

Price list 2017

Last amendment: 03. July 2017 / em

Servo amplifiers and motor controllers

for dc motors (DC)

for synchronous motors (EC)

for asynchronous motors (AC)

1.	Classic	Thyristor motor controllers	DC
2.	SERVO-DC	Transistor servo amplifiers	DC
3.	SERVO-AC	Transistor servo amplifiers	AC
4.	DS / DPC	Digital ac servo amplifiers	DC/AC
5.	BAMO-A	Analog battery motor controllers	DC/AC
6.	BAMOBIL-A	Analog battery motor controllers	DC
7.	BAMOBIL-D	Digital battery motor controllers	DC/AC
8.	BAMOCAR-PG-D	Digital battery motor controllers	DC/AC
Attachment	Motors	EC servo motors, AC servo motors	
Attachment	Service	Service costs for services on site	

All prices in Euro (without VAT)

Note:

Please use the device description for the project planning and the device selection!
(**MANUAL xxx**)

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These General Conditions of Sale and Delivery are a translation of the German text of our General Conditions of Sale and Delivery. In event of contradictions between the original German text and its translation the German version takes precedence.

General conditions of Sale and Delivery 2017

1. General information

All deliveries and services of the UNITEK Industrie Elektronik GmbH are provided exclusively according to the following terms and conditions. Thus, UNITEK hereby object to any purchase conditions of the Purchaser unless they are explicitly confirmed in writing by UNITEK.

2. Offers and orders

Any offers submitted by UNITEK are only binding for the period indicated. Orders must be submitted in writing. They are accepted not before UNITEK's written confirmation. Any amendments or supplements to the original order must be confirmed in writing by UNITEK. UNITEK reserves any factual and intellectual property rights in estimates, designs, technical illustrations and sketches, and other documents. Documents must not be reproduced or made available to third parties unless agreed on by UNITEK.

3. Prices

The prices are valid ex works, excluding freight, freight charges, packaging, installation, and commissioning, plus the applicable legal value added tax. 1% of the invoice value will be charged for the packaging. Any return is subject to UNITEK's written agreement. Any insurance costs must be paid for by the Purchaser. The prices are based on the present cost situation. In case of any significant changes of this basis or currency conversions UNITEK has the right to adjust their prices. The Purchaser will then be informed in writing.

4. Terms of payment

The invoice amount is to be paid to UNITEK within 8 days with 3% discount or within 30 days strictly net. Cheques, bills of exchange, etc. are accepted with reservations and only after a prior written agreement. They can be returned at any time without giving any reasons. They are regarded as payment only after their encashment. Discount charges must be paid by the Purchaser. Any offsetting is excluded. If a payment deadline is exceeded UNITEK reserves the right to charge interest of 2% above the respective Bundesbank discount rate and to demand immediate payment of claims not yet due or which have been deferred. Setting off the purchase price or holding back the payment of the purchase price are only permitted if the counterclaims of the Purchaser have been accepted by UNITEK or stated legally binding.

5. Reservation of title

UNITEK reserves title in the delivered goods until fully payment of the contractual payments has been made. As long as the reservation of title is effective any pledging or transfer of the goods by way of security are prohibited. In case of pledging, confiscations, or other instructions or interventions by third parties the Purchaser must inform UNITEK immediately. Resale in the ordinary course of business is allowed until further notice. In the course of this, the purchase price claims, that is, the invoice amount of the reserved goods, are transferred to UNITEK.

In case of the Purchaser's breach of duty, in particular in the event of a default in payment, UNITEK has the right to withdraw from the contract and for the return of the goods if the appropriate deadline given to the Purchaser has expired without success. This shall not affect the legal provisions concerning the dispensability of setting a deadline. The Purchaser shall be obliged to hand over the goods.

6. Delivery period

The delivery period begins with the dispatch of the order confirmation. The delivery time refers to the completion of the product in the UNITEK works. In case the Purchaser wants the product to be modified before it is dispatched, the delivery period is interrupted and, if necessary, extended in order to clarify and agree on the requested modifications. During the delivery period UNITEK reserves the right to make insignificant constructional and formal amendments which serve the technical improvement. The delivery periods indicated to the Purchaser with the order confirmation are only approximate and not binding unless explicitly assured by UNITEK. Unforeseen events that lie outside of UNITEK's control such as interruptions of operation, strikes, lockouts, or political military events will lead to an appropriate extension of the delivery period. Partial deliveries are permitted. If UNITEK is unable to keep the delivery date, the Purchaser may claim compensation upon proof for damages resulting from the delayed delivery. This compensation amounts to a rate of maximal 0.5% per completed week of delay, however, no more than 5% of the price for the delayed goods.

Further claims of the Purchaser for compensation due to delayed deliveries or instead of the services are in all cases excluded even after the expiry of a delivery deadline set for UNITEK. This does not apply in cases of mandatory liability such as in case of intent, gross negligence, or due to injury to life, body or health. The Purchaser may only withdraw from the contract within the scope of legal provisions if UNITEK is responsible for the delivery delay. The above mentioned regulations do not imply a change of the burden of proof to the disadvantage of the Purchaser.

7. Transfer of risk

The risks are transferred to the Purchaser upon date of dispatch ex works even if freight-free delivery or supply has been agreed on. Any insurance against transportation damage shall only be effected by UNITEK on behalf of and at the expense of the Purchaser if ordered in writing. UNITEK will take no responsibility for the least expensive means of shipping.

8. Material defects

If products show a material defect within the limitation period UNITEK shall be liable provided that the reason for the defect had already existed at the time of the transfer of risk. UNITEK shall, at its option, either repair the defective products in its works or replace them. The limitation period for material defects is two years after delivery regardless of the service life. This does not apply in cases of injury to life, negligent breach of duty of UNITEK or in cases of fraudulent concealment of a defect. The legal provisions remain unaffected. UNITEK must immediately be informed in writing of any material defects. Liability for defects shall be excluded if on the part of the Purchaser or third parties improper modifications or repair work are carried out, or if defects are caused by non-observance of the operating instructions, incorrect equipment, improper handling, or by unpredictable natural events (e.g. earthquake, lightning, flood, etc.) as well as by non-reproducible software errors. Any claims on the part of the Purchaser are excluded for expenses necessary for the purpose of supplementary performance, in particular expenses for transportation, travel, labour, and material, due to the fact that the device was later moved to a location other than the registered office of the Purchaser. Recourse claims on the part of the Purchaser against UNITEK according to §478 BGB only exist to the extent that the Purchaser has not made any agreement with his customer, which goes beyond the statutory warranty claims for defects.

9. Customer's right of withdrawal

The Purchaser has the right of withdrawal if the appropriate period of amendment given to UNITEK in writing has expired without result, that is, UNITEK could neither remove possible defects for which they are responsible nor provide for the repair or replacement of the product.

10. UNITEK's right of withdrawal

If UNITEK learns after the order confirmation that the Purchaser is in an unfavourable financial situation, UNITEK is entitled to demand security for their consideration or to withdraw from their delivery obligation.

11. Binding character of the contract

In case one or more agreements of the above mentioned conditions are or become completely or partially invalid then the legal validity of the other agreements and the contract as a whole will remain unaffected thereby.

12. Place of performance and jurisdiction

The place of performance for deliveries is the UNITEK company, for payments Winnenden. The place of jurisdiction for all disputes arising from this contract is Waiblingen provided the Purchaser is a general merchant. In case the customer transfers his residence outside the jurisdictional territory of the ZBO after the conclusion of the contract, the place of jurisdiction will be the registered UNITEK office. The legal relations between the parties are governed by the laws of the Federal Republic of Germany.

1. Thyristor controllers - Classic series

Thyristor controllers - Classic series

Applications

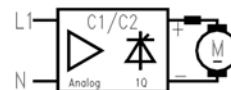
Speed and/or torque control of ac motors with high accuracy.
Voltage or current control of ohmic or inductive consumers for 1-quadrant or 4-quadrant operation.
Tacho control or armature voltage control with high-resistance coupling and IxR compensation.
Type: Wall mounting IP00, covered safely to prevent accidental contact.

Alternative devices for LABOD current controllers GNxx (observe the connection adaption)
for analog thyristor current controllers of SEW, Siemens, etc.

Note:

Specify the control electronics, the control voltage, the version, and the type for each order!

The device series Classic P1, P3, Q1, Q2 are equipped with the control electronics REGxx-S (standard).
The device series Classic Q3 and Q6 are equipped with the control electronics REGxx-E (extended watchdog function).
The control electronics REGxx-E (extended watchdog function) will be delivered for an additional charge (list/on request).



