

Features

- ◆ Plug-in modules for 19"-subracks (3U and 6U height)
- ◆ Available DC-input voltage ranges 18–36, 36–75, 80–160 and 160–320VDC
- ◆ Also models with AC-input (see page 6)
- ◆ Standard output voltages: 5–250VDC up to 200A
- ◆ EMI compliance with EN 55022 class A
- ◆ Safety compliance to IEC/EN 60950
- ◆ Many options available, i.e. powerfail signals, ext. On/Off, redundant operation, wall mounting
- ◆ Customized version available on request
- ◆ 3-year product warranty



3U Models

The TSC series is a range high quality DC/DC converter qualified for demanding applications in industrial automation and telecom systems. The modular design allows very high flexibility of input/output configuration and application specific options at very reasonable cost even for low quantities. All models are constructed as rugged plug-in module for 19"-subrack (Euro cassette) with wall mounting as option.



6U Models

Models					
3U Height Modules		6U Height Modules			
Order Code	Output current max.	Order Code	Output current max.	Output voltage (adjust.range)	Input voltage range
TSC 2020	8 A	TSC 1220	25 A	5 VDC (4.5 – 5.5 VDC)	18 – 36 VDC
TSC 3020	20 A	TSC 1320	45 A		
TSC 5020	30 A	TSC 1520	60 A		
TSC 0620	50 A	TSC 3520	95 A		
TSC 6020	70 A	TSC 3720	135 A		
TSC 2620	85 A	TSC 3620	190 A		
TSC 2022	4 A	TSC 1222	12.5 A	12 VDC (11 – 13 VDC)	
TSC 3022	12 A	TSC 1322	25 A		
TSC 5022	16 A	TSC 1522	33 A		
TSC 0622	24 A	TSC 3522	50 A		
TSC 6022	35 A	TSC 3722	70 A		
TSC 2622	50 A	TSC 3622	100 A		
TSC 2024	2.4 A	TSC 1224	6 A	24 VDC (23 – 26 VDC)	
TSC 3024	6 A	TSC 1324	13 A		
TSC 5024	8 A	TSC 1524	18 A		
TSC 0624	12 A	TSC 3524	27 A		
TSC 6024	18 A	TSC 3724	40 A		
TSC 2624	25 A	TSC 3624	55 A		
		TSC 3824	75 A		
TSC 2029	1 A	TSC 1229	3 A	48 VDC (45 – 55 VDC)	
TSC 3029	2.7 A	TSC 1329	6 A		
TSC 5029	4 A	TSC 1529	8 A		
TSC 0629	6 A	TSC 3529	12 A		
TSC 6029	9 A	TSC 3729	19 A		
TSC 2629	12 A	TSC 3629	26 A		
		TSC 3829	38 A		
TSC 2027	0.5 A	TSC 1227	1.2 A	110 VDC (100 – 130 VDC)	
TSC 3027	1.2 A	TSC 1327	2.5 A		
TSC 5027	1.8 A	TSC 1527	3.3 A		
TSC 0627	2.5 A	TSC 3527	5.3 A		
TSC 6027	3.5 A	TSC 3727	8 A		
TSC 2627	5 A	TSC 3627	11 A		
		TSC 3827	15 A		
TSC 2028	0.25 A	TSC 1228	0.6 A	220 VDC (200 – 250 VDC)	
TSC 3028	0.6 A	TSC 1328	1.25 A		
TSC 5028	0.9 A	TSC 1528	1.6 A		
TSC 0628	1.25 A	TSC 3528	2.8 A		
TSC 6028	1.8 A	TSC 3728	4 A		
TSC 2628	2.5 A	TSC 3628	5.5 A		
		TSC 3828	8 A		

Height: 1U = 44.45 mm (1.75)

