

Шарниры:

0

Двигатель:

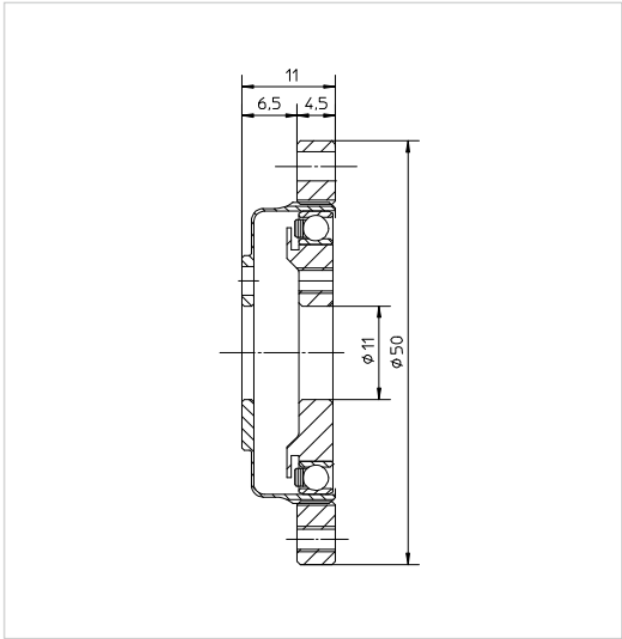
Электродвигатель	JCM38×06S	JCM38×12S
Номинальная мощность, Вт	56	58
Номинальный момент, Нм	0,07	0,14
Пиковый момент, Нм	0,21	0,42
Номинальная скорость, об/мин	8000	4000
Номинальный ток фазы, $A_{ампл}$	3,2	3,2
Постоянная момента, $Hм/A_{ампл}$	0,022	0,043
Постоянная мотора, $Hм/\sqrt{Вт}$	0,03	0,05
Напряжение питания, $V_{ампл}$	24	24
Сопротивление (фаза-фаза), Ом	0,6	0,86
Индуктивность (фаза-фаза), мГн	0,24	0,5
Максимальный КПД, %	90	88
Число пар полюсов	7	7
Момент инерции ротора, $кг·см^2 *$	0,01	0,02
Масса (статор + ротор), г *	64 (54+10)	94 (74+20)
Внешний диаметр статора D, мм	38	38
Внутренний диаметр ротора d, мм	18	18
Диаметр лобовых частей G, мм	36,2	36,2
Длина ротора l, мм *	8	16
Длина штырьковых лепестков h, мм	5	5
Длина статора L (max), мм	16,5	22,5

\* – для исполнения без датчиков Холла

Редуктор:

Illustration 11.1

CSD-14-2A [mm]



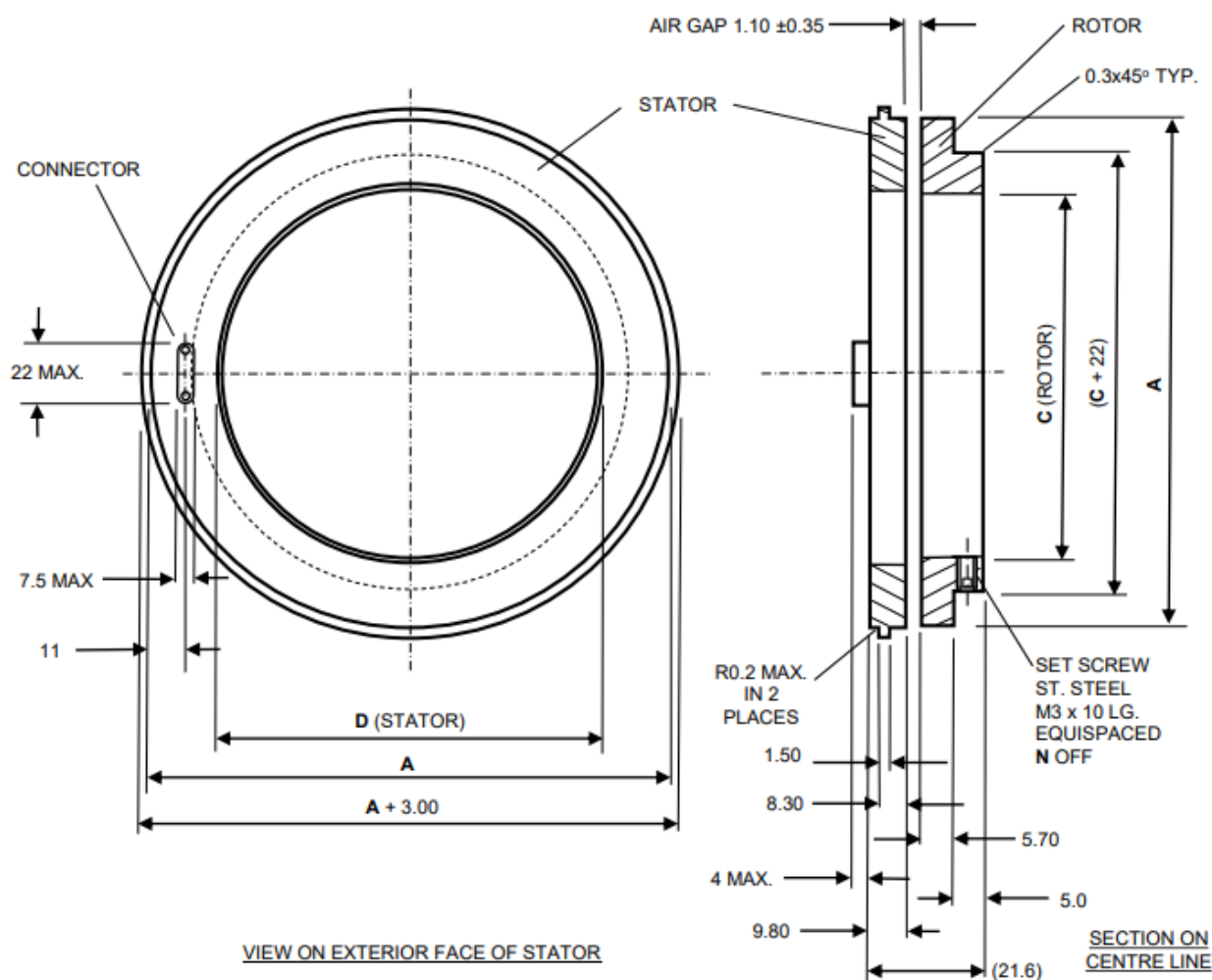
	Unit	CSD-14-2A	
Ratio	$i$ [ ]	50	100
Repeatable peak torque	$T_R$ [Nm]	12	19
Average torque	$T_A$ [Nm]	4.8	7.7
Rated torque	$T_N$ [Nm]	3.7	5.4
Momentary peak torque	$T_M$ [Nm]	24	31
Maximum input speed (oil lubrication)	$n_{in(max)}$ [rpm]	14000	
Maximum input speed (grease lubrication)	$n_{in(max)}$ [rpm]	8500	
Average input speed (oil lubrication)	$n_{av(max)}$ [rpm]	6500	
Average input speed (grease lubrication)	$n_{av(max)}$ [rpm]	3500	
Moment of inertia	$J_{in}$ [ $\times 10^{-4}$ kgm <sup>2</sup> ]	0.021	
Weight	$m$ [kg]	0.06	