Thyristor motor controllers - single board devices C1, C2

1.1 Series Classic C1				Substitute for LABOD GN1DZ...2x	
AC connection, supply voltage max. 230 V~, 1-quadrant control devices					
Item no.	Type	.	Motor voltage	Motor current	Price €
002	C1 230/180-4-W	with potential	180V	4A	126,-
004	C1-230/180-4f-W	potential-free	180V	4A	157,-
Type: wall mounting (W), with plug-in terminal connection					

1.2 Series Classic C2				Substitute for LABOD GN1DZ...7x	
AC connection, supply voltage max. 230 V~, 1-quadrant control devices					
Item no.	Type	.	Motor voltage	Motor current	Price €
011	C2.1-230/180-12f	potential-free	180V	12A	209,-
Type: wall mounting h*w*d 140*190*63 with plug-in terminal connection					

1.3 Relay circuits C-AU-12			Substitute for LABOD A-UM12	
Armature switchover with brake for reversing operation with 1-quadrant motor controller complete with mains contactor and brake contactor, touch or switch function				
Auxiliary voltage 230V~ (option 400V~) mechanically fitting for C1 and C2				
Item no.	Type	Version	Price €	
211	C-AU-12-N	with mains contactor 230V/12A	198,-	
210	C-AU-12	without mains contactor 230V/12A	198,-	

Command value potentiometer for C1/C2 5kOhm with operating button	25,-
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1. Thyristor controllers - Classic series

Thyristor motor controllers - ac power supply P1, Q1

1.4 Series Classic P1				Substitute for LABOD GN1...pf		
AC power supply, supply voltage 230 or 400 V~, 1-quadrant control devices, potential-free control electronics REGxx-S or REGxx-E (with extended functions) 2-fold dynamic overcurrent for 5sec						
Item no.	Type	Power supply voltage	Motor voltage	Motor current	Price with REGxx.-S €	Price with REGxx.-E €
020	P1 230/180-15	230V~	180V	15A	336,-	367.-
021	P1 230/180-25	230V~	180V	25A	399,-	430.-
022	P1 230/180-40	230V~	180V	40A	493,-	525.-
023	P1 400/300-15	400V~	300V	15A	378,-	409.-
024	P1 400/300-25	400V~	300V	25A	419,-	450.-
025	P1 400/300-40	400V~	300V	40A	524,-	555.-
Control voltage: specify 220/230V~ or 380/400V~				Control electronics: specify REG4.x -S or -E		
Type: wall mounting H*B*T 160*190*100 (120 for 40A)						

1.5 Series Classic Q1				Substitute for LABOD GN1...4Q-krf GN1...4Q		
AC power supply, supply voltage 230 or 400 V~, 4-quadrant control devices, potential-free control electronics REGxx-S or REGxx-E (with extended functions) 2-fold dynamic overcurrent for 5sec, circular current-free double thyristor bridge B2-B2						
Item no.	Type	Power supply voltage	Motor voltage	Motor current	Price with REGxx.-S €	Price with REGxx.-E €
050	Q1 230/180-15 -(k)	230V~	180V	15A	572,-	604.-
051	Q1 230/180-25 -(k)	230V~	180V	25A	651,-	682.-
052	Q1 230/180-40 -(k)	230V~	180V	40A	756,-	787.-
053	Q1 400/300-15 -(k)	400V~	300V	15A	661,-	693.-
054	Q1 400/300-25 -(k)	400V~	300V	25A	756,-	787.-
055	Q1 400/300-40 -(k)	400V~	300V	40A	861,-	892.-
Control voltage: specify 220/230V~ or 380/400V~				Control electronics: specify REG4.x -S or -E		
Type: wall mounting H*B*T 240*190*100 (110 for 40A)						
(k) - for circular current control on request						

1.6 Line chokes for thyristor motor controllers							
single-phase line chokes							
For device types: Classic C1, C2, P1, Q1							
Item no.	Controller current A	Choke type	Choke current A~	Inductance mH	Dimensions a / b / c mm	Weight kg	Price €
	004	K60-6	6	2.5	52/50/6	0.6	Prices on request
	010	K66-10	10	1.5	56/52/86	0.75	
	015	K78-16	16	1.2	66/60/102	1.5	
	020...025	K84-25	25	0.7	72/65/110	1.8	
	030...050	K84-50	50	0.5	78/80/115	2.5	

1.7 Smoothing chokes for thyristor motor controllers							
For device types:							
Classic C1, C2, P1, Q1, Q2/for C1, C2, Q1 one choke, for Q2 two chokes, for Q1-k four chokes for each device							
Item no.	Controller current A	Choke type	Choke current A~	Inductance mH	Dimensions a / b / c mm	Weight kg	Price €
	2	E178A-2,5	2,5	96	66/60/100	1.4	Prices on request
	4	E178A-4	4	33	66/60/100	1.4	
	8	E1120A-8	8	51	102/102/130	4.3	
	10...12	E1135A-12	12	49	115/120/145	7	
	15	E1135A-16	16	33	115/120/145	7	
	20...25	E1135B-24	24	16	115/130/145	8.2	
	30...40	E1150A-40	40	7	128/115/185	8.5	
Further chokes on request							

1. Thyristor controllers - Classic series

Thyristor motor controllers - three-phase current supply P3, Q3

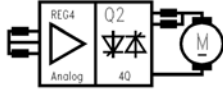
1.8 Series Classic P3				Substitute for LABOD GN3...vDB		
Three-phase power supply, supply voltage 3x400 V~(option 500/600V)						
1-quadrant control devices, potential-free control electronics REGxxS or REGxx-E (with extended functions)						
2-fold dynamic overcurrent for 5sec, fully controlled DB6						
Item no.	Type	Supply voltage 3-phase	Motor voltage DC =	Motor current	Price with REGxx-S €	Price with REG-E €
060	P3 400/450- 15	400V~	450V	15A	724,-	756.-
061	P3 400/450- 25	400V~	450V	25A	787,-	819.-
062	P3 400/450- 40	400V~	450V	40A	913,-	945.-
063	P3 400/450- 60	400V~	450V	60A	1008,-	1039.-
064	P3 400/450-120	400V~	450V	120A	1218,-	1249.-
065	P3 400/450-150	400V~	450V	150A	1344,-	1375.-
066	P3 400/450-240-x	400V~	450V	240A	1848,-	1879.-
067	P3 400/450-360-x	400V~	450V	360A	2247,-	2278.-
068	P3 400/450-480-x	400V~	450V	480A	2740,-	2772.-
069	P3 400/450-840-x	400V~	450V	840A	4347,-	4378.-
201	Installed field current controller 10A Q3-F...Additional price to be added					168,-
Type: wall mounting. Further devices (500V/600V; 1000/2000A) on request						
Specify the control electronics REGxx -S or REGxx-E						

1.9 Series Classic Q3				Substitute for LABOD GN3...4Q-krf		
Three-phase power supply, supply voltage 3x400 V~(option 500/600V)						
4-quadrant control devices, potential-free control electronics REGxx-E (with extended functions)						
2-fold dynamic overcurrent for 5sec						
circular current-free double three-phase bridge B6-B6						
Item no.	Type	Supply voltage 3-phase	Motor voltage DC =	Motor current		Price with REGxx-E €
079	Q3 400/450- 15-x	400V~	450V	15A		1270,-
080	Q3 400/450- 25-x	400V~	450V	25A		1344,-
081	Q3 400/450- 40-x	400V~	450V	40A		1449,-
082	Q3 400/450- 60-x	400V~	450V	60A		1648,-
083	Q3 400/450-120-x	400V~	450V	120A		1869,-
084	Q3 400/450-150-x	400V~	450V	150A		2184,-
085	Q3 400/450-240-x	400V~	450V	240A		3108,-
086	Q3 400/450-360-x	400V~	450V	360A		3570,-
087	Q3 400/450-480-x	400V~	450V	480A		5008,-
088	Q3 400/450-840-x with cross-flow fan	400V~	450V	840A		6604,-
201	Installed field current controller 10A Q3-F...Additional price to be added					168,-
Type: wall mounting. Further devices (500V/600V; 1000/2000A) on request						
Control electronics REGxx-E installed						

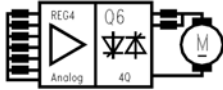
1.10 Three-phase line chokes							
For device types: Classic P3, Q3							
Item no.	Controller current A=	Choke type	Choke current A~	Inductance mH	Dimensions a /b /c mm	Weight kg	Price €
	15	KD2-16	3x16	0.9	120/75/140	2.8	Prices on request
	20...25	KD2,5-25	3x25	0.7	150/75/150	3.5	
	30...50	KD2,5-50	3x50	0.4	150/90/155	5.1	
	60...90	KD3-75	3x75	0.3	185/135/170	6.5	
	100..120	KD4-100	3x100	0.25	240/130/205	14.5	
	150	KD4-150	3x150	0.16	240/150/225	16	
	200..250	KD5-250	3x250	0.12	300/170/270	31.5	
3 single-phase line chokes for each device							
	360	K170-400	400	0.08	142/170/230	14	Prices on request
	480..660	KU150-600	600	0.05	210/260/275	29	
	840	KU150-800	800	0.04	210/270/275	32	
Further chokes on request							

1. Thyristor controllers - Classic series

Thyristor servo amplifiers - Classic Q2, Q6

1.11 Series Classic Q2 Thyristor servo amplifier, Connection via a series transformer, 2-phase connection, 4-quadrant control devices, potential-free control electronics REGxx-S or REGxx-E (with extended functions) 2-fold dynamic overcurrent for 5sec				Substitute for LABOD GN2...4Q			
Item no.	Type	Trafo secondary voltage	Motor voltage DC =	Motor current	Price with REGxx-S €	Price with REGxx-E €	
100	Q2 220/160-10	2x220V~	160V	10A	399,-	430,-	
101	Q2 220/160-20	2x220V~	160V	20A	493,-	525,-	
102	Q2 220/160-30	2x220V~	160V	30A	567,-	598,-	
Standard supply voltage 220/230V, optional 380/400V							
Type: wall mounting h*w*d: 240*190*100 (120 for 30A)							
Features: circular current controlled double thyristor center circuit							
Higher power voltages on request. Specify the motor voltage with each order.							
Specify the control electronics REGxx-S or REGxx-E							

1.12 AC Transformers for Classic Q2 Secondary 2-phase center circuit						
Item no.	Controller current A=	Transformer type	Transformer power VA	Dimensions a /b /c mm	Weight kg	Price €
	6	UI120B-primary/2xsecondary voltage	1600	160/150/210	16	Prices on request
	10	UI150A primary/2xsecondary voltage	2000	200/135/260	27	
	20	UI150C primary/2xsecondary voltage	3500	200/170/255	115	
	30	UI180C primary/2xsecondary voltage	5000	240/205/320	51	
Chokes: see table: 1.7 Smoothing chokes for thyristor motor controllers						

1.13 Series Classic Q6 Thyristor servo amplifiers, Connection via a series transformer, 6-phase connection, 4-quadrant control devices, potential-free control electronics REGxx-E (with extended functions) 2-fold dynamic overcurrent for 5sec				Substitute for LABOD GN6...4Q			
Item no.	Type	Trafo secondary voltage	Motor voltage DC =	Motor current		Price with REGxx-E €	
110	Q6 160/180-15	6x160V~	180V	15A		803,-	
111	Q6 160/180-25	6x160V~	180V	25A		861,-	
112	Q6 160/180-40	6x160V~	180V	40A		1018,-	
113	Q6 160/180-60	6x160V~	180V	60A		1102,-	
Standard supply voltage 380/400V, optional 220/230V							
Type: wall mounting h*w*d: 240*220*100..(120 for 60A)							
Features: circular current controlled 6-phase thyristor center circuit							
Higher power voltages on request. Specify the motor voltage with each order.							

