

MR 74 MOTORS WITH UL/CSA

Complementary Data Sheet for AC Servo Motors with UL/CSA Certification

This data sheet contains the technical specifications of MR 74 servo motors with UL/CSA certification (option -SU). For further information on this series of AC servo motors, such as type code or dimensions, and the technical specifications of MR 74 servo motors with CE identification, but without UL/CSA certification, see data sheet 6674.260, "MR 74 AC Servo Motors".

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UL/CSA Certification

The MR 74 servo motors described herein are certified according to UL/CSA and approved for application in North America and Canada. Similar to the MR 74 servo motors without UL/CSA certification, they carry the CE identification.

Main Characteristics

- maintenance-free, since brushless
- high dynamics
- compact dimensions due to high-performance neodymium magnet material
- built-in resolver for sinusoidal commutation, other position sensors as options
- IP 65 protection

Applications

Positioning and feed movements with high dynamics and accuracy in

- handling and assembly systems
- electronics production machinery
- semiconductor production machinery
- measuring and testing machinery
- optical discs production machinery (CDs, DVDs, ...)
- machine tools and metal working machinery
- packaging machinery
- textile machinery
- plastics processing machinery
- coiling machinery
- and many other applications

Servo Motors (UL/CSA) for $U_{ZK} = 320 \text{ V}$: Overview and Assignment

Order Number Motor	Rated Speed n_N [r.p.m.]	Rated Torque M_N [Nm]	Standstill Torque $M_{0.200}$ [Nm]	Standstill Current $I_{0.200}$ [A _{rms}]	Servo Drive or Servo Power Module with Rated Current ...
MR 7411-U3-N034....-SU	3,400	0.31	0.45	0.8	2 A
MR 7411-U3-N060....-SU	6,000	0.31	0.45	1.4	2 A
MR 7412-U3-N034....-SU	3,400	0.63	0.80	1.1	2 A
MR 7412-U3-N060....-SU	6,000	0.63	0.80	1.9	2 A
MR 7414-U3-N034....-SU	3,400	1.3	1.4	1.9	2 A
MR 7414-U3-N060....-SU	6,000	1.3	1.4	3.3	4 A
MR 7422-U3-N034....-SU	3,400	1.4	1.6	2.5	4 A
MR 7422-U3-N060....-SU	6,000	1.4	1.6	4.4	6 A
MR 7424-U3-N034....-SU	3,400	2.2	2.6	3.9	4 A
MR 7424-U3-N060....-SU	6,000	2.2	2.6	6.8	6 A
MR 7432-U3-N034....-SU	3,400	1.7	2.2	3.8	4 A
MR 7434-U3-N034....-SU	3,400	3.2	4.3	5.1	6 A

Other sizes and speeds on request.

Corresponding Servo Drives and Servo Power Modules with 320 V DC-Bus Voltage:

Servo Drive Family	TrioDrive D/xS ¹⁾		TrioDrive A ²⁾	TrioDrive C ²⁾
Design	compact		compact	compact
Power supply	direct 230 V~		direct 230 V~	direct 230 V~
Technology	digital		analog	multi-axis servo system
Rated current	2 A	BN 6756	BN 6651	BN 6621
	4 A	BN 6757	BN 6652	BN 6622
	6 A	BN 6758	BN 6653	BN 6623

¹⁾ UL/CSA certification in preparation

²⁾ CE identification, only, no UL/CSA certification

Servo Motors (UL/CSA) for $U_{ZK} = 320 \text{ V}$: Technical Specifications (1) – MR 741x

For the following types: MR 74.-U3-SU (type code see data sheet 6674.260)

			MR 7411 -N034	MR 7411 -N060	MR 7412 -N034
Rated speed	n_N	r.p.m.	3,400	6,000	3,400
Rated output	P_N	W	115	195	225
Torque at rated speed	M_N	Nm	0.31	0.31	0.63
Rated current	I_N	A_{rms}	0.8	1.4	0.9
Standstill torque	$M_{0,200}$	Nm	0.45	0.45	0.80
Standstill current	$I_{0,200}$	A_{rms}	0.8	1.4	1.1
Peak torque	M_{max}	Nm	1.3	1.3	3.3
Peak current	I_{max}	A	3.5	6.0	4.9
Torque constant	K_t	Nm/A_{rms}	0.40	0.23	0.70
Voltage constant	K_e	V/1000 r.p.m.	54.0	31.1	54.0
Resistance phase-phase	R_{u-v}	Ω	105	22.9	35.0
Inductivity phase-phase	L_{u-v}	mH	272	90.6	136
Electr. time constant	T_{el}	ms	2.6	4.0	3.9
Rotor inertia	J_R	10^{-3} kg m^2	0.0098	0.0098	0.0196
Weight		kg	0.8	0.8	1.3

Note: The maximum achievable values depend on the servo drive used.