Датчик угла:

INC-4-75	
Dim. A : Stator / Rotor Body O.D.	75.00
Dim. C : Rotor I.D.	35.00
Dim. D : Stator I.D.	35.80
N Number of Set Screws	3
Max. radial misalignment	
Rotor & Stator fixings	

#### NOTES

1. 3D CAD MODEL FILES AVAILABLE ON [WWW.CELERAMOTION.COM](http://WWW.CELERAMOTION.COM)
2. UNIT SHOWN WITH AXIAL CONNECTOR AC1
3. SEE SECTION 9.3. FOR CORRESPONDING SERVO CLAMPS
4. ALL DIMS IN mm – DO NOT SCALE
5. 3<sup>RD</sup> ANGLE PROJECTION
6. TOLERANCES:- 0 DECIMAL PLACES =  $\pm 0.5$   
1 DECIMAL PLACES =  $\pm 0.2$   
2 DECIMAL PLACES =  $\pm 0.1$



## Двигатель:

Электродвигатель	JCM50×14S	JCM69×10S	JCM69×18S	JCM69×35D	JCM85×26D	CM100x30D
Номинальная мощность, Вт	100	180	214	391	405	690
Номинальный момент, Нм	0,32	0,57	1,15	2,2	2,58	4,4
Пиковый момент, Нм	0,96	1,71	3,45	6,6	7,75	13,2
Номинальная скорость, об/мин	3000	3000	1700	1700	1500	1500
Номинальный ток фазы, А <sub>англ</sub>	2,8	5,1	5,7	11,0	12,2	20,4
Постоянная момента, Нм/А <sub>англ</sub>	0,11	0,11	0,2	0,2	0,212	0,215
Постоянная мотора, Нм/√Вт	0,1	0,15	0,22	0,35	0,44	0,62
Напряжение питания, В <sub>англ</sub>	48	48	48	48	48	48
Сопротивление (фаза-фаза), Ом	1,75	0,8	1,1	0,42	0,32	0,16
Индуктивность (фаза-фаза), мГн	0,8	0,65	1,2	0,61	0,55	0,35
Максимальный КПД, %	89	90	89	89	91	92
Число пар полюсов	10	10	10	10	10	10
Момент инерции ротора, кг·см <sup>2</sup> *	0,082	0,2	0,35	0,62	1,26	2,7
Масса (статор + ротор), г *	125 (95+30)	180 (140+40)	285 (220+65)	507 (390+117)	650 (490+160)	1105 (850+255)
Внешний диаметр статора D, мм	50	69	69	69	85	100
Внутренний диаметр ротора d, мм	30	42	42	42	52	59
Диаметр лобовых частей G, мм	48	66	66	66	81,5	95,5
Длина ротора l, мм *	16	12	20	37	28	32
Длина штырьковых лепестков h, мм	5	5	5	5	5	5
Длина статора L (max), мм	24,7	25	33	50	41,5	48,5

## Редуктор:

Illustration 11.4

CSG-25-2UH [mm]

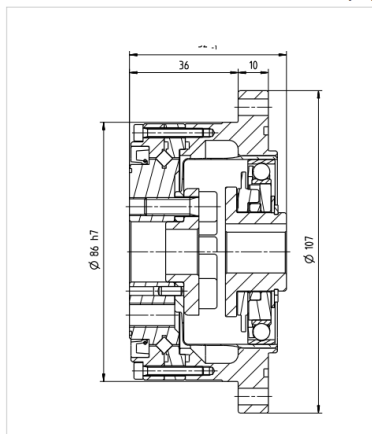


Table 10.2

	Unit	CSG-20-2UH					CSG-25-2UH				
Ratio	$i$ [ ]	50	80	100	120	160	50	80	100	120	160
Repeatable peak torque	$T_R$ [Nm]	73	96	107	113	120	127	178	204	217	229
Average torque	$T_A$ [Nm]	44	61	64	64	64	72	113	140	140	140
Rated torque	$T_N$ [Nm]	33	44	52	52	52	51	82	87	87	87
Momentary peak torque	$T_M$ [Nm]	127	165	191	191	191	242	332	369	395	408
Maximum input speed (oil lubrication)	$n_{in(max)}$ [rpm]	10000					7500				
Maximum input speed (grease lubrication)	$n_{in(max)}$ [rpm]	6500					5600				
Average input speed (oil lubrication)	$n_{av(max)}$ [rpm]	6500					5600				
Average input speed (grease lubrication)	$n_{av(max)}$ [rpm]	3500					3500				
Moment of inertia	$J_{in}$ [ $\times 10^{-4}$ kgm <sup>2</sup> ]	0.193					0.413				
Weight	m [kg]	0.98					1.5				

Датчик угла:

### Measurement & Elec. Data for Digital Comms Interfaces - Product Options SSI1-9, SPI, ASI1, ASI2 & BiSS-C

INC-X-58			
Measurement	Absolute over 360°. Note this is true absolute - no motion required at start up		
Resolution (121001 Product Option)	12bits	4,096counts per rev	316.4arc-secs 1536micro-rads
Resolution (141001 Product Option)	14bits	16,384counts per rev	79.1arc-secs 384micro-rads
Resolution (161001 Product Option)	16bits	65,536counts per rev	19.77arc-secs 96micro-rads
Resolution (171001 Product Option)	17bits	131,072counts per rev	9.89arc-secs 48micro-rads
Resolution (181001 Product Option)	18bits	262,144counts per rev	4.94arc-secs 24micro-rads
Resolution (191001 Product Option)	19bits	524,288counts per rev	2.47arc-secs 12micro-rads
Resolution (201001 Product Option)	20bits	1,048,576counts per rev	1.24arc-secs 6micro-rads
Repeatability	+/-1		
Static Accuracy over 360°	≤75arc-seconds or 0.36milliradians		
Internal Position Update Period	<0.1		
Thermal Drift Coefficient	≤0.50		
Max. Speed for Angle Measurement	10,000		
Data Outputs	RS422 Compatible, supports SSI (Serial Synchronous Interface), ASI (asynchronous serial interface), SPI or BiSS-C		
Power Supply	5VDC(4.5-32VDC) or 12VDC (4.5-32VDC) or 24VDC (4.5-32VDC)		
Current Consumption	<100 (typically <75 and does not change significantly with voltage supply)		
Reverse Polarity	PSU Reverse polarity protected to max. supply voltage		
Connector (ACx & RCx Product Options)	Harwin Data Mate Vertical Plug 10 Way with 2 Jack Screws Type M80-500-10-42 or M80-510-10-42 or M80-540-10-42		
Mating Connector (ACx & RFCx)	Harwin Data Mate Vertical Socket Type M80-461-10-42 (alternative M80-461-10-05)		
Zero Setting	Via Connector Pin or Integral Cable - see details for set and reset in relevant Section for Connector, Cable or Comms Interface		
Power Up Time To 1st Measurement	<500		