1.14 Three-phase transformers for thyristor servo amplifiers Classic Q6 Secondary 6-phase center circuit						
Item no.	Controller current A=	Transformer type	Transformer power VA	Dimensions a /b /c mm	Weight kg	Price €
	15	UID150A-primary/secondary voltage	2500	300/135/270	33	Prices on request
	25	UID180B primary/secondary voltage	6000	360/175/320	68	
	40	UID180C primary/secondary voltage	7500	360/190/320	74	
	60	UID210C primary/secondary voltage	13000	420/240/410	125	
Further transformers on request						

1. Thyristor controllers - Classic series

1.15 Smoothing chokes for thyristor servo amplifier Classic Q6 (for Q2 see page 2)							
Item no.	Controller current A=	Choke type	Choke current A=	Inductance mH	Dimensions a /b /c mm	Weight kg	Price €
	15	EI120A-16	16	10	102/102/130	4.3	Prices on request
	15	EI120A-16	16	18	102/102/130	4.3	
	25	EI120A-24	24	8	102/102/130	4.3	
	40	EI135B-40	40	3.1	115/130/145	8.2	
	40	EI150B-40	40	6	128/132/185	10.6	
	60	EI170B-60	60	3	140/162/200	12.5	

Accessories for thyristor motor controllers

1.16 Field current controllers				
for constant field current or armature field control (transfer circuit) potential-free control electronics with adjustable field current monitoring, min., max. current, adjustable triggering point, neutral position				Substitute for LABOD FIR 3.1
Item no.	Type	Field voltage	Field current	Price €
196	F2 230/180-12	max. 180V	12A	262,-
197	F2 400/340-12	max. 340V	12A	262,-
198	F2 230/180-20	max. 180V	20A	493,-
199	F2 400/340-20	max. 340V	20A	493,-

1.17 Accessories in the top-hat rail housing			
Item no.	Type	Function	Price €
236	QTV2-3	4Q voltage isolating amplifier	135,-
212	EXZU-UA1	Armature voltage feedback	25,-
204	F6	Field rectifier 2.5A (ac)	48,-
205	F6D	Field rectifier 2.5A (three-phase current)	58,-
207	Power supply/command P	DC/DC isolated 24V to $\pm 15V$ and $\pm 10V$	67,-
1177	MKS-TRA 24	Transistor relay	42,-
99	Ampl-1, Amplo-1	2-channel adaption amplifier	68.-

1.18 Function cards pluggable for Classic P1,P3,Q1,Q2,Q3,Q6			
Item no.	Type	Function	Price €
214	MULTI 1 function card		on request
215	MULTI-2 command value card		on request
216	MULTI 4 monitoring card		on request
218	MULTI 5 digital monitoring card digital compact controller		on request

Control electronics for Classic			
2587	REGxx-E Extension and substitute for previous REG models	Basic functions as previous REG models Additional functions: 2 switchable threshold value switches for current and speed Speed reaches signal Brake logic Additional analog outputs for current and speed	205.-

1.19 Power supply unit			
Item no.	Type	Function	Price €
2338	Power supply unit 24-2	Power supply unit primary 96-260V~ secondary 24V= 2A	80.-

2. DC Transistor servo amplifiers

DC Servo for dc servo motors

Series SERVO-DC-TV6.2

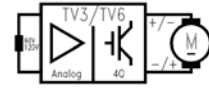
Bus circuit ac power supply via an isolating transformer or a potential-free dc and auxiliary voltage supply in the device.

Ballast circuit installed

Input voltage 24V~ to 120V~ or 30V= to 160V=

Motor voltages 24V= to 120V=

Alternative device for LABOD -TSR-4Q-6HE... (always check the supply adaption)



2.1 SERVO-DC-TV6.2 Wall mounting, plug-in device					
Item no.	Type	Version		Motor current	Price €
338	TV6.2- 120-12-W	Wall mounting		12/24 A	472,-
339	TV6.2- 120-12-S	Plug-in device		12/24A	472,-
Type TV6-x-x-W wall mounting - compact device (180x250mm)					
Type TV6-x-x-S plug-in device 6HE, 16TE					

2.2 Backplanes 6HE compatible with TV6			
Item no.	Type		Price €
332	TV6-Rx	Backplane without choke	76,-
1845	DR42-12	Choke for TV6Rx	31,-

Alternative device for LABOD -TSR-4Q-6HE... (always check the supply adaption)

2.3 Rack setups compatible with TV3,TV6			
Item no.	Type	Size	Price €
341	Rack-3HE	Basic price	56,-
343	Rack-6HE	Basic price	70,-
346	Slot	(Price per slot)	8,-

The rack setups are completely assembled. Combirack 3HE/6HE on request.

2. DC Transistor servo amplifiers

Series SERVO-DC-TV3.2

Versions

TG DC tacho (or internal armature voltage feedback)

Control range 1:3000 (UA 1:30)

IN Incremental encoder evaluation

Control range 1: 500

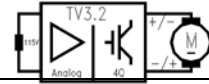
RS Resolver evaluation

Control range 1:1000

For dc motors, dc servo motors up to 160V=, 5 and 10A

Connection via an isolating transformer,

Auxiliary voltage 24V~/24V=, ballast circuit, and power supply



2.4 Compact devices 5A with power supply and ballast circuit

Item no.	Type	Transformer voltage	Motor voltage	Motor current	.	Price €
374	TV3.2-115-5-TG-f	24 to 115V~	max.160	5/10A	.	283,-
Type: flat version hwxwd: 120x180x50						
388	TV3.2-115-5-TG-k	24 to 115V~	max. 160	5/10A	.	346,-
389	TV3.2-115-5-IN -k	24 to 115V~	max. 160	5/10A	.	388,-
390	TV3.2-115-5-RS-k	24 to 115V~	max. 160	5/10A	.	462,-
Type: sheet steel housing IP00 book format hwxwd 132x68x183+plug-in terminals						

2.5 Compact devices 10A with power supply and ballast circuit

Item no.	Type	Transformer voltage	Motor voltage	Motor current	.	Price €
387	TV3.2-115-10-TG-k	24 to 115V~	max. 160	10/20A	.	372,-
381	TV3.2-115-10-IN-k	24 to 115V~	max. 160	10/20A	.	436,-
382	TV3.2-115-10-RS-k	24 to 115V~	max. 160	10/20A	.	509,-
Type: sheet steel housing IP00 book format hwxwd 132x68x183+plug-in terminals						

2.6 3HE Rack mounting devices 5 or 10A, (3HE/12TE)

without ballast circuit, external power supply TVD3-115-Nx

Item no.	Type	ZW voltage	Motor voltage	Motor current	.	Price €
391	TV3.2-115- 5-TG	max. 200V=	max. 160	5/10A	.	294,-
392	TV3.2-115-10-TG	max. 200V=	max. 160	10/20A	.	330,-
393	TV3.2-115- 5-IN	max. 200V=	max. 160	5/10A	.	325,-
394	TV3.2-115-10-IN	max. 200V=	max. 160	10/20A	.	362,-
395	TV3.2-115- 5-RS	max. 200V=	max. 160	5/10A	.	399,-
396	TV3.2-115-10-RS	max. 200V=	max. 160	10/20A	.	436,-
Type: 3HE rack mounting unit 5 or 10A,(3HE/12TE) without ballast circuit						

2.7 Power supply modules TVD3-115-N with ballast circuit compatible with TV3.2

Item no.	Type	Bus voltage	Bus current	Price €
378	TVD3-115-N10	Uz max. 200V	Iz 10A	126,-
379	TVD3-115-N30	Uz max. 200V	Iz 30A	157,-

2.8 Rack setups 3HE with backplane, completely assembled

Item no.	Type	.	Price €
365	1x3HE axis + power supply module position-x	1x TV3 2-xx + 1x TVD3-115 N	121,-
366	2x3HE axes + power supply module position-x	2x TV3 2-xx + 1x TVD3-115 N	165,-
367	3x3HE axes + power supply module position-x	3x TV3 2-xx + 1x TVD3-115 N	198,-
368	4x3HE axes + power supply module position-x	4x TV3 2-xx + 1x TVD3-115 N	242,-
369	5x3HE axes + power supply module position-x	5x TV3 2-xx + 1x TVD3-115 N	286,-
370	6x3HE axes + power supply module position-x	6x TV3 2-xx + 1x TVD3-115 N	330,-
Type: wall mounting x=W, front mounting x=F			

Special types and mixed 3HE/6HE racks on request

2. DC Transistor servo amplifiers

Series SERVO -DC-TV3.230

Motor voltage max. 200V=

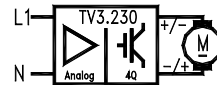
For dc motors with dc tacho, incremental encoder or resolver

Direct power supply 230V~, potential-free control electronics

Auxiliary voltage 20V~/24V=.

