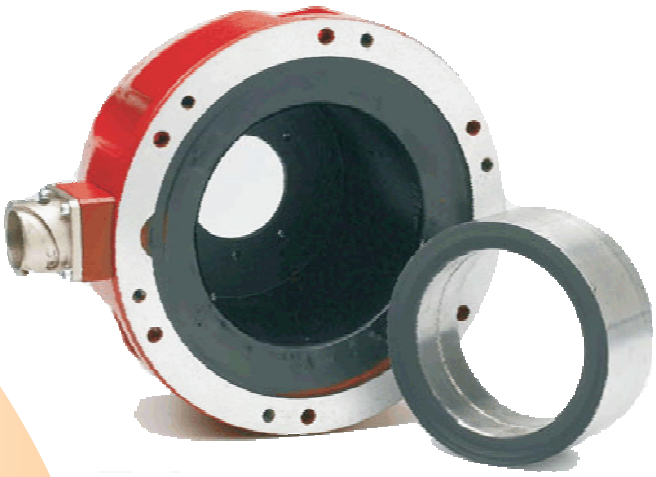
*Direct Drive Technology*

# SKA DDR

## Torque motors





MOTOR POWER COMPANY

# SKA Direct Drive Rotative Torque motors

"Multipoles" permanent magnet synchronous brushless motors. The SKA DDR series is available in the **Frameless** version formed by the rotor and stator parts alone so that it can be integrated into machines. A **Power Pack** version is also available, with flange, bearings feedback and connections.

- 2Nm to 760Nm stall torque
- Thermal protector (clixon)
- Class F insulation
- IP65 protection degree (Power Pack solution)

All SKA motors feature these advantages of Direct Drive technology:

SKA motors replace all transmission mechanical components (like gearboxes, screws, belts, pulleys, racks) • bypass the limits given by backlash, friction and inertia • enhance manufactured throughput and reliability • improve motion linearity and precision • decrease noise levels • distribute power and motion control intelligence in the machine • simplify and accelerate the design and assembly of the machine • save energy in machine operation • reduce costs.

**Frameless**

**Male shaft Power Pack**

**Hollow shaft Power Pack**

**Through hollow shaft Power Pack**

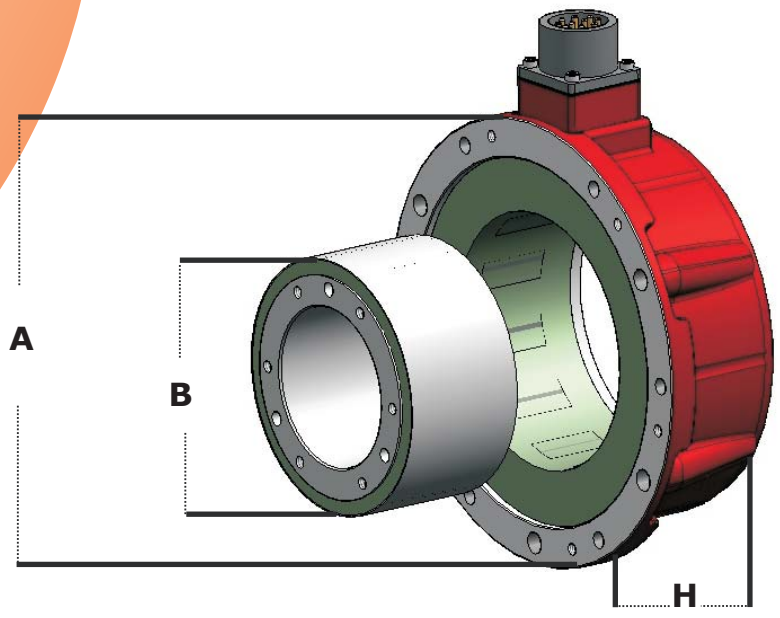
| Models | Rotor | Stator | Shaft | Bearings | Front Flange | Rear Flange | Power Connector | Signal Connector | Back Cover | Safety brake | Hall Sensors | Resolver | TTL -SinCos Optical Encoder | Magnetic and Optical Ring Encoder |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Frameless** | • | • | × | × | × | × | • | × | × | × | # | × | × | × |
| **Male shaft Power Pack** | • | • | • | • | • | • | • | • | • | # | # | # | # | × |
| **Hollow shaft Power Pack** | • | • | • | • | • | • | • | • | • | # | # | # | # | × |
| **Through hollow Shaft Power Pack** | • | • | • | • | • | • | • | • | • | # | # | × | #* | # |

• : standard × : not available # : on demand * Max. 45 mm inner shaft diameter

# SKA DDR FRAMELESS VERSION

| | Stall Torque (Nm) | Peak Torque (NmPk) | External diameter A (mm) | Hole diameter B (mm) | Thickness H (mm) | Poles (No.) | Speed range (Rpm) |
|---|---|---|---|---|---|---|---|
| **SKA DDR 090.30** | 2 | 15.9 | 110 | 30 | 60 | 14 | 300-1700 |
| **SKA DDR 090.60** | 3.5 | 28 | | | 90 | | |
| **SKA DDR 090.90** | 4.7 | 40 | | | 120 | | |
| **SKA DDR 148.30** | 8 | 35 | 180 | 65 | 62 | 14 | 150-1200 |
| **SKA DDR 148.60** | 14 | 72 | | | 92 | | |
| **SKA DDR 148.90** | 20 | 106 | | | 122 | | |
| **SKA DDR 148.120** | 26 | 141 | | | 152 | | |
| **SKA DDR 245.30** | 41 | 128 | 290 | 130 | 70 | 28 | 90-800 |
| **SKA DDR 245.60** | 70 | 241 | | | 100 | | |
| **SKA DDR 245.90** | 93 | 350 | | | 130 | | |
| **SKA DDR 245.120** | 115 | 458 | | | 160 | | |
| **SKA DDR 335.30** | 100 | 290 | 390 | 210 | 82 | 42 | 50-500 |
| **SKA DDR 335.60** | 164 | 550 | | | 112 | | |
| **SKA DDR 335.90** | 220 | 800 | | | 142 | | |
| **SKA DDR 335.120** | 270 | 1043 | | | 172 | | |
| **SKA DDR 335.150** | 320 | 1290 | | | 202 | | |
| **SKA DDR 430.30** | 210 | 458 | 490 | 290 | 85 | 56 | 50-300 |
| **SKA DDR 430.60** | 340 | 868 | | | 115 | | |
| **SKA DDR 430.90** | 450 | 1254 | | | 145 | | |
| **SKA DDR 430.120** | 560 | 1649 | | | 175 | | |
| **SKA DDR 430.150** | 660 | 2025 | | | 205 | | |
| **SKA DDR 430.180** | 760 | 2400 | | | 235 | | |

Data are rated at △T =80°C , 0-40°C environmental temperature - Class F insulation. Performances are rated with natural ventilation



# How to order SKA DDR Frameless

| SKA DDR | FL | 090.60 | 15 | 00 | 03 |
|---|---|---|---|---|---|
| Product name | Motor version | Model | Winding | Hall Sensor | Connectors |

**Motor version**
- FL = Frameless

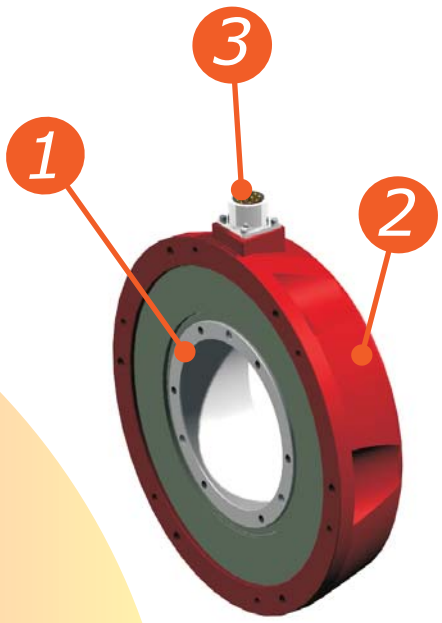
**Model**
- 090.30
- 090.60
- 090.90
- 148.30
- 148.60
- 148.90
- 148.120
- 245.30
- 245.60
- 245.90
- 245.120
- 335.30
- 335.60
- 335.90
- 335.120
- 335.150
- 430.30
- 430.60
- 430.90
- 430.120
- 430.150
- 430.180

**Winding**
- See data sheet

**Hall Sensor**
- 00 Without Hall Sensors (standard)
- 01 With Hall Sensors (optional)

**Connectors**
- 03 Connectors

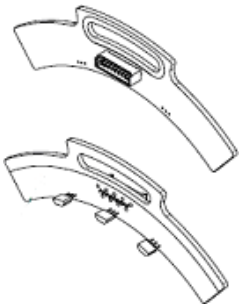
1. Rotor
2. Stator
3. Connector



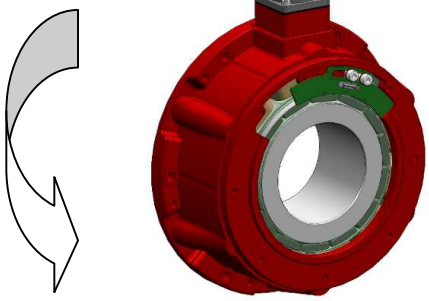

# SKAddr FL TRASDUCERS

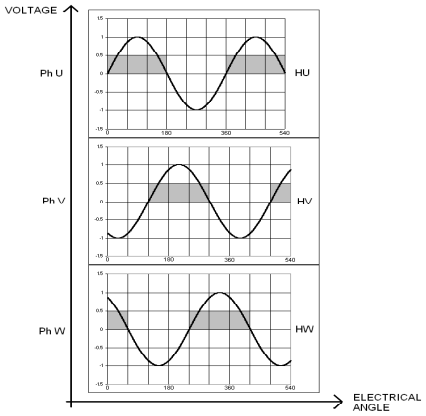
## 01 TYPE: HALL SENSOR

| | | | |
|---|---|---|---|
| NOMINAL VOLTAGE | Vn | [ Vdc ] | 5 ± 5% |
| NOMINAL CURRENT | In | [ mA ] | 100 |
| WORKING TEMPARATURE | Tn | [ °C ] | -20° ÷ + 100° |
| ELECTRONIC TYPE | | | LINE DRIVER AM 26 LS32 |
| N° OF COMMUTATION SIGNAL | | | 3 DIFFERENTIAL |
| | | | |
| | | | |
| | | | |



## COMMUTATION SENSOR SEQUENCE






COMMUTATION SIGNAL WITH RELATIVE PHASE VOLTAGE IN THE COUNTER CLOCKWISE SIDE TRANSDUCER.

| TRANSDUCER CONNECTION | | | | |
|---|---|---|---|---|
| POWER CONNECTOR | | HALL SIGNAL CABLE | | |
| *FUNCTION* | *PIN POWER CN* | *FUNCTION* | *COLOR* | *N°PIN CN MOLEX* |
| PHASE **U** | A | Vcc 5Vcd | RED | 1 |
| PHASE **V** | B | GND 0V | BLUE | 2 |
| PHASE **W** | C | SHIELD | BLACK | 3 |
| GND | H | HU | WHITE | 4 |
| THERMAL PROTECTOR | F | HW | GREEN | 5 |
| THERMAL PROTECTOR | G | HV | GREY | 6 |
| | | HU\ | BROWN | 7 |
| | | HW\ | YELLOW | 8 |
| | | HV\ | PINK | 9 |



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# TORQUE SERVOMOTORS

SERIES

# SKAddr 090 30/60

**TORQUE [Nm]**

# 2 / 3.5

| | | SYMBOLS | UNITS | WINDING TYPE | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 17 | 18 | 19 | 50 | 51 |
| MOTOR SPEED | Vn drive 145 V (ac) 3phase | | [ rpm ] | 1000 | 650 | - | - | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | **1200*** | **1200*** | 750 | 500 | 300 |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | - | - | **1200*** | **800*** | **500*** |
| MOTOR RATINGS | **COMMON RATINGS** | | | | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 96 | 144 | 240 | 340 | 570 |
| | Poles number | P | [mm] | 14 | | | | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | | | | |
| | **SKAddr 090 30** | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 2.0 | | | | |
| | Peak torque | Cmax | [ Nm ] | 15.9 | 15.9 | 14.3 | 10.5 | |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 1.14 | 1.71 | 3.0 | 5.0 | |
| | Stall current | In0 | [Arms] | 1.25 | 0.83 | 0.50 | 0.36 | |
| | Peak current | I cmax | [Arms] | 14 | 9.3 | 4.8 | 2.1 | |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 9.3 | 21.0 | 58 | 124 | |
| | Phase/phase inductance | Lff | [mH] | 21 | 48 | 140 | 250 | |
| | Electrical time constant | Te | [msec] | 2.3 | 2.. | 2.4 | 2.0 | |
| | Power loss | Pd | [ W ] | 33 | | | | |
| | Thermal resistance | Rth | [°C/W] | 3.2 | | | | |
| | Motor constance | Km | [Nm/√W] | 0.36 | | | | |
| | Cogging torque | Tcog | [Nm] | 0.12 | | | | |
| | Insulation class | | | F | | | | |
| | **SKAddr 090 60** | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 3.5 | | | | |
| | Peak torque | Cmax | [ Nm ] | 28 | 28 | 28 | 21 | 13 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 1.04 | 1.57 | 2.50 | 3.85 | 7.1 |
| | Stall current | In0 | [Arms] | 2.19 | 1.46 | 0.87 | 0.63 | 0.37 |
| | Peak current | I cmax | [Arms] | 26.9 | 17.8 | 11.2 | 5.46 | 1.83 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 3.9 | 8.9 | 24 | 47 | 140 |
| | Phase/phase inductance | Lff | [mH] | 12 | 27 | 72 | 142 | 430 |
| | Electrical time constant | Te | [msec] | 3.0 | 3.0 | 3.0 | 3.0 | 3.1 |
| | Power loss | Pd | [ W ] | 41 | | | | |
| | Thermal resistance | Rth | [°C/W] | 2.6 | | | | |
| | Motor constance | Km | [Nm/√W] | 0.55 | | | | |
| | Cogging torque | Tcog | [Nm] | 0.20 | | | | |
| | Insulation class | | | F | | | | |
| THERMAL PROTECTION | Type of thermal cut-off | | | N C : normally closed | | | | |
| | Rated voltage | Vn | [ Vac] | 250 | | | | |
| | Rated current | In | [ A ] | 2.5 | | | | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | | | | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | | | | |
| | Operative time | | [ ms ] | 1 | | | | |
| | Insulation class | | | F | | | | |

