



MAC400-D2-CRGM

Int.ServoAC 400WS1 1.28Nm IP55 Inc STO

MAC motorĖ is a series of integrated (all-in-one) servo motors with shaft power from 46 W to 4500 W. +400 W and new F-series (50..140 W) are programmable through ePLC (embedded-PLC). Choose between a large number of control modules.

Options include:

- Absolute Multiturn Encoder (incremental encoder is standard)
- Built-in Brake or Brake module (MABxx)
- Ethernet module w/built-in Switch for easy daisy-chaining and all protocols (Profinet, EtherNet/IP, EtherCAT, SERCOS, ModbusTCP/UDP, Powerlink)
- Wireless modules are also available: WLAN or BlueTooth
- CANopen, Devicenet or Profibus or ePLC modules
- Serial communication modules, RS232 and/or RS485
- High IP versions are also available (IP 65..66..67)
- Food or Medico types in Stainless Steel IP69K

Unique Ethernet functionality: use MacTalkĖ (PC software) to change freely between all the different Ethernet protocols, you dont need several different types on stock Ė ONE is enough.



General information

Description	Int.ServoAC 400WS1 1.28Nm IP55 Inc STO , WxHxL: 60x115x191 mm. 115/230 VAC + 24VDC. AC-Power cable: WP04xx/WP00xx 3000 RPM. 1.27 Nm RMS / 3.83 Nm Peak, IP55, Incremental Encoder: 8192 CPR, Black, Ø14x30 mm keyway 5x20 mm, incl. M8 4pin hardware STO connector, NB! STO: Not yet approved by TUV		
Manufacture	JVL	Motor type	Integr. AC-servo - Rotating
Motor power [W]	400	Power Peak [W]	1200
Duty Cycle	S1	Max Duty Cycle [%]	100
Continuous Torque	1.28	Peak torque [Nm]	3.8
Main supply [V]	115, 230	Voltage type - Main	AC
Speed [Rpm]	3000	Connectivity: Without module	RS232 - 5VDC, Modbus RTU
Encoder type	Incr. Encoder	Encoder [Counts/rev]	8192
Fan mounted	No	Brake	No
Integrated gear	No	Gear ratio	-
Integrated PLC	Yes	STO connector	Yes
Approval TÜV - STO	No	Approval - UL	Approved
PLC no. of AIN	2	PLC no. of DI	-



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General information

PLC no. of DIO	-	PLC no. of DO	2
Multifunction IOs	2		
Flange size	60x60	Protection house	IP55
Shaft size - Front [mm]	14.00mm	Protection shaft	IP55
Color	Black	Paint type	
		TOM_007	
Ambient Temperature range:		Max. Amb. Temperature range - Torque derating:	
Maximum Installation Altitude:		Max. Installation Altitude - Power Derating every 1000m:	
TOM_008		TOM_009	
Weight net [kg]	2.50	Weight gross [kg]	2.93
Tariff no	85012000	Country Of Origin	DK



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Mechanical information

Motor type	Integr. AC-servo - Rotating	Color	Black
Rotor inertia [kgcm ²]	0.34	Max inertia factor	20
Encoder type	Incr. Encoder	Encoder [Counts/rev]	8192
Precision Motor - Absolute [Deg -/+]	0.04	Precision Motor - Max Load [Deg -/+]	
Precision Motor - Repeatability [Deg -/+]	0.04		
Brake	No	Brake - Go ON time [ms]	-
Brake Holding torque [Nm]	-	Brake - Go OFF time [ms]	-
Radial load [N]	245	Radial load distance [mm]	13.5
Axial load [N]	98		
Axial play [mm]	xxx	Axial play force [N]	xxx
Front bearing type	xxx	Rear bearing type	xxx
Integrated gear	No	Gear ratio	-
Gear efficiency [%]	< -	Gear backlash [ArcMin]	-
Motor length [mm]	190.5	Motor width [mm]	64.0
Motor height [mm]	115.0	Protection house	IP55
Customer Sealing	Standard		
Flange size	60x60	Mounting holes front [mm]	5.5
Motor diameter center front [mm]	50.0	Bolt circle diameter front [mm]	70.0
Flange material	Aluminium	Flange Thickness [mm]	
Shaft Key included	Key mounted in shaft	Shaft Key Dimension	5x5x20
Shaft size - Front [mm]	14.00mm	Protection shaft	IP55
Shaft length Front [mm]	30.0	Shaft material	Carbon steel SM45C
Approval - ROHS-3	Yes	Approval - UL	Approved
Approval TÜV - STO	No	Approval - ATEX	No
CAD 2D [PDF]	Download	CAD 3D [STEP]	Download
CAD 2D [DWG]	Download	CAD 3D [DWG]	No