			MR 7412 -N060	MR 7414 -N034	MR 7414 -N060
Rated speed	n_N	r.p.m.	6,000	3,400	6,000
Rated output	P_N	W	400	450	800
Torque at rated speed	M_N	Nm	0.63	1.3	1.3
Rated current	I_N	A_{rms}	1.6	1.8	3.0
Standstill torque	$M_{0,200}$	Nm	0.80	1.4	1.4
Standstill current	$I_{0,200}$	A_{rms}	1.9	1.9	3.3
Peak torque	M_{max}	Nm	3.3	5.8	5.8
Peak current	I_{max}	A	8.5	8.4	14.6
Torque constant	K_t	Nm/A_{rms}	0.41	0.72	0.42
Voltage constant	K_e	V/1000 r.p.m.	31.1	54.0	31.0
Resistance phase-phase	R_{u-v}	Ω	12.5	14.1	4.5
Inductivity phase-phase	L_{u-v}	mH	45.3	57	19.1
Electr. time constant	T_{el}	ms	3.6	4.1	4.2
Rotor inertia	J_R	10^{-3} kg m^2	0.0196	0.0392	0.0392
Weight		kg	1.3	2.0	2.0

Note: The maximum achievable values depend on the servo drive used.

Servo Motors (UL/CSA) for $U_{ZK} = 320$ V: Technical Specifications (2) – MR 742x .. 3x

For the following types: MR 74.-U3-SU (type code see data sheet 6674.260)

			MR 7422 -N034	MR 7422 -N060	MR 7424 -N034
Rated speed	n_N	r.p.m.	3,400	6,000	3,400
Rated output	P_N	W	500	900	790
Torque at rated speed	M_N	Nm	1.4	1.4	2.2
Rated current	I_N	A_{rms}	2.3	3.9	3.1
Standstill torque	$M_{0,200}$	Nm	1.6	1.6	2.6
Standstill current	$I_{0,200}$	A_{rms}	2.5	4.4	3.9
Peak torque	M_{max}	Nm	7.5	7.5	10.9
Peak current	I_{max}	A	12.7	22.0	17.9
Torque constant	K_t	Nm/ A_{rms}	0.62	0.36	0.71
Voltage constant	K_e	V/1000 r.p.m.	39.7	22.9	45.8
Resistance phase-phase	R_{u-v}	Ω	6.6	2.4	3.7
Inductivity phase-phase	L_{u-v}	mH	3.1	1.0	2.9
Electr. time constant	T_{el}	ms	0.5	0.4	0.8
Rotor inertia	J_R	10^{-3} kg m ²	0.058	0.058	0.099
Weight		kg	2.0	2.0	3.1

Note: The maximum achievable values depend on the servo drive used.

			MR 7424 -N060	MR 7432 -N034	MR 7434 -N034
Rated speed	n_N	r.p.m.	6,000	3,400	3,400
Rated output	P_N	W	1,400	610	1,150
Torque at rated speed	M_N	Nm	2.2	1.7	3.2
Rated current	I_N	A_{rms}	5.4	3.0	3.9
Standstill torque	$M_{0,200}$	Nm	2.6	2.2	4.3
Standstill current	$I_{0,200}$	A_{rms}	6.8	3.8	5.1
Peak torque	M_{max}	Nm	11.8	9.0	28.0
Peak current	I_{max}	A	31.0	16.4	35.0
Torque constant	K_t	Nm/ A_{rms}	0.41	0.57	0.82
Voltage constant	K_e	V/1000 r.p.m.	27.5	49.4	53.8
Resistance phase-phase	R_{u-v}	Ω	3.7	6.4	3.2
Inductivity phase-phase	L_{u-v}	mH	1.0	18.2	8.2
Electr. time constant	T_{el}	ms	0.8	2.8	2.6
Rotor inertia	J_R	10^{-3} kg m ²	0.099	0.08	0.16
Weight		kg	3.1	3.5	4.8

Note: The maximum achievable values depend on the servo drive used.