*Drive main voltage needed to supply the full peak torque

DATASHEET n°: 1B4101010502GB

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# TORQUE SERVOMOTORS

SERIES

# SKAddr 090 90

**TORQUE [Nm]**

# 4.7

| | | SYMBOLS | UNITS | WINDING TYPE | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 17 | 18 | 19 | 50 | 51 | |
| MOTOR SPEED | Vn drive 145 V (ac) 3phase | | [ rpm ] | 1000 | 650 | - | - | - | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | **1200*** | **1200*** | 750 | 500 | 300 | |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | - | - | **1200*** | **800*** | **500*** | |
| MOTOR RATINGS | **COMMON RATINGS** | | | | | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 96 | 144 | 240 | 340 | 570 | |
| | Poles number | P | [mm] | 14 | | | | | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | | | | | |
| | **SKAddr 090 90** | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 4.7 | | | | | |
| | Peak torque | Cmax | [ Nm ] | 40 | 40 | 40 | 30 | 19 | |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 1.05 | 1.54 | 2.50 | 3.75 | 6.8 | |
| | Stall current | In0 | [Arms] | 2.94 | 1.96 | 1.17 | 0.84 | 0.50 | |
| | Peak current | I cmax | [Arms] | 38 | 26 | 16 | 8.0 | 2.8 | |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 3.0 | 6.7 | 18.8 | 40 | 115 | |
| | Phase/phase inductance | Lff | [mH] | 9.9 | 20 | 54 | 120 | 345 | |
| | Electrical time constant | Te | [msec] | 3.3 | 3.0 | 2.9 | 3.0 | 3.0 | |
| | Power loss | Pd | [ W ] | 50 | | | | | |
| | Thermal resistance | Rth | [°C/W] | 2.1 | | | | | |
| | Motor constance | Km | [Nm/√W] | 0.68 | | | | | |
| | Cogging torque | Tcog | [Nm] | 0.14 | | | | | |
| | Insulation class | | | F | | | | | |
| | **SKAddr 090** | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | | | | | | |
| | Peak torque | Cmax | [ Nm ] | | | | | | |
| | Torque constant ± 5% | Kt | [Nm/Arms] | | | | | | |
| | Stall current | In0 | [Arms] | | | | | | |
| | Peak current | I cmax | [Arms] | | | | | | |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | | | | | | |
| | Phase/phase inductance | Lff | [mH] | | | | | | |
| | Electrical time constant | Te | [msec] | | | | | | |
| | Power loss | Pd | [ W ] | | | | | | |
| | Thermal resistance | Rth | [°C/W] | | | | | | |
| | Motor constance | Km | [Nm/√W] | | | | | | |
| | Cogging torque | Tcog | [Nm] | | | | | | |
| | Insulation class | | | F | | | | | |
| THERMAL PROTECTION | Type of thermal cut-off | | | N C : normally closed | | | | | |
| | Rated voltage | Vn | [ Vac] | 250 | | | | | |
| | Rated current | In | [ A ] | 2.5 | | | | | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | | | | | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | | | | | |
| | Operative time | | [ ms ] | 1 | | | | | |
| | Insulation class | | | F | | | | | |

*Drive main voltage needed to supply the full peak torque

DATASHEET n°: 1B4102020502GB

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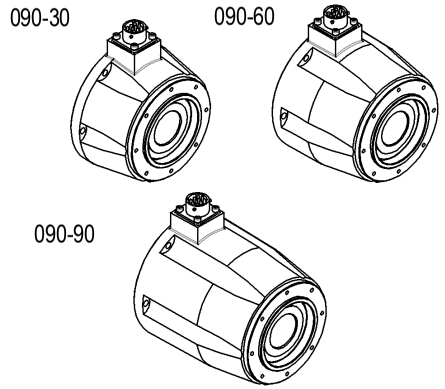
Frameless series

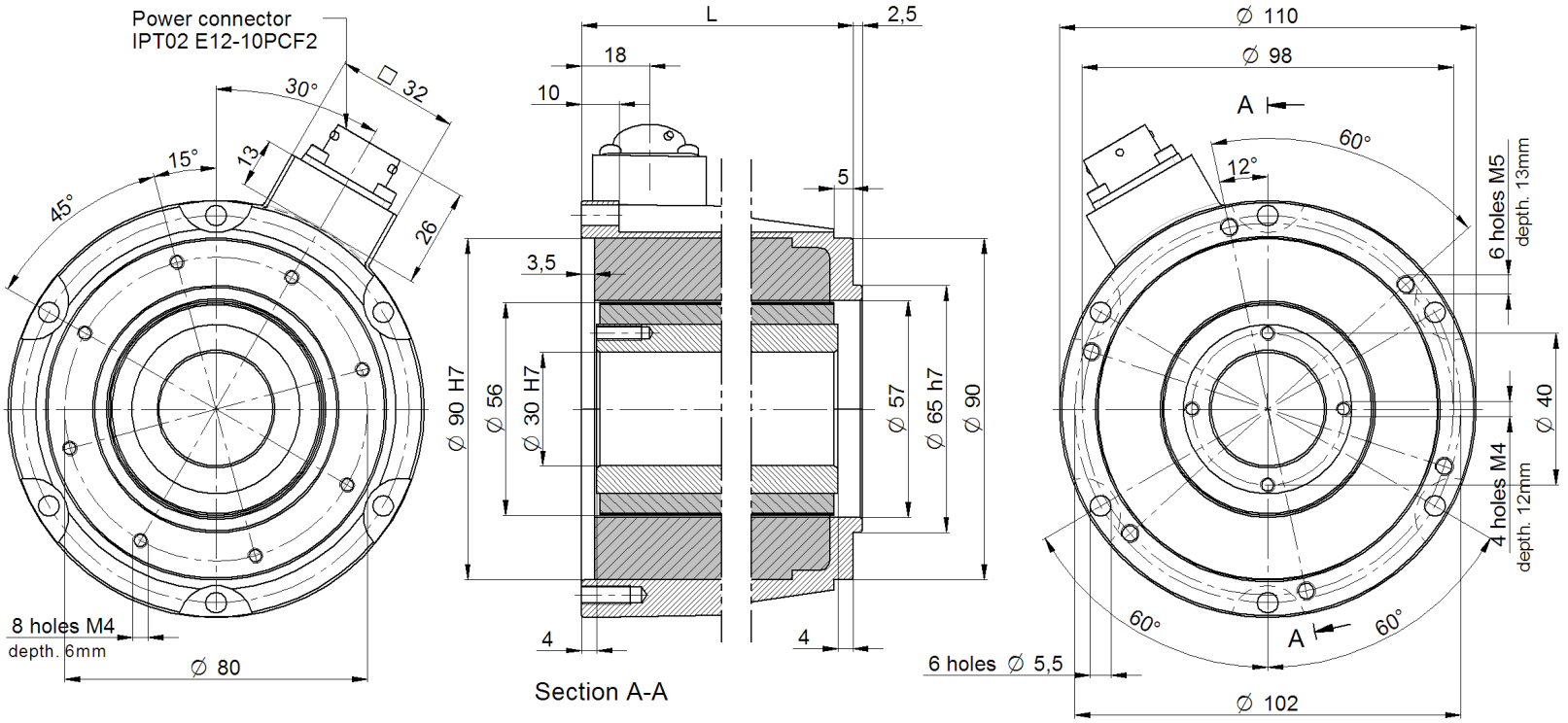
Data Sheet n°: DDR-200901-GB

# SKAddr 090 *Power Elements*




| MECHANICAL DATA | | | 090-30 | 090-60 | 090-90 |
|---|---|---|---|---|---|
| Motor lenght | L | [mm] | 60 | 90 | 120 |
| Rotor weight | Wr | [Kg] | 0.63 | 1.00 | 1.40 |
| Stator weight | Ws | [Kg] | 1.35 | 2.40 | 3.30 |
| Rotor inertia | Jr | [Kg cm²] | 3.1 | 4.98 | 6.86 |
| Max theorethical acceleration | αmax | [rad s²] | 51290 | 56225 | 58309 |

| Wiring diagram | A = Phase U B = Phase V C = Phase W H =PE F = Thermal Prot. G = Thermal Prot. |
|---|---|