Actual value encoder versions

TG	DC tacho	Control range 1:3000
IN	Incremental encoder evaluation	Control range 1: 500
RS	Resolver evaluation	Control range 1:1000



2.9 Compact devices with ballast circuit and power supply

Item no.	Type	Power supply voltage	Motor voltage	Motor current	Price €
650	TV3-230- 5-TG-k	230V~	200V=	5/10A	362,-
652	TV3-230- 5-IN-k	230V~	200V=	5/10A	409,-
654	TV3-230- 5-RS-k	230V~	200V=	5/10A	493,-

Type: sheet steel housing IP00 book format hxxxd 132x68x183+plug-in terminals

2.10 3HE Rack mounting devices without ballast circuit, external power supply

TVD3-230-Nx

Item no.	Type	ZW voltage	Motor voltage	Motor current	Price €
660	TV3-230 - 5 - TG	320V=	200V=	5/10A	310,-
661	TV3-230-10 - TG	320V=	200V=	10/20A	336,-
662	TV3-230 - 5 - IN	320V=	200V=	5/10A	362,-
663	TV3-230-10 - IN	320V=	200V=	10/20A	388,-
664	TV3-230 - 5 - RS	320V=	200V=	5/10A	441,-
665	TV3-230-10 - RS	320V=	200V=	10/20A	483,-

Type: rack mounting device 3HE

2.11 Power supply modules TVD3-230Nx with ballast circuit

Item no.	Type	Bus voltage	Bus current	Price €
633	TVD3 - 230N10	Uz max. 380V	Iz 10A	126,-
634	TVD3 - 230N30	Uz max. 380V	Iz 30A	157,-

Type: rack mounting unit 3HE

2.12 Rack setups 3HE with backplane, completely assembled

Item no.	Type		Price €
365	1x3HE axis + power supply module position-x	1x TV3 2-xx + 1x TVD3 115 N	121,-
366	2x3HE axes + power supply module position-x	2x TV3 2-xx + 1x TVD3 115 N	165,-
367	3x3HE axes + power supply module position-x	3x TV3 2-xx + 1x TVD3 115 N	198,-
368	4x3HE axes + power supply module position-x	4x TV3 2-xx + 1x TVD3 115 N	242,-
369	5x3HE axes + power supply module position-x	5x TV3 2-xx + 1x TVD3 115 N	286,-
370	6x3HE axes + power supply module position-x	6x TV3 2-xx + 1x TVD3 115 N	330,-

Type: wall mounting x=W, front mounting x=F

Special types and mixed 3HE/6HE racks on request

To be specified with each order:

Motor voltage, motor current, tacho voltage, mode of operation (e.g. S3 25%)

Speed at 10V command value, type of servo and rack

Evaluation for incremental encoder or resolver, counting pulses.

2. DC Transistor servo amplifiers

Series SERVO-DC-TVQ6

for dc motors, dc servo motor with tacho, incremental encoder or resolver.

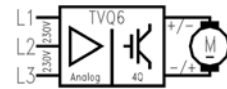
Motor voltage up to 250V=, potential-free control electronics

Power supply 230V~

Actual value encoder

TG DC tacho

Control range 1:3000



2.13 Compact devices with ballast circuit and power supply

Item no.	Type	Power supply voltage	Motor voltage	Motor current		Price €
351	TVQ6-250-10-TG-k	230V~	max. 250V	10/20A	.	1006,-
352	TVQ6-250-16-TG-k	230V~	max. 250V	16/32A	.	1132,-
354	TVQ6-250-25-TG-k	230V~	max. 250V	25/40A	.	1407,-

2.14 6HE Rack mounting devices for multiple-axis version (6HE,16TE) without ballast circuit rear panel power supply TVD6-N30 or external dc supply (e.g. battery)

Item no.	Type	ZK voltage	Motor voltage	Motor current		Price €
361	TVQ6-250-10-TG	max. 320V=	max. 250V	10/20A		735,-
362	TVQ6-250-16-TG	max. 320V=	max. 250V	16/32A		840,-
363	TVQ6-250-25-TG	max. 320V=	max. 250V	25/40A		1123,-

2.15 Backplanes compatible with TVQ6.2

Item no.	Type		Price €
426	TVD6-N30	Backplane with power supply, ZWK 320V, 30A	241,-
427	TVD6-R	Backplane (supplement, without power supply)	115,-

2.16 Rack setups 6HE (Standard rack acc. to DIN 41494)

Item no.	Type		Price €
343	6HE rack-x	Basic price	70,-
346	6HE slot	Price per slot	8,-

Type: wall mounting x=W, front mounting x=F

The rack setups are completely assembled. Backplanes with or without power supply units can be freely combined.

Special types and mixed 3HE/6HE racks on request

Options:

Evaluation for incremental encoder or resolver

2.17 Evaluation electronics for motor encoder systems Price to be added to the device price

Item no.	Type		Price €
581	IN- Incremental encoder evaluation	Counting pulse output	48,-
582	RS- Resolver evaluation	Counting pulse output	107,-

To be specified with each order:

Option, motor voltage, motor current, tacho voltage, mode of operation (e.g. S3 25%)

Speed at 10V command value, type for servo and rack

2. DC Transistor servo amplifiers

Transformers and chokes

for series SERVO-DC

2.20 Chokes for device types servo TV3, TV3.2, TV6, TVQ6.2, AS-250-DC						
Item no.	Type	Rated current A	Inductance mH	Dimensions a /b /c mm	Weight kg	Price €
0672	2M5-4 N	4A	2.5mH	60/85/65	0.65	Price on request
0660	2M6-8 N	8A	2.5mH	70/90/75	1.15	
0675	2M7-12 N	12A	1.5mH	80/105/86	1.65	
0182	2EI84-15	15A	1.0mH	73/65/105	1.5	
0679	2EI105-20	20A	1.0mH	90/92/115	3.1	
1617	2EI120-25	25A	1.1mH	.	.	

2.21 AC Isolating transformers for device types servo TV3,TV3.2, TV6.2 primary power supply voltage V~, secondary after motor voltage					
Item no.	Type	Transformer power VA	Dimensions a /b /c mm	Weight kg	Price €
	TE 8/2	100	85x89x82	2.0	Price on request
	TE 12/1	250	120x101x115	4.3	
	TE12/3	400	120x133x115	6.8	
	TE 15/1	500	108x132x122	8.2	
	TE 15/3	800	150x150x132	13.5	
	TE 74/2	1300	175x140x160	15.4	
	TE 74/3	1600	175x150x160	18.5	

3. AC Transistor servo amplifiers

AC Servo for EC servo motors, brushless dc motors

Series AC -SERVO-TVD3.2 (also see digital AC-Servo Serie DS xxx)

Motor voltage max. 110V~

For brushless dc motors, EC synchro servo motors up to 3x110V~

Connection via an isolating transformer up to 115V~

Auxiliary voltage 20V~/24V=,

Versions

bl	bl-tacho with rotor position signals	Control range 1:3000
IN	Incremental encoder evaluation and rotor position signals	Control range 1: 500
RS	Resolver evaluation	Control range 1:1000



3.1 Compact devices with ballast circuit and power supply					
Item no.	Type	Transformer voltage	Max. motor voltage	Motor current	Price €
384	TVD3.2 - 115 - 5 - bl k	24 bis 115V~	3x110V~	5/10A	367,-
397	TVD3.2 - 115 -10 - bl k	24 bis 115V~	3x110V~	10/20A	415,-
385	TVD3.2 - 115 - 5 - IN k	24 bis 115V~	3x110V~	5/10A	399,-
398	TVD3.2 - 115 -10 - IN k	24 bis 115V~	3x110V~	10/20A	446,-
386	TVD3.2 - 115 - 5 - RS k	24 bis 115V~	3x110V~	5/10A	472,-
399	TVD3.2 - 115 -10 - RS k	24 bis 115V~	3x110V~	10/20A	520,-
Type: sheet steel housing IP00 book format hwxwd 132x68x183+plug-in terminals					

3.2 3HE-Rack mounting devices without ballast circuit, external power supply TVD3-115-Nx					
Item no.	Type	ZW voltage	Motor voltage	Motor current	Price €
371	TVD3.2 - 115 - 5 -bl	160V=	3x110V~	5/10A	304,-
375	TVD3.2 - 115 -10 -bl	160V=	3x110V~	10/20A	346,-
372	TVD3.2 - 115 - 5 -IN	160V=	3x110V~	5/10A	336,-
376	TVD3.2 - 115 -10 -IN	160V=	3x110V~	10/20A	378,-
373	TVD3.2 - 115 - 5 -RS	160V=	3x110V~	5/10A	409,-
377	TVD3.2 - 115 - 10 -RS	160V=	3x110V~	10/20A	451,-
Type: rack mounting device 3HE					

3.3 Power supply modules TVD3-115 N with ballast circuit			
Item no.	Type		Price €
378	TVD3 -115 - N10	Uz max. 200V Iz 10A	126,-
379	TVD3 -115 - N30	Uz max. 200V Iz 30A	157,-
Type: rack mounting device 3HE			

3.4 Rack setups with backplane, completely assembled			
Item no.	Type		Price €
365	1 axis + power supply module position-x	1x TVx3 xx + 1x TVD3-115-N	121,-
366	2 axes + power supply module position-x	2x TVx3 xx + 1x TVD3-115-N	165,-
367	3 axes + power supply module position-x	3x TVx3 xx + 1x TVD3-115-N	198,-
368	4 axes + power supply module position-x	4x TVx3 xx + 1x TVD3-115-N	242,-
369	5 axes + power supply module position-x	5x TVx3 xx + 1x TVD3-115-N	286,-
370	6 axes + power supply module position-x	6x TVx3 xx + 1x TVD3-115-N	330,-
Type: wall mounting x=W, front mounting x=F			

To be specified with each order:

Motor voltage, motor current,
 Mode of operation (e.g. S3 25%),
 Encoder type, no. of resolver poles, increments per rpm,
 Speed at 10V command value

