

## Traction Products Reference List



1. Static Compact Converters Series BORDLINE® -CC  
Incl. Grid Converter, Traction Converter, Auxiliary Conv. and Battery Charger

2. Static Converters Series B800 / 8000 / 9000 / BORDLINE® -Family  
On board Power Supplies for Rail Vehicles and Trolley-Buses

3. Gate Units  
Gate Drivers for GTOs and IGBTs

4. Multiple Power Supplies  
DC / DC Converters with Galvanic Isolation

5. Power Supplies for Gate Units  
Square-Wave Power Supplies



## Traction Products Reference List

## 1 Static Compact Converters Series BORDLINE® -CC

Type	Qty.	Customer/Project	Country	Input	Output power	Application
<b>BORDLINE® -CC Series</b>						
WW D680	18	Stadler, Meran	IT	400 V, 3Ph Diesel Genset	500 kW	Regional Train
WW D690	22	Stadler, RM	CH	15kV, 16 2/3 Hz	750 kW	Regional Train
WW D690	152	Stadler, SBB-Thurbo	CH	15kV, 16 2/3 Hz	750 kW	Regional Train
WW D690	184	Stadler, SBB-Flirt	CH	15kV, 16 2/3 Hz	750 kW	Regional Train
WW D691	36	Stadler, Flirt Seehas	CH/D	15kV, 16 2/3 Hz	750 kW	Regional Train
FW D685	1	Stadler, Brüniglok	CH	400 V, 3Ph Diesel Genset	500 kW	Locomotive
FW D685	1	Stadler, FGC	ES	400 V, 3Ph Diesel Genset	500 kW	Locomotive
FW D686	8	Stadler, GGB	CH	3 x 725V, 50 Hz	500 kW	Rack Railway
FW D687	12	Stadler, Zugspitzbahn	D	1500V <sub>DC</sub>	600 kW	Rack Railway
FW D688	4	Stadler, OSE	GR	400 V, 3Ph Diesel Genset	500 kW	Rack Railway

NOTE: All units regularly with Generator or Grid input and Traction & Auxiliary output



## Traction Products Reference List

## 2 Static Auxiliary Converters Series BORDLINE®

Type	Qty.	Customer/Project	Country	Input	Output power	Application
<b>BORDLINE® -M Series</b>						
AW D890 A	605	ADtranz, DB BR423	D	400 V, 16 2/3 Hz	90 kW	Suburban Train
AW D890 A	5	ADtranz, Div.	CH	400 V, 16 2/3 Hz	90 kW	Regional Train
AW D891 A42	17	Bombardier, SBB Seetal	CH	600/750 V <sub>DC</sub>	55 kW	Regional Train
AW D891	3	Stadler, MG-B Shuttle	CH	360 V, 16 2/3 Hz	95 kW	Regional Train
AW D891	12	Stadler, Spatz	CH	360 V, 16 2/3 Hz	95 kW	Regional Train
AL D710	30	Bombardier, IC-Bt	CH	320 V, 16 2/3 Hz	50 kW	Coaches
AL D712	24	Stadler, Glacier Express	CH	320 V, 16 2/3 Hz	30 kW	Regional Train
AL D713	4	Stadler, TPF	CH	320 V, 16 2/3 Hz	45 kW	Regional Train
AL D750	18	Forchbahn /Trogenerbahn	CH	1200/1500 V <sub>DC</sub>	65 kW	Regional Train
AL D772	4	Bombardier, Brüssel	BE	600/750 V <sub>DC</sub>	25 kW	Tramway
AL D773	8	TSOL, Lausanne	CH	600/750 V <sub>DC</sub>	25 kW	Tramway
AL D870	109	ADtranz, Stuttgart	D	600/750 V <sub>DC</sub>	35 kW	Tramway
AL D870	7	Stadler, Montblanc	F	600/750 V <sub>DC</sub>	35 kW	Tramway
AL D870	3	Stadler, Cerdagne	F	600/750 V <sub>DC</sub>	35 kW	Tramway
AL D871	42	ADtranz, Helsinki	SF	600/750 V <sub>DC</sub>	35 kW	Tramway
AL D872	30	ADtranz, Chemnitz	D	600/750 V <sub>DC</sub>	35 kW	Tramway
AL D873	24	RTA New Orleans	USA	600/750 V <sub>DC</sub>	55 kW	Tramway