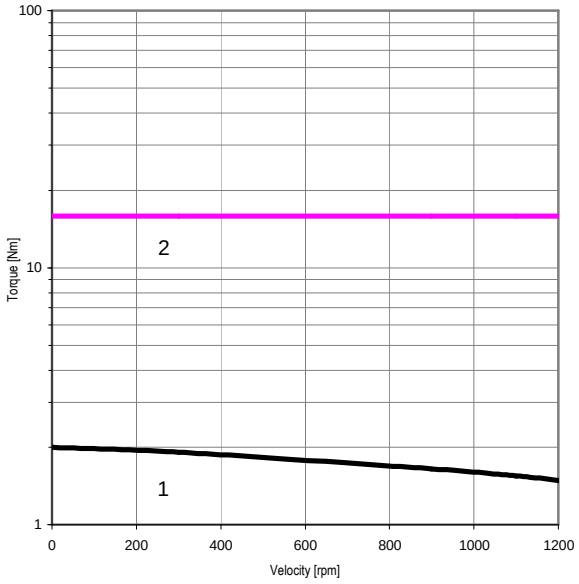


SERIES

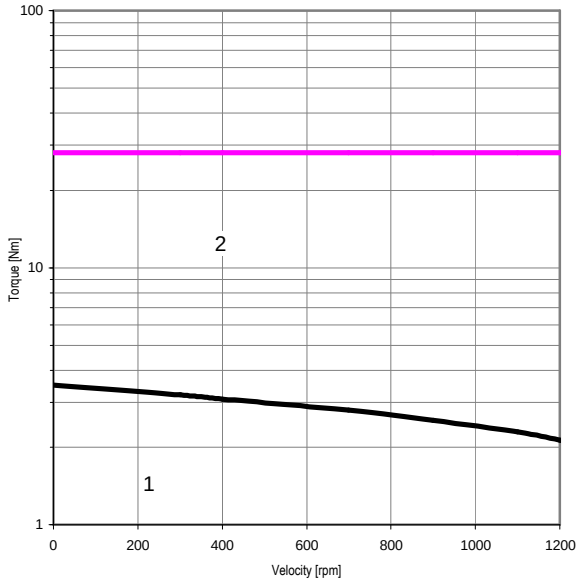
# SKAddr 090

**Performance Curves**

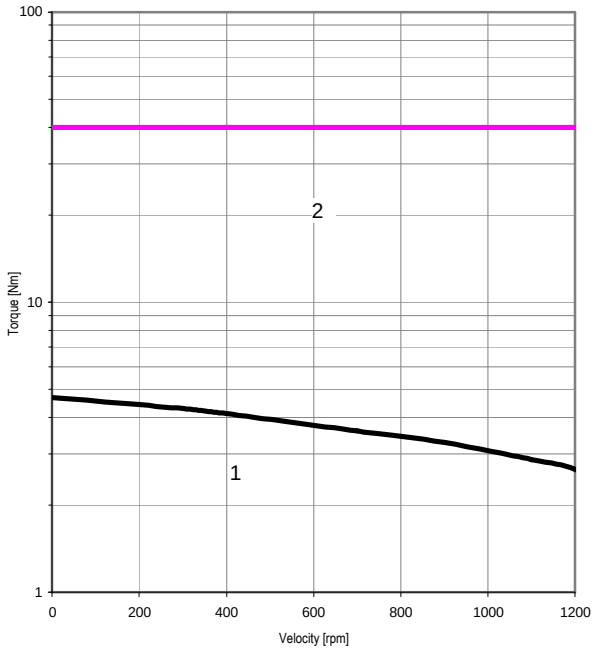
SKA ddr 090.30




SKA ddr 090.60




SKA ddr 090.90




| 1 – Continuous Duty Area 2 – Intermittent Duty Area | |
|---|---|

# TORQUE SERVOMOTORS

SERIES

# SKAddr 148 30/60

**TORQUE [Nm]**

# 8/14

| | | SYMBOLS | UNITS | WINDING TYPE | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 17 | 18 | 19 | 50 | 51 | 52 |
| MOTOR SPEED | Vn drive 145 V (ac) 3phase | | [ rpm ] | **1000*** | **650*** | 400 | 280 | - | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | - | **1000*** | **750*** | **500*** | 300 | - |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | - | - | **1000*** | **800*** | **500*** | **300*** |
| MOTOR RATINGS | **COMMON RATINGS** | | | | | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 96 | 144 | 240 | 340 | 570 | 950 |
| | Poles number | P | [mm] | 14 | | | | | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | | | | | |
| | **SKAddr 148 30** | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 8.0 | | | | | |
| | Peak torque | Cmax | [ Nm ] | 35 | 35 | 35 | 35 | 35 | 24 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 1.30 | 1.94 | 3.26 | 4.54 | 7.61 | 13.7 |
| | Stall current | In0 | [Arms] | 5.00 | 3.33 | 2.00 | 1.43 | 0.85 | 0.51 |
| | Peak current | I cmax | [Arms] | 26.9 | 18.0 | 10.7 | 7.71 | 4.60 | 1.75 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 1..02 | 3.60 | 5.6 | 18.8 | 53.5 | 98 |
| | Phase/phase inductance | Lff | [mH] | 3.34 | 12.6 | 20 | 66 | 187 | 340 |
| | Electrical time constant | Te | [msec] | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| | Power loss | Pd | [ W ] | 87 | | | | | |
| | Thermal resistance | Rth | [°C/W] | 1.21 | | | | | |
| | Motor constance | Km | [Nm/√W] | 0.86 | | | | | |
| | Cogging torque | Tcog | [Nm] | 0.48 | | | | | |
| | Insulation class | | | F | | | | | |
| | **SKAddr 148 60** | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 14 | | | | | |
| | Peak torque | Cmax | [ Nm ] | 72 | 72 | 72 | 72 | 72 | 65 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 1.30 | 1.94 | 3.26 | 4.54 | 7.61 | 13.4 |
| | Stall current | In0 | [Arms] | 8.75 | 5.83 | 3.50 | 2.50 | 1.49 | 0.89 |
| | Peak current | I cmax | [Arms] | 55.4 | 37.1 | 22.1 | 15.9 | 9.5 | 4.9 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 0.53 | 1.25 | 3.36 | 6.6 | 18.8 | 52.3 |
| | Phase/phase inductance | Lff | [mH] | 2.6 | 6.2 | 16 | 32 | 92 | 254 |
| | Electrical time constant | Te | [msec] | 4.9 | 4.9 | 4.9 | 4.8 | 4.9 | 4.9 |
| | Power loss | Pd | [ W ] | 93 | | | | | |
| | Thermal resistance | Rth | [°C/W] | 1.13 | | | | | |
| | Motor constance | Km | [Nm/√W] | 1.45 | | | | | |
| | Cogging torque | Tcog | [Nm] | 0.84 | | | | | |
| | Insulation class | | | F | | | | | |
| THERMAL PROTECTION | Type of thermal cut-off | | | N C : normally closed | | | | | |
| | Rated voltage | Vn | [ Vac] | 250 | | | | | |
| | Rated current | In | [ A ] | 2.5 | | | | | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | | | | | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | | | | | |
| | Operative time | | [ ms ] | 1 | | | | | |
| | Insulation class | | | F | | | | | |

* Drive main voltage needed to supply the full peak torque

DATASHEET n°: 1B4102010502GB

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# TORQUE SERVOMOTORS

SERIES

# SKAddr 148 90/120

**TORQUE [Nm]**

# 20/26

| | | SYMBOLS | UNITS | WINDING TYPE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 17 | 18 | 19 | 50 | 51 | 52 | 53 |
| MOTOR SPEED | Vn drive 145 V (ac) 3phase | | [ rpm ] | **900*** | **650*** | **400*** | 280 | 170 | - | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | - | **900*** | **750*** | **500*** | **300*** | **180*** | - |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | - | - | - | **800*** | **500*** | **300*** | **150*** |
| MOTOR RATINGS | **COMMON RATINGS** | | | | | | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 96 | 144 | 240 | 340 | 570 | 950 | 1900 |
| | Poles number | P | [mm] | 14 | | | | | | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | | | | | | |
| | **SKAddr 148 90** | | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 20 | | | | | | |
| | Peak torque | Cmax | [ Nm ] | 106 | 106 | 106 | 106 | 106 | 90 | 60 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 1.30 | 1.94 | 3.26 | 4.54 | 7.61 | 13.1 | 28.6 |
| | Stall current | In0 | [Arms] | 12.5 | 8.33 | 5.00 | 3.57 | 2.13 | 1.27 | 0.64 |
| | Peak current | I cmax | [Arms] | 81.5 | 54.6 | 32.5 | 23.3 | 13.9 | 6.85 | 2.1 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 0.33 | 0.70 | 1.90 | 3.9 | 11.0 | 30.0 | 136 |
| | Phase/phase inductance | Lff | [mH] | 1.6 | 3.6 | 10.6 | 22 | 62 | 157 | 632 |
| | Electrical time constant | Te | [msec] | 5.0 | 5.1 | 5.6 | 5.6 | 5.6 | 5.2 | 4.7 |
| | Power loss | Pd | [ W ] | 112 | | | | | | |
| | Thermal resistance | Rth | [°C/W] | 0.94 | | | | | | |
| | Motor constance | Km | [Nm/√W] | 1.89 | | | | | | |
| | Cogging torque | Tcog | [Nm] | 1.20 | | | | | | |
| | Insulation class | | | F | | | | | | |
| | **SKAddr 148 120** | | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 26 | | | | | | |
| | Peak torque | Cmax | [ Nm ] | 141 | 141 | 141 | 141 | 141 | 141 | 85 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 1.30 | 1.94 | 3.26 | 4.54 | 7.61 | 12.7 | 28.8 |
| | Stall current | In0 | [Arms] | 16.3 | 10.8 | 6.50 | 4.64 | 2.77 | 1.66 | 0.83 |
| | Peak current | I cmax | [Arms] | 108 | 72.7 | 43.3 | 31.1 | 18.5 | 11.1 | 2.95 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 0.22 | 0.50 | 1.38 | 2.79 | 7.80 | 20.8 | 87 |
| | Phase/phase inductance | Lff | [mH] | 1.3 | 3.0 | 8.3 | 17 | 47 | 127 | 524 |
| | Electrical time constant | Te | [msec] | 6.0 | 6.0 | 6.0 | 6.1 | 6.0 | 6.0 | 6.0 |
| | Power loss | Pd | [ W ] | 133 | | | | | | |
| | Thermal resistance | Rth | [°C/W] | 0.79 | | | | | | |
| | Motor constance | Km | [Nm/√W] | 2.25 | | | | | | |
| | Cogging torque | Tcog | [Nm] | 1.56 | | | | | | |
| | Insulation class | | | F | | | | | | |
| THERMAL PROTECTION | Type of thermal cut-off | | | N C : normally closed | | | | | | |
| | Rated voltage | Vn | [ Vac] | 250 | | | | | | |
| | Rated current | In | [ A ] | 2.5 | | | | | | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | | | | | | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | | | | | | |
| | Operative time | | [ ms ] | 1 | | | | | | |
| | Insulation class | | | F | | | | | | |

* Drive main voltage needed to supply the full peak torque

DATASHEET n°: 1B4102020502GB

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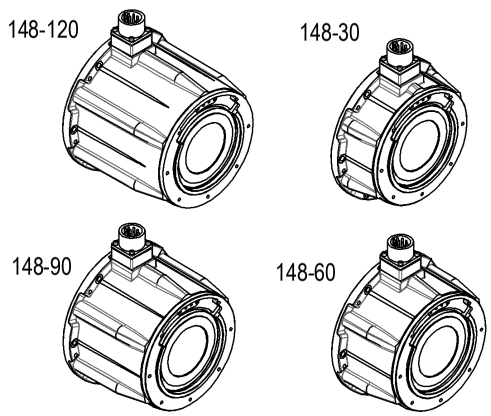
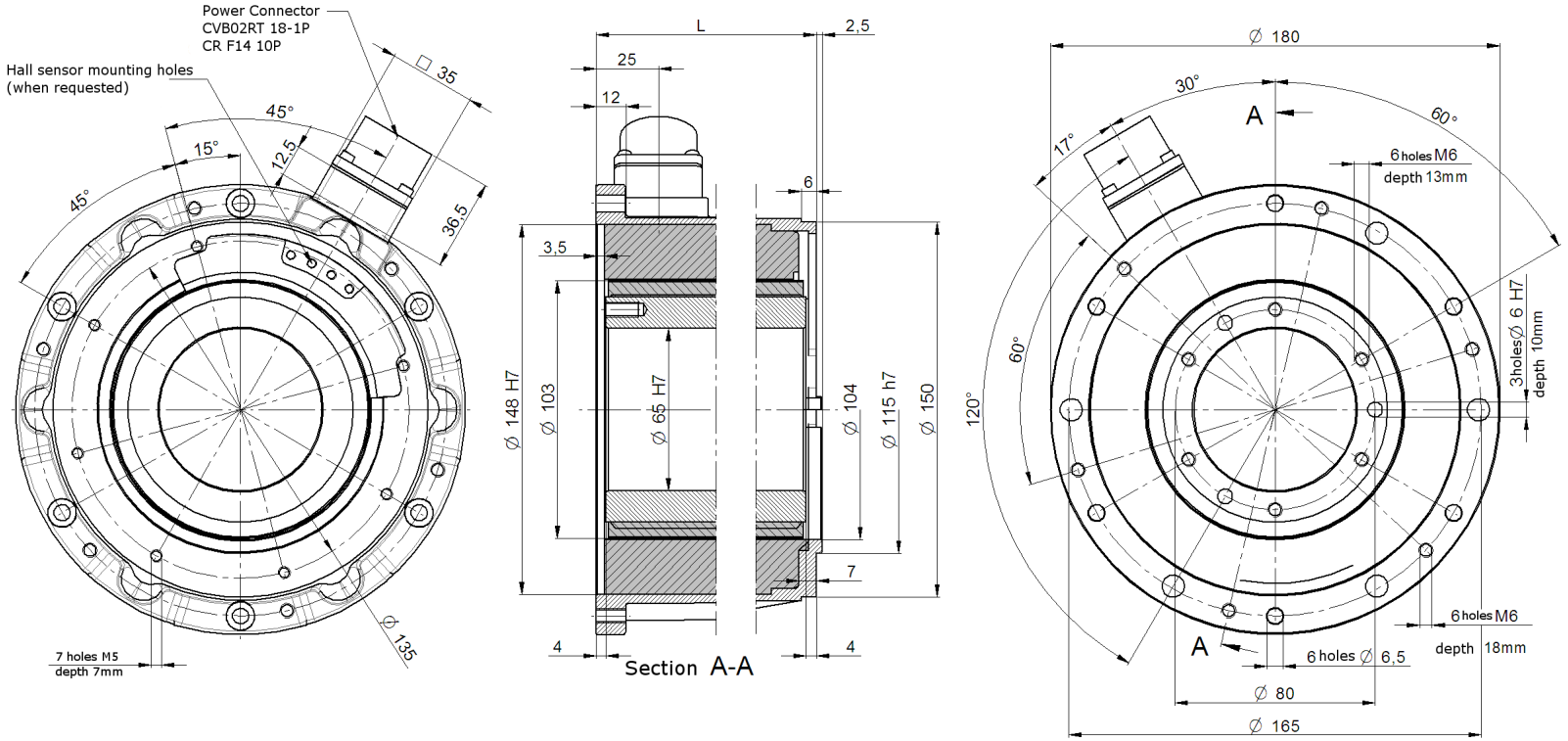
Frameless series

Data Sheet n°: DDR-200901-GB

# SKAddr 148 *Power Elements*

| MECHANICAL DATA | | | 148-30 | 148-60 | 148-90 | 148-120 | | |
|---|---|---|---|---|---|---|---|---|
| Motor length | L | [mm] | 62 | 92 | 122 | 152 | | |
| Rotor weight | Wr | [Kg] | 1.90 | 3.10 | 4.25 | 5.40 | | |
| Stator weight | Ws | [Kg] | 3.20 | 5.35 | 7.50 | 9.70 | | |
| Rotor inerzia | Jr | [Kg cm²] | 36.11 | 57.10 | 78.09 | 99.08 | | |
| Max theoretical acceleration | αmax | [rad s²] | 9693 | 13309 | 13574 | 14231 | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Wiring diagram | A = Phase U B = Phase V C = Phase W H = Ground F = Thermal Protection. G = F | | | | | | | |



