

ATT-8E

8 Channel Digital Step Attenuator 100 kHz ... 8500 MHz, 0 ... 31.75 dB

Features

- extremely high bandwidth
- 0.25 dB step size
- cascade able
- compact size
- wear-free

Applications

- signal conditioning
- ATE automatic test equipment
- automatic test sequences
- research and development (R&D)
- production

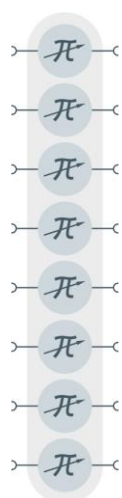


Scope

The ATT-8E is an eight channel RF digital step attenuator in 50 ohms technology. The frequency range covers 100 kHz to more than 8500 MHz. The attenuation in each channel is adjustable in the range 0 ... 31.75 dB in 0.25 dB steps. The ATT-8E is designed as a slide-in module for the integration into the SR6-11C system platform. In combination with the SR6-CU controller module it can be easily controlled with ASCII strings.

Principal Block Diagram

The ATT-8E has 8 independent step attenuators. The module offers high isolation between the attenuator channels, they can be used separately with different signals without the influence from adjacent channels.



Remote Control

In combination with the SR6-CU controller module, the ATT-8E is remote controllable via standard interfaces USB and LAN with simple SCPI orientated ASCII strings.

Built-In Test Function

Internal supply voltages are monitored. The module status can be read out via remote interface.

RF Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
impedance	Z_{IN}		50		Ω	
number of channels	n_{CH}		8			
frequency	f_{MIN}		50	100	kHz	
	f_{MAX}	8500			MHz	
return loss	S_{11}, S_{22}		-10	-8.5	dB	$f \leq 1$ MHz
(note 1)	S_{11}, S_{22}		-18	-15	dB	$1 \text{ MHz} < f \leq 4000 \text{ MHz}$
	S_{11}, S_{22}		-13	-9	dB	$4000 \text{ MHz} < f \leq 6000 \text{ MHz}$
	S_{11}, S_{22}		-12	-8	dB	$f > 6000 \text{ MHz}$
insertion loss	S_{21}, S_{12}	-2.2	-1.5		dB	$f \leq 2000 \text{ MHz}$
	S_{21}, S_{12}	-2.8	-2.3		dB	$2000 \text{ MHz} < f \leq 4000 \text{ MHz}$
	S_{21}, S_{12}	-4.5	-2.8		dB	$4000 \text{ MHz} < f \leq 6000 \text{ MHz}$
	S_{21}, S_{12}	-6.2	-5.0		dB	$f > 6000 \text{ MHz}$
channel isolation	S_{ISO}			-100	dB	$f \leq 1$ MHz
	S_{ISO}			-85	dB	$1 \text{ MHz} < f \leq 4000 \text{ MHz}$
	S_{ISO}			-80	dB	$4000 \text{ MHz} < f \leq 6000 \text{ MHz}$
	S_{ISO}			-65	dB	$f > 6000 \text{ MHz}$
attenuation range	a_{ATT}	0		31.75	dB	
attenuation step size	Δa_{ATT}		0.25		dB	
attenuation accuracy						
0.25/0.50 dB setting	da_{ATT}			± 0.1	dB	$f < 4000 \text{ MHz}$, note 2
	da_{ATT}			± 0.2	dB	$f \geq 4000 \text{ MHz}$, note 2
1.00/2.00 dB setting	da_{ATT}			± 0.2	dB	$f < 4000 \text{ MHz}$, note 2
	da_{ATT}			± 0.25	dB	$f \geq 4000 \text{ MHz}$, note 2
4.00 dB setting	da_{ATT}			± 0.2	dB	$f < 4000 \text{ MHz}$, note 2
	da_{ATT}			± 0.4	dB	$f \geq 4000 \text{ MHz}$, note 2
8.00 dB setting	da_{ATT}			± 0.5	dB	$f < 4000 \text{ MHz}$, note 2
	da_{ATT}			± 0.75	dB	$f \geq 4000 \text{ MHz}$, note 2
16.00 dB setting	da_{ATT}			± 1.0	dB	$f < 4000 \text{ MHz}$, note 2
	da_{ATT}			± 1.5	dB	$f \geq 4000 \text{ MHz}$, note 2
31.75 dB setting	da_{ATT}			± 2.0	dB	$f < 4000 \text{ MHz}$, note 2
	da_{ATT}			± 2.75	dB	$f \geq 4000 \text{ MHz}$, note 2
RF input power	P_{RF}			+11	dBm	$f \leq 60 \text{ MHz}$
	P_{RF}			+27	dBm	$f > 60 \text{ MHz}$
attenuator settling time	t_{SET}		1		μs	
DC voltage	U_{DC}			20	V	
ESD discharge resistor	R_{ESD}		4.7		k Ω	
RF connectors	X_{RF}	SMA female				

