mode:</b> ) Ast ) Analogue ) QAM ) COFDM <b>ste:</b> Switching output modes may take a few seconds.	utput						
λASI ) Analogue QQAM ) COFDM Me: Switching output modes may take a few seconds.	utput m	ode:					
лапарие ) QAM ) COFDM <b>ste</b> : Switching output modes may take a few seconds.	ASI						
) COFDM te: Switching output modes may take a few seconds.	O Analog	ue					
te: Switching output modes may take a few seconds.	COFDN						
te: Switching output modes may take a rew seconds.	0.001.01						
	te: Swit	ching outp	ut modes ma	w take a f	ew seconds		
	te: Swit	tching outp	ut modes ma	ay take a f	ew seconds.		
AM options	ote: Swit	tching outp	ut modes ma	ay take a f	ew seconds.		
AM options	lote: Swit	ptions	ut modes ma	ay take a f	ew seconds.		
AM options Baudrate (kBaud): 6875 Set	lote: Swil	ptions e (kBaud):	ut modes ma	ay take a f	ew seconds.		
AM options Baudrate (kBaud): 6875 Set Constellation: ca	QAM o Baudrati	ptions (kBaud): stellation:	ut modes ma 6875 Se	ay take a f	ew seconds.		
AM options Baudrate (kBaud): 6875 Set Constellation: 64 v	QAM o Baudrab	ptions e (kBaud): stellation:	ut modes ma 6875 Se 64 🖌	ay take a f	ew seconds.		
AM options Baudrate (kBaud): 6675 Set Constellation: 64 · ·	QAM o Baudrati Cor Attenui	tching outp <b>ptions</b> e (kBaud): instellation: ation (dB):	ut modes ma 6875 Se 64 💙 30 Se	ay take a f t	ew seconds.		
AM options Baudrate (kBaud): 6875 Set Constellation: 64 A Attenuation (dB): 30 Set	QAM o Baudrati Cor Attenui	ptions (kBaud): nstellation: ation (dB):	ut modes ma 6875 Se 64 🗸 30 Se	ay take a f it	ew seconds,		
AM options Baudrate (kBaud): 6875 Set Constellation: 64 V Attenuation (dB): 30 Set Channel name: E21 V	QAM o Baudrati Cor Attenui Char	tching outpo ptions (kBaud): nstellation: ation (dB): unel name:	ut modes ma 6875 Se 64 V 30 Se E21 V	ay take a f t	ew seconds.		

#### 4.3.5 Service Management

The Service management menu gives an overview of available services from antenna input or the ASI input (if enabled). Remultiplexing (remuxing) is possible after downloading a appropriate SW option. To build your own MUX you combine several incoming services. These can be received either from the tuner or from the ASI in. Under the [Digital output] section in this meny you can see the actual "Outgoing data rate". This helps you to avoid overload for the output (see section 5 for information).

#### System Input Output IPTV Service management CI Upload Service management **Available services** Name SVT2 Tvärsnytt Provider Sveriges Television ID Source Dig Ana CI 5540 Tuner Sveriges Television SVT24 1240 Tuner SVT2 Östnytt Sveriges Television SVT1 Östnytt Sveriges Television 5840 Tuner X SVT1 Tvärsnytt Barn/Kunskapsk. Sveriges Television Sveriges Television 5800 Tune 870 Tuner SVT1 Tal txt Sveriges Television 1280 Tuner SVT2 Tal txt Sveriges Television Boxer TV Access AB 1290 Tuner 65534 Tuner Boxer Navigator SR-P1 SR 3010 Tuner SR-Klassiskt 3020 Tuner 3030 Tuner SR-P3 SR Output: Set digital Set analogue Remove analogue Decryption: Enable Disable **Digital output** Outgoing data rate: 15.96 MBit/s ID Source 5640 Tuner 5840 Tuner Name Provider SVT2 Östnytt Sveriges Television SVT1 Östnytt Sveriges Television

+

In the menu to the right a list of all services the unit receives, both from the [Tuner input] and from the [ASI input].

To select the service or services you want at the **[Digital output]** mark a service by clicking the line where the service is presented and than click the "Set digital" button. Now an "X" should appear in the "Dig" column. Do the same to choose a service as "Analogue out". Make your choice of which services you want to select as outputs and you will see the selected service(s) in the **[Digital output]** list in the menu.