NOTE: All units regularly with AC and DC output



## Traction Products Reference List

2 Static Auxiliary Converters Series BORDLINE<sup>®</sup> continued

Type	Qty.	Customer/Project	Country	Input	Output power	Application
<b>BORDLINE<sup>®</sup> -M Series</b>						
AL D874	14	ADtranz, Duisurg	D	600/750 V <sub>DC</sub>	35 kW	Tramway
AL D875	3	Siemens, Köln	D	600/750 V <sub>DC</sub>	55 kW	Tramway
AL D877	37	ADtranz, Nantes	F	600/750 V <sub>DC</sub>	35 kW	Tramway
AL D878	43	ADtranz, Rhein Nekar	D	600/750 V <sub>DC</sub>	55 kW	Tramway
AL D879	146	ADtranz, Porto	Pt	600/750 V <sub>DC</sub>	55 kW	Tramway
AL D880	6	Bombardier, Zürich	CH	600/750 V <sub>DC</sub>	35 kW	Tramway
AL D881	15	Bombardier, Nottingham	UK	600/750 V <sub>DC</sub>	35 kW	Tramway
AL D882	36	ALSTOM, Melbourne Yarra	Au	600/750 V <sub>DC</sub>	55 kW	Tramway
AL D883	50	SSB, Stuttgart Retrofit	DE	600/750 V <sub>DC</sub>	45 kW	Tramway
AL D884	30	Alstom, Metro Lausanne	CH	600/750 V <sub>DC</sub>	35 kW	Subway
AL D885	12	Siemens, Maracaibo	VE	600/750 V <sub>DC</sub>	95 kW	Tramway

NOTE: All units regularly with AC and DC output



## Traction Products Reference List

2 Static Auxiliary Converters Series BORDLINE<sup>®</sup> continued

Type	Qty.	Customer/Project	Country	Input	Output power	Application
<b>BORDLINE<sup>®</sup> -M Battery Charger</b>						
AL D770	9	Stadler, Jungfraubahn	CH	600/750 V <sub>DC</sub>	12kW	Motor coaches
AL D771	4	Stadler, Jungfraubahn	CH	600/750 V <sub>DC</sub>	12kW	Motor coaches
KA D850	32	Bombardier, Talgo 350	ES	3 x 400V, 50Hz	15kW	Locomotives
KA D851	50	Stadler, SBB Ae 6/6 Retrofit	CH	230V, 16.7Hz	4kW	Locomotives

## Traction Products Reference List

## 2 Static Auxiliary Converters Series BORDLINE® continued

Type	Qty.	Customer/Project	Country	Input	Output power	Application
<b>BORDLINE® -S Series</b>						
FA C810	19	CKD, Brno, Bratislava	CZ	600/750 V <sub>DC</sub>	12 kW	Tramway
FA C810	10	ADtranz, Leipzig, Halle	D	600/750 V <sub>DC</sub>	12 kW	Tramway
FA C810	2	ADtranz, Wroclaw	D	600/750 V <sub>DC</sub>	12 kW	Tramway
FB C810	8	CKD, New Orleans	USA	600/750 V <sub>DC</sub>	12 kW	Tramway
FB C811	6	Siemens, Chaux de Fonds	D	600/750 V <sub>DC</sub>	12 kW	Trolleybus
FB C820	10	ADtranz, OEG, Duisburg	D	600/750 V <sub>DC</sub>	28 kW	Tramway
FB C821	20	ADtranz, Darmstadt	D	600/750 V <sub>DC</sub>	16 kW	Tramway
FB C821	23	ADtranz, Gera	D	600/750 V <sub>DC</sub>	16 kW	Tramway
FA C830	181	ADtranz, SBB ICN I	CH	3 x 400 V, 50 Hz	20 (35) kW	Coaches
FB C821	36	ADtranz, Essen	D	600/750 V <sub>DC</sub>	16 kW	Tramway
FB C821	47	ADtranz, Magdeburg	D	600/750 V <sub>DC</sub>	16 kW	Tramway
FB C810	22	ADtranz, Gent	B	600/750 V <sub>DC</sub>	12 kW	Tramway
FB C832	16	CKD, Brno, Bratislava	CZ	600/750 V <sub>DC</sub>	12 kW	Tramway
FA C830	140	Bombardier, SBB ICN II	CH	3 x 400 V, 50 Hz	20 (35) kW	Coaches

