

No part of this manual may be copied, reproduced, transmitted, transcribed or translated into any language without permission.

Unitron reserves the right to change the specifications of the hardware and software described in these manuals at any time.

Unitron cannot be held liable for any damages resulting from the use of this product. Specifications are subject to change without notice. 2/16

© Unitron - Frankrijklaan 27 - B-8970 Poperinge - Belgium

T +32 57 33 33 63 F +32 57 33 45 24

email sales@johansson.be

www.johansson.be - www.unitrongroup.com

## CONTENTS

<b>1. INTRODUCTION .....</b>	<b>4</b>
Product description .....	4
Package contents .....	4
Mounting .....	5
Typical application .....	6
<b>2. INSTALLATION OF THE HARDWARE .....</b>	<b>7</b>
<b>3. CONFIGURATION OF THE MODULE .....</b>	<b>8</b>
STB Power to Trunk Switch .....	8
Terrestrial amplifier .....	8
Diagnostic LED's: .....	8
dSCR Modes: .....	9
<b>4. TECHNICAL SPECIFICATIONS .....</b>	<b>10</b>
<b>5. SAFETY INSTRUCTIONS .....</b>	<b>12</b>
<b>6. CONDITIONS OF WARRANTY.....</b>	<b>13</b>

# 1. INTRODUCTION

## Product description

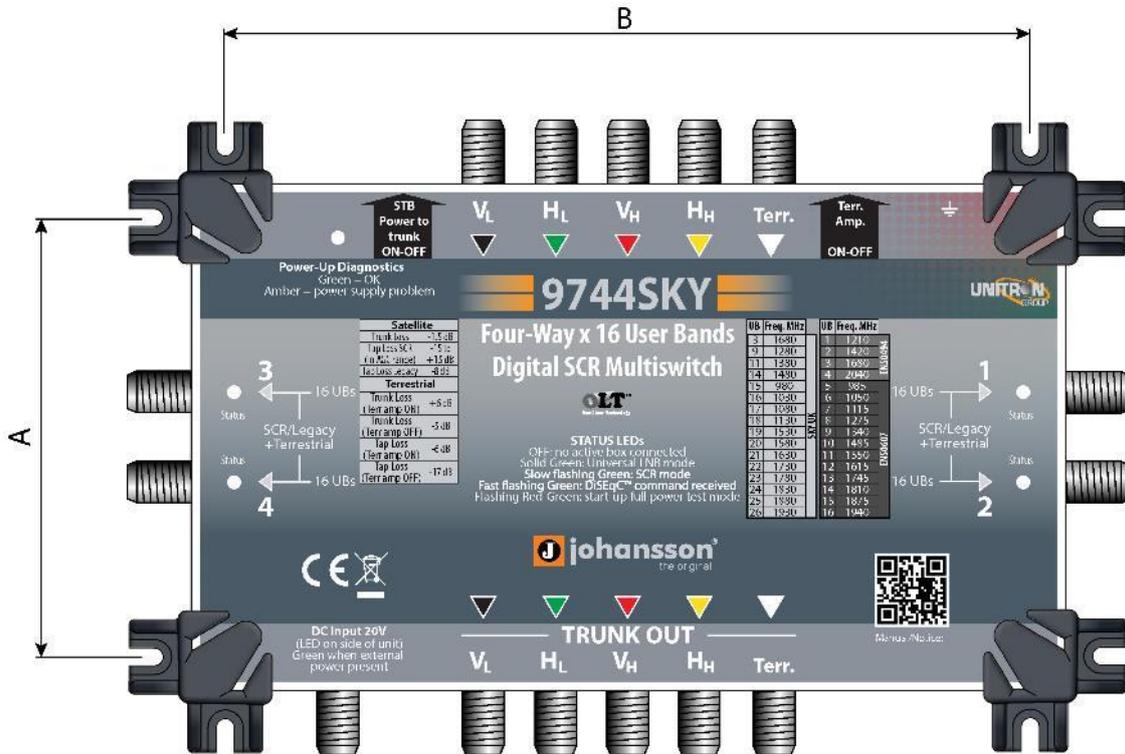
The 974xSKY products are designed to support a wide range of new and existing multiswitch installations.

