

***DUET, DUET FLEXI and DUET HV
DRIVE INTEGRATED SERVOMOTORS***

MOTION CONTROL

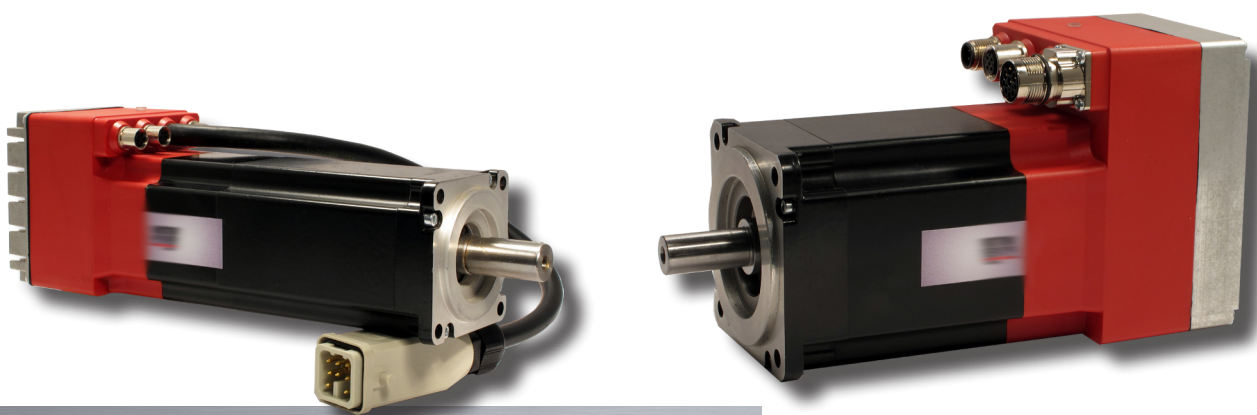
CONTENTS

Duet features and benefits	pag. 4
Product lineup	pag. 7
Duet type designation	pag. 8
Duet 40 ratings and specifications	pag. 11
Duet 40 dimensions	pag. 12
Duet 40 torque/speed charts	pag. 13
Duet 60 ratings and specifications	pag. 14
Duet 60 dimensions	pag. 15
Duet 60 torque/speed charts	pag. 16
Duet Flexi 60 ratings and specifications	pag. 18
Duet Flexi 60 dimensions	pag. 19
Duet Flexi 60 torque/speed charts	pag. 20
Duet Flexi 80 ratings and specifications	pag. 21
Duet Flexi 80 dimensions	pag. 22
Duet Flexi 80 torque/speed charts	pag. 23
Duet HV 80 ratings and specifications	pag. 25
Duet HV 100 ratings and specifications	pag. 26
Duet HV dimensions	pag. 27
Duet HV torque/speed charts	pag. 28
Duet wiring connections	pag. 29
Duet Flexi wiring connections	pag. 30
Duet HV wiring connections	pag. 31
Duet, Duet Flexi and Duet HV cable specifications	pag. 32
Feedback features for Duet, Duet Flexi and Duet HV	pag. 35
Brake features	pag. 37
Connectors specifications	pag. 38
Connectors and accessories	pag. 39

DUET AND DUET FLEXI LOW VOLTAGE INTEGRATED BRUSHLESS DRIVE

Cutting edge technology for decentralized architecture: **drive integrated servomotor DUET** series is the result of the wide-ranging experience that has built over more almost 25 years as marketing oriented player in the motion control market, gathering exceptional expertise in understanding and fulfilling customer needs. Everything you need for moving and controlling an axis is built directly into these highly compact single component: servomotor, feedback and intelligent servo drive featuring CANopen or Ethercat networking.

Either **Duet and Duet Flexi** include user friendly software tools enabling easy set up and tuning, ensure huge room saving in cabinet along with cables cutback between motor and drive and offer fast connectivity with plug in power connectors.



> ACCESSORIES FOR DUET AND DUET FLEXI :

- > CABLES**
- > CONNECTORS**

DUET AND DUET FLEXI FEATURES AND BENEFITS

- > SYNCHRONOUS BRUSHLESS SERVOMOTOR, PERMANENTLY EXCITED**
- > BUILT-IN DIGITAL DRIVE**
- > RATED OUTPUT POWER FROM 60W TO 520W**
- > SUPPLY VOLTAGE 48 VDC**
- > MAXIMUM SERVOMOTOR SPEED UP TO 5000RPM**
- > TORQUE, VELOCITY AND POSITION MODE**
- > USER PROGRAMMABILITY**
- > INSULATION CLASS F (155 °C)**
- > IP 65 ON MOTOR BODY**
- > RAL 9005 BLACK POWDER COATING**
- > SHAFT BALANCING CLASS G 2,5 ACCORDING ISO 1940**
- > BUILT-IN FEEDBACK 2 POLES RESOLVER, ABSOLUTE MULTITURN ENCODER (HIPERFACE), INCREMENTAL ENCODER**
- > OPTIONAL ELECTROMAGNETIC PERMANENT-HOLDING BRAKE. ZERO BACKLASH**
- > OPTIONAL SHAFT SEALING**

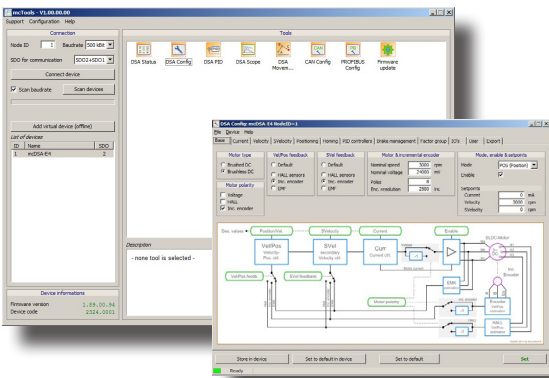


DUET AND DUET FLEXI LOW VOLTAGE INTEGRATED BRUSHLESS DRIVE

DUET

The early range features unique performance potential thanks to extremely compact design and superior thermal dissipation characteristics, this allowing the units to be operated at full peak currents, with no need of power derating or extra ventilation. The execution is available either with network position or velocity mode functionalities.

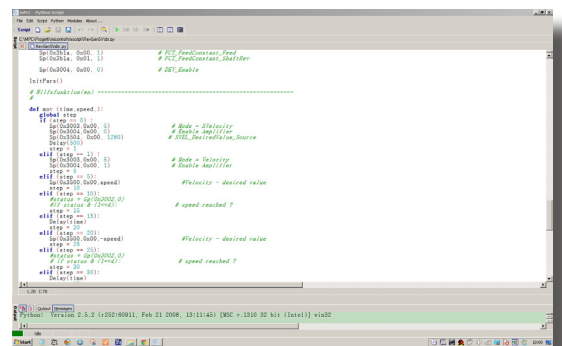
- > 48 VDC CONTINUOUS SUPPLY VOLTAGE
- > 24VDC LOGIC BACKUP
- > NOMINAL SPEED 3000RPM
- > IP 65 PROTECTION DEGREE (OPTIONAL OIL SEAL)
- > TORQUE, VELOCITY AND POSITION MODE
- > 4096 CPR INCREMENTAL ENCODER
- > PERMANENT MAGNET SAFETY BRAKE OPTION
- > CANopen DS 301, DS402 CONNECTIVITY
- > CE, UL SERVO MOTOR
- > EASY AND INTUITIVE PC SOFTWARE ALLOWS A FAST PARAMETERIZATION
- > SIMPLE SCOPE
- > SCRIPT EDITING
- > USB PROGRAMMING KEY



DUET FLEXI

The Duet FLEXI line is the most up-to-date product range extension and responds to a rising demand of integrated products with advanced features. This range incorporates all the characteristics of the early DUET series and introduces options such as absolute encoder feedback and Ethercat or Profibus connectivity.

- > 48 VDC CONTINUOUS SUPPLY VOLTAGE
- > 24VDC LOGIC BACKUP
- > NOMINAL SPEED 3000RPM
- > IP 65 PROTECTION DEGREE (OPTIONAL OIL SEAL)
- > FEEDBACK: MULTI TURN ABSOLUTE ENCODER, RESOLVER
- > TORQUE, VELOCITY AND POSITION MODE
- > PERMANENT MAGNET SAFETY BRAKE OPTION
- > CANopen DS301-DS402, OR EtherCAT[™] CONNECTIVITY
- > CE, UL SERVO MOTOR



DUET HV HIGH VOLTAGE INTEGRATED BRUSHLESS DRIVE

DUET HV is the new high voltage DUET series, a line consisting of brushless servomotor with integrated drive - featuring 2,8Nm, 4Nm, 5,6Nm and 8Nm models - incorporating as well absolute encoder for uncompromised precision in positioning.

This device can either work via Ethercat connectivity through the control of a master controller or as a stand alone unit wherever synchronized motion between axes is not mandatory for application operation. When used in this configuration, DUET HV can manage machine cycle with its internal PLC. Full programmability allows to perform application in a very efficient way and permits the creation of sophisticated architectures with complex trajectories, allowing decentralized motion distribution and high optimization in cabling and cabinet design.