Other output voltages on request

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Models					
3U Height Modules		6U Height Modules			
Order Code	Output current max.	Order Code	Output current max.	Output voltage (adjust.range)	Input voltage range
TSC 2030	8 A	TSC 1230	30 A	5 VDC (4.5 – 5.5 VDC)	36 – 75 VDC
TSC 3030	20 A	TSC 1330	50 A		
TSC 5030	35 A	TSC 1530	80 A		
TSC 0630	50 A	TSC 3530	110 A		
TSC 6030	80 A	TSC 3730	165 A		
TSC 2630	100 A	TSC 3630	220 A		
TSC 2032	4 A	TSC 1222	15 A	12 VDC (11 – 13 VDC)	
TSC 3032	12 A	TSC 1332	30 A		
TSC 5032	20 A	TSC 1532	42 A		
TSC 0632	26 A	TSC 3532	56 A		
TSC 6032	40 A	TSC 3732	85 A		
TSC 2632	60 A	TSC 3632	115 A		
TSC 2034	2.4 A	TSC 1234	7.5 A	24 VDC (23 – 26 VDC)	
TSC 3034	6 A	TSC 1334	15 A		
TSC 5034	10 A	TSC 1534	23 A		
TSC 0634	14 A	TSC 3534	30 A		
TSC 6034	20 A	TSC 3734	50 A		
TSC 2634	30 A	TSC 3634	65 A		
		TSC 3834	100 A		
TSC 2039	1 A	TSC 1239	3.6 A	48 VDC (45 – 55 VDC)	
TSC 3039	2.7 A	TSC 1339	7.3 A		
TSC 5039	4.5 A	TSC 1539	11 A		
TSC 0639	6.5 A	TSC 3539	14 A		
TSC 6039	9 A	TSC 3739	23 A		
TSC 2639	15 A	TSC 3639	30 A		
		TSC 3839	45 A		
TSC 2037	0.5 A	TSC 1237	1.5 A	110 VDC (100 – 130 VDC)	
TSC 3037	1.2 A	TSC 1337	3 A		
TSC 5037	2 A	TSC 1537	4.5 A		
TSC 0637	3 A	TSC 3537	6.5 A		
TSC 6037	4 A	TSC 3737	10 A		
TSC 2637	6.5 A	TSC 3637	14 A		
		TSC 3837	20 A		
TSC 2038	0.25 A	TSC 1238	0.8 A	220 VDC (200 – 250 VDC)	
TSC 3038	0.6 A	TSC 1338	1.5 A		
TSC 5038	1 A	TSC 1538	2.4 A		
TSC 0638	1.5 A	TSC 3538	3.5 A		
TSC 6038	2 A	TSC 3738	5 A		
TSC 2638	3.2 A	TSC 3638	7 A		
		TSC 3838	10 A		

Height: 1U = 44.45 mm (1.75)

Other output voltages on request

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Models					
3U Height Modules		6U Height Modules			
Order Code	Output current max.	Order Code	Output current max.	Output voltage (adjust.range)	Input voltage range
TSC 2050	8 A	TSC 1250	30 A	5 VDC (4.5 – 5.5 VDC)	80 – 160 VDC
TSC 3050	20 A	TSC 1350	50 A		
TSC 5050	35 A	TSC 1550	80 A		
TSC 0650	50 A	TSC 3550	110 A		
TSC 6050	80 A	TSC 3750	165 A		
TSC 2650	100 A	TSC 3650	220 A		
TSC 2052	4 A	TSC 1252	15 A	12 VDC (11 – 13 VDC)	
TSC 3052	12 A	TSC 1352	30 A		
TSC 5052	20 A	TSC 1552	42 A		
TSC 0652	26 A	TSC 3552	56 A		
TSC 6052	40 A	TSC 3752	85 A		
TSC 2652	60 A	TSC 3652	115 A		
TSC 2054	2.4 A	TSC 1254	7.5 A	24 VDC (23 – 26 VDC)	
TSC 3054	6 A	TSC 1354	15 A		
TSC 5054	10 A	TSC 1554	23 A		
TSC 0654	14 A	TSC 3554	30 A		
TSC 6054	20 A	TSC 3754	50 A		
TSC 2654	30 A	TSC 3654	65 A		
		TSC 3854	100 A		
TSC 2059	1 A	TSC 1259	3.6 A	48 VDC (45 – 55 VDC)	
TSC 3059	2.7 A	TSC 1359	7.3 A		
TSC 5059	4.5 A	TSC 1559	11 A		
TSC 0659	6.5 A	TSC 3559	14 A		
TSC 6059	9 A	TSC 3759	23 A		
TSC 2659	15 A	TSC 3659	30 A		
		TSC 3859	45 A		
TSC 2057	0.5 A	TSC 1257	1.5 A	110 VDC (100 – 130 VDC)	
TSC 3057	1.2 A	TSC 1357	3 A		
TSC 5057	2 A	TSC 1557	4.5 A		
TSC 0657	3 A	TSC 3557	6.5 A		
TSC 6057	4 A	TSC 3757	10 A		
TSC 2657	6.5 A	TSC 3657	14 A		
		TSC 3857	20 A		
TSC 2058	0.25 A	TSC 1258	0.8 A	220 VDC (200 – 250 VDC)	
TSC 3058	0.6 A	TSC 1358	1.5 A		
TSC 5058	1 A	TSC 1558	2.4 A		
TSC 0658	1.5 A	TSC 3558	3.5 A		
TSC 6058	2 A	TSC 3758	5 A		
TSC 2658	3.2 A	TSC 3658	7 A		
		TSC 3858	10 A		

Height: 1U = 44.45 mm (1.75)