### Measurement & Electrical Data for A/B/Z Pulses Comms Interfaces - Product Option ABZ1-6

INC-X-58			
Measurement	Incremental with reference mark. Position of reference mark programmable by user.		
Resolution	As above (limited to 17-bits) - resolution defined as one edge of A/B pulse train		
Repeatability	+/-1		
Static Accuracy over 360°	≤75arc-seconds or 0.36milliradians		
Internal Position Update Period	<0.1		
Thermal Drift Coefficient	≤1		
Max. Speed for Angle Measurement	10 to 16bits = 7200r.p.m. 17bits = 3600r.p.m.		
Data Outputs	A/B pulses with Z pulse ref. Z position settable from connector/cable. Z pulse width selectable by Product Option/ Part Number.		
Power Supply	5VDC±10% or 12VDC (8-32VDC) or 24VDC (8-32VDC)		
Current Consumption	<150 (does not vary significantly with supply voltage)		
Reverse Polarity	PSU Reverse polarity protected to max. supply voltage		
Connector (ACx & RFCx Product Options)	As above - resolution defined as one edge of A/B pulse train		
Mating Connector (ACx & RFCx)	Harwin Data Mate Vertical Socket Type M80-461-10-42 (alternative M80-461-10-05)		
Z Position Setting	Via Connector Pin or Integral Cable - see details for set and reset in relevant Section for Connector, Cable or Comms Interface		
Power Up Time To 1st Measurement	<500		

## Двигатель:

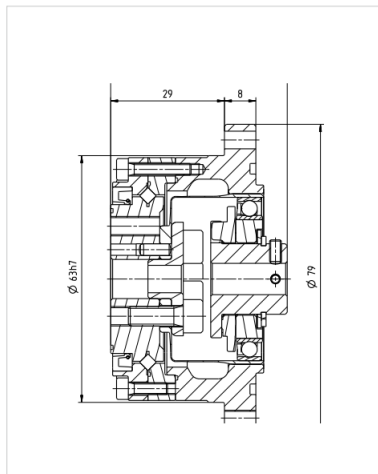
Электродвигатель	JCM50×14S	JCM69×10S
Номинальная мощность, Вт	100	180
Номинальный момент, Нм	0,32	0,57
Пиковый момент, Нм	0,96	1,71
Номинальная скорость, об/мин	3000	3000
Номинальный ток фазы, А <sub>фазы</sub>	2,8	5,1
Постоянная момента, Нм/А <sub>фазы</sub>	0,11	0,11
Постоянная мотора, Нм/√Вт	0,1	0,15
Напряжение питания, В <sub>пит</sub>	48	48
Сопротивление (фаза-фаза), Ом	1,75	0,8
Индуктивность (фаза-фаза), мГн	0,8	0,65
Максимальный КПД, %	89	90
Число пар полюсов	10	10
Момент инерции ротора, кг·см <sup>2</sup> *	0,082	0,2
Масса (статор + ротор), г *	125 (95+30)	180 (140+40)
Внешний диаметр статора D, мм	50	69
Внутренний диаметр ротора d, мм	30	42
Диаметр лобовых частей G, мм	48	66
Длина ротора l, мм *	16	12
Длина штырьковых лепестков h, мм	5	5
Длина статора L (max), мм	24,7	25

\* - для исполнения без патентов Уолла

## Редуктор:

Illustration 11.2

CSG-17-2UH [mm]



	Unit	CSG-14-2UH			CSG-17-2UH			
Ratio	$i [ ]$	50	80	100	50	80	100	120
Repeatable peak torque	$T_R [Nm]$	23	30	36	44	56	70	70
Average torque	$T_A [Nm]$	9.0	14	14	34	35	51	51
Rated torque	$T_N [Nm]$	7.0	10	10	21	29	31	31
Momentary peak torque	$T_M [Nm]$	46	61	70	91	113	143	112
Maximum input speed (oil lubrication)	$n_{in(max)} [rpm]$	14000			10000			
Maximum input speed (grease lubrication)	$n_{in(max)} [rpm]$	8500			7300			
Average input speed (oil lubrication)	$n_{av(max)} [rpm]$	6500			6500			
Average input speed (grease lubrication)	$n_{av(max)} [rpm]$	3500			3500			
Moment of inertia	$J_{in} [x10^{-4} kgm^2]$	0.033			0.079			
Weight	$m [kg]$	0.52			0.68			

Датчик угла:

#### Measurement & Elec. Data for Digital Comms Interfaces - Product Options SSI1-9, SPI, ASI1, ASI2 & BiSS-C

INC-x-58			
Measurement	Absolute over 360°. Note this is true absolute - no motion required at start up		
Resolution (121001 Product Option)	12bits	4,096counts per rev	316.4arc-secs 1536micro-rads
Resolution (141001 Product Option)	14bits	16,384counts per rev	79.1arc-secs 384micro-rads
Resolution (161001 Product Option)	16bits	65,536counts per rev	19.77arc-secs 96micro-rads
Resolution (171001 Product Option)	17bits	131,072counts per rev	9.89arc-secs 48micro-rads
Resolution (181001 Product Option)	18bits	262,144counts per rev	4.94arc-secs 24micro-rads
Resolution (191001 Product Option)	19bits	524,288counts per rev	2.47arc-secs 12micro-rads
Resolution (201001 Product Option)	20bits	1,048,576counts per rev	1.24arc-secs 6micro-rads
Repeatability	±/-1		
Static Accuracy over 360°	≤75arc-seconds or 0.36milliradians		
Internal Position Update Period	<0.1		
Thermal Drift Coefficient	≤0.50		
Max. Speed for Angle Measurement	10,000		
Data Outputs	RS422 Compatible, supports SSI (Serial Synchronous Interface), ASI (asynchronous serial interface), SPI or BiSS-C		
Power Supply	5VDC(4.5-32VDC) or 12VDC (4.5-32VDC) or 24VDC (4.5-32VDC)		
Current Consumption	<100 (typically <75 and does not change significantly with voltage supply)		
Reverse Polarity	PSU Reverse polarity protected to max. supply voltage		
Connector (ACx & RCx Product Options)	Harwin Data Mate Vertical Plug 10 Way with 2 Jack Screws Type M80-500-10-42 or M80-510-10-42 or M80-540-10-42		
Mating Connector (ACx & RFCx)	Harwin Data Mate Vertical Socket Type M80-461-10-42 (alternative M80-461-10-05)		
Zero Setting	Via Connector Pin or Integral Cable - see details for set and reset in relevant Section for Connector, Cable or Comms Interface		
Power Up Time To 1st Measurement	<500		

#### Measurement & Electrical Data for A/B/Z Pulses Comms Interfaces - Product Option ABZ1-6

INC-x-58			
Measurement	Incremental with reference mark. Position of reference mark programmable by user.		
Resolution	As above (limited to 17-bits) - resolution defined as one edge of A/B pulse train		
Repeatability	±/-1		
Static Accuracy over 360°	≤75arc-seconds or 0.36milliradians		
Internal Position Update Period	<0.1		
Thermal Drift Coefficient	≤1		
Max. Speed for Angle Measurement	10 to 16bits = 7200r.p.m. 17bits = 3600r.p.m.		
Data Outputs	A/B pulses with Z pulse ref. Z position settable from connector/cable. Z pulse width selectable by Product Option/ Part Number.		
Power Supply	5VDC±10% or 12VDC (8-32VDC) or 24VDC (8-32VDC)		
Current Consumption	<150 (does not vary significantly with supply voltage)		
Reverse Polarity	PSU Reverse polarity protected to max. supply voltage		
Connector (ACx & RFCx Product Options)	As above - resolution defined as one edge of A/B pulse train		
Mating Connector (ACx & RFCx)	Harwin Data Mate Vertical Socket Type M80-461-10-42 (alternative M80-461-10-05)		
Z Position Setting	Via Connector Pin or Integral Cable - see details for set and reset in relevant Section for Connector, Cable or Comms Interface		
Power Up Time To 1st Measurement	<500		

