Televes

T.0X
HEADENDS

T.0X: A SYSTEM WITH NO LIMITS

Televes has reached a new dimension in the conception, design and manufacture of headends. Year zero of this new era is marked by the creation of intelligent and efficient devices that will achieve total reliability. Modules that have no limits on the type of signal being processed, on the parameters being configured, on the kind of format they generate DVB-S2, DVB-T, … all formats, all standards.

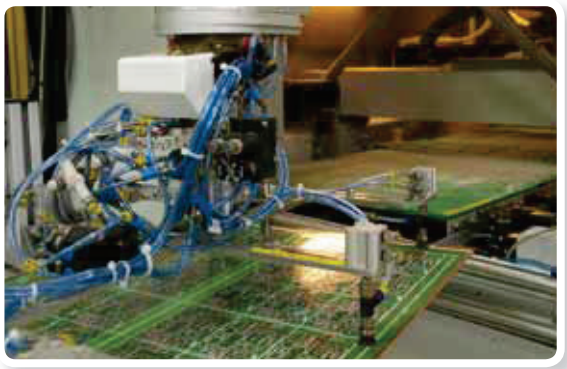
That's **T.0X**, a new concept of headends that meet all needs and all modulation formats through a fast, compact, reliable and environmentally friendly system.

The birth of the T.0X series would be impossible without a revolutionary manufacturing method. The T.0X module production is fully robotised, which translates into high reliability and high supply capacity.

This series also incorporates significant technological progress in electronic design and signal processing.

This progress, result of Televes leadership in R & D & I, become innovative advantages making the installer and the end user obtain the following benefits:

Energy efficiency, lower consumption and heat dissipation negligible. Distributing signals by headends is a low-power and ecological operation.



T.0X

THE NEW GENERATION
OF DIGITAL SERVICES

T.0X: A SYSTEM WITH NO LIMITS

A single supply voltage, possible by the use of DC/DC converters for each modules. One feature that also contribute to energy efficiency. Furthermore, the wiring becomes easy, and therefore the mounting of the equipment.

More services with fewer modules, their mechanical design makes quick and easy the mounting and start-up of these modules, both DIN rail or RACK.

The use of FPGA, allows compact development of different modulation solutions, avoiding the use of special-purpose integrated circuits, and optimizing the cooling of the modules.

Common Interface, thanks to CI the distribution of encrypted services is possible. The installer, by an appropriate CAM (standard/professional) and its card, defines which services are decrypted and therefore free to the output of the module.

Intelligent headends, the IP/GSM Headend Management Unit (CDC), together with TSuite, allows remote communication with the headend, to change or monitoring configuration parameters.

SERIE T.0X

Depending on the processing service, all T.0X devices can be grouped into following sections:

- **SMATV Headends**
- **MATV Headends**
- **Headend Management**
- **Fibre Optics (see section "Optical fiber")**

T.0X

For configuration, signal adaptation and installation of the equipment, there is the group of "Auxiliary Equipment and Accessories".

- CDC IP: ref. 5559.
- CDC IP/GSM: ref. 555901.
- Control Software TSuite: ref. 216801.
- High power Push-Pull amplifier: ref. 5575.
- Switched-mode PSU: ref. 5629.
- Programming unit PCT 5.0: ref. 7234.
- USB-COM adapter: ref. 5838.
- 75 Ω load (DC blocked): ref. 4061.
- 75 Ω load: ref. 4058.
- Standard wall mount L= 498mm (PSU+7 Units T0X): ref. 5071.
- Standard wall mount L=560mm (PSU+8 Units T0X): ref.5239.
- Frame rack 19"/5U (PSU+7 Units T0X): ref.5301.
- Lockable cabinet: 7 Units + PSU (including ventilation unit): ref. 507202.
- Rack 19" 15U: ref. 5333.
- Rack 19" 28U: ref. 5331.
- Rack 19 " 37U: ref. 5332.
- Blank plate: ref. 5673.
- Control bus lead 1m: ref.422603.

SMATV/MATV T.0X SERIES - QUICK REFERENCE GUIDE

OUTPUT / INPUT	DVB-C (QAM)		DVB-T (COFDM)		PAL	
	FTA	CI/FTA	FTA	CI/FTA	FTA	CI/FTA
DVB-S2 (QPSK/8PSK)	5630 (Twin)	563501 564101 (MUX)	563101 563199 (S_ID)	563301 564201 (MUX)	–	
DVB-S (QPSK)					–	553701 / 553702 (Twin)
DVB-T (COFDM)		563601	564901 (Twin)	563401	–	
A/V	–		–		5806 (Twin)	–

Televes

SMATV HEADENDS

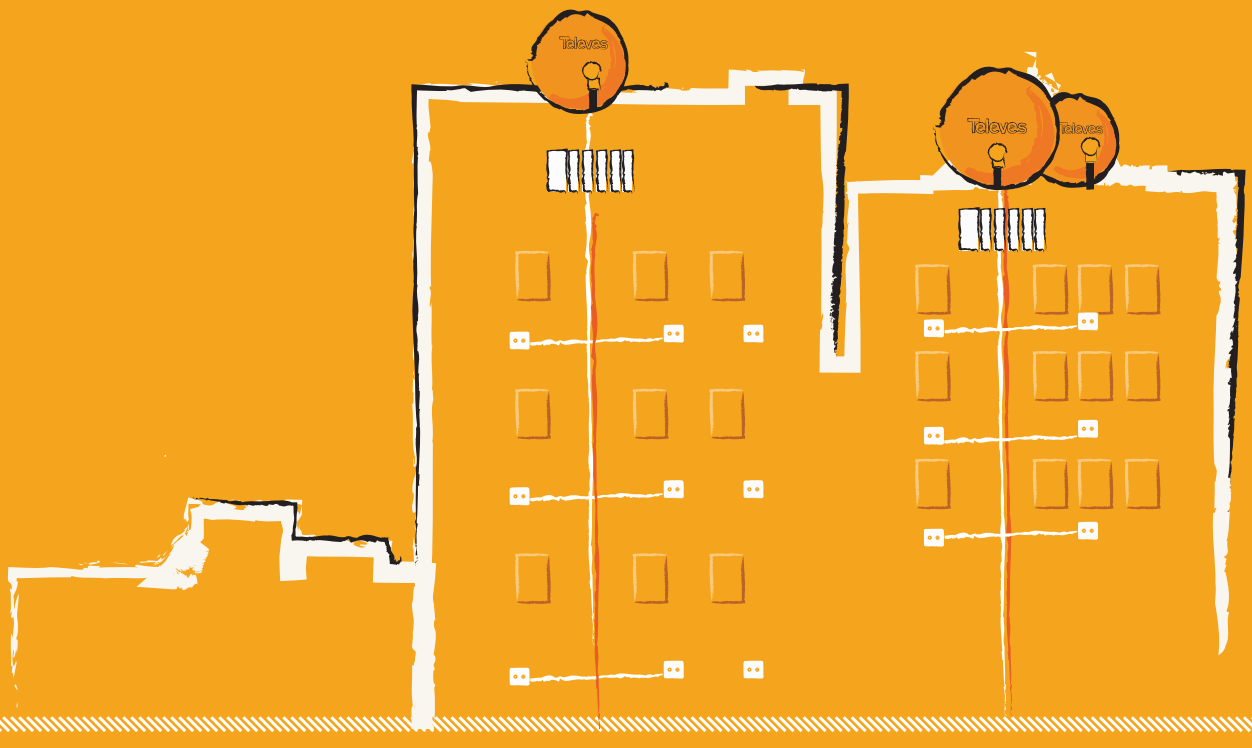
Modules that receive the signal TVSAT, transmodulating it to different formats depending on the type of distribution network: PAL, DVB-T and DVB-C.

The digital output modules T0X (COFDM and QAM) are capable of receiving signals in DVB-S2, enabling the installation to provide content in high definition (HDTV). The parameter adjustment is simple and intuitive.

The modules, with COFDM format output, have an automatic detection system modulation format of the input signal so as to facilitate the work of setting and programming.

The installer can adjust the format of the output signal to the requirements of the network you have to give service.

In the adjustment phase, the modules generate information on the quality of the input signal, the digital output modules also provide information about the occupancy of the output signal.



Transmodulador DVBS/S2 - COFDM

QR-A00167

Transmodulator that generates a DTT multiplex from services whose origin is a TVSAT transponder in either DVBS (QPSK) or DVBS2 (QPSK /8PSK) modulation formats.

Once extracted the MPEG2 TS, it is re-modulated in COFDM format to obtain an output channel (7/8 MHz bandwidth) in VHF/UHF by means of a agile up-converter.

Settings of operation parameters can be performed by means of the programming unit (ref. 7234): input frequency, output channel, modulation format and adaptation of services, mainly.

- **Total or selective** elimination of services received, so that they cannot be detected (and stored) by the STB*.
- **Edition of TS_ID** to facilitate detection of programs / services in the receiver (STB).*
- **Edition of Network_ID, Original Network_ID and Cell_ ID** to control network IDs.
- Allows you to assign an **LCN (Logical Channel Number)** to the services present in the output, which facilitates the management of channels in the receiver (STB).*
- **Edition of S_ID,** to avoid retuning of receivers (STB)* when the services of a multiplex are changed at its output.

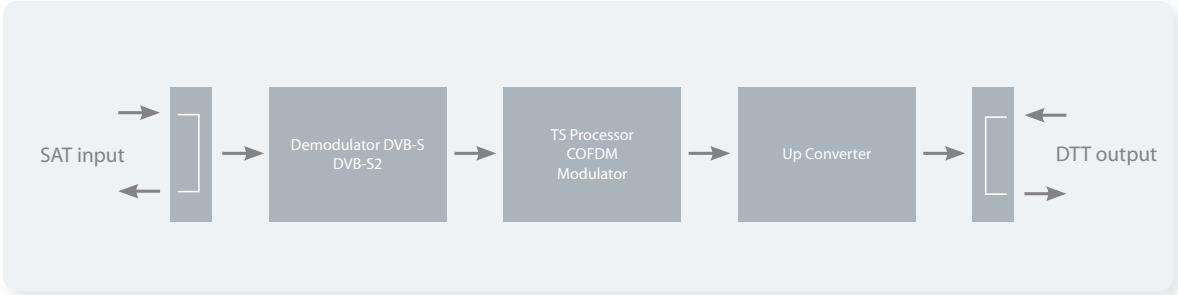
▲ 563101

REF.	DESCRIPTION
563101	Transmodulador DVBS/S2 - COFDM (BIII/UHF) + control SID

	CONNECTIONS
1	SAT IF input
2	SAT IF output
3	Power BUS
4	Control BUS
5	Programming unit/ PC socket
6	RF input
7	RF output + 1 COFDM channel

** Receiver (STB) or TV set with built-in DTT (COFDM) tuner.*

BLOCK DIAGRAM



SMATV

Reference				563101	
SAT INPUT	SAT	Input frequency range	MHz	950...2150	
		Frequency steps		1	
		Input level	dBµV	49 - 90	
		Loop-through losses	dB	≤ 1,5	
		LNB powering	Vdc	13V/17V/ OFF - 22 KHz (ON/OFF)	
		Input return losses (typ.)	dB	> 10	
		Input impedance	Ω	75	
	DVB-S	Modulation		10-30 (QPSK - 8PSK)	
		Symbol rate	Mbaud	2 - 42,5	
		FEC inner code		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)	
		FEC outer code		RS (188/204)	
		Roll-Off factor	%	20, 25, 35	
	DVB-S2	Modulation		QPSK / 8PSK	
		Symbol rate	Mbaud	10 - 30	
		FEC inner code		LDPC (1/2, 1/3, 1/4, 2/3, 2/5, 3/4, 3/5, 4/5, 5/6, 8/9, 9/10)	
		FEC outer code		BCH (Bose-Chaudhuri-Hocquenghem)	
		Roll-Off factor	%	20, 25, 35	
DTT OUTPUT	COFDM	Modulation (Constellation)		COFDM (QPSK, 16 QAM, 64 QAM)	
		FFT		8K	
		Guard interval	µs	1/4, 1/8, 1/16, 1/32	
		Scrambling		DVB EN 300744	
		Interleaving		DVB EN 300744	
		Convolutional code (FEC)		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)	
		PCR correction		yes	
		Services deleting		yes	
		Network_ID		yes	
		Original Network_ID		yes	
		Cell_ID		yes	
		TS_ID		yes	
		Spectral inversion		Normal, Inverted	
		Channel bandwidth	MHz	7, 8	
	RF	Output frequency		177 - 266 / 474 - 858 MHz (channel mode) 45 - 862 MHz (frequency mode)	
		Frequency steps	KHz	166	
		Output level (max. typ.)	dBµV	80 ± 5	
		Output level regulation margin	dB	>15	
		MER		>32	
		Output loop-through losses		≤ 1,5	
		Output return losses (typ.)		> 12	
		Output impedance	Ω	75	
GENERAL		Powering voltage	Vdc	24	
		Consumption	mA	270 mA (not powering LNB) 480 mA (including a LNB of 300 mA consumption)	
		Ingress protection	IP	20	
		Dimensions (W x H x D)	mm	50 x 216 x 175	

Programmable Automatic

DVBS/S2 - COFDM CI Transmodulator

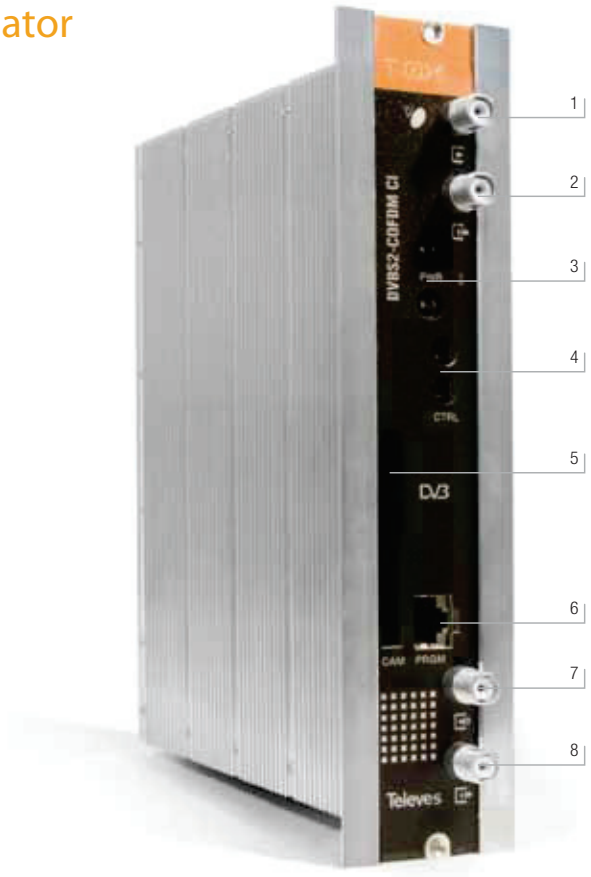
QR-A00132

Transmodulator that generates a DTT multiplex from services whose origin is a TVSAT transponder in either DVBS (QPSK) or DVBS2 (QPSK /8PSK) modulation formats.