Other output voltages on request

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Models					
3U Height Modules		6U Height Modules			
Order Code	Output current max.	Order Code	Output current max.	Output voltage (adjust.range)	Input voltage range
TSC 2070	8 A	TSC 1270	30 A	5 VDC (4.5 – 5.5 VDC)	160 – 320 VDC
TSC 3070	20 A	TSC 1370	50 A		
TSC 5070	35 A	TSC 1570	80 A		
TSC 0670	50 A	TSC 3570	110 A		
TSC 6070	80 A	TSC 3770	165 A		
TSC 2670	100 A	TSC 3670	220 A		
TSC 2072	4 A	TSC 1222	15 A	12 VDC (11 – 13 VDC)	
TSC 3072	12 A	TSC 1372	30 A		
TSC 5072	20 A	TSC 1572	42 A		
TSC 0672	26 A	TSC 3572	56 A		
TSC 6072	40 A	TSC 3772	85 A		
TSC 2672	60 A	TSC 3672	115 A		
TSC 2074	2.4 A	TSC 1274	7.5 A	24 VDC (23 – 26 VDC)	
TSC 3074	6 A	TSC 1374	15 A		
TSC 5074	10 A	TSC 1574	23 A		
TSC 0674	14 A	TSC 3574	30 A		
TSC 6074	20 A	TSC 3774	50 A		
TSC 2674	30 A	TSC 3674	65 A		
		TSC 3874	100 A		
TSC 2079	1 A	TSC 1279	3.6 A	48 VDC (45 – 55 VDC)	
TSC 3079	2.7 A	TSC 1379	7.3 A		
TSC 5079	4.5 A	TSC 1579	11 A		
TSC 0679	6.5 A	TSC 3579	14 A		
TSC 6079	9 A	TSC 3779	23 A		
TSC 2679	15 A	TSC 3679	30 A		
		TSC 3879	45 A		
TSC 2077	0.5 A	TSC 1277	1.5 A	110 VDC (100 – 130 VDC)	
TSC 3077	1.2 A	TSC 1377	3 A		
TSC 5077	2 A	TSC 1577	4.5 A		
TSC 0677	3 A	TSC 3577	6.5 A		
TSC 6077	4 A	TSC 3777	10 A		
TSC 2677	6.5 A	TSC 3677	14 A		
		TSC 3877	20 A		
TSC 2078	0.25 A	TSC 1278	0.8 A	220 VDC (200 – 250 VDC)	
TSC 3078	0.6 A	TSC 1378	1.5 A		
TSC 5078	1 A	TSC 1578	2.4 A		
TSC 0678	1.5 A	TSC 3578	3.5 A		
TSC 6078	2 A	TSC 3778	5 A		
TSC 2678	3.2 A	TSC 3678	7 A		
		TSC 3878	10 A		

Height: 1U = 44.45 mm (1.75)

Other output voltages on request

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Models					
3U Height Modules		6U Height Modules			
Order Code	Output current max.	Order Code	Output current max.	Output voltage (adjust.range)	Input voltage range
TSC 2090	8 A	TSC 1290	30 A	5 VDC (4.5 – 5.5 VDC)	93 – 138 VAC / 185 – 264 VAC (selectable) 50 / 60 Hz
TSC 3090	20 A	TSC 1390	50 A		
TSC 5090	35 A	TSC 1590	80 A		
TSC 0690	50 A	TSC 3590	110 A		
TSC 6090	80 A	TSC 3790	165 A		
TSC 2690	100 A	TSC 3690	220 A		
TSC 2092	4 A	TSC 1222	15 A	12 VDC (11 – 13 VDC)	
TSC 3092	12 A	TSC 1392	30 A		
TSC 5092	20 A	TSC 1592	42 A		
TSC 0692	26 A	TSC 3592	56 A		
TSC 6092	40 A	TSC 3792	85 A		
TSC 2692	60 A	TSC 3692	115 A		
TSC 2094	2.4 A	TSC 1294	7.5 A	24 VDC (23 – 26 VDC)	
TSC 3094	6 A	TSC 1394	15 A		
TSC 5094	10 A	TSC 1594	23 A		
TSC 0694	14 A	TSC 3594	30 A		
TSC 6094	20 A	TSC 3794	50 A		
TSC 2694	30 A	TSC 3694	65 A		
		TSC 3894	100 A		
TSC 2099	1 A	TSC 1299	3.6 A	48 VDC (45 – 55 VDC)	
TSC 3099	2.7 A	TSC 1399	7.3 A		
TSC 5099	4.5 A	TSC 1599	11 A		
TSC 0699	6.5 A	TSC 3599	14 A		
TSC 6099	9 A	TSC 3799	23 A		
TSC 2699	15 A	TSC 3699	30 A		
		TSC 3899	45 A		
TSC 2097	0.5 A	TSC 1297	1.5 A	110 VDC (100 – 130 VDC)	
TSC 3097	1.2 A	TSC 1397	3 A		
TSC 5097	2 A	TSC 1597	4.5 A		
TSC 0697	3 A	TSC 3597	6.5 A		
TSC 6097	4 A	TSC 3797	10 A		
TSC 2697	6.5 A	TSC 3697	14 A		
		TSC 3897	20 A		
TSC 2098	0.25 A	TSC 1298	0.8 A	220 VDC (200 – 250 VDC)	
TSC 3098	0.6 A	TSC 1398	1.5 A		
TSC 5098	1 A	TSC 1598	2.4 A		
TSC 0698	1.5 A	TSC 3598	3.5 A		
TSC 6098	2 A	TSC 3798	5 A		
TSC 2698	3.2 A	TSC 3698	7 A		
		TSC 3898	10 A		