Servo Motors (UL/CSA) for $U_{ZK} = 560$ V: Overview and Assignment

Order Number Motor	Rated Speed n_N [r.p.m.]	Rated Torque M_N [Nm]	Standstill Torque $M_{0.200}$ [Nm]	Standstill Current $I_{0.200}$ [A _{rms}]	Servo Drive or Servo Power Module with Rated Current ...
MR 7411-U5-N060....-SU	6,000	0.31	0.45	0.8	2 A
MR 7412-U5-N060....-SU	6,000	0.63	0.80	1.1	2 A
MR 7414-U5-N060....-SU	6,000	1.3	1.4	1.9	2 A
MR 7422-U5-N060....-SU	6,000	1.4	1.6	2.5	4 A
MR 7424-U5-N060....-SU	6,000	2.2	2.6	3.9	4 A
MR 7432-U5-N060....-SU	6,000	1.7	2.2	3.8	4 A
MR 7434-U5-N060....-SU	6,000	3.2	4.3	5.1	8 A
MR 7436-U5-N060....-SU	6,000	4.4	6.0	7.8	8 A
MR 7442-U5-N030....-SU	3,000	4.0	5.0	3.9	4 A
MR 7444-U5-N030....-SU	3,000	8.0	10.0	7.8	8 A
MR 7446-U5-N030....-SU	3,000	11.0	13.0	11.0	12 A/16 A
MR 7452-U5-N030....-SU	3,000	6.2	7.0	4.9	8 A
MR 7454-U5-N030....-SU	3,000	11.3	13.0	9.2	12 A/16 A
MR 7458-U5-N030....-SU	3,000	22.5	23.0	17.0	20 A/32 A

Other sizes and speeds on request.

Corresponding Servo Drives and Servo Power Modules with 560 V DC-Bus Voltage:

Servo Drive Family	MidiDrive D/xS ¹⁾	MidiDrive A ²⁾	MidiDrive C ²⁾
Design	compact	compact	compact
Power supply	direct 3 × 400/480 V	direct 3 × 400/480 V	direct 3 × 400/480 V
Technology	digital	analog	multi-axis servo system
Rated current	2 A	BN 6745	BN 6626
	4 A	BN 6746	BN 6627
	8 A	BN 6747	BN 6628
	12 A		BN 6629
	16 A	BN 6748	
	20 A		BN 6630
	32 A	BN 6749	

¹⁾ UL/CSA certification in preparation

²⁾ CE identification, only, no UL/CSA certification

Servo Motors (UL/CSA) for $U_{ZK} = 560$ V: Technical Specifications (1) – MR 741x .. 2x

For the following types: MR 74.-U5-SU (type code see data sheet 6674.260)

			MR 7411 -N060	MR 7412 -N060	MR 7414 -N060
Rated speed	n_N	r.p.m.	6,000	6,000	6,000
Rated output	P_N	W	195	400	800
Torque at rated speed	M_N	Nm	0.31	0.63	1.3
Rated current	I_N	A_{rms}	0.8	0.9	1.8
Standstill torque	$M_{0,200}$	Nm	0.45	0.80	1.4
Standstill current	$I_{0,200}$	A_{rms}	0.8	1.1	1.9
Peak torque	M_{max}	Nm	1.3	3.3	5.8
Peak current	I_{max}	A	3.5	4.9	8.4
Torque constant	K_t	Nm/ A_{rms}	0.40	0.70	0.72
Voltage constant	K_e	V/1000 r.p.m.	54.0	54.0	54.0
Resistance phase-phase	R_{u-v}	Ω	70	35	14
Inductivity phase-phase	L_{u-v}	mH	272	136	57
Electr. time constant	T_{el}	ms	3.9	3.9	4.1
Rotor inertia	J_R	10^{-3} kg m ²	0.0098	0.0196	0.0392
Weight		kg	0.8	1.3	2.0

Note: The maximum achievable values depend on the servo drive used.

			MR 7422 -N060	MR 7424 -N060
Rated speed	n_N	r.p.m.	6,000	6,000
Rated output	P_N	W	900	1,400
Torque at rated speed	M_N	Nm	1.4	2.2
Rated current	I_N	A_{rms}	2.3	3.1
Standstill torque	$M_{0,200}$	Nm	1.6	2.6
Standstill current	$I_{0,200}$	A_{rms}	2.5	3.9
Peak torque	M_{max}	Nm	7.5	10.9
Peak current	I_{max}	A	12.7	17.9
Torque constant	K_t	Nm/ A_{rms}	0.62	0.71
Voltage constant	K_e	V/1000 r.p.m.	39.7	45.8
Resistance phase-phase	R_{u-v}	Ω	6.6	3.7
Inductivity phase-phase	L_{u-v}	mH	3.1	2.9
Electr. time constant	T_{el}	ms	0.5	0.8
Rotor inertia	J_R	10^{-3} kg m ²	0.058	0.099
Weight		kg	2.0	3.1

Note: The maximum achievable values depend on the servo drive used.

