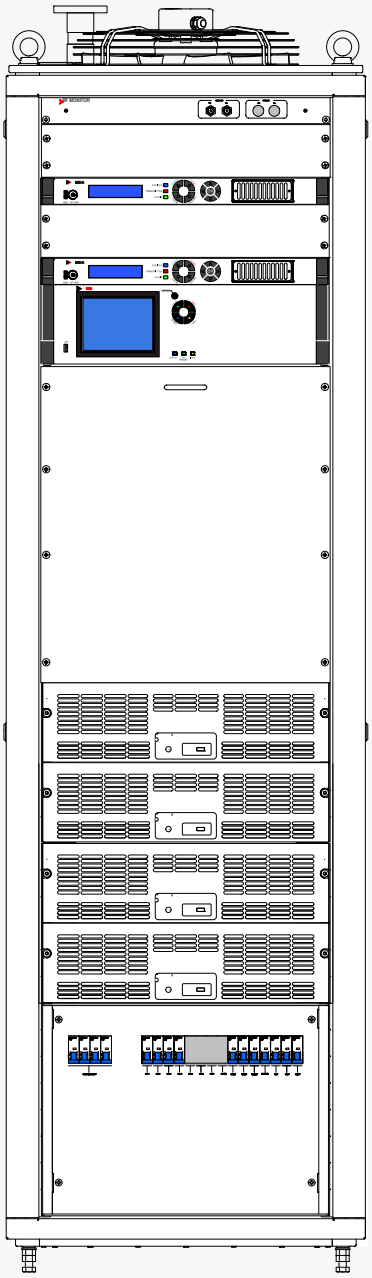
THALNALINE

NEW AIR COOLED TX LINE



VHF/UHF **air cooled**

24 – 42/19”
HE

THALNALINE CONFIGURATIONS

Tab. 1 – Thalna line configuration data

HPAs number		PWR (KW)			RF OUT CONNECTOR (EIA flanged)	
		MIN	*TYP*	*MAX*	VHF	UHF
1 HPA	*DIGITAL TV standards*	0.55 *(MER 33dB)* 0.5 *(MER 36dB)*	0.55 *(MER 33dB)* 0.5 *(MER 36dB)*	0.6 *(MER 33dB)* 0.5 *(MER 36dB)*	$^{7}/_{8}$"	
	ATSC 1.0	0.7				
	DAB	0.7				
	ANALOG	1.5				
2 HPA	*DIGITAL TV standards*	1.1 *(MER 33dB)* 1.0 *(MER 36dB)*	1.2 *(MER 33dB)* 1.0 *(MER 36dB)*	1.2 *(MER 33dB)* 1.0 *(MER 36dB)*	$^{7}/_{8}$"	
	ATSC 1.0	1.4				
	DAB	1.3				
	ANALOG	3				
3 HPA	*DIGITAL TV standards*	1.6 *(MER 33dB)* 1.5 *(MER 36dB)*	1.7 *(MER 33dB)* 1.5 *(MER 36dB)*	1.8 *(MER 33dB)* 1.5 *(MER 36dB)*	$1–^{5}/_{8}$"	
	ATSC 1.0	2.1				
	DAB	2				
	ANALOG	4.5				
4 HPA	*DIGITAL TV standards*	2.2 *(MER 33dB)* 2.1 *(MER 36dB)*	2.3 *(MER 33dB)* 2.1 *(MER 36dB)*	2.4 *(MER 33dB)* 2.1 *(MER 36dB)*	$1–^{5}/_{8}$"	
	ATSC 1.0	2.8				
	DAB	2.6				
	ANALOG	6			$1–^{5}/_{8}$"	$3–^{1}/_{8}$"
5 HPA	*DIGITAL TV standards*	TBD	TBD	TBD		
	ATSC 1.0	TBD				
	DAB	TBD				
	ANALOG	TBD				
6 HPA	*DIGITAL TV standards*	TBD	TBD	TBD		
	ATSC 1.0	TBD				
	DAB	TBD				
	ANALOG	TBD				
8 HPA	*DIGITAL TV standards*	TBD	TBD	TBD		
	ATSC 1.0	TBD				
	DAB	TBD				
	ANALOG	TBD				

THALNA LINE AIR COOLED TRANSMITTERs

Itelco has recently renewed its range of air cooled solid-state transmitters for broadcasting market, in both UHF and VHF frequencies, introducing the Thalna line.

The new line maintains the traditional safety features of Itelco transmitters and improve the easy of intervention by the operators thanks to the extremely simple design.

The manufacturing process optimization allows Itelco to be extremely competitive, meeting the customer needs in terms of operating costs reduction, ease of maintenance and spare parts management.

Thalna air cooled transmitter, that perfectly meets the needs of customers that require solutions of medium power, is capable of delivering approximately up to 6kWps (2.4kW DTV), implemented on a single rack (19").

One outstanding feature of Thalna transmitters is their Multi-Standard Capability which makes them compatible with all worldwide standards used for digital transmission, with a special attention to latest development. Thalna line represents a Multi-Standard platform supporting DVB-T2, DVB-T/H, ISDB-T/Tb, ATSC, DAB, and Analog TV.

All transmitters of Thalna lines are completely Dual-Cast. The use of latest LDMOS technology allowed Itelco to realize the new lines of air cooled transmitters giving particular attention to compactness, with minimum space requirements inside the station, and to operational costs, with an impressive power consumption reduction.

Thalna transmitters are characterized by air cooling system, realized using two redundant rack blowers operating in active stand-by. Exhaust air can be easily canalized outside the installation room reducing operating temperature conditions and noise generation.

Each unit composing the transmitter is self-cooled using independent and redundant blowers. This gives to Itelco customers the possibility to easily test every unit outside the transmitter rack, on a station or laboratory desk.

The transmitter control logic guarantees a complete management of all units composing the equipment, through a CAN-bus connection, allowing a real time, extremely safe and robust data exchange. Each unit is additionally equipped with a USB port for a local connection.

The equipment control allows transmitter operating conditions optimization, even during service operation on a unit, including power consumption and output power optimization.

The simplicity of Thalna interconnection and cabling, in addition to a design that is common with Northia line, allows Itelco customers to easily install and maintain both air and liquid cooled equipment.

In order to guarantee maximum redundancy also on control section, Thalna transmitters have been realized with possibility to operate without Control Logic. Not only the transmitter is maintained in operating condition in the last selected state, but it is possible to switch on/off the transmitter.

