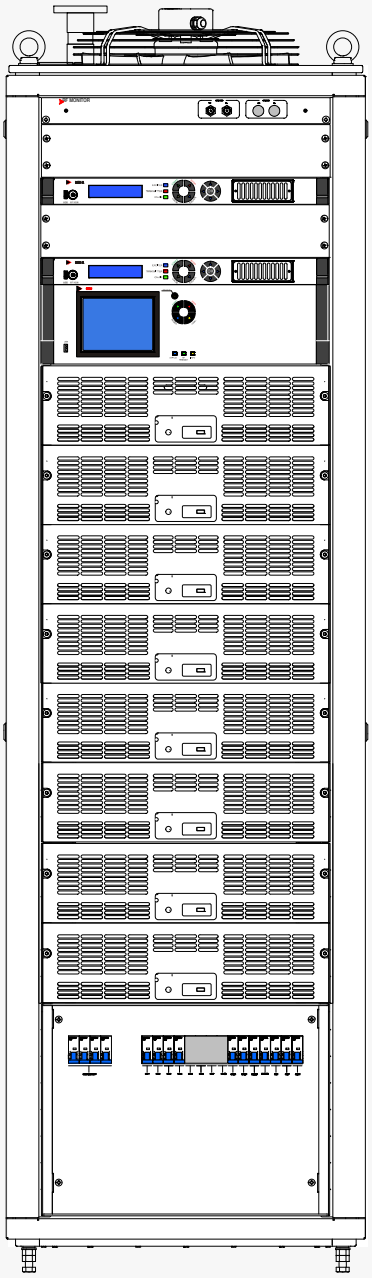
THALNALINE

NEW AIR COOLED TX LINE



24 – 42/19”
HE

VHF/UHF **air cooled**

THALNA LINE CONFIGURATIONS

Tab. 1 – Thalna line VHF configuration data

HPAs number		PWR (KW)	RF OUT CONNECTOR (EIA flanged)
1 HPA	*DIGITAL TV standards*	0.8 *(MER 33dB)* 0.7 *(MER 36dB)*	$^{7}/_{16}$"
	ATSC 1.0	0.8	
	DAB	1	
	ANALOG	1.5	
2 HPA	*DIGITAL TV standards*	1.6 *(MER 33dB)* 1.4 *(MER 36dB)*	$^{7}/_{8}$"
	ATSC 1.0	1.6	
	DAB	2	
	ANALOG	3	
3 HPA	*DIGITAL TV standards*	2.4 *(MER 33dB)* 2.1 *(MER 36dB)*	1–$^{5}/_{8}$"
	ATSC 1.0	2.4	
	DAB	3	
	ANALOG	4.5	
4 HPA	*DIGITAL TV standards*	3.2 *(MER 33dB)* 2.8 *(MER 36dB)*	1–$^{5}/_{8}$"
	ATSC 1.0	3.2	
	DAB	4	
	ANALOG	6	
5 HPA	*DIGITAL TV standards*	4 *(MER 33dB)* 3.5 *(MER 36dB)*	1–$^{5}/_{8}$"
	ATSC 1.0	4	
	DAB	5	
	ANALOG	7.5	
6 HPA	*DIGITAL TV standards*	TBD	
	ATSC 1.0	TBD	
	DAB	TBD	
	ANALOG	TBD	
8 HPA	*DIGITAL TV standards*	TBD	
	ATSC 1.0	TBD	
	DAB	TBD	
	ANALOG	TBD	

THALNA LINE CONFIGURATIONS

Tab. 2 – Thalna line UHF configuration data

HPAs number		PWR (KW)	RF OUT CONNECTOR (EIA flanged)
1 HPA	*DIGITAL TV standards*	0.7 *(MER 33dB)* 0.6 *(MER 36dB)*	$^{7}/_{8}$"
	ATSC 1.0	0.7	
	ANALOG	1.2	
2 HPA	*DIGITAL TV standards*	1.4 *(MER 33dB)* 1.2 *(MER 36dB)*	$^{7}/_{8}$"
	ATSC 1.0	1.4	
	ANALOG	2.4	
3 HPA	*DIGITAL TV standards*	2.1 *(MER 33dB)* 1.8 *(MER 36dB)*	1–$^{5}/_{8}$"
	ATSC 1.0	2.1	
	ANALOG	3.6	
4 HPA	*DIGITAL TV standards*	2.8 *(MER 33dB)* 2.4 *(MER 36dB)*	
	ATSC 1.0	2.8	1–$^{5}/_{8}$"
	ANALOG	4.8	3–$^{1}/_{8}$"
5 HPA	*DIGITAL TV standards*	3.5 *(MER 33dB)* 3.0 *(MER 36dB)*	3–$^{1}/_{8}$"
	ATSC 1.0	3.5	
	ANALOG	6	
6 HPA	*DIGITAL TV standards*	4.2 *(MER 33dB)* 3.6 *(MER 36dB)*	
	ATSC 1.0	4.2	3–$^{1}/_{8}$"
	ANALOG	7.2	
8 HPA	*DIGITAL TV standards*	4.8 *(MER 33dB)* 4.2 *(MER 36dB)*	3–$^{1}/_{8}$"
	ATSC 1.0	4.8	
	ANALOG	4.8	

THALNA LINE AIR COOLED TRANSMITTERS

Itelco has updated its range of air cooled solid state transmitters for VHF and UHF television broadcasting, introducing the Thalna line.

The Thalna series retains the traditional safety features of Itelco transmitters and improve the easy of use due to its simple design.

We've also optimized our manufacturing process, further improving performance and reliability, as well as cost effectiveness, in purchase price, energy costs and spare parts management.

Thalna air cooled transmitters, perfectly meet the needs of customers that medium power, up to 10kWps (5kW DTV), all within a single rack (19").