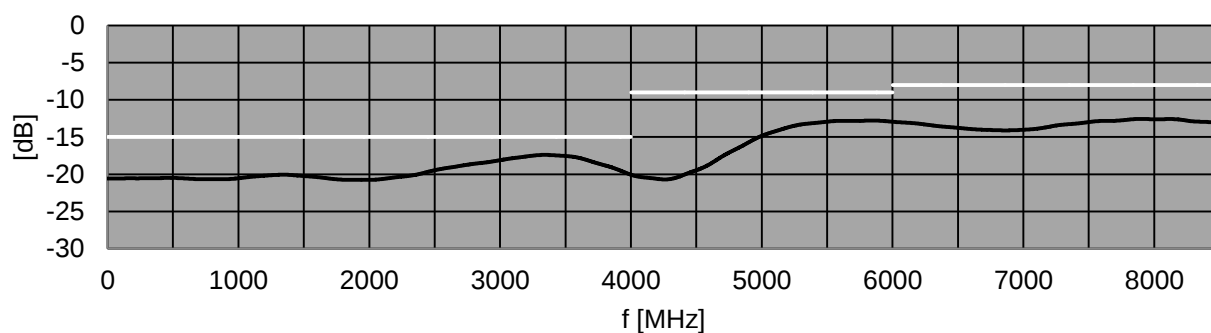
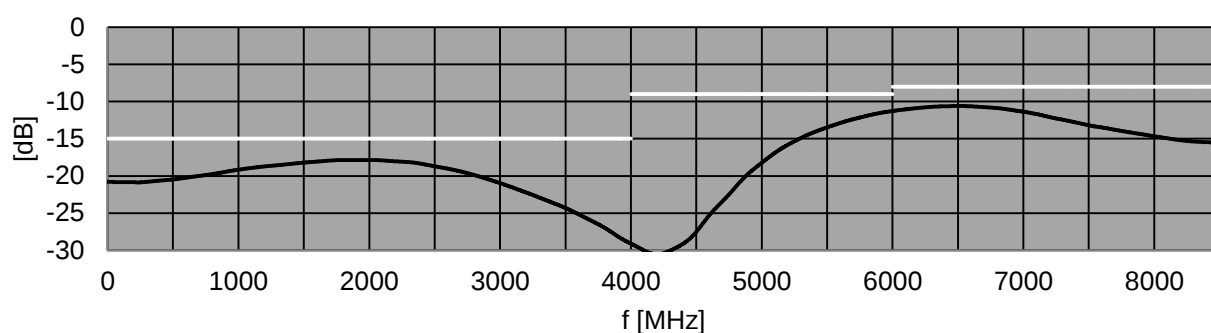
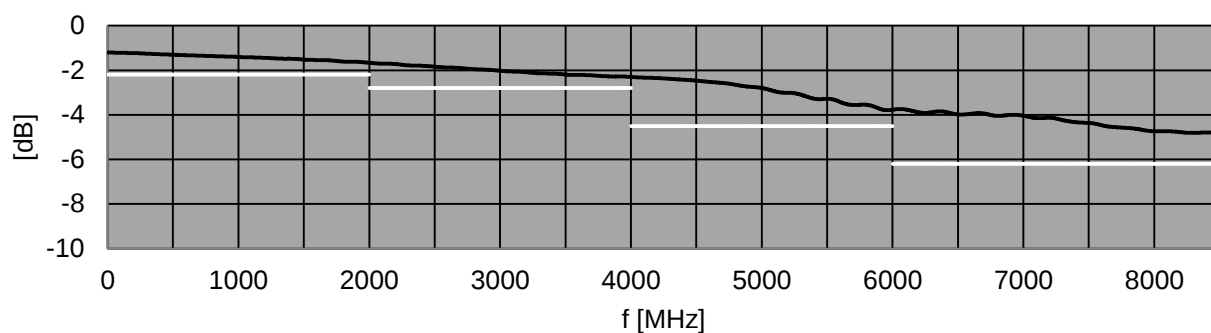
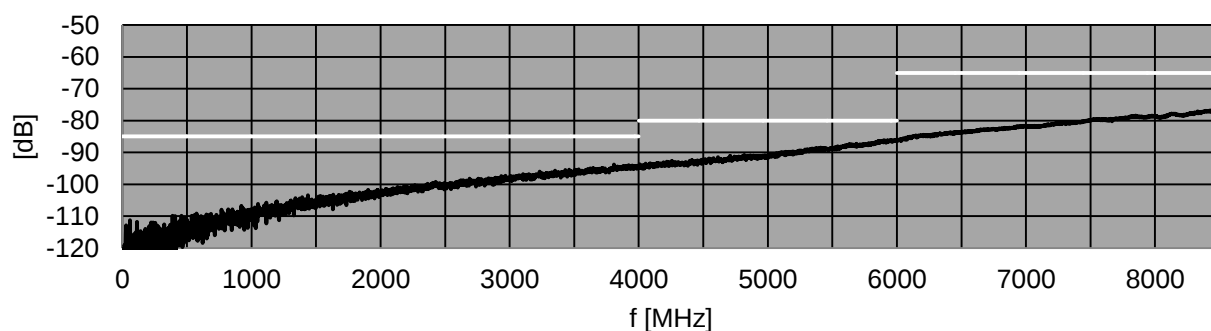
Note 1: 0 dB setting