#### EXM Web Control Interface

System	Input	Output	IPTV	Servio	e manag	ement	CI	Upload
Service r	nanag	gement						
Austinble								
Available	serv	ices						
Name	F	rovider		ID	Source	Dig An	a CI	
SVT2 Tvärsny	tt s	Sveriges Tele	vision	5540	Tuner	-		
SVT24	-	Sveriges Tele	vision	1240	Tuner			
SVT2 Östnytt	-	Sveriges Tele	evision	5640	Tuner	x		
SVT1 Östnytt	5	Sveriges Tele	vision	5840	Tuner	x		
SVT1 Tvärsny	tt s	Sveriges Tele	evision	5800	Tuner			
Barn/Kunskap	isk. :	Sveriges Tele	vision	870	Tuner	x		
SVT1 Tal txt		Sveriges Tele	vision	1280	Tuner			
SVT2 Tal txt	5	Sveriges Tele	vision	1290	Tuner			
Boxer Navigal	tor I	Boxer TV Acc	ess AB	65534	Tuner			
SR-P1		SR		3010	Tuner			
SR-Klassiskt	5	SR		3020	Tuner			
SR-P3	6	SR		3030	Tuner			
-								
Output:	C Set	analagua	Dom	ave engled				
Set uigital	Jei	analogue	Rem	ove analog	Jue			
Decryption:								
Enable D	isable							
								-
Digital o	utput							
Outgoing dat	a rate:	15.96 MBit/s						
		Burnetday						
Name SIG2 Öctputt		Frovider	louision	5640	Tunor	Optio	ns	
SVT2 Ostnytt		Sveriges Te	levision	5840	Tuner			
Svil Obdive		overiges re	ic vision	5040	Tunici	2		
Barn/Kunskar	ek.	Sveriges Te	levision	870	luner			
Barn/Kunskap	isk.	Sveriges Te	levision	870	Tuner			

The ASI output contains the services you have selected for [Digital output].

For decryption you mark the service by a click on the service name line and by clicking on "Enable" under the **[Decryption]** headline.

**Note!** To decrypt more than one service requires a multidecryption CA module and a smartcard that is activated for more than one service. Some smartcards can handle two or three services at a time. Please, refer to your smartcard service provider for further information.

Click the "Network settings" and select "Network ID" and "Transport ID". If a choice is made you have to click on **[Save]** to store the ID:s. The DVB standard recommends following Network ID ranges:

DVB-S: 0 to 8191 (0 should be avoided)

DVB-T: 8193 to 13568 (Boxer in Sweden use 8945)

DVB-C: 40961 to 65281 (ComHem in Sweden 41001 and up)

The OCX 0200 is designed to perform remultiplexing fully automatically of both audio and video streams as well as full remultiplexing and regeneration of PSI/SI data.

The advantage for you as a user is much lower risk of failure and the process is much less time consuming.

# 4.3.5 Service management (continued)

For setting the LCN (Logical Channel Number) you click on the [+] sign under the column named [Options]. In the box under the label [Logical channel number] you write the number you want for the service you have choosed and click on the [Set] button.

*Note!* LCN is not supported in all DVB receivers i.e. refer to your manufacturer for specification for the DVB receivers in your cable TV network.

## EXM Web Control Interface

System 1	input	Output	IPTV	Servic	e manag	eme	nt	CI	Upload
Service m	anage	ment							Service details
Available	servic	es							Service ID: 5840 Transport ID: 1021
Name	P	rovider		ID	Source	Dig	Ana	CI	Source: ASI
Viasat History (	FSS) v	riasat		6490	Tuner	x	x		I water ball at a second second second
Explorer/Spice(	FSS)			6410	Tuner				Logical channel number
SVT2 Tvärsnytt	5	Sveriges Te	levision	5540	ASI				1 Set Remove
SVT24	5	Sveriges Te	levision	1240	ASI	x			
SVT2 Östnytt	5	Sveriges Te	levision	5640	ASI	x			
SVT1 Östnytt	s	Sveriges Te	levision	5840	ASI	x			
SVT1 Tvärsnytt	s	Sveriges Te	levision	5800	ASI				
Barn/Kunskaps	k. 5	Sveriges Te	levision	870	ASI	x			
SVT1 Tal txt	5	Sveriges Te	levision	1280	ASI				
SVT2 Tal txt	S	Sveriges Te	levision	1290	ASI				
Boxer Navigato	r E	Boxer TV A	ccess AB	65534	ASI	x			
SR-P1	5	SR		3010	ASI				
SR-P2 Musik	s	SR.		3020	ASI				
SR-P3	5	R		3030	ASI				
Dutput: Set digital	Set analo sable tput	ngue Re	emove anal	logue					-
Dutgoing data Name	rate: 24.	59 MBit/s Provider		ID	Source	e O	ption	5	
SVT24		Sveriges T	elevision	1240	ASI		+		
SVT2 Östnytt		Sveriges T	elevision	5640	ASI		+		
SVT1 Östnytt		Sveriges T	elevision	5840	ASI		+		