A unique feature of Thalna transmitters is their multi–standard capability which makes them compatible with all worldwide standards used for digital and analog TV transmission, even the most recent developments, including DVB–T2, DVB–T/H, ISDB–T/Tb, ATSC, ATSC 3.0, DAB, as well as PAL, SECAM and NTSC.

Thalna transmitters can also be programmed to support switching from one standard to another (Dual–Cast). The use of latest LDMOS device make possible improvements in compact size and substantial reductions in energy consumption.

The Thalna transmitters are air cooled via two redundant blowers operating in active standby. Exhaust air can be easily ducted outside the room reducing both temperature and noise generation.

Transmitter modules have dual fans as well, making possible bench top testing of each module.

The advanced transmitter control system monitors and manages each subassembly through a CAN–bus connection, making possible high speed, detailed and robust operation. Each unit is additionally equipped with a USB port for local testing.

The control system allows transmitter facilitates the optimization of power consumption and output power, even during normal operation.

The Thalna straightforward design like that of other Itelco transmitters, make possible quick and efficient installation and service due to the excellent layout and labelling of connections.

The well thought out design even keeps you on the air in rare cases of control system failure. Not only the transmitter is maintained in operating condition in the last selected state, but it is even possible to switch the transmitter on and off.

The design engineering at Itelco have utilized their decades of experience to maximize reliability and robustness. Safety is also a primary design philosophy, assuring personnel safe conditions in installation, operation and service. During maintenance of one of the transmitter assemblies, all power is removed from that assembly automatically.

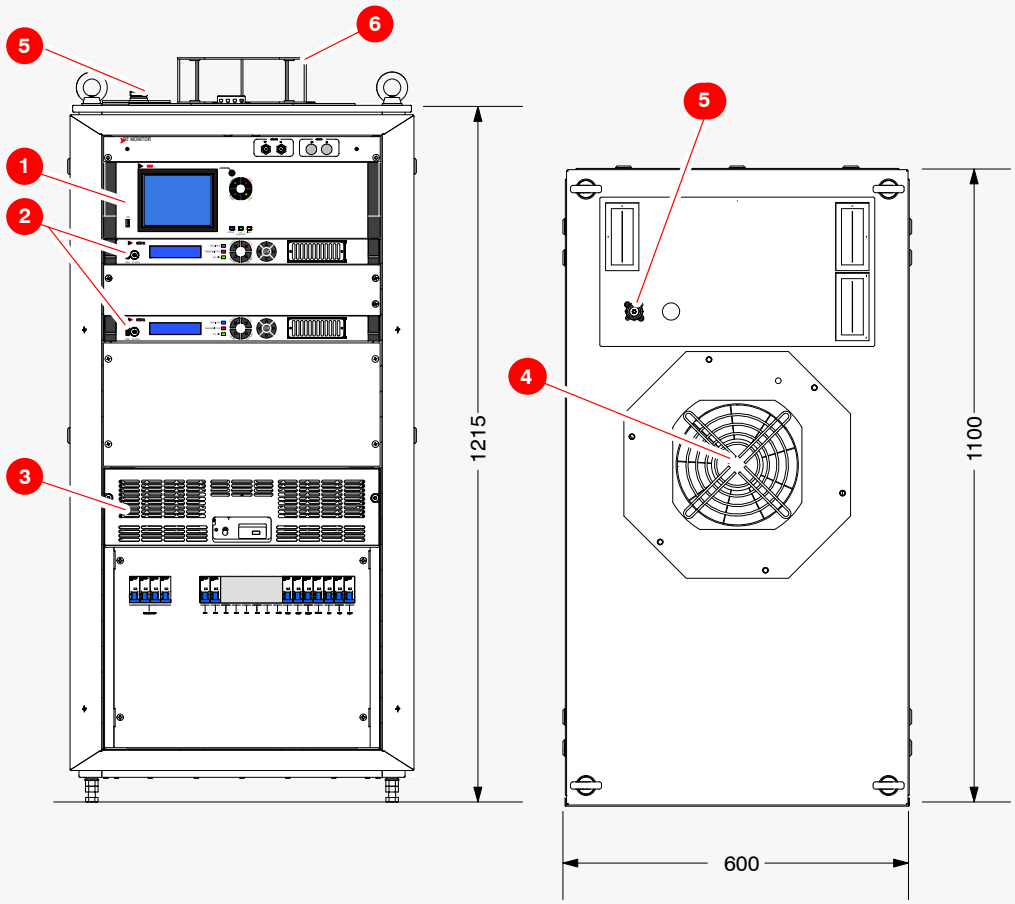
MAIN FEATURES

- **Multi–Standard operation** (DVB–T/H/T2, ATSC, ATSC 3.0, ISDB–T/Tb, DAB, Analog –*all standards*)
- **Dual–Cast operation** (*optional)*
- **Fully broadband** on UHF frequencies
- **Low power consumption**
- **Doherty technology**
- **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**
- **2 GbE** available inputs
- **Extremely compact** design
- **Modular** design
- **Easy installation** and maintenance
- **Band–pass filter** *(optional)*
- **SNMP** / **Web Server** remote control
- **CAN–bus** internal communication
- **Internal GPS** for SFN operation (*optional)*
- **Remote** software/firmware upgrade
- **High Efficiency** air cooling system