Note 2: referred to insertion loss (0dB-Setting), $T_O = \text{const.}$

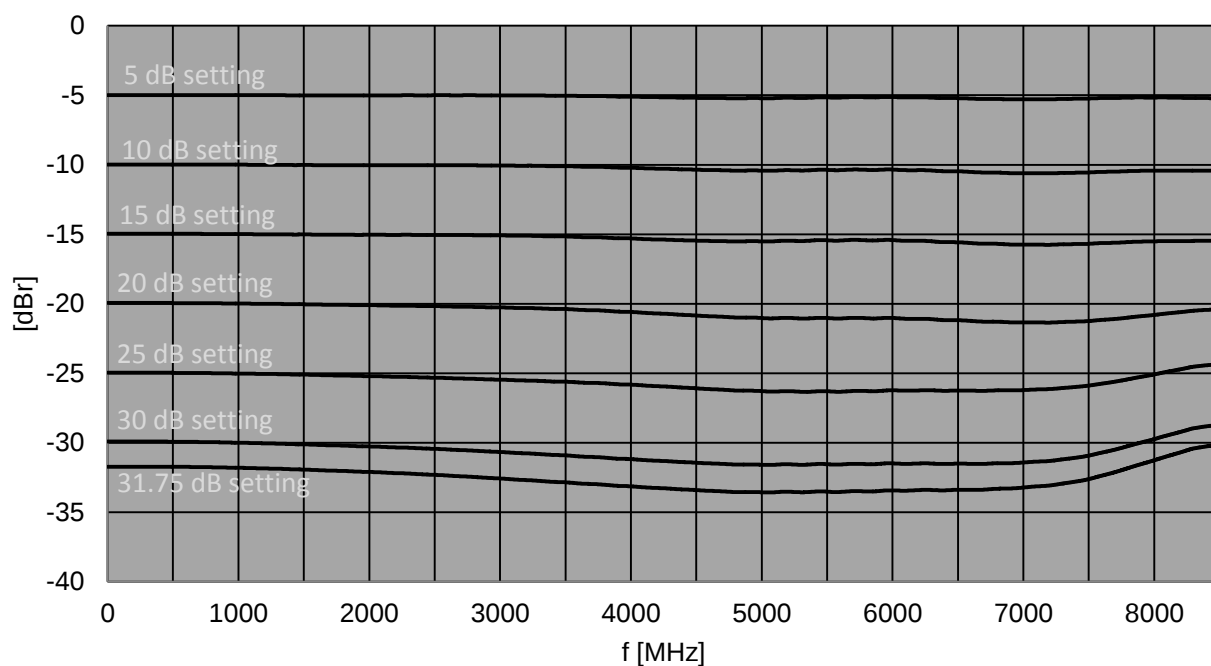
Common Specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
power supply	U_{DC}	23.5	24.0	24.5	V	via SR6-11C
power consumption	P_{DC}		1		W	
dimensions	$W \times H \times D$	approx. 30 x 262 x 197			mm	6 U, 6 HP
weight	m		1.3		kg	
operating temp. range	T_O	+5		+60	$^{\circ}C$	
storage temp. range	T_S	-40		+70	$^{\circ}C$	
ordering information	ATT-8E		P/N: 1503.4000.1			

