




Preliminary

■ THE NEED



Deployment of satellite cables to end-use receivers has traditionally been a difficult task due to the large bandwidth supported by satellite broadcast services and the required quality in relaying the bandwidth effectively from the rooftop dish to the receivers at home. In parallel, the advent of Digital Video Recorder (DVR) products and the increasing amount of receiving devices at the typical home further exacerbated both the complexities in installation and the limitation on end-user experience.

■ THE UNICABLE™ SOLUTION

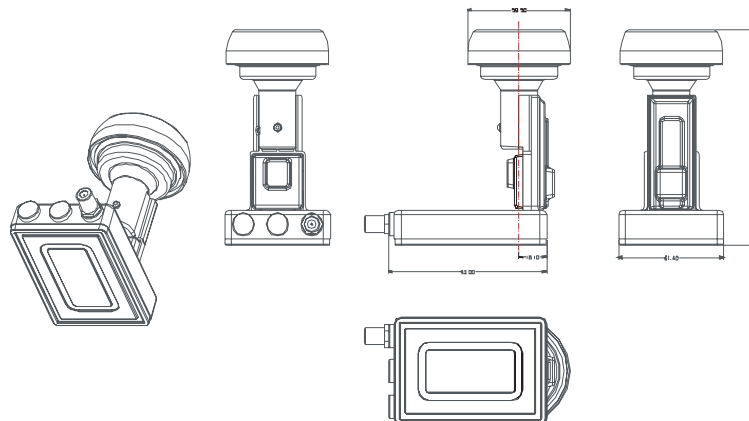
Unicable™ technology has been developed to facilitate that need. FTA's UniCable product range enables the delivery of broadcast programming over a single cable to multiple users and eliminates the numerous cables required to support consumer electronics devices such as Digital Video Recorders (DVRs) and high end Set Top Boxes (STBs). The availability of affordable UniCable LNB solutions allows consumers to easily upgrade their basic STBs without the need for a specialist installation engineer to visit the home. UniCable features an integrated software and hardware solution that allows UniCable-certified Digital Video Recorders and Set Top Boxes to multiplex selected programming when using UniCable Low Noise Block (LNB) or Multiswitching products.

UNICABLE'S VALUE PROPOSITION

- Simplification of new ("Greenfield") installations and upgrade of existing installations, saving labor, time and material cost.
- Suitable for legacy equipment - Replaces LNB but utilizes same receiver (Diseqc supported) and same dish. Any STB easily becomes Unicable certified through over the air upgrade.
- User flexibility - a Unicable performs the channel routing at the rooftop, allowing built-in user flexibility in upgrading or modifying the deployment requirement at the home. No need to deploy a new cable for every new DVR upgrade at the home.
- Esthetical solution for users who wish to avoid highly noticeable, multiple cable deployment from rooftop to the home.

■ UNICABLE SPECIFICATIONS

Low Band Freq Range	10.7 - 11.7 GHz	IF Channel 1 (SCR0) 1680 MHz
LO Freq	9.75 GHz	IF Channel 2 (SCR1) 1420 MHz
NF	0.9 dB [typical]	IF Channel 3 (SCR2) 2040 MHz
High Band Freq Range	11.7 - 12.75 GHz	IF Channel 4 (SCR3) 1210 MHz
LO Freq	10.6 GHz	IF Channel Isolation 20 dB min
NF	0.9 dB [typical]	
		Unicable Control Convention
LO Accuracy	± 1.0 MHz	Channel 1 (SCR0) 13V/DC
LO Temp Drift	± 2.5 MHz	Channel 2 (SCR1) 13V/22KHz
		Channel 3 (SCR2) 18V/DC
LO Phase Noise @10KHz		Channel 4 (SCR3) 18V/22KHz
	-80dBc/Hz min	
Conversion Gain	60dB min	Control Signals - Diseqc 1.0 or later
Gain Variation @ 36MHz standard.	±0.75 dB max	version compliance required. Extensions incorporated into CENELEC EN 61319-1
Image Rejection	40 dB min	
Cross Pole Isolation	23 dB typical	DC Power requirement
IF 1dB Comp Point	0.0 dBm min	18V@260mA [maxV/mA]
IF VSWR	2.5 : 1	
IF Impedance	75 ohm (F-Type)	Operating Temperature -30 up to 60 deg C
		Weight 400 grams



■ UNICABLE™ APPLICATION NOTES

➔ How does Unicable work?

Unicable receives KU satellite signals in similar way to legacy LNB's. The 4 different frequency bands, containing satellite channels, being Vertical/ High Band, Vertical/ Low Band, Horizontal/ High Band and Horizontal/ Low Band are received with low noise amplifiers to ensure high reception sensitivity. Signals at each band are then down-converted to the L-band with Local Oscillators in the High and Low bands. Then, signals are multiplexed in a matrix to the various SCR chips. SCR chips pick the requested channel by a receiver at a time, controlled through a logic Unicable MCU (Micro Controller Unit), according to the established Diseqc standard. SCR chips perform another down-conversion to one of the IF Channel Frequencies, which are then filtered and combined with proper Gain, on the single Cable. Unicable LNB is, in fact, a mini-channel router that reconstructs the received IF output per user choice of a number of simultaneous users. Schematic system diagram of the Unicable LNB is provided in Figure 1.