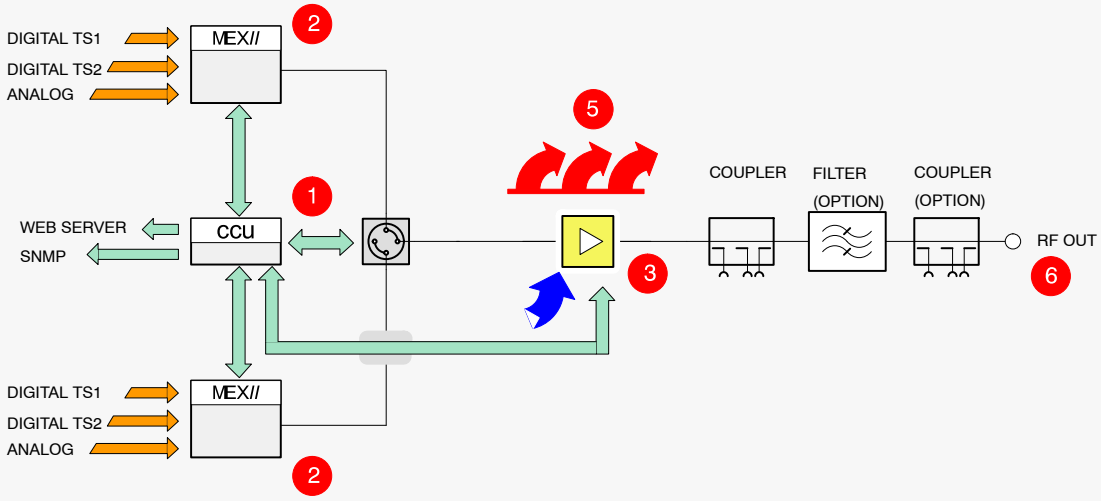
SPECIFICATIONS

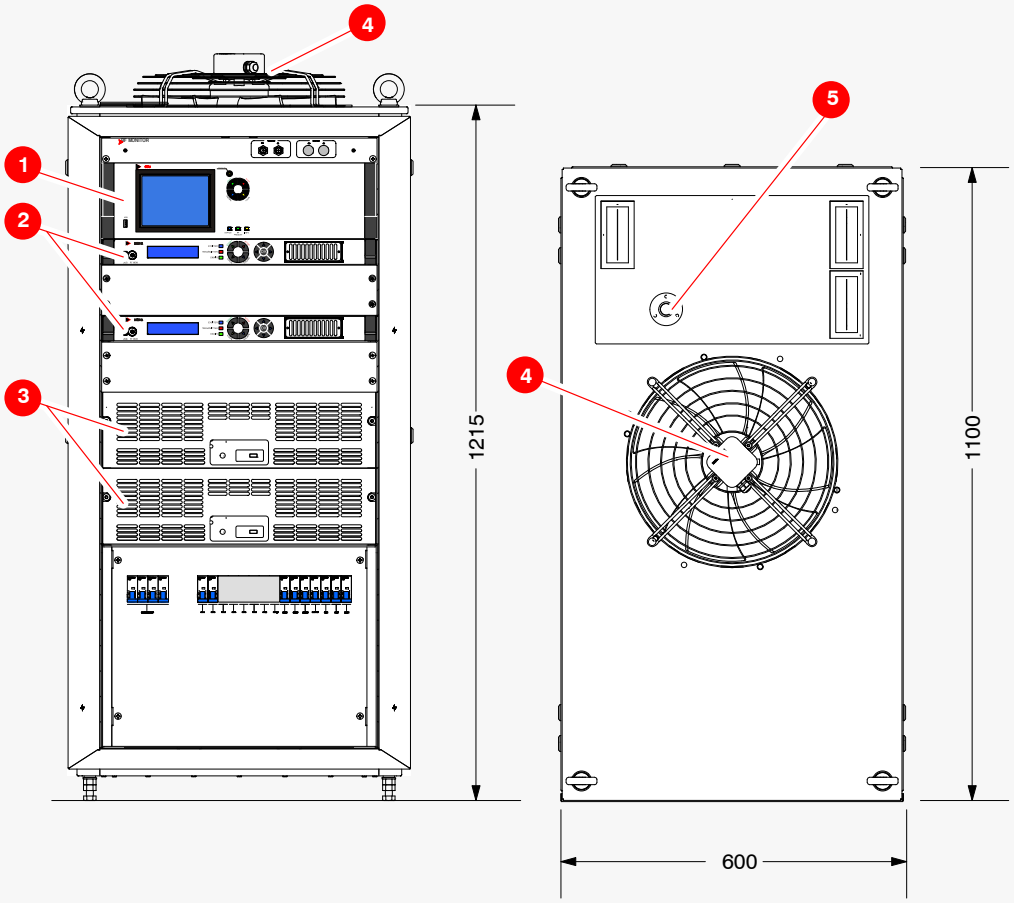
RF DATA		
Frequency range		
■ VHF band III	174 to 254 MHz	
■ UHF band IV–V	470 to 690 (690) Mhz 470 to 860 (870) Mhz	*Doherty mode* *class AB (optional)*
RF Output power	*refer to Tab. 1*	
RF Output connector	*refer to Tab. 1*	
Shoulder	> 38 dB Typ.	
MER	> 35 dB (DAB > 30 dB)	
Crest factor	8.5 to 9.5 dB	
Spurious Emissions	<–60 dBc with filter	
Harmonic Emissions	<–60 dBc with filter	
In band Spurious Emissions	<–60 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, ATSC 3.0 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	
● ATSC 3.0	6 MHz, 7 MHz, 8 MHz	
● DTMB	6 MHz, 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, 2 RJ45 GbE	
● ATSC, ATSC 3.0	2 SMPTE310M or 2 ASI, 75 Ω BNC, 2 RJ45	
■ ***Digital 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 (Option)***		
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	single phase 208V_{ac} – 230V_{ac} 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* 40% *Doherty (up to* 46% *DAB, Doherty)* *UHF:* up to 32% *Doherty* / 22% class AB	
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 (option)***		
	– 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	