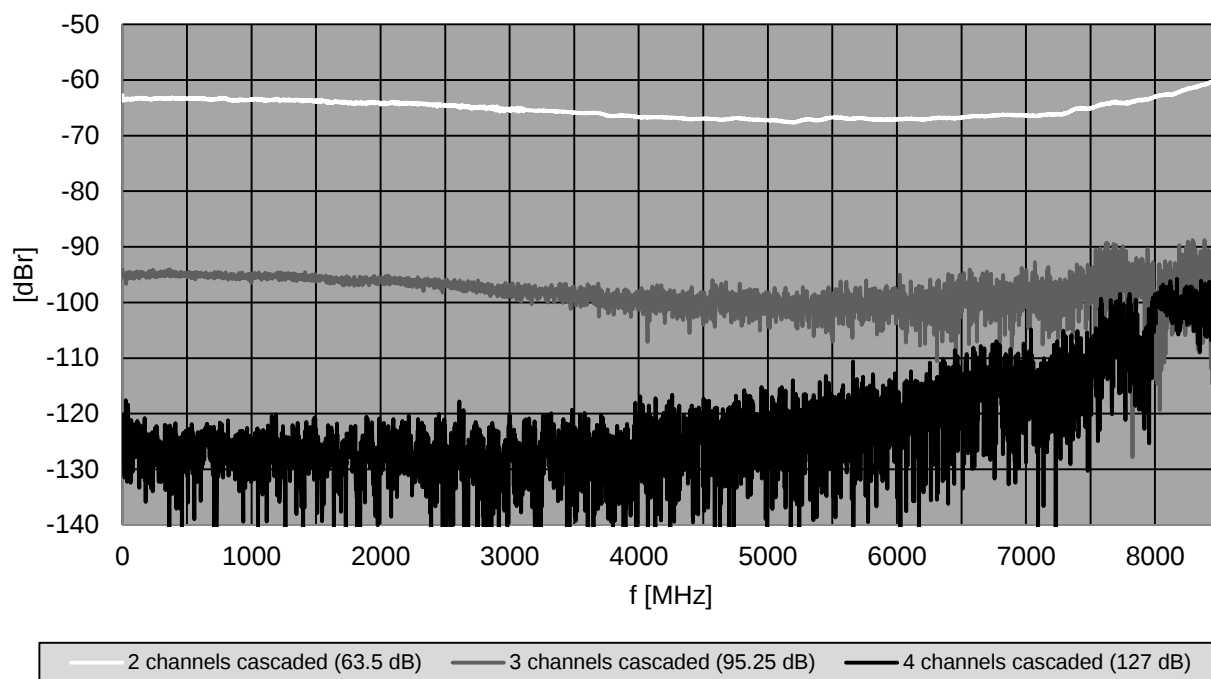


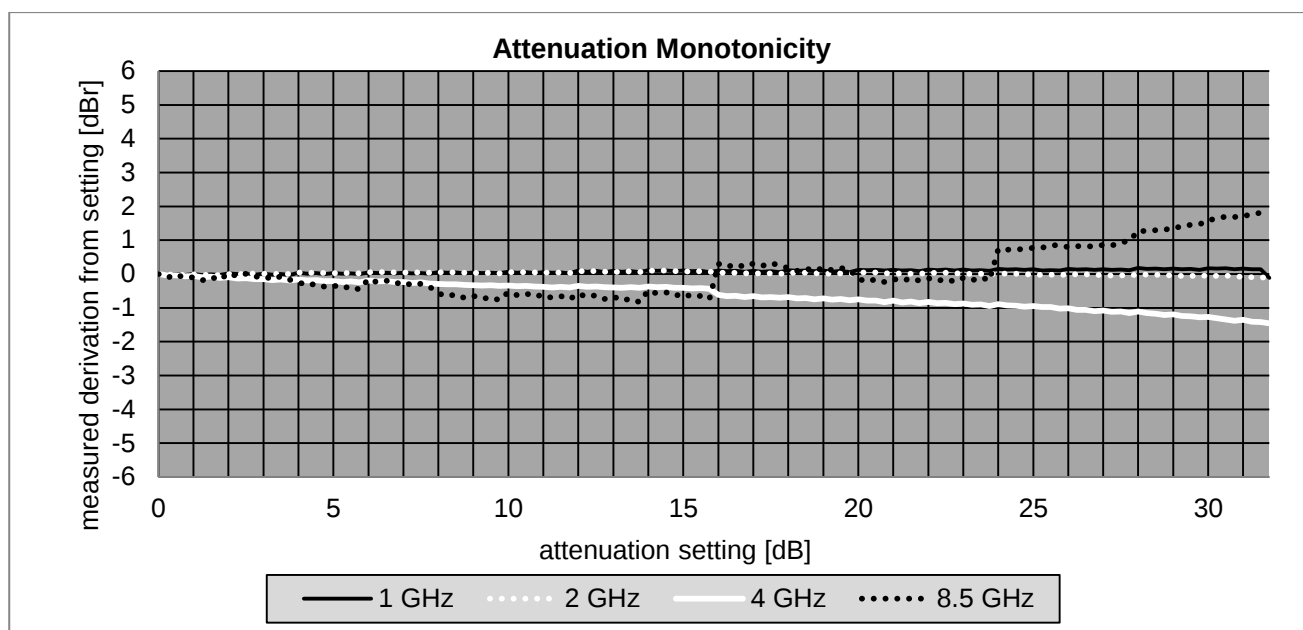
S-Parameters (typical responses)**Input Return Loss (S11), 0 dB setting****Output Return Loss (S22), 0 dB setting****Insertion Loss (S21), 0 dB setting****Channel Isolation, 0dB setting**