The system architecture, with the use of redundancy elements, guarantees in any case the absence of service interruptions, also during technical assistance operations. Particular attention has been dedicated to the realization of an extremely safe equipment, especially to guarantee personnel maximum safety during service operations. In case of maintenance operation on one of the transmitter unit, all unit parts under electrical power supply are automatically disconnected.

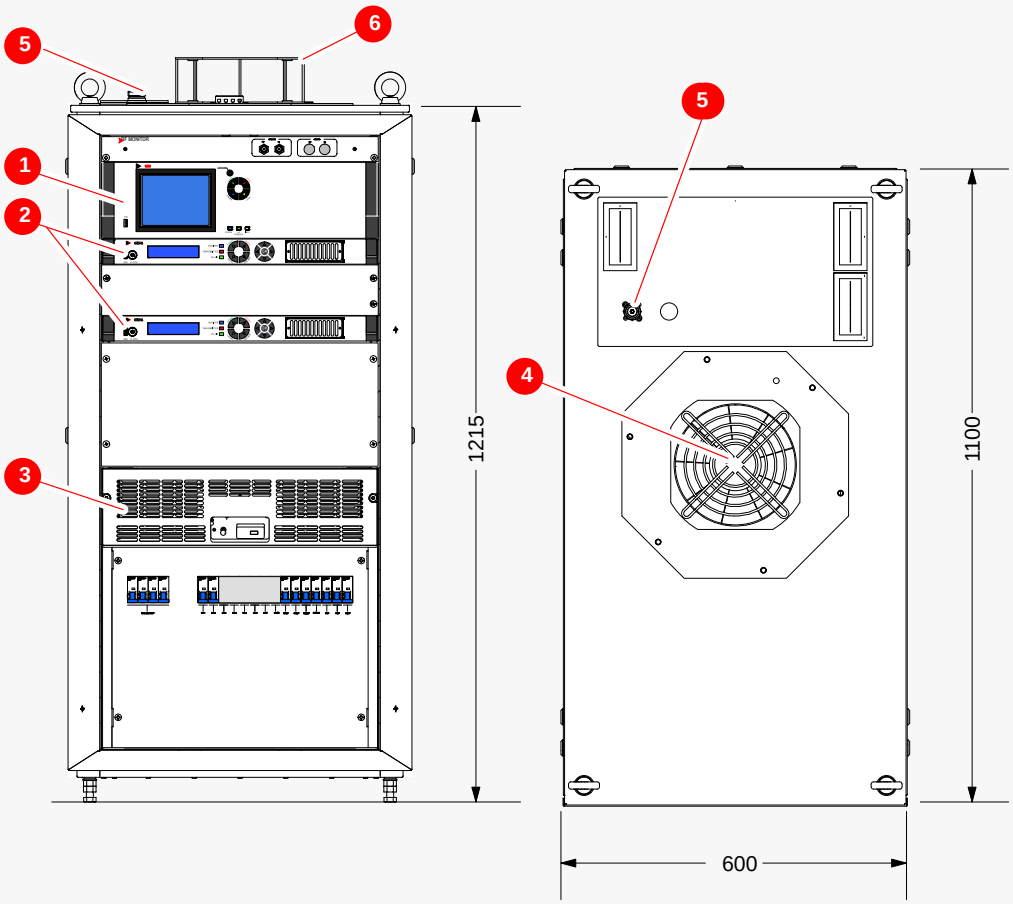
MAIN FEATURES

- **Multi-Standard operation** (DVB-T/H/T2, ATSC, ISDB-T/Tb, DAB, Analog - *all standards*)
- **Dual-Cast operation** (*optional*)
- **Fully broadband** on UHF frequencies
- **Low power consumption**
- **Doherty technology** (*optional*)
- **Latest LDMOS** technology for HPA
- **Hot-pluggable** HPA
- **USB port** for HPA section
- **MEX-II** multi-standard exciter
- **Seamless inputs** between ASI and/or IP (with priority) all combinations in SFN
- **Adaptive precorrection**
- **2 ASI**
- **GbE** available inputs (*optional*)
- **Extremely compact** design
- **Modular** design
- **Easy installation** and maintenance
- **Band-pass filter** option
- **SNMP** / **Web Server** remote control
- **CAN-bus** internal communication
- **Internal GPS** for SFN operation (*optional*)
- **Remote** software/firmware upgrade
- **High Efficiency** air cooling system