## Двигатель:

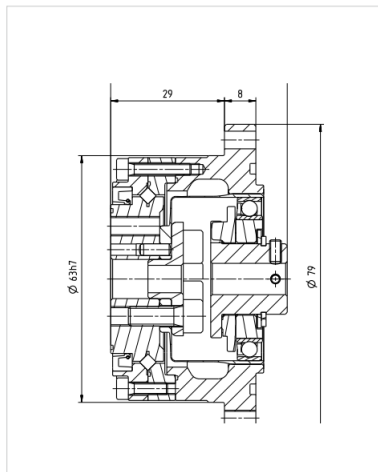
Электродвигатель	JCM50×14S	JCM69×10S
Номинальная мощность, Вт	100	180
Номинальный момент, Нм	0,32	0,57
Пиковый момент, Нм	0,96	1,71
Номинальная скорость, об/мин	3000	3000
Номинальный ток фазы, $A_{\text{фазы}}$	2,8	5,1
Постоянная момента, Нм/ $A_{\text{фазы}}$	0,11	0,11
Постоянная мотора, Нм/ $\sqrt{\text{Вт}}$	0,1	0,15
Напряжение питания, В <sub>пит</sub>	48	48
Сопротивление (фаза-фаза), Ом	1,75	0,8
Индуктивность (фаза-фаза), мГн	0,8	0,65
Максимальный КПД, %	89	90
Число пар полюсов	10	10
Момент инерции ротора, кг·см <sup>2</sup> *	0,082	0,2
Масса (статор + ротор), г *	125 (95+30)	180 (140+40)
Внешний диаметр статора D, мм	50	69
Внутренний диаметр ротора d, мм	30	42
Диаметр лобовых частей G, мм	48	66
Длина ротора l, мм *	16	12
Длина штырьковых лепестков h, мм	5	5
Длина статора L (max), мм	24,7	25

\* – для исполнения без патентов Уолла

## Редуктор:

Illustration 11.2

CSG-17-2UH [mm]





	Unit	CSG-14-2UH			CSG-17-2UH			
Ratio	$i$ [ ]	50	80	100	50	80	100	120
Repeatable peak toque	$T_R$ [Nm]	23	30	36	44	56	70	70
Average torque	$T_A$ [Nm]	9.0	14	14	34	35	51	51
Rated torque	$T_N$ [Nm]	7.0	10	10	21	29	31	31
Momentary peak torque	$T_M$ [Nm]	46	61	70	91	113	143	112
Maximum input speed (oil lubrication)	$n_{in(max)}$ [rpm]	14000			10000			
Maximum input speed (grease lubrication)	$n_{in(max)}$ [rpm]	8500			7300			
Average input speed (oil lubrication)	$n_{av(max)}$ [rpm]	6500			6500			
Average input speed (grease lubrication)	$n_{av(max)}$ [rpm]	3500			3500			
Moment of inertia	$J_{in}$ [x10 <sup>-4</sup> kgm <sup>2</sup> ]	0.033			0.079			
Weight	m [kg]	0.52			0.68			

Датчик угла:

Measurement & Elec. Data for Digital Comms Interfaces - Product Options SSH-9, SPI, ASH, AS2 & BISS-C

INCx58		
Measurement	Absolute over 360° Note this is true absolute - no motion required at start up	
Resolution (121891 Product Option)	12bits 4,096counts per rev 316.4arc-secs 1538micro-rads	
Resolution (141891 Product Option)	14bits 16,384counts per rev 79.1arc-secs 384micro-rads	
Resolution (161891 Product Option)	16bits 65,536counts per rev 19.77arc-secs 96micro-rads	
Resolution (171891 Product Option)	17bits 131,072counts per rev 9.88arc-secs 48micro-rads	
Resolution (181891 Product Option)	18bits 262,144counts per rev 4.94arc-secs 24micro-rads	
Resolution (191891 Product Option)	19bits 524,288counts per rev 2.47arc-secs 12micro-rads	
Resolution (201891 Product Option)	20bits 1,048,576counts per rev 1.24arc-secs 6micro-rads	
Repeatability	<±1	count
Static Accuracy over 360°	<±7arc-seconds or 0.36miliadians	
Internal Position Update Period	<0.1	mliasecond
Thermal Drift Coefficient	<0.50	gon/K Full-Scale
Max. Speed for Angle Measurement	10,000	p.p.m.
Data Outputs	RS422 Compatible, supports SSI (Serial Synchronous Interface), ASI (asynchronous serial interface), SPI or BISS-C	
Power Supply	5VDC(4.5-32VDC) or 12VDC (4.5-32VDC) or 24VDC (4.5-32VDC)	VDC
Current Consumption	<100 (typically <75 and does not change significantly with voltage supply)	mAmp
Reverse Polarity	PSU Reverse polarity protected to max. supply voltage	VDC
Connector (ACx & RCx Product Options)	Harwin Data Mate Vertical Plug 10 Wilex with 2 Jack Screws Type M80-505-10-42 or M80-515-10-42 or M80-540-10-42	
Mating Connector (ACx & RCx)	Harwin Data Mate Vertical Socket Type M80-461-10-42 (alternative M80-461-10-06)	
Zero Setting	Via Connector Pin or Integral Cable - see details for set and reset in relevant Section for Connector, Cable or Comms Interface	
Power Up Time to 1st Measurement	<500	mliasecond

Measurement & Electrical Data for A/B/Z Pulses Comms Interfaces - Product Option ABZ1-6

INCx58		
Measurement	Incremental with reference mark. Position of reference mark programmable by user.	
Resolution	As above (limited to 17 bits) - resolution defined as one edge of A/B pulse train	
Repeatability	<±1	count
Static Accuracy over 360°	<±7arc-seconds or 0.36miliadians	
Internal Position Update Period	<0.1	mliasecond
Thermal Drift Coefficient	<1	gon/K Full-Scale
Max. Speed for Angle Measurement	10 to 16bits = 7200 p.p.m. 17bits = 3600 p.p.m.	
Data Outputs	A/B pulses with Z pulse ref. Z position settable from connector/cable. Z pulse width selectable by Product Option/ Part Number.	
Power Supply	5VDC±10% or 12VDC (8-32VDC) or 24VDC (8-32VDC)	VDC
Current Consumption	<150 (does not vary significantly with supply voltage)	mAmp
Reverse Polarity	PSU Reverse polarity protected to max. supply voltage	VDC
Connector (ACx & RCx Product Options)	As above - resolution defined as one edge of A/B pulse train	
Mating Connector (ACx & RCx)	Harwin Data Mate Vertical Socket Type M80-461-10-42 (alternative M80-461-10-06)	
Z Position Setting	Via Connector Pin or Integral Cable - see details for set and reset in relevant Section for Connector, Cable or Comms Interface	
Power Up Time to 1st Measurement	<500	mliasecond