Height: 1U = 44.45 mm (1.75)

Other output voltages on request

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Input Specifications

Inrush current		20x I _{out} nom. typ.
Inrush current limiting	AC Input: DC Input:	standard with option "I"
Input current at no load		3 % full load typ.
Max ripple of dc input voltage		10 % pk-pk
Start-up delay time		100 ms typ. (softstart)
Hold up time	230 VAC Input: 115 VAC Input:	15 ms typ. 7 ms typ.

Output Specifications

Output voltage range		adjustable (refer top model selection table)
Regulation	- Input variation ±10% - Load variation 10–90%	±0.1 % max. ±0.2 % max.
Ripple and noise (20 MHz bandwidth)		<1 % V _{out} +30 mVpk-pk max.
Transient response to ±1%		2 ms
Dynamic response		6 % typ.
Output current limitation		105 – 110 % of I _{out} max.
Short circuit protection		constant current, (automatic recovery)
Overvoltage protection		105 % of V _{out} max.
Remote sense		standard for all models

General Specifications

Temperature ranges	- Operating - Optional - Storage	-20°C to +75°C -40°C to +75°C -40°C to +85°C
Derating		3.5 %/K above +55°C
Temperature coefficient		0.02 %/°C typ.
Efficiency	Models with 5VDC output: Other models:	70 % typ. 85 % typ.
Switching frequency		33 kHz typ.
Isolation voltage (60 sec.)	- Models with input voltage <75 VDC: - Input / Output - Input / Case - Output / Case - Models with input voltage >80 VDC and AC models: - Input / Output - Input / Case - Output / Case	1'500 VDC 1'500 VDC 1'000 VDC 3'000 VDC 3'000 VDC 1'000 VDC
Isolation resistance	- Input / Output (500VDC)	>10 MOhm
Reliability /calculated MTBF (MIL-HDBK-217F, at +40°C, ground benign)		>100'000 h
Safety standards		UL 60950-1, IEC/EN 60950-1
Safety approval	- UL/cUL 60950-1	www.ul.com -> certifications -> File E188913 (TSC 20 pending)
Electromagnetic compatibility (EMC), emissions		EN 55022, class B, FCC part 15, level B
Electromagnetic compatibility (EMC), immunity		EN 61000-6-2: 2005
Connection		H15 male connector (DIN 41612) (screw terminal for output current >50A)
Environmental compliance	- Reach - RoHS	www.tracopower.com/products/tsc-reach.pdf RoHS directive 2002/95/EC

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

Alarm Options

Power fail	– Option "p"	Signal if input voltage drops below the specified limit Signal output is NPN open collector, activated in ok-status
DC-ok	– Option "d"	Signal if input voltage drops below the specified limit Signal output is NPN open collector, activated in ok-status
Relay output	– Option "r"	Relay instead of logical output for alarm signals (in combination with option p and d)

Control Options

External On/Off	– Option "h"	Connection to negative input line inactivates the unit
System reset	– Option "y"	Reset input specified for VME systems
External programming	– Option "e"	External programming of the output voltage by a potentiometer or an external voltage of 0VDC to 10VDC. Details need to be specified.

I/O Options

Current sharing	– Option "cs"	Provides balanced load for units in parallel operation. Controlled over interconnecting wire.
Decoupling diode	– Option "dd"	For redundant operation. Internal fault of one unit does not affect other units in a parallel circuit.
Inrush current limiting	– Option "i"	A thermistor in series to the input lines reduces its resistance when it gets warm.

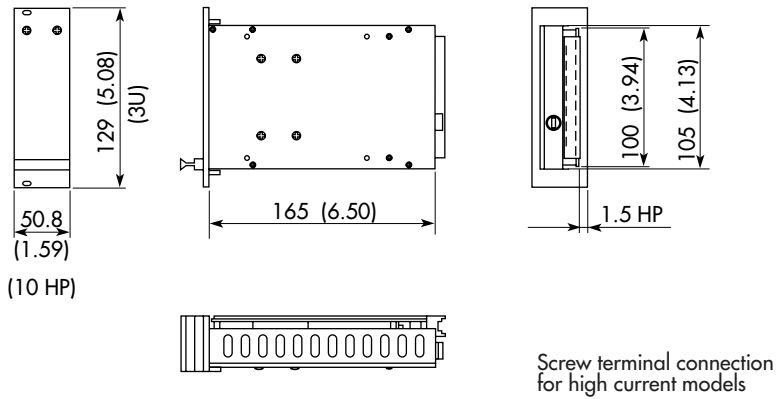
Mechanical Options

Wall mounting	– Option "w"	Module is screwed on a mounting plate for install in a cabinet. This option includes screw terminal block for connection.
Mechanical strength	– Option "ms"	Rugged construction for harsh environment
Extended temperature range	– Option "c"	The unit is designed and tested for operation at an ambient temp. range of -40°C to +75°C