3. AC Transistor servo amplifiers

Transformers

3.5 AC Isolating transformers for device types servo TVD3.2 primary power supply $V\sim$, secondary max. 115V\sim					
Item no.	Type	Transformer power VA	Dimensions a /b /c mm	Weight kg	Price€
	TE 8/	100	85x89x82	2.0	Prices on request
	TE 12/1	250	120x101x115	4.3	
	TE12/3	400	120x133x115	6.8	
	TE 15/1	500	108x132x122	8.2	
	TE 15/3	800	150x150x132	13.5	
	TE 74/2	1300	175x140x160	15.4	
	TE 74/3	1600	175x150x160	18.5	

Price list 2017 / dated: 03 July 2017

3. AC Transistor servo amplifiers

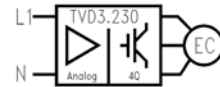
Series AC-SERVO-TVD3.230 (also see digital AC-Servo Serie DS xxx)

Motor voltage max. 200V~

For brushless dc motors, EC synchro servo motors up to 3x200V~
 Direct connection to the power supply 230V~, potential-free control electronics.
 Auxiliary voltage 20V~/24V=,

Versions

bl	bl-tacho with rotor position signals	Control range 1:3000
IN	Incremental encoder evaluation and rotor position signals	Control range 1: 500
RS	Resolver evaluation	Control range 1:1000



3.6 Compact devices with ballast circuit and power supply

Item no.	Type	Power supply voltage	Motor voltage	Motor current	Price €
611	TVD3-230- 5-bl-k	230V~	3x200V~	5/10A	385,-
614	TVD3-230-10-bl-k	230V~	3x200V~	10/20A	415,-
612	TVD3-230- 5-IN-k	230V~	3x200V~	5/10A	409,-
615	TVD3-230-10-IN-k	230V~	3x200V~	10/20A	457,-
613	TVD3-230- 5-RS-k	230V~	3x200V~	5/10A	493,-
616	TVD3-230-10-RS-k	230V~	3x200V~	10/20A	541,-

Type: sheet steel housing IP00 book format hwxwd 132x68x183+plug-in terminals

3.7 3HE- Rack mounting devices without ballast circuit, external power supply TVD3-230-Nx

Item no.	Type	ZW voltage	Motor voltage	Motor current	Price €
623	TVD3-230 - 5 - bl	320V=	3x200V~	5/10A	325,-
624	TVD3-230-10 - bl	320V=	3x200V~	10/20A	357,-
626	TVD3-230 - 5 - IN	320V=	3x200V~	5/10A	362,-
627	TVD3-230-10 - IN	320V=	3x200V~	10/20A	388,-
629	TVD3-230 - 5 - RS	320V=	3x200V~	5/10A	441,-
630	TVD3-230-10 - RS	320V=	3x200V~	10/20A	483,-

Type: rack mounting device 3HE

3.8 Power supply modules TVD3-230Nx with ballast circuit

Item no.	Type	Bus voltage	Bus current	Price €
633	TVD3 - 230N10	Uz max. 380V	Iz 10A	126,-
634	TVD3 - 230N30	Uz max. 380V	Iz 30A	157,-

Type: rack mounting device 3HE

3.9 Rack setups with backplane, completely assembled

Item no.	Type		Price €
365	1 axis + power supply module position-x	1x TVx3 xx + 1x TVD3-N230	121,-
366	2 axes + power supply module position-x	2x TVx3 xx + 1x TVD3-N230	165,-
367	3 axes + power supply module position-x	3x TVx3 xx + 1x TVD3-N230	198,-
368	4 axes + power supply module position-x	4x TVx3 xx + 1x TVD3-N230	242,-
369	5 axes + power supply module position-x	5x TVx3 xx + 1x TVD3-N230	286,-
370	6 axes + power supply module position-x	6x TVx3 xx + 1x TVD3-N230	330,-

Type: wall mounting x=W, front mounting x=F

To be specified with each order:

Motor voltage, motor current,
 Mode of operation (e.g. S3 25%),
 Encoder type, no. of resolver poles, increments per rpm,
 Speed at 10V command value

Price list 2017 / dated: 03 July 2017

3. AC Transistor servo amplifiers

Series AC-SERVO- TVD6-200 (for new installations see digital AC- Servo Serie DS xxx)

Motor voltage max. 200V~

For brushless dc motors, EC synchro servo motors up to 3x200V~

Power supply 230V~, motor voltage 3x200V~, ZWK 320V=

Versions

TVD6-200-x-bl

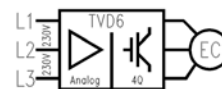
bl-tacho with rotor position sensor

TVD6-200-x-IN

Incremental encoder with rotor position tracks

TVD6-200-x-RS

Resolver (incremental encoder simulation)



3.10 Compact devices with ballast circuit and power supply

Item no.	Type	Power supply voltage	Motor voltage	Motor current	Price €
402	TVD 6-200-10- bl- k	230V~	3x200V~	10/20A	966,-
403	TVD 6-200-16- bl- k	230V~	3x200V~	16/32A	1039,-
404	TVD 6-200-25- bl- k	230V~	3x200V~	25/40A	1281,-
410	TVD 6-200-10- IN- k	230V~	3x200V~	10/20A	1008,-
411	TVD 6-200-16- IN- k	230V~	3x200V~	16/32A	1071,-
412	TVD 6-200-25- IN- k	230V~	3x200V~	25/40A	1312,-
420	TVD 6-200-10- RS- k	230V~	3x200V~	10/20A	1071,-
421	TVD 6-200-16- RS- k	230V~	3x200V~	16/32A	1144,-
422	TVD 6-200-25- RS- k	230V~	3x200V~	25/40A	1386,-

3.11 6HE Rack mounting devices for multiple-axis version (6HE,16TE) without ballast circuit rear panel power supply TVD6-N30 or external dc supply (e.g. battery)

Item no.	Type	ZW voltage	Motor voltage	Motor current	Price €
406	TVD 6-200-10- bl	320V=	3x200V~	10/20A	724,-
407	TVD 6-200-16- bl	320V=	3x200V~	16/32A	798,-
408	TVD 6-200-25- bl	320V=	3x200V~	25/40A	997,-
414	TVD 6-200-10- IN	320V=	3x200V~	10/20A	766,-
415	TVD 6-200-16- IN	320V=	3x200V~	16/32A	840,-
416	TVD 6-200-25- IN	320V=	3x200V~	25/40A	1029,-
423	TVD 6-200-10- RS	320V=	3x200V~	10/20A	829,-
424	TVD 6-200-16- RS	320V=	3x200V~	16/32A	903,-
425	TVD 6-200-25- RS	320V=	3x200V~	25/40A	1102,-

3.12 Backplanes - compatible with TVD6

Item no.	Type		Price €
426	TVD6-200-N30	Backplane with power supply, ZWK 320V, 30A	241,-
427	TVD6-R	Backplane (supplement, without power supply)	115,-

3.13 Rack setups (standard rack acc. to DIN 41494)

Item no.	Type		Price €
341	Rack-3HE	Basic price	56,-
343	Rack-6HE	Basic price	70,-
346	Slot	Price per slot	8,-

The rack setups are completely assembled.

Backplanes with or without power supply units can be freely combined.

3. AC Transistor servo amplifiers

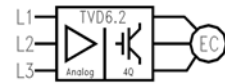
Series AC-SERVO- TVD6.2-400 (for new installations see digital AC- Servo Serie DS xxx)

Motor voltage max. 400V~

For brushless dc motors, EC synchro servo motors up to 3x400V~
Power supply 400V~/3x400V~, motor voltage 3x400V~, ZWK 620V=

Versions

TVD6.2-400-x-bl	bl-tacho with rotor position sensor
TVD6.2-400-x-IN	Incremental encoder with rotor position tracks
TVD6.2-400-x-RS	Resolver (incremental encoder simulation)



3.14 Compact devices with ballast circuit and power supply

Item no.	Type	Power supply voltage	Motor voltage	Motor current	Price €
471	TVD 6.2-400- 5- bl- k	400V~	3x400V~	5/10A	1008,-
472	TVD 6.2-400-10- bl- k	400V~	3x400V~	1a 10/20A	1050,-
473	TVD 6.2-400-16- bl- k	400V~	3x400V~	1a 16/32A	1144,-
474	TVD 6.2-400-25- bl- k	400V~	3x400V~	1a 25/40A	1312,-
479	TVD 6.2-400- 5- IN- k	400V~	3x400V~	1a 5/10A	1050,-
480	TVD 6.2-400-10- IN- k	400V~	3x400V~	1a 10/20A	1113,-
481	TVD 6.2-400-16- IN- k	400V~	3x400V~	1a 16/32A	1207,-
482	TVD 6.2-400-25- IN-k	400V~	3x400V~	1a 25/40A	1365,-
487	TVD 6.2-400- 5- RS- k	400V~	3x400V~	1a 5/10A	1123,-
488	TVD 6.2-400-10- RS- k	400V~	3x400V~	1a 10/20A	1165,-
489	TVD 6.2-400-16- RS- k	400V~	3x400V~	1a 16/32A	1260,-
490	TVD 6.2-400-25- RS- k	400V~	3x400V~	1a 25/40A	1417,-

3.15 6HE Rack mounting devices for multiple-axis version (6HE,16TE)

without ballast circuit rear panel power supply TVD6.2-N30 or external dc supply (e.g. battery)

Item no.	Type	ZW voltage	Motor voltage	Motor current	Price €
475	TVD 6.2-400- 5- bl	560V=	3x400V~	5/10A	745,-
476	TVD 6.2-400-10- bl	560V=	3x400V~	10/20A	798,-
477	TVD 6.2-400-16- bl	560V=	3x400V~	16/32A	892,-
478	TVD 6.2-400-25- bl	560V=	3x400V~	25/40A	1050,-
483	TVD 6.2-400- 5- IN	560V=	3x400V~	5/10A	787,-
484	TVD 6.2-400-10- IN	560V=	3x400V~	10/20A	840,-
485	TVD 6.2-400-16- IN	560V=	3x400V~	16/32A	924,-
486	TVD 6.2-400-25- IN	560V=	3x400V~	25/40A	1092,-
491	TVD 6.2-400- 5- RS	560V=	3x400V~	5/10A	861,-
492	TVD 6.2-400-10- RS	560V=	3x400V~	10/20A	903,-
493	TVD 6.2-400-16- RS	560V=	3x400V~	16/32A	997,-
494	TVD 6.2-400-25- RS	560V=	3x400V~	25/40A	1155,-

3.16 Backplanes - compatible with TVD6.2

Item no.	Type		Price €
495	TVD6.2-400-N30	Backplane with power supply, ZWK 560V, 30A	241,-
427	TVD6-R	Backplane (supplement, without power supply)	115,-

3. AC Transistor servo amplifiers

3.17 Rack setups (standard rack acc. to DIN 41494)			
Item no.	Type	.	Price €
343	Rack-6HE-x	Basic price	70,-
346	Slot	Price per slot	8,-
Type: wall mounting x=W, front mounting x=F			

The rack setups are completely assembled.