Once extracted the MPEG2 TS, it is re-modulated in COFDM format to obtain an output channel (7/8 MHz bandwidth) in VHF/UHF by means of a agile up-converter.

Settings of operation parameters can be performed by means of the programming unit (ref. 7234): input frequency, output channel, modulation format and adaptation of services, mainly.

- **Total or selective** elimination of services received, so that they cannot be detected (and stored) by the STB*.
- **Edition of TS_ID** to facilitate detection of programs / services in the receiver (STB).*
- **Edition of Network_ID, Original Network_ID and Cell_ID** to control network IDs.
- Allows you to assign an **LCN (Logical Channel Number)** to the services present in the output, which facilitates the management of channels in the receiver (STB).*
- Through its **CI interface**, and the corresponding CAM module, encrypted satellite channels become free DTT services. According to the CAM used (standard/ professional) it is possible open one or more services for free TV.



REF.	DESCRIPTION
563301	DVBS/S2 - COFDM CI (BIII/UHF) Transmodulator

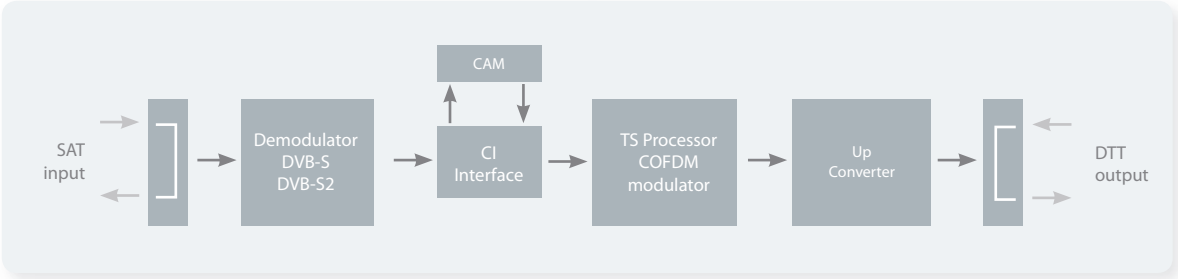
Note:

Due to the large number of manufacturers of CAM modules, it is a responsibility of the client to verify appropriate combinations of CAMs that will work properly with this transmodulator.

** Receiver (STB) or TV set with built-in DTT (COFDM) tuner.*

	CONNECTIONS
1	SAT IF input
2	SAT IF output
3	Power
4	Control BUS
5	CAM slot
6	Programming unit/ PC socket
7	RF input
8	RF output + 1 COFDM channel

BLOCK DIAGRAM



SMATV

Reference				563301	
SAT INPUT	SAT	Input frequency range	MHz	950...2150	Programmable
		Frequency steps		1	Programmable
		Input level	dBµV	49 - 90	
		Loop-through losses	dB	≤ 1,5	
		LNB powering	Vdc	13V/17V/ OFF - 22 KHz (ON/OFF)	Programmable
		Input return losses (typ.)	dB	> 10	
		Input impedance	Ω	75	
	DVB-S	Modulation		QPSK	Automatic
		Symbol rate	Mbaud	2 - 42,5	Programmable
		FEC inner code		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)	Automatic
		FEC outer code		RS (188/204)	Automatic
		Roll-Off factor	%	35	Automatic
	DVB-S2	Modulation		QPSK / 8PSK	Automatic
		Symbol rate	Mbaud	10 - 30	Programmable
		FEC inner code		LDPC (1/2, 1/3, 1/4, 2/3, 2/5, 3/4, 3/5, 4/5, 5/6, 8/9, 9/10)	Automatic
		FEC outer code		BCH (Bose-Chaudhuri-Hocquenghem)	Automatic
		Roll-Off factor	%	20, 25, 35	Automatic
DTT OUTPUT	COFDM	Modulation (Constellation)		COFDM (QPSK, 16 QAM, 64 QAM)	Programmable
		FFT		8K	
		Guard interval	µs	1/4, 1/8, 1/16, 1/32	Programmable
		Scrambling		DVB EN 300744	Automatic
		Interleaving		DVB EN 300744	Automatic
		Convolutional code (FEC)		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)	Programmable
		PCR correction		yes	Automatic
		Services deleting		yes	Programmable
		Network_ID		yes	Programmable
		Original Network_ID		yes	Programmable
		Cell_ID		yes	Programmable
		TS_ID		yes	Programmable
		Spectral inversion		Normal, Inverted	Programmable
		Channel bandwidth	MHz	7, 8	Programmable
	RF	Output frequency		177 - 266 / 474 - 858 MHz (channel mode) 45 - 862 MHz (frequency mode)	Programmable
		Frequency steps	KHz	166,125	Programmable
		Output level (max. typ.)	dBµV	80 ± 5	Programmable
		Output level regulation margin	dB	>12	Programmable
		MER		>32	
		Output loop-through losses		≤ 1,5	
		Output return losses (typ.)		> 12	
		Output impedance	Ω	75	
GENERAL		Powering voltage	Vdc	24	
		Consumption	mA	280mA (without CAM; LNB not powered) 330mA (with CAM inserted; LNB not powered) 500mA (without CAM; LNB* powered) 540mA (with CAM inserted; LNB* powered) **Considering 300 mA LNB consumption, approx.*	
		Ingress protection	IP	20	
		Dimensions (W x H x D)	mm	50 x 216 x 175	

Programmable Automatic

DVBS/S2 - QAM CI Multiplexer Transmodulator

QR-A00169

Transmodulator that generates a QAM MUX, from services coming from up to three TVSAT transponders and 2 different satellites (2 independent SAT IF inputs).

- Adaptation of the transport stream to the requirements of the DVB-C by:
  - Inclusion of null packets ("Stuffing") for faster scans of the receiver (STB).*
  - **Total or selective deleting of services** from the received Multiplexes to avoid being detected (and stored) by the receiver (STB).*
- **Edition of TS_ID** to facilitate detection of programs / services in the receiver (STB).*
- **Edition of Network_ID, Original Network_ID and Cell_ID** to control network IDs.
- **PID filtering,** allows you to delete services not interested in a multiplex (exploiting the occupation). Very interesting feature when used with a CAM.
- Allows you to assign an **LCN (Logical Channel Number)** to the services present in the output, which facilitates the management of channels in the receiver (STB).*
- Through its **CI interface**, and the corresponding CAM module, encrypted satellite channels become free DTT services. According to the CAM used (standard/ professional) it is possible open one or more services for free TV.
- Provides **information** about the **occupation of each service** and the total occupation of the QAM output signal, which allows optimization of distributed services.

REF.	DESCRIPTION
564101	DVBS/S2-QAM CI (47...862MHz) Multiplexer Transmodulator

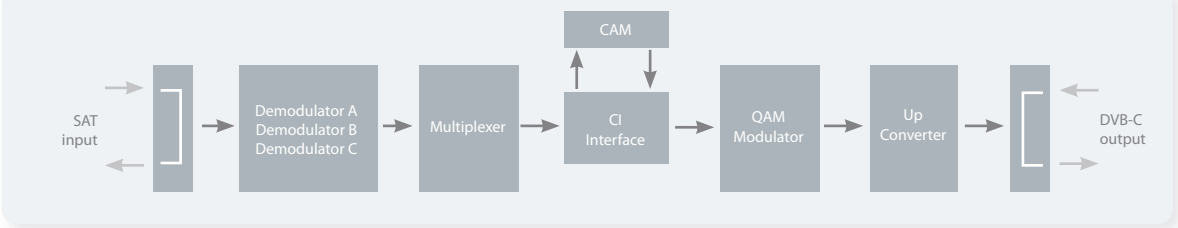
Note:

Due to the large number of manufacturers of CAM modules, it is a responsibility of the client to verify appropriate combinations of CAMs that will work properly with this transmodulator.

** Receiver (STB) or TV set with built-in QAM tuner.*

	CONNECTIONS
1	SAT IF input A
2	SAT IF input B (or loop-through)
3	Power BUS
4	Control BUS
5	CAM slot
6	Programming unit/ PC socket
7	RF input
8	RF output + 1 channel QAM

BLOCK DIAGRAM



SMATV

Reference				564101	
SAT INPUT	SAT	Input frequency range	MHz	950...2150	P
		Frequency steps		1	P
		Input level	dBµV	42...82	
		Loop-through losses	dB	≤ 1,5	
		LNB powering	Vdc	13V/17V/ OFF - 22 KHz (ON/OFF)	P
		Input return losses (typ.)	dB	> 10	
		Input impedance	Ω	75	
	DVB-S	Modulation format		QPSK	P
		Symbol rate	Mbaud	2 - 42,5	P
		FEC inner code		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)	A
		FEC outer code		RS (188/204)	A
		Roll-Off factor	%	35	A
	DVB-S2	Modulation format		QPSK / 8PSK	P
		Symbol rate	Mbaud	10 - 30	P
		FEC inner code		LDPC (1/2, 1/3, 1/4, 2/3, 2/5, 3/4, 3/5, 4/5, 5/6, 8/9, 9/10)	A
		FEC outer code		BCH (Bose-Chaudhuri-Hocquenghem)	A
		Roll-Off factor	%	20, 25, 35	A
DVB-C OUTPUT	QAM	Modulation (Constellation)		16, 32, 64, 128, 256 QAM	P
		Symbol rate	Mbaud	6,9	P
		Scrambling		DVB EN 300429	A
		Interleaving		DVB EN 300429	A
		FEC outer code		RS (188, 204)	A
		Roll-Off factor	%	15	A
		PCR correction		yes	A
		Services deleting		yes	P
		Network_ID		yes	P
		Original Network_ID		yes	P
		TS_ID		yes	
		Spectral inversion		Normal, Inverted	P
		Channel bandwidth (max.)	MHz	8,3	
	RF	Output frequency		47...862	P
		Frequency steps	KHz	250	P
		Output level (max. typ.)	dBµV	> 80 ± 5	P
		Output level regulation margin	dB	> 15	P
		Output loop-through losses	dB	<1,5	
		Output return losses (typ.)		> 12	
		Output impedance	Ω	75	
		MER	dB	> 40	
		Output modes		normal, CW (Continuous Wave), OFF, NULL	P
GENERAL		Powering voltage	Vdc	24	
		Consumption	mA	520 (0 LNB / 0 CAM) 620 (0 LNB / 1 CAM) 870 (1 LNB / 1 CAM) 1120 (2 LNBs / 1 CAM)	
		Ingress protection	IP	20	
		Dimensions (W x H x D)	mm	50 x 216 x 175	

P Programmable A Automatic

DVBS/S2 - COFDM CI Multiplexer Transmodulator

QR-A00163

This transmodulator generates a COFDM multiplex by multiplexing services from up to 3 satellite digital transponders. These services can be extracted either from 2 different satellites (2 independent SAT IF inputs) or from 1 satellite and the input loop-through of the headend itself.

- Adaptation of the transport stream to the requirements of the DVB-T by:
  - Inclusion of **null packets ("Stuffing")** for faster scans of the receiver (STB).*
  - **Total or selective deleting of services** from the received Multiplexes to avoid being detected (and stored) by the receiver (STB).*
- **Edition of TS_ID** to facilitate detection of programs / services in the receiver (STB).*
- **Edition of Network_ID, Original Network_ID and Cell_ID** to control network IDs.
- **PID filtering,** allows you to delete services not interested in a multiplex (exploiting the occupation). Very interesting feature when used with a CAM.
- Allows you to assign an **LCN (Logical Channel Number)** to the services present in the output, which facilitates the management of channels in the receiver (STB).*
- Provides **information** about the **occupation of each service** and the total occupation of the COFDM output signal, which allows optimization of distributed services.
- **Edition of S_ID,** to avoid retuning of receivers (STB)* when the services of a multiplex are changed at its output.
- Through its **CI interface**, and the corresponding CAM module, encrypted satellite channels become free DTT services. According to the CAM used (standard/ professional) it is possible open one or more services for free TV.

	CONNECTIONS
1	SAT IF input **A**
2	SAT IF input **B** (or loop-through)
3	Power BUS
4	Control BUS
5	CAM slot
6	Programming unit/ PC socket
7	RF input
8	RF output + 1 channel COFDM

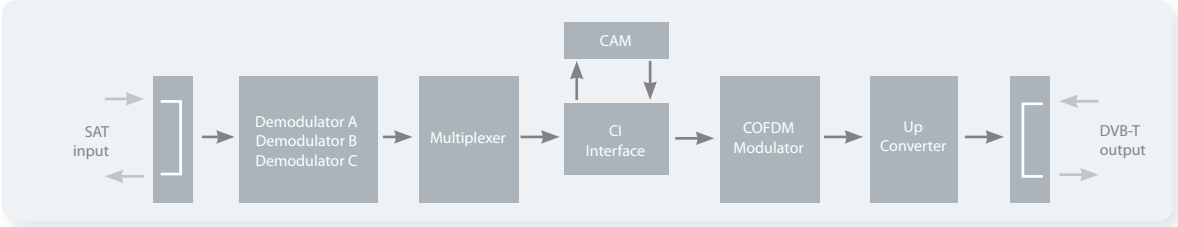
REF.	DESCRIPTION
564201	DVBS/S2-COFDM CI (UHF) Multiplexer Transmodulator

Note:

Due to the large number of manufacturers of CAM modules, it is a responsibility of the client to verify appropriate combinations of CAMs that will work properly with this transmodulator.