Further options and combinations on request

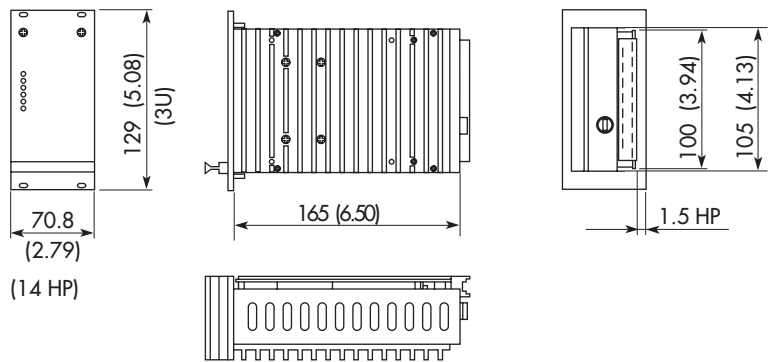
Outline Dimensions

TSC 2000 Models:



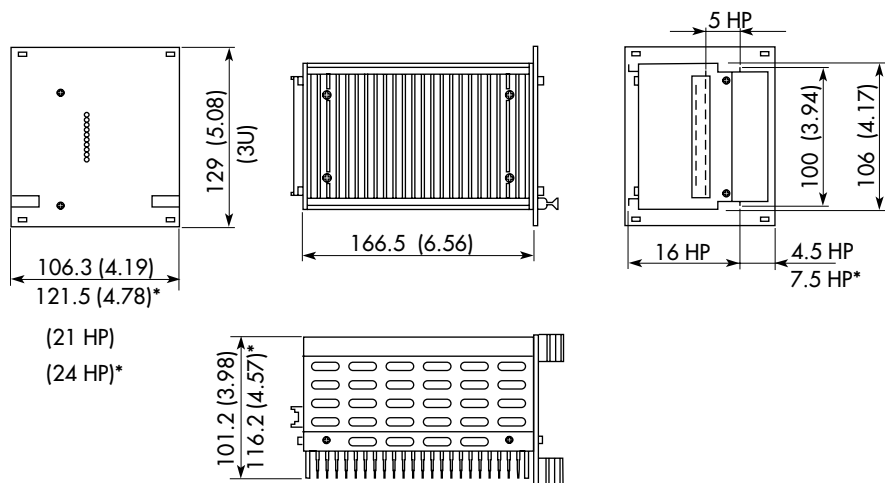
Weight: 0.9 kg (31.7 oz)

TSC 3000 Models:



Weight: 1 kg (35.2 oz)

TSC 5000 Models:



Weight:
1.7 kg (59.9 oz)
2.1 kg (74.0 oz) *

* 5 VDC output units

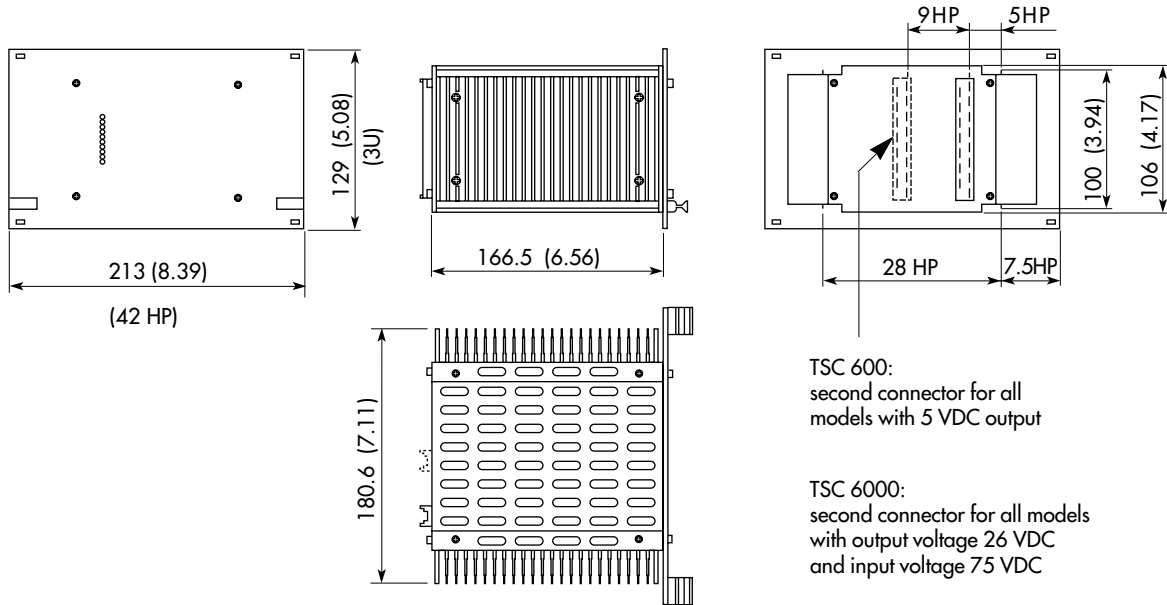
1 U = 44.45 mm (1.75")

1 HP = 5.08 mm (0.2")

Specifications can be changed any time without notice.