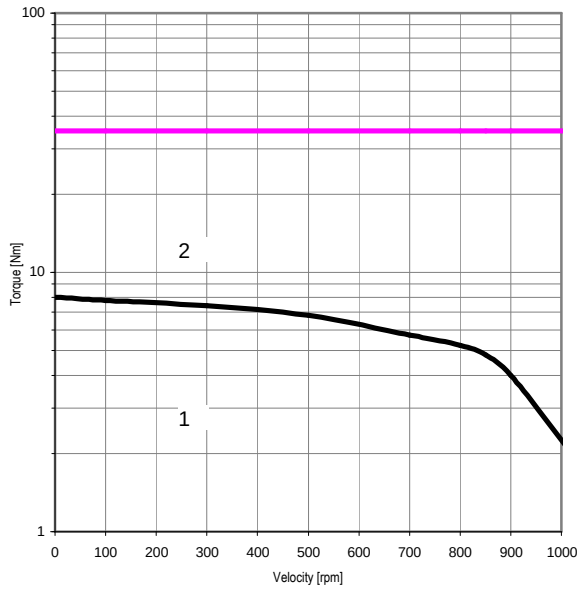



SERIES

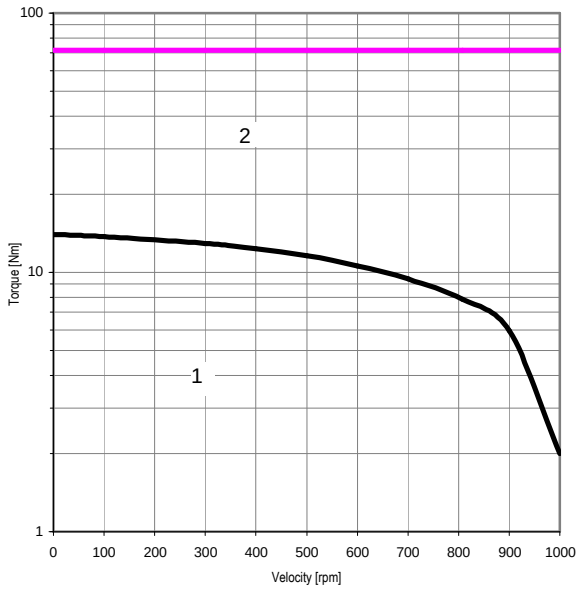
# SKAddr 148

## Performance Curves

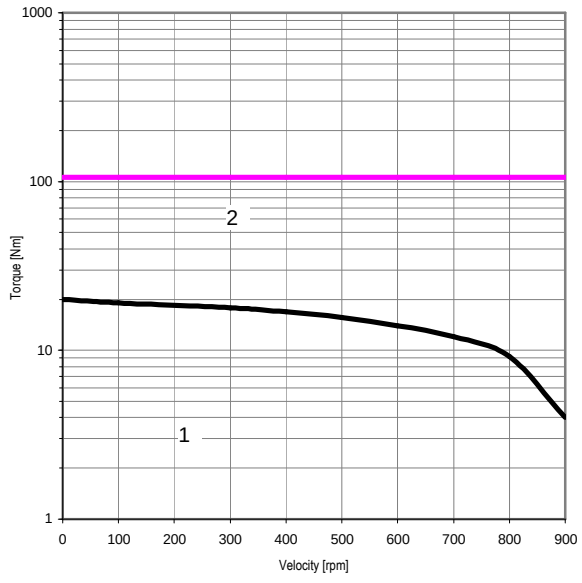
SKA ddr 148.30



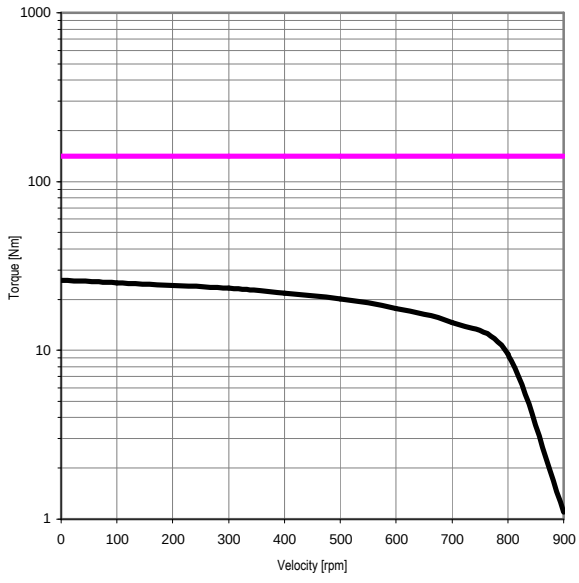

SKA ddr 148.60




SKA ddr 148.90




SKA ddr 148.120




1 – Continuous Duty Area  2 – Intermittent Duty Area

# TORQUE SERVOMOTORS

SERIES

# SKAddr 245 30/60

**TORQUE [Nm]**

# 41/70

| | | SYMBOLS | UNITS | WINDING YPE | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 19 | 50 | 51 | 52 | 53 | 54 |
| MOTOR SPEED | Vn drive 145 V (ac) 3phase | | [ rpm ] | 400 | 300 | 170 | 100 | 50 | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | 750 | 500 | 300 | 180 | 90 | 50 |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | - | 800 | 500 | 300 | 150 | 90 |
| MOTOR RATINGS | **COMMON RATINGS** | | | | | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 240 | 340 | 570 | 950 | 1900 | 3150 |
| | Poles number | P | [mm] | 28 | | | | | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | | | | | |
| | **SKAddr 245 30** | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 41 | | | | | |
| | Peak torque | Cmax | [ Nm ] | 128 | 128 | 128 | 128 | 128 | |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 3.3 | 4.7 | 7.9 | 13.2 | 26.4 | |
| | Stall current | In0 | [Arms] | 10.3 | 7.32 | 4.36 | 2.61 | 1.31 | |
| | Peak current | I cmax | [Arms] | 38.6 | 27.4 | 16.1 | 9.7 | 4.8 | |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 0.76 | 1.52 | 4.2 | 13.5 | 44 | |
| | Phase/phase inductance | Lff | [mH] | 8.0 | 16 | 42 | 113 | 370 | |
| | Electrical time constant | Te | [msec] | 10.4 | 10.4 | 10.0 | 10.4 | 8.4 | |
| | Power loss | Pd | [ W ] | 182 | | | | | |
| | Thermal resistance | Rth | [°C/W] | 0.58 | | | | | |
| | Motor constance | Km | [Nm/√W] | 3.05 | | | | | |
| | Cogging torque | Tcog | [Nm] | 1.23 | | | | | |
| | Insulation class | | | F | | | | | |
| | **SKAddr 245 60** | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 70 | | | | | |
| | Peak torque | Cmax | [ Nm ] | 241 | 241 | 241 | 241 | 241 | 202 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 3.3 | 4.7 | 7.9 | 13.2 | 26.4 | 44.0 |
| | Stall current | In0 | [Arms] | 17.5 | 12.5 | 7.45 | 4.46 | 2.23 | 1.34 |
| | Peak current | I cmax | [Arms] | 73.9 | 51.5 | 30.9 | 18.2 | 9.1 | 4.6 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 0.31 | 0.64 | 2.07 | 5.0 | 20.5 | 59.2 |
| | Phase/phase inductance | Lff | [mH] | 4.4 | 9.0 | 21 | 65 | 220 | 610 |
| | Electrical time constant | Te | [msec] | 14.0 | 14.0 | 10.0 | 13.0 | 11.0 | 10.3 |
| | Power loss | Pd | [ W ] | 215 | | | | | |
| | Thermal resistance | Rth | [°C/W] | 0.49 | | | | | |
| | Motor constance | Km | [Nm/√W] | 4.77 | | | | | |
| | Cogging torque | Tcog | [Nm] | 2.10 | | | | | |
| | Insulation class | | | F | | | | | |
| THERMAL PROTECTION | Type of thermal cut-off | | | N C : normalmente chiusa | | | | | |
| | Rated voltage | Vn | [ Vac] | 250 | | | | | |
| | Rated current | In | [ A ] | 2.5 | | | | | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | | | | | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | | | | | |
| | Operative time | | [ ms ] | 1 | | | | | |
| | Insulation class | | | F | | | | | |

DATASHEET n°: 1B4103010502GB

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# TORQUE SERVOMOTORS

SERIES

# SKAddr 245 90/120

**TORQUE [Nm]**

# 93/115

| | | SYMBOLS | UNITS | WINDING TYPE 51 | 52 | 53 | 54 |
|---|---|---|---|---|---|---|---|
| SPEED MOTOR | Vn drive 145 V (ac) 3phase | | [ rpm ] | 170 | 100 | 50 | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | 300 | 180 | 90 | 50 |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | 500 | 300 | 150 | 90 |
| MOTOR RATINGS | **COMMON RATINGS** | | | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 570 | 950 | 1900 | 3150 |
| | Poles number | P | [mm] | 28 | | | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | | | |
| | **SKAddr 245 90** | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 93 | | | |
| | Peak torque | Cmax | [ Nm ] | 350 | 350 | 350 | 320 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 7.9 | 13.2 | 26.4 | 43.8 |
| | Stall current | In0 | [Arms] | 9.89 | 5.92 | 2.96 | 1.79 |
| | Peak current | I cmax | [Arms] | 44.7 | 26.5 | 13.2 | 7.3 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 1.14 | 3.22 | 12.9 | 35.3 |
| | Phase/phase inductance | Lff | [mH] | 18 | 51 | 204 | 560 |
| | Electrical time constant | Te | [msec] | 15.8 | 15.8 | 15.8 | 15.8 |
| | Power loss | Pd | [ W ] | 250 | | | |
| | Thermal resistance | Rth | [°C/W] | 0.42 | | | |
| | Motor constance | Km | [Nm/√W] | 5.88 | | | |
| | Cogging torque | Tcog | [Nm] | 2.79 | | | |
| | Insulation class | | | F | | | |
| | **SKAddr 245 120** | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 115 | | | |
| | Peak torque | Cmax | [ Nm ] | 458 | 458 | 458 | 438 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 7.9 | 13.2 | 26.4 | 43.8 |
| | Stall current | In0 | [Arms] | 12.2 | 7.32 | 3.66 | 2.21 |
| | Peak current | I cmax | [Arms] | 58.6 | 34.6 | 17.3 | 10.0 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 1.04 | 2.8 | 9.95 | 25.7 |
| | Phase/phase inductance | Lff | [mH] | 12.1 | 33.5 | 135 | 435 |
| | Electrical time constant | Te | [msec] | 12 | 12 | 13.6 | 16.9 |
| | Power loss | Pd | [ W ] | 275 | | | |
| | Thermal resistance | Rth | [°C/W] | 0.38 | | | |
| | Motor constance | Km | [Nm/√W] | 6.93 | | | |
| | Cogging torque | Tcog | [Nm] | 3.45 | | | |
| | Insulation class | | | F | | | |
| THERMAL PROTECTION | Type of thermal cut-off | | | N C : normalmente chiusa | | | |
| | Rated voltage | Vn | [ Vac] | 250 | | | |
| | Rated current | In | [ A ] | 2.5 | | | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | | | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | | | |
| | Operative time | | [ ms ] | 1 | | | |
| | Insulation class | | | F | | | |