** Receiver (STB) or TV set with built-in DTT (COFDM) tuner.*

BLOCK DIAGRAM



SMATV

Reference				564201	
SAT INPUT	SAT	Input frequency range	MHz	950...2.150	Programmable
		Frequency steps		1	Programmable
		Input level	dBµV	42...82	
		Loop-through losses	dB	≤ 1,5	
		LNB powering	Vdc	13V/17V/ OFF - 22 KHz (ON/OFF)	Programmable
		Input return losses (typ.)	dB	> 10	
		Input impedance	Ω	75	
	DVB-S	Modulation format		QPSK	Programmable
		Symbol rate	Mbaud	2 - 42,5	Programmable
		FEC inner code		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)	Automatic
		FEC outer code		RS (188/204)	Automatic
		Roll-Off factor	%	35	Automatic
	DVB-S2	Modulation format		QPSK / 8PSK	Programmable
		Symbol rate	Mbaud	10 - 30	Programmable
		FEC inner code		LDPC (1/2, 1/3, 1/4, 2/3, 2/5, 3/4, 3/5, 4/5, 5/6, 8/9, 9/10)	Automatic
		FEC outer code		BCH (Bose-Chaudhuri-Hocquenghem)	Automatic
		Roll-Off factor	%	20, 25, 35	Automatic
DVB-T OUTPUT	COFDM	Modulation (Constellation)		QPSK, 16 QAM, 64 QAM	Programmable
		Scrambling		DVB EN 300744	Automatic
		Interleaving		DVB EN 300744	Automatic
		Guard interval		1/4, 1/8, 1/16, 1/32	
		FEC		1/2, 2/3, 3/4, 5/6, 7/8	Automatic
		PCR correction		yes	Automatic
		Services deleting		yes	Programmable
		Cell_ID		selectable	
		Network_ID		yes	Programmable
		Original Network_ID		yes	Programmable
		TS_ID		yes	Programmable
		S_ID		yes	Programmable
		Spectral inversion		Normal, Inverted	Programmable
		Channel bandwidth (max.)	MHz	7, 8	
	RF	Output frequency		47...862	Programmable
		Frequency steps	KHz	125 ...166 (user selectable)	Programmable
		Output level (max. typ.)	dBµV	> 80 ± 5	Programmable
		Output level regulation margin	dB	> 15	Programmable
		Output loop-through losses	dB	< 1,5	
		Output return losses (typ.)		> 12	
		Output impedance	Ω	75	
		MER	dB	> 40	
		Output modes		normal, CW (Continuous Wave), OFF, NULL	Programmable
GENERAL		Powering voltage	Vdc	24	
		Consumption	mA	520 (0 LNB / 0 CAM) 620 (0 LNB / 1 CAM) 870 (1 LNB / 1 CAM) 1120 (2 LNBs / 1 CAM)	
		Ingress protection	IP	20	
		Dimensions (W x H x D)	mm	50 x 216 x 175	

Programmable Automatic

DVBS/S2 - QAM Twin Transmodulator

QR-A00066

Transmodulator that generates two QAM (DVB-C) multiplexes from services whose origin is a transponder TVSAT or two transponders on the same band and polarization.

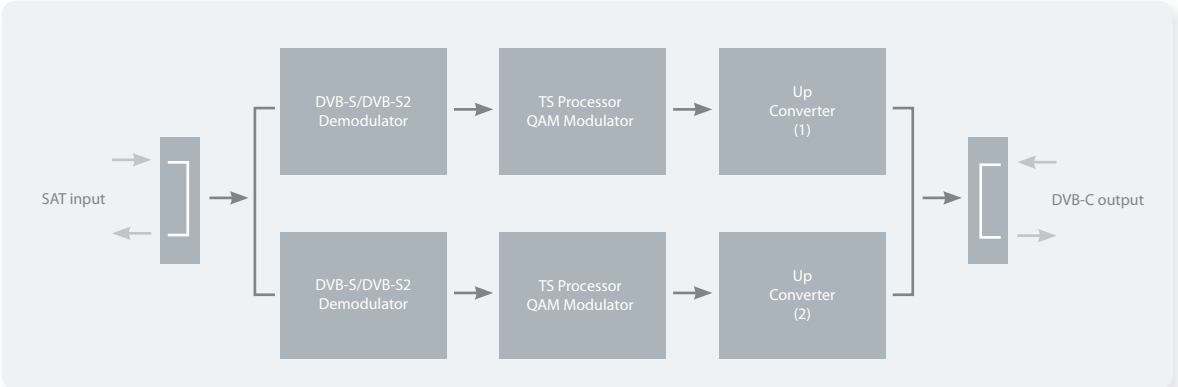
- Adaptation of the transport stream to the requirements of the DVB-C by:
  - Inclusion of **null packets ("Stuffing")** for faster scans of the receiver (STB).*
  - **Total or selective deleting of services** from the received Multiplexes to avoid being detected (and stored) by the receiver (STB).*
- **Edition of TS_ID** to facilitate detection of programs / services in the receiver (STB).*
- **Edition of Network_ID, Original Network_ID and Cell_ID** to control network IDs.
- **PID filtering,** allows you to delete services not interested in a multiplex (exploiting the occupation). Very interesting feature when used with a CAM.
- Allows you to assign an **LCN (Logical Channel Number)** to the services present in the output, which facilitates the management of channels in the receiver (STB).*

REF.	DESCRIPTION
5630	DVBS/S2-QAM Twin (47...862 MHz) Transmodulator

	CONNECTIONS
1	SAT IF input
2	SAT IF output
3	Powering
4	Control BUS
5	Programming unit/ PC socket
6	RF input
7	RF output + 1 channel QAM

** Receiver (STB) or TV set with built-in QAM tuner.*

BLOCK DIAGRAM



SMATV

Reference				5630	
SAT INPUT	SAT	Input frequency range	MHz	950...2150	
		Frequency steps		1	
		Input level	dBµV	49 - 84	
		Loop-through losses	dB	≤ 1,5	
		LNB powering	Vdc	13V/17V/ OFF - 22 KHz (ON/OFF)	
		Input return losses (typ.)	dB	> 10	
		Input impedance	Ω	75	
	DVB-S	Modulation		QPSK	
		Symbol rate	Mbaud	2 - 42,5	
		FEC inner code		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)	
		FEC outer code		RS (188/204)	
		Roll-Off factor	%	35	
	DVB-S2	Modulation		QPSK / 8PSK	
		Symbol rate	Mbaud	10 - 30	
		FEC inner code		LDPC (1/2, 1/3, 1/4, 2/3, 2/5, 3/4, 3/5, 4/5, 5/6, 8/9, 9/10)	
		FEC outer code		BCH (Bose-Chaudhuri-Hocquenghem)	
		Roll-Off factor	%	20, 25, 35	
DVB-C OUTPUT	QAM	Modulation (Constellation)		16, 32, 64, 128, 256 QAM	
		Symbol rate	Mbaud	1 - 6,9	
		Scrambling		DVB EN 300429	
		Interleaving		DVB EN 300429	
		FEC outer code		RS (188, 204)	
		Roll-Off factor	%	15	
		PCR correction		yes	
		Services deleting		yes	
		Op_ID		yes	
		Network_ID		yes	
		Original Network_ID		yes	
		TS_ID		yes	
		Spectral inversion		Normal, Inverted	
		Bandwidth (max.)	MHz	8,3	
	RF	Output frequency	MHz	47...862	
		Frequency steps	KHz	250	
		Output level (max. typ.)	dBµV	80 ± 5	
		Output level regulation margin	dB	> 15	
		Output loop-through losses	dB	≤ 1,5	
		Output return losses (typ.)		> 12	
		Output impedance	Ω	75	
GENERAL		Powering voltage	Vdc	24	
		Consumption	mA	550 (0 LNB), 800 (1 LNB)	
		Ingress protection	IP	20	
		Dimensions (W x H x D)	mm	50 x 216 x 175	

Programmable Automatic

DVBS/S2 - QAM CI Transmodulator

QR-00177

Transmodulator that generates a QAM multiplex from services whose origin is a TV SAT transponder.

- Adaptation of the transport stream to the requirements of the DVB-C by:
  - Inclusion of **null packets ("Stuffing")** for faster scans of the receiver (STB).*
  - **Total or selective deleting of services** from the received Multiplexes to avoid being detected (and stored) by the receiver (STB).*
- **Edition of TS_ID** to facilitate detection of programs / services in the receiver (STB).*
- **Edition of Network_ID, Original Network_ID and Cell_ID** to control network IDs.
- **PID filtering,** allows you to delete services not interested in a multiplex (exploiting the occupation). Very interesting feature when used with a CAM.
- Allows you to assign an **LCN (Logical Channel Number)** to the services present in the output, which facilitates the management of channels in the receiver (STB).*
- Through its **CI interface**, and the corresponding CAM module, encrypted satellite channels become free DTT services. According to the CAM used (standard/ professional) it is possible open one or more services for free TV.

REF.	DESCRIPTION
563501	DVBS/S2-QAM CI (47...862MHz) Transmodulator

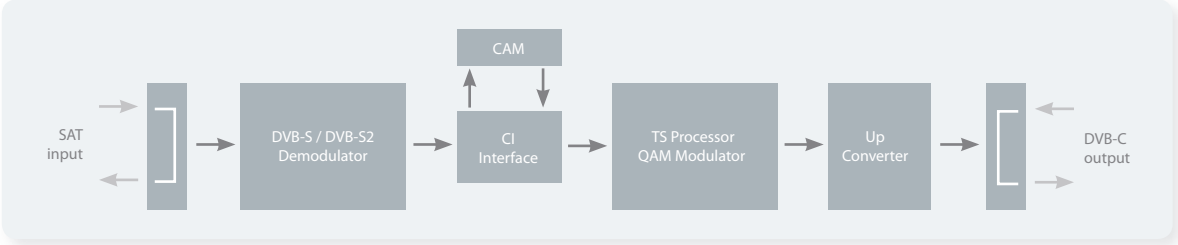
Note:

Due to the large number of manufacturers of CAM modules, it is a responsibility of the client to verify appropriate combinations of CAMs that will work properly with this transmodulator.

** Receiver (STB) or TV set with built-in QAM tuner.*

	CONNECTIONS
1	SAT IF input
2	SAT IF output
3	Power BUS
4	Control BUS
5	CAM slot
6	Programming unit/ PC socket
7	DVB-C input
8	DVB-C output + 1 channel QAM

DIAGRAMA DE BLOQUES



SMATV

Reference				563501	
SAT INPUT	SAT	Input frequency range	MHz	950...2150	
		Frequency steps		1	
		Locking margin		± 5	
		Input level	dBµV	49 - 84	
		Loop-through losses	dB	≤ 1,5	
		LNB powering	Vdc	13V/17V/ OFF - 22 KHz (ON/OFF)	
		Input return losses	dB	> 10	
		Input impedance	Ω	75	
	DVB-S	Modulation format		QPSK	
		Symbol rate	Mbaud	2 - 42,5	
		FEC inner code		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)	
		FEC outer code		RS (188/204)	
		Roll-Off factor	%	35	
	DVB-S2	Modulation format		QPSK / 8PSK	
		Symbol rate	Mbaud	10 - 30	
		FEC inner code		LDPC (1/2, 1/3, 1/4, 2/3, 2/5, 3/4, 3/5, 4/5, 5/6, 8/9, 9/10)	
		FEC outer code		BCH (Bose-Chaudhuri-Hocquenghem)	
		Roll-Off factor	%	20, 25, 35	
DVB-C OUTPUT	QAM	Modulation (Constellation)		16, 32, 64, 128, 256 QAM	
		Symbol rate	Mbaud	<6,9	
		Scrambling		DVB EN 300429	
		Interleaving		DVB EN 300429	
		FEC outer code		RS (188, 204)	
		Roll-Off factor	%	15	
		PCR correction		yes	
		Services deleting		yes	
		Network_ID		yes	
		Original Network_ID		yes	
		TS_ID		yes	
		Spectral inversion		Normal, Inverted	
		Channel bandwidth	MHz	< 8	
	RF	Output frequency		47...862	
		Frequency steps	KHz	250	
		Output level (max. typ.)	dBµV	80 ± 5	
		Output level regulation margin	dB	> 15	
		Output loop-through losses	dB	≤ 1,5	
		Output return losses		> 12	
		Output impedance	Ω	75	
GENERAL		Powering voltage	Vdc	24	
		Consumption	mA	300 (0 CAM - 0 LNB), 400 (1 CAM - 0 LNB) 550 (0 CAM - 1 LNB), 650 (1 CAM - 1 LNB)	
		Ingress protection	IP	20	
		Dimensions (W x H x D)	mm	50 x 216 x 175	

Programmable Automatic

Transmodulador QPSK - PAL CI Twin

QR-A00168

Transmodulator generating two analog channels (PAL) from services whose origin is a transponder TV SAT or two transponders on the same band and polarization.

- Generation of PAL channels with the possibility of modulation in stereo.
- Features a slot for insertion of a conditional access module (CAM): standard CAM for ref. 553701, and professional CAM for ref. 553702.
- **Ref. 553702** for decoding 2 programs from the same transponder via a **professional CAM**.
- Features two 3.5 mm jacks that provide baseband output for A/V signals of the channel generated.
- Audio language selection, manual or automatic.
- Automatic selection of subtitles language.
- Programmable audio level.
- Adaptation of emissions 16 / 9 (Letter-box, Pan & Scan, Full Screen).

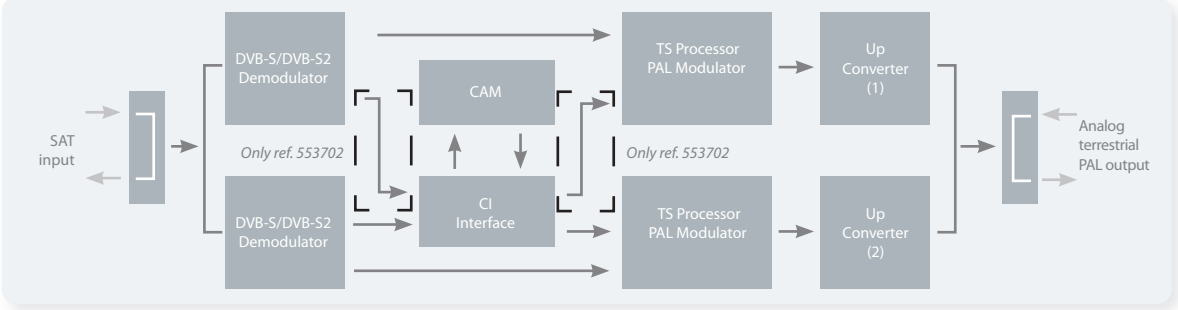
REF.	DESCRIPTION
553701	QPSK-PAL CI Twin Stereo (VSB 47...862MHz) Transmodulator
553702	QPSK-PAL CI Twin Estéreo (VSB 47...862MHz) Transmodulator For professional CAMs. Simultaneous decoding of 2 services.