Backplanes with or without power supply units can be freely combined.

To be specified with each order:

Motor voltage, motor current,

Mode of operation (e.g. S3 25%),

Encoder type, no. of resolver poles, increments per rpm,

Speed at 10V command value

3. AC Transistor servo amplifiers

Accessories for TVD3, TVD3.2, TVD6, TVD6.2

3.18 External ballast resistors 50W / 300W					
Item no.	Type	Resistance Ohm	Power Watt		Price €
1028	BAL-20-50	20	50		20,-
1088	BAL-40-50	40	50		20,-
1089	BAL-80-50	80	50		20,-
1293	BAL-20-300	20	300		44,-
1212	BAL-40-300	40	300		44,-

3.19 Encoder cables				
Item no.	Type	.Option		Price €
	Resolver cable	. Suitable for drag chain		on request
	Incremental cable	. Motor type Unitek connection sheet		
	SIN-COS cable	.		
	BL-tacho cable	.		
		.		

3.20 Motor chokes (for motor cables >25m)					
Item no.	Type	Current A	Inductance mH		Price €
2334	MDD 1.6a - 5	5	1.9		Prices on request
2335	MDD 1.6b - 10	10	1		
2336	MDD 2b - 20	20	0.8		

3.21 EMC Filters					
Item no.	Type	Voltage V~	Current A~	For device	Price €
1611	F250V-B90-16	1x250	1x16		55,-
0046	FN3270H-35-33	3x480	3x45		73,-

4. Digital ac transistor servo amplifiers

Digital servo controller

for EC synchronous servo motors,
ac asynchronous motors,
dc motors

Feedback : Resolver, incremental-TTL,
SIN-COS, BL-tacho, and others

Interfaces : analog, TTL, RS232, CAN-BUS

Software : DS-NDrive



Series DS-2xx

Battery voltage 24 to 48V
Motor voltage Ueff 3x14V to 3x34V~



4.1 Complete devices

Item no.	Type	Feedback evaluation	Motor voltage	Motor current	Price €
739	DS-2420.2 -IN	Incremental encoder		20/40A	588,--
738	DS-2420.2 -RS	Resolver		20/40A	651,--
760	DS-2420.2 -SC	Sincos 1Vss			651,--
761	DS-2420.2 -bl	Bl-tacho+rotor position			593,--
737	DS-2420.2 -HAL	Linear Hall sensor			651,--

4.2 Complete devices

Item no.	Type	Feedback evaluation	Motor voltage	Motor current	Price €
742	DS-4820.2 -IN	Incremental encoder		20/40A	609,--
743	DS-4820.2 -RS	Resolver		20/40A	672,--
762	DS-4820.2 -SC	Sincos 1Vss			672,--
763	DS-4820.2 -bl	Bl-tacho+rotor position			609,--
	DS-4820.2 -HAL	Linear Hall sensor			on request

Motor voltage max. 200V~

Power supply 30 to 230V~ (single-phase, 3-phase)
Motor voltage Ueff 3x200V~, Bus voltage ZWK max. 350V=

4.3 Complete devices with power supply and ballast circuit

Item no.	Type	Feedback evaluation	Motor current	Price €
730	DS-205.4 -IN	Incremental encoder	5/10A	609,--
731	DS-205.4 -RS	Resolver	5/10A	672,--
764	DS-205.4 -SC	Sincos 1Vss		672,--
765	DS-205.4 -bl	Bl-tacho+rotor position		609,--

4. Digital ac transistor servo amplifiers

Digital servo controller

for EC synchronous servo motors,

ac asynchronous motors,

dc motors

Feedback : Resolver, incremental-TTL,
SIN-COS, BL-tacho, and others

Interfaces : analog, TTL, RS232, CAN-BUS

Software : DS-NDrive



Series DS-4xx

Motor voltage max. 400V~

For brushless dc motors, EC synchro servo motors up to 3x400V~

Power supply 30 to 480V~/3x30 to 3x480V~,

Motor voltage Ueff 3x400V~, bus voltage ZWK max. 620V=

4.4 Complete devices with power supply and ballast circuit

Item no.	Type	Evaluation	.	Motor current	Price €
740	DS-403.4 -IN	Incremental encoder	.	3/6	622,--
720	DS-405.2 -IN	Incremental encoder	.	5/10A	714,--
721	DS-412.2 -IN	Incremental encoder	.	12/24A	819,--
722	DS-420.2 -IN	Incremental encoder	.	20/40A	913,--
741	DS-403.4 -RS	Resolver	.	3/6A	685,--
725	DS-405.2 -RS	Resolver	.	5/10A	798,--
726	DS-412.2 -RS	Resolver	.	12/24A	903,--
727	DS-420.2 -RS	Resolver	.	20/40A	997,--
766	DS-403.4 -SC	Sincos 1Vss	.	3/6A	685,--
719	DS-405.2 -SC	Sincos 1Vss	.	5/10A	798,--
744	DS-412.2 -SC	Sincos 1Vss	.	12/24A	903,--
746	DS-420.2 -SC	Sincos 1Vss	.	20/40A	997,--
769	DS-403.4 -bl	Bl-tacho+rotor position	.	3/6A	622,--
743	DS-405.2 -bl	Bl-tacho+rotor position	.	5/10A	714,--
745	DS-412.2 -bl	Bl-tacho+rotor position	.	12/24A	819,--
747	DS-420.2 -bl	Bl-tacho+rotor position	.	20/40A	913,--

4. Digital ac transistor servo amplifiers

Digital servo controller

Digital pitch controller

for EC synchronous servo motors,

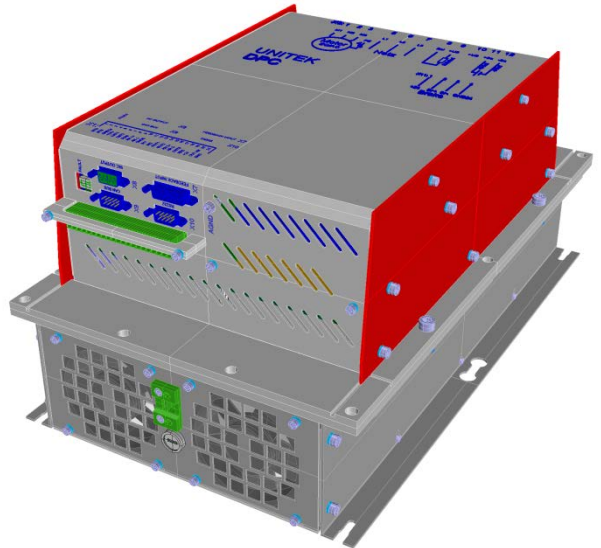
ac asynchronous motors,

dc motors

Feedback : Resolver, incremental-TTL,
SIN-COS, BL-tacho, and others

Interfaces : analog, TTL, RS232, CAN-BUS

Software : DS-NDrive



shock and vibration proof

Series DPC-4xx

Motor voltage max. 400V~

For brushless dc motors, EC synchro servo motors up to 3x400V~

Power supply 3x30 to 3x480V~,

Motor voltage Ueff 3x400V~, bus circuit ZWK max. 620V=

4.5 Complete devices - switch cabinet insertion mounting

Item no.	Type	Evaluation	.	Motor current	Price €
856	DPC-440-IN-D	Incremental encoder	.	40/80	1735,--
857	DPC-460-IN-D	Incremental encoder	.	60/120	1906,--
858	DPC-440-RS-D	Resolver	.	40/80	1899,--
859	DPC-460-RS-D	Resolver	.	60/120	1990,--
861	DPC-440-SC-D	Sincos 1V ss	.	40/80	1899,--
862	DPC-460-SC-D	Sincos 1Vss	.	60/120	1990,--
050	Fan box (option)		.		196,--

4.6 Complete devices - switch cabinet internal mounting with fan box

Item no.	Type	Evaluation	.	Motor current	Price €
852	DPC-440-IN-W	Incremental encoder	.	40/80	1931,--
853	DPC-460-IN-W	Incremental encoder	.	60/120	2102,--
851	DPC-440-RS-W	Resolver	.	40/80	2095,--
850	DPC-460-RS-W	Resolver	.	60/120	2186,--
854	DPC-440-SC-W	Sincos 1Vss	.	40/80	2095,--
855	DPC-460-SC-W	Sincos 1Vss	.	60/120	2186,--

4. Digital ac transistor servo amplifiers

Accessories for DS200/DS400/DPC

4.7 External ballast resistors (for DS-405, -412 50Watt (-420 100Watt) installed)					
Item no.	Type	Resistance Ohm	Power Watt	For device	Price €
1293	BAL-20-300	20	300	DPC	44,-
1212	BAL-40-300	40	300	DS-420	44,-
1567	BAL-51-300	51	300	DS-412	44,-
1175	BAL-82-300	82	300	DS-405	44,-