- Each 974xSKY unit has:
  - 4 cascade-able LNB inputs from universal Quattro LNBF : VL HL VH HH
  - 1 terrestrial trunk.
  - 4, 8 or 16 SCR/Legacy outputs (9744SKY, 9746SKY or 9748SKY)
  - 1 DC input.
- Each output can support a wide variety of satellite receivers :
  - In legacy mode, the 974xSKY outputs can be used as a standard multiswitch.
  - In SCR mode, each 974xSKY output supports up to 16UBs with all versions of the single cable technology. This includes OLT, SCR, CSS, EN50494, EN50607, and newer versions.
- As all outputs are independent, the installation can be a mix of legacy and SCR connections.
- The terrestrial part allows to support any service that operates below 1 GHz, which includes terrestrial reception, cable and DOCSIS reception.
- The trunks enable to cascade multiple products to support big installations of more than 100 households in MDU applications, like apartments, or more than 100 rooms in hospitality environments, like hotels.
- The DC power can be inserted at any product. In cascaded systems, multiple power supplies might be needed, see "Diagnostic LED's" for more information. The Johansson reference for the powersupply is 2460 or 2460UK.

## Package contents

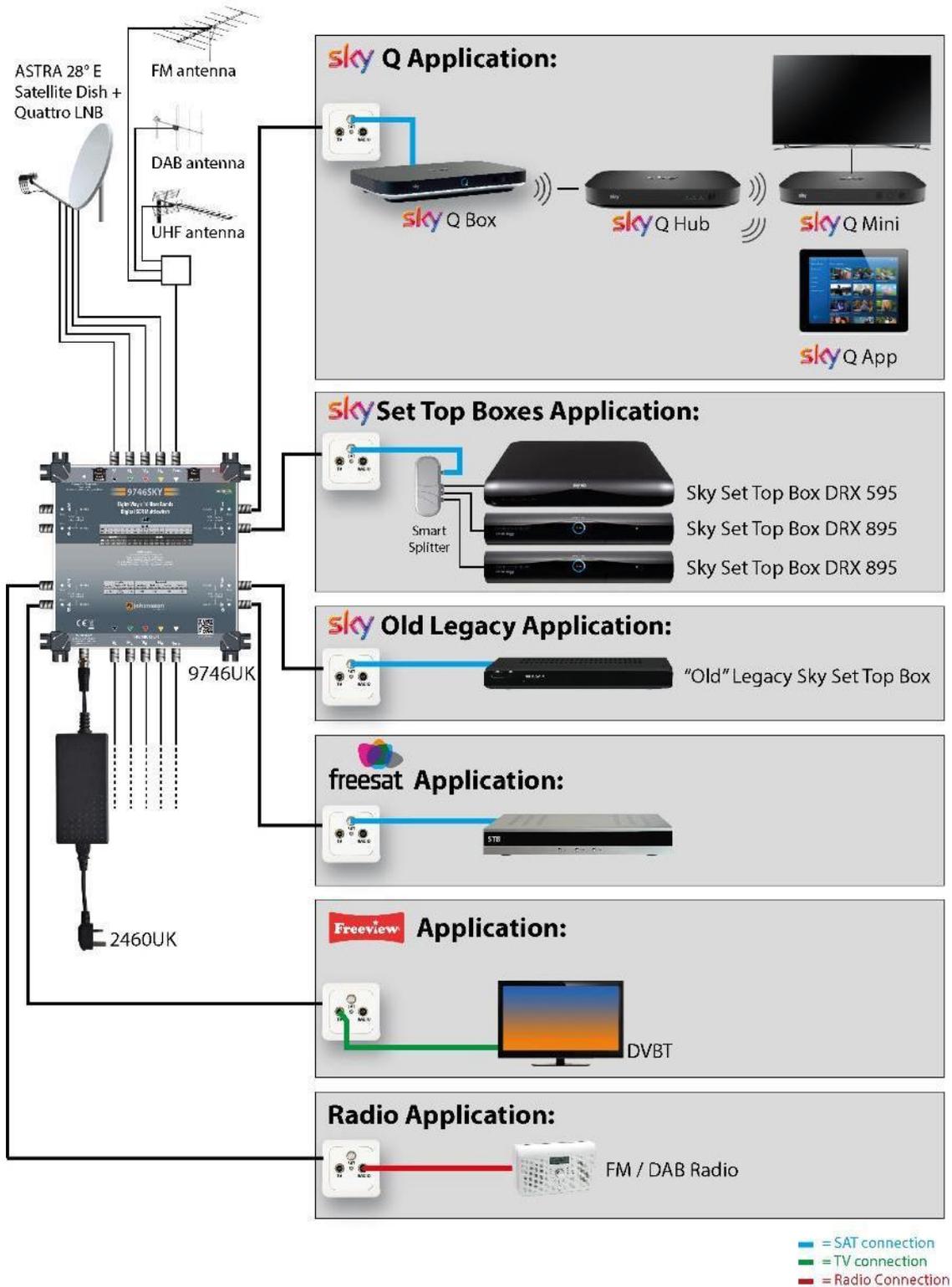
- 1x Digital SCR Multiswitch (9744SKY, 9746SKY or 9748SKY)