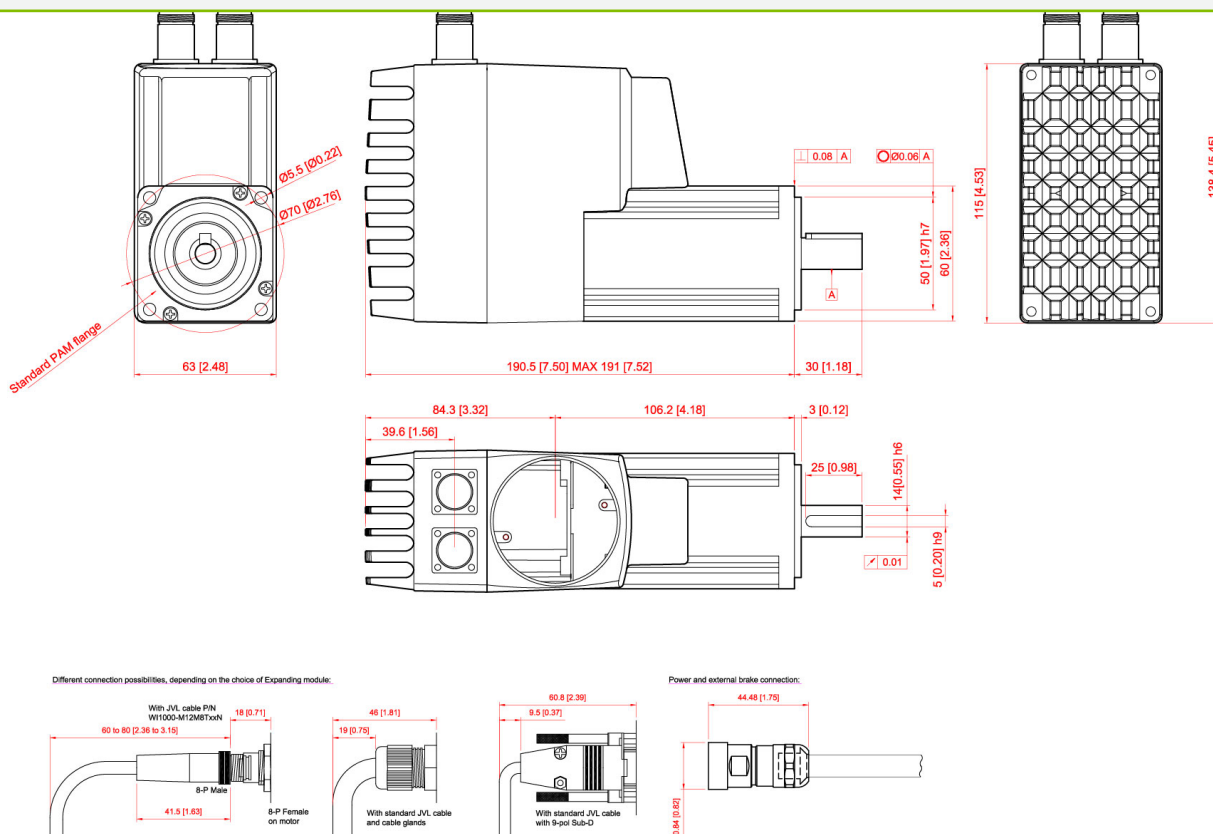


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Mechanical information

CAD 3D [EASM]	No	CAD 3D [IGES]	Download
Datasheet - pdf	Yes	User Manual	Download
REACH SVHC document	Download	Low voltage Directive	LVD conformity with EU standard: EN 61800-3
No Dual Use	Read more here		