DATASHEET n°: 1B4103020502GB

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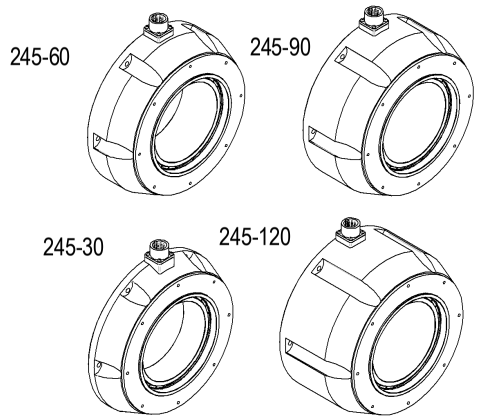
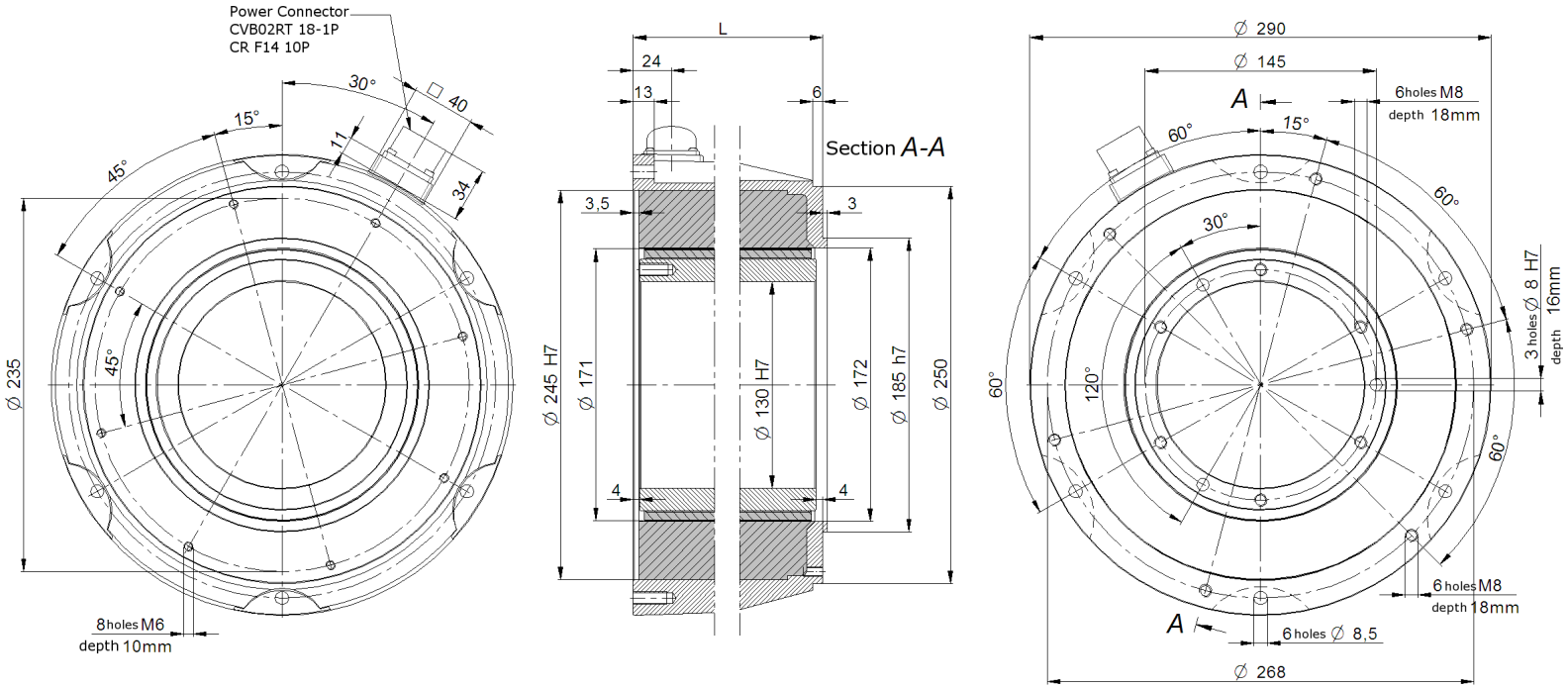
Frameless series

Data Sheet n°:DDR-200901-GB

# SKAddr 245 *Power Elements*

| MECHANICAL DATA | | | 245-30 | 245-60 | 245-90 | 245-120 | | |
|---|---|---|---|---|---|---|---|---|
| Motor length | L | [mm] | 70 | 100 | 130 | 160 | | |
| Rotor weight | Wr | [Kg] | 4.30 | 6.50 | 8.70 | 11.00 | | |
| Stator weight | Ws | [Kg] | 10.00 | 16.40 | 22.80 | 29.10 | | |
| Rotor inertia | Jr | [Kg m²] | 0.0245 | 0.0371 | 0.0498 | 0.0624 | | |
| Max theoretical acceleration | αmax | [rad s²] | 5224 | 6496 | 7028 | 7340 | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Wiring diagram | A = Phase U B = Phase V C = Phase W H = Ground F = Thermal Protection G = F | | | | | | | |



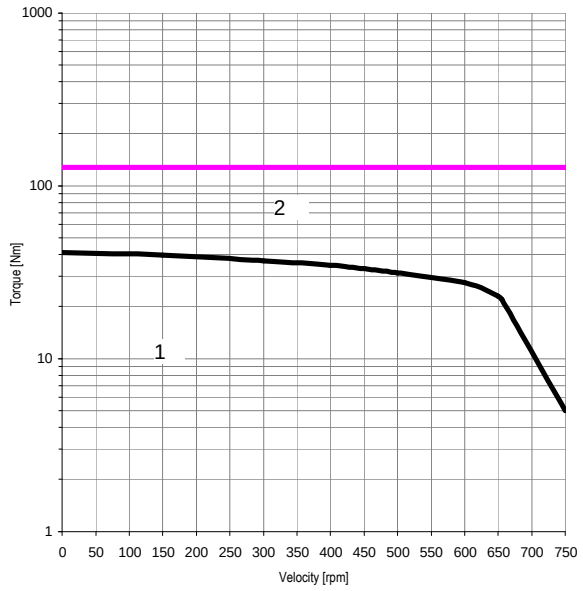



SERIES

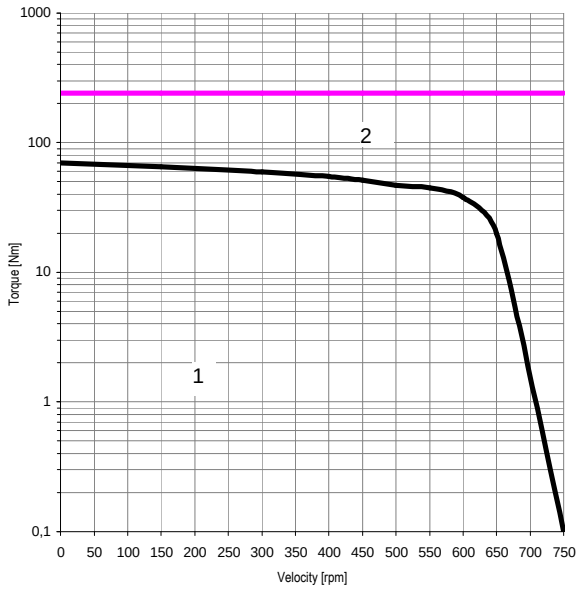
# SKAddr 245

## Operative Curves

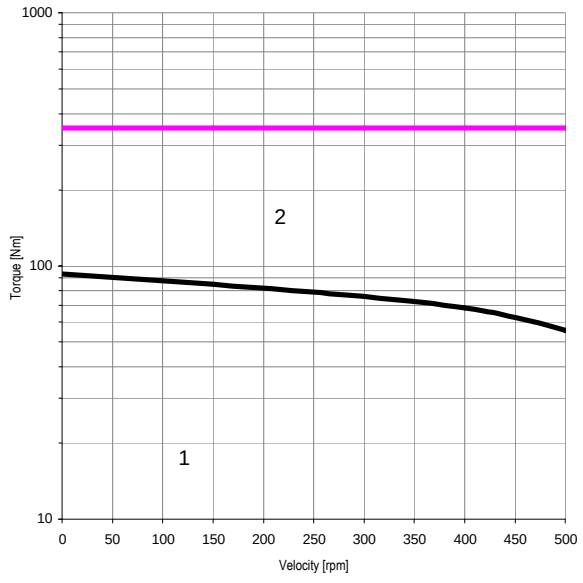
SKA ddr 245.30



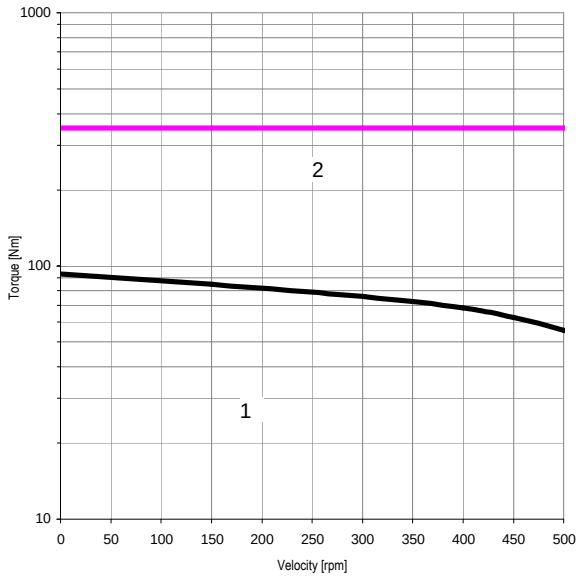

SKA ddr 245.60




SKA ddr 245.90




SKA ddr 245.120




1 – Continuous Duty Area  2 – Intermittent Duty Area

# TORQUE SERVOMOTORS

SERIES

# SKAddr 335 30/60

**TORQUE [Nm]**

# 100/164

| | | SYMBOLS | UNITS | WINDING TYPE | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 19 | 50 | 51 | 52 | 53 | 54 | 55 |
| MOTOR SPEED | Vn drive 145 V (ac) 3phase | | [ rpm ] | 400 | 280 | 170 | 100 | 50 | - | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | - | 500 | 300 | 180 | 90 | 50 | - |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | - | - | 500 | 300 | 150 | 90 | 50 |
| MOTOR RATINGS | **COMMON RATINGS** | | | | | | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 240 | 340 | 570 | 950 | 1900 | 3150 | 5700 |
| | Poles number | P | [mm] | 42 | | | | | | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | | | | | | |
| | **SKAddr 335 30** | | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 100 | | | | | | |
| | Peak torque | Cmax | [ Nm ] | 290 | 290 | 290 | 290 | 290 | 290 | 167 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 3.32 | 4.7 | 7.9 | 13.2 | 26.4 | 43.8 | 81.9 |
| | Stall current | In0 | [Arms] | 25.0 | 17.9 | 10.6 | 6.36 | 3.18 | 1.92 | 1.06 |
| | Peak current | I cmax | [Arms] | 87.4 | 61.9 | 36.7 | 22.3 | 11.0 | 6.61 | 2.04 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 0.22 | 0.47 | 1.24 | 3.50 | 14.0 | 38.7 | 126 |
| | Phase/phase inductance | Lff | [mH] | 2.1 | 4.6 | 12 | 34 | 136 | 376 | 1225 |
| | Electrical time constant | Te | [msec] | 9.72 | 9.72 | 9.72 | 9.72 | 9.72 | 9.72 | 9.72 |
| | Power loss | Pd | [ W ] | 315 | | | | | | |
| | Thermal resistance | Rth | [°C/W] | 0.33 | | | | | | |
| | Motor constance | Km | [Nm/√W] | 5.63 | | | | | | |
| | Cogging torque | Tcog | [Nm] | 3 | | | | | | |
| | Insulation class | | | F | | | | | | |
| | **SKAddr 335 60** | | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 164 | | | | | | |
| | Peak torque | Cmax | [ Nm ] | 550 | 550 | 550 | 550 | 550 | 550 | 393 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 3.32 | 4.7 | 7.9 | 13.2 | 26.4 | 43.8 | 81.9 |
| | Stall current | In0 | [Arms] | 41.0 | 29.2 | 17.4 | 10.4 | 5.22 | 3.15 | 1.74 |
| | Peak current | I cmax | [Arms] | 166 | 117 | 69.5 | 41.8 | 20.8 | 12.5 | 4.8 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 0.09 | 0.19 | 0.52 | 1.41 | 5.80 | 16.4 | 53.1 |
| | Phase/phase inductance | Lff | [mH] | 1.2 | 2.5 | 6.8 | 18 | 75 | 210 | 690 |
| | Electrical time constant | Te | [msec] | 13.3 | 13.1 | 13.0 | 13.0 | 13.0 | 12.8 | 13.0 |
| | Power loss | Pd | [ W ] | 355 | | | | | | |
| | Thermal resistance | Rth | [°C/W] | 0.30 | | | | | | |
| | Motor constance | | [Nm/√W] | 8.7 | | | | | | |
| | Cogging torque | | [Nm] | 4.9 | | | | | | |
| | Insulation class | | | F | | | | | | |
| THERMAL PROTECTION | Type of thermal cut-off | Cmax | | N C : normally closed | | | | | | |
| | Rated voltage | Kt | [ Vac] | 250 | | | | | | |
| | Rated current | In0 | [ A ] | 2.5 | | | | | | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | | | | | | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | | | | | | |
| | Operative time | | [ ms ] | 1 | | | | | | |
| | Insulation class | | | F | | | | | | |