Outline Dimensions

TSC 600 Models:
TSC 6000 Models:

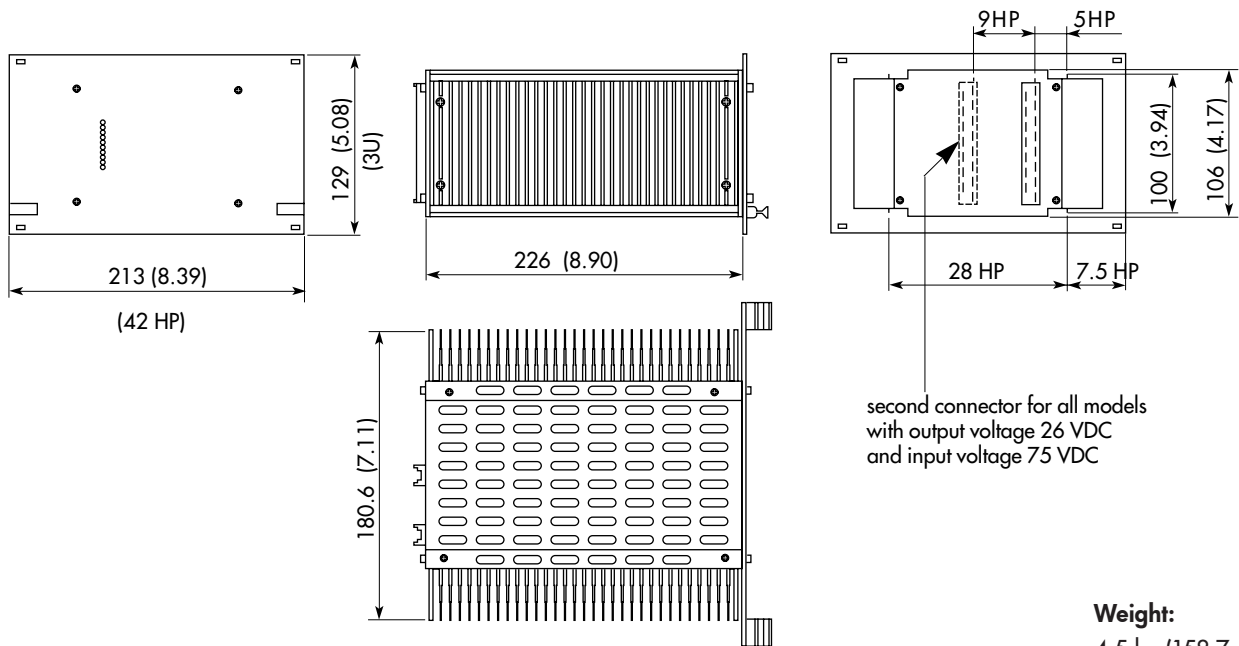


TSC 600:
second connector for all
models with 5 VDC output

TSC 6000:
second connector for all models
with output voltage 26 VDC
and input voltage 75 VDC

Weight:
TSC 600 : 2.6 kg (91.7 oz)
TSC 6000 : 3.5 kg (123.4)

TSC 2600 Models:



second connector for all models
with output voltage 26 VDC
and input voltage 75 VDC

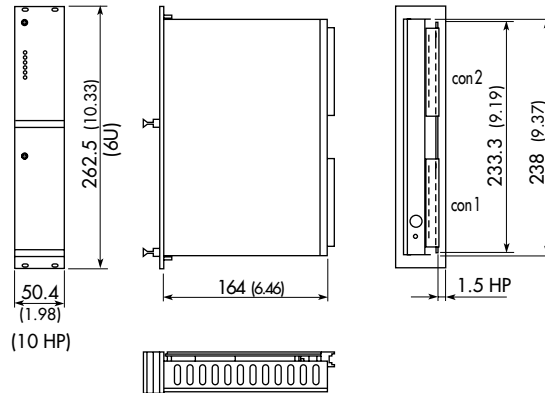
Weight:
4.5 kg (158.7 oz)