## Mounting

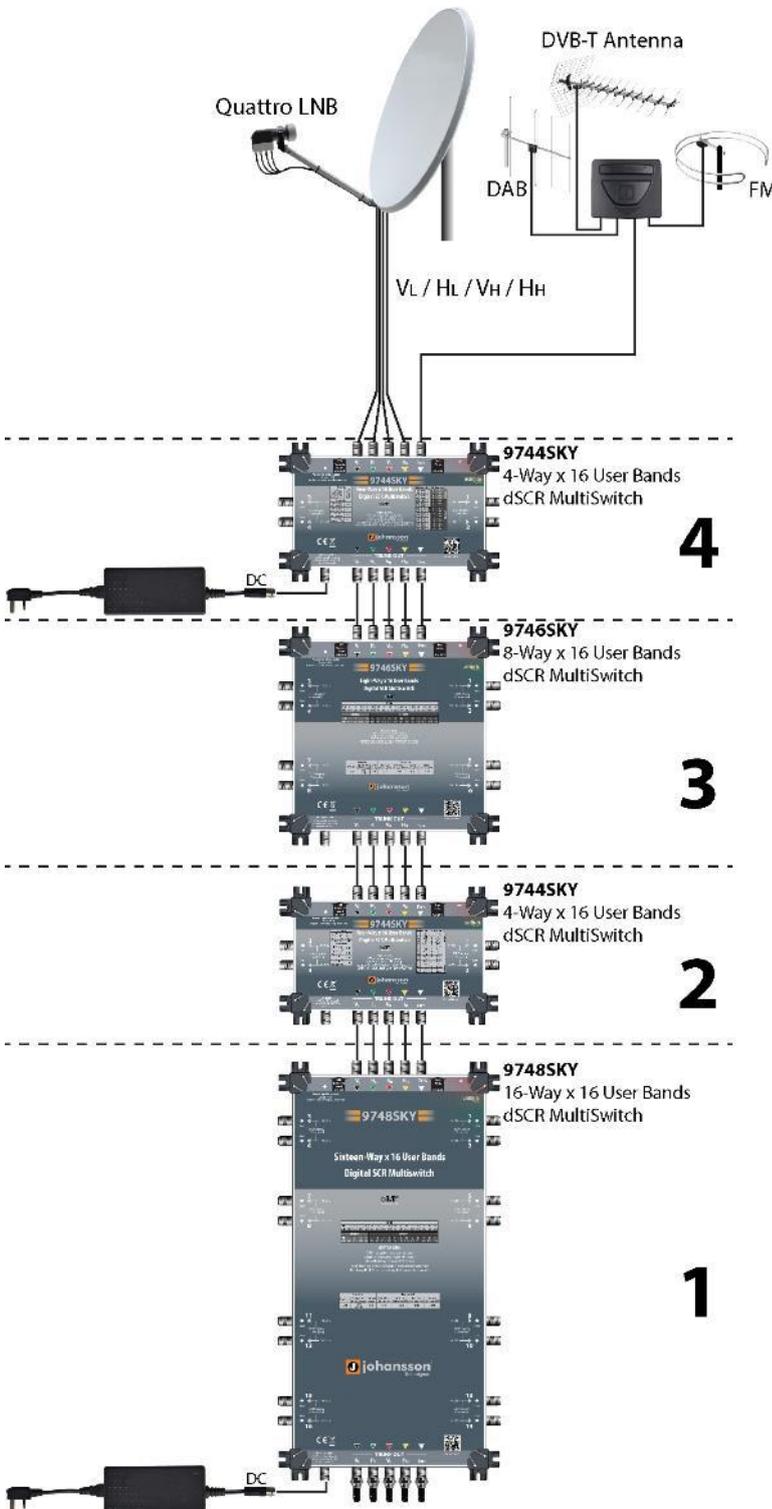


	A	B
9744SKY	98 mm	179 mm
9746SKY	179 mm	179 mm
9748SKY	377 mm	179 mm

## Typical application for the UK



## 2. INSTALLATION OF THE HARDWARE



The optional power supply (ref 2460/2460UK) can feed multiple multiswitches.

Ref.	Amount of products per power supply
9744SKY	4
9746SKY	2
9748SKY	1

The four trunks are DC isolated from each other, so 13 V and 18 V can be supplied separately from trunk out to trunk in.

All 4 LNB trunks should always be cascaded or terminated with a DC-blocked 75-Ohm terminator. All unused SCR/Legacy outputs should be terminated with a 75-Ohm terminator for proper terrestrial signals.