DATASHEET n°: 1B4104030502GB

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# TORQUE SERVOMOTORS

SERIES

# SKAddr 335 90/120

**TORQUE [Nm]**

# 220/270

| | | SYMBOLS | UNITS | WINDING TYPE | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 | 51 | 52 | 53 | 54 | 55 |
| MOTOR SPEED | Vn drive 145 V (ac) 3phase | | [ rpm ] | 280 | 170 | 100 | 50 | - | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | - | 300 | 180 | 90 | 50 | - |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | - | - | 300 | 150 | 90 | 50 |
| MOTOR RATINGS | **COMMON RATINGS** | | | | | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 340 | 570 | 950 | 1900 | 3150 | 5700 |
| | Poles number | P | [mm] | 42 | | | | | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | | | | | |
| | **SKAddr 335 90** | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 220 | | | | | |
| | Peak torque | Cmax | [ Nm ] | 800 | 800 | 800 | 800 | 800 | 624 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 4.7 | 7.9 | 13.2 | 26.4 | 43.8 | 81.9 |
| | Stall current | In0 | [Arms] | 38.3 | 23.4 | 14.0 | 7.00 | 4.22 | 2.33 |
| | Peak current | I cmax | [Arms] | 170 | 101 | 60.6 | 30.3 | 18.3 | 7.62 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 0.12 | 0.32 | 0.92 | 3.70 | 11.3 | 39 |
| | Phase/phase inductance | Lff | [mH] | 1.8 | 4.4 | 12.9 | 53 | 150 | 470 |
| | Electrical time constant | Te | [msec] | 15.0 | 13.8 | 14.0 | 14.3 | 13.2 | 12.1 |
| | Power loss | Pd | [ W ] | 400 | | | | | |
| | Thermal resistance | Rth | [°C/W] | 0.26 | | | | | |
| | Motor constance | Km | [Nm/√W] | 11.0 | | | | | |
| | Cogging torque | Tcog | [Nm] | 6.6 | | | | | |
| | Insulation class | | | F | | | | | |
| | **SKAddr 335 120** | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 270 | | | | | |
| | Peak torque | Cmax | [ Nm ] | 1043 | 1043 | 1043 | 1043 | 1043 | 852 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 4.7 | 7.9 | 13.2 | 26.4 | 43.8 | 81.9 |
| | Stall current | In0 | [Arms] | 48.2 | 28.7 | 17.2 | 8.59 | 5.18 | 2.86 |
| | Peak current | I cmax | [Arms] | 222 | 132 | 79.0 | 39.6 | 23.8 | 10.4 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 0.09 | 0.24 | 0.67 | 2.72 | 7.43 | 24.6 |
| | Phase/phase inductance | Lff | [mH] | 1.4 | 3.5 | 10.4 | 42.1 | 116 | 382 |
| | Electrical time constant | Te | [msec] | 15.5 | 15.6 | 15.5 | 15.5 | 15.6 | 15.5 |
| | Power loss | Pd | [ W ] | 420 | | | | | |
| | Thermal resistance | Rth | [°C/W] | 0.25 | | | | | |
| | Motor constance | Km | [Nm/√W] | 12.6 | | | | | |
| | Cogging torque | Tcog | [Nm] | 8.1 | | | | | |
| | Insulation class | | | F | | | | | |
| THERMAL PROTECTION | Type of thermal cut-off | | | N C : normally closed | | | | | |
| | Rated voltage | Vn | [ Vac] | 250 | | | | | |
| | Rated current | In | [ A ] | 2.5 | | | | | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | | | | | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | | | | | |
| | Operative time | | [ ms ] | 1 | | | | | |
| | Insulation class | | | F | | | | | |

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# TORQUE SERVOMOTORS

SERIES

# SKAddr 335 150

**TORQUE [Nm]**

# 320

| | | SYMBOLS | UNITS | WINDING TYPE | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 | 51 | 52 | 53 | 54 | 55 |
| MOTOR SPEED | Vn drive 145 V (ac) 3phase | | [ rpm ] | 280 | 170 | 100 | 50 | - | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | - | 300 | 180 | 90 | 50 | - |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | - | - | 300 | 150 | 90 | 50 |
| MOTOR RATINGS | **COMMON RATINGS** | | | | | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 340 | 570 | 950 | 1900 | 3150 | 5700 |
| | Poles number | P | [mm] | 42 | | | | | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | | | | | |
| | **SKAddr 335 150** | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 320 | | | | | |
| | Peak torque | Cmax | [ Nm ] | 1290 | 1290 | 1290 | 1290 | 1290 | 1097 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 4.7 | 7.9 | 13.2 | 26.4 | 43.8 | 81.9 |
| | Stall current | In0 | [Arms] | 57.1 | 34.0 | 20.4 | 10.2 | 6.14 | 3.39 |
| | Peak current | I cmax | [Arms] | 275 | 163 | 97.7 | 48.9 | 29.4 | 13.4 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 0.07 | 0.19 | 0.53 | 2.10 | 5.95 | 19.2 |
| | Phase/phase inductance | Lff | [mH] | 1.1 | 3.0 | 8.6 | 34 | 96 | 311 |
| | Electrical time constant | Te | [msec] | 15.7 | 15.8 | 16.2 | 16.2 | 16.2 | 16.2 |
| | Power loss | Pd | [ W ] | 490 | | | | | |
| | Thermal resistance | Rth | [°C/W] | 0.21 | | | | | |
| | Motor constance | Km | [Nm/√W] | 14.4 | | | | | |
| | Cogging torque | Tcog | [Nm] | 9.60 | | | | | |
| | Insulation class | | | F | | | | | |
| | **SKAddr 335** | | | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | | | | | | |
| | Peak torque | Cmax | [ Nm ] | | | | | | |
| | Torque constant ± 5% | Kt | [Nm/Arms] | | | | | | |
| | Stall current | In0 | [Arms] | | | | | | |
| | Peak current | I cmax | [Arms] | | | | | | |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | | | | | | |
| | Phase/phase inductance | Lff | [mH] | | | | | | |
| | Electrical time constant | Te | [msec] | | | | | | |
| | Power loss | Pd | [ W ] | | | | | | |
| | Thermal resistance | Rth | [°C/W] | | | | | | |
| | Motor constance | Km | [Nm/√W] | | | | | | |
| | Cogging torque | Tcog | [Nm] | | | | | | |
| | Insulation class | | | | | | | | |
| THERMAL PROTECTION | Type of thermal cut-off | | | N C : normally closed | | | | | |
| | Rated voltage | Vn | [ Vac] | 250 | | | | | |
| | Rated current | In | [ A ] | 2.5 | | | | | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | | | | | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | | | | | |
| | Operative time | | [ ms ] | 1 | | | | | |
| | Insulation class | | | F | | | | | |

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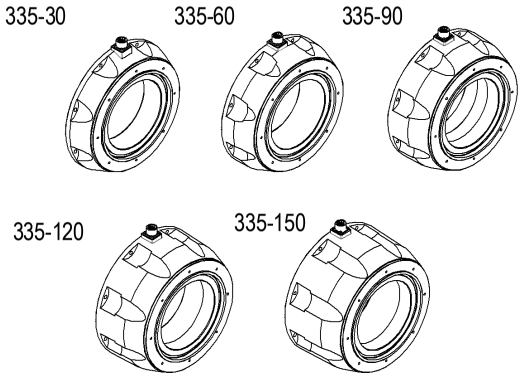
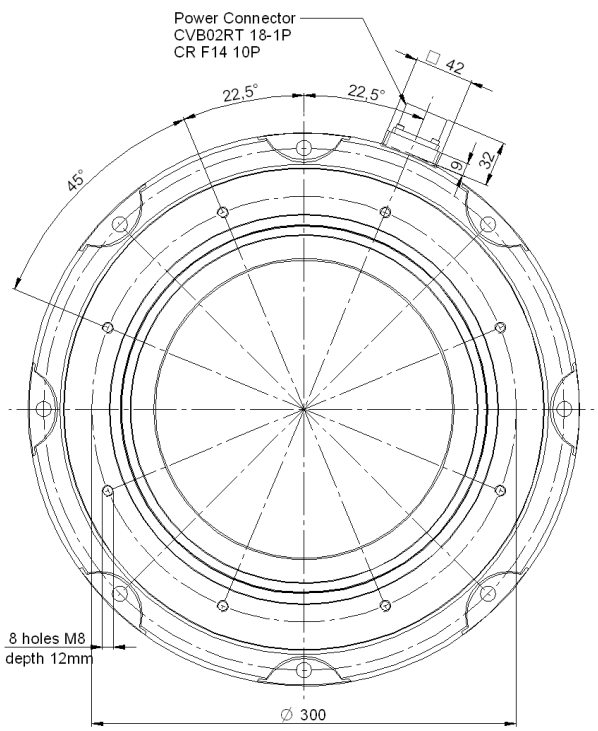
Frameless series

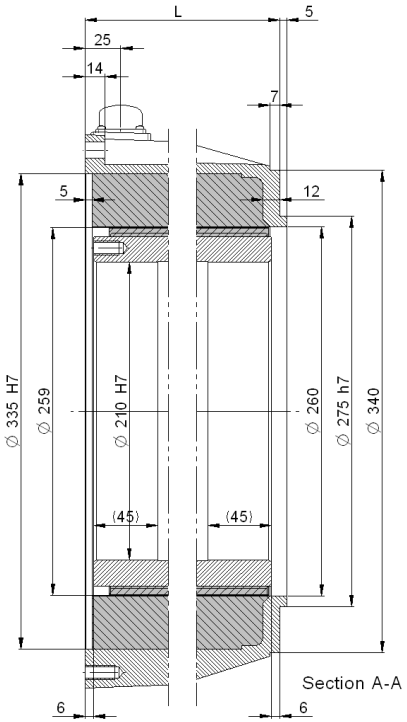
Data Sheet n°:DDR-200901-GB

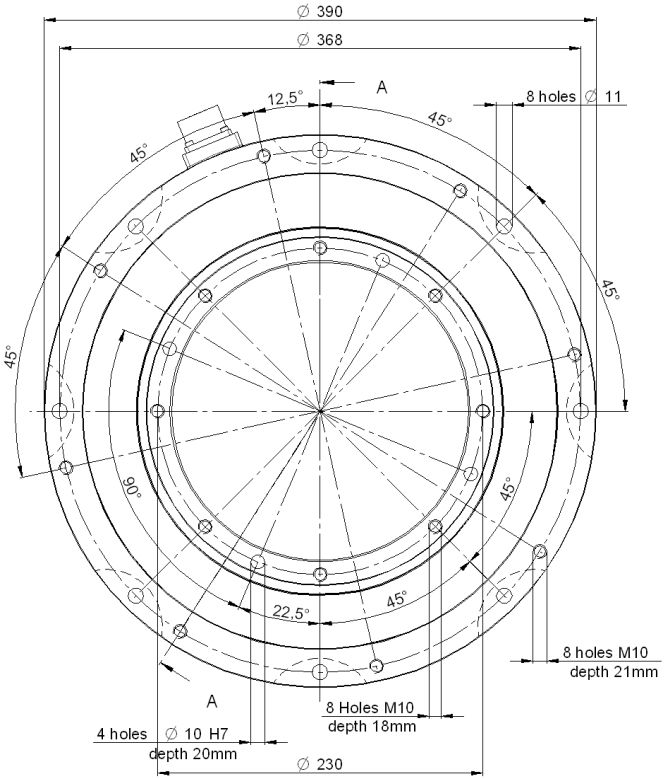
# SKAddr 335 *Power Elements*

| MECHANICAL DATA | | | 335-30 | 335-60 | 335-90 | 335-120 | 335-150 | |
|---|---|---|---|---|---|---|---|---|
| Motor length | L | [mm] | 82 | 112 | 142 | 172 | 202 | |
| Rotor weight | Wr | [Kg] | 9.00 | 13.10 | 17.10 | 21.20 | 25.2 | |
| Stator weight | Ws | [Kg] | 16 | 25.6 | 35.30 | 45.00 | 54.50 | |
| Rotor inertia | Jr | [Kg m²] | 0.1231 | 0.1805 | 0.2367 | 0.2932 | 0.3498 | |
| Max theoretical acceleration | αmax | [rad s²] | 2356 | 3047 | 3380 | 3557 | 3688 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Wiring diagram | A = Phase U B = Phase V C = Phase W H = Ground F = Thermal Protection G = F. | | | | | | | |