1 U = 44.45 mm (1.75") 1 HP = 5.08 mm (0.2")

Specifications can be changed any time without notice

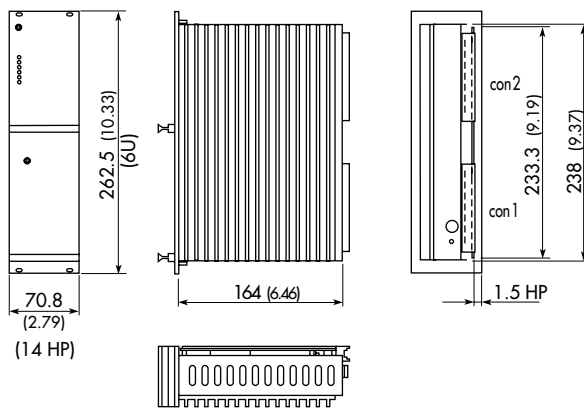
Outline Dimensions

TSC 1200 Models:



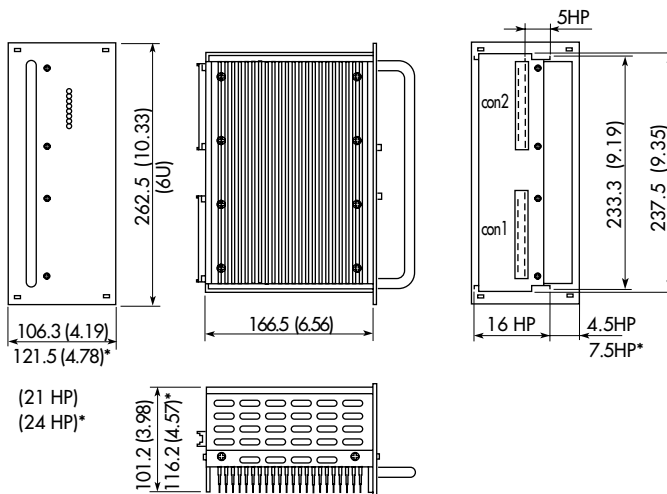
Weight:
1.7 kg (59.9 oz)

TSC 1300 Models:



Weight:
2.0 kg (70.5 oz)

TSC 1500 Models:



Weight:
3.0 kg (105.8 oz)
3.7 kg (130.5 oz) *

* 5 VDC output units

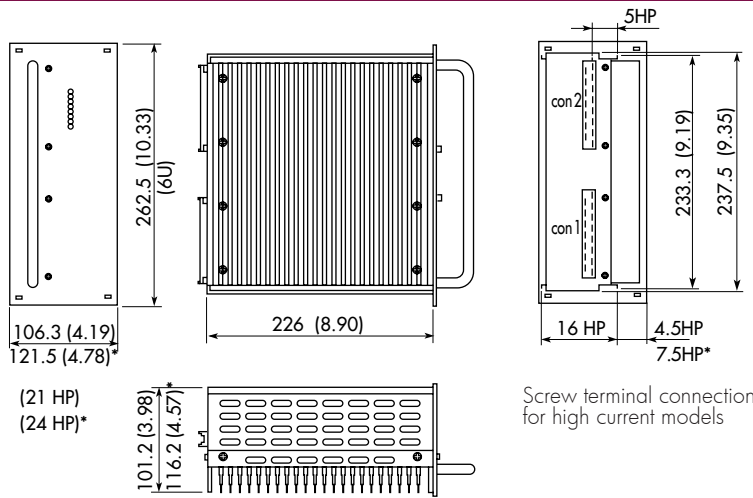
1 U = 44.45 mm (1.75")

1 HP = 5.08 mm (0.2")

Specifications can be changed any time without notice

Outline Dimensions

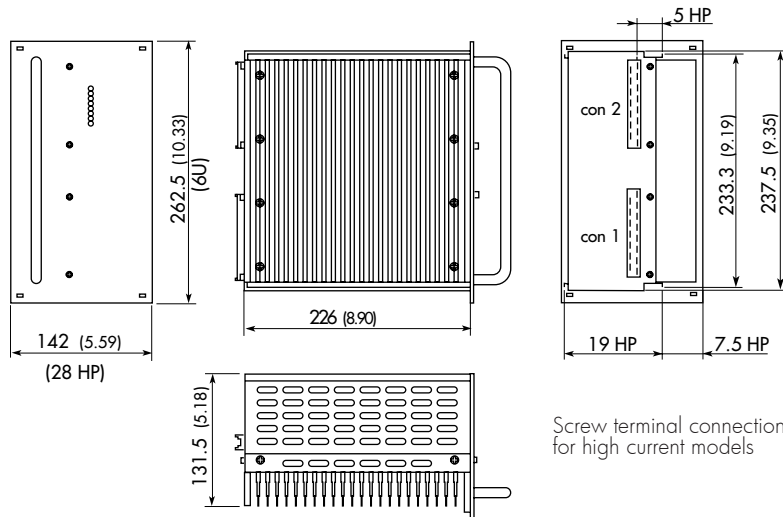
TSC 3500 Models:



Weight:
5.0 kg (176.3 oz)
6.2 kg (218.6 oz) *
* 5 VDC output units

Screw terminal connection for high current models

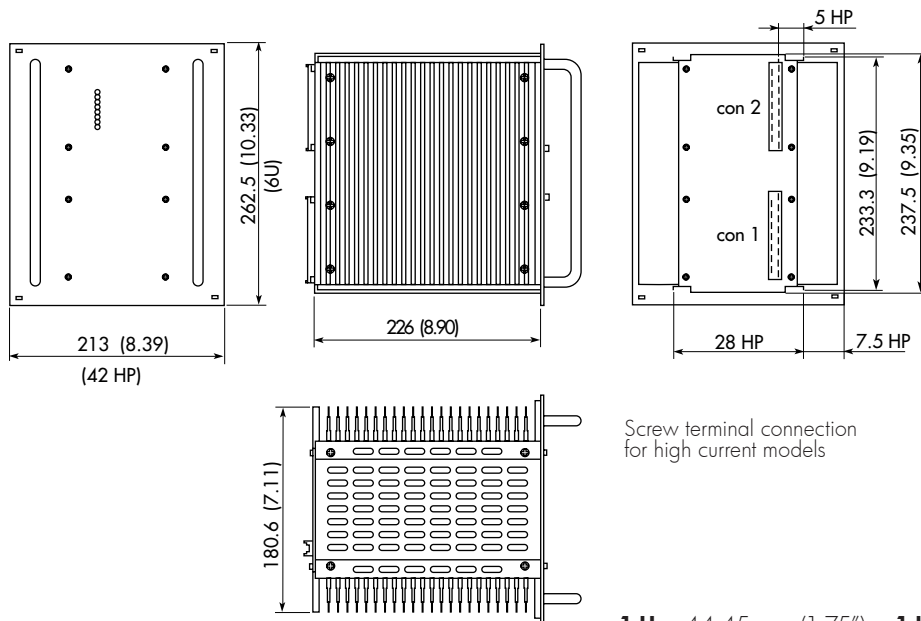
TSC 3700 Models:



Weight:
6.5 kg (229.2 oz)

Screw terminal connection for high current models

TSC 3600 Models:



Weight:
10 kg (352.7 oz)

Screw terminal connection for high current models

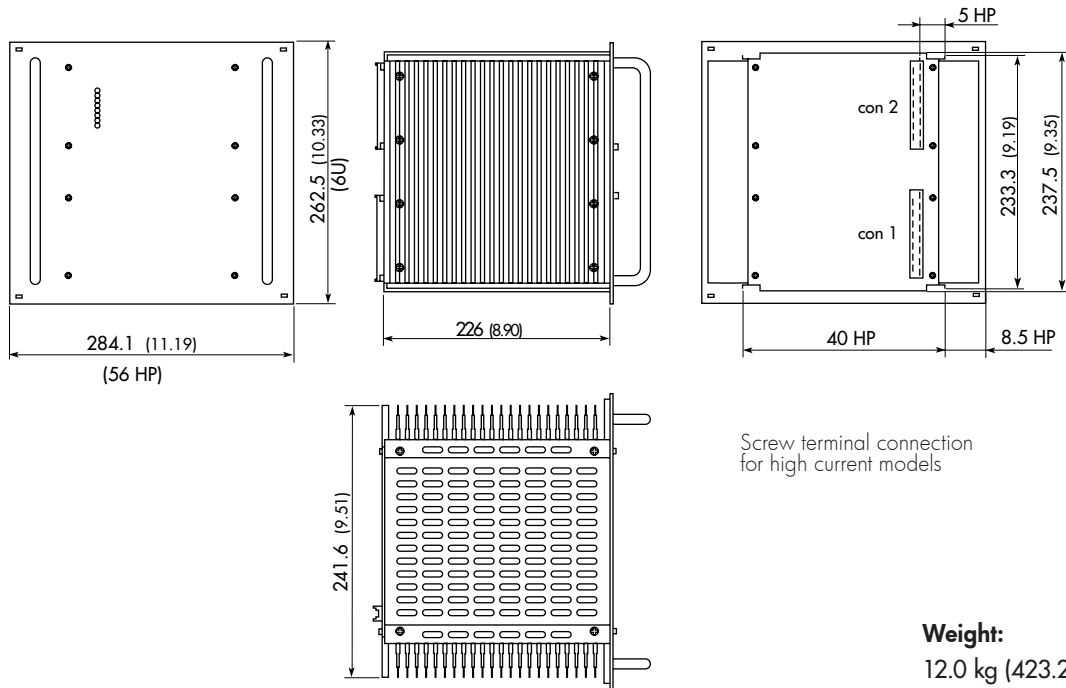
1 U = 44.45 mm (1.75") 1 HP = 5.08 mm (0.2")

Specifications can be changed any time without notice

<http://www.tracopower.com>

Outline Dimensions

TSC 3800 Models:



1 U = 44.45 mm (1.75") 1 HP = 5.08 mm (0.2")

Specifications can be changed any time without notice