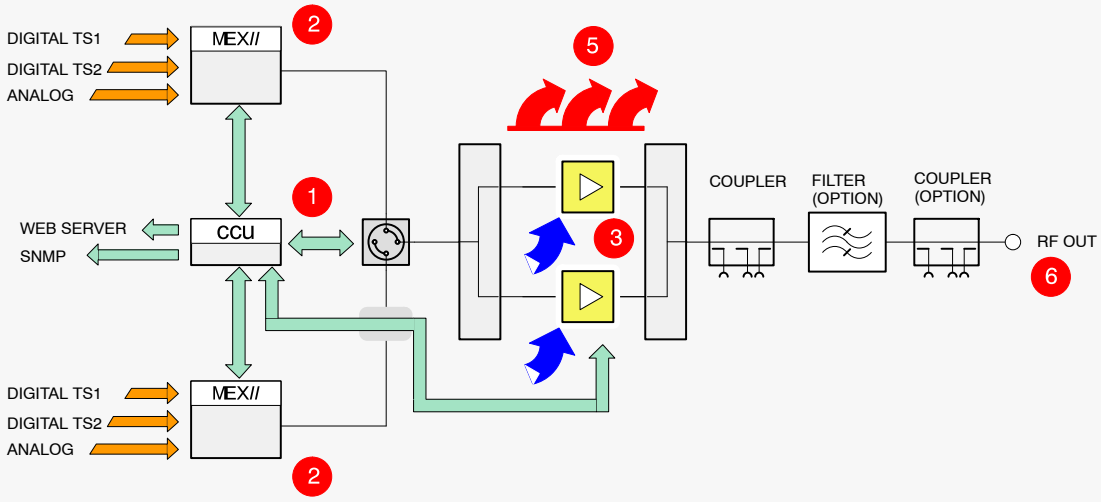
1	CCU TX CONTROL UNIT (*optional*)	4	RACK BLOWER
2	MEX// MULTISTANDARD MODULATOR	5	RF OUT TO ANTENNA/COMBINER
3	HPA SECTION	6	

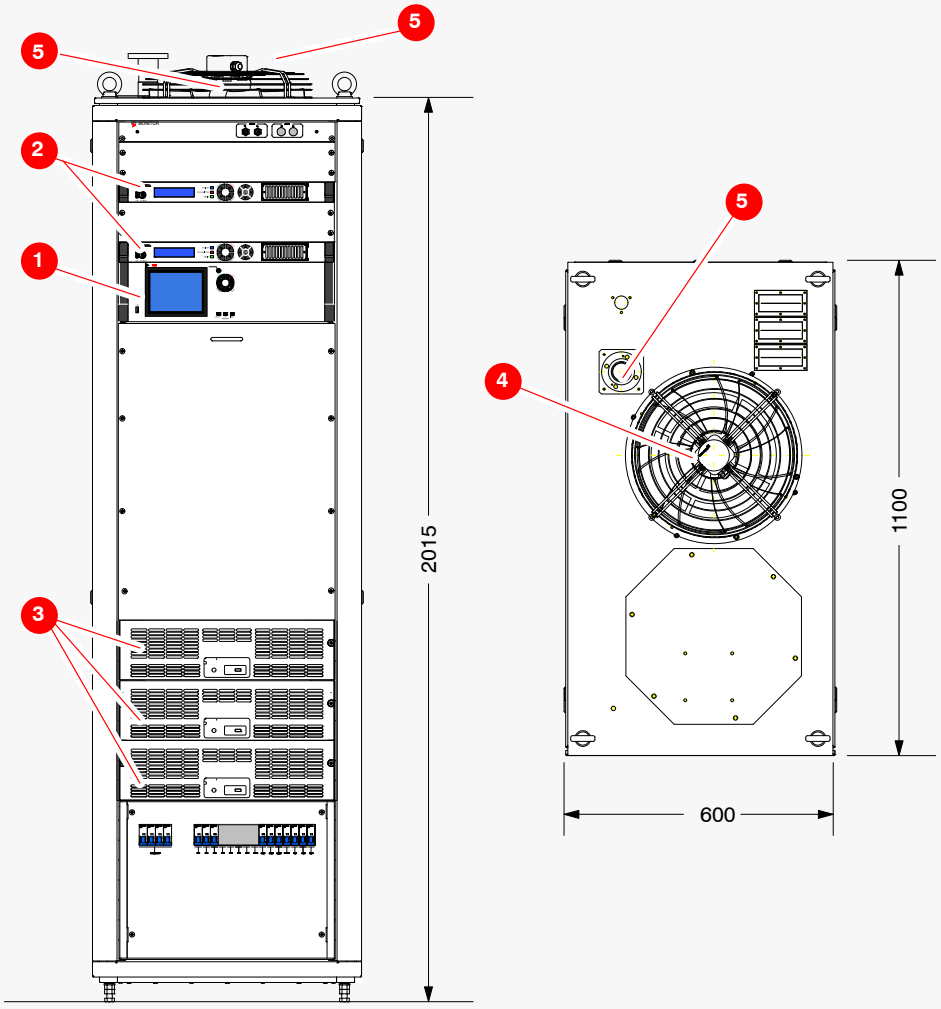




1	CCU TX CONTROL UNIT (*optional*)	4	RACK BLOWER
2	MEX// MULTISTANDARD MODULATOR (1)	5	RF OUT TO ANTENNA/COMBINER
3	HPA SECTION	6	