4.8 Encoder cables				
Item no.	Type	.Option		Price €
	Resolver cable	. Suitable for drag chain		on request
	Incremental cable	. Motor type Unitek connection sheet		
	SIN-COS cable			
	BL-tacho cable			

4.9 Motor chokes (for motor cables >25m)					
Item no.	Type	Current A	Inductance mH	For device	Price €
2334	MDD 1.6a - 5	5	1.9	DS-405	Prices on request
2335	MDD 1.6b - 10	10	1	DS-412	
2336	MDD 2b - 20	20	0.8	DS-420	
2337	MDD 3c - 50	50	0.5	DPC	

4.10 EMC filters (for interference suppression class A)					
Item no.	Type	Voltage V~	Current A~	For device	Price €
1611	F250V-B90-16	1x250	1x16	DS 405/412 bei 230V	55,-
0046	FN3270H-35-33	3x480	3x35	DS-420 bei 400V	73,-

More powerful filters on request

4.11 Accessories in the top-hat rail housing			
Item no.	Type	Function	Price €
207	Voltage supply	DC/DC isolated 24V to $\pm 15V$ and $\pm 10V$	67,-
1177	MKS-TRA 24	Transistor relay	42,-
237	Charging circuit	Inrusher limiter	59,-

4.12 Power supply unit			
Item no.	Type	Function	Price €
2338	Power supply unit 24-2	Power supply unit primary 100-240V~, sec. 24V= 2A	80,-

5. Battery motor controllers BAMO-A2

Analog battery motor controllers BAMO-A2

for dc motors

Battery voltage 12V= to 160V=
 Motor voltage 10V= to 150V=
 Motor current 10A to 500A
 Possible delivery as A1 (1Q amplifier)



Series BAMO-A2-x-x 4Q amplifier with regenerative braking

5.1 Nom. battery voltage 48, max. 62V, IGBT - output stage Motor voltage 0 to ± battery voltage (- 4V)

Not for new applications → see BAMOBIL A2

Item no.	Type	Type current [A]	Size	Price €
537	BAMO-A2-62-10/20-x	10/20	1	315,-
552	BAMO-A2-62-25/50-x	25/50	2	357,-
553	BAMO-A2-62-40/80-x	40/80	2	399,-
546	BAMO-A2-62-60/100	60/100	3	714,-
554	BAMO-A2-62-120/200	120/200	3	1024,-
555	BAMO-A2-62-180/300	180/300	3	1312,-
BAMO-A1-62-xx BAMO-A2-62 to 500/600A on request				

5.2 Nom. battery voltage 96, 144 V, max. 160V, IGBT - output stage Motor voltage 0 to ± battery voltage (- 4V)

Item no.	Type	Type current [A]	Size	Price €
544	BAMO-A2-160-10/20-x	10/20	1	315,-
545	BAMO-A2-160-25/50-x	25/50	2	357,-
532	BAMO-A2-160-40/80-x	40/80	2	399,-
551	BAMO-A2-160-60/100	60/100	3	714,-
547	BAMO-A2-160-120/200	120/200	3	1024,-
548	BAMO-A2-160-180/300	180/300	3	1312,-
BAMO-A1-160-xx BAMO-A2-160 to 500/800A on request				

Additional cooler on request

6. Battery motor controllers BAMOBIL – A1/A2

Analog battery motor controllers BAMOBIL – A1/A2

for dc motors

A1 - 1Q amplifiers for pumps, fans, etc.

A2 - 4Q servo amplifiers with regenerative braking for drives, steering amplifier, etc.



6.1 BAMOBIL A1						
Nom. battery voltage 24V, 48V max. motor voltage >23V, >47V						
1-Quadrant. Driving in one rotation direction						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
521	BAMOBIL-A1-62-300	24 to 48V	300	300	1	451,-
Option - battery voltage 12V						

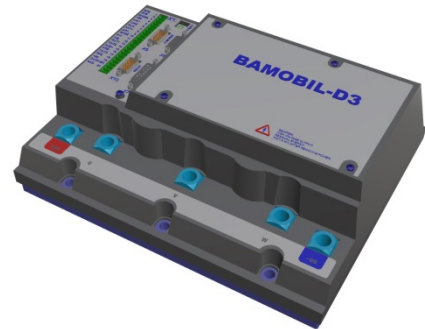
6.2 BAMOBIL A2						
Nom. battery voltage 24V, 48V max. motor voltage >23V, >47V						
4-Quadrant Driving and braking in both rotation directions						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
506	BAMOBIL-A2-62-50 eco	24 to 48V	50	25	1	282,-
511	BAMOBIL-A2-62-100	24 to 48V	100	50	1	378,-
513	BAMOBIL-A2-62-200	24 to 48V	200	100	1	472,-
Option - battery voltage 12V						

Additional cooler on request

7. Battery motor controllers BAMOBIL – D3

Digital BAMOBIL-D3

for vehicles, boats, machines, and installations with batteries
with EC synchronous motors,
AC asynchronous motors,
DC dc motors



Air cooler
Robust industrial standard
max. 60V, max. 450A

Software DS-NDrive

7.1 BAMOBIL D3 (EC motor with rotor position encoder)						
Nom. battery voltage 24V-48V, max. motor voltage >3x14V, >3x33V						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
280	BAMOBIL-D3.3-62-80-BL	12 to 48	80	40	2	685,--
281	BAMOBIL-D3.3-62-120-BL	12 to 48	120	60	2	792,--
282	BAMOBIL-D3.3-62-250-BL	12 to 48	250	125	2	998,--
283	BAMOBIL-D3.3-62-450-BL	12 to 48	450	225	2	1079,--

7.2 BAMOBIL D3 (EC motor with incremental encoder)						
Nom. battery voltage 24V-48V, max. motor voltage >3x14V, >3x33V						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
284	BAMOBIL-D3.3-62-80-IN	12 to 48	80	40	2	685,--
285	BAMOBIL-D3.3-62-120-IN	12 to 48	120	60	2	792,--
286	BAMOBIL-D3.3-62-250-IN	12 to 48	250	125	2	998,--
287	BAMOBIL-D3.3-62-450-IN	12 to 48	450	225	2	1079,--

7.3 BAMOBIL D3 (EC motor with resolver)						
Nom. battery voltage 24V-48V, max. motor voltage >3x14V, >3x33V						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
288	BAMOBIL-D3.3-62-80-RS	12 to 48	80	40	2	685,--
289	BAMOBIL-D3.3-62-120-RS	12 to 48	120	60	2	792,--
290	BAMOBIL-D3.3-62-250-RS	12 to 48	250	125	2	998,--
291	BAMOBIL-D3.3-62-450-RS	12 to 48	450	225	2	1079,--

7.4 BAMOBIL D3 (EC motor with encoder SINCOS)						
Nom. battery voltage 24V-48V, max. motor voltage >3x14V, >3x33V						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
292	BAMOBIL-D3.3-62-80-SC	12 to 48	80	40	2	685,--
293	BAMOBIL-D3.3-62-120-SC	12 to 48	120	60	2	792,--
294	BAMOBIL-D3.3-62-250-SC	12 to 48	250	125	2	998,--
295	BAMOBIL-D3.3-62-450-SC	12 to 48	450	225	2	1079,--

7. Battery motor controllers BAMOBIL – D3

Digital BAMOBIL-D3-I (I = isolated)

for vehicles, boats, machines, and installations with batteries
with EC synchronous motors,
AC asynchronous motors,
DC dc motors
HV isolation, potential-free electronics
Air cooler
Robust industrial standard
max. 160V, max. 450A



Software DS-NDrive

7.5 BAMOBIL D3-I (HV isolation) (EC motor with rotor position encoder)						
Nom. battery voltage 24V-120V, max. motor voltage >3x14V, >3x80V						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
900	BAMOBIL-D3-I-62-80-BL	12 to 48	80	40	2	890,--
901	BAMOBIL-D3-I-62-120-BL	12 to 48	120	60	2	962,--
902	BAMOBIL-D3-I-62-250-BL	12 to 48	250	125	2	1033,--
903	BAMOBIL-D3-I-62-450-BL	12 to 48	450	225	2	1252,--
904	BAMOBIL-D3-I-160-100-BL	12 to 120	100	50	2	960,--
905	BAMOBIL-D3-I-160-200-BL	12 to 120	200	100	2	1120,--
906	BAMOBIL-D3-I-160-300-BL	12 to 120	300	150	2	1380,--

7.6 BAMOBIL D3-I (EC motor with incremental encoder)						
Nom. battery voltage 24V-120V, max. motor voltage >3x14V, >3x80V						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
910	BAMOBIL-D3-I-62-80-IN	12 to 48	80	40	2	890,--
911	BAMOBIL-D3-I-62-120-IN	12 to 48	120	60	2	962,--
912	BAMOBIL-D3-I-62-250-IN	12 to 48	250	125	2	1033,--
913	BAMOBIL-D3-I-62-450-IN	12 to 48	450	225	2	1252,--
914	BAMOBIL-D3-I-160-100-IN	12 to 120	100	50	2	960,--
915	BAMOBIL-D3-I-160-200-IN	12 to 120	200	100	2	1120,--
916	BAMOBIL-D3-I-160-300-IN	12 to 120	300	150	2	1380,--

7.7 BAMOBIL D3I (EC motor with resolver)						
Nom. battery voltage 24V-120V, max. motor voltage >3x14V, >3x80V						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
920	BAMOBIL-D3-I-62-80-RS	12 to 48	80	40	2	890,--
921	BAMOBIL-D3-I-62-120-RS	12 to 48	120	60	2	962,--
922	BAMOBIL-D3-I-62-250-RS	12 to 48	250	125	2	1033,--
923	BAMOBIL-D3-I-62-450-RS	12 to 48	450	225	2	1252,--
924	BAMOBIL-D3-I-160-100-RS	12 to 120	100	50	2	960,--
925	BAMOBIL-D3-I-160-200-RS	12 to 120	200	100	2	1120,--
926	BAMOBIL-D3-I-160-300-RS	12 to 120	300	150	2	1380,--