DUET HV FEATURES AND BENEFITS

- > Synchronous brushless servomotor permanently excited
 - > Nominal power supply 560Vdc
 - > Stall torque 2,8 - 4 - 5,6 - 8 Nm
 - > Nominal speed 3000 rpm
 - > Absolute multi and singleturn encoder
 - > STO SIL 3 (safe torque off)
 - > IP65 protection
 - > Internal optional brake
 - > Integrated movement features: device profile DS402, interpolated mode, positioning, extended gearing function, homing, capture
 - > Stand alone programmability according to the standard IEC61131, ST language
 - > Capture input
 - > PC parametrization tool
 - > I2t, Overload, Short circuit, Overtemperature, Overvoltage Protection
 - > Optional cables, power supply
- > On board I/Os:
 - 4 digital IN 24Vdc general purpose, configurable as PSTOP, NSTOP, Enable, Home, Capture, Step/Direction
 - 3 digital OUT 24Vdc 250mA, general purpose
 - 2 digital IN 24Vdc or 1 RTO OUT
 - 1 digital IN/OUT 24Vdc with configurable function
 - 3 differential I/O's configurable as master incremental encoder or absolute encoder input
 - Encoder emulation output
 - PWM IN or OUT
 - Auxiliary rs485
 - I/O extension port
 - 1 Analogue IN $\pm 10V$



PRODUCT LINEUP

Type	Rated Output Power [W]	Rated Torque [Nm]	Peak Torque [Nm]	Rated Voltage [Vdc]	Rated Speed [rpm]	Feedback	Fieldbus
DUET 40 0,16 00	60	0,19	0,48	48	3000	4096 cpr incremental encoder	CanOpen
DUET 40 0,32 01	100	0,32	0,96	48	3000	4096 cpr incremental encoder	CanOpen
DUET 60 0,65 01	190	0,60	1,95	48	3000	4096 cpr incremental encoder	CanOpen
DUET 60 1,3 02	370	1,17	2,4	48	3000	4096 cpr incremental encoder	CanOpen
DUET FLEXI 60 0,65 01	200	0,64	1,95	48	3000	<ul style="list-style-type: none"> • resolver • absolute multiturn encoder 	<ul style="list-style-type: none"> • CanOpen • Ethercat
DUET FLEXI 60 1,3 01	310	1,18	3,75	48	2500	<ul style="list-style-type: none"> • resolver • absolute multiturn encoder 	<ul style="list-style-type: none"> • CanOpen • Ethercat
DUET FLEXI 80 1,5 03	390	1,5	4,5	48	2500	<ul style="list-style-type: none"> • resolver • absolute multiturn encoder 	<ul style="list-style-type: none"> • CanOpen • Ethercat
DUET FLEXI 80 2 03	520	2	5,6	48	2500	<ul style="list-style-type: none"> • resolver • absolute multiturn encoder 	<ul style="list-style-type: none"> • CanOpen • Ethercat
DUET HV 80 2,8	800	2,55	8,4	560	3000	Multi and singleturn absolute encoder	Ethercat
DUET HV 80 4	1068	3,4	12	560	3000	Multi and singleturn absolute encoder	Ethercat
DUET HV 100 5,6	1320	4,2	22	560	3000	Multi and singleturn absolute encoder	Ethercat
DUET HV 100 8	1570	5	33	560	3000	Multi and singleturn absolute encoder	Ethercat

DUET TYPE

DUET 40 0,16 E1 1 C 1 XXX

DUET

Model

Feedback

Brake

Fieldbus

Mechanical arrangement

Optional

1

2

3

4

5

6

1

Model

40 0,16
40 0,32
60 0,65
60 1,3

2

Feedback

E1 = 4096 cpr incremental encoder

3

Brake

0 = without brake
1 = with brake

4

Fieldbus

C = CanOpen

5

Mechanical Arrangement

0 - Shaft with key / without oil seal (front flange side IP 42)
1 - Shaft with key / with oil seal (front flange side IP 65)
2 - Shaft without key / without oil seal (front flange side IP 42)
3 - Shaft without key / with oil seal (front flange side IP 65)

N.B.: All motor body are IP 65

DUET FLEXI TYPE

DUET FL 60 0,65 R1 0 C 1 1

DUET FLEXI

Model

Feedback

Brake

Fieldbus

Mechanical arrangement

Optional

1

2

3

4

5

6

1

Model

60 0,65
60 1,3
80 1,5
80 2,0

2

Feedback

R1 = Resolver 2p
A1 = Absolute multiturn encoder

3

Brake

0 = without brake
1 = with brake

4

Fieldbus

C = CanOpen
E = Ethercat

5

Mechanical Arrangement

0 - Shaft with key / without oil seal (front flange side IP 42)
1 - Shaft with key / with oil seal (front flange side IP 65)
2 - Shaft without key / without oil seal (front flange side IP 42)
3 - Shaft without key / with oil seal (front flange side IP 65)

N.B.: All motor body are IP 65

DUET HV TYPE

DUET HV	80 2,8	17	A1	1	E	0	XXX
DUET HV	Model	Winding	Feedback	Brake	Fielbus	Mechanical arrangement	Optional
	1		3	4	5	6	7

1 Model
 80 2,8 = Flange 80 mm - 2,8 Nm (8 poles)
 80 4 = Flange 80 mm - 4 Nm (8 poles)
 100 5,6 = Flange 100 mm - 5,6 Nm (8 poles)
 100 8 = Flange 100 mm - 8 Nm (8 poles)

3 Feedback
 A1 = Absolute Multiturn Encoder 12+12 Bits 128 Sin/Cos revolution
 A3 = Absolute Multiturn Encoder 9+12 Bits 16 Sin/Cos revolution
 A5 = Absolute Singleturn Encoder 9 Bits 16 Sin/Cos revolution

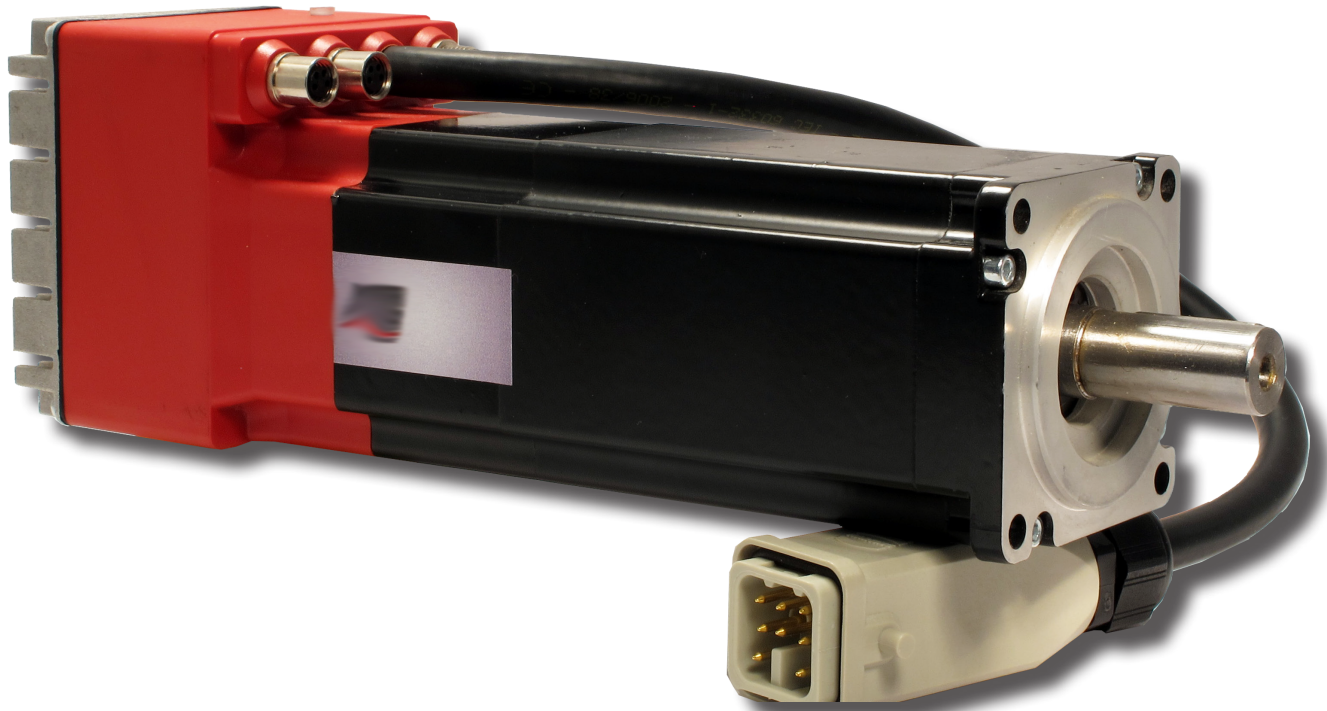
4 Brake
 0 = without brake
 1 = with brake

5 Fielbus
 E = Ethercat

6 Mechanical Arrangement
 0 - Shaft with key / without oil seal (front flange side IP 42)
 1 - Shaft with key / with oil seal (front flange side IP 65)
 2 - Shaft without key / without oil seal (front flange side IP 42)
 3 - Shaft without key / with oil seal (front flange side IP 65)

DUET

LOW VOLTAGE INTEGRATED BRUSHLESS DRIVE



DUET 40 RATINGS AND SPECIFICATIONS

INSULATION CLASS	F	AMBIENT TEMPERATURE	0 to 40 °C
ENCLOSURE	Totally enclosed. Self-cooled	AMBIENT HUMIDITY	5 to 85% (non-condensing)
PROTECTION CLASS	IP 65 standard on the body	POLES	8
MOTOR INSULATION SYSTEM UL /CSA	cURus , DV155J File nr. : E216686	CE certified	

DUET 40 0,16 00

DUET 40 0,32 01

Rated Voltage	Vdc	48	48
Auxiliary Voltage (+6% -10%)	Vdc	24	24
Minimum Voltage	Vdc	9	9
Maximum Voltage	Vdc	60	60
Stall Torque	Nm	0,21	0,34
Peak Torque	Nm	0,48	0,96
Rated Torque	Nm	0,19	0,32
Rated Output Power	W	60	100
Stall Current	Arms	2,84	3,6
Peak Current	Arms	6,5	10,2
Rated Current	Arms	2,6	3,5
Rated Speed @48Vdc	rpm	3000	3000
Maximum Speed @48Vdc	rpm	5000	5000
Maximum Speed @24Vdc	rpm	3200	2600
Torque Constant (± 5%)	Nm/Arms	0,074	0,094
Voltage Constant (± 5%)	Vrms/Krpm	4,5	5,7
Phase/phase resistance (± 10%@25°C)	Ohm	1,77	1
Phase/phase inductance (± 10%)	mH	1,6	1,42
Electrical time constant	ms	0,9	1,4
Thermal Resistance	°C/W	2,38	2,3
Mechanical time constant	ms	1,3	0,8
Rotor Inertia (*)	Kg cm ²	0,027	0,047
Duet weight	Kg	0,55	0,7
Duet weight with brake	Kg	0,7	0,85
Axial Load	N	30 (applied on the shaft's center)	
Radial Load	N	180 (applied on the shaft's center)	