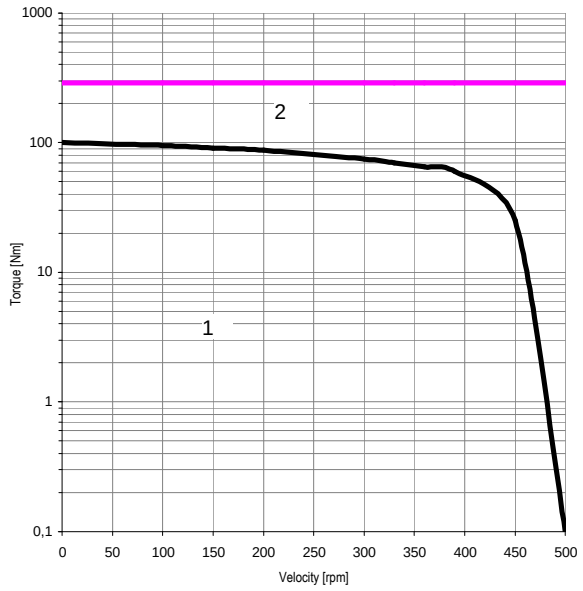



SERIES

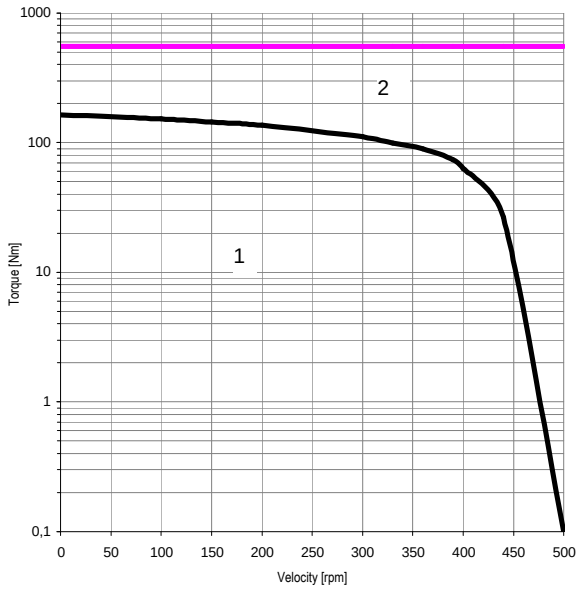
# SKAddr 335

## Performance Curves

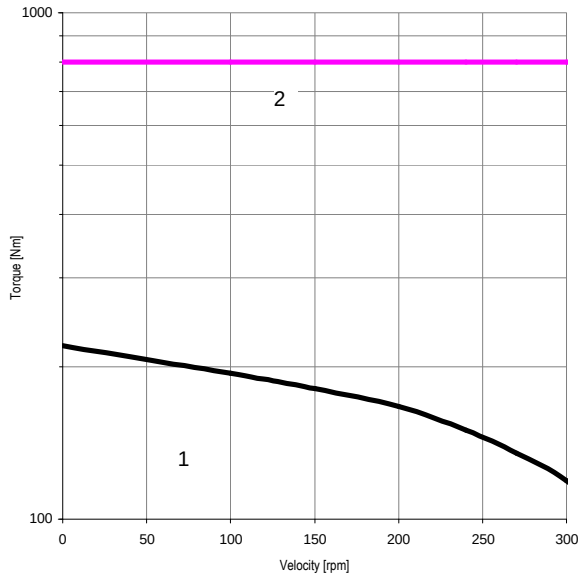
SKA ddr 335.30



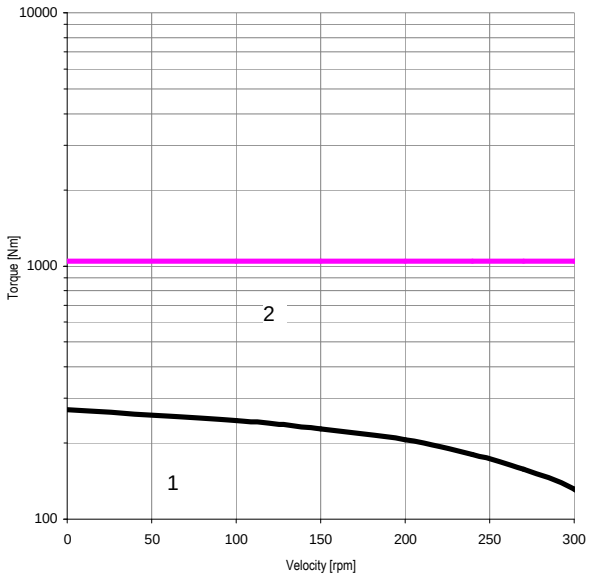

SKA ddr 335.60




SKA ddr 335.90




SKA ddr 335.120



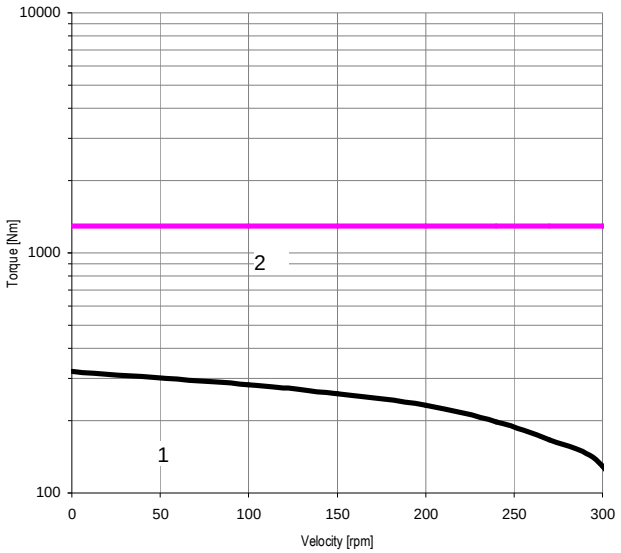

1 – Continuous Duty Area  2 – Intermittent Duty Area

SERIES

# SKAddr 335

## Performance Curves

SKA ddr 335.150




1 – Continuous Duty Area  2 – Intermittent Duty Area

# TORQUE SERVOMOTORS

SERIES

# SKAddr 430 30/60

**TORQUE [Nm]**

# 210/340

| | | SYMBOLS | UNITS | WINDING TYPE 52 | 53 | 54 | 55 |
|---|---|---|---|---|---|---|---|
| MOTOR SPEED | Vn drive 145 V (ac) 3phase | | [ rpm ] | 100 | 50 | - | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | 180 | 90 | 50 | - |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | 300 | 150 | 90 | 50 |
| MOTOR RATINGS | **COMMON RATINGS** | | | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 950 | 1900 | 3150 | 5700 |
| | Poles number | P | [mm] | 56 | | | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | | | |
| | **SKAddr 430 30** | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 210 | | | |
| | Peak torque | Cmax | [ Nm ] | 458 | 458 | 458 | 436 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 11.3 | 22.7 | 37.9 | 68.4 |
| | Stall current | In0 | [Arms] | 13.3 | 6.68 | 4.01 | 2.23 |
| | Peak current | I cmax | [Arms] | 40.4 | 20.2 | 12.1 | 6.37 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 1.11 | 4.47 | 12.5 | 40.3 |
| | Phase/phase inductance | Lff | [mH] | 16.0 | 66.0 | 183 | 593 |
| | Electrical time constant | Te | [msec] | 14.4 | 14.8 | 14.6 | 14.7 |
| | Power loss | Pd | [ W ] | 450 | | | |
| | Thermal resistance | Rth | [°C/W] | 0.23 | | | |
| | Motor constance | Km | [Nm/√W] | 9.90 | | | |
| | Cogging torque | Tcog | [Nm] | 6.30 | | | |
| | Insulation class | | | F | | | |
| | **SKAddr 430 60** | | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 340 | | | |
| | Peak torque | Cmax | [ Nm ] | | 868 | 868 | 868 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | | 22.7 | 37.9 | 68.4 |
| | Stall current | In0 | [Arms] | | 10.9 | 6.58 | 3.64 |
| | Peak current | I cmax | [Arms] | | 38.2 | 22.9 | 12.7 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | | 2.65 | 5.22 | 16.9 |
| | Phase/phase inductance | Lff | [mH] | | 32 | 102 | 330 |
| | Electrical time constant | Te | [msec] | | 12 | 19.5 | 19.5 |
| | Power loss | Pd | [ W ] | 490 | | | |
| | Thermal resistance | Rth | [°C/W] | 0.21 | | | |
| | Motor constance | Km | [Nm/√W] | 15.4 | | | |
| | Cogging torque | Tcog | [Nm] | 10.2 | | | |
| | Insulation class | | | F | | | |
| THERMAL PROTECTION | Type of thermal cut-off | | | N C : normally closed | | | |
| | Rated voltage | Vn | [ Vac] | 250 | | | |
| | Rated current | In | [ A ] | 2.5 | | | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | | | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | | | |
| | Operative time | | [ ms ] | 1 | | | |
| | Insulation class | | | F | | | |

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# TORQUE SERVOMOTORS

SERIES

# SKAddr 430 90/120

**TORQUE [Nm]**

# 450/560

| | | SYMBOLS | UNITS | WINDING TYPE | | |
|---|---|---|---|---|---|---|
| | | | | 53 | 54 | 55 |
| MOTOR SPEED | Vn drive 145 V (ac) 3phase | | [ rpm ] | 50 | - | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | 90 | 50 | - |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | 150 | 90 | 50 |
| MOTOR RATINGS | **COMMON RATINGS** | | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 1900 | 3150 | 5700 |
| | Poles number | P | [mm] | 56 | | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | | |
| | **SKAddr 430 90** | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 450 | | |
| | Peak torque | Cmax | [ Nm ] | 1254 | 1254 | 1254 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 22.7 | 37.9 | 68.4 |
| | Stall current | In0 | [Arms] | 14.3 | 8.63 | 4.78 |
| | Peak current | I cmax | [Arms] | 55.2 | 33.1 | 18.3 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 1.45 | 3.31 | 10.77 |
| | Phase/phase inductance | Lff | [mH] | 18 | 73.0 | 237 |
| | Electrical time constant | Te | [msec] | 22.0 | 22.1 | 22.0 |
| | Power loss | Pd | [ W ] | 550 | | |
| | Thermal resistance | Rth | [°C/W] | 0.19 | | |
| | Motor constance | Km | [Nm/√W] | 19.2 | | |
| | Cogging torque | Tcog | [Nm] | 13.5 | | |
| | Insulation class | | | F | | |
| | **SKAddr 430 120** | | | | | |
| | Stall torque | Cn0 | [ Nm ] | 560 | | |
| | Peak torque | Cmax | [ Nm ] | | 1649 | 1649 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | | 37.9 | 68.4 |
| | Stall current | In0 | [Arms] | | 10.7 | 5.94 |
| | Peak current | I cmax | [Arms] | | 43.5 | 24.1 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | | 2.42 | 7.80 |
| | Phase/phase inductance | Lff | [mH] | | 57 | 183 |
| | Electrical time constant | Te | [msec] | | 23.6 | 23.5 |
| | Power loss | Pd | [ W ] | 620 | | |
| | Thermal resistance | Rth | [°C/W] | 0.17 | | |
| | Motor constance | Km | [Nm/√W] | 22.5 | | |
| | Cogging torque | Tcog | [Nm] | 16.8 | | |
| | Insulation class | | | F | | |
| THERMAL PROTECTION | Type of thermal cut-off | | | N C : normally closed | | |
| | Rated voltage | Vn | [ Vac] | 250 | | |
| | Rated current | In | [ A ] | 2.5 | | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | | |
| | Operative time | | [ ms ] | 1 | | |
| | Insulation class | | | F | | |

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# TORQUE SERVOMOTORS

SERIES

# SKAddr 430 150/180

**TORQUE [Nm]**

# 660/760

| | | SYMBOLS | UNITS | WINDING TYPE 54 | 55 |
|---|---|---|---|---|---|
| MOTOR SPEED | Vn drive 145 V (ac) 3phase | | [ rpm ] | - | - |
| | Vn drive 230 V (ac) 3phase | | [ rpm ] | 50 | - |
| | Vn drive 400 V (ac) 3phase | | [ rpm ] | 90 | 50 |
| MOTOR RATINGS | **COMMON RATINGS** | | | | |
| | Voltage constant ± 5% | Ke | [Vrms/krpm] | 3150 | 5700 |
| | Poles number | P | [mm] | 56 | |
| | Temperature range | Tr | [°C] | 0 ÷ 40° | |
| | **SKAddr 430 150** | | | | |
| | Stall torque | Cn0 | [ Nm ] | 660 | |
| | Peak torque | Cmax | [ Nm ] | 2025 | 2025 |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 37.9 | 68.4 |
| | Stall current | In0 | [Arms] | 12.7 | 7.00 |
| | Peak current | I cmax | [Arms] | 53.4 | 29.6 |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 2.03 | 6.21 |
| | Phase/phase inductance | Lff | [mH] | 47.3 | 152 |
| | Electrical time constant | Te | [msec] | 23.3 | 24.5 |
| | Power loss | Pd | [ W ] | 680 | |
| | Thermal resistance | Rth | [°C/W] | 0.15 | |
| | Motor constance | Km | [Nm/√W] | 25.3 | |
| | Cogging torque | Tcog | [Nm] | 19.8 | |
| | Insulation class | | | F | |
| | **SKAddr 430 180** | | | | |
| | Stall torque | Cn0 | [ Nm ] | 760 | |
| | Peak torque | Cmax | [ Nm ] | 2400 | |
| | Torque constant ± 5% | Kt | [Nm/Arms] | 68.4 | |
| | Stall current | In0 | [Arms] | 8.06 | |
| | Peak current | I cmax | [Arms] | 35.1 | |
| | Phase/phase res. ± 5% a 20°C | Rff | [Ohm] | 5.14 | |
| | Phase/phase inductance | Lff | [mH] | 129 | |
| | Electrical time constant | Te | [msec] | 25.1 | |
| | Power loss | Pd | [ W ] | 745 | |
| | Thermal resistance | Rth | [°C/W] | 0.14 | |
| | Motor constance | Km | [Nm/√W] | 27.8 | |
| | Cogging torque | Tcog | [Nm] | 22.8 | |
| | Insulation class | | | F | |
| THERMAL PROTECTION | Type of thermal cut-off | | | N C : normally closed | |
| | Rated voltage | Vn | [ Vac] | 250 | |
| | Rated current | In | [ A ] | 2.5 | |
| | Operative temperature | Tn | [ °C ] | 130 °C ± 5% | |
| | Resetting temperature | Tr | [ °C ] | 100 °C ± 15°C | |
| | Operative time | | [ ms ] | 1 | |
| | Insulation class | | | F | |