INCx58		
Operating Temp.	Minus 45 to +85 Minus 60 to +85Celsius for 12VCT & 24VCT Product Option Minus 45 to +105Celsius max. for 9HT Product Option Operator outside limits to be qualified by user	Celsius
Storage Temp.	Minus 55 to +125 (Minus 60 to +125 for 24CT Product Option)	Celsius
Temperature Shock	ML-STD-810G, Method 503.5, Procedure I-B (T1=-40°C, T2=+55°C)	
IP Rating - Rotor & Stator	IP67 for <60 minutes & 1m depth (Inhabited with mechanically protected connector or AFL 1.5 or VFL 1.5 Product Options) For additional protection for long term immersion at depth, specify product option AFL2-52 or VFL2-52 Product Option For immersion at depths of >100m select Extended Range High Pressure Option	
IP Rating - Connector	IP50 (ACx) or RCx Product Option. See Section 4.7 for IP rating of AFLx & VFLx Product Option	
Humidity	RH 0-99% standard. Select Extended Range Option C & appropriate connector for condensing humidity or long term immersion	
Salt Fog	(Inhabited with protected cable/connector or any integral axial cable) Complies with DEF STAN 00-35 Pt 3 Iss. 4, Test CNA2 Salt Mist Test. Select Extended Range Option C and appropriate connector for environments with significant exposure to salt fog	
Bio Hazards	(Inhabited with protected cable/connector or any integral axial cable) Complies with DEF STAN 00-35 Pt 4 Iss. 4 Section 11 (Hazards)	
Induced Dust & Sand	Complies with DEF STAN 00-35 Pt 3 Iss 4, Test CL25 (Turbulent Dust) Cat 1. Select Extended Range Option C and appropriate connector for environments with abrasive dust or sand.	
Mechanical Impact Resistance	W07 - when installed - suitable for mechanical impacts from objects of >200grams from 1m height	
Shock	IEC 60068-2-27 100g for 11ms - axial & radial - suitable for most airborne, marine & armoured vehicles ML-STD-810G, Method 516.6, Procedure I-Functional Shock - axial and radial - 40 g 11 ms, sawtooth waveform For more extreme or prolonged conditions specify Extended Product Option G & preferably Integral Axial Cable	
Vibration	IEC 60068-2-6 20g for 10-2000Hz - axial and radial - suitable for most high vibration & airborne environments ML-STD-810G, Method 514.6, Procedure I - axial and radial - Category 20, for tracked vehicles For more extreme or prolonged conditions specify Extended Product Option G and preferably Integral Axial Cable	
Environmental pressure range	0 to 7 (i.e. vacuum to 7). See Extended Product Range High Pressure Option for higher operating pressures	Bar
Max. permissible press. change rate	1	Bar/second
EMC Radiated Susceptibility	(Inhabited) Complies with IEC 61000-6-2 - suitable for threat in harsh EMC environments	
EMC Radiated Emissions	(Inhabited) Complies with IEC 61000-6-4 - suitable for threat adjacent to EMC sensitive devices	
Materials - all Product Options		
Rotor & Stator Housing	Standard range - Al. alloy (6061-T6 or 6064-T6) with SurTec500. Sensor surfaces: FR4 grade epoxy Product Option A or S - Alzom finish at alloy (6061-T6 or 6064-T6). Sensor surfaces: FR4 grade epoxy	
Connector (ACx or RCx Product Option)	PPS with Stainless Steel Screw Fixings and Gal & Tin Electrical Connections	
Miscellaneous - all Product Options		
Mass Shaft Clamp Rotor (max.)	43	grams
Mass Plain Rotor (max.)	32	grams
Mass Servo Clamp Rotor (AC1)	43	grams
Mom. of Inertia Shaft Clamp Rotor (max.)	2.0E-05	Kgm <sup>2</sup>
Mom. of Inertia Plain Rotor (max.)	1.8E-05	Kgm <sup>2</sup>
MTBF	0.22 failures per 1M hours based on ML-HBK-217 method for ground military vehicles at 20Celsius average	
MTBF	0.35 failures per 1M hours based on ML-HBK-217 method for naval shelled at 35Celsius average	
Hazardous materials	Standard range - Hazardous materials not used. RoHS compliant. RoHS certificate available. REACH statement available.	
Outgassing materials	Complies with NASA desicc as low outgas mat. with TML <1% & CVCM <0.1% at 125C & 24hrs vacuum to ASTM E-595-90	
ITAR classification	Not ITAR controlled. No ITAR components	
Approvals	Flammability Rating UL94V-0. Standard range - RoHS compliant - RoHS certificate available. REACH statement available.	
Marking	Zetex, logo, CE & UL94V-0 printed on Rotor & Stator faces. Serial No. labelled on exterior diameter of Stator housing Extended Product Range Option E - engraved serial number and part number on exterior faces of Stator & Rotor	
Country of Manufacture	UK	
Export Licence Requirements	Not required for standard product options	

## Двигатель:

Электродвигатель	JCM38×06S	JCM38×12S
Номинальная мощность, Вт	56	58
Номинальный момент, Нм	0,07	0,14
Пиковый момент, Нм	0,21	0,42
Номинальная скорость, об/мин	8000	4000
Номинальный ток фазы, А <sub>ампл</sub>	3,2	3,2
Постоянная момента, Нм/А <sub>ампл</sub>	0,022	0,043
Постоянная мотора, Нм/√Вт	0,03	0,05
Напряжение питания, В <sub>ампл</sub>	24	24
Сопротивление (фаза-фаза), Ом	0,6	0,86
Индуктивность (фаза-фаза), мГн	0,24	0,5
Максимальный КПД, %	90	88
Число пар полюсов	7	7
Момент инерции ротора, кг·см <sup>2</sup> *	0,01	0,02
Масса (статор + ротор), г *	64 (54+10)	94 (74+20)
Внешний диаметр статора D, мм	38	38
Внутренний диаметр ротора d, мм	18	18
Диаметр лобовых частей G, мм	36,2	36,2
Длина ротора l, мм *	8	16
Длина штырьковых лепестков h, мм	5	5
Длина статора L (max), мм	16,5	22,5

\* – для исполнения без датчиков Холла

## Редуктор:

Illustration 22.2

CSF-14-1U-CC-F [mm]