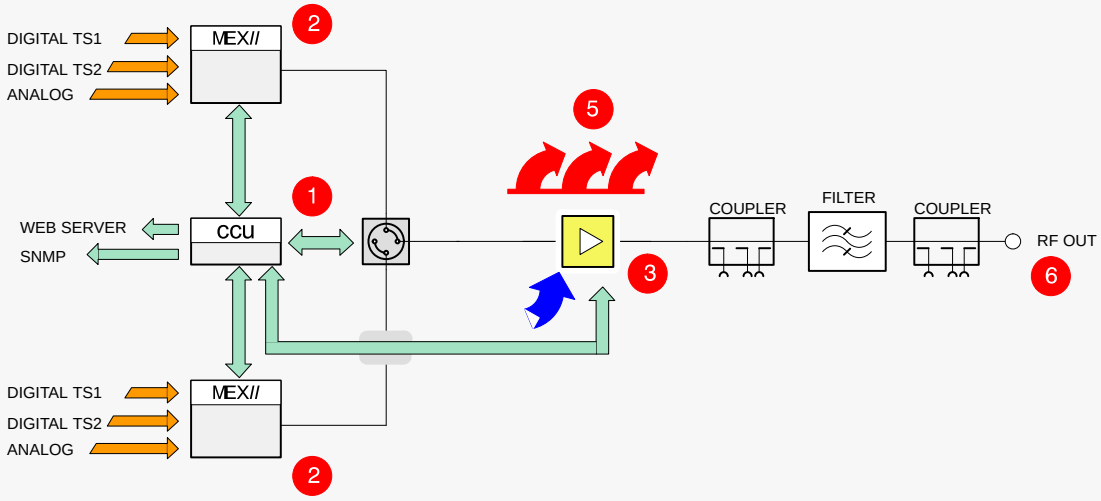
SPECIFICATIONS

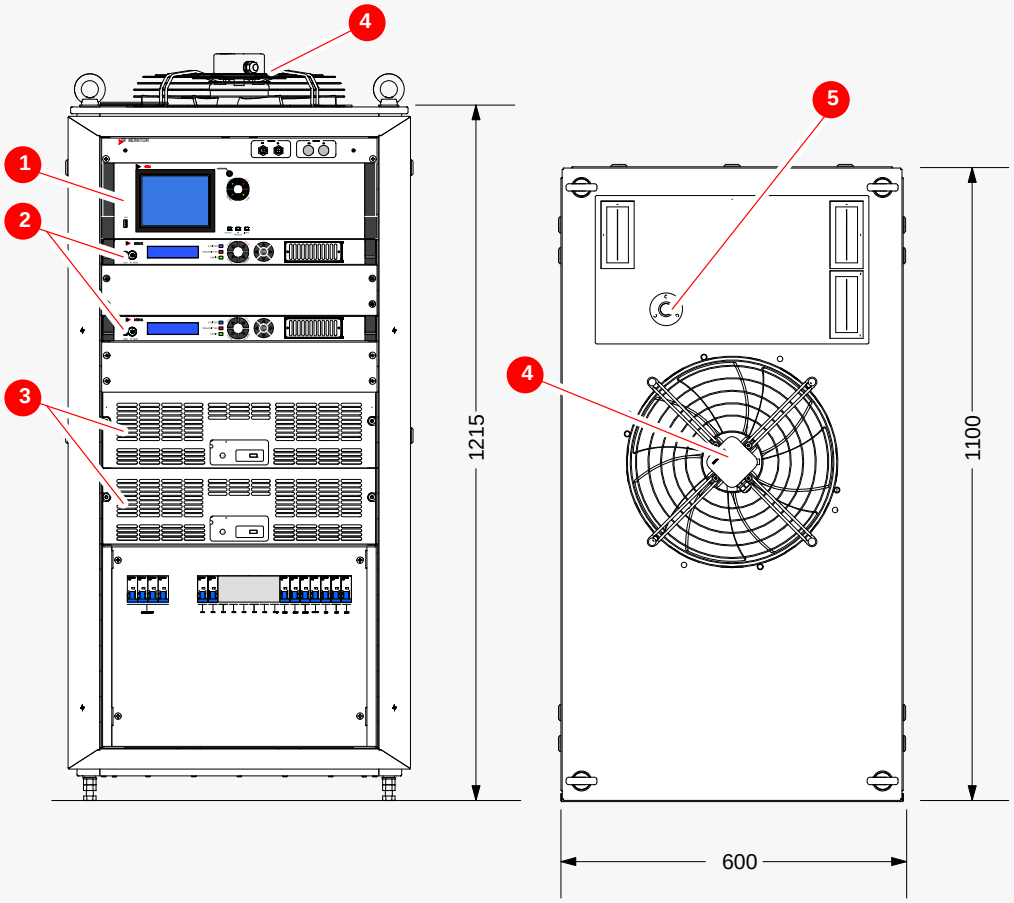
RF DATA		
Frequency range		
■ VHF band III	174 to 254 MHz	
■ UHF band IV−V	470 to 860 (870) Mhz 470 to 800	*class AB* *Doherty mode*
RF Output power	*refer to Tab. 1*	
RF Output connector	*refer to Tab. 1*	
Shoulder	> 38 dB	
MER	> 35 dB (DAB > 30 dB)	
Crest factor	8.5 to 9.5 dB	
Spurious Emissions	<−60 dBc (< −70 dBc with filter)	
Harmonic Emissions	<−60 dBc (< −70 dBc with filter)	
In band Spurious Emissions	<−70 dBc	
STANDARDS		
■ ***Digital TV***		
Standards	DVB−T *(fully compliant with EN 300 744, TS 101 191)* DVB−T2 *(EN 302 755, TS 102 773; TR101 290; TS 102 2831)* ISDB−T/T_b *(ARIB STB−B31, TR−B14)* ATSC, ATSC Mobile DTV DTMB	
Channel Bnadwidth		
● DVB−T	5/6/7/8 Mhz	
● DVB−T2	1.7/5/6/7/8 Mhz	
● ISDB−T/T_b	6/8 Mhz	
● DTMB	8 Mhz	
Inputs		
● DVB−T/T2, ISDB−T/T_b, DTMB	2 BNC 75 Ω, DVB ASI, TS 188/204 packets, continuous and burst mode, 1 RJ45 GbE	
● ATSC	2 SMPTE310M or 2 ASI, 75 Ω BNC, 2 RJ45	
■ ***Dgital Radio/Mobil tv in VHF band***		
Standards	DAB, DAB+, T−DMB	
Channel Bnadwidth	1.536 MHz	
Inputs		
● ETI	2 BNC 75 Ω, (NI, G703), (NA, G7049 5376, (NA,G704) 5592 and jitter tolerance according to G.823	
● EDI	2 RJ45, IP, RTP, UDP, IGMP (v2 & v3)	
■ ***Analog TV***		
Standards (compliance to CCIR report 642−2 volume XI part I, ETS 300 384)	B/G/D/K/K1/M/N//I/I1/L	
Color transmission	PAL, NTSC, SECAM	
Sound transmission	IRT dual−sound config, FM single sound and NICAM728 (−13 dB/−20 dB) *optional*, FM single sound (−10 dB)	
Inputs		
● Video	2 BNC 75 Ω, 1 V_{pp} ± 6 dB. Manual Gain or AGC on ITS line, DC Restore, White Limiter (85−95%), Sync Restore (20−30%)	
● Audio	2 XLR 600 Ω/5 kΩ balan/unbal, 0 dBm −3 dB +19 dB. In wideband mode input 2 works up to 120kHz (MPX)	
● Additional Audio	1 BNC 50 Ω/5 kΩ for MPX (up to 120 kHz) and 1 BNC 50 Ω for auxiliary services for standard M	
● NICAM audio	2 XLR 600 Ω/5 kΩ balan/unbal, 0 dBm ± 10 dB	
● NICAM data input	1 BNC TTL 728 Kbit/s ext. data, 1 BNC TTL 728 kHz ext. clock	
MAINS SUPPLY VOLTAGE		
Ac supply	three phase + N + PE 3 x 208V_{ac} 3 x 230V_{ac} 3 x 400V_{ac}	
Frequency	50/60 Hz ± 4%	
Power factor	> 0.95	
Efficiency (COFDM)	*VHF:* up to 28% *class AB* / 35% *Doherty* *UHF:* up to 22% class AB / 30% *Doherty*	
THD	< 6%	
Safety	EN 60215/EN 60950	
EMC	EN 301489	