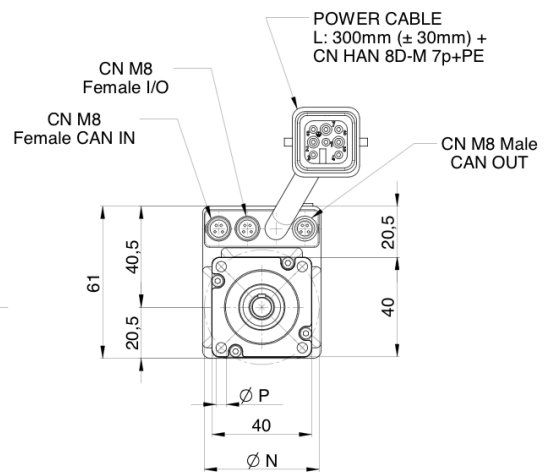
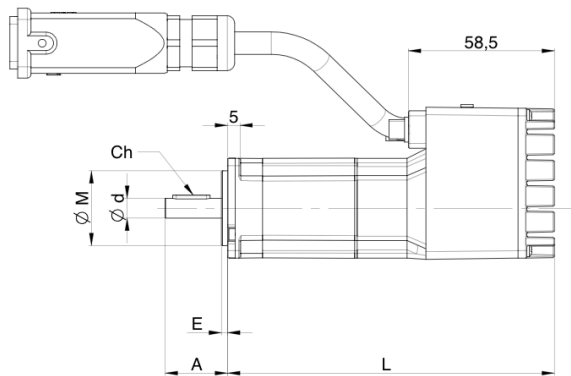
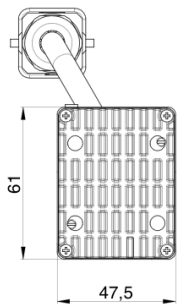
Rated output with 250 x 250 x 6 mm metallic heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 42 standard shaft bushing
(*) without brake and without feedback

DUET 40 DIMENSIONS

DUET 40 0,16 00

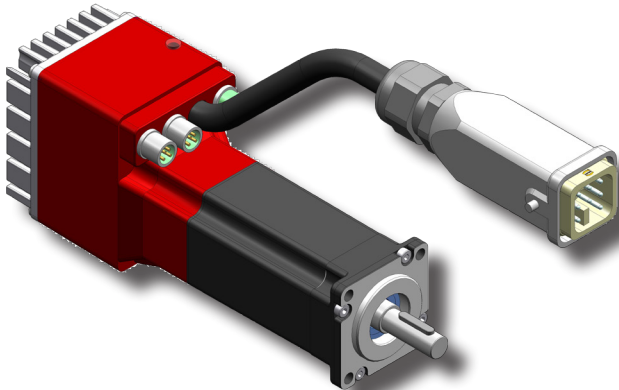
DUET 40 0,32 01

L (Without Brake)	mm	131	149
L (With Brake)	mm	162	180
A	mm	25	25
d	mm	8 (h6)	8 (h6)
ch	mm	3x3x15	3x3x15
M	mm	30 (h7)	30 (h7)
E	mm	2,5	2,5
N	mm	46	46
P	mm	4,2	4,2



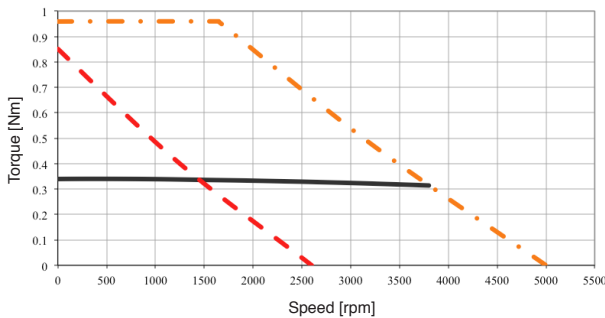
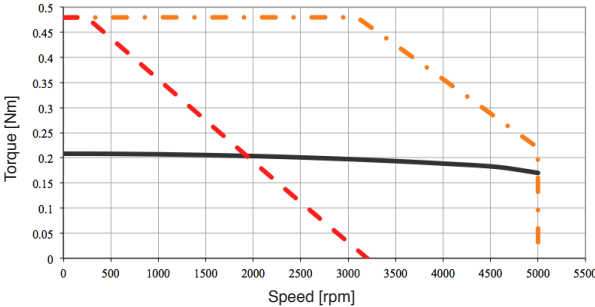
Dimensions in mm

DUET 40 TORQUE / SPEED CHARTS



DUET 40 0,16 00

DUET 40 0,32 01



DUET 60 RATINGS AND SPECIFICATIONS

INSULATION CLASS	F	AMBIENT TEMPERATURE	0 to 40 °C
ENCLOSURE	Totally enclosed. Self-cooled	AMBIENT HUMIDITY	5 to 85% (non-condensing)
PROTECTION CLASS	IP 65 standard on the body	POLES	8
MOTOR INSULATION SYSTEM UL /CSA	cURus , DV155J File nr. : E216686	CE certified	

DUET 60 0,65 01

DUET 60 1,3 02

Rated Voltage	Vdc	48	48
Auxiliary Voltage (+6% -10%)	Vdc	24	24
Minimum Voltage	Vdc	9	9
Maximum Voltage	Vdc	60	60
Stall Torque	Nm	0,57	0,68 1,31*
Peak Torque	Nm	1,95	2,4
Rated Torque	Nm	0,60	0,66 1,17*
Rated Output Power	W	190	210 370*
Stall Current	Arms	6,0	6,1 11,7*
Peak Current	Arms	20,7	21,2
Rated Current	Arms	6,5	6,1 10,4*
Rated Speed @48Vdc	rpm	3000	3000
Maximum Speed @48Vdc	rpm	5000	4500
Maximum Speed @24Vdc	rpm	2600	2200
Torque Constant (± 5%)	Nm/Arms	0,094	0,112
Voltage Constant (± 5%)	Vrms/Krpm	5,7	6,8
Phase/phase resistance (± 10%@25°C)	Ohm	0,38	0,2
Phase/phase inductance (± 10%)	mH	0,9	0,68
Electrical time constant	ms	2,4	3,4
Thermal Resistance	°C/W	1,9	1,4
Mechanical time constant	ms	0,83	0,57
Rotor Inertia ^(a)	Kg cm ²	0,13	0,24
Duet weight	Kg	1,2	1,6
Duet weight with brake	Kg	1,6	2
Axial Load	N	70 (applied on the shaft's center)	
Radial Load	N	220 (applied on the shaft's center)	

Rated output with 250 x 250 x 6 mm metallic heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 42 standard shaft bushing - Stall torque at switching frequency 12,5Khz

* Intermittent duty S2 10%/40"

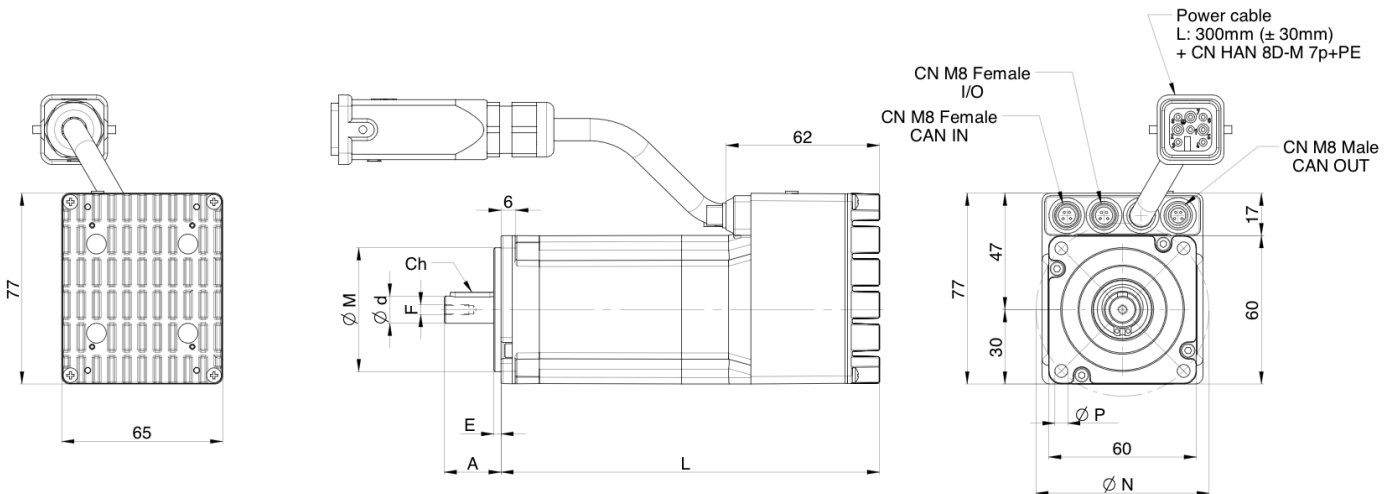
(*) without brake and without feedback

DUET 60 DIMENSIONS

DUET 60 0,65 01

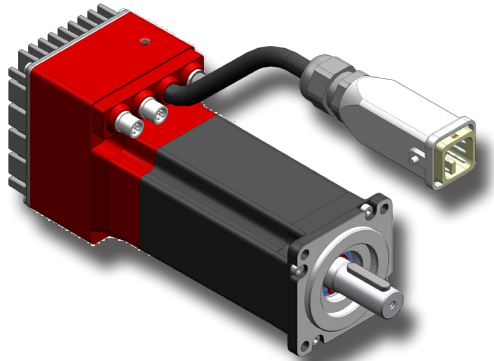
DUET 60 1,3 02

L (Without Brake)	mm	153	178
L (With Brake)	mm	190	215
A	mm	23	30
d	mm	11 (h6)	14 (h6)
ch	mm	4x4x18	5x5x25
M	mm	50 (h7)	50 (h7)
E	mm	3	3
N	mm	70	70
P	mm	5,2	5,2