(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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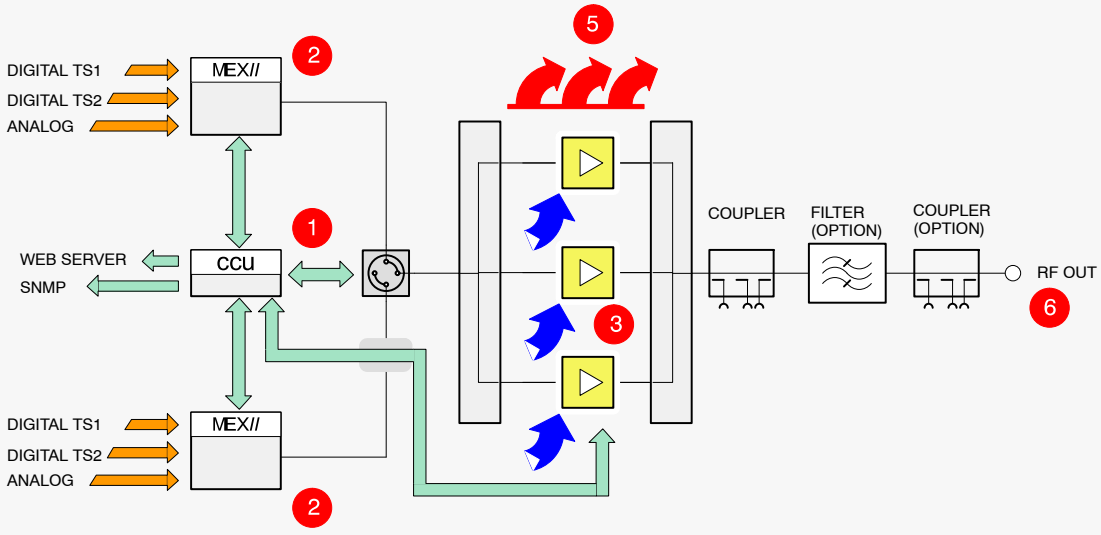

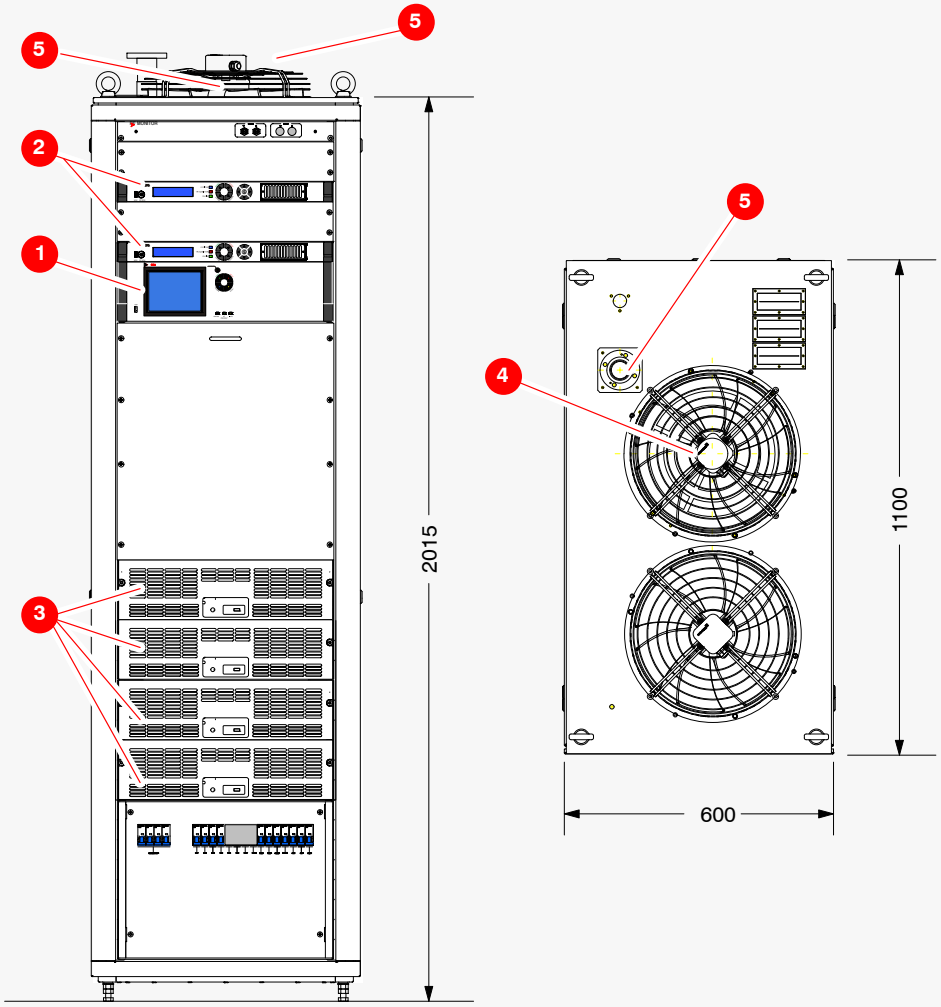

1	CCU TX CONTROL UNIT	4	RACK BLOWER
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3	HPA SECTION	6	

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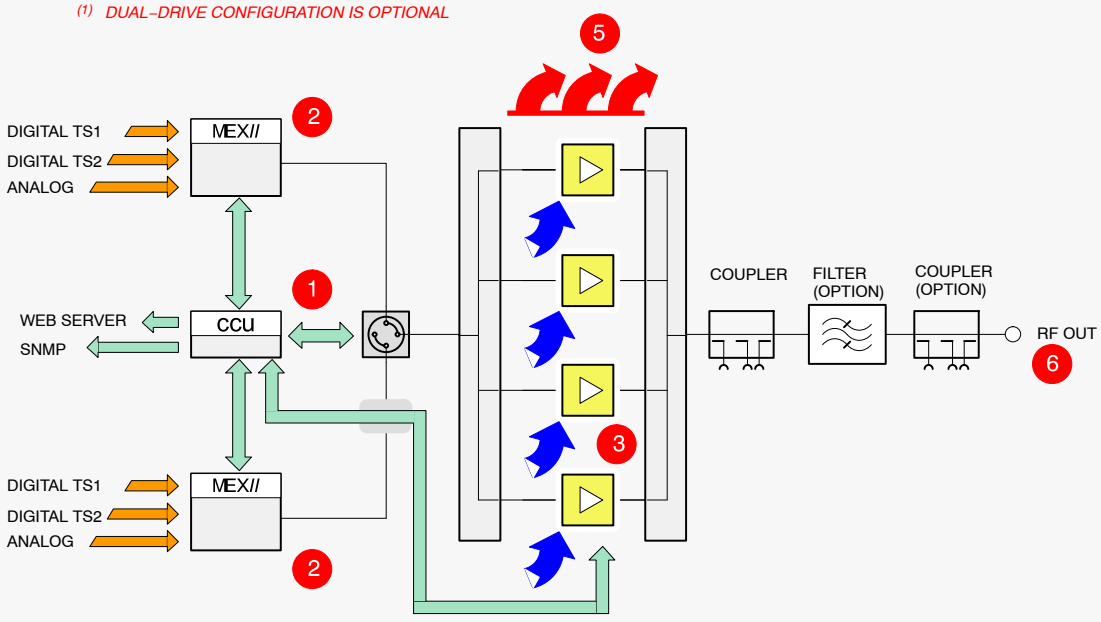