Servo Motors (UL/CSA) for $U_{ZK} = 560$ V: Technical Specifications (2) – MR 743x .. 4x

For the following types: MR 74.-U5-SU (type code see data sheet 6674.260)

			MR 7432	MR 7434	MR 7436
			-N060	-N060	-N060
Rated speed	n_N	r.p.m.	6,000	6,000	6,000
Rated output	P_N	W	1,100	2,050	2,800
Torque at rated speed	M_N	Nm	1.7	3.2	4.4
Rated current	I_N	A_{rms}	3.0	3.9	5.8
Standstill torque	$M_{0,200}$	Nm	2.2	4.3	6.0
Standstill current	$I_{0,200}$	A_{rms}	3.8	5.1	7.8
Peak torque	M_{max}	Nm	9.0	28.0	30.3
Peak current	I_{max}	A	16.4	35.0	41.5
Torque constant	K_t	Nm/ A_{rms}	0.57	0.82	0.76
Voltage constant	K_e	V/1000 r.p.m.	49.4	53.8	54.3
Resistance phase-phase	R_{u-v}	Ω	6.4	3.2	1.8
Inductivity phase-phase	L_{u-v}	mH	18.2	8.2	4.9
Electr. time constant	T_{el}	ms	2.8	2.6	2.7
Rotor inertia	J_R	10^{-3} kg m ²	0.08	0.16	0.24
Weight		kg	3.5	4.8	6.1

Note: The maximum achievable values depend on the servo drive used.

			MR 7442	MR 7444	MR 7446
			-N030	-N030	-N030
Rated speed	n_N	r.p.m.	3,000	3,000	3,000
Rated output	P_N	W	1,300	2,600	3,500
Torque at rated speed	M_N	Nm	4.0	8.0	11.0
Rated current	I_N	A_{rms}	3.2	6.5	9.5
Standstill torque	$M_{0,200}$	Nm	5.0	10.0	13.0
Standstill current	$I_{0,200}$	A_{rms}	3.9	7.8	11.0
Peak torque	M_{max}	Nm	18.0	36.0	48.0
Peak current	I_{max}	A	15.3	30.7	45.9
Torque constant	K_t	Nm/ A_{rms}	1.25	1.23	1.16
Voltage constant	K_e	V/1000 r.p.m.	85.6	85.6	88.4
Resistance phase-phase	R_{u-v}	Ω	3.5	1.7	1.3
Inductivity phase-phase	L_{u-v}	mH	11.4	5.7	4.1
Electr. time constant	T_{el}	ms	3.3	3.3	3.2
Rotor inertia	J_R	10^{-3} kg m ²	0.28	0.64	0.96
Weight		kg	4.8	9.0	13.5

Note: The maximum achievable values depend on the servo drive used.

Servo Motors (UL/CSA) for $U_{ZK} = 560$ V: Technical Specifications (3) – MR 745x

For the following types: MR 74..-U5-SU (type code see data sheet 6674.260)

			MR 7452	MR 7454	MR 7458
			-N030	-N030	-N030
Rated speed	n_N	r.p.m.	3,000	3,000	3,000
Rated output	P_N	W	1,950	3,600	6,800
Torque at rated speed	M_N	Nm	6.2	11.3	22.5
Rated current	I_N	A_{rms}	4.5	8.3	16.1
Standstill torque	$M_{0,200}$	Nm	7.0	13.0	23.0
Standstill current	$I_{0,200}$	A_{rms}	4.9	9.2	17.0
Peak torque	M_{max}	Nm	28.0	52.0	96.0
Peak current	I_{max}	A	22.6	42.3	77.6
Torque constant	K_t	Nm/ A_{rms}	1.38	1.36	1.34
Voltage constant	K_e	V/1000 r.p.m.	90.1	90.1	83.1
Resistance phase-phase	R_{u-v}	Ω	2.4	1.2	0.7
Inductivity phase-phase	L_{u-v}	mH	12.1	3.0	0.9
Electr. time constant	T_{el}	ms	5.1	2.5	1.3
Rotor inertia	J_R	10^{-3} kg m ²	0.80	1.58	3.16
Weight		kg	7.5	11.0	18.0

Note: The maximum achievable values depend on the servo drive used.

Servo Drive System Packages by ESR Pollmeier GmbH

ESR – the complete servo drive system from a single source

General

The series MR 74 AC servo motors with UL/CSA certification described in this data sheet are components of the ESR drive system packages. These consist of servo drives and servo motors with or without gearboxes, completely with position sensors and, if required, brakes. They are supplemented by software and accessories. All parts of the packages are matching and have been tested as combinations. This delivery from one single source guarantees trouble-free commissioning, reliable operation, and a definite system responsibility on the part of only one supplier.

System design

Our services include an individual drive system configuration. With many years of experience, we will be pleased to assist you at choosing the appropriate servo drive system for your application.

For further information, see data sheet 6674.260 "MR 74 AC Servo Motors".

The statements in this data sheet are for information, only. They do not guarantee properties. We reserve the right to make changes without notice.

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