#### 4.3.6 Upload

Update of the OCX 0200 firmware or upload of enhanced functionality is done via the Upload menu. Select **[Browse]** and search for the correct file on your computer. When the file is selected press **[Upload]** and the file is uploaded into the OCX 0200. A power reset will always ensure that the OCX 0200 reboots with the uploaded software.

Please refer to the installation information for each specific SW.

#### EXM Web Control Interface

System Input	Output	IPTV Se	rvice management	CI	Upload	
Upload						
File to Upload:			Bläddra Upload			
File list						
File		Version	Build			
UI for EXX-200		1.15-RC	3 1.650			
UI for EXX-200		1.1	5 1.640			
Audio DSP for EXX-200	5	1.1	4 1.000			
Video DSP for EXX-200	5	1.1	4 1.000			
FPGA (variant: 1)			1.230			
FPGA (variant: 1)			1.000			
FPGA			1.230			
FPGA			1.000			
Firmware for EXX-200		1.15-RC	3 1.590			
Firmuran for EVV-200		1.1	5 1 540			

### 4.2.6 IPTV settings

This menu allows for settings required to transmit a digital-TV transport stream as IPTV. IPTV output is optional and can be ordered separately.

#### EXM Web Control Interface

System	Input	Output	IPTV	Service management	CI	Upload	
PTV o	Itput						
	Address:	239 192	0.1	0			
	Port:	1234	1				
Start							
Bit	ate (Mbit):	35					
Set bitr	ate						
Set bitr	ate						

For IPTV out you have to set **[UDP/RTP]** values for Port and Address. For example: IP address 239.192.0.10 and Port 1234. In the box named "Bitrate" you can choose what bitrate you want on the IPTV TS out and the maximum value is 55Mb/s. Click **[Set bitrate]** to save settings. Click on **[Start]** to get the IPTV stream on the output (RJ 45 connector). To check the IPTV out signal you can use a player like VLC Player.

**Note!** To avoid overload it's not recommended to run other RF output at the same time i.e. choose ASI as Output. The choosen bitrate will be the same on the ASI output

## 4.2.7 CI and Smart card information

This menu allows you to view information about your CA System and current subscriptions.

#### EXM Web Control Interface

System	Input	Output	IPTV	Service management	CI	Upload
I						
Conax CA 1ain menu4						_7
PPV b Abonr PPV ir Toker Ändra Ålden Moder Om C Messa Språk Loade	eställning hemangsinfi formation is Status4 CA-PIN SIGN-PIN SIGN-PIN sgräns m Ordering- onax CA ige4 r Status	ormation 4				
Press 'OK' to Cancel	select; Pre	ss 'EXIT' to i	eturn4			

# 5. About remultiplexing

To be sure that you don't exceed maximum bit rate for an output MUX, please control that you don't select to many services.

The website: <u>http://www.satcodx.com/eng/</u> lists bit rates for satellite services. The services are named TS and marked red and by clicking on one service you can get both average and peak values. It is recommended to select the peak value when planning a new MUX.

The table below gives max bit rates for COFDM and QAM out from OCX 0200. **NOTE!** Due to bit rate fluctuations from statistical multiplexing, we recommend that you <u>only use 85%</u> of the maximum available bit rate

Output signal COFDM	Modulation 64QAM	Baudrate/BW 8 MHz	Max bitrate (Mb/s) 31,67	85% 26,92
COFDM	64QAM	7 MHz	27,71	23,55
COFDM	64QAM	6 MHz	23,75	20,19
QAM	16QAM	6.875 Mbaud/s	25,34	21,54
QAM	32QAM	6,875 Mbaud/s	31,68	26,93
QAM	64QAM	6.875 Mbaud/s	38,01	32,31
QAM	128QAM	6.875 Mbaud/s	44,35	37,70
QAM	256QAM	6.875 Mbaud/s	50,69	43,08

Table 1. Max bit rates for COFDM and QAM.