REMOTE INTERFACES		
Local control	Display(s), Keyboard(s), and USB ports	
Remote control	Ethernet for HTTP (Web Server)/SNMP/NTP/SSL, RS232, Parallel	
Test points	RF out monitor, RF amp output, RF exciter output	
SYNCHRONIZATION		
Reference frequency	Internal (OCXO or integrated GPS)/Internal locked to the External (BNC 50 Ω, 10 MHz)	
Reference pulse	1pps Internal (integrated GPS)/External (BNC 50 Ω, TTL)	
Internal reference Accuracy	$\pm 1 \cdot 10^{-8}$ (0 to 70 ºC) $\pm 5 \cdot 10^{-10}$ per day (after 30 day) $\pm 1 \cdot 10^{-7}$ per year	
METERING		
■ ***Digital TV***		
	− forward output power − refleted power	
■ ***Analog TV***		
	− vision carrier output power − sound carrier output power − forward output power − refleted power	
COOLING		
Transmitter cabinet	forced air	
MECHANICAL		
RACK	24 HE/ steel 42 HE/ steel	*for TX with 1−2 HPA* *for TX with HPA > 2*
DIMENSIONS (W x H x D, in mm)		
24 HE	600 x 1215 x 1100	
42 HE	600 x 2015 x 1100	
WEIGHTS (kg)		
24 HE	195 (dual exciter + 2 HPA)	
42 HE	330 (dual exciter + 2 HPA)	
COLOUR		
Cabinets	black	
Units	light grey	
ENVIRONMENTAL		
Ambient temperature range	0 ºC to +55 ºC	
Storage temperature range	−30 ºC to +70 ºC	
Relative humidity (@ 40 ºC)	95% without condensation	
Max. Operating altitude (asl)	Up to 3000 meters	
Safety rules	EN 60215 / EN 60950	
EMC	EN 301489	



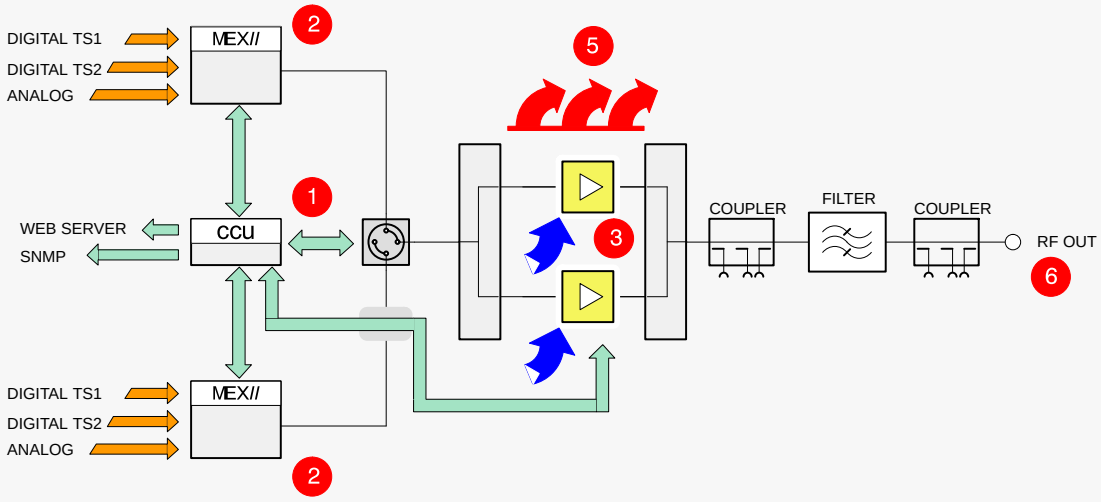
1	CCU TX CONTROL UNIT (*optional*)	4	RACK BLOWER
2	MEX// MULTISTANDARD MODULATOR	5	RF OUT TO ANTENNA/COMBINER
3	HPA SECTION	6	

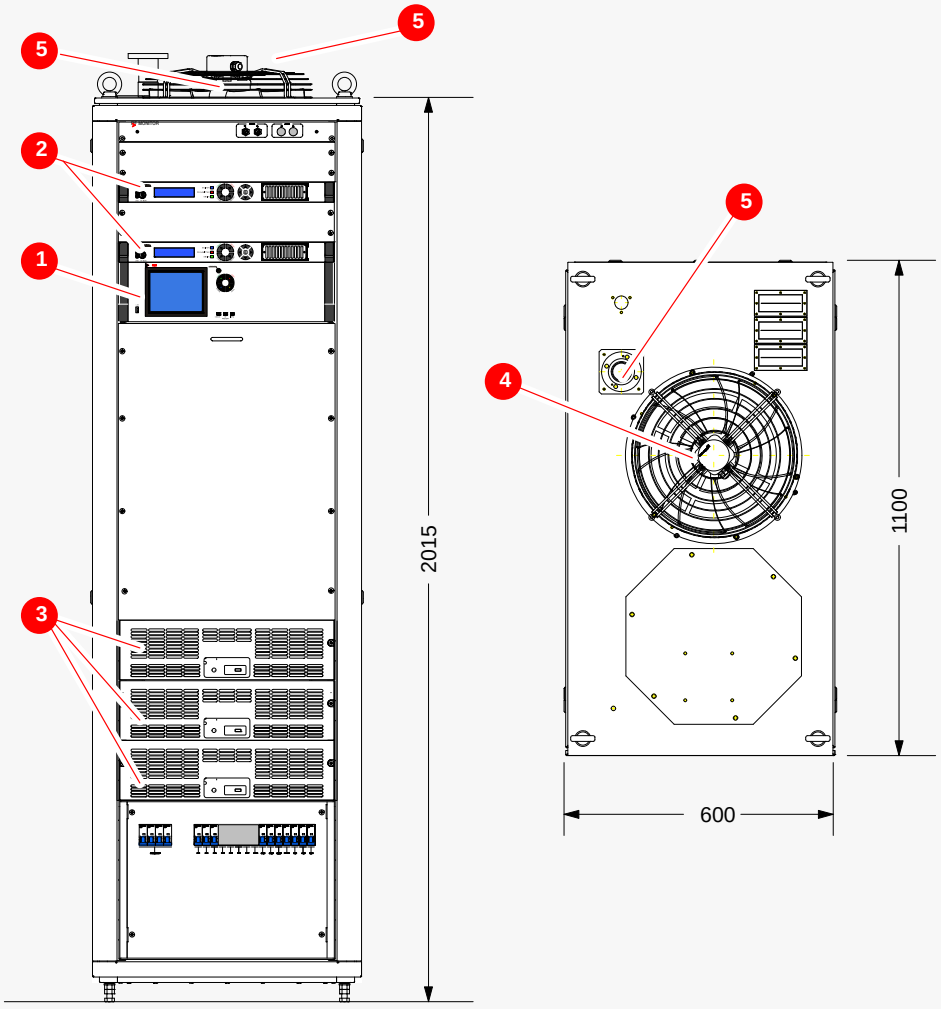




1	CCU TX CONTROL UNIT (*optional*)	4	RACK BLOWER
2	MEX*//* MULTISTANDARD MODULATOR (1)	5	RF OUT TO ANTENNA/COMBINER
3	HPA SECTION	6	