In this example 1 multiswitch is installed per floor. Only 2 power supplies are used to power the 4 multiswitches.

## 3. CONFIGURATION OF THE MODULE

### STB Power to Trunk Switch

- OFF ➔ This is the default state, as trunks will feed all cascaded units and the LNB. Power comes from DC inserted at the "DC Input" of 1 or more cascaded units.
- ON ➔ The STB will feed the unit and the LNB. This is only allowed when 1 unit is used in the system. From the moment 2 are cascaded, the position "OFF" should be selected. Otherwise, 1 STB will need to feed all units.

There is always DC pass-through on the trunks (Sat only).

### Terrestrial amplifier

The Terrestrial trunk has an integrated amplifier that can be turned into bypass- or amplified-mode. Only in bypass mode, DOCSIS signals can pass through.

The Terrestrial trunk should always be terminated with a 75-Ohm terminator.

### Diagnostic LED's:

Special high power startup mode: status LED's blink alternating **GREEN** and **RED**.

This is a special mode active when starting up the device (when the trunks are powered, not when STBs power the unit). In this mode, the unit will consume the maximum power. This allows the installer to check that there will be adequate power for the system under full (SCR) load. This "High power startup" mode gives the installer a 15-second window to check the performance of the power supplies. After 15 seconds, the unit will go into 1 of the 2 operational modes (SCR or Legacy).

During the 15 seconds, the power-up diagnostic LED of all 974xSKY units should be checked.

- If the voltage level on the trunks is too low for the unit to operate, then the Power up Diagnostic LED will be orange, ➔ connect an extra DC supply to the DC input.
- If the voltage level on the trunks is OK, then the LED will be green.

## **dSCR Modes:**

SCR mode:                Slow blinking **GREEN**  
Legacy mode:            Solid **GREEN**

The 974xSKY can work in two modes on each output independently – SCR Mode and Legacy Mode.

The default mode is Legacy Mode. The module will automatic switch from Legacy to SCR mode upon the first DiSEqC command when a SCR set top box is connected. If SCR mode has been activated, that specific output needs to be powered-off to go back to Legacy Mode.

### **SCR mode: status LED slow blinking green**

When a compatible Set Top Box is connected and set in "SCR Mode" up to 16 User Bands can be generated and can be tuned independent of each other to any LNB input and transponder. The 974xSKY is compatible with the Sky, EN50607 and EN50494 CENELEC-standard. The set top box sends the desired data for the LNB input and frequency selected in DiSEqC commands.

### **Legacy mode: status LED solid green**

When a Legacy Set Top Box (non-SCR Compatible) is connected to any of the ports, the dSCR works like a standard multiswitch allowing only one tuner to be connected to each output and allowing the tuner to select a single band, polarity and frequency from the relevant transponder using 13/18 V and 0/22 kHz tone switching.

## 4. TECHNICAL SPECIFICATIONS

	9744SKY	9746SKY	9748SKY
<b>Satellite</b>			
Operating Frequency Range	950 – 2150 MHz		
Inputs	4		
Outputs * (Trunk)	4		
Max and Min Input Txp Power Level	-35 to -5 dBm		
Trunk lines in to out gain	-2.5 (-1.5 Typical)	-4 Max (-2.5 Typical)	-9 Max (-6 Typical)
In to SCR out gain	-15 to +15 Typical, AGC controlled		
In to legacy out gain	-13 Max (-8 typical)		
Return loss	>8		
<b>Terrestrial</b>			
Operating Frequency Range	88 – 790 MHz		
Inputs	1		
Outputs * (Trunk)	1		
Max Input Mux Power Level	Amplified: 96 dB $\mu$ V Min		Amplified: 88 dB $\mu$ V Min
Trunk Lines in to out gain	Bypass: -7 Max (-5 Typical) Amplified: +4 Min (+6 Typical)	Bypass: -10 Max (-8 Typical) Amplified: +1 Min (+3 Typical)	Bypass: -20 Max (-16 Typical) Amplified: +2 Min (+6 Typical)
In to SCR out gain	Bypass: -23 Max (-17 Typical) Amplified: -12 Max (-6 Typical)	Bypass: -27 Max (-21 Typical) Amplified: -16 Max (-10 Typical)	Bypass: -34 Max (-24 Typical) Amplified: -16 Max (-10 Typical)
<b>dSCR Output Ports</b>			
dSCR Output Ports	4	8	16
Supported Output Modes	SCR + Legacy + DTT/DAB/FM		
SCR Mode Indication	Multicolor/Flashing LED		
SCR Output Power per Txp	-23 dBm Min (-21 dBm Typical), AGC controlled		
SCR channel bandwidth	46 MHz		
SCR User Bands	16		
SCR Standard (auto detect & switch)	BSkyB SCR, CENELEC EN50494, CENELEC EN50607, Universal LNB tone & volts		
Legacy Output Power per Txp	Up to -15 dBm, no AGC		
DiSEqC signaling	DiSEqC compliant		