Shaft Seal

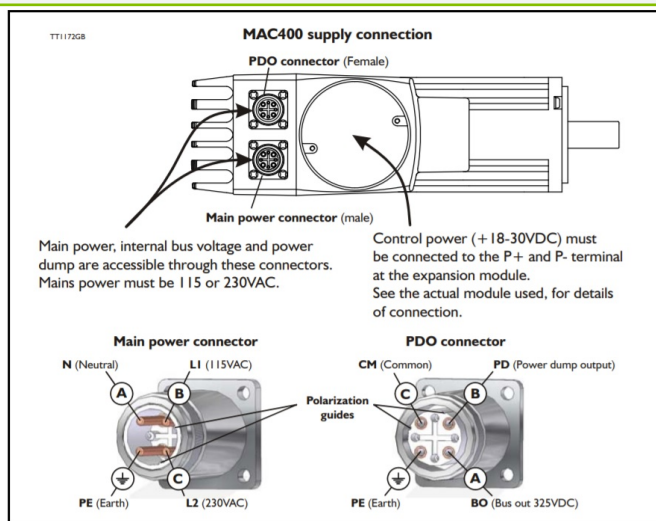


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Connector information

Motor connectors



Expansion connector

Generation 1 and 2

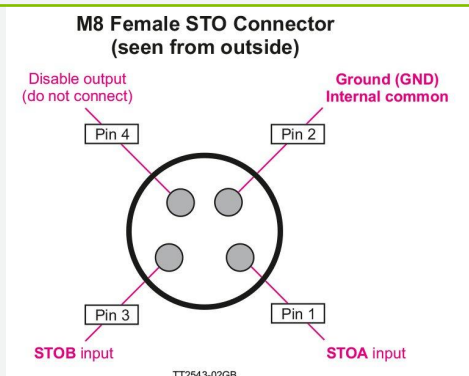
	Connector Power	M16 4-pin male
Connector Power Supplier	Connector Power direction	Straight
	PDO Connector Type	M16 4-pin female
Connector PDO Supplier	Connector STO	M8 4-pin female A-coded

Picture of STO

"STO" (X0) connector M8 - 4 pin male connector				
Signal name	Description	Pin no.	JVL Cable W1010-M08M4TxXP	Isolation group (see note)
STOA	STO channel A	1	Brown	1
GND	Ground for the STO signals	2	Inner screen	1
STOB	STO channel B	3	Black	1
24V out	DO NOT CONNECT !	4	(do not exist)	1

Connector housing/metal is connected to earth and at JVL supplied cables also to the cable screen.

Picture STO Con



Module connections	Here - Click for module cable PLC no. of DI connections		-
PLC no. of DO	2	PLC no. of DIO	-
PLC no. of AIN	2	Multifunction IOs	2

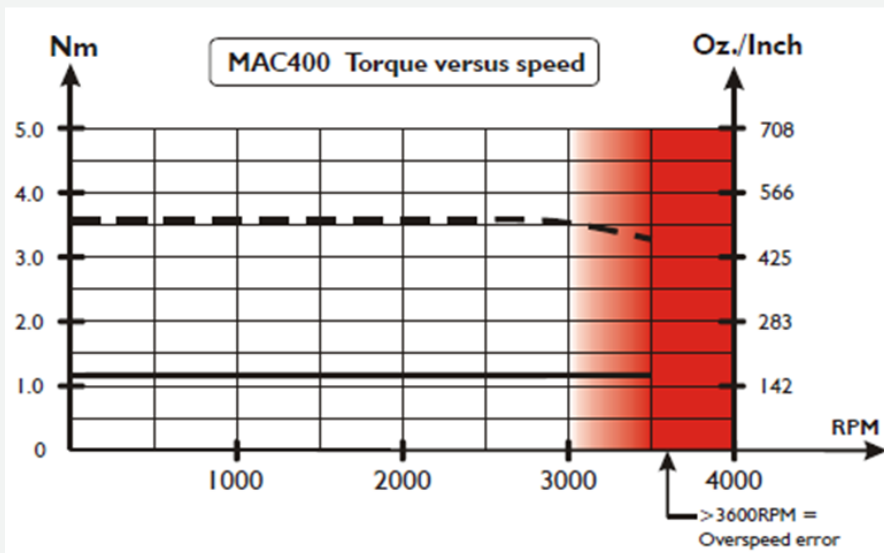


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Torque, force and Power information