Attenuation over Frequency, Relative to 0 dB setting, single channel

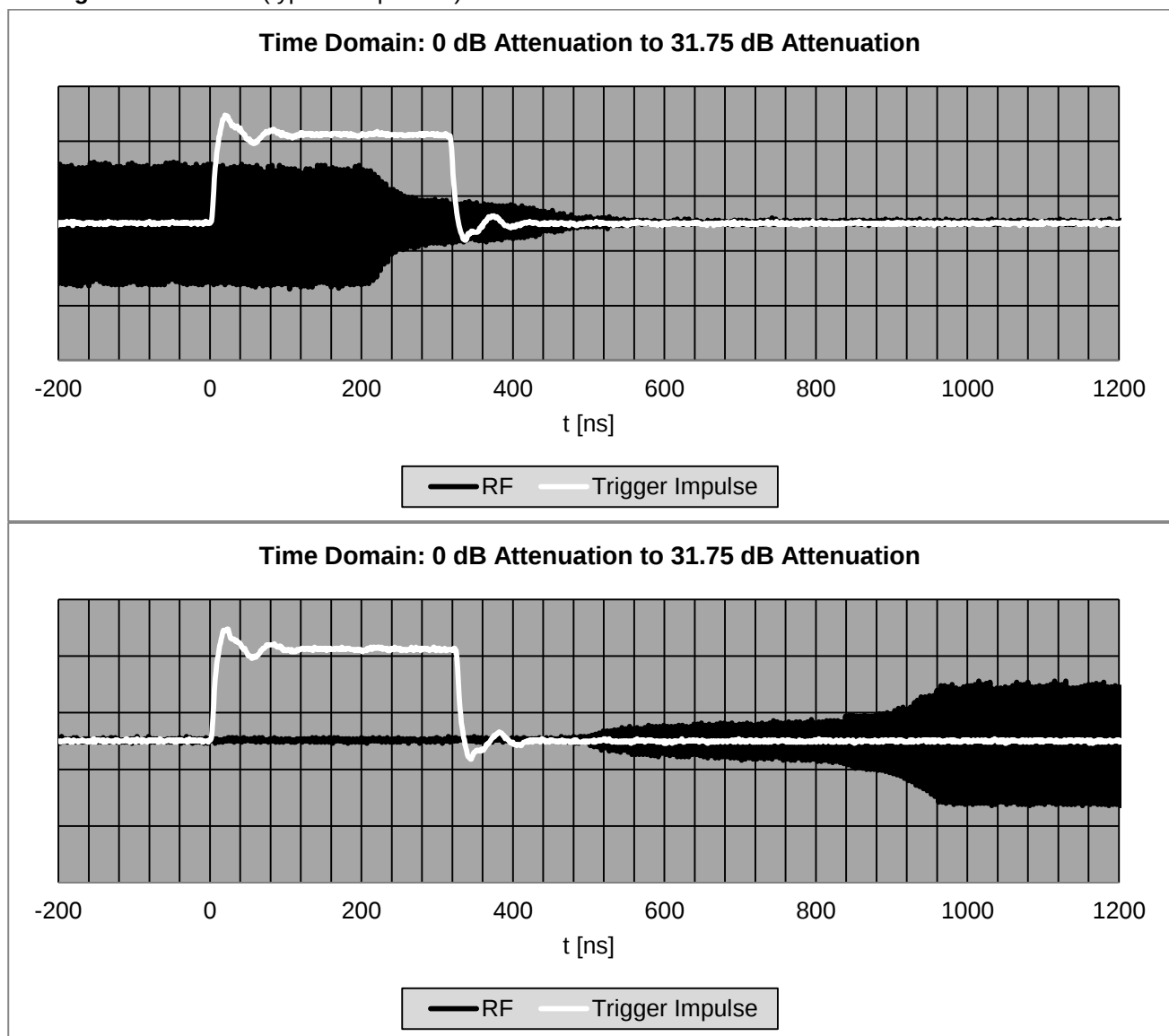


Attenuation over Frequency, relative to 0 dB setting, cascaded





Setting Characteristic (typical responses)



SR6-11C System Platform

The ATT-8E module is foreseen for the integration into the SR6-11C system platform.