	CONNECTIONS
1	SAT IF input
2	SAT IF output
3	Power BUS
4	Control BUS
5	A/V baseband outputs (modules A & B)
6	CAM slot
7	Programming unit/ PC socket
8	RF input
9	RF output + 2 channels PAL

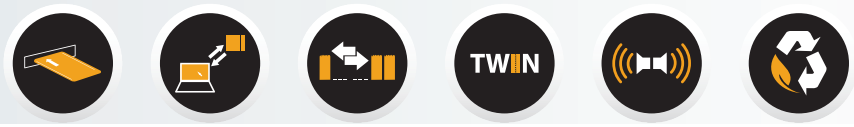
Note:

Due to the large number of manufacturers of CAM modules, it is a responsibility of the client to verify appropriate combinations of CAMs that will work properly with this transmodulator.

BLOCK DIAGRAM



SMATV



Reference				553701	553702	
SAT INPUT	SAT	Input frequency range	MHz	950...2150		Programmable
		Frequency steps		1		Programmable
		Input level	dBµV	44 - 84		
		Input loop-through losses	dB	≤ 1,5		
		LNB powering	Vdc	13V/17V/ OFF - 22KHz (ON/OFF)		Programmable
		Input return losses (typ)	dB	> 10		
		Impedance	Ω	75		
	DVB-S	Modulation Format		QPSK		Automatic
		Symbol rate	Mbaud	2 - 42,5		Automatic
		FEC inner code		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)		Automatic
		FEC outer code		RS (188, 204)		Automatic
		Roll-Off factor	%	35		Automatic
PAL OUTPUT	VIDEO	Input format 1		MPEG-1		Automatic
		Decoding 1		ISO/IEC 11172-2		Automatic
		Input format 2		MPEG-2		Automatic
		Decoding 2		ISO/IEC 13818-2(MP@ML)		Automatic
		TS input rate	Mbps	< 90		Automatic
		Video rate		1,5 - 15		Automatic
		Chrominance format		4 : 2 : 0		Automatic
		Video resolution	pixel	720 x 576		Automatic
	AUDIO	Input format 1		MPEG-1, MPEG-2		Automatic
		Decoding		LAYER1, LAYER2		Automatic
		Audio output		Stereo, Dual		Programmable
	RF	Output frequency	MHz	47...862		Programmable
		Frequency steps	KHz	250		Programmable
		V/A carriers spacing	MHz	4,5 / 5,5 / 6 / 6,5		
		V/A_{main} carriers ratio	dB	-12 / -16		
		$V/A_{secondary}$ carriers ratio		-18 / -20 / -23 / -24		
		Output level (max. typ.)	dBµV	80 ± 5		
		Output level regulation margin		> 15		Programmable
		C/N @ 5 MHz	dB	> 56		
		Output loop-through losses		≤ 1,5		
		Output return losses (typ.)		> 10		
		Impedance	Ω	75		
	CI	COnditional Access Module (CAM)	tipo	Standard	Professional	
GENERAL		Powering voltage	Vdc	24		
		Consumption	mA	550 (0 CAM - 0 LNB), 590 (1 CAM - 0 LNB) 755 (0 CAM - 1 LNB), 810 (1 CAM - 1 LNB)		
		Ingress protection	IP	20		
		Dimensions (W x H x D)	mm	50 x 216 x 175		

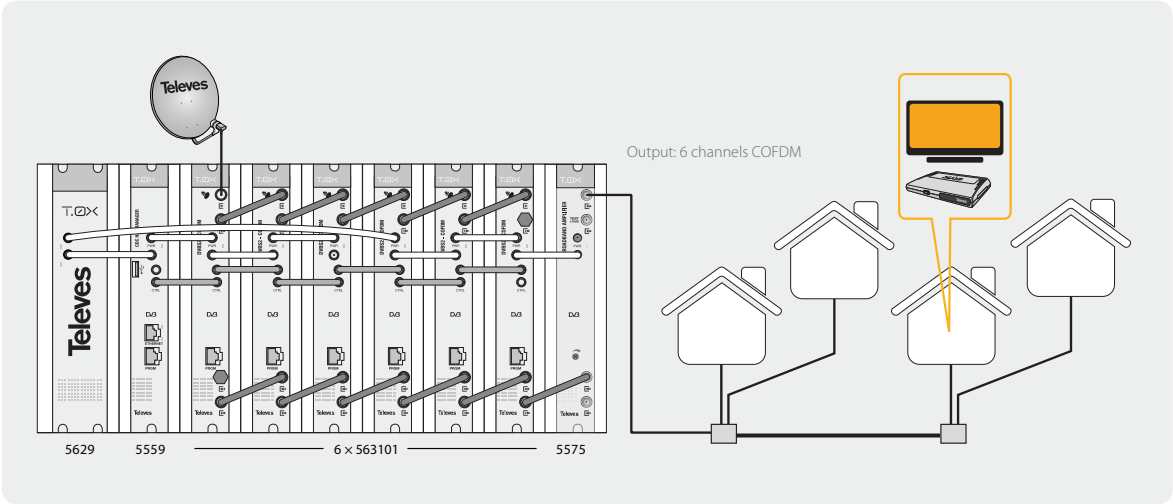
Programmable Automatic

APPLICATIONS

Ref. 563101

DVBS/S2 - COFDM

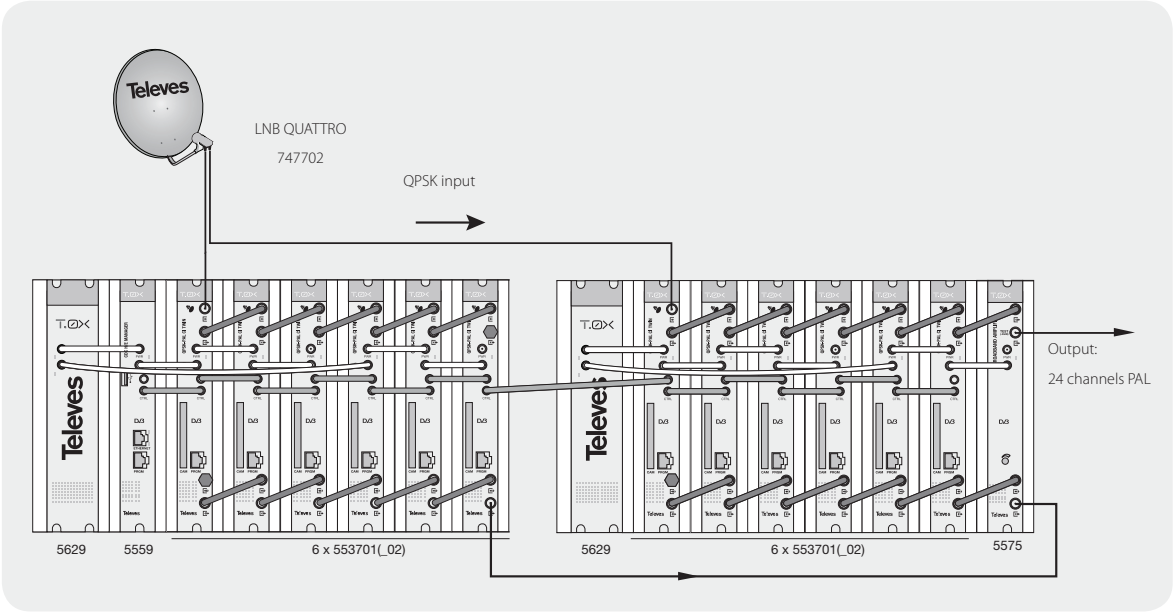
- FTA channels reception



Ref. 553701

QPSK - PAL CI Twin

- Retransmission, as free or coded services, of 24 SD channels received via satellite and converted into PAL channels. The headend includes the module of the remote control system CDC-IP/HE.



Note:

Due to the large number of manufacturers of CAM modules, it is a responsibility of the client to verify appropriate combinations of CAMs that will work properly with this transmodulator.

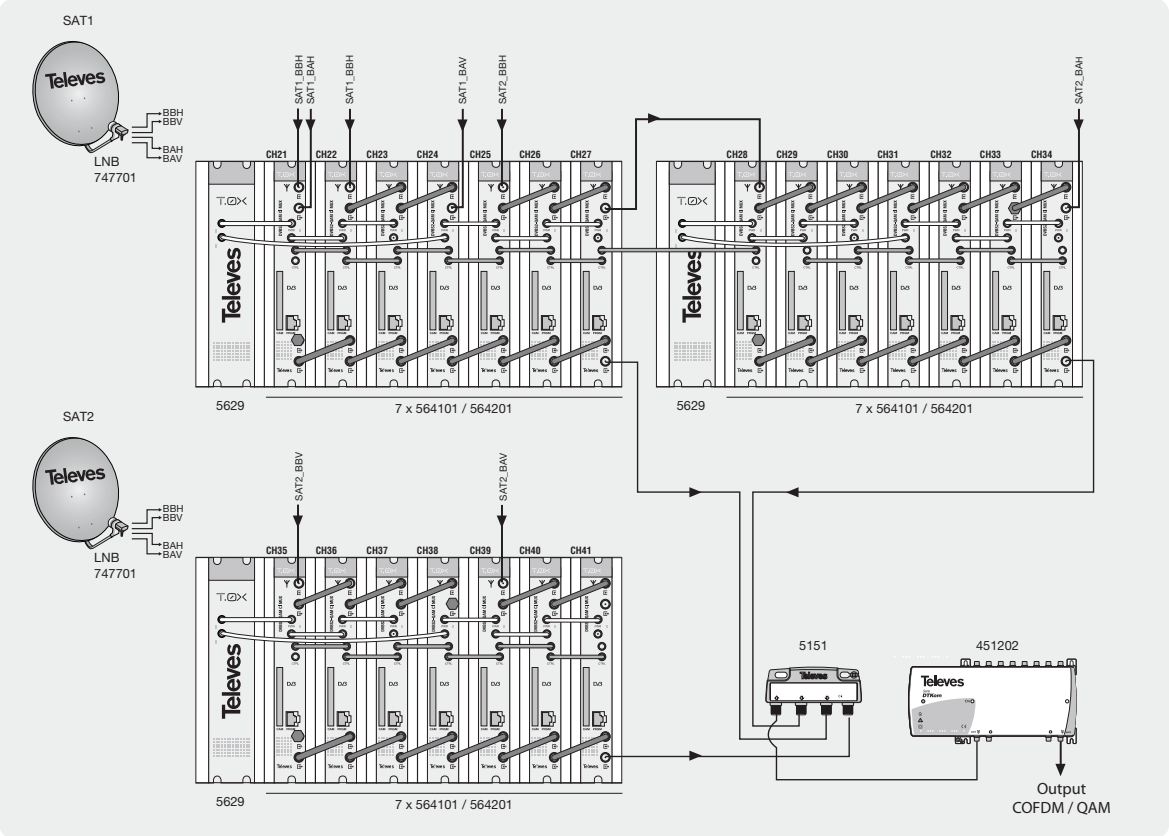
APPLICATIONS

Ref. 564101 / 564201

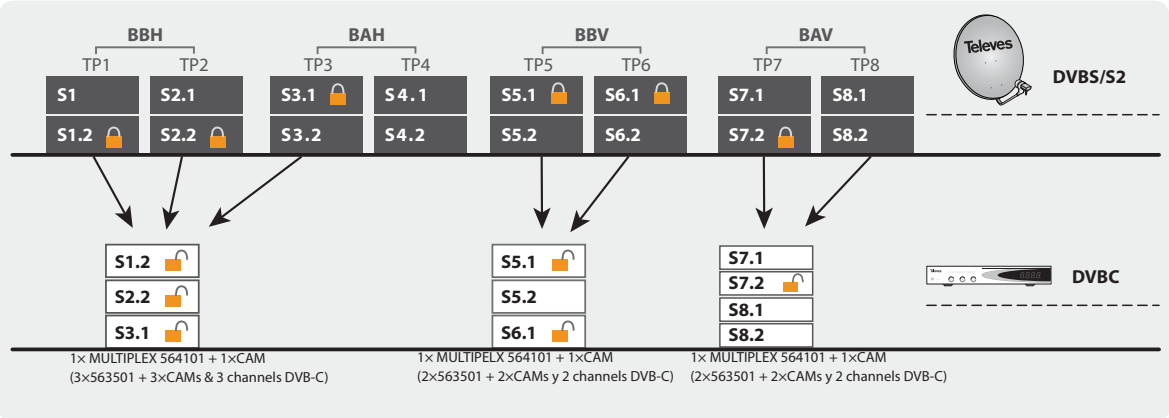
DVBS/S2 - QAM CI MUX 3:1

Multiplexing of 21 channels coming from 2 satellites, for distribution in QAM or COFDM.

Note: TS-ID of each unit must be different each other, otherwise it is not guaranteed a correct scanning of services.



Example of configuration and decoding of services from several DVB-C transponders.



** The number of encrypted programmes managed by the MULTIPLEX depends on the type of CAM used.*

Note:

Due to the large number of manufacturers of CAM modules, it is a responsibility of the client to verify appropriate combinations of CAMs that will work properly with this transmodulator.