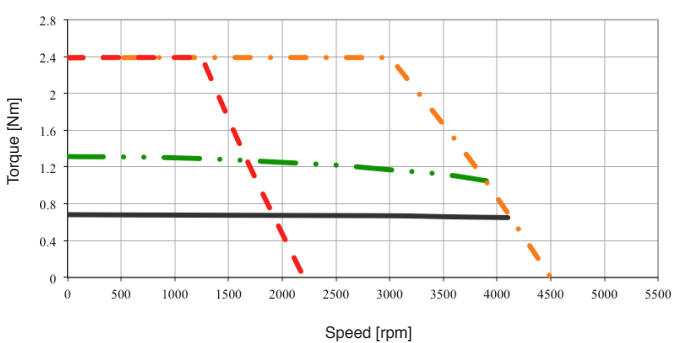
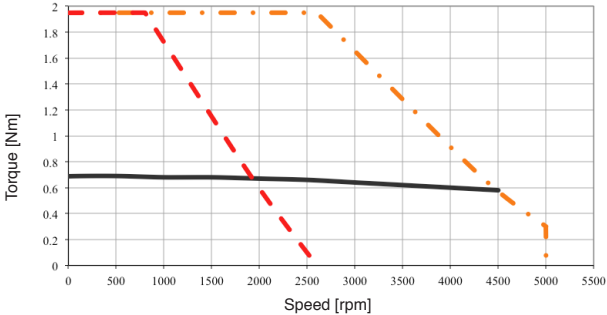
Dimensions in mm

DUET 60 TORQUE /SPEED CHARTS



DUET 60 0,65 01

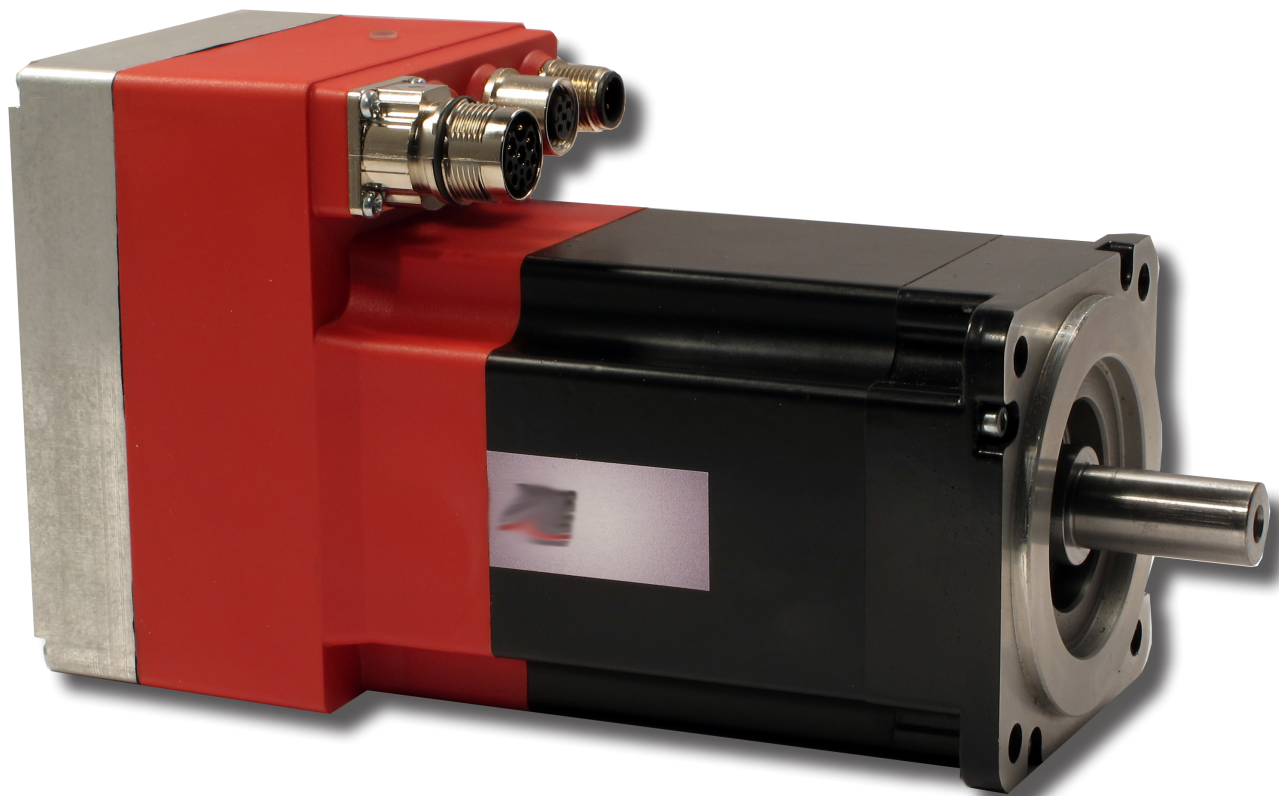
DUET 60 1,3 02



— Continuous duty S1 @ rated voltage
 - - - 24 Vdc
 . . . 48 Vdc
 . . . Intermittent duty S2 10"/40"

DUET FLEXI

LOW VOLTAGE INTEGRATED BRUSHLESS DRIVE



DUET FLEXI 60 RATINGS AND SPECIFICATIONS

INSULATION CLASS	F	AMBIENT TEMPERATURE	0 to 40 °C
ENCLOSURE	Totally enclosed. Self-cooled	AMBIENT HUMIDITY	5 to 85% (non-condensing)
PROTECTION CLASS	IP 65 standard on the body	POLES	8
MOTOR INSULATION SYSTEM UL /CSA	cURus , DV155J File nr. : E216686	CE certified	

DUET FLEXI 60 0,65 01

DUET FLEXI 60 1,3 01

Rated Voltage	Vdc	48	48
Auxiliary Voltage (+6% -10%)	Vdc	24	24
Minimum Voltage	Vdc	24	24
Maximum Voltage	Vdc	60	60
Stall Torque	Nm	0,65	1,3**
Peak Torque	Nm	1,95	3,75
Rated Torque	Nm	0,64	1,18**
Rated Output Power	W	200	310**
Rated Output Power @ 10 Arms	W	-	240
Stall Current	Arms	6,9	13,9**
Peak Current	Arms	20,7	39,8
Rated Current	Arms	7	12,9**
Rated Speed @48Vdc	rpm	3000	2500
Maximum Speed @48Vdc	rpm	5000	5000
Maximum Speed @24Vdc	rpm	2600	2600
Torque Constant (± 5%)	Nm/Arms	0,094	0,094
Voltage Constant (± 5%)	Vrms/Krpm	5,7	5,7
Phase/phase resistance (± 10%@25°C)	Ohm	0,38	0,16
Phase/phase inductance (± 10%)	mH	0,90	0,48
Electrical time constant	ms	2,4	3
Thermal Resistance	°C/W	1,9	1,4
Mechanical time constant	ms	0,83	0,65
Rotor Inertia ^(a)	Kg cm ²	0,13	0,24
Duet weight	Kg	1,4	1,8
Duet weight with brake	Kg	1,8	2,2
Axial Load	N	70 (applied on the shaft's center)	
Radial Load	N	220 (applied on the shaft's center)	

Rated output with 250 x 250 x 6 mm metallic heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 42 standard shaft bushing - Continuous duty (S1) operation with cooling system appropriately sized.
 ** @power stage temperature ≤ 50°C (rated current limited to 10 Arms @ power stage temperature > 50°C < 70°C)
 (†) without brake and without feedback