11 slots in the SR6-11C can be used for modules like RF switches, matrices, multicouplers, attenuators, BIAS-Ts, level detectors, bi-directional splitters/combiners for signal conditioning and a controller unit.

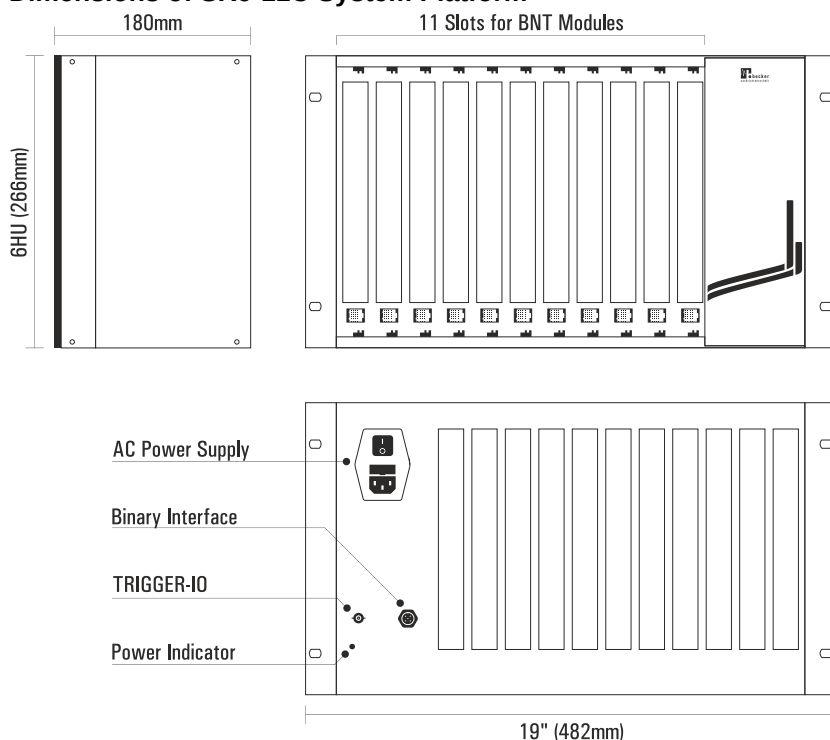
For the control of ATT-8E module the SR6-CU controller unit is required.