(1) *DUAL-DRIVE CONFIGURATION IS OPTIONAL*





1	CCU TX CONTROL UNIT	4	RACK BLOWER
2	MEX// MULTISTANDARD MODULATOR	5	RF OUT TO ANTENNA/COMBINER
3	HPA SECTION	6	

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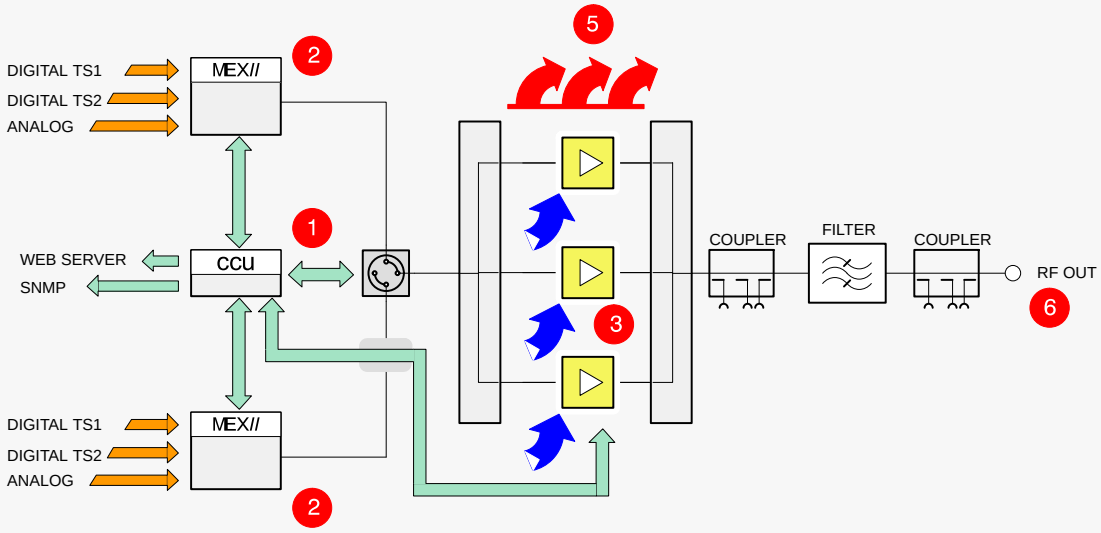