*The formula for calculating QAM output bitrate is: [ Baudrate x "A"/(204/188) ]where "A" is 4 for 16QAM, 5 for 32QAM, 6 for 64QAM, 7 for 128QAM and 8 for 256QAM mode.* 

# 6. Installation

Before connecting power to the OCX 0200, make sure that all other connections have been made.

A coaxial cable of good quality with a F-connector should be connected from the aerial to the Antenna input and another one from the RF output to the cable TV network.

Connect a power supply and make all necessary settings as described in section 4.

Note! Important information in page 4 about connecting the DC cable.



Installation in a base unit with 5 OCX modules and common power supply.

## **Accessories**



OPP 0100 power supply100W, 11 outputs



ODCC 100 DC-cable for OCX 0200



OBU 0100 Base unit for 5 OCX 0200 modules and power supply

## 6.1 Installation examples

6.1.1 Installation of 3 pcs of OCX 0200 and one COFDM mux out.



**NOTE!** Unit #2 and unit #3 has SW option for enhanced functionality with ASI in and COFDM out. VSB RF is default modulation format.

6.1.2 Installation of 3 pcs of OCX 0200 and one QAM mux out.



**NOTE!** Unit #2 and unit #3 has SW option for added functionality as ASI in and QAM out. VSB RF is default modulation format.

6.1.3 Installation of OCX 0200 units through a switch with DHCP with possibility for remote management over VPN connection between office and Head end.



OCX 0200 connected through a switch with DHCP

**NOTE!** If you have questions about how to set up the VPN connection ask your network administrator for detailed information.

## 7. Technical specification

RJ-45. 10/100 BaseT

F female, 75 Ω

F female, 75 Ω

BNC female, 75  $\Omega$ 

BNC female, 75 Ω

PCMCIA (5 VDC)

Tx/Access error

3,5 mm 4 pole

Power on, QAM/Rx error,

RJ-45, 10/100 BaseT

# OCX 0200 DVB-C Cable processor

#### **Connectors and Interfaces**

Control and IP out connector RF input connector RF output connector ASI input connector ASI output connector CAM connector LED Indicator lights

Remote management A/V out connector

QAM Cable Receiver

Input frequency Input freq step size Input level range Input impedance Input return loss QAM mode C/N limit Bandwidth DVB compliance 50 - 858 MHz (centre freq.) 250 kHz -55 to -25 dBm \*) 75 Ω 12 dB 16, 32, 64, 128 or 256 QAM 26 dB \*) 8 MHz DVB-C

\*) QEF reception with test signal: 64QAM, 26 dB C/N

#### **RF Modulation (analogue)**

Standards Sound

Modulation video Modulation mono Output frequency Output level

S/N weighted C/N, broadband NICAM standards Power ratio (Vision/NICAM carrier)

Tolerance Impedance

B/G, I, D/K, L, M/N Mono, NICAM stereo or A2/A2\* stereo VSB AM, neg. or pos. Audio FM or AM 47 - 862 MHz > 110 dBuV (47-470 MHz) > 105 dBuV (470-862 MHz) > 57 dB > 70 dB NICAM 728 (EN 300 163) B/G -20dB, -24dB, 1 D/K -24dB, L -27dB +/- 1dB 75 Ω

#### QAM modulation (Option)

QAM modes Symbol rate MER (at RF out) DVB compliance QAM output frequency Output level 16, 32, 64, 128 and 256 QAM 4 - 7.2 Mbaud/s > 38 dB for 256-QAM DVB-C (EN 300 429) 47 - 862 MHz (1 kHz step) Min 105 dBuV (47-470 MHz) Min 100 dBuV (470-862 MHz) Yes

PSI/SI management Remultiplexing

### COFDM modulation (Option)

2K

1/32

7/8

Yes

Yes

>34 dB

DVB-T (EN 300 744)

31.67 Mbit/s (8 MHz bandwidth)

27,71 Mbit/s (7 MHz bandwidth)

23,75 Mbit/s (6 MHz bandwidth)

47 - 862 MHz (1 kHz step)

Min 100 dBuV (47-470 MHz)

Min 95 dBuV (470-862 MHz)