7.8 BAMOBIL D3-I (EC motor with encoder SINCOS)						
Nom. battery voltage 24V-120V, max. motor voltage >3x14V, >3x80V						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
930	BAMOBIL-D3-I-62-80-SC	12 to 48	80	40	2	890,--
931	BAMOBIL-D3-I-62-120-SC	12 to 48	120	60	2	962,--
932	BAMOBIL-D3-I-62-250-SC	12 to 48	250	125	2	1033,--
933	BAMOBIL-D3-I-62-450-SC	12 to 48	450	225	2	1252,--
934	BAMOBIL-D3-I-160-100-SC	12 to 120	100	50	2	960,--
935	BAMOBIL-D3-I-160-200-SC	12 to 120	200	100	2	1120,--
936	BAMOBIL-D3-I-160-300-SC	12 to 120	300	150	2	1380,--

7. Battery motor controllers BAMOBIL – D3

Digital BAMOBIL-D3-IM (IM = isolated, metal housing)

for vehicles, boats, machines, and installations with batteries
with EC synchronous motors,
AC asynchronous motors,
DC dc motors

HV isolation, potential-free electronics
Air cooler, optional liquid cooling

Aluminium metal housing IP65
Robust industrial standard
max. 160V, max. 450A

Software DS-NDrive



7.9 BAMOBIL D3-IM (HV isolation, metal housing) (EC motor with rotor position encoder)						
Nom. battery voltage 24V-120V, max. motor voltage >3x14V, >3x80V, protection rating IP65						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
940	BAMOBIL-D3-IM-62-80-BL	12 to 48	80	40	IP65	1180,--
941	BAMOBIL-D3-IM-62-120-BL	12 to 48	120	60		1236,--
942	BAMOBIL-D3-IM-62-250-BL	12 to 48	250	125		1498,--
943	BAMOBIL-D3-IM-62-450-BL	12 to 48	450	225		1638,--
944	BAMOBIL-D3-IM-160-100-BL	12 to 120	100	50		1305,--
945	BAMOBIL-D3-IM-160-200-BL	12 to 120	200	100		1410,--
946	BAMOBIL-D3-IM-160-300-BL	12 to 120	300	150		1638,--

7.10 BAMOBIL D3-IM (EC motor with incremental encoder)						
Nom. battery voltage 24V-120V, max. motor voltage >3x14V, >3x80V, protection rating IP65						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
950	BAMOBIL-D3-IM-62-80-IN	12 to 48	80	40	IP65	1180,--
951	BAMOBIL-D3-IM-62-120-IN	12 to 48	120	60		1236,--
952	BAMOBIL-D3-IM-62-250-IN	12 to 48	250	125		1498,--
953	BAMOBIL-D3-IM-62-450-IN	12 to 48	450	225		1638,--
954	BAMOBIL-D3-IM-160-100-IN	12 to 120	100	50		1305,--
955	BAMOBIL-D3-IM-160-200-IN	12 to 120	200	100		1410,--
956	BAMOBIL-D3-IM-160-300-IN	12 to 120	300	150		1638,--

7.11 BAMOBIL D3-IM (EC motor with resolver)						
Nom. battery voltage 24V-120V, max. motor voltage >3x14V, >3x80V, protection rating IP65						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
960	BAMOBIL-D3-IM-62-80-RS	12 to 48	80	40	IP65	1180,--
961	BAMOBIL-D3-IM-62-120-RS	12 to 48	120	60		1236,--
962	BAMOBIL-D3-IM-62-250-RS	12 to 48	250	125		1498,--
963	BAMOBIL-D3-IM-62-450-RS	12 to 48	450	225		1638,--
964	BAMOBIL-D3-IM-160-100-RS	12 to 120	100	50		1305,--
965	BAMOBIL-D3-IM-160-200-RS	12 to 120	200	100		1410,--
966	BAMOBIL-D3-IM-160-300-RS	12 to 120	300	150		1638,--

7.12 BAMOBIL D3.2-IM (EC motor with encoder SINCOS)						
Nom. battery voltage 24V-120V, max. motor voltage >3x14V, >3x80V, protection rating IP65						
Item no.	Type	Battery voltage [V]	max. current [A]	Continuous current [A]	Size	Price €
970	BAMOBIL-D3-IM-62-80-SC	12 to 48	80	40	IP65	1180,--
971	BAMOBIL-D3-IM-62-120-SC	12 to 48	120	60		1236,--
972	BAMOBIL-D3-IM-62-250-SC	12 to 48	250	125		1498,--
973	BAMOBIL-D3-IM-62-450-SC	12 to 48	450	225		1638,--
974	BAMOBIL-D3-IM-160-100-SC	12 to 120	100	50		1305,--
975	BAMOBIL-D3-IM-160-200-SC	12 to 120	200	100		1410,--
976	BAMOBIL-D3-IM-160-300-SC	12 to 120	300	150		1638,--

8. Digital battery motor controllers BAMOCAR-PG-D

For vehicles, boats, machines, and installations with batteries

with EC synchronous motors,
AC asynchronous motors,
DC dc motors

Protection rating IP65
Liquid-cooled heat sink
Robust industrial standard
max. 700V, max. 400A

Software DS-NDrive



8.1 BAMOCAR PG-D3 x-x-BL (EC synchronous motors with rotor position encoder, dc motors with tacho)						
Item no.	Type	Battery voltage [V]	Motor current [Apeak]	Motor continuous current [Aeff]	Power S1 kW	Price €
835	BAMOCAR-PG-D3-400-400-BL	370/400	400	200	80	3061.--
845	BAMOCAR-PG-D3-700-400-BL	650/700	400	200	140	3423.--

8.2 BAMOCAR PG-D3 x-x-IN (EC synchronous motors, ac asynchronous motors with incremental encoder + rotor position)						
Item no.	Type	Battery voltage [V]	Motor current [Apeak]	Motor continuous current [Aeff]	Power S1 kW	Price €
836	BAMOCAR-PG-D3-400-400-IN-(FU)	370/400	400	200	80	3061.--
846	BAMOCAR-PG-D3-700-400-IN-(FU)	650/700	400	200	140	3423.--

8.3 BAMOCAR PG-D3 x-x-RS (EC synchronous motors, ac asynchronous motors with resolver)						
Item no.	Type	Battery voltage [V]	Motor current [Apeak]	Motor continuous current [Aeff]	Power S1 kW	Price €
837	BAMOCAR-PG-D3-400-400-RS-(FU)	370/400	400	200	80	3061.--
847	BAMOCAR-PG-D3-700-400-RS-(FU)	650/700	400	200	140	3423.--

8.4 BAMOCAR PG-D3 x-x-SC (EC synchronous motors, ac asynchronous motors with SIN-COS encoder)						
Item no.	Type	Battery voltage [V]	Motor current [Apeak]	Motor continuous current [Aeff]	Power S1 kW	Price €
838	BAMOCAR-PG-D3-400-400-SC-(FU)	370/400	400	200	80	3061.--
848	BAMOCAR-PG-D3-700-400-SC-(FU)	650/700	400	200	140	3423.--

8.5 BAMOCAR PG-D3-x-x-F (Asynchronous motors or EC motors - without sensor)

Application conditions and prices on request

8.6 Connectors							
Item no.	Type			Function	Type	Per device	Price €
G435	Connector	X1	M16 19-pole socket	Control connection	Binder 99-5662-15-19	once	25.20
G436	Connector	X7	M16 19-pole pin	Motor encoder	Binder 99-5661-15-19	once	25.20
G437	Connector	X9	M12 5-pole pin	CAN-BUS	Binder 99-0436-14-05	once	15.00
optional (G438)	Connector	X10	M12 4-pole socket	Brake	Binder 99-0429-14-04	once	19.00
G432	RS232 complete with cable and D connector	X8	M8 6-pole	Programming cable	Binder 79-3464-52-06		40.--
Complete cables including the connectors				Prices on request			

**Brushless dc motors (synchronous motors)
with different encoder systems:**

Resolver	RS
Incremental encoder with rotor position track	IN
Incremental encoder with sinusoidal signals 1V	SIN
Encoder with data transmission (Endat, Hyperface)	EN/HY
Rotor position encoder with bl-tacho (not for digital servo controllers)	BL
Rotor position encoder (only for BAMO and BAMOBIL)	R

Prices for motors of different manufacturers on request.

Data required for preparing a quotation:

Torque	(Continuous torque, peak torque)
Speed	(Max. speed, control range)
Encoder system	(RS,IN,SIN,EN/HY,BL,R)
Supply voltage servo amplifier	(230, 400V)
Construction	(long, short, disc)
Gears	(Type, ratio)
Application	(Machine or installation type)
Quantity	(Annual requirement, lot size)

Enquiries: E-Mail: gerhard.koerber@unitek-online.com
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Service prices

1. Hourly rates - in Germany	Price €
Service on site up to 8 hours	90,- /hour
Service on site more than 8 hours	98,-/ hour
Service at our factory - repair time per hour	80,-/ hour

1.1. Hourly rates - outside of Germany	Price €
Service on site up to 8 hours	98,-/ hour
Service on site more than 8 hours	120,-/ hour

1.2. Surcharges on weekends
Saturdays 25%
Sundays 50%

2. Travel expenses	Price €
Kilometers	0.90/km
Time	80,-/ hour

3. Overnight stay
Expenses for overnight stays at cost
4. Daily rates
Daily rates are calculated and offered for long-term service engagements
5. Material costs
Spare parts are charged acc. to the spare parts price list
6. Terms of payment
Services are to be paid immediately and strictly net without discount