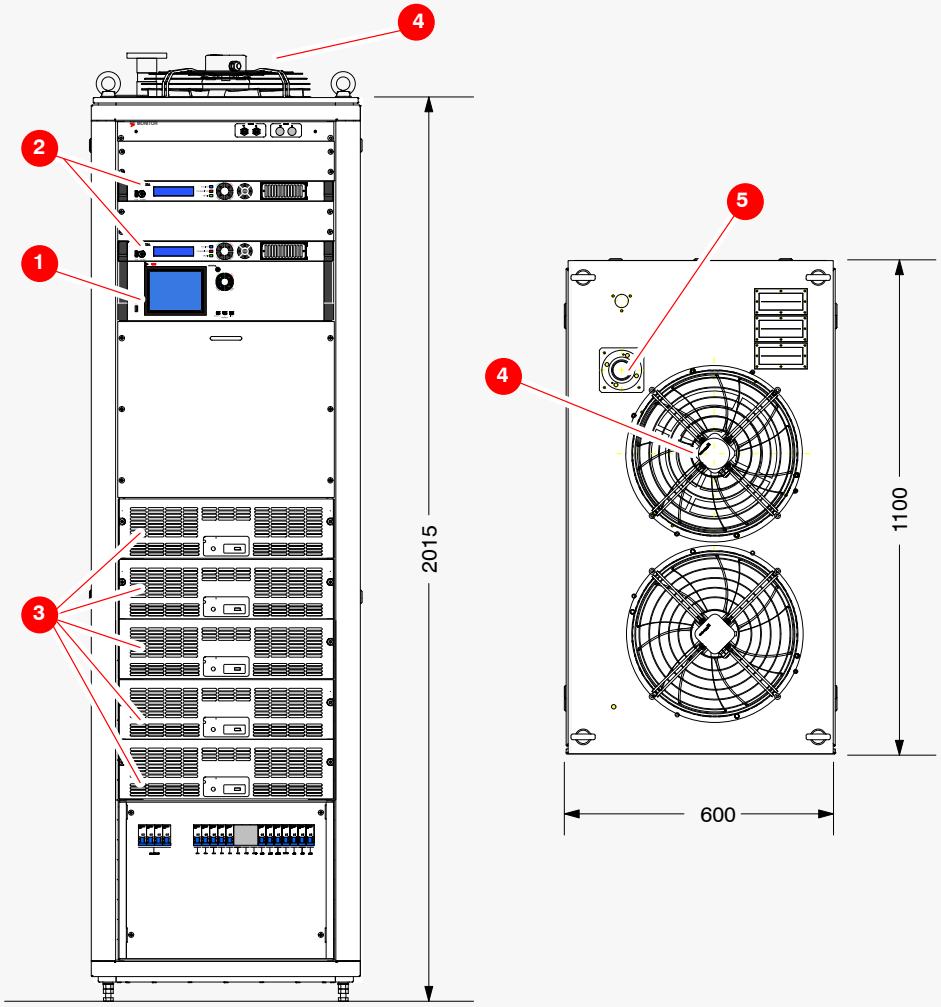

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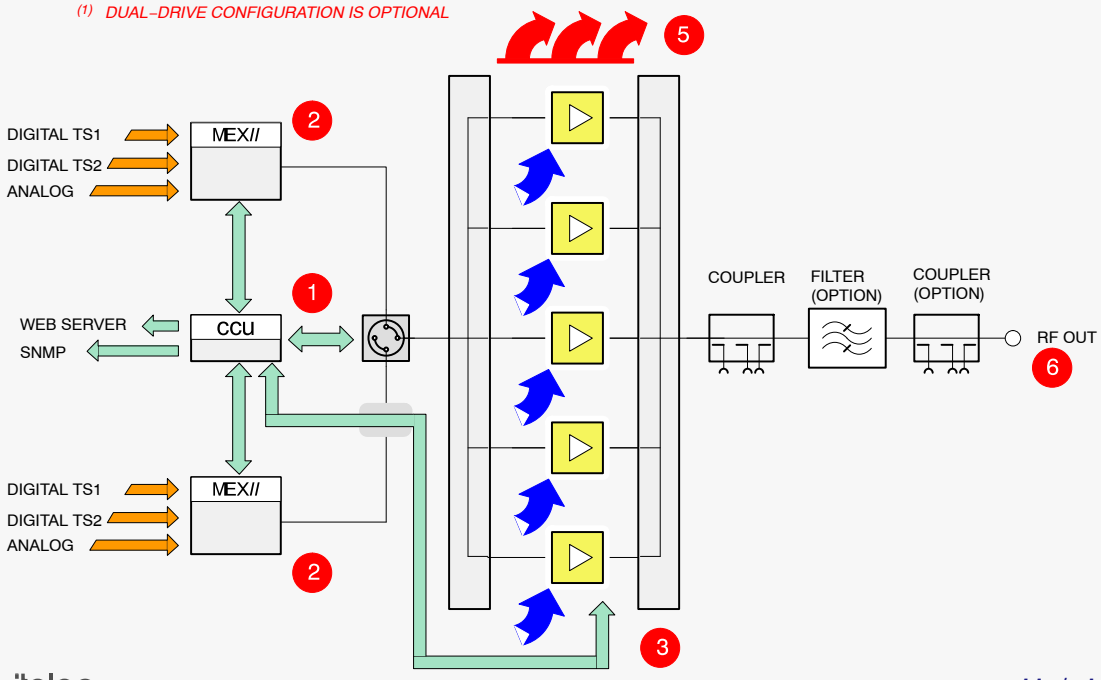