\*: Unused ports needs to be terminated by 75 Ohm DC-blocked terminator

DC Power		
DC Power Connector	Unit can be powered via PWR port, trunk lines or outputs (all F-types)	
Power Indication	Green LED (front of unit)	
Power Supply Voltage	10 to 20 VDC	10 to 20 VDC (from STB) 11 to 20 VDC (from DC Input)
Max Power Consumption	SCR mode: 6W per pair of ports LNB emulation mode: < 2,1 W per port (Ter Amp OFF)	
DC from trunk lines out to in	Yes (not for terrestrial trunk)	
Supply current to LNB (switchable)	500 mA @ 20 V	
Short circuit protection & power on diagnostics	Yes	
Ground tags	1	
Operating Temperature Range	-20 to +50 °C, Indoor housing	

Sky UK		EN50607		EN50494	
UB	FREQ	UB	FREQ	UB	FREQ
3	1680	5	985	1	1210
9	1280	6	1050	2	1420
11	1380	7	1115	3	1680
14	1480	8	1275	4	2040
15	980	9	1340		
16	1030	10	1485		
17	1080	11	1550		
18	1130	12	1615		
19	1530	13	1745		
20	1580	14	1810		
21	1630	15	1875		
22	1730	16	1940		
23	1780				
24	1830				
25	1880				
26	1930				

## 5. SAFETY INSTRUCTIONS



**Read these instructions carefully before connecting the unit**



To prevent fire, short circuit or shock hazard:

- Do not expose the unit to rain or moisture.
- Install the unit in a dry location without infiltration or condensation of water.
- Do not expose it to dripping or splashing.
- Do not place objects filled with liquids, such as vases, on the apparatus.
- If any liquid should accidentally fall into the cabinet, disconnect the power plug.



To avoid any risk of overheating:

- Install the unit in a well aery location and keep a minimum distance of 15 cm around the apparatus for sufficient ventilation
- Do not place any items such as newspapers, table-cloths, curtains, on the unit that might cover the ventilation holes.
- Do not place any naked flame sources, such as lighted candles, on the apparatus
- Do not install the product in a dusty place
- Use the apparatus only in moderate climates (not in tropical climates)
- Respect the minimum and maximum temperature specifications



To avoid any risk of electrical shocks:

- Connect apparatus only to socket with protective earth connection.
- The mains plug shall remain readily operable
- Pull out power plug to make the different connections of cables
- To avoid electrical shock, do not open the housing of adapter.



**Maintenance**



Only use a dry soft cloth to clean the cabinet.



Do not use solvent



For repairing and servicing refer to qualified personnel.



**Dispose according your local authority's recycling processes**

## 6. CONDITIONS OF WARRANTY

Unitron N.V. warrants the product as being free from defects in material and workmanship for a period of 24 months starting from the date of production indicated on it. See note below.

If during this period of warranty the product proves defective, under normal use, due to defective materials or workmanship, Unitron N.V, at its sole option, will repair or replace the product. Return the product to your local dealer for reparation

### **THE WARRANTY IS APPLIED ONLY FOR DEFECTS IN MATERIAL AND WORKMANSHIP AND DOES NOT COVER DAMAGE RESULTING FROM:**

- Misuse or use of the product out of its specifications.
- Installation or use in a manner inconsistent with the technical or safety standards in force in the country where the product is used
- Use of non-suitable accessories (power supply, adapters...).
- Installation in a defect system.
- External cause beyond the control of Unitron N.V. such as drop, accidents, lightning, water, fire, improper ventilation...

### **THE WARRANTY IS NOT APPLIED IF**

- Production date or serial number on the product is illegible, altered, deleted or removed.
- The product has been opened or repaired by a non-authorized person.

### **NOTE**

Date of production is YYWW format, example 1447 = year 2014 – week 47.  
For the serial number barcodes, the date corresponds to the 4 first numbers







[www.unitrongroup.com](http://www.unitrongroup.com)

**UNITRON NV**  
**Frankrijklaan 27**  
**B-8970 Poperinge**  
**Belgium**

**T +32 57 33 33 63**  
**F +32 57 33 45 24**

**[sales@johansson.be](mailto:sales@johansson.be)**  
**[www.johansson.be](http://www.johansson.be)**