NOTE: All units regularly with AC and DC output



## Traction Products Reference List

## 2 Static Auxiliary Converters Series B800 / 9000

Type	Qty.	Customer/Project	Country	Input	DC Output *	Application
<b>Series B800</b>						
FA B800 A24	18	Innsbruck	AT	600 V DC	28 V / 140 A	Trolleybus
FA B802 W24	51	TN / VBSG / VBSch	CH	600 V DC	28 V / 140 A	Trolleybus
FA B803 A24	5	Helsinki	FI	600 V DC	28 V / 140 A	Tramway
FA B805 W36	40	VBZ	CH	600 V DC	42 V / 140 A	Tramway
FA B808 A36	10	JB / GGB	CH	600 - 800 V DC	30 V / 280 A	Motor coaches
FA B812 W24	350	Dresd. / Leipzig / Plauen	DE	600 / 750 V DC	28 V / 140 A	Tramway
FA B813 A24	28	Freiburg/Brsg.	DE	750 V DC	28 V / 200 A	Tramway
FA B816 W24	48	VBZ	CH	600 V DC	28 V / 140 A	Trolleybus
FB B806 W36	34	BD / RBS	CH	1200/1500 V DC	42 V / 200 A	Motor & steering coaches
FB B810 W43	350	LUL	GB	600 V DC	53 V / 260 A	Subway
FB B815 W24	38	Magdeburg/Heidelberg	DE	600 / 750 V DC	28 V / 250 A	Tramway
<b>Series 9000</b>						
WA 9155	109	BLS	CH	100 V, 16 2/3 Hz	42 V, 60 A	Coaches
XB 9157	520	SBB, EW4	CH	2 x 78 V, 16 2/3 Hz	42 V, 120 A	Coaches
XB 9166	295	SBB, ZSB	CH	2 x 78 V, 16 2/3 Hz	42 V, 120 A	Coaches
XC 9165	120	SBB, S-Bahn Zürich	CH	2 x 78 V, 16 2/3 Hz	42 V, 180 A	Suburban Train
XB 9174	77	DB, München	DE	2 x 60 V, 16 2/3 Hz	29 V, 180 A	Suburban Train



## Traction Products Reference List

## 2 Static Converters Series 8000

Type	Qty.	Customer/Project	Country	Input	DC Output *	Application
<b>Series 8000</b>						
AB 8008 A36	35	MOB / GFM	CH	0,6 - 1,2 kV DC	42 V / 70 A	Motor & steering coaches
AC 8001 G36	43	RhB	CH	0,7 - 1,5 kV DC/0,9 kV AC	42 V / 50 A	Railway carriage
AC 8707 B36	60	diff. private railways	CH	1500 V DC	42 V / 120 A	Motor coaches/railway carriage
AC 8983 S35	5	WAB	CH	100 - 1800 V DC	35 V / 250 A	Motor coaches
AD 8009 A32	50	Cleveland	USA	600 V DC	37,5V/200 A	LRV
AE 8704 W24	48	TPG	CH	600 V	28 V / 140 A	Tramway
AF 8980 S60	9	BOB, Perisher	AUS	100 - 1800 V DC	60 V / 400 A	Motor coaches
AG 8705 W36	43	diff. private railways	CH	1500 V DC	42 V / 120 A	Motor coaches
KB 8706 A24	31	diff. local transp	CH	600 V DC	28 V / 140 A	Trolleybus
KB 8708 A24	69	Duisburg/Freiburg	DE	750 V DC	28 V / 200 A	Tramway
KB 8988 A24	38	TPG / Fribourg	CH	600 V DC	28 V / 200 A	Trolleybus



## Traction Products Reference List

## 3 Gate Units for GTO

Type	Qty.	Customer/Project	Country	GTO	Application
GV A582	412	BT/SZU	CH	2,5 kv / 2 kA	Converter for Traction
GV A582	172	RhB-Bernina	CH	2,5 kV / 2kA	Converter for Traction
GV A582	4800	S-Bahn Zürich	CH	2,5 kV / 2kA	Converter for Traction
GV A582	24	SBA	USSR	2,5 kV / 2kA	Converter for stat. use
GV A585	342	Metro-North	USA	4,5 kV / 2 kA	Converter for Traction
GV A585	630	VBZ	CH	2,5 kV / 2kA	Converter for Traction
GV A585	159	TSOL + SVB	CH	2,5 kV / 1,2kA	Chopper
GV A585	2900	LUL Central Line	GB	2,5 kV / 0,8 kA	Subway, Chopper
GV A586	60	DB, DE 1024	DE	4,5 kV / 3 kA	Converter for Traction
GV A586	7000	SBB, Lok 460	CH	4,5 kV / 3 kA	Converter for Traction
GV A586	1700	ESL / Canal Loco)	GB	4,5 kV / 3 kA	Converter for Traction
GV A586	135	IC 70	NO	4,5 kV / 3 kA	Converter for Traction
GV A586	700	ATM Milano	IT	4,5 kV / 2 kA	Converter for Traction
GV A586	688	Metro Napoli	IT	4,5 kV / 2 kA	Converter for Traction
GV A586	1200	BR, Class 92	GB	4,5 kV / 3 kA	Converter for Traction
GV A586	1400	FS, ETR 500	IT	4,5 kV / 3 kA	Converter for Traction
GV A586	180	QR - EMU	AUS	4,5 kV / 3 kA	Converter for Traction
GV A586	1200	Catalunya, Bilbao	ES	4,5 kV / 3 kA	Converter for Traction