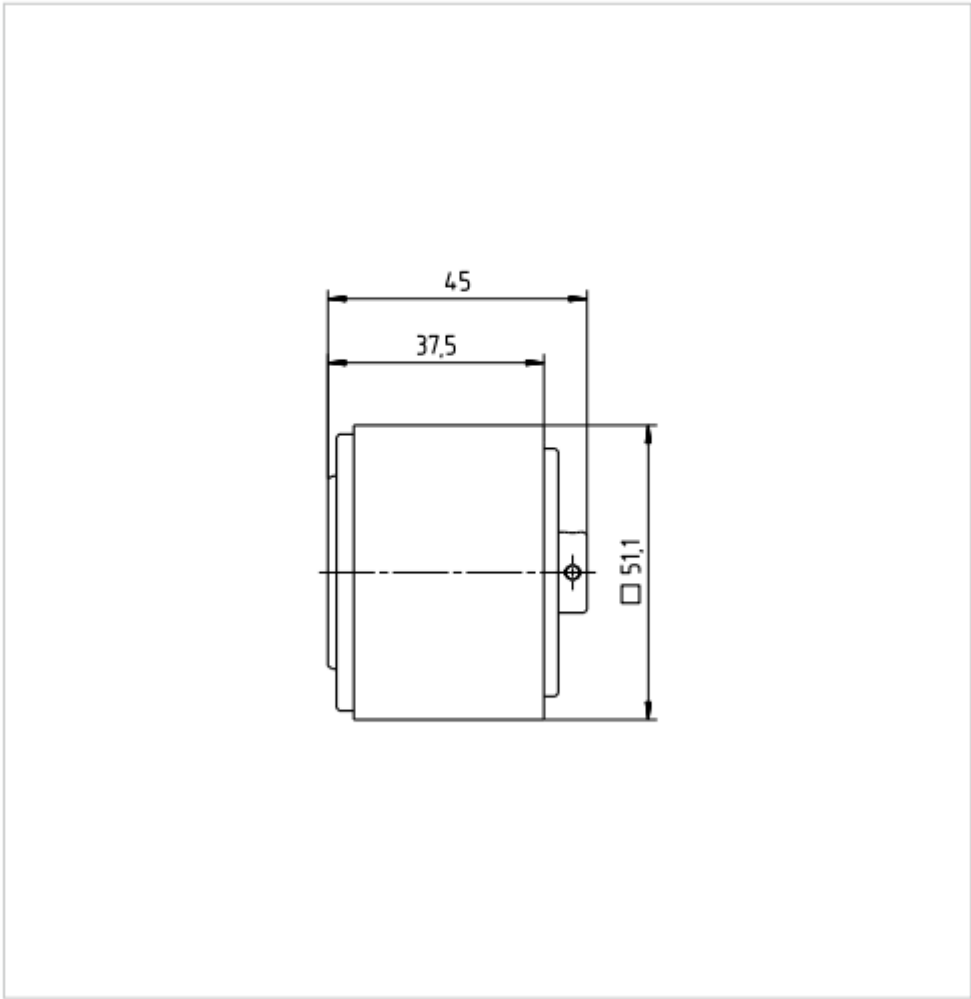


TABLE 22.1

	Unit	CSF-14-1U-CC-F			
Ratio	i [ ]	30	50	80	100
Repeatable peak toque	T <sub>R</sub> [Nm]	9.0	18	23	28
Average torque	T <sub>A</sub> [Nm]	6.8	6.9	11	11
Rated torque	T <sub>N</sub> [Nm]	4.0	5.4	7.8	7.8
Momentary peak torque	T <sub>M</sub> [Nm]	17	35	47	54
Maximum input speed (grease lubrication)	n <sub>in (max)</sub> [rpm]	8500			
Average input speed (grease lubrication)	n <sub>av (max)</sub> [rpm]	3500			
Moment of inertia	J <sub>in</sub> [x10 <sup>-4</sup> kgm <sup>2</sup> ]	340			
Weight	m [g]	295			

Датчик угла:

## 4.11 Measurement, Electrical & Environmental Data (37mm)

### Measurement, Electrical, Environmental & Material Data for 37mm InCOrder

Measurement			
Measurement	Absolute over 360°. Note this is true absolute - no motion required at start up		
Resolution (101001 Product Option)	10bits	1.024counts per rev	1265.6arc-secs 6144micro-rads
Resolution (121001 Product Option)	12bits	4.096counts per rev	316.4arc-secs 1536micro-rads
Resolution (141001 Product Option)	14bits	16.384counts per rev	79.1arc-secs 384micro-rads
Resolution (161001 Product Option)	16bits	65.536counts per rev	19.77arc-secs 96micro-rads
Resolution (171001 Product Option)	17bits	131.072counts per rev	2.47arc-secs 48micro-rads
Repeatability	±1		
Static Accuracy over 360°	<150arc-seconds or <0.73milliradians		
Internal Position Update Period	<0.1		
Thermal Drift Coefficient	≤1.0		
Max. Speed for Angle Measurement	10,000		
Max. Physical Speed	10,000		
Electrical			
Data Outputs	RS422 Compatible, supports SSI (Serial Synchronous Interface), ASI (asynchronous serial interface), SPI or BISS-C		
Power Supply	5VDC (4.5-8VDC) or 12VDC (4.5-14VDC)		
Current Consumption	<100 (typically <75 and does not change significantly with voltage supply)		
Reverse Polarity	PSU Reverse polarity protected to max. supply voltage		
Zero Setting	Zero Set or Reset to factory value via Electronics Module		
Power Up Time to 1st Measurement	<500		
Environment			
Operating Temp.	Minus 45 to +65 (+65 at +8VDC power supply)		
Storage Temp.	Operation outside limits to be qualified by user. At temperatures >65Celsius, duration should be minimized.		
Temperature Shock	Minus 55 to +125		
IP Rating - Rotor & Stator	MIL-STD-810G, Method 503.5, Procedure I-B (T1=40 °C, T2=65 °C.)		
Humidity	95% RH for <450 minutes at 1m depth		
Salt Fog	RH 0-99%, non-condensing - but unaffected by occasional condensation		
Bio Hazards	Complies with DEF STAN 00-35 Pt 3 Iss. 4, Test CN2 Salt Mist Test		
Induced Dust & Sand	Complies with DEF STAN 00-35 Part 3 Issue 4, Test CL25 (Turbulent Dust) Cat 1		
Shock	IEC 60068-2-27 100g for 11ms - axial & radial - suitable for most airborne, marine & armoured vehicles		
Vibration	MIL-STD-810G, Method 516.6, Procedure F Functional Shock - axial and radial - 40 g 11 ms, sawtooth waveform		
Environmental pressure range	IEC 60068-2-6 20g for 10-2000Hz - axial and radial - suitable for most high vibration & airborne environments		
Max. permissible press. change rate	MIL-STD-810G, Method 514.6, Procedure I - axial and radial - Category 20, for tracked vehicles		
EMC Radiated Susceptibility	0 to 4 (in other words vacuum to 4)		
EMC Radiated Emissions	1		
(Intelled) Complies with IEC 61000-6-2 - suitable for fitment in harsh EMC environments			
(Intelled) Complies with IEC 61000-6-4 - suitable for fitment adjacent to EMF sensitive devices			
Miscellaneous			
Mass Set-Screw Rotor (max.)	10 (for 8mm bore)		
Mass Plain Rotor (max.)	7 (for 8mm bore)		
Mass Screw Mount Stator (max.)	20 (for 8mm bore)		
Mass E-Module in Housing	25		
MTBF	0.22 failures per 1M hours based on MIL-HBK-217+ method for ground military vehicles at 20Celsius average		
MTBF	0.35 failures per 1M hours based on MIL-HBK-217+ method for naval shelled at 35Celsius average		
Hazardous materials	Standard range - Hazardous materials not used. RoHS compliant. RoHS certificate available. REACH statement available.		
Outgassing materials	Complies with NASA class II as low outgas mat. with TML <1% & CVCM <0.1% at 125°C & 24hrs in vacuum to ASTM E-595-90		
ITAR classification	Not ITAR controlled. No ITAR components.		
Approvals	Flammability Rating UL94V-0. Standard range - RoHS compliant - RoHS certificate available. REACH statement available.		
Marking	Zetex, logo, CE & UL94V-0 printed on Rotor & Stator faces, Serial Number label.		
Country of Manufacture	Extended Product Range Option E - engraved serial number and part number on exterior faces of Stator & Rotor		
Export Licence Requirements	UK		
	Not required for standard product options		