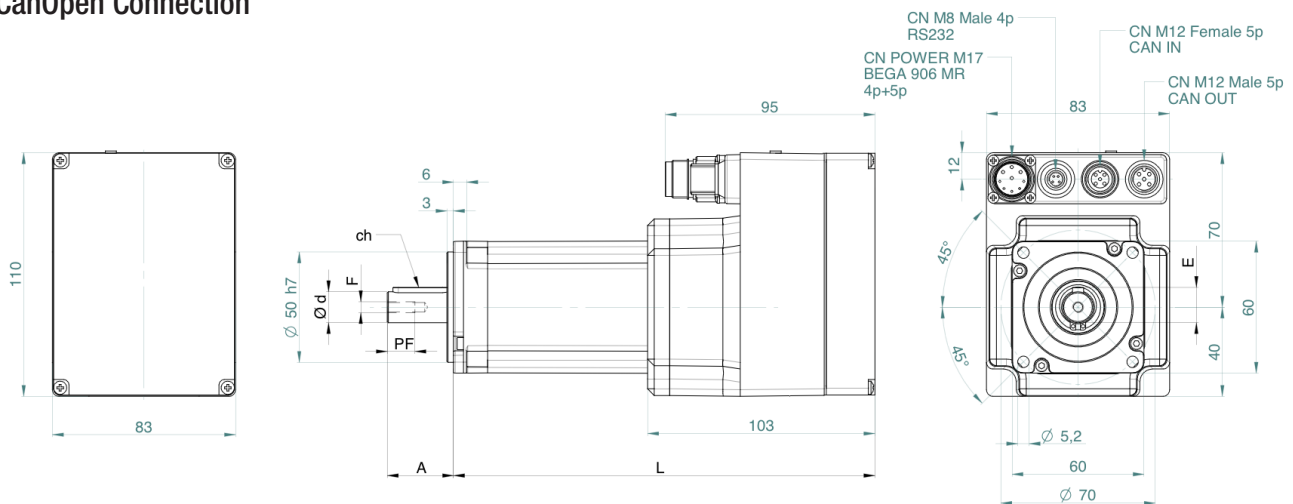
DUET FLEXI 60 DIMENSIONS

DUET FLEXI 60 0,65 01

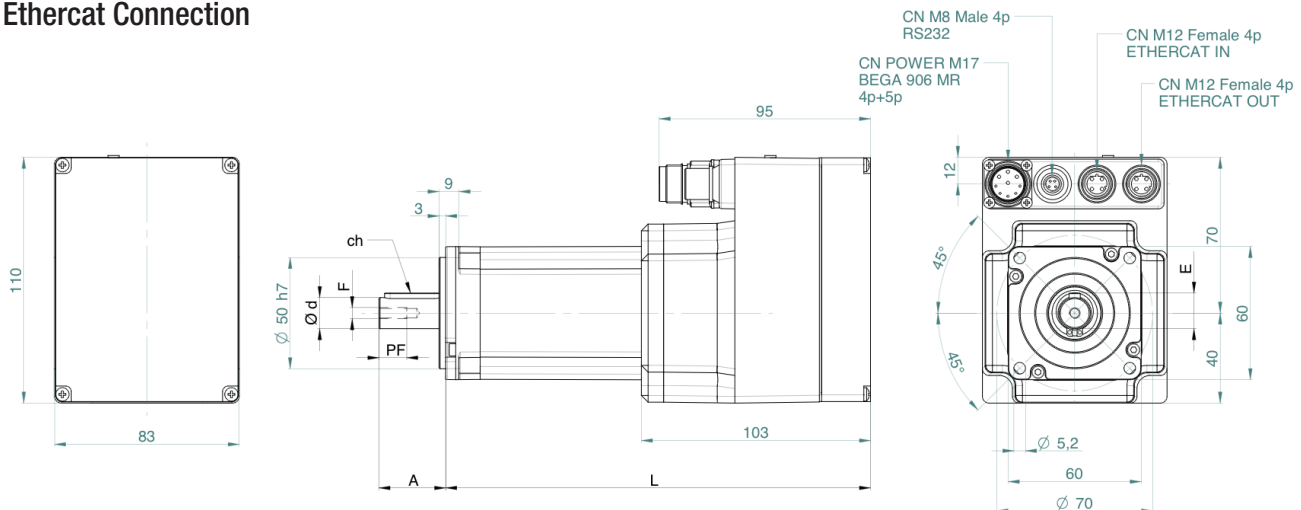
DUET FLEXI 60 1,3 01

L (Without Brake)	mm	166	191
L (With Brake)	mm	203	228
A	mm	23	30
d	mm	11 (h6)	14 (h6)
ch	mm	4x4x18	5x5x25
F	mm	M4	M5
PF	mm	10	12,5
E	mm	12,5	16

CanOpen Connection



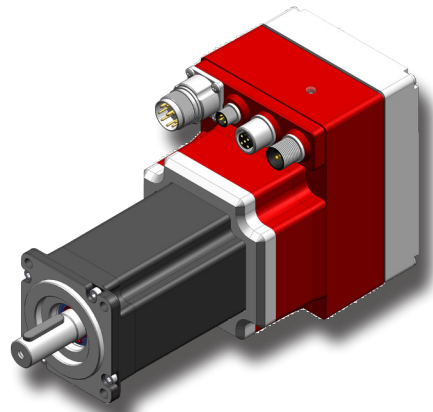
Ethercat Connection



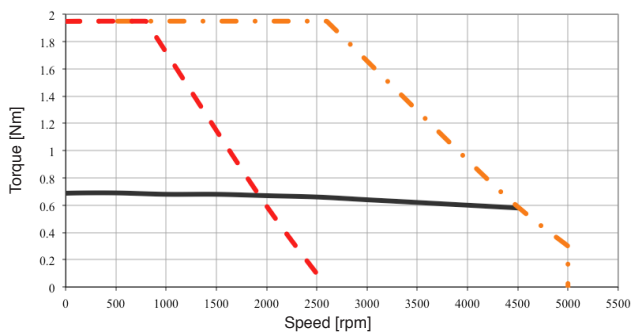
Dimensions in mm

SEE IT BEFORE IT HAPPENS

DUET FLEXI 60 TORQUE /SPEED CHARTS

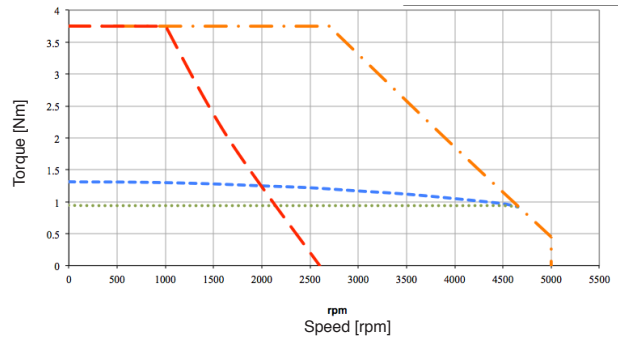


DUET FLEXI 60 0,65 01



Continuous duty (S1) operation with cooling system appropriately sized.

DUET FLEXI 60 1,3 01



Continuous duty (S1) operation with cooling system appropriately sized.

- Continuous duty @ rated voltage
- - - 24 Vdc
- · · 48 Vdc
- - - Continuous duty @ T(power stage) ≤ 50°C
- · · Continuous duty @ T(power stage) ≤ 70°C

DUET FLEXI 80 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	CE certified	
MOTOR INSULATION SYSTEM UL /CSA	cURus , DV155J File nr.:E216686		

DUET FLEXI 80 1,5 03

DUET FLEXI 80 2 03

Rated Voltage	Vdc	48	48
Auxiliary Voltage (+6% -10%)	Vdc	24	24
Minimum Voltage	Vdc	24	24
Maximum Voltage	Vdc	60	60
Stall Torque	Nm	1,5**	2**
Peak Torque	Nm	4,5	5,6
Rated Torque	Nm	1,5**	2**
Rated Output Power	W	390**	520**
Rated Output Power @ 10 Arms	W	360	360
Stall Current	Arms	10,7**	14,2**
Peak Current	Arms	32	39,8
Rated Current	Arms	11**	14,7**
Rated Speed @48Vdc	rpm	2500	2500
Maximum Speed @48Vdc	rpm	3600	3600
Maximum Speed @24Vdc	rpm	1800	1800
Torque Constant (± 5%)	Nm/Arms	0,141	0,141
Voltage Constant (± 5%)	Vrms/Krpm	8,5	8,5
Phase/phase resistance (± 10%@25°C)	Ohm	0,14	0,12
Phase/phase inductance (± 10%)	mH	0,53	0,31
Electrical time constant	ms	3,9	2,6
Thermal Resistance	°C/W	1,7	1,3
Mechanical time constant	ms	0,66	1,06
Rotor Inertia (⁹)	Kg cm²	0,64	1,16
Duet weight	Kg	2,4	3,2
Duet weight with brake	Kg	3,1	3,9
Axial Load	N	110 (applied on the shaft's center)	
Radial Load	N	350 (applied on the shaft's center)	

Rated output with 250 x 250 x 6 mm metallic heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 42 standard shaft bushing - Continuous duty (S1) operation with cooling system appropriately sized.

** @power stage temperature ≤ 50°C (rated current limited to 10 Arms @ power stage temperature > 50°C < 70°C).

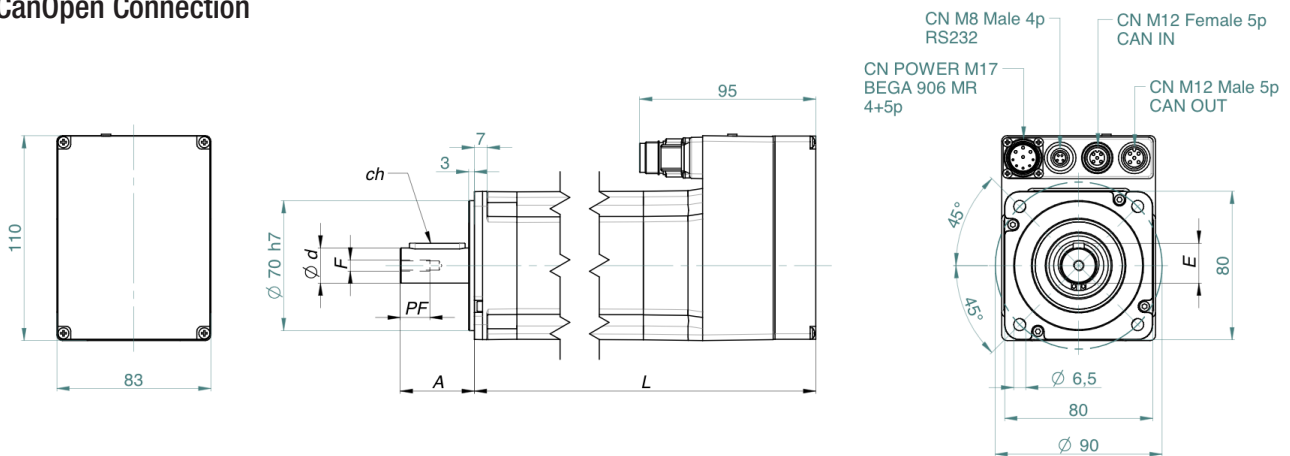
(⁹) without brake and without feedback

DUET FLEXI 80 DIMENSIONS

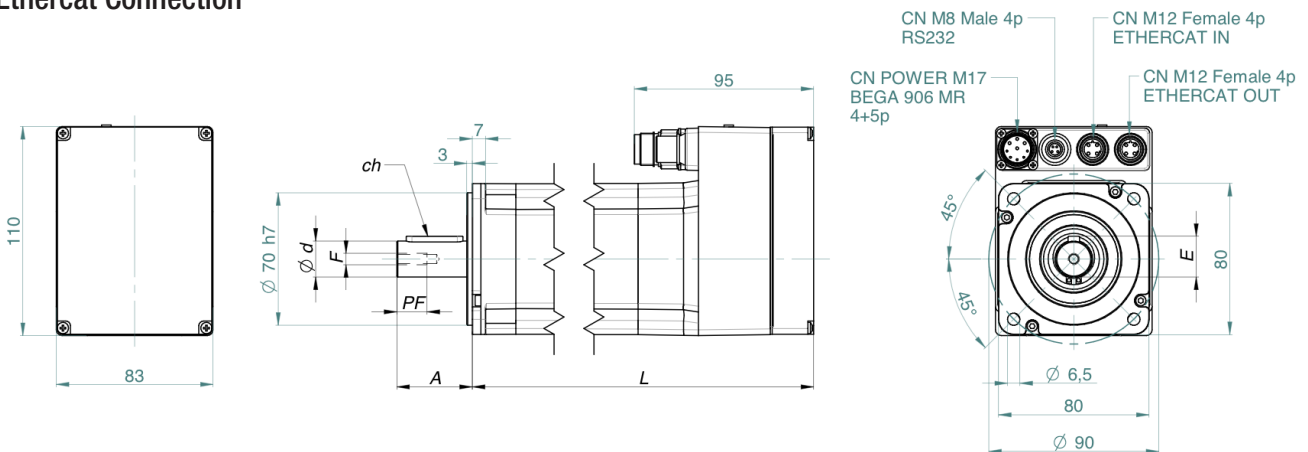
		DUET FLEXI 80 1,5 03	DUET FLEXI 80 2 03
--	--	-----------------------------	---------------------------