RMS torque [Nm]	1.28	Peak torque [Nm]	3.8
Supply Volt 1 [V]	1x115	Supply Volt 2 [V]	1x230
Supply Volt 3 [V]		Supply Volt 4 [V]	



Conditions:
Supply voltage = 90-240VAC
Ambient temperature < 40°C
Torque setting = 300% (max)
Load setting = 1.0



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Electrical information

Main supply [V]	115, 230	Main supply Min-Max [V]	90-260
Voltage type - Main	AC	Main Voltage possible	1x115VAC, 1x230VAC
Inrush current -Main max [A]		Inrush special	No
Recommended fuse	115VAC: FRN-R-10 Cooper Bussmann inc. 230VAC: T6.3A@230VAC type gG, Do or Dz.	P- isolated from Earth (Low Voltage ground (P-) isolated from housing)	No
Bus Supply Voltage Min [V]		Busvoltage Overvoltage limit [VDC]	467V
Power Dump Voltage Active Level [V]		Internal Power-Dump Resistance [Ohm]	102
Internal Power-Dump Power [W]	6	PD connection - Int/Ext	Int/Ext PD in Parallel
External Power-Dump Resistance Minimum value [Ohm]	33	External Power-Dump Max Current [A]	50
Control voltage (CVI/O+) [VDC]	18-28	Control Voltage (CVI) Min-Max [VDC]	18-30
PLC no. of DI	-	PLC no. of DO	2
PLC no. of DIO	-	PLC no. of AIN	2
Analogue voltage	-/+10VDC, -/+11bit	Multifunction IOs	2
Multifunction Nom. level [V]		Multifunction Maximum level [V]	
Multifunction Low trigger level [V]		Multifunction High trigger level [V]	
Resistance [Ohm]		Induction [mH]	
MTBF 100% [Year]	-	MTBF 30% [Year]	-



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Communication information

Software	MacTalk
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Connectivity: Without module	RS232 - 5VDC, Modbus RTU e-PLC Files
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Connectivity: Gen. 1 modules	Yes
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Connectivity: Gen. 2 modules	Yes
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Cable information