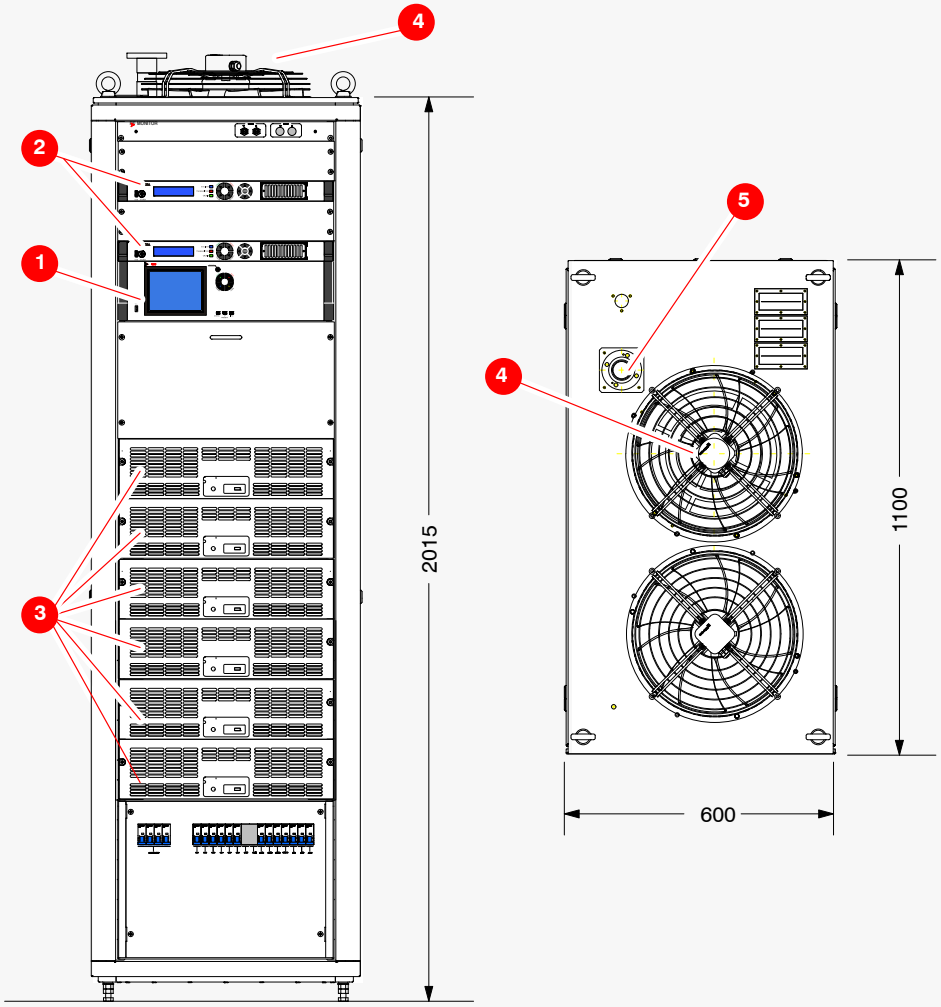

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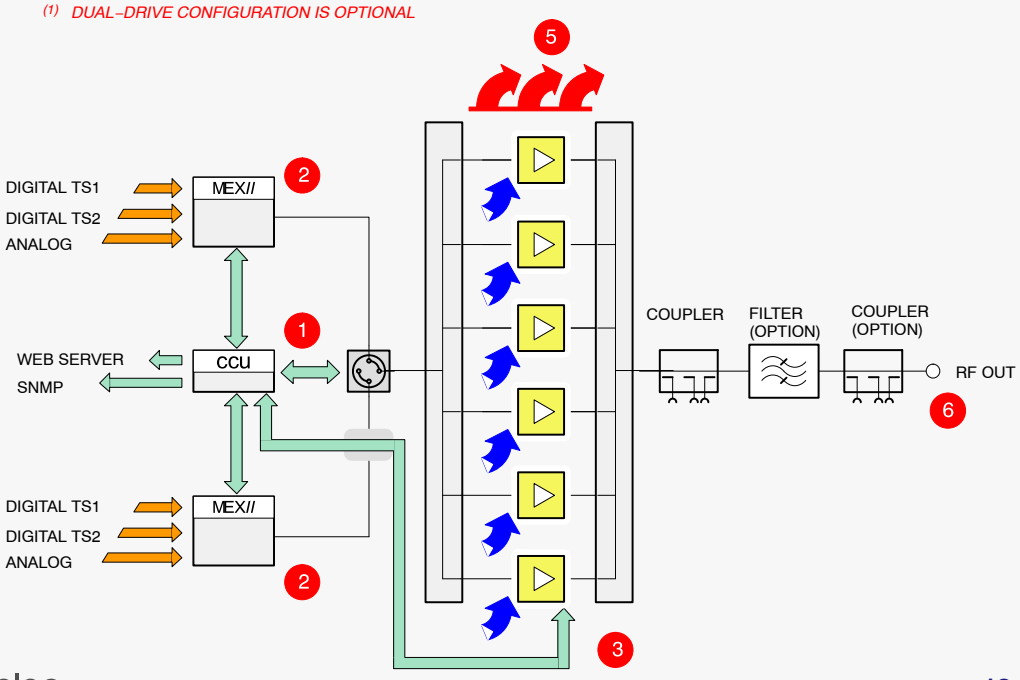