L (Without Brake)	mm	183	208
L (With Brake)	mm	225 [228 with A1 feedback]	250 [253 with A1 feedback]
A	mm	30	40
d	mm	14 (h6)	19 (h6)
ch	mm	5x5x25	6x6x30
F	mm	M5	M6
PF	mm	12,5	16
E	mm	16	21,5

CanOpen Connection

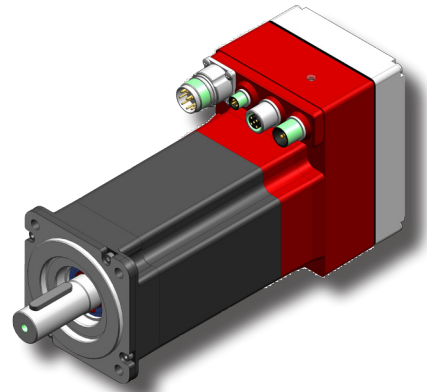


Ethercat Connection



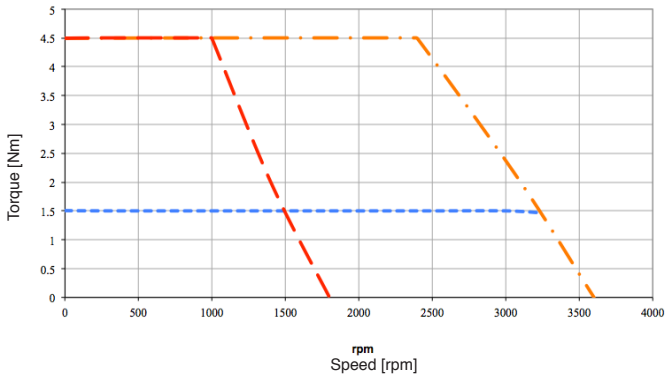
Dimensions in mm

DUET FLEXI 80 TORQUE /SPEED CHARTS

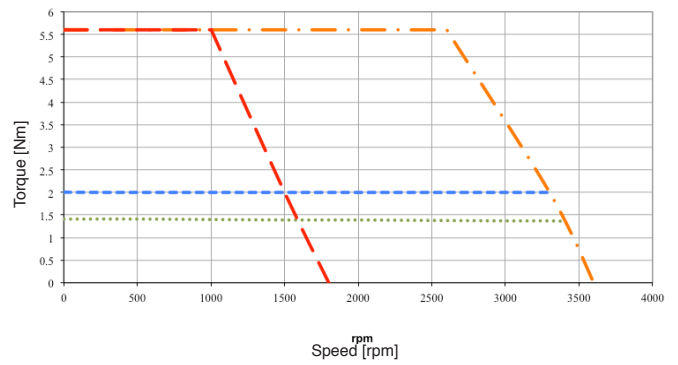


DUET FLEXI 80 1,5 03

DUET FLEXI 80 2 03



Continuous duty (S1) operation with cooling system appropriately sized.



Continuous duty (S1) operation with cooling system appropriately sized.

- Continuous duty @ rated voltage
- - - 24 Vdc
- · - · - 48 Vdc
- - - Continuous duty @ T(power stage) ≤50°C
- · · · · Continuous duty @ T(power stage) ≤70°C

DUET HV

HIGH VOLTAGE INTEGRATED BRUSHLESS DRIVE



DUET HV 80 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	CE certified	
MOTOR INSULATION SYSTEM UL /CSA	cURus , DV155J File nr.:E216686		

DUET HV 80 2,8 17

DUET HV 80 4 17

Rated Voltage	Vdc	560	560
Auxiliary Voltage (+6% -10%)	Vdc	24	24
Minimum Voltage	Vdc	275	275
Maximum Voltage	Vdc	740	740
Stall Torque	Nm	2,96	4
Peak Torque	Nm	8,4	12
Rated Torque	Nm	2,55	3,4
Rated Output Power	W	800	1068
Stall Current	Arms	1,75	2,50
Peak Current	Arms	5,8	7,50
Rated Current	Arms	1,64	2,19
Rated Speed @560Vdc	rpm	3000	3000
Maximum Speed @560Vdc	rpm	4000	4000
Torque Constant (± 5%)	Nm/Arms	1,6	1,6
Voltage Constant (± 5%)	Vrms/Krpm	97	96
Phase/phase resistance (± 10%@25°C)	Ohm	7,9	6,5
Phase/phase inductance (± 10%)	mH	35,4	28,6
Electrical time constant	ms	4,48	4,40
Thermal Resistance	°C/W	1,32	1,0
Mechanical time constant	ms	0,53	0,60
Rotor Inertia (*)	Kg cm ²	1,16	1,58
Duet weight	Kg	4,1	5,1
Duet weight with brake	Kg	4,8	6,5
Axial Load	N	110 (applied on the shaft's center)	
Radial Load	N	350 (applied on the shaft's center)	

Rated output with 250 x 250 x 6 mm metallic heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 42 standard shaft bushing (*) without brake and without feedback

DUET HV 100 RATINGS AND SPECIFICATIONS

TIME RATING	Continuous	AMBIENT TEMPERATURE	0 to 40 °C
INSULATION CLASS	F	AMBIENT HUMIDITY	5 to 85% (non-condensing)
ENCLOSURE	Totally enclosed. Self-cooled	POLES	8
PROTECTION CLASS	IP 65 standard on the body	CE certified	
MOTOR INSULATION SYSTEM UL /CSA	cURus , DV155J File nr.:E216686		

DUET HV 100 5,6 17

DUET HV 100 8 17

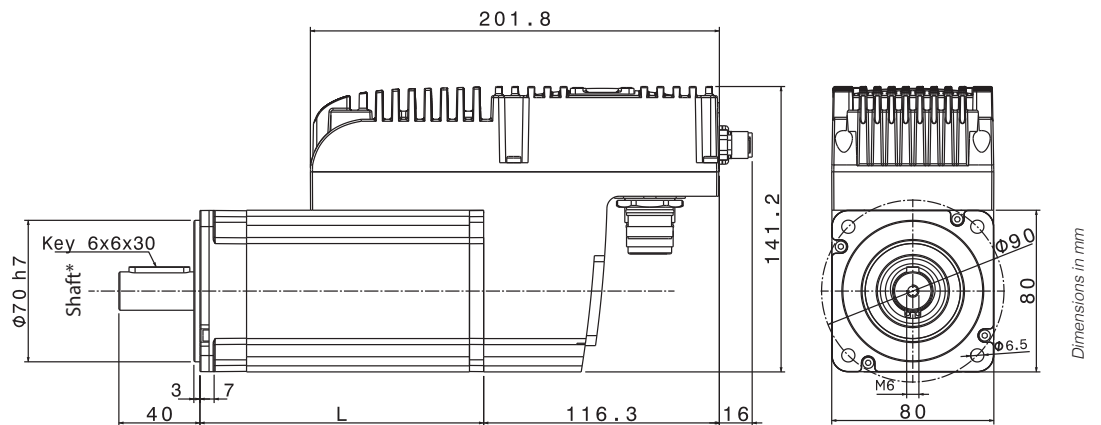
Rated Voltage	Vdc	560	560
Auxiliary Voltage (+6% -10%)	Vdc	24	24
Minimum Voltage	Vdc	275	275
Maximum Voltage	Vdc	740	740
Stall Torque	Nm	5,6	8
Peak Torque	Nm	22	33
Rated Torque	Nm	4,2	5
Rated Output Power	W	1320	1570
Stall Current	Arms	3,50	5
Peak Current	Arms	13,8	20,6
Rated Current	Arms	2,71	3,22
Rated Speed @560Vdc	rpm	3000	3000
Maximum Speed @560Vdc	rpm	4000	4000
Torque Constant (± 5%)	Nm/Arms	1,6	1,6
Voltage Constant (± 5%)	Vrms/Krpm	97	97
Phase/phase resistance (± 10%@25°C)	Ohm	3,64	2,2
Phase/phase inductance (± 10%)	mH	19,7	13,13
Electrical time constant	ms	5,4	6,0
Thermal Resistance	°C/W	0,95	0,78
Mechanical time constant	ms	0,62	0,53
Rotor Inertia (*)	Kg cm ²	2,91	4,1
Duet weight	Kg	6,7	8,4
Duet weight with brake	Kg	7,3	9,0
Axial Load	N	225 (applied on the shaft's center)	
Radial Load	N	626 (applied on the shaft's center)	

Rated output with 300 x 300 x 6 mm metallic heat sink flange coupling - Derating must be considered if the oil seal is applied - IP 42 standard shaft bushing (*) without brake and without feedback