Televes

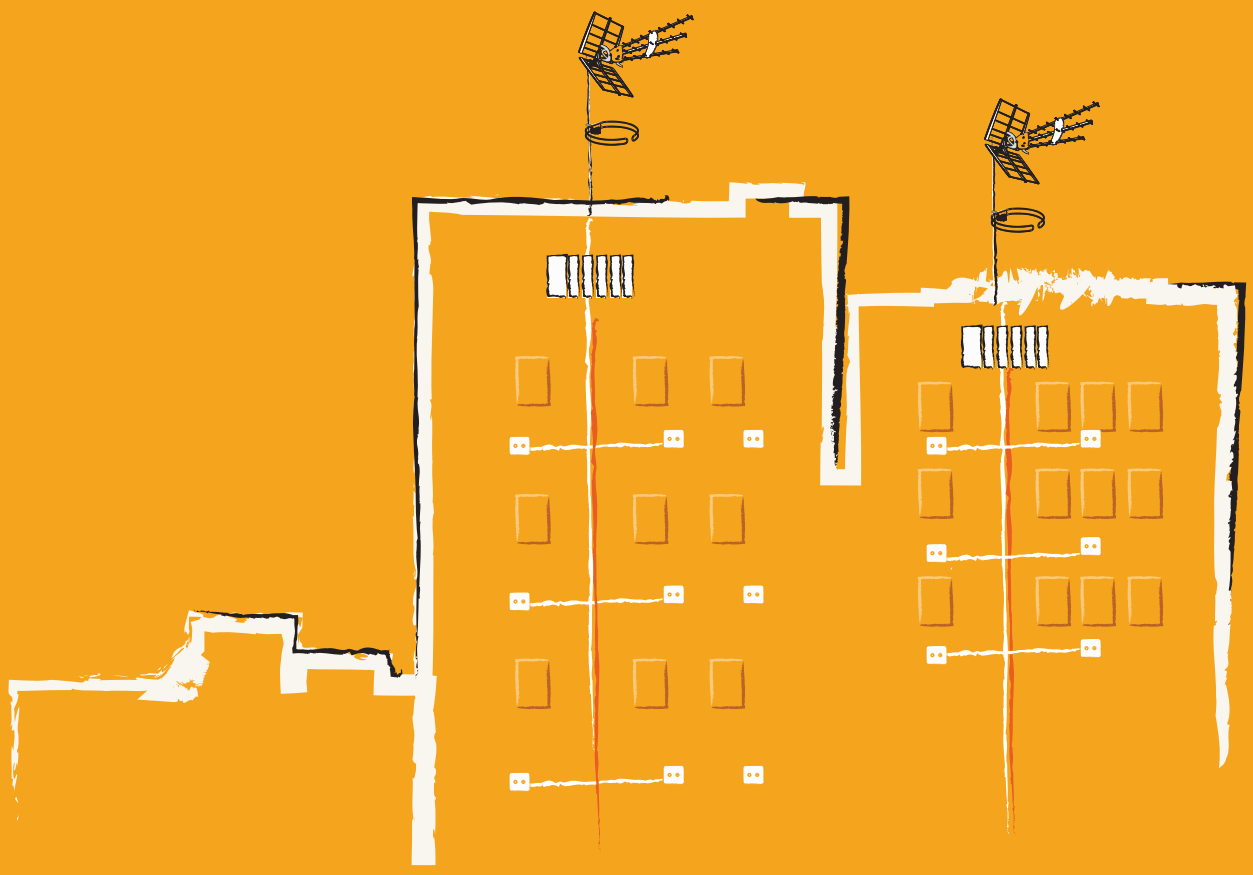
MATV HEADENDS

These modules receive terrestrial TV or A/V signals, and process them depending on the distribution network.

Modules with COFDM output have an automatic detection system of the input modulation format that makes easier their setting-up and configuration.

The installer can adjust the output signal format to the requirements of the distribution network.

During the adjusting phase, these modules generate information about the quality of the input signal. On the other hand they provide information about the occupation level of each service.

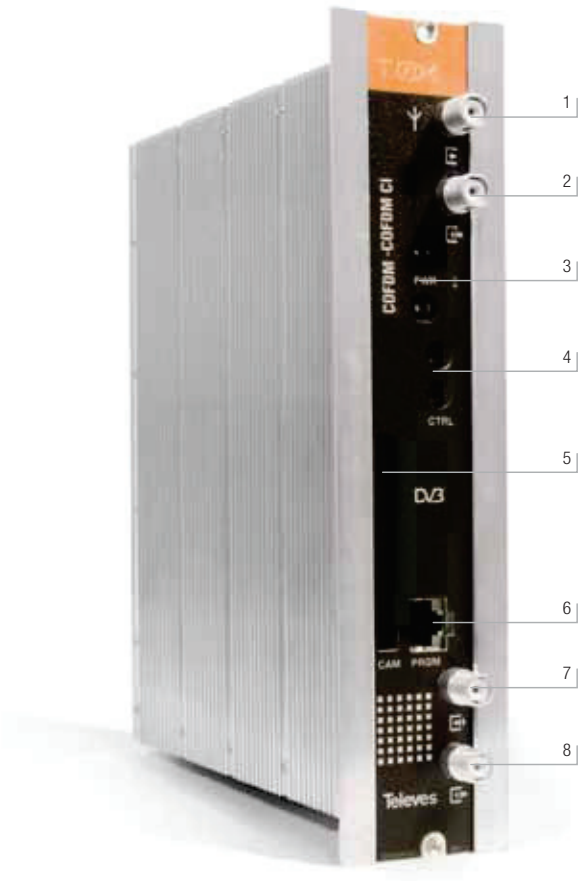


COFDM - COFDM CI Transmodulator- Renegenerator

QR-00178

Transmodulator that demodulates a DTT MULTIPLEX, obtaining the MPEG-2 Transport Stream that can be edited to remove and/or decryption of services. After processing, the Transport Stream is modulated in a new DTT MULTIPLEX.

- **Total or selective deleting of services** from the received Multiplexes to avoid being detected (and stored) by the receiver (STB).*
- **Edition of TS_ID** to facilitate detection of programs / services in the receiver (STB).*
- **Edition of Network_ID, Original Network_ID and Cell_ID** to control network IDs.
- **PID filtering,** allows you to delete services not interested in a multiplex (exploiting the occupation). Very interesting feature when used with a CAM.
- Allows you to assign an **LCN (Logical Channel Number)** to the services present in the output, which facilitates the management of channels in the receiver (STB).*
- It allows the **regeneration of the COFDM signal** when its impulses are deteriorating and have achieved a degree of degradation that prevents proper decoding by the STB. Given the nature of the digital signal through its regeneration is achieved it is again identical to the original signal..



REF.	DESCRIPTION
563401	COFDM-COFDM CI (BIII-UHF) Transmodulator

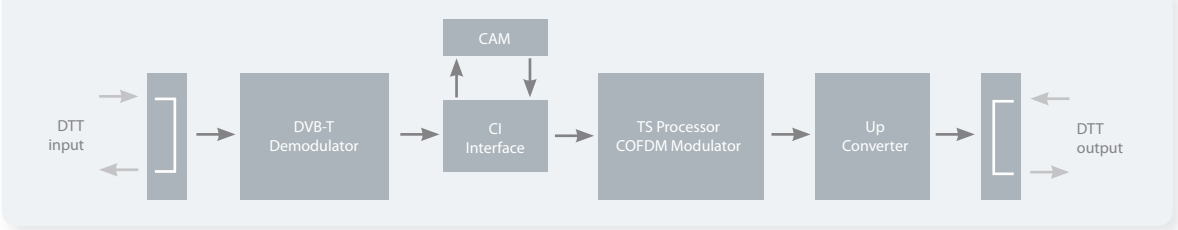
Note:

Due to the large number of manufacturers of CAM modules, it is a responsibility of the client to verify appropriate combinations of CAMs that will work properly with this transmodulator.

** Receiver (STB) or TV set with built-in COFDM tuner.*

	CONNECTIONS
1	RF input
2	RF output
3	Power BUS
4	Control BUS
5	CAM slot
6	Programming unit / PC socket
7	RF input
8	RF output

BLOCK DIAGRAM



MATV

Reference				563401	
DTT INPUT	DTT	Frequency range	MHz	177,5...226,5 (VHF) / 474...858 (UHF)	Programmable
		Frequency steps	KHz	125, 166	Programmable
		Locking margin		± 500	
		Input level	dBµV	49 - 90	
		Input loop-through losses	dB	≤ 1,5	
		Input line powering for preamps	Vdc	0, 12, 24	Programmable
		Input return loses (typ.)	dB	> 10	
		Impedance	Ω	75	
	DVB-T	Modulation		COFDM	
		Guard interval	µs	1/4, 1/8, 1/16, 1/32	Automatic
		Scrambling		DVB EN 300744	
		Interleaving		DVB EN 300744	
		FEC inner code		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)	Automatic
		FEC outer code		RS(188/204)	Automatic
		Bandwidth	MHz	7,8	Programmable
DTT OUTPUT	COFDM	Modulation (Constellation)		COFDM (QPSK, 16QAM, 64 QAM)	Automatic
		Guard interval	µs	1/4, 1/8, 1/16, 1/32	Automatic
		Scrambling		DVB EN 300744	Automatic
		Interleaving		DVB EN 300744	Automatic
		FEC		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)	Automatic
		PCR Correction		yes	Automatic
		Services deleting		yes	Programmable
		Network_ID		yes	Programmable
		Original Network_ID		yes	Programmable
		Cell_ID		yes	Programmable
		TS_ID		yes	Programmable
		Spectral inversion		Normal, Inverted	Automatic
		Bandwidth	MHz	7, 8	Programmable
	RF	Frequency range	MHz	177,5...226,5 (VHF) / 474...858 (UHF)	Programmable
		Frequency steps	KHz	125, 166	Programmable
		Output level (max. typ.)	dBµV	80 ± 5	
		Output level regulation margin	dB	> 15	Programmable
		MER		> 32	
		Output loop-through losses		≤ 1,5	
		Output return losses (typ.)		> 12	
		Impedance	Ω	75	
GENERAL		Powering voltage	Vdc	24	
		Consumption	mA	250 (0 Preamp. / 0 CAM), 300 (0 Preamp. / 1 CAM) 300 (1 Preamp. / 0 CAM), 340 (1 Preamp. / 1 CAM)	
		Ingress protection	IP	20	
		Dimensions (W x H x D)	mm	50 x 216 x 175	

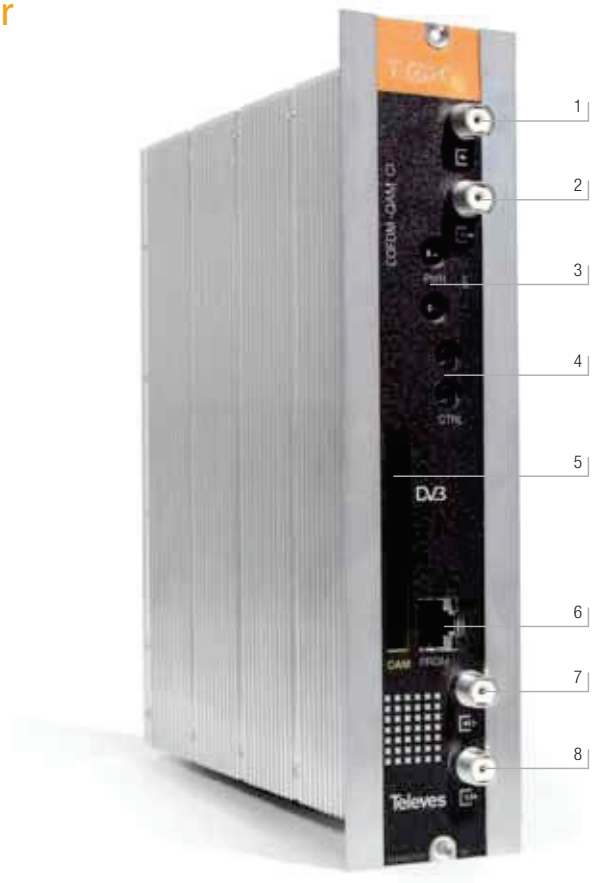
Programmable Automatic

COFDM - QAM CI Transmodulator

QR-00179

Transmodulator that demodulates a DTT MULTIPLEX, obtaining the MPEG-2 Transport Stream that can be edited to remove and/or decryption of services. After processing the transport stream is modulated in a new MULTIPLEX DVB-C QAM.

- **Total or selective deleting of services** from the received Multiplexes to avoid being detected (and stored) by the receiver (STB).*
- **Edition of TS_ID** to facilitate detection of programs / services in the receiver (STB).*
- **Edition of Network_ID, Original Network_ID and Cell_ID** to control network IDs.
- Allows you to assign an **LCN (Logical Channel Number)** to the services present in the output, which facilitates the management of channels in the receiver (STB).*
- Through its **CI interface**, and the corresponding CAM module, encrypted satellite channels become free DTT services. According to the CAM used (standard/ professional) it is possible open one or more services for free TV.



REF.	DESCRIPTION
563601	COFDM-QAM CI (47...862 MHz) Transmodulator

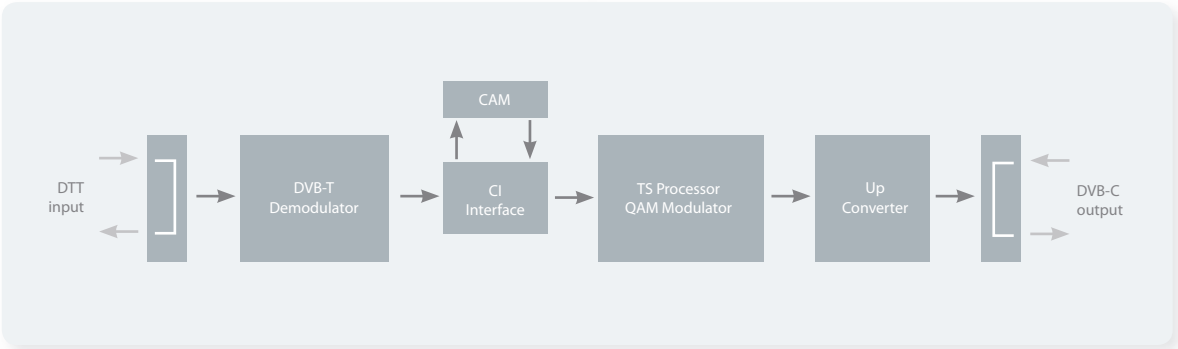
	CONNECTIONS
1	RF input
2	RF output
3	Power BUS
4	Control BUS
5	CAM slot
6	Programming unit / PC socket
7	RF input
8	RF output

Note:

Due to the large number of manufacturers of CAM modules, it is a responsibility of the client to verify appropriate combinations of CAMs that will work properly with this transmodulator.