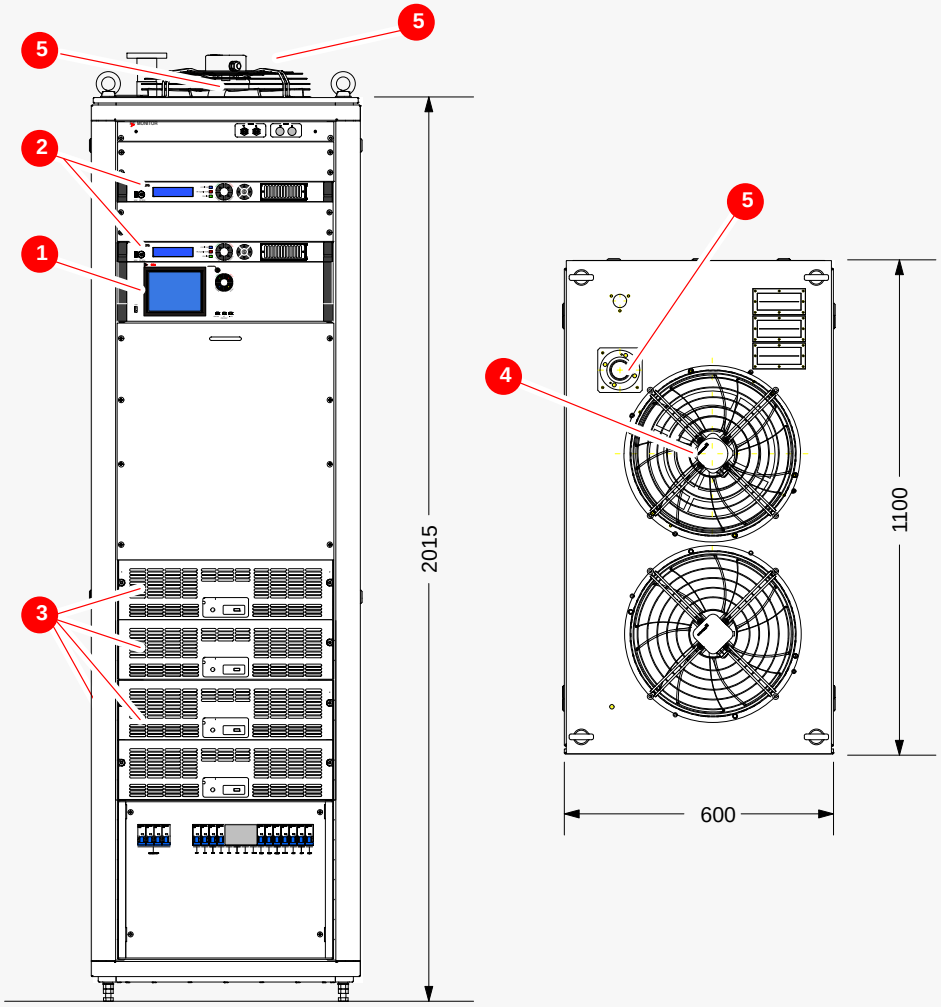

1	CCU TX CONTROL UNIT	4	RACK BLOWER
2	MEX// MULTISTANDARD MODULATOR	5	RF OUT TO ANTENNA/COMBINER
3	HPA SECTION	6	

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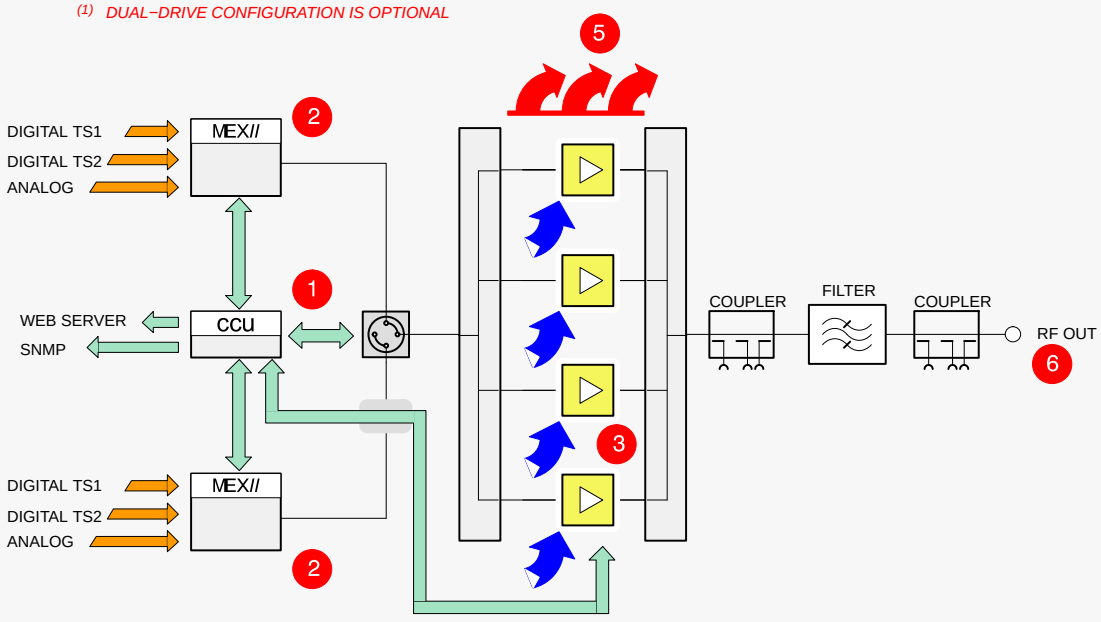