DUET HV DIMENSIONS

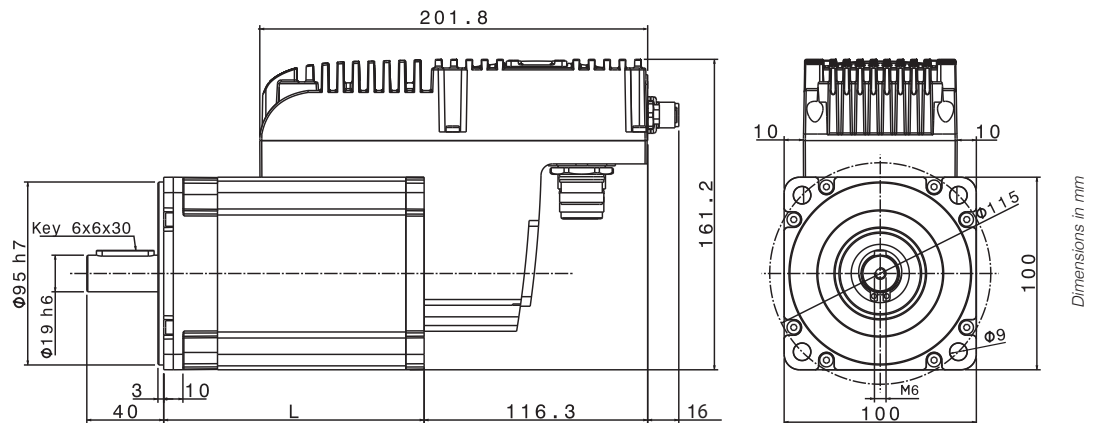
DUET HV 80

Type	DUET HV 80 2,8	DUET HV 80 4
Flange	80	80
Lenght L without brake (mm)	115	140
Lenght L with brake (mm)	157	182



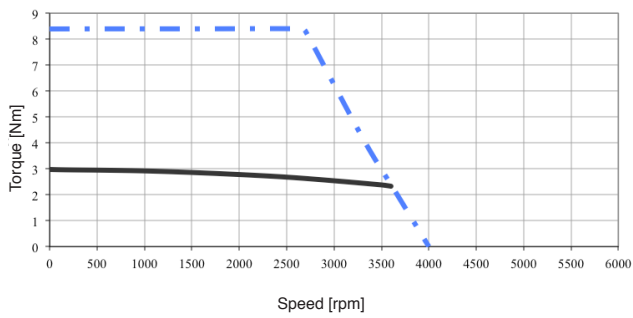
DUET HV 100

Type	DUET HV 100 5,6	DUET HV 100 8
Flange	100	100
Lenght L without brake (mm)	135	165,5
Lenght L with brake (mm)	186	216

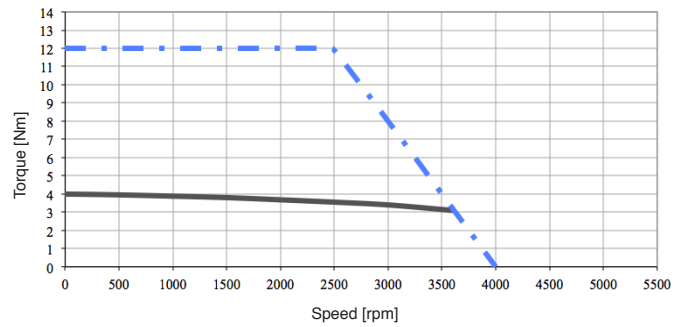


DUET HV TORQUE /SPEED CHARTS

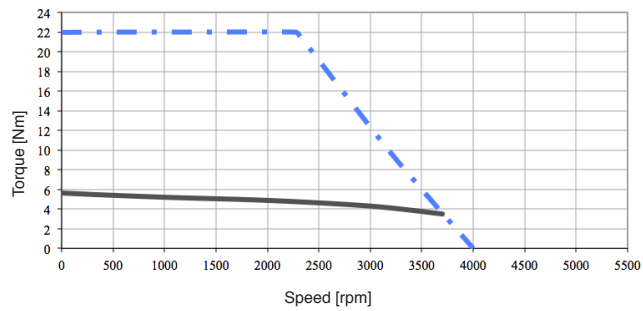
DUET HV 80 2,8 17



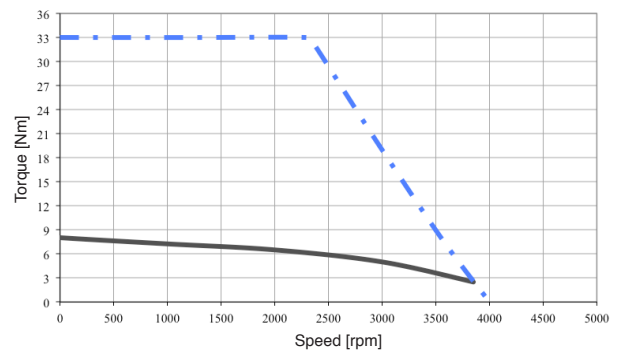
DUET HV 80 4 17





DUET HV 100 5,6 17



DUET HV 100 8 17

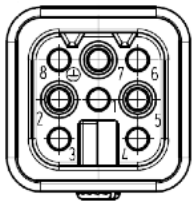


 Continuous duty @ rated voltage
 Cmax 560Vdc

DUET WIRING CONNECTIONS

POWER CONNECTOR

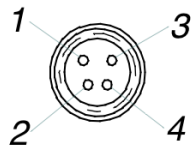
PIN	FUNCTION
1	24 Vdc
2	0 Vdc
3	48 VP +
5	DOUT 1
6	DIN 1
7	PR
8	PE + Shield



HAN 8D-M Male

CAN IN

PIN	FUNCTION
1	Comret
2	-
3	Can-High
4	Can-Low

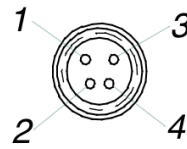


M8 Female

SIGNAL CONNECTOR

I/O

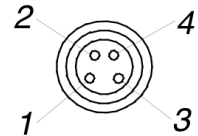
PIN	FUNCTION
1	0 Vdc
2	24 Vdc
3	AIN 0 0-10 Vdc
4	DIN 0



M8 Female

CAN OUT

PIN	FUNCTION
1	Comret
2	-
3	Can-High
4	Can-Low



M8 Male

DUET FLEXI WIRING CONNECTIONS

POWER CONNECTOR

SIGNAL CONNECTOR

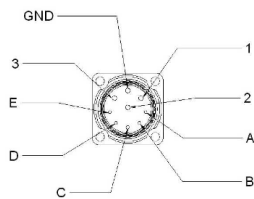
RS 232

CAN IN

CAN OUT

PIN	FUNCTION
1	+24 Vdc
2	0 Vdc
3	+48 Vdc
GND	Protective ground
A	Motor brake + (#)
B	Motor brake - (#)
C	- (#)
D	Drive brake out + (#)
E	Drive brake out - (#)

(#) Optional



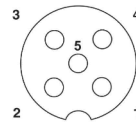
M17 BEGA 906 MR Male

PIN	FUNCTION
1	Rx
2	Tx
3	Gnd
4	DIN7
Case	Shield



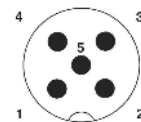
M8 Male

PIN	FUNCTION
1	Shield
2	-
3	Can-Gnd
4	Can-high
5	Can-low



M12 Female

PIN	FUNCTION
1	Shield
2	-
3	Can-gnd
4	Can-high
5	Can-low



M12 Male

POWER CONNECTOR

SIGNAL CONNECTOR

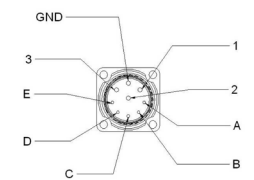
RS 232

ETHERCAT IN

ETHERCAT OUT

PIN	FUNCTION
1	+24 Vdc
2	0 Vdc
3	+48 Vdc
GND	Protective ground
A	Motor brake + (#)
B	Motor brake - (#)
C	- (#)
D	Drive brake out + (#)
E	Drive brake out - (#)

(#) Optional



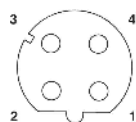
M17 BEGA 906 MR Male

PIN	FUNCTION
1	Rx
2	Tx
3	Gnd
4	DIN7
Case	Shield



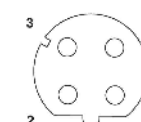
M8 Male

PIN	FUNCTION
1	TD +
2	RD +
3	TD -
4	RD -
Case	Shield



M12 Female

PIN	FUNCTION
1	TD +
2	RD +
3	TD -
4	RD -
Case	Shield



M12 Female

DUET HV WIRING CONNECTIONS

POWER CONNECTOR

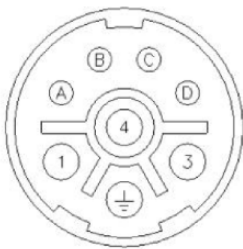
SIGNAL CONNECTOR

RS 232

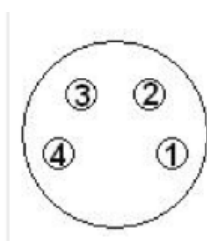
I/O

ETHERCAT IN/OUT

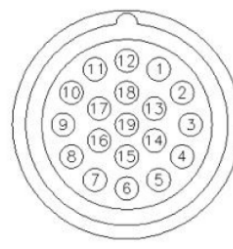
PIN	FUNCTION	PIN	FUNCTION	PIN	FUNCTION	PIN	FUNCTION
1	HV-	1	TX232	1	IN/OUT 1-	1	TX Data +
3	NC	2	RX232	2	IN/OUT 2-	2	RX Data +
4	HV+	3	NC	3	AN_IN -	3	TX Data -
T	PE	4	GND_COM	4	AN_IN +	4	RX Data -
A	/STO	Case	PE	5	IN/OUT 2+	Case	PE
B	GND_24			6	GND_5V		
C	IN9			7	+5V		
D	+24 V			8	IN 8		
Case	PE			9	OUT 5		
				10	IN/OUT 3		
				11	IN 7		
				12	IN/OUT 0-		
				13	IN/OUT 0+		
				14	IN/OUT 1+		
				15	IN 4		
				16	OUT 4		
				17	OUT 6		
				18	IN 6		
				19	IN 5		
				Case	PE		



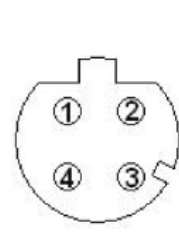
M23 Male



M8 Female



M23 Male



M12 D-Code Female

CABLES SPECIFICATIONS

POWER CABLE for DUET

PIN	COLOUR	FUNCTION	For cable order	
1	Red	VL +		Lenght (mm)
2	Black	VL -		
3	Brown	VP +		Order code
4	Brown	Dout 0		003108020082
5	White	Din 1		
6	Blue	Din 2		
7	Blue	PR		
8	Sh + G/V	Sh + PE		

POWER CABLE for DUET FLEXI

PIN	COLOUR	FUNCTION	For cable order	
1	Red	24V		Lenght (mm)
2	Blue	0V		
3	Brown	48V		Order code
4	Yellow/Green	GND		003108012049
A	White	Motor brake +		
B	Black	Motor brake -		
C	-	-		
D	Brown	Drive brake +		
E	Blue	Drive brake -		

RS 232 CABLE for DUET FLEXI

M8 PIN	COLOUR	SUB-D 9 PIN	FUNCTION	For cable order		
1	Brown	3	Rx		Lenght (mm)	
2	White	2	Tx			1000
3	Blue	5	Gnd			2000
4	Black	-	DIN7		3000	
-	Shield	Metallic case	Shield		003108009974	
					003108009973	
					003108009975	

All cables are for static laying, power cables stand up to 10A stall current.
For dynamic laying cables, please, contact our front office.