** Receiver (STB) or TV set with built-in QAM tuner.*

BLOCK DIAGRAM



MATV

Reference				563601	
DTT INPUT	DTT	Frequency range	MHz	177,5...226,5(VHF) / 474...858(UHF)	Programmable
		Frequency steps	KHz	125, 166	Programmable
		Locking margin		± 500	
		Input level	dBµV	49 - 90	
		Input loop-through losses	dB	≤ 1,5	
		Input line powering for preamps	Vdc	0, 12, 24	Programmable
		Input return loses	dB	> 10	
		Impedance	Ω	75	
	DVB-T	Modulation		COFDM	Automatic
		Guard interval	µs	1/4, 1/8, 1/16, 1/32	
		Scrambling		DVB EN 300744	
		Interleaving		DVB EN 300744	
		FEC inner code		Viterbi (1/2, 2/3, 3/4, 5/6, 7/8)	Automatic
		FEC outer code		RS (188/204)	Automatic
		Bandwidth	MHz	7, 8	Programmable
DVB-C OUTPUT	QAM	Modulation (Constellation)		16, 32, 64, 128, 256 QAM	Programmable
		Symbol rate	Mbaud	< 6,9	Programmable
		Scrambling		DVB EN 300429	Automatic
		Interleaving		DVB EN 300429	Automatic
		FEC outer code		RS (188, 204)	Programmable
		Roll-Off factor	%	15	Automatic
		PCR Correction		yes	Automatic
		Services deleting		yes	Programmable
		Network_ID		yes	Programmable
		Original Network_ID		yes	Programmable
		Spectral inverson		Normal, Inverted	Programmable
		Bandwidth	MHz	< 8	Programmable
	RF	Output frequency		47...862	Programmable
		Frequency steps	KHz	250	Programmable
		Output level (max. typ.)	dBµV	80 ± 5	
		Regulation margin	dB	>15	Programmable
		MER		>40	
		Output loop-through losses	dB	≤ 1,5	
		Ouput return losses		> 12	
		Impedance	Ω	75	
GENERAL		Powering voltage	Vdc	24	
		Consumption	mA	270 (0 Preamp. / 0 CAM), 370 (0 Preamp. / 1 CAM) 320 (1 Preamp. / 0 CAM), 420 (1 Preamp. / 1 CAM)	
		Ingress protection	IP	20	
		Dimensions (W x H x D)	mm	50 x 216 x 175	

Programmable Automatic

Analogue/Digital Twin Channel Processor

QR-00180

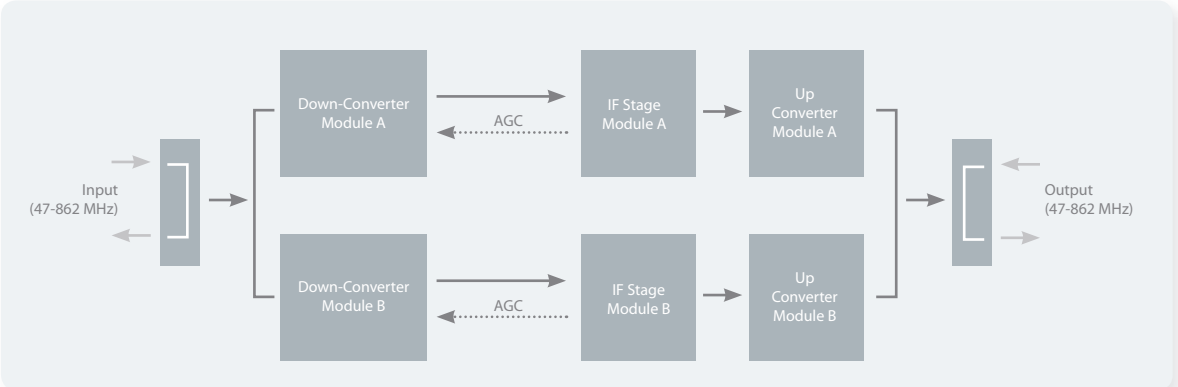
Module that processes 2 channels, analog or digital, whatever the type of service, to function as a converter channel (using different input and output channels) or as an amplifier (with the same input and output channel).

- **Working as a converter**, allows to obtain an output channel different to the one of its input (Twin).
- **Working as an amplifier** allows equalizing a DTT MULTIPLEX to adapt it to the levels of the rest of signals.
- Its **SAW filter** provides high selectivity, thus avoiding affecting other adjacent signals.
- **Adjustable slope,** to balance signal within the bandwidth.

REF.	DESCRIPTION
564901	Analogue/Digital Twin (47...862MHz) Channel Processor

	CONNECTIONS
1	RF input
2	RF output
3	Power BUS
4	Control BUS
5	Programming unit / PC socket
6	RFI input
7	RF output

BLOCK DIAGRAM



MATV

Reference				564901	
A/D INPUT	RF	Frequency range	MHz	47...862	
		Frequency steps	KHz	125 (digital), 166 (digital), 250 (analogue)	
		Locking margin		± 500	
		Input loop-through gain	dB	0 ± 3	
		Input level	dBµV	50 ... 80	
		Filter bandwidth	MHz	6 /7/ 8	
		Input line powering for preamps	Vdc	0, 12, 24	
		Input return losses	dB	> 10	
		Impedance	Ω	75	
A/D OUTPUT	RF	Frequency range	MHz	47...862	
		Frequency steps	KHz	125 (digital), 166 (digital), 250 (analogue)	
		Output level (max. typ.)	dBµV	80 ± 5	
		Regulation margin	dB	> 15	
		Spurious level	dBc	> 60	
		END (Equivalent Noise Degradation)	dB	< 2	
		Output loop-throuhg losses		≤ 1,5	
		Output return losses		> 12	
		Impedance	Ω	75	
GENERAL		Powering voltage	Vdc	24	
		Consumption	mA	400 (0 Preamp.), 450 (1 Preamp.)	
		Ingress protection	IP	20	
		Dimensions (W x H x D)	mm	50 x 216 x 175	

Programmable Automatic

A/V-PAL Stereo Twin Analogue Modulator

QR-A00144

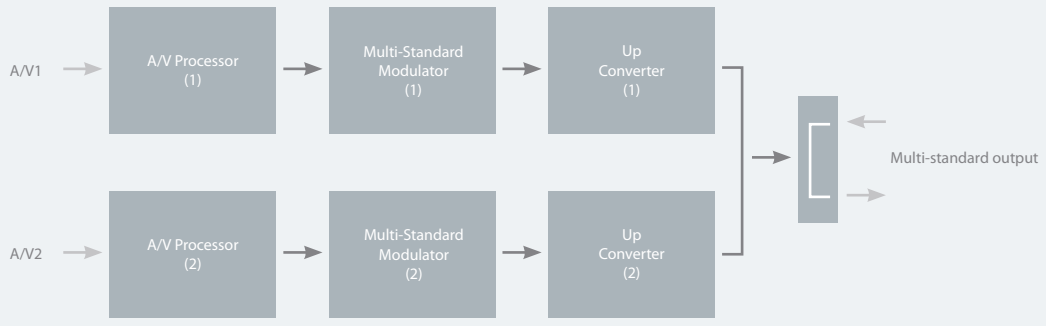
Modulator that generates one or two analog channels from one/two audio/video signals.

- Vestigial side band output.
- High **C/N.**
- **Excellent** flatness**.**
- Configuration of video and audio parameters that allows adapting the signal to any standard.
- 9 Tables of channels.
- Test Pattern generator.

REF.	DESCRIPTION
5806	A/V-PAL Stereo Twin (47...862MHz) Analogue Modulator

	CONNECTIONS
1	Power BUS
2	Control BUS
3	A/V Inputs (modules A and B)
4	Programming unit / PC socket
5	RF input
6	RF output + 2 channels PAL

BLOCK DIAGRAM



MATV

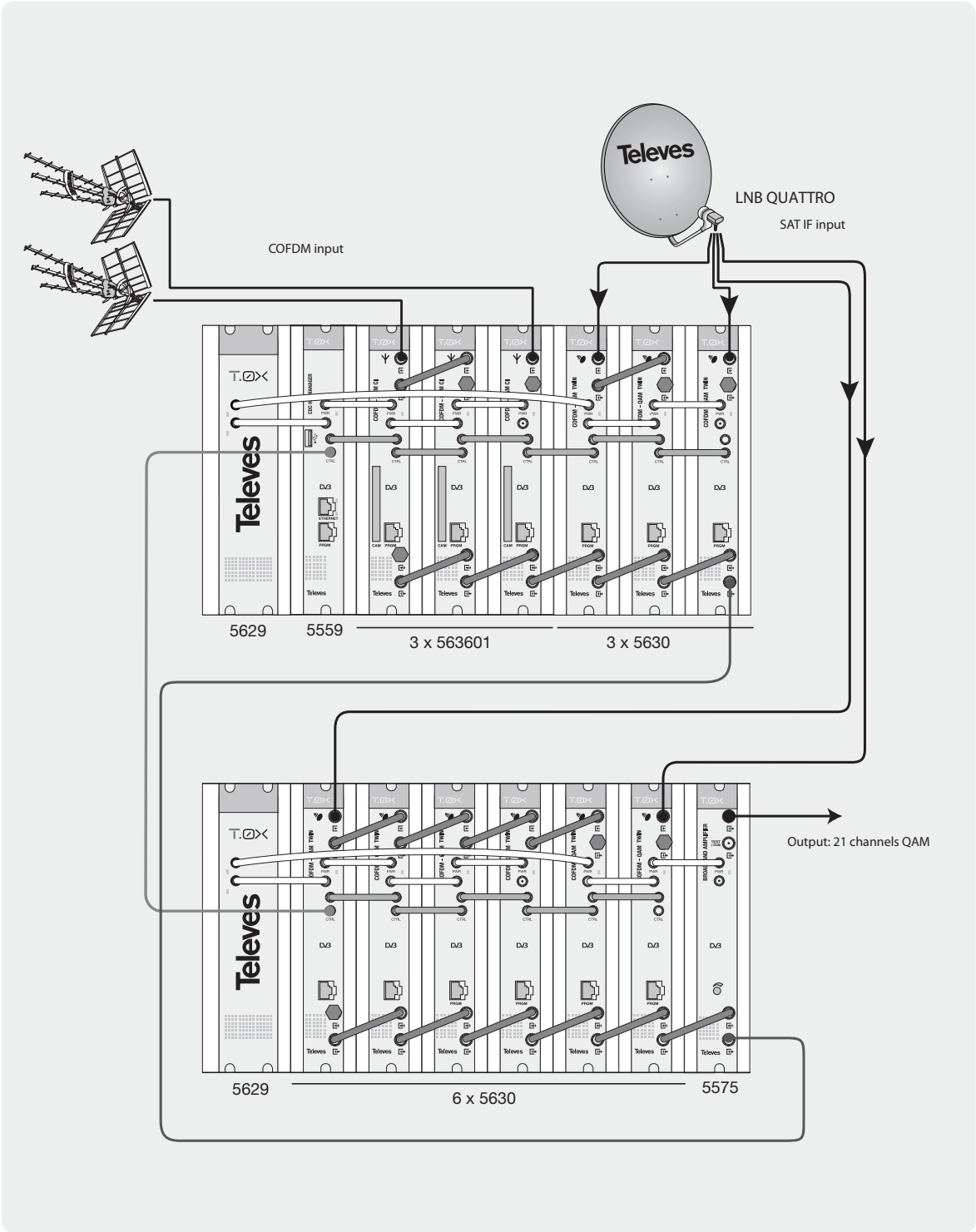
Reference				5806	
A/V INPUT	VIDEO	Frequency range	MHz	0,00005...5	
		Input level	Vpp@75 Ω	1	
		Modulation depth	%	72,5 - 90	
		Differential gain		< 4	
		Differential phase	º	< 4	
		Lum/Chrom delay	ns	< 100	
		S/N Ratio	dB	> 52	
		Flatness		< 1	
	AUDIO	Frequency range	KHz	0,04 - 15	
		Input level	dBm	-15...7	
		Impedance	Ω	10.000	
		Pre-emphasis	µs	50	
		Input level deviation	dBm	-7...6	
		Modulation deviation	KHz	±11,5 - ±45	
		Distortion	%	< 1	
		Flatness	dB	± 1	
MULTI-STANDARD OUTPUT (PAL)	RF	Frequency range	MHz	47...862	
		Frequency steps	KHz	250	
		Output level (max. typ.)	dBµV	80 ± 5	
		Regulation margin	dB	> 15	
		C/N @ 5 MHz		> 56	
		Output loop-through losses		≤ 1,5	
		Output return losses (typ.)		14	
		Impedance	Ω	75	
GENERAL		Powering voltage	Vdc	24	
		Consumption	mA	300	
		Ingress protection	IP	20	
		Dimensions (W x H x D)	mm	50 x 216 x 175	

Programmable Automatic

APPLICATIONS

Ref. 5630/563601 — COFDM and DVBS/S2 - QAM

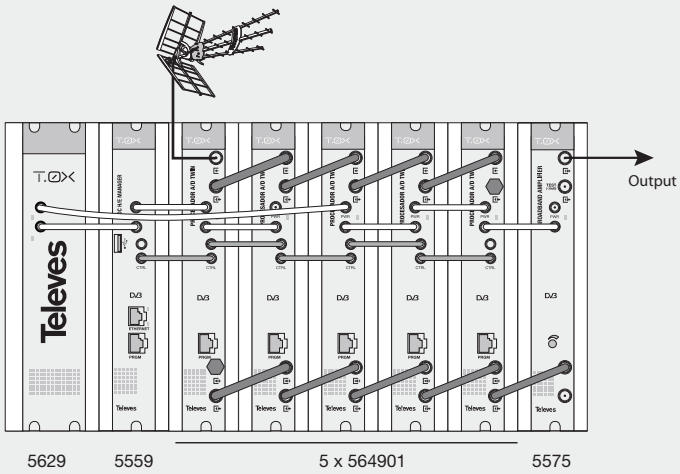
- Implementation of 18 satellite transponders (SD / HD) and 3 DVB-T channels into 21 DVB-C output channels, with optional remote programming/monitoring CDC-IP/HE and Ref. 5575 as launch amplifier.



APPLICATIONS

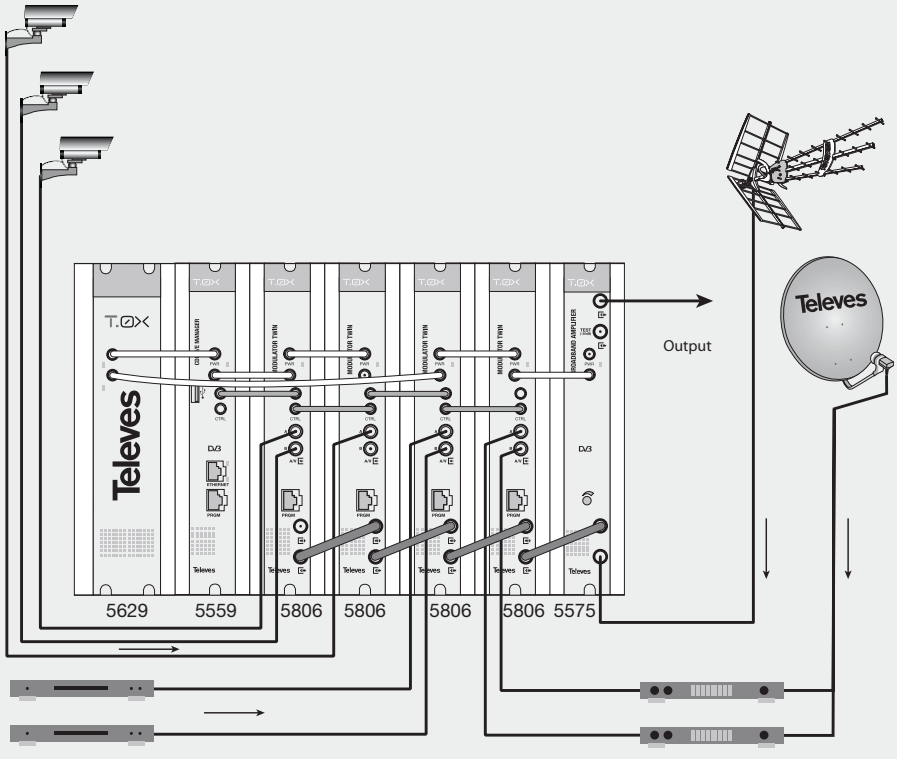
Ref. 564901 — A/D Twin Processor

- Implementation, amplification and adaptation of 10 free DVB-T channels (SD/HD) into 10 DVB-T output channels, with optional remote programming/monitoring CDC-IP/HE and Ref. 5575 as launch amplifier.