COFDM mode Guard interval FEC MER DVB compliance Max output bitrate

Output level

PSI/SI management Remultiplexing

## IPTV out (Option)

Max input bit rate Max output bit rate Connector Output protocol PSI/SI management Remultiplexing 55 Mbit/s 55 Mbit/s \*) RJ 45 (same as control) UDP, Multicast Yes Yes

\*) With single TS input to IP

#### Miscellaneous

Power supply	7,5 VDC nom. (6-10 VDC)
Power consumption	Typ. 15 W
Dimensions	165x105x37 mm (ex. connectors)
Weight	Approx. 390 g
Controller	Embedded web server
Operating temperature	-20 to +50°C, non condensing

This specification may change without prior notice.

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## ASI input(option) - output

ASI bit rate	270
Max payload bitrates:	
Max input bit rate	55 N
Max output bit rate	55 N
PCR restamping	Yes
PSI/SI management	Yes
Remultiplexing	Yes

270 Mbit/s 55 Mbit/s \*) 55 Mbit/s \*) Yes Yes

\*) The input, output and throughput bitrate is highly dependent on the type of application that is run in the unit.

#### MPEG Decoder - Audio

Supported formats Output

Impedance

Output level

MPEG 1 layer II, AAC HE, Selection of Dual mono in, Stereo or Mono < 100 Ω 0 dBu

### MPEG Decoder - Video

Supported formats Output standards Impedance Output level Aspect Ratio

(14:9)Teletext Subtitling Decryption MPEG2 MP@ML. MPEG4 h.264 AVC PAL, SECAM or NTSC 75 Ω 1 Vpp @ 75 Ω Letterbox, Pan/Scan, or conversion Combined programmable, WSS Insertion in VBI Teletext or DVB subtitling

**Common Interface** 

### Remultiplexing (option)

Each OCX 0200 contains a remultiplexer for 2 incoming transport streams. The transports streams can be received from a cable network and from the ASI input. All PSI/SI regeneration in a Head end system is handled over IP.

Following components can be remultiplexed:

Audio, Video, Subtitling, PAT, PMT, NIT, EIT, TDT, CAT, SDT

### Graphical User Interface (GUI)

EXM Web Control Interface System Input Output TPTV Services Current settings Tuner/DVBS Output:COFDV IPTV outpl social Tuner locked.ve Firmware revisi eEXX-220 version 1.0 Build: 3 promotion Entitlements 158 0 20 256 265 0 158 0 1 Set P Reset unt

Graphical User Interface for easy set up of complex systems. Simple handling of remultiplexing and creation of new multiplexes from any input.

Default setting of PSI/SI tables to avoid clashes in the output multiplexes. Simple structure for setting input, output and processing parameters.

Each OCX 0200 contains an embedded web server. Standard web browsers (Internet Explorer, Mozilla Firefox etc.) are supported

This specification may change without prior notice.

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# 8. Declaration of Conformity

CE

# 9. Glossary

DVB	Digital Video Broadcasting (Standardization body)
MPEG-2	Compression format for digital TV
MPEG-4	Compression format for digital-TV (SD and HD)
H.264 AVC	Format for compression of the video in HDTV
VSB	Vestigal Side Band (adjacent channel RF-modulation)
ASI	Asynchronous Serial Interface (High Speed Interface)
NICAM	Digital sound format for analogue TV-transmission
IP	Internet Protocol (defines how data is packetized for Internet broadcast)
IPTV	TV-content packetized for Internet Protocol
DVB-T	Modulation format (COFDM) for terrestrial transmission of digital-TV
QAM	Modulation standard for digital-TV in cable networks
COFDM	Modulation standard for digital-TV in terrestrial networks
Remultiplexing	Way of recombining services from different multiplexes
DHCP	Dynamic Host Configuration Protocol is a protocol used by networked devices ( <i>clients</i> ) to obtain the parameters necessary for operation in an <u>Internet Protocol</u> network. This protocol reduces system administration workload, allowing devices to be added to the network with little or no manual configuration.
Common Interface	Connector for a PCMCIA module used for decrypting encrypted TV-programs. Modules should comply with the DVB_CI standard
SD	Standard definition TV (576i in Europe)
HD	High Definition TV (720p or 1080i)
LCN	Logical Channel Numbers (method to give specific TV- programs a number that defines the order they appear in the program list on a TV or set-top box
VPN	Virtual Private Network (secure point to point connection in an unsecure network)





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