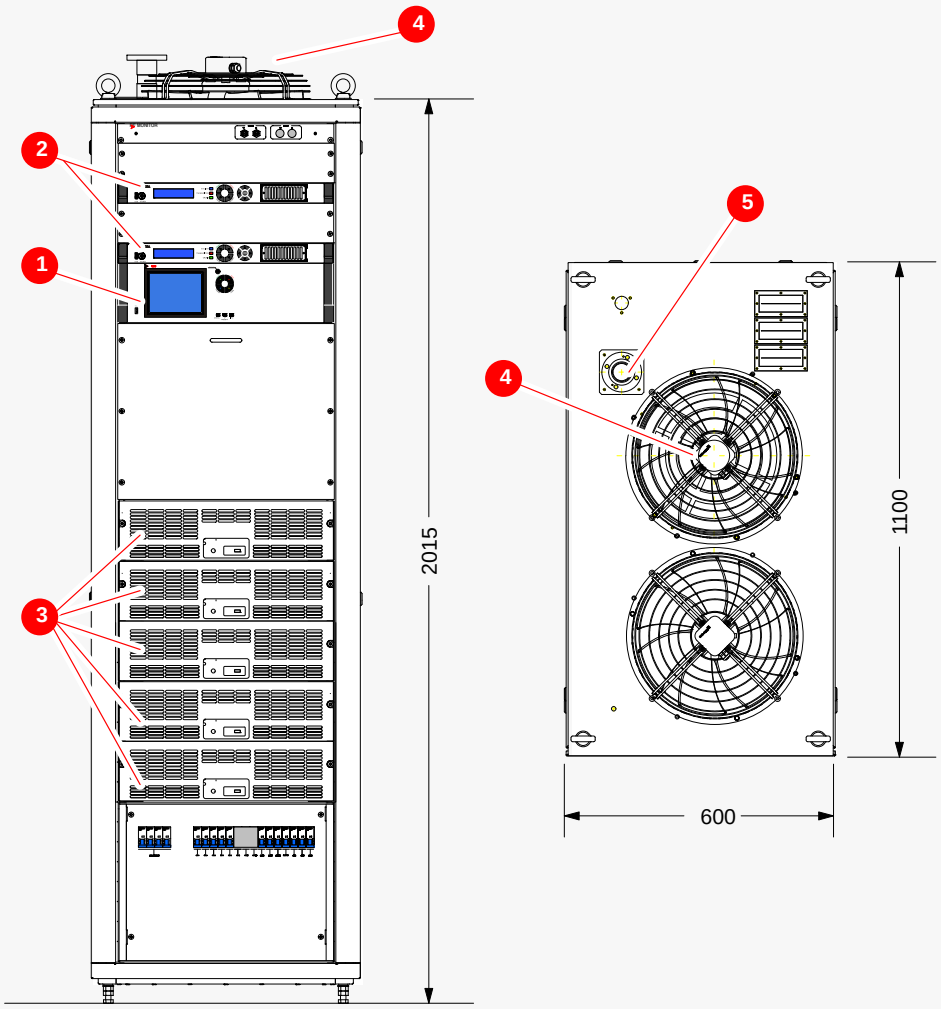

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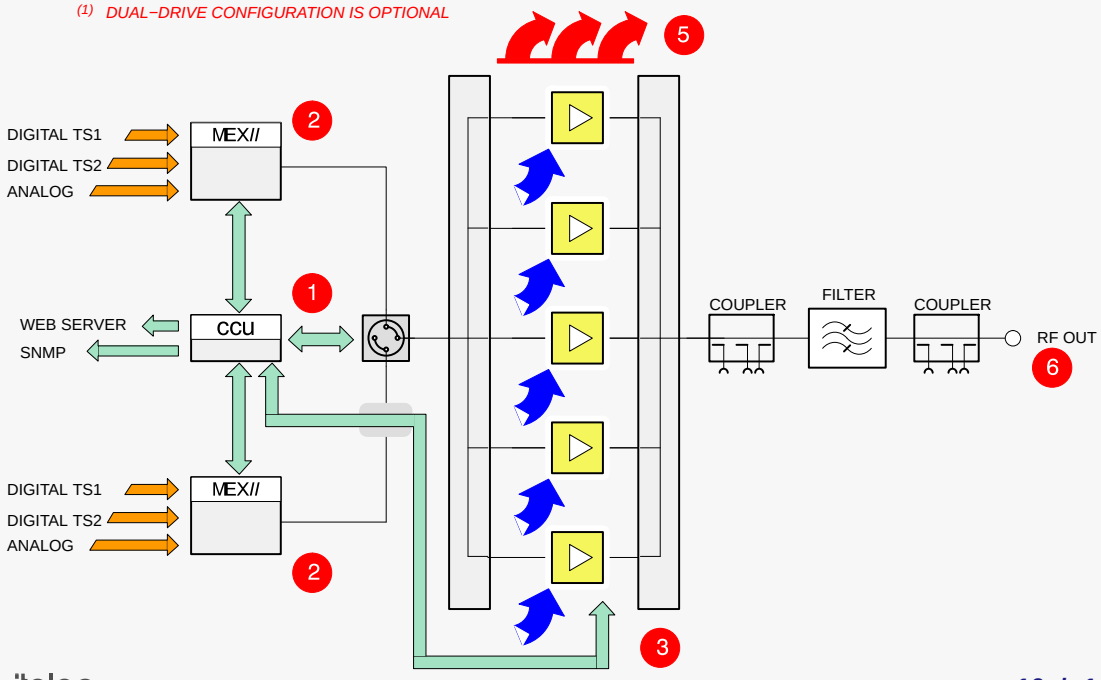
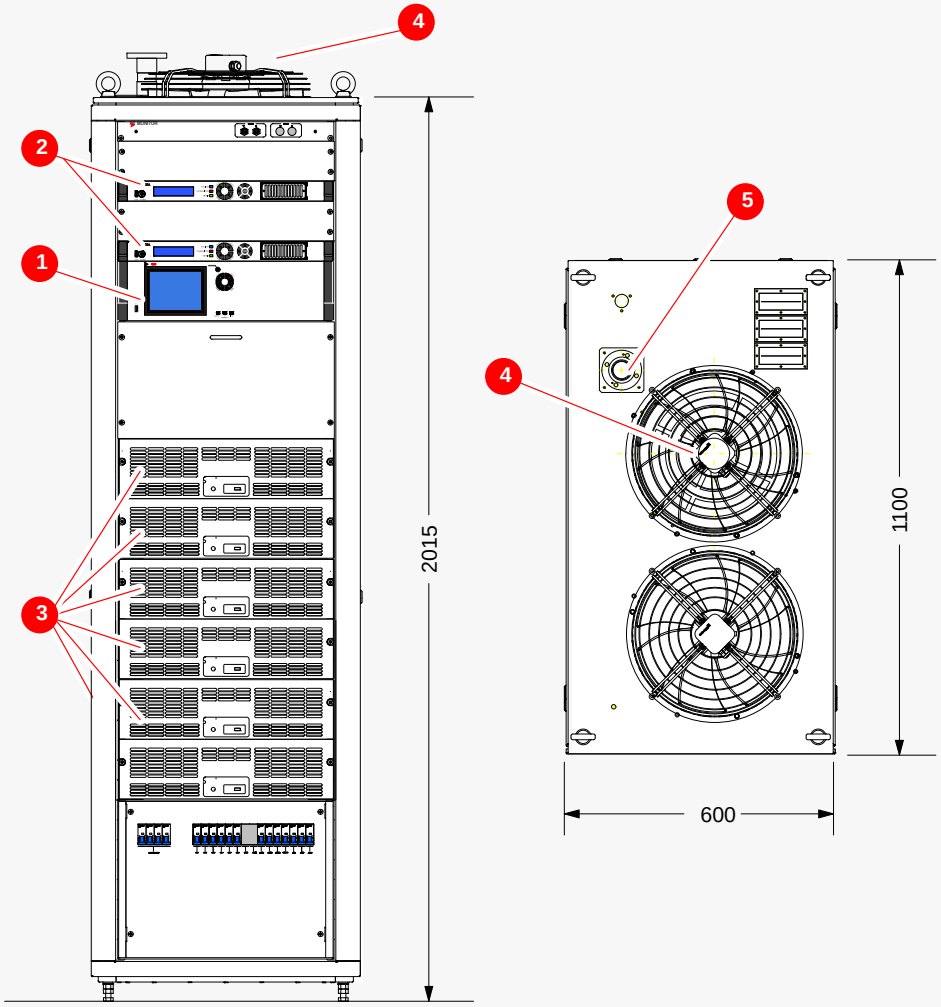
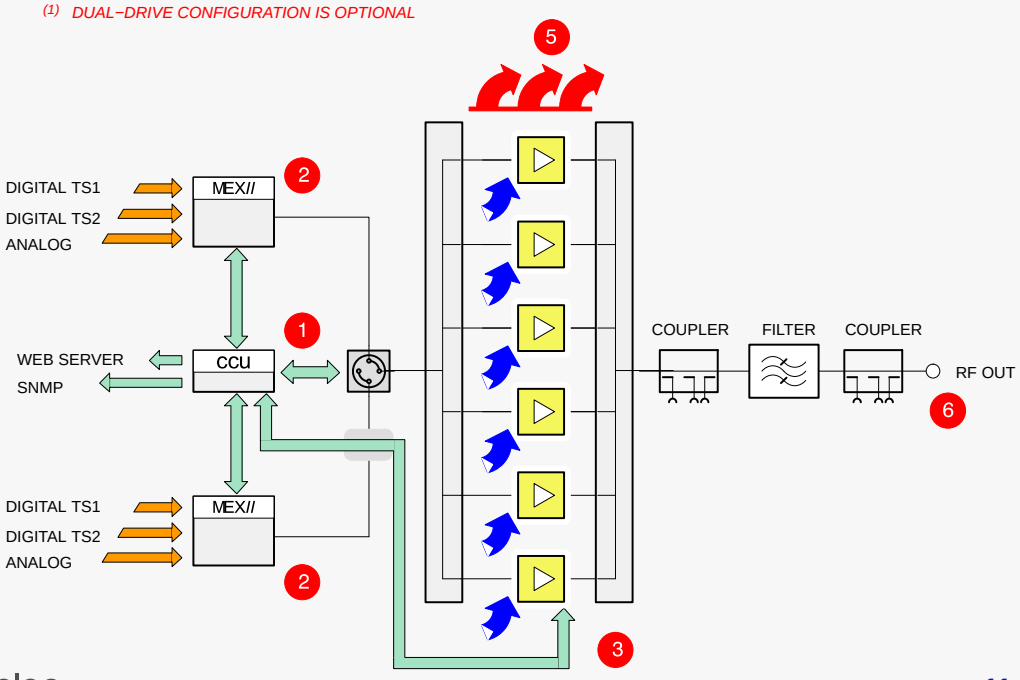
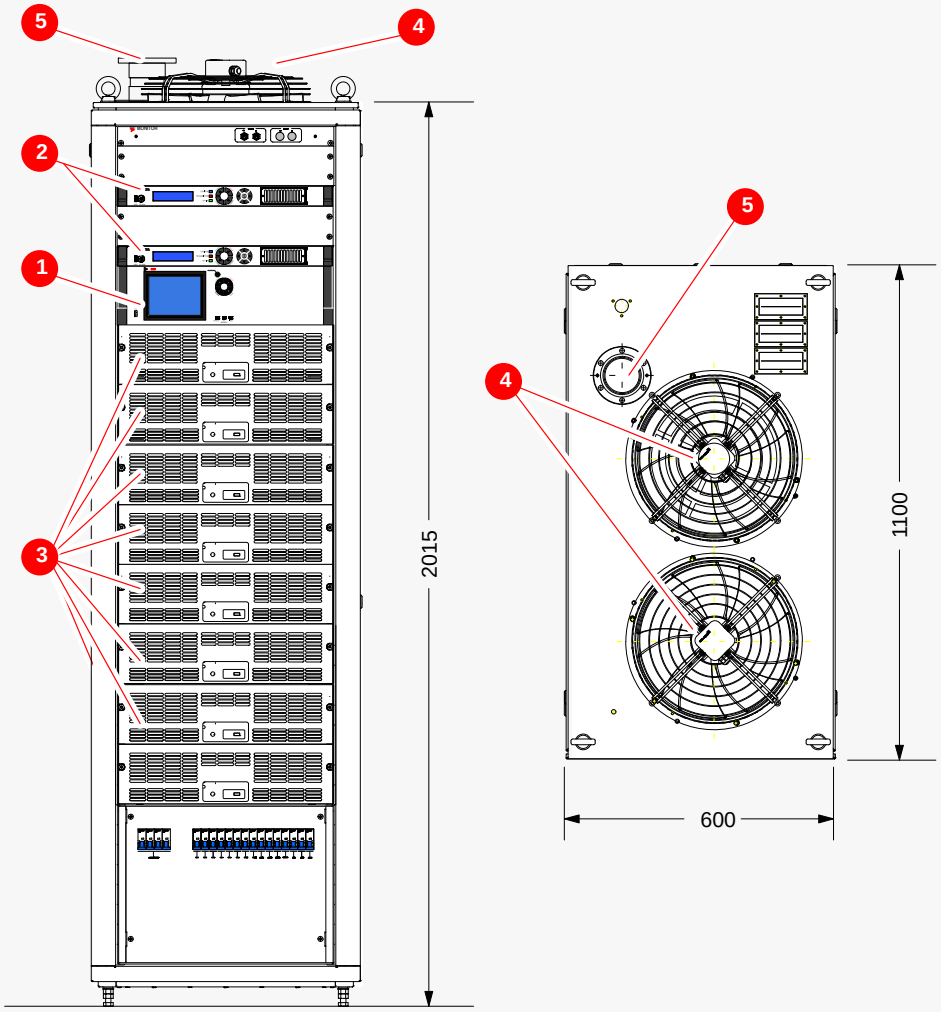