DATASHEET n°: 1B4105030502GB

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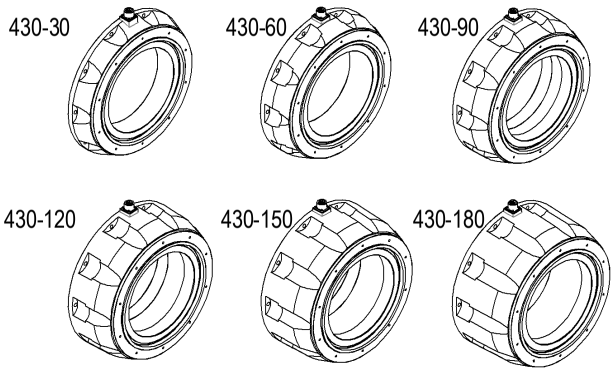
Frameless series

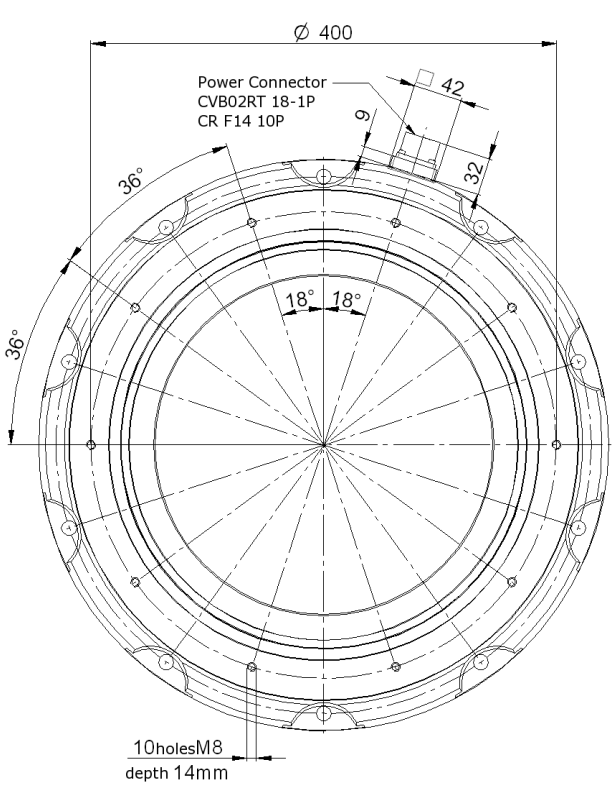
Data Sheet n°:DDR-200901-GB

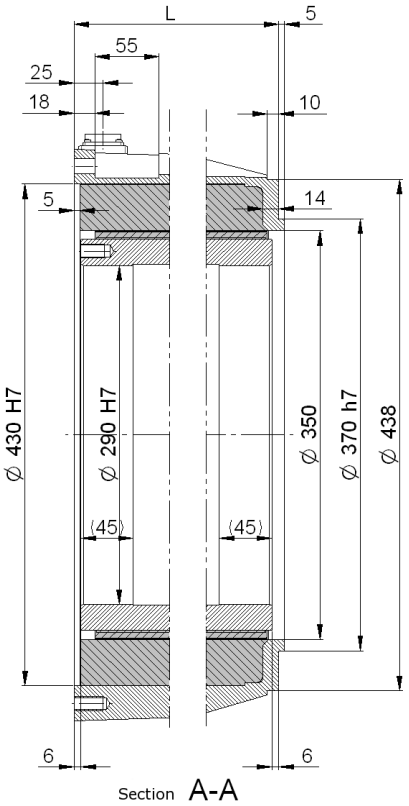
# SKAddr 430 *Power Elements*

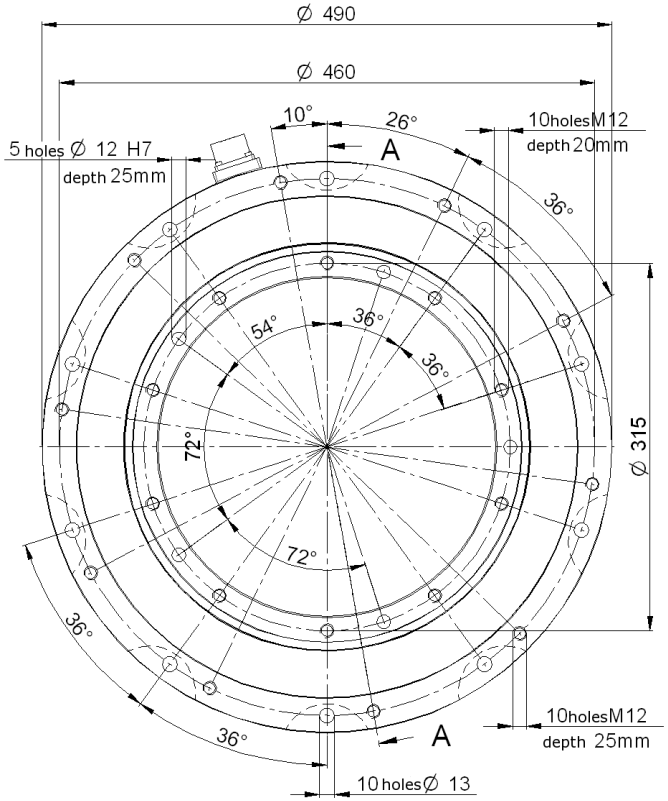
| MECHANICAL DATA | | | 430-30 | 430-60 | 430-90 | 430-120 | 430-150 | 430-180 |
|---|---|---|---|---|---|---|---|---|
| Motor length | L | [mm] | 85 | 115 | 145 | 175 | 205 | 235 |
| Rotor weight | Wr | [Kg] | 15.30 | 22.00 | 28.50 | 35.20 | 41.70 | 48.3 |
| Stator weight | Ws | [Kg] | 22.8 | 36.5 | 50.00 | 64.00 | 77.50 | 90.50 |
| Rotor inertia | Jr | [Kg m²] | 0.3894 | 0.5642 | 0.7323 | 0.9025 | 1.0728 | 1.2430 |
| Max theoretical acceleration | αmax | [rad s²] | 1176 | 1538 | 1712 | 1827 | 1887 | 1931 |

| Wiring diagram | A = Phase U B = Phase V C = Phase W H = Ground F = Thermal Protection G = F. |
|---|---|



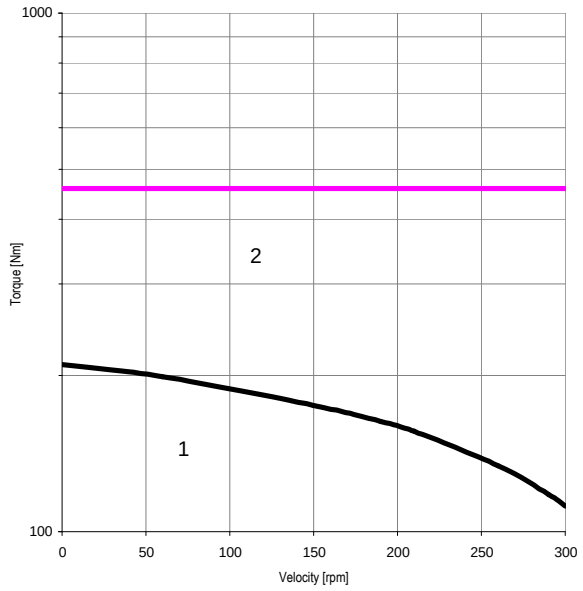



SERIES

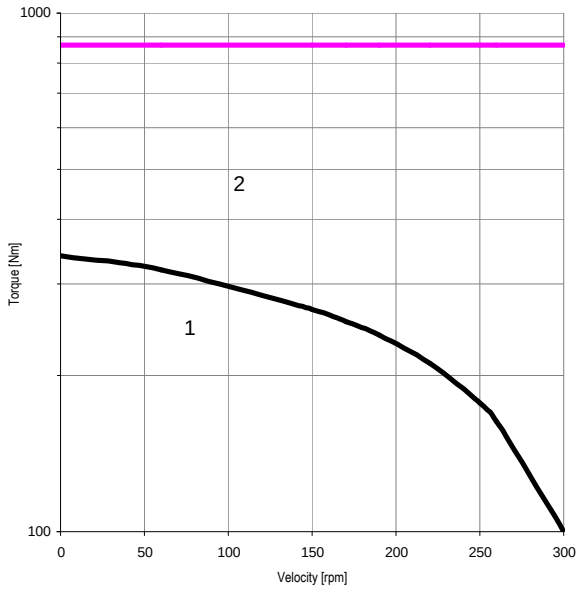
# SKAddr 430

## Performance Curves

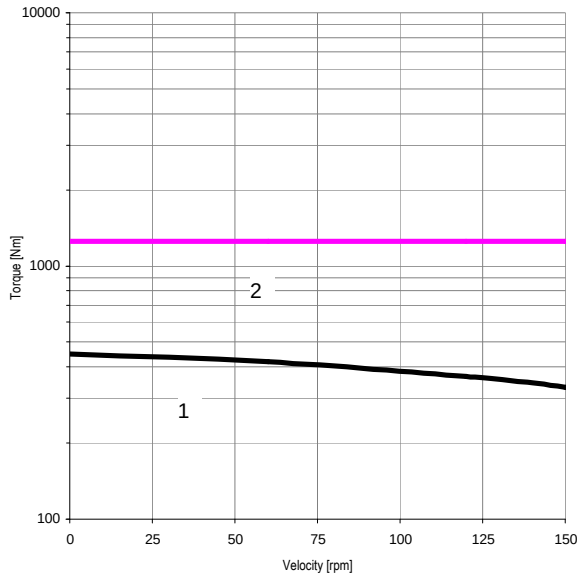
SKA ddr 430.30




SKA ddr 430.60




SKA ddr 430.90

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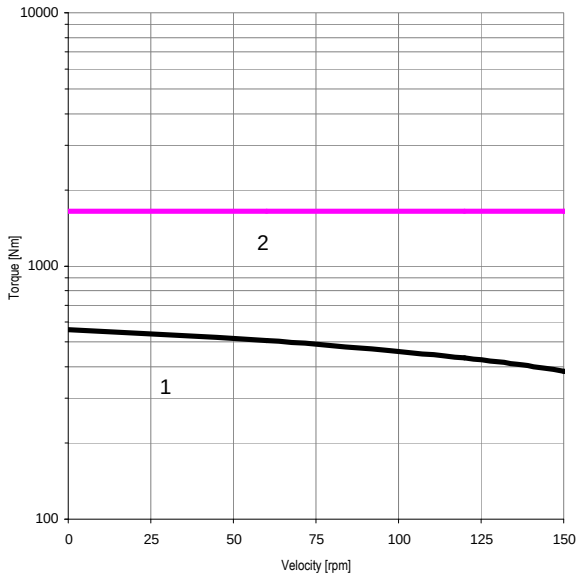


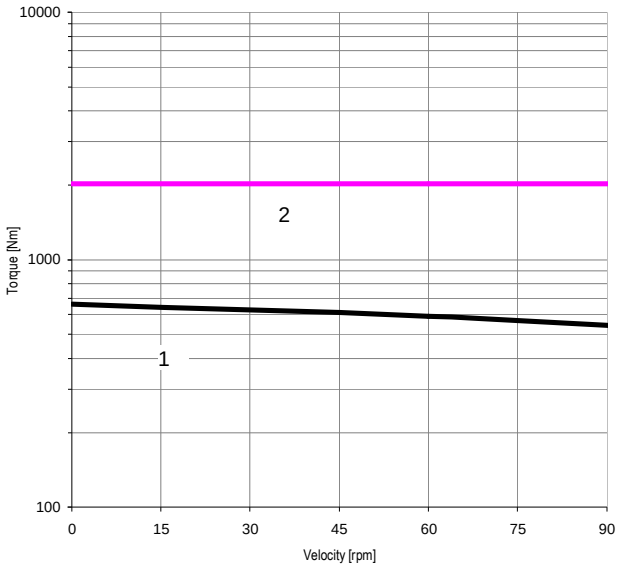

1 – Continuous Duty Area  2 – Intermittent Duty Area

SERIES

# SKAddr 430

## Performance Curves

SKA ddr 430.150

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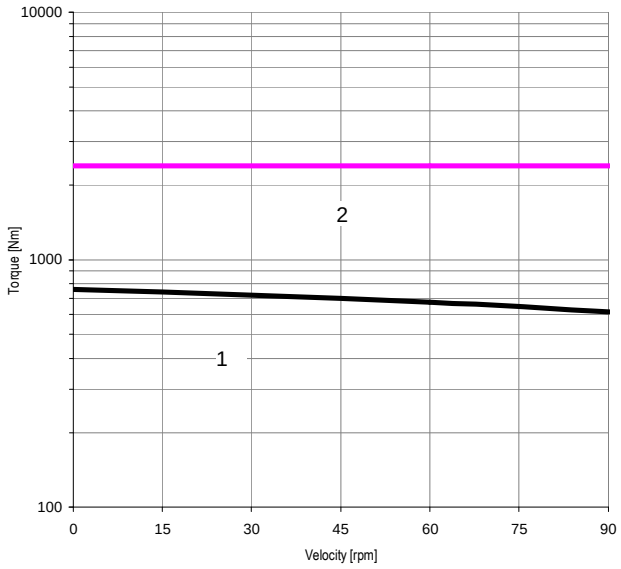


1 – Continuous Duty Area  2 – Intermittent Duty Area

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