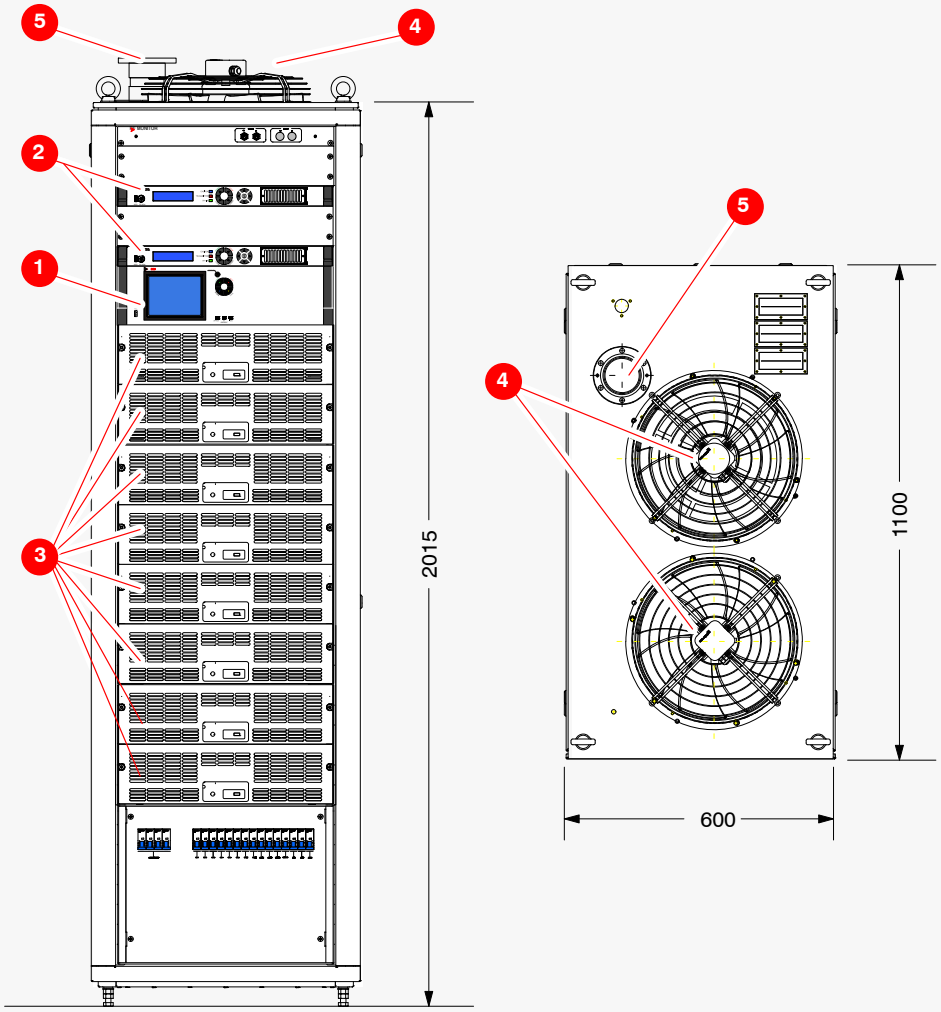

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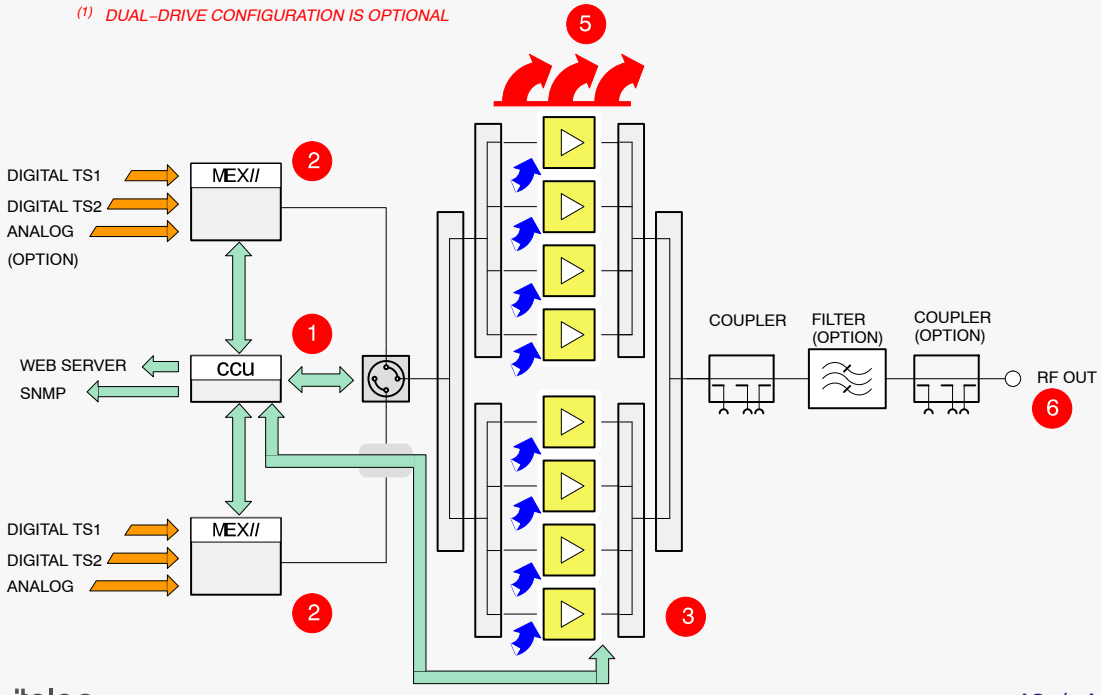

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