1	CCU TX CONTROL UNIT	4	RACK BLOWER
2	MEXII MULTISTANDARD MODULATOR	5	RF OUT TO ANTENNA/COMBINER
3	HPA SECTION	6	

(1) *DUAL-DRIVE CONFIGURATION IS OPTIONAL*





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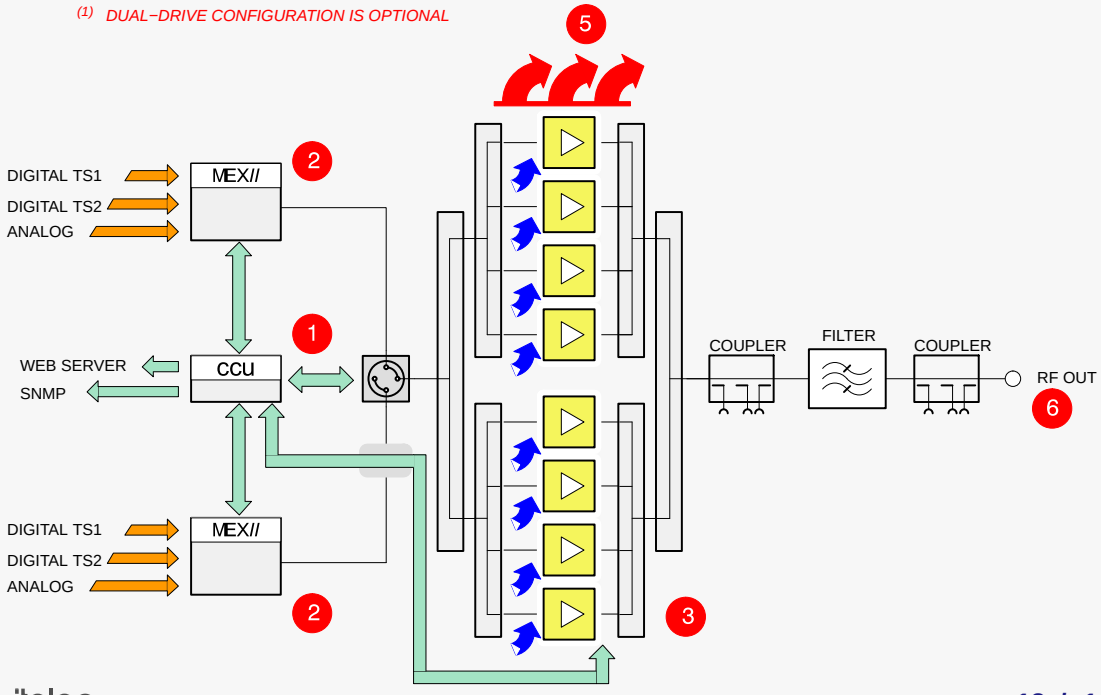

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