## Traction Products Reference List

3 Gate Units for GTO continued

Type	Qty.	Customer/Project	Country	GTO	Application
GV A586	650	Spoornet 14 E	SA	4,5 kV / 3 kA	Converter for Traction
GV A586	330	RhB Vereina	CH	4,5 kV / 3 kA	Converter for Traction
GV A586	420	BLS, Loco Re465	CH	4,5 kV / 3 kA	Converter for Traction
GV A587	1600	IR	IND	4,5 kV / 3 kA	Converter for Traction
GV A587	1200	VR 20	FIN	4,5 kV / 3 kA	Converter for Traction
GV A587	330	Ansaldo	IT	4,5 kV / 3 kA	Converter for Traction
GV A587	15000	ADtranz, BR101, mDDM, DT4	D	4,5 kV / 3 kA	Converter for Traction
GV A588	30000	General Electric Co	USA	2,5 kV / 3 kA	Converter for Traction
GV A587	900	ADtranz, Loco Re465	IN	4,5 kV / 3 kA	Converter for Traction
GV A587	2200	ADtranz, BR145	D	4,5 kV / 3 kA	Converter for Traction
GV A587	6000	ADtranz, ET423 II	D	4,5 kV / 3 kA	Converter for Traction
GV A587	5200	ADtranz, BR 185	D	4,5 kV / 3 kA	Converter for Traction
GV A587	960	ADtranz, New Jersey	USA	4,5 kV / 3 kA	Converter for Traction
GV A587	450	ADtranz, Polen Loco	P	4,5 kV / 3 kA	Converter for Traction

## 3 Gate Driver for IGBT

Type	Qty.	Customer/Project	Country	IGBT	Application
GV A586	12000	General Electric Co	USA	3,3 kV / 1,2 kA	Converter for Traction



## Traction Products Reference List

## 4 Multiple Power Supplies

Type	Qty.	Customer/Project	Country	Application
<b>MICAS - K</b>				
KU A575	650	ABB Transportation Systems Ltd, BUR	CH	Railway carriage
KU A576	1050	LUL	GB	Subway
KU A577	1093	ESL	GB	Locomotives
<b>MICAS - S2</b>				
KU A902	600	SBB, S-Bahn ZH	CH	Locomotives
KU A911	350	FS, ETR 500	IT	Locomotives
KU A912	500	SBB, Loco Re 460	CH	Locomotives
KU A913	380	LUL	GB	Subway
KU A914	220	BR, Class 92	GB	Locomotives
KU A915	140	ESL	GB	Locomotives

## Traction Products Reference List

## 5 Power Supplies for Gate Units

Type	Qty.	Customer/Project	Country	Application
KT 9192	200	SBB, S-Bahn ZH	CH	Locomotives
KY A921	120	FS, ETR 500	IT	Locomotives
KY A922	15	IC 70	NO	Locomotives
KY A922	18	BLS, Loco Re 465	CH	Locomotives
KY A922	22	RhB Vereina	CH	Locomotives
KY A922	240	SBB, Loco Re 460	CH	Locomotives
KY A923	150	Catalunia, Bilbao	ES	Motor coaches
KY A923	35	IR	IND	Locomotives
KY A923	70	BR, Class 92	GB	Locomotives
KY A924	12	QR - EMU	AUS	Locomotives
KY A924	120	ESL	GB	Locomotives
KY A924	40	VR 20	FIN	Locomotives
KY A931	700	LUL	GB	Subway
KY A934	1600	ADtranz, ET423, BR101, mDDM, DT4	D	Locomotives, Suburban Train
KY A924	60	ADtranz, Loco 465	IN	Locomotives
KY A934	920	ADtranz, ET423 II, BR145, BR185	D	Locomotives, Suburban Train
KY A933	100	ADtranz, New Jersey	USA	Locomotives