CABLES SPECIFICATIONS

I/O CABLE for DUET HV

PIN	COLOUR	FUNCTION	For cable order	
			Lenght (mm)	Order code
1	Brown	IN/OUT 1-		
2	Orange	IN/OUT 2-		
3	Grey	AN_IN-	1000	005108000505
4	White	AN_IN+	3000	005108000511
5	White	IN/OUT 2+	5000	005108000512
6	Blue	GND_5V	10000	005108000513
7	Red	+5V		
8	Red	IN8		
9	Red	OUT5		
10	Red	IN/OUT 3		
11	Red	IN 7		
12	Green	IN/OUT 0-		
13	White	IN/OUT 0+		
14	White	IN/OUT 1+		
15	Orange	IN 4		
16	Green	OUT 4		
17	Brown	OUT 6		
18	Grey	IN 6		
19	White	IN 5		
Case	Black	PE		



POWER CABLE for DUET HV

PIN	WIRE IDENTIFICATION	FUNCTION	For cable order	
			Lenght (mm)	Order code
1	1	HV -		
3	3	NC		
4	2	HV +	1000	005108000504
T	Yellow/Green	PE	3000	005108000507
A	5	/STO	5000	005108000508
B	6	GND	10000	005108000509
C	7	IN9		
D	8	+24 V		
Case	Black	PE		



CABLES SPECIFICATIONS

RS 232 CABLE for DUET HV

PIN	COLOUR	FUNCTION	For cable order	
1	Red	TXT232	Lenght (mm)	Order code
2	Blue	RX232		
3	Brown	NC	1000	005108000506
4	Yellow/Green	GND_COM		
Case	White	PE		



ETHERCAT RJ45/M12 CABLE for DUET HV

RJ45 PIN	M12 PIN	FUNCTION	For cable order	
1	1	TX Data+	Lenght (mm)	Order code
3	2	RX Data +		
2	3	TX Data -	10000	005108000500
6	4	RX Data -		
Case	Case	PE		



ETHERCAT M12/M12 CABLE for DUET HV

PIN	FUNCTION	For cable order	
1	TX Data+	Lenght (mm)	Order code
2	RX Data +		
3	TX Data -	3000	005108000503
4	RX Data -	5000	005108000502
Case	PE	10000	005108000501



FEEDBACK FEATURES FOR DUET

E1 TTL ENCODER	Motor size		DUET 40-60
	Nominal Voltage	V	$5 \pm 10\%$
	Nominal current	mA	30
	Electronic type		LINE DRIVER AM 26 LS31
	Zero impulse		ONE AT A LAP
	N° of pulses revolution	ppr	1024
	Resolution	cpr	4096
	N° of commutation signal		3 (U, V, W)
	System accuracy	degree	$\pm 0,5$

FEEDBACK FEATURES FOR DUET FLEXI

R1 RESOLVER 2 poles	Motor size		DUET FLEXI 60-80
	Nominal Voltage	Vrms	$7 \pm 5\%$
	Nominal current	mA	50
	Phase shift		$+3^\circ$
	Minimum sin amplitude	mVrms	20
	Frequency	kHz	10
	Poles number		2
	Trasformer ratio		$0.5 \pm 5\%$
	Input impedance	ohm	$130 + j280$
	Output impedance	ohm	$425 + j755$
	System accuracy		$\pm 10'$
	Rotor inertia	Kg cm ²	0.03

A1 ABSOLUTE MULTITURN ENCODER	Motor size		DUET FLEXI 60 - 80
	Nominal Voltage	V	$7 \div 12$
	Maximum nominal current	mA	60
	Interface type		Hiperface
	N° absolute singleturn steps		4096 (12 Bits)
	N° absolute multiturn steps		4096 (12 Bits)
	N° of sin/cos periods per revolution		128
	Error limits for evaluating the sin/cos period	arc sec	± 80
	Rotor inertia	Kg cm ²	0.0045

FEEDBACK FEATURES FOR DUET HV

A1 ABSOLUTE MULTITURN ENCODER

Motor size		DUET HV 80 - 100
Nominal Voltage	V	7 ÷ 12
Maximum nominal current	mA	60
Interface type		Hiperface
N° absolute singleturn steps		4096 (12 Bits)
N° absolute multiturn steps		4096 (12 Bits)
N° of sin/cos periods per revolution		128
Error limits for evaluating the sin/cos period	arc sec	± 80
Rotor inertia	Kg cm ²	0.0045

A3 ABSOLUTE MULTITURN ENCODER

Motor size		DUET HV 80 - 100
Nominal Voltage	V	7 ÷ 12
Maximum nominal current	mA	50
Interface type		Hiperface
N° absolute singleturn steps		512 (9 Bits)
N° absolute multiturn steps		4096 (12 Bits)
N° of sin/cos periods per revolution		16
Error limits for evaluating the sin/cos period	arc sec	± 288
Rotor inertia	Kg cm ²	0.001

A5 ABSOLUTE SINGLETURN ENCODER

Motor size		DUET HV 80 - 100
Nominal Voltage	V	7 ÷ 12
Maximum nominal current	mA	50
Interface type		Hiperface
N° absolute singleturn steps		512 (9 Bits)
N° of sin/cos periods per revolution		16
Error limits for evaluating the sin/cos period	arc sec	± 288
Rotor inertia	Kg cm ²	0.001

BRAKE FEATURES

		DUET 40 0,16	DUET 40 0,32	DUET 60 0,65	DUET 60 1,3
Static Torque @20°C	Nm	0,4	0,4	2	2
Moment of Inertia	Kg cm ²	0,008	0,008	0,05	0,05
Rated Current	A	0,34	0,34	0,46	0,46
Input Power	W	8	8	11	11
Engaging Time	ms	6	6	6	6
Release Time	ms	10	10	25	25
Operating Voltage	24 Vdc +6% - 10% Stabilized				

		DUET FLEXI 60 0,65	DUET FLEXI 60 1,3	DUET FLEXI 80 1,5	DUET FLEXI 80 2
Static Torque @20°C	Nm	2	2	4,5	4,5
Moment of Inertia	Kg cm ²	0,05	0,05	0,22	0,22
Rated Current	A	0,46	0,46	0,5	0,5
Input Power	W	11	11	12	12
Engaging Time	ms	6	6	7	7
Release Time	ms	25	25	35	35
Operating Voltage	24 Vdc +6% - 10% Stabilized				

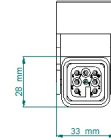
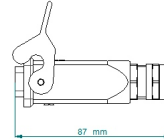
		DUET HV 80 2,8	DUET HV 80 4	DUET HV 100 5,6	DUET HV 100 8
Static Torque @20°C	Nm	4,5	4,5	9	9
Moment of Inertia	Kg cm ²	0,22	0,22	0,80	0,80
Rated Current	A	0,5	0,5	0,75	0,75
Input Power	W	12	12	18	18
Engaging Time	ms	7	7	7	7
Release Time	ms	35	35	40	40
Operating Voltage	24 Vdc +6% - 10% Stabilized				

CONNECTOR SPECIFICATIONS

FLYING CONNECTORS for DUET

Power connector
HAN Female M 250V/10A 3x1,5mm²+5x.0,14mm²

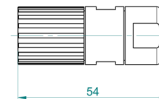
order code 007117000804



FLYING CONNECTORS for DUET FLEXI

Power connector
BSTA 908FR1186201A000 4+5p/FM

order code 005117001105



TERMINAL CONNECTORS for DUET

M8 male CAN IN terminal connector 120Ω

order code 005117000970

M8 female CAN OUT terminal connector 120Ω

order code 005117000972

TERMINAL CONNECTORS for DUET FLEXI

M12 male CAN IN terminal connector 120Ω

order code 005803000256

M12 female CAN OUT terminal connector 120Ω

order code 005803000701

CONNECTORS AND ACCESSORIES

FLYING CONNECTORS for DUET HV

M23 Female 180° power connector	order code 005117001854
M23 Female 90° power connector	order code 005117001855
M23 Female 180° I/O connector	order code 005117001852
M23 Female 90° I/O connector	order code 005117001853
M12 Male 180° Ethercat connector	order code 005117001850
M12 Male 90° Ethercat connector	order code 005117001851

CAPS for CONNECTORS for DUET HV

Cap for M23	order code 005803000272
Cap for M23 IP65	order code 005803000274
Cap for M12 Ethercat	order code 005803000270

POWER SUPPLIES for DUET HV

DPS 10 (10 Amp)	order code 005016001066
DPS 20 (20 Amp)	order code 005016001062
DPS 40 (40 Amp)	order code 005016001064