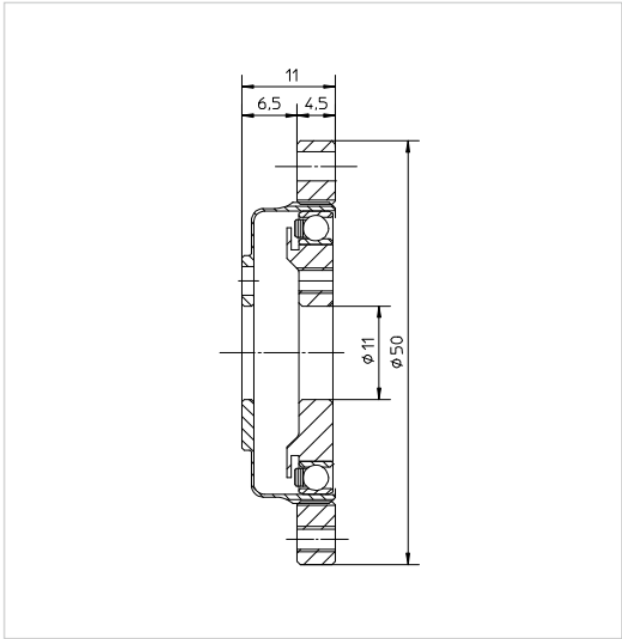
## Двигатель:

Электродвигатель	JCM38×06S
Номинальная мощность, Вт	56
Номинальный момент, Нм	0,07
Пиковый момент, Нм	0,21
Номинальная скорость, об/мин	8000
Номинальный ток фазы, А <sub>нелл</sub>	3,2
Постоянная момента, Нм/А <sub>нелл</sub>	0,022
Постоянная мотора, Нм/√Вт	0,03
Напряжение питания, В <sub>нелл</sub>	24
Сопротивление (фаза-фаза), Ом	0,6
Индуктивность (фаза-фаза), мГн	0,24
Максимальный КПД, %	90
Число пар полюсов	7
Момент инерции ротора, кг·см <sup>2</sup> *	0,01
Масса (статор + ротор), г *	64 (54+10)
Внешний диаметр статора D, мм	38
Внутренний диаметр ротора d, мм	18
Диаметр лобовых частей G, мм	36,2
Длина ротора l, мм *	8
Длина штырьковых лепестков h, мм	5
Длина статора L (max), мм	16,5

## Редуктор:

Illustration 11.1

CSD-14-2A [mm]



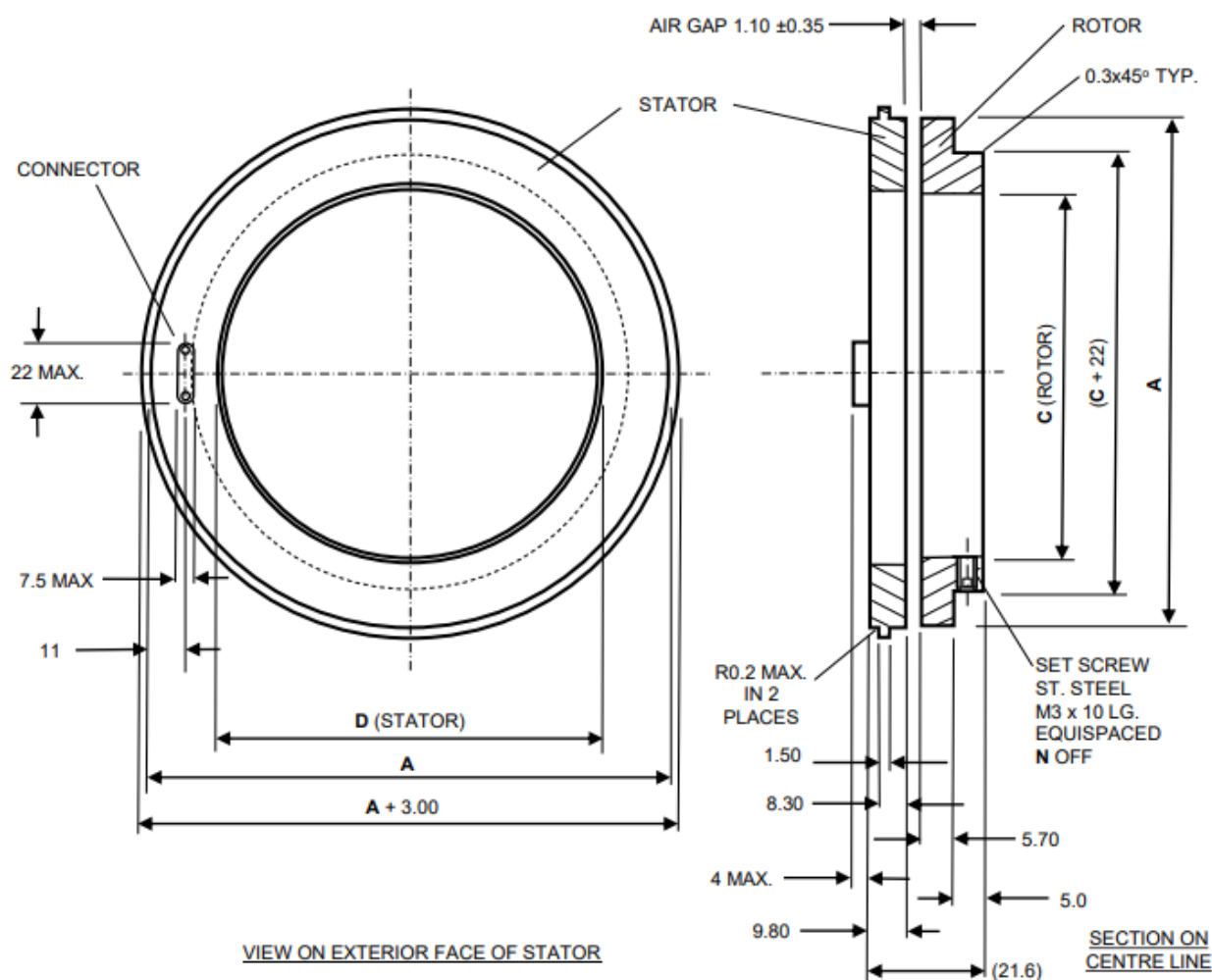
	Unit	CSD-14-2A	
Ratio	$i$ [ ]	50	100
Repeatable peak torque	$T_R$ [Nm]	12	19
Average torque	$T_A$ [Nm]	4.8	7.7
Rated torque	$T_N$ [Nm]	3.7	5.4
Momentary peak torque	$T_M$ [Nm]	24	31
Maximum input speed (oil lubrication)	$n_{in(max)}$ [rpm]	14000	
Maximum input speed (grease lubrication)	$n_{in(max)}$ [rpm]	8500	
Average input speed (oil lubrication)	$n_{av(max)}$ [rpm]	6500	
Average input speed (grease lubrication)	$n_{av(max)}$ [rpm]	3500	
Moment of inertia	$J_{in}$ [ $\times 10^{-4}$ kgm <sup>2</sup> ]	0.021	
Weight	$m$ [kg]	0.06	

Датчик угла:

INC-4-75	
Dim. A : Stator / Rotor Body O.D.	75.00
Dim. C : Rotor I.D.	35.00
Dim. D : Stator I.D.	35.80
N Number of Set Screws	3
Max. radial misalignment	
Rotor & Stator fixings	

#### NOTES

1. 3D CAD MODEL FILES AVAILABLE ON [WWW.CELERAMOTION.COM](http://WWW.CELERAMOTION.COM)
2. UNIT SHOWN WITH AXIAL CONNECTOR AC1
3. SEE SECTION 9.3. FOR CORRESPONDING SERVO CLAMPS
4. ALL DIMS IN mm – DO NOT SCALE
5. 3<sup>RD</sup> ANGLE PROJECTION
6. TOLERANCES:- 0 DECIMAL PLACES =  $\pm 0.5$   
1 DECIMAL PLACES =  $\pm 0.2$   
2 DECIMAL PLACES =  $\pm 0.1$



## Двигатель:

Электродвигатель	JCM38×06S
Номинальная мощность, Вт	56
Номинальный момент, Нм	0,07
Пиковый момент, Нм	0,21
Номинальная скорость, об/мин	8000
Номинальный ток фазы, А <sub>нелл</sub>	3,2
Постоянная момента, Нм/А <sub>нелл</sub>	0,022
Постоянная мотора, Нм/√Вт	0,03
Напряжение питания, В <sub>нелл</sub>	24
Сопротивление (фаза-фаза), Ом	0,6
Индуктивность (фаза-фаза), мГн	0,24
Максимальный КПД, %	90
Число пар полюсов	7
Момент инерции ротора, кг·см <sup>2</sup> *	0,01
Масса (статор + ротор), г *	64 (54+10)
Внешний диаметр статора D, мм	38
Внутренний диаметр ротора d, мм	18
Диаметр лобовых частей G, мм	36,2
Длина ротора l, мм *	8
Длина штырьковых лепестков h, мм	5
Длина статора L (max), мм	16,5

## Редуктор:

Червяк с коэффициентом передачи 50

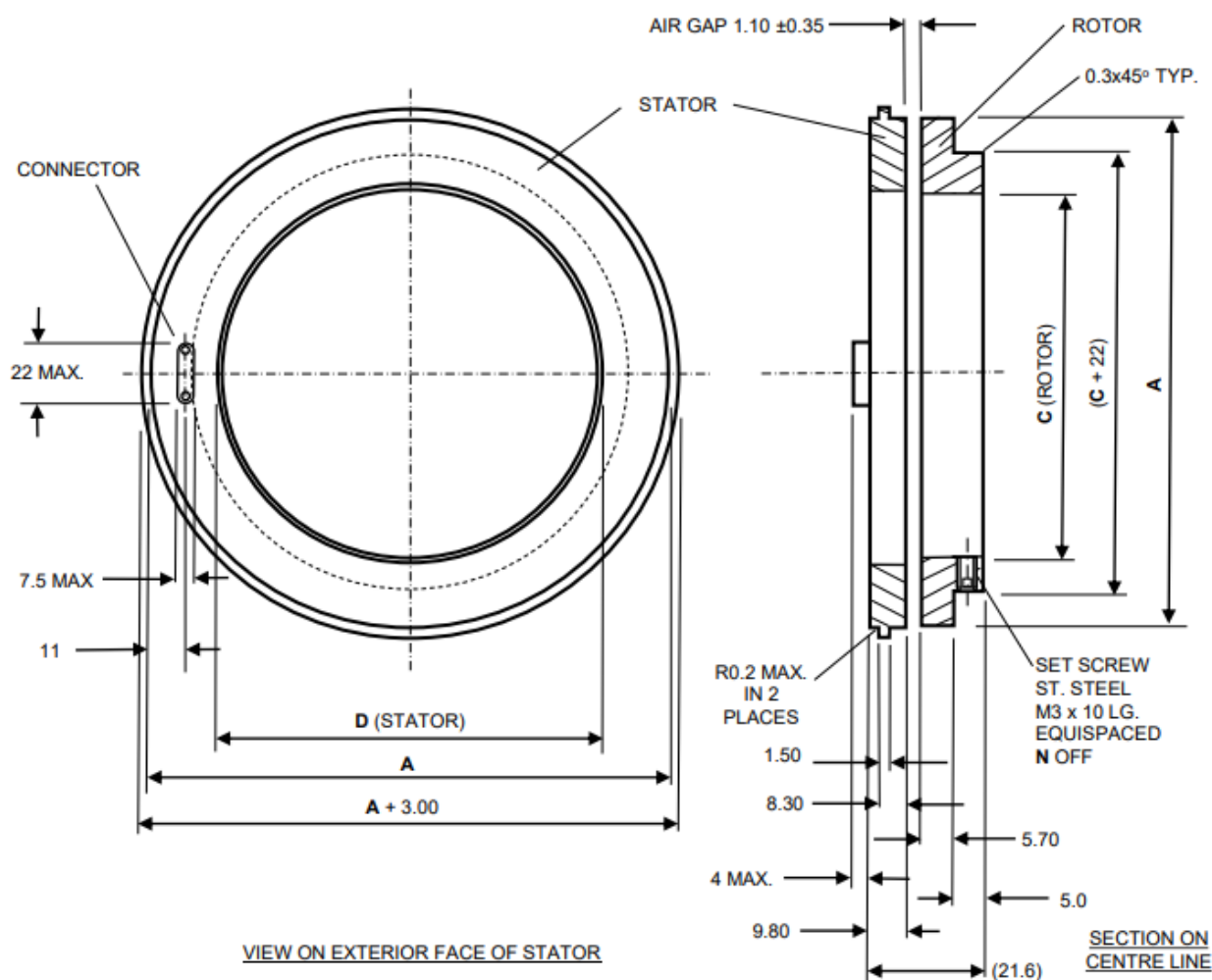
## Датчик угла:



INC-4-75	
Dim. A : Stator / Rotor Body O.D.	75.00
Dim. C : Rotor I.D.	35.00
Dim. D : Stator I.D.	35.80
N Number of Set Screws	3
Max. radial misalignment	
Rotor & Stator fixings	

#### NOTES

1. 3D CAD MODEL FILES AVAILABLE ON [WWW.CELERAMOTION.COM](http://WWW.CELERAMOTION.COM)
2. UNIT SHOWN WITH AXIAL CONNECTOR AC1
3. SEE SECTION 9.3. FOR CORRESPONDING SERVO CLAMPS
4. ALL DIMS IN mm – DO NOT SCALE
5. 3<sup>RD</sup> ANGLE PROJECTION
6. TOLERANCES:- 0 DECIMAL PLACES =  $\pm 0.5$   
1 DECIMAL PLACES =  $\pm 0.2$   
2 DECIMAL PLACES =  $\pm 0.1$



№ шарнира	Необходимый момент	Номинальный момент дв	Пиковый момент дв	Средний момент ред	Пиковый момент ред	Передаточное отношение ред
0	3,476	0,14	0,42	4,8	12	50
1	139,53	2,58	7,75	140	204	100
2	64,03	0,57	1,71	51	70	100
3	29,266	0,57	1,71	34	44	50
4	10,189	0,14	0,42	11	28	100
5	$7,681 \cdot 10^{-5}$	0,07	0,21	4,8	12	50
6	1	0,07	0,21	Червяк		60