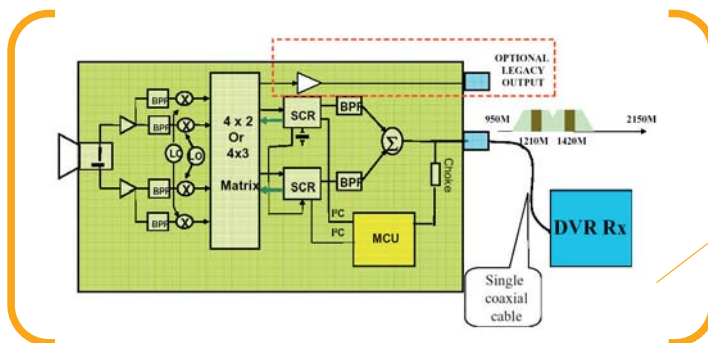


Figure 1

➔ How many users can be installed with a Unicable LNB?

Unicable LNB supports up to 4 simultaneous tuners. This means that more 'tuners' can be cascaded through the single cable but only four, at a given time, can independently control the viewed channels from the satellite offering. Tuners are not users, though. In standard, "traditional" Set Top Boxes, there is a single tuner, so 4 Set Top Boxes, in different rooms, for instance, can independently enjoy channels with Unicable-enabled installations. In some Digital Video Recorders there are two tuners, designed to enhance user experience by allowing to record and watch different channels, or view in picture-in-picture when these enhanced tuners picture mode. Unicable will then "count" Digital Video Recorders as two features are at use. Importantly, a topology that has many more devices rarely requires more than four concurrent tuners at any given time.

➔ Are there any special requirements when using Unicable?

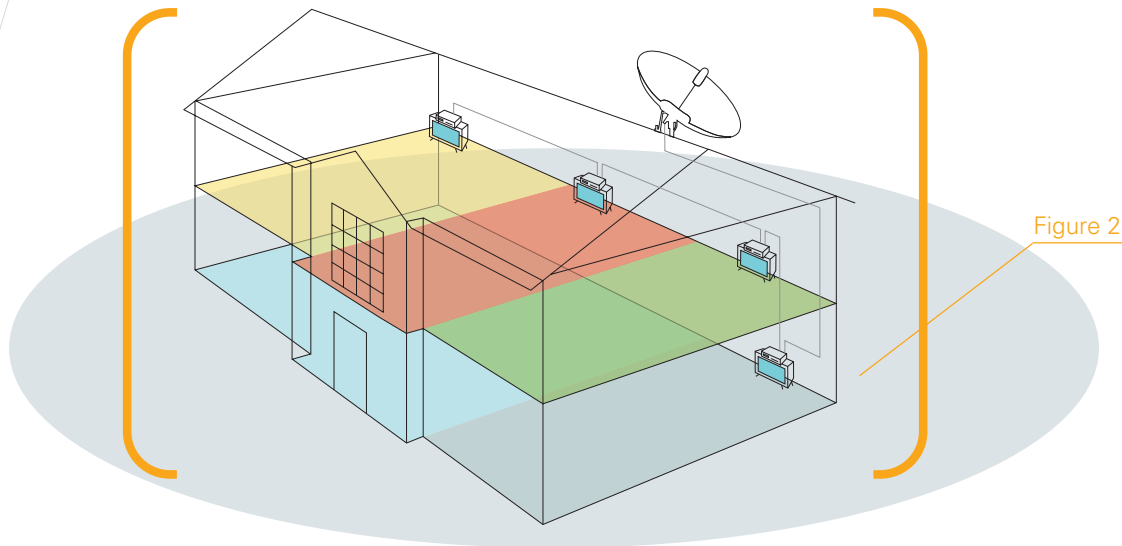
Unicable will pose two requirements when installed. First, it will require one to remove unidirectional splitters, if this is an upgrade of old installations. If the deployment requires you to branch out the cable, low cost power combiners that are bi-directional should be used. Secondly, depending on cable quality and length, typically in cases where cable longer than 35 meters is used, a low cost power booster may need to be plugged onto the cable at any point along its lay-out. Unicable can be purchased with a power booster at virtually no additional cost.

Other than that, Unicable will render the investment more useful and more flexible, and will allow home users to benefit from Digital Video Recorders experience without needing to lay out another cable from one's rooftop to the living room.

➔ **In that case, where are the benefits in real life deployment scenario?**

Direct gains are broadly in material cost and installation time, while enabling true flexibility at the home. But, there are indirect benefits. Frequently, consumers avoid investment in home appliances because of the hassle associated with installation. Satellite reception market per se suffers from consumer thought along these lines in some regions, and regulation in other.

Importantly, Unicable removes the need in twin cables to Twin-Tuner Digital Video Recorders (Figure 2). Surveys show that virtually all consumers (>90% in continental Europe) are not aware of the need to change cable deployment in order for them to enjoy Twin Tuner Digital Video Recorders. Set top box vendors consider Unicable as a driver and differentiator for sales of these products.



➔ **Is this an established technology or proprietary standard?**

Unicable is based on a technology that is broadly supported within the broadcast industry. It is in compliance with Dsiqc 1.0 or later version its extensions are incorporated into CENELEC EN 61319-1 standard.

The Unicable product offering has been enabled by chipset designed by ST Microtechnology, whose set top box chipset solutions serve over 80% market share in the European satellite set top box market. This in turn, will assure the great majority of set top boxes will automatically enjoy the software driver upgrades of Unicable. Otherwise required software addenda are minimal.

SES Astra and Eutelsat have approved the amendments to the above standards, and other large industry players are committed to its success.

➔ **Who should I contact for more information?**

Additional information can be found at www.ftacom.com