Ref. 5806 — A/V-PAL Twin Modulator

- Implementation of 8 AV signals into 10 PAL output channels in combination with terrestrial reception, with optional remote programming/monitoring CDC-IP/HE and Ref. 5575 as launch amplifier.

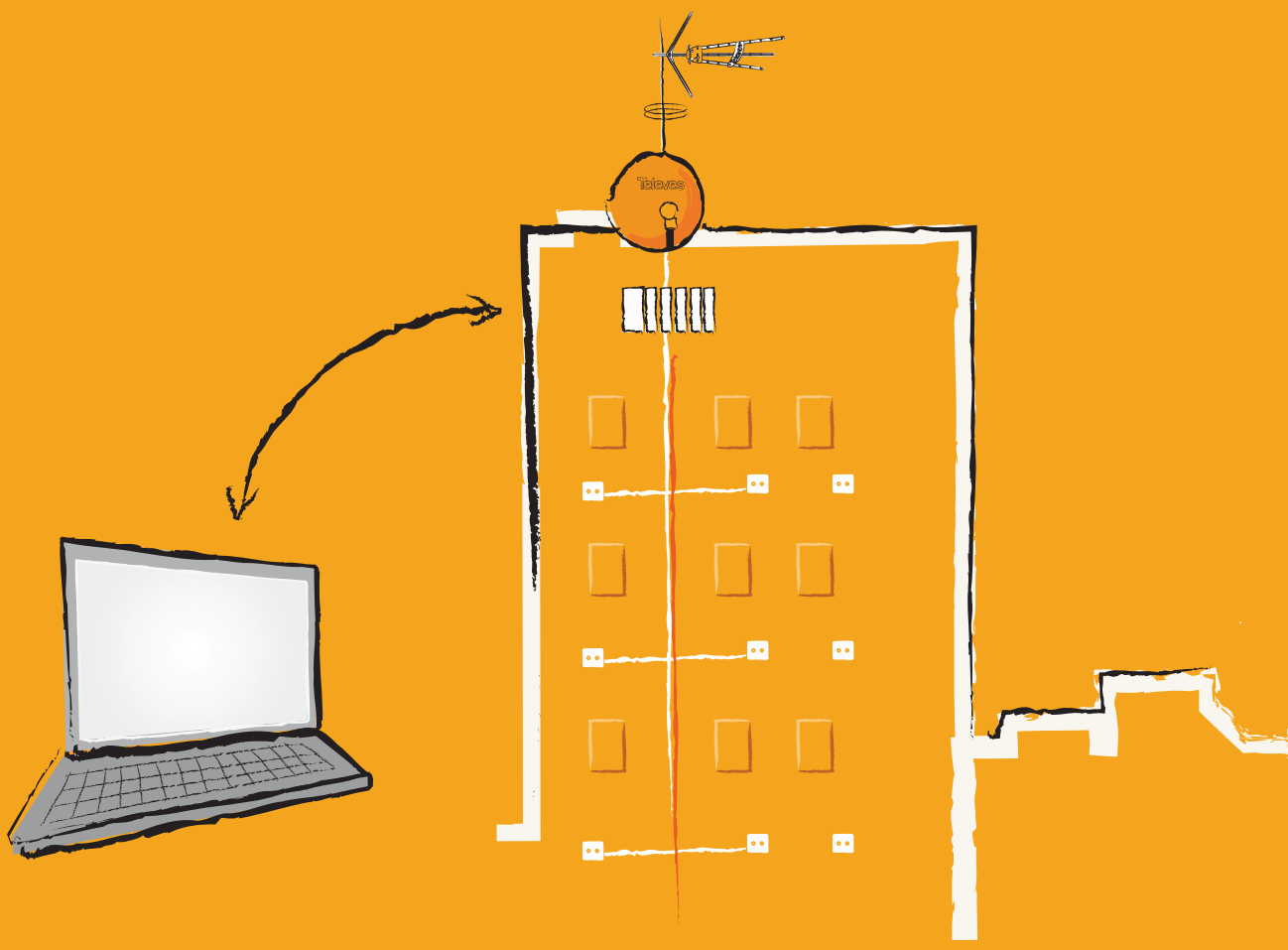


Televes

HEADEND CONTROL AND SOFTWARE

The headend management module (CDC) in conjunction with the TSuite software allows remote management of a headend, without needing to be on site.

CDC modules facilitate the set-up in local mode, as they allow accessing to the headend modules using a laptop instead of using a programming unit, module by module.



HEADEND CONTROL AND SOFTWARE

CDC IP/GPRS

QR-A00128

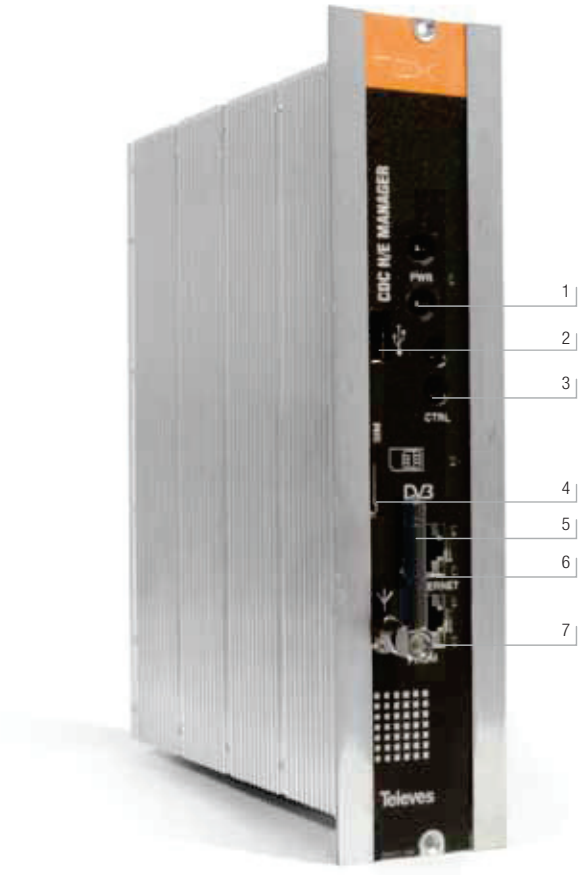
This is a device that allows remote monitoring and control of a headend Televés, no matter if it is T.0X, T05 or AvantHD.

Methods to access to IP networks are implemented using, either a 10/100 Mbps Ethernet interface, (ref. 5559 and ref. 555901), or just the ref555901 together with an internal modem GSM / GPRS.

- The management and control of the headers is done through a centralized service called "Televés Services". This portal is located in a Televés Service Center, which requires authentication to access it.
- Equipped with a RISC Microcomputer and an Operating System GNU / Linux, that ensure reliability in the management of interfaces, protocols and peripherals.

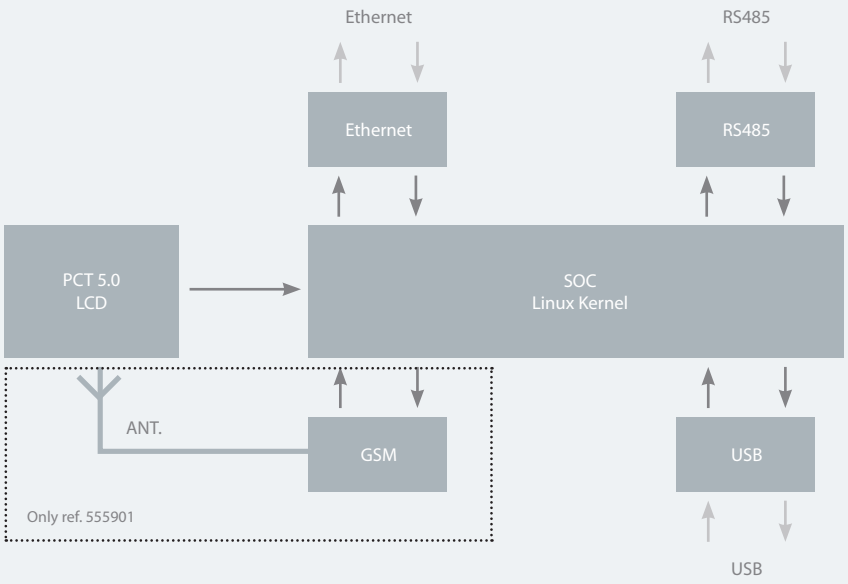
REF.	DESCRIPTION
5559	Headend control IP
555901	Headend control IP/GSM

	CONNECTIONS
1	Power BUS
2	USB socket
3	Control BUS
4	SIM slot (only ref. 555901)
5	GSM antenna (only ref. 555901)
6	Ethernet socket
7	Programming unit socket



▲ 555901

BLOCK DIAGRAM



HEADEND CONTROL AND SOFTWARE

Reference					5559	555901
FIRMWARE		Operating system			Linux Kernel 2.6.16	
		Bootloader			U-boot 1.1.3	
		File system			jffs2	
HARDWARE	RADIO GSM/GPRS	Frequency	MHz	GSM	-	850/900
				DCS	-	1800
				PCS	-	1900
		Bandwidth		EGSM	-	80
				GSM	-	150
				DCS	-	170
				PCS	-	140
		Transmission power	dBm	GSM	-	+ 33
				DCS	-	+ 30
				PCS	-	+ 30
		Sensitivity		GSM	-	- 107
				DCS	-	- 106
				PCS	-	- 106
	CPU				ARM920T™ ARM	
	MEMORY	Flash	MB		8	
		SDRAM			64	
		NAND Flash			128 x 8bit	
	CONNECTIONS	USB			2.0 Full Speed Host (12 Mbps)	
		RJ45 (1)			Ethernet 10/100 Base-T	
		RJ45 (2)			Programming unit PCT-5.0	
		SIM			Cards reader	
		F			-	Antenna GSM/GPRS

GENERAL	Powering voltage	Vdc	24		
	Consumption	mA	300	300	
	Ingress protection	IP	20		
	Dimensions (W x H x D)	mm	50 x 216 x 185 (incl. antenna GPRS in ref. 555901)		

HEADEND CONTROL AND SOFTWARE

QR-A00150

TSuite

Software that allows remote or local control of a T.0X headend, via a control module ref. 5559 or 555901.

- It is a system of adjustment, maintenance, control, management and remote monitoring from anywhere in the world via IP.
- Allows the use of a PC as local programming unit.
- Designed to support new services.
- Compatible with Avant HD and T05.

TSuite offers through Televés Services, a private portal for each user which enables centralized management of all his headends.

- Allows connection to the CDC device for configuration of the headend.
- Allows monitoring the communication status of the headers, knowing at all times if disconnections are occurring.
- It monitors the sessions (users) activated to control their headends.
- Enable alerts of disconnection/connection, start/end of session.
- Displays the history of communications.
- Also enables direct connection to the T.0X CDC device, allowing local configuration.

REF.	DESCRIPTION
2168	TSuite control software

▲ 216801

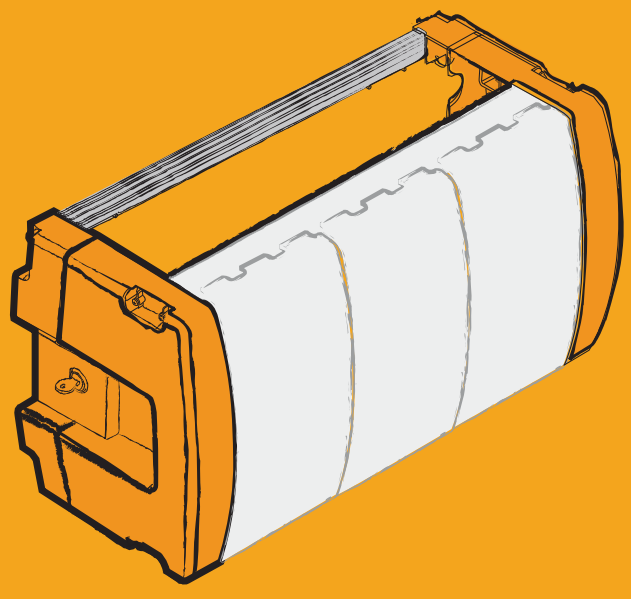
Includes:

- Software TSuite.
- PC-Module CDC (RS232-RJ45) connecting lead.
- USB-COM (RS232) adapter Ref. 5838.
- USB extender.

Televes

AUXILIARY EQUIPMENT AND ACCESSORIES

Items for powering, amplifying, programming and connecting T.0X equipment.

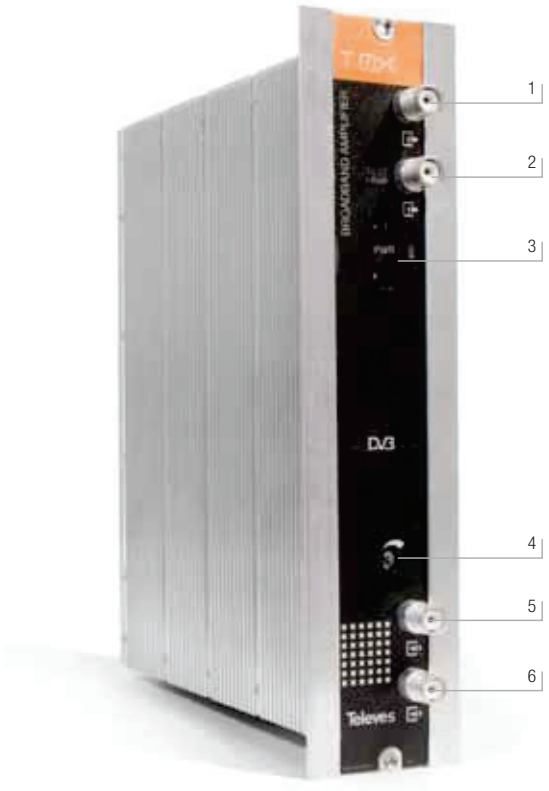


RF Amplifier

QR-A00064

High power amplifier for the signals processed in a T.0X headend.