Via the Trigger-IO interface at the rear side of the SR6-11C System Platform a synchronous operation in a device network of SR6-11C can be realized.

After a positive TTL pulse slope at the trigger input, the preloaded configurations are executed only by hardware in micro seconds.

In applications with very fast execution demands the hardware can be directly controlled via the binary interface on the rear side.

Dimensions of SR6-11C System Platform



Appearances



ATT-8E front view



ATT-8E rear view



SR6-11C front view

Related Products

Product	Description	P/N
SR6-11C	System Platform with 11 Slots for Modules	1409.1202.1
SR6-CU	Controller Unit with LAN and USB Remote Interface	1409.3000.1
Unidirectional Products: Active Multicouplers, Matrices, Level Detectors		
WSDU-1X8A	8 Way High Dynamic Signal Conditioning Multicoupler 100 kHz ... 4000 MHz	1807.6300.1
WSDU-2X4A	2 Section 4 Way High Dynamic Signal Conditioning Multicoupler 100 kHz ... 4000 MHz	1807.6400.1
WSDU-1X8L	8 Way Multicoupler Module 100 kHz ... 4000 MHz	1807.6100.1
WSDU-2X4L	2 Section Hi Dynamic 4 Way Multicoupler Module 100 kHz ... 4000 MHz	1807.6200.1
WSDU-2X4E+	2 Section 1x4 plus 1x2 Multicoupler Module 20 ... 8000 MHz	1501.6200.1
WSDU-1X8S	High Dynamic 1x8 Shortwave Multicoupler Module 300 kHz ... 30 MHz	1502.6100.1
WSDU-1X2PM	2 Channel, 5 W Multicoupler with ALC Capability 20 MHz...3000 MHz	1606.6000.1
RSWM-4X4	4x4 Switching Matrix -Non-blocking-, 100 kHz ... 4000 MHz or 20 MHz ... 4000 MHz	1205.4100
RSWM-4X4E	4x4 Ultra-Wideband Switching Matrix -Non-blocking-, 20 MHz ... 8000 MHz	2001.4100.1
RFLD-8RE	8 Channel True Power RF Level Detector, 1 MHz ... 8000 MHz	1505.8000.1
Bi-Directional Products: Switches, Matrices, Attenuators, Delay Lines, BIAS-Ts, Splitters/Combiners, Filters		
RSWU-2SP4TS+	2 Channel Non-reflective SP4T Switches plus 1 Channel SPDT Switch, 100 kHz ... 8500 MHz	1408.4010.1
RSWU-8SPSTS	8 Channel Non-reflective SPST Switch 100 kHz ... 8500 MHz	1408.4000.1
RSWU-4SPDTS	4 Channel Non-reflective SPDT Switch 100 kHz ... 8500 MHz	1408.4020.1
RSWU-8SPST-CS	8 Channel High Isolation SPST with DC Load Simulation, 100 kHz ... 7500 MHz	1811.4100.1
BSWM-4X4E	4x4 High Isolation Bi-Directional Switching Matrix –Blocking-, 100 kHz ... 7500 MHz	1205.4600.1
ATT-8E	8 Channel Digital Step Attenuator 0 ... 31.75 dB, 100 kHz ... 8000 MHz	1503.4000.1
DLL-4	4 Channel Programmable Delay Line 0 ... 1700 ps, 250 MHz ... 4000 MHz	1303.4200.1
PT-4CS	4 Channel Programmable DC Sink 0 ... 400 mA, 100 kHz ... 8500 MHz	1605.2020.1
PT-4CL	4 Channel Wideband DC Load, 100 kHz ... 8500 MHz	1605.2040.1
BSDU-2X4A+	2 Section 4 Way, Bi-Directional Signal Conditioning plus 2 Way Splitter/Combiner, 500 MHz ... 7500 MHz	1903.6100.1
BSDU-2X4+	2 Section 4 Way Wideband Bi-Directional plus 2 Way Splitter/Combiner, 500 MHz ... 7500 MHz	1903.6200.1
FBS-1590	L1 Band GNSS Notch Filter	1511.5100.1