- **Low distortion** of second and third order allowing high output voltage (typical values of 120dBµV).
- Features **two inputs**, which allows mixing of channels processed from its own headend and channels from other sources.
- Test output.

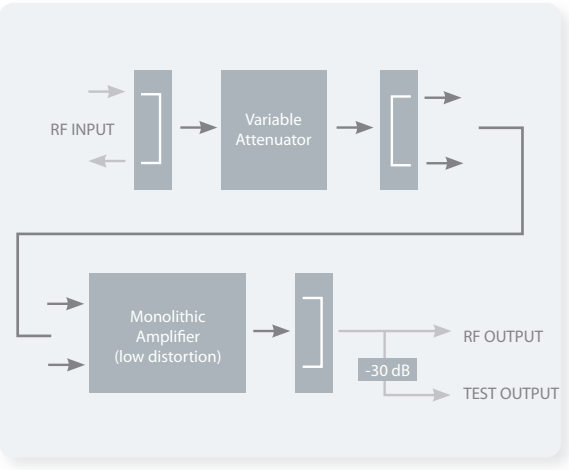


REF.	DESCRIPTION
5575	Push-Pull (47...862MHz) Amplifier

CONNECTIONS	
1	RF output
2	Test output
3	Powering BUS
4	Gain regulation
5	RF input
6	RF input

Reference				5575
RF INPUT	Frequency range		MHz	47...862
	Noise figure		dB	< 11
	Return losses			> 10
	Impedance		Ω	75
RF OUTPUT	Frequency range		MHz	46...862
	Gain		dB	44 ± 2,5
	Output level	DIN45004B	dBµV	120
		42 CH Cenelec		105
	Gain regulation		dB	0 - 20
	Return losses			> 8
	Impedance		Ω	75
GENERAL	Powering voltage		Vdc	24
	Consumption (max.)		mA	450
	Ingress protection		IP	20
	Dimensions (W x H x D)		mm	50 x 216 x 175

BLOCK DIAGRAM

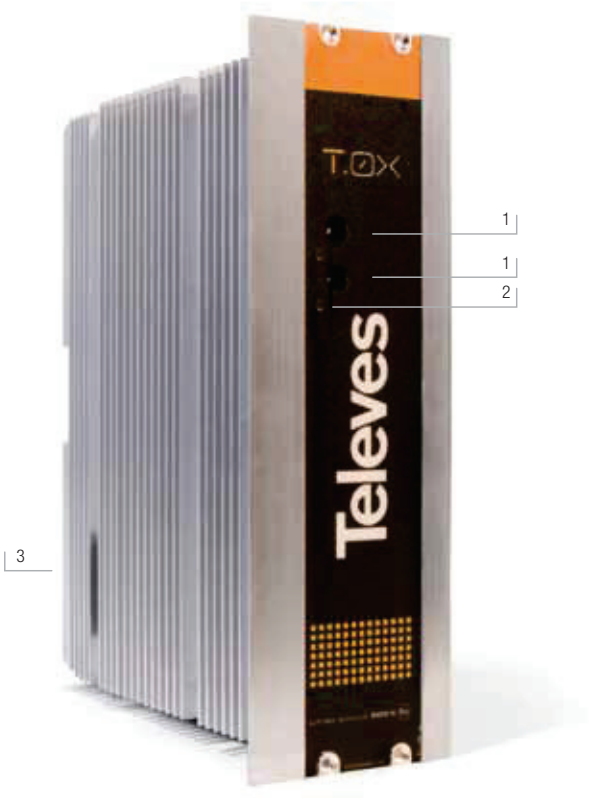


Power Supply Unit

QR-A00065

High power switched-mode PSU, flyback type, high efficiency (> 85%) and capable of delivering 5A at 24V (120W).

- Equipped with two outputs monitored by LEDs to indicate the status of the voltage delivered.
- Detects either overload or short-circuit.
- 4A maximum current per output.
- It offers protection against output voltage variation.

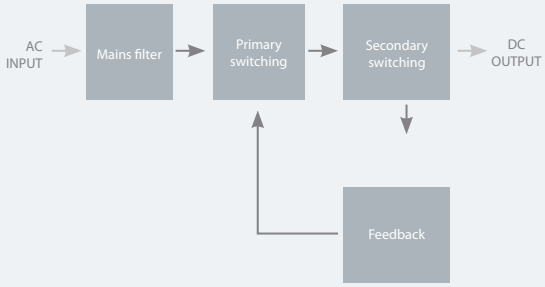


REF.	DESCRIPTION
5629	Switched-mode Power Supply Unit

	CONNECTIONS
1	DC outputs
2	Status LED
3	Mains socket (196-264 Vac)

Reference				5629
INPUT	AC	Mains voltage	Vac	196...264
		Frequency	Hz	50, 60
OUTPUT	DC	Output voltage	Vdc	24
		Max. current	A	5
		Max. current per OUT		4
		Max. power	W	120
		Efficiency	%	> 85
GENERAL		Consumption (max.)	W	140
		Ingress protection	IP	20
		Dimensions (W x H x D)	mm	75 x 216 x 175

BLOCK DIAGRAM



Programador universal

QR-A00080

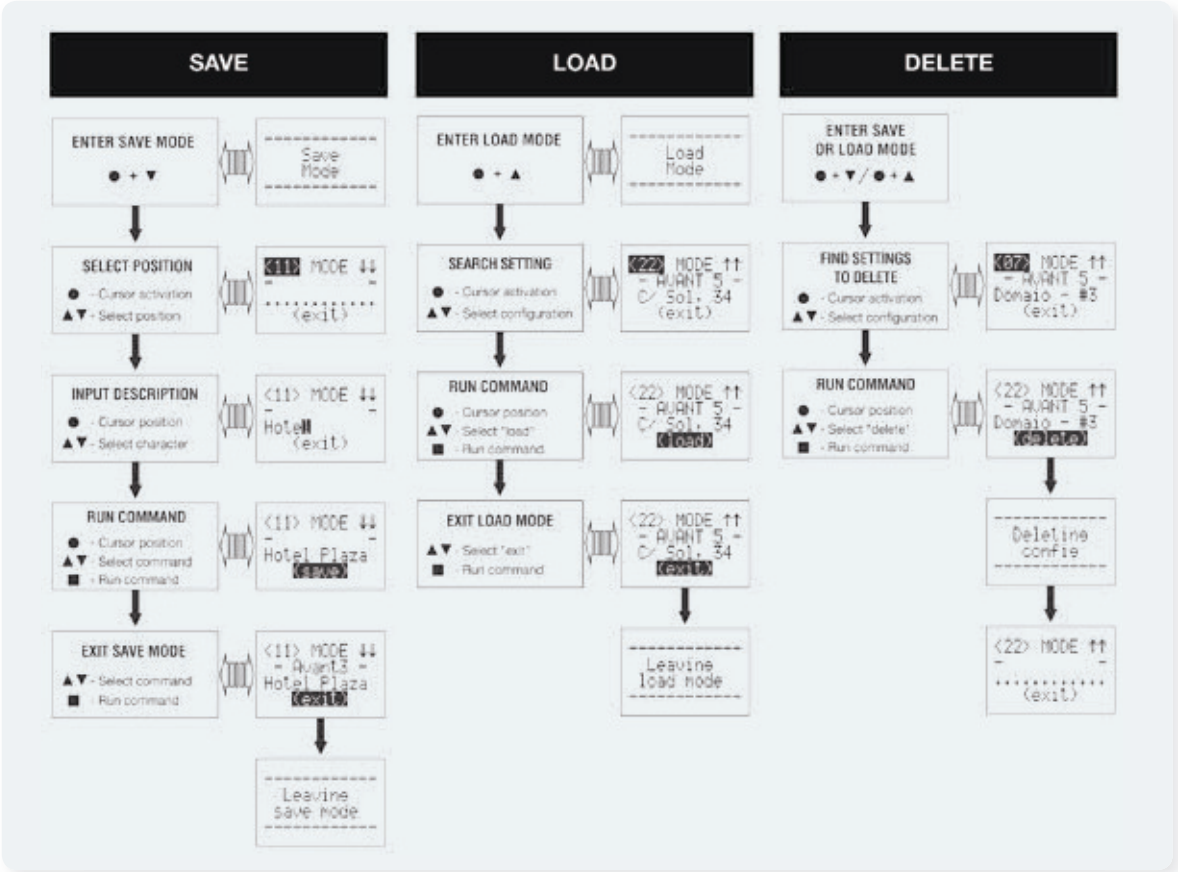
Programming unit that allows configuration and tuning of programmable units like T.0X, T05, AVANT, ... and other.

- Equipped with memory for storing, downloading and cloning of configurations.
- Varies the illumination of the display to suit the lighting conditions on the installation site.
- User-friendly.
- Includes lead (1 m) with 2 RJ45 male connectors.

REF.	DESCRIPCTION
7234	Universal Programming Unit

▲ 7234

QUICK GUIDE TO CLONE CONFIGUTIONS



AUXILIARY EQUIPMENT AND ACCESSORIES

Mechanical accessories that allow the installation of T.0X equipment either onto wall or within 19" cabinets.

QR-A00118

REF.	DESCRIPTION
Wall mount	
5071	Standard rail for 7 modules + PSU. L= 498 mm. Aluminum profile.
5239	Standard rail for 8 modules + PSU. L= 560 mm. Aluminum profile.
507202	Enclosure for 7 modules + PSU, with lock and ventilation unit, with holes to pass-through cables. Rail length= 498 mm. Dimensions (W x H x D): 610 x 295 x 235 mm
567201	Wall support for 4 modules+ PSU. L= 275 mm. Aluminum profile.

▲ 5071/5239

▲ 507202

▲ 567201

QR-A00142

REF.	DESCRIPTION
Installation into 19" cabinet	
5301	19" frame, 7 modules + PSU.
5333	19" cabinet 15U* Dimensions (W x H x D): 540 x 740 x 400 mm
5331	19" cabinet 28U* Dimensions (W x H x D): 600 x 1400 x 600 mm
5332	19" cabinet 37U* Dimensions (W x H x D): 600 x 1800 x 600 mm
5673	Blank plate T.0X

** Includes door, wheels and ventilation unit.*

▲ 5301

▲ 5673

▲ 5331/5332

REF.	DESCRIPTION
Connecting accessories	
4061	75 ohms DC-blocked terminal load
4071	DC blocker transition, F-male/F-female
4947	Surge arrester, 90 V, 0...3 GHz
422603	T.0X Control Bus Interconnection Lead (1m.)

▲ 4061

▲ 4071

▲ 4947

Note: The indicated number of modules is based exclusively on the available space. Nevertheless, the number of modules that can be fitted is limited by other restrictions, such as consumption or temperature.

PRE-MOUNTED AND CONFIGURED CABINETS

19 "cabinets offered and assembled and tested, turn-key to be directly installed in its final destination.

Key features

- ROBUSTNESS

  On the robustness of the cabinet, along with the ease of installation. It is possible to remove the side doors and have easy access to every corner of its interior.

  Includes wheels that allow greater mobility at the time of installation and subsequent maintenance.

- FLEXIBILITY

  The availability of blank plates of 1 height unit (1U), facilitate the configuration of the cabinet and cause the subrack can accommodate any type of configuration.

- PROFESSIONAL

  It is a professional solution.

  The installation is performed by qualified personnel. All subracks are adjusted and tested at the factory, so the installer's work is minimal, while ensuring a high level of reliability.

- EVOLUTIVE

  These assemblies are thought to evolve according to market needs, at any time.

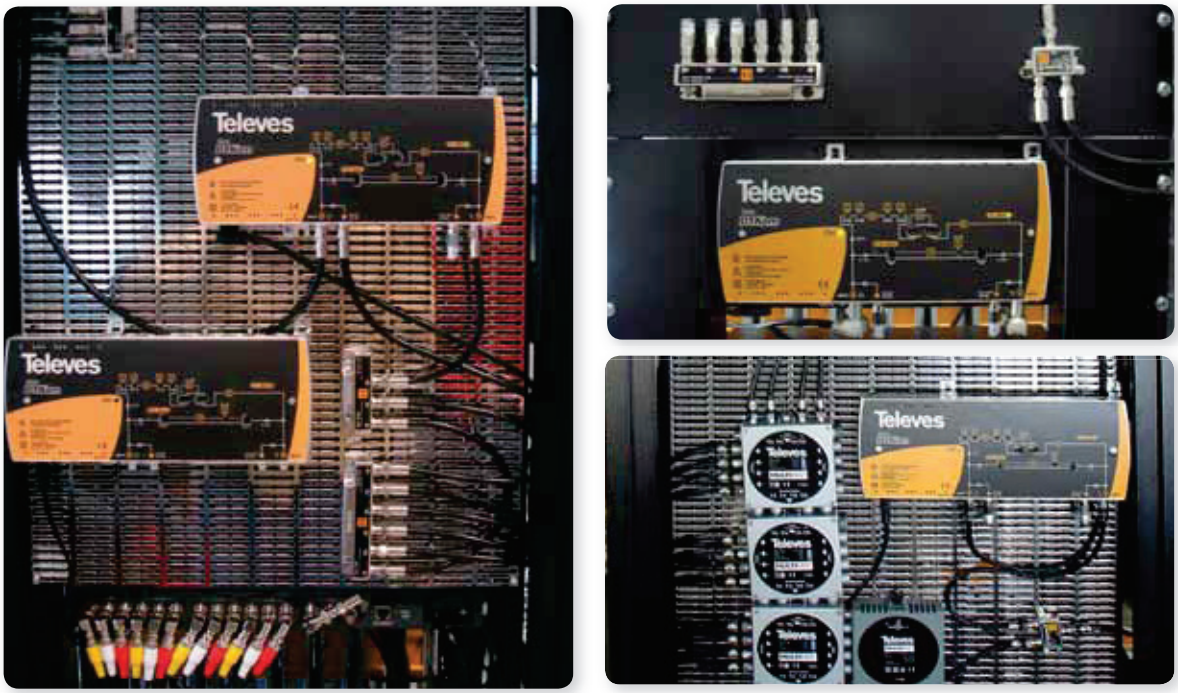
- HEADEND REMOTE MANAGEMENT

  By installing our software TSuite, the headend can be re-programmed remotely, so it can be adjusted to the changes of the programming without having to do it
  on-site.

- PRACTICAL

  All connections are made inside the cabinet and converge into a single output, adjusted and tested for the distribution of the signal in the network.

PRE-MOUNTED AND CONFIGURED CABINETS



Todo el cableado y conexionado se realiza dentro del armario.