Item number	Mount on	Cable con 1 +Con 1 angle	Cable application	Wires no totally	Cable length [m]
Item description		Cable con 2 +Con 2 angle	Cable flexibility	Wire [mm2]	Connector 1 LED
MAC400-CONKIT1-PWR	Connector Power	- 0° Straight			Connector
Power con kit fem M16 for MAC400 0°		- n/a			n/a
MAC400-CONKIT2-PWR	Connector Power	- 0° Straight			Connector
Power con kit fem. M16 for MAC400 90°		- n/a			n/a
WP0002	Connector Power	M16 4-pin female - 0° Straight	Power	4	2
MAC400 115/230 VAC Power 2m 0°		Open Ended - n/a	Standard	0.75	n/a
WP0005	Connector Power	M16 4-pin female - 0° Straight	Power	4	5
MAC400 115/230 VAC Power 5m 0°		Open Ended - n/a	Standard	0.75	n/a
WP0020	Connector Power	M16 4-pin female - 0° Straight	Power	4	20
MAC400 115/230 VAC Power 20m 0°		Open Ended - n/a	Standard	0.75	n/a
WP0202	Connector Power	M16 4-pin female - 0° Straight	Power	3	2
MAC400 230VAC Power 2m w/ DK Plug 0°		230V DK Plug - 0° Straight	Standard	0.75	n/a
WP0203	Connector Power	M16 4-pin female - 0° Straight	Power	3	3
MAC400 230VAC Power 3m w/DK Plug 0°		230V DK Plug - 0° Straight	Standard	0.75	n/a
WP0205	Connector Power	M16 4-pin female - 0° Straight	Power	3	5
MAC400 230VAC Power 5m w/DK Plug 0°		230V DK Plug - 0° Straight	Standard	0.75	n/a
WP0302	Connector Power	M16 4-pin female - 0° Straight	Power	3	2
MAC400 115 VAC Power 2m 0°		Open Ended - n/a	Standard	0.75	n/a
WP0303	Connector Power	M16 4-pin female - 0° Straight	Power	3	3
MAC400 115 VAC Power cable 3m 0°		Open Ended - n/a	Standard	0.75	n/a
WP0305	Connector Power	M16 4-pin female - 0° Straight	Power	3	5
MAC400 115 VAC Power cable 5m 0°		Open Ended - n/a	Standard	0.75	n/a
WP0320	Connector Power	M16 4-pin female - 0° Straight	Power	3	20
MAC400 115 VAC Power 20m 0°		Open Ended - n/a	Standard	0.75	n/a
WP0402	Connector Power	M16 4-pin female - 0° Straight	Power	3	2
MAC400 230 VAC Power 2m 0°, black		Open Ended - n/a	Standard	0.75	n/a
WP0402-W	Connector Power	M16 4-pin female - 0° Straight	Power	3	2
MAC400 230 VAC Power 2m 0°, Black, 3D+UL Robot		Open Ended - n/a	Robotic - 3D	0.75	n/a
WP0405	Connector Power	M16 4-pin female - 0° Straight	Power	3	5
MAC400 230 VAC Power 5m 0°, black		Open Ended - n/a	Standard	0.75	n/a
WP0405-W	Connector Power	M16 4-pin female - 0° Straight	Power	3	5
MAC400 230 VAC Power 5m 0°, Black, 3D+UL Robot		Open Ended - n/a	Robotic - 3D	0.75	n/a
WP0420	Connector Power	M16 4-pin female - 0° Straight	Power	3	20
MAC400 230 VAC Power 20m 0°, black		Open Ended - n/a	Standard	0.75	n/a
WP0420-W	Connector Power	M16 4-pin female - 0° Straight	Power	3	20
MAC400 230 VAC Power 20m 0°, Black, 3D+UL Robot		Open Ended - n/a	Robotic - 3D	0.75	n/a
WP1405	Connector Power	M16 4-pin female - 90° Angled	Power	4	5
MAC400 230 VAC Power 5m 90°		Open Ended - n/a	Standard		n/a
WP1410	Connector Power	M16 4-pin female - 90° Angled	Power	4	10
MAC400 230 VAC Power 10m 90°		Open Ended - n/a	Standard		n/a
WI1010-M08M4STO	Connector STO	M8 4-pin male A-coded - n/a	STO	4	Connector
M8 STO Disable plug for MIS17/23/34/43		- n/a	n/a	0.2	
WI1010-M08M4T03P	Connector STO	M8 4-pin male A-coded - 180° Straight	STO	4	3
M8 STO 4Pin Male 0° Con Shl Yel 3m 1xcon		Open Ended - n/a	Standard	0.2	No
WI1010-M08M4T05P	Connector STO	M8 4-pin male A-coded - 180° Straight	STO	4	10
M8 STO 4Pin Male 0° Con Shl Yel 5m 1xcon		Open Ended - n/a	Standard	0.2	No
WI1010-M08M4T1.5P	Connector STO	M8 4-pin male A-coded - 180° Straight	STO		1.5
M8 STO 4Pin Male 0° Con Shl Yel 1.5 m 1xcon, PA014		- n/a	Standard		No
WI1010-M08M4T15P	Connector STO	M8 4-pin male A-coded - 180° Straight	STO	4	15
M8 STO 4Pin Male 0° Con. shl. Yel 15m 1xCon		Open Ended - n/a	Standard	0.2	No
WI1010-M08M4T20P	Connector STO	M8 4-pin male A-coded - 180° Straight	STO	4	20
M8 STO 4P Male 0° Con. shl. Yel 20m		Open Ended - n/a	Standard	0.2	No
WI1010-M08M4TF3T.3P	Connector STO	M8 4-pin male A-coded - 180° Straight	STO		0.3
M8 STO shl cable Male 4 pin to Female 3 pin.		M08 3-pin female A-coded - n/a	Standard		No
WI1010-M08M4TM4T10P	Connector STO	M8 4-pin male A-coded - 180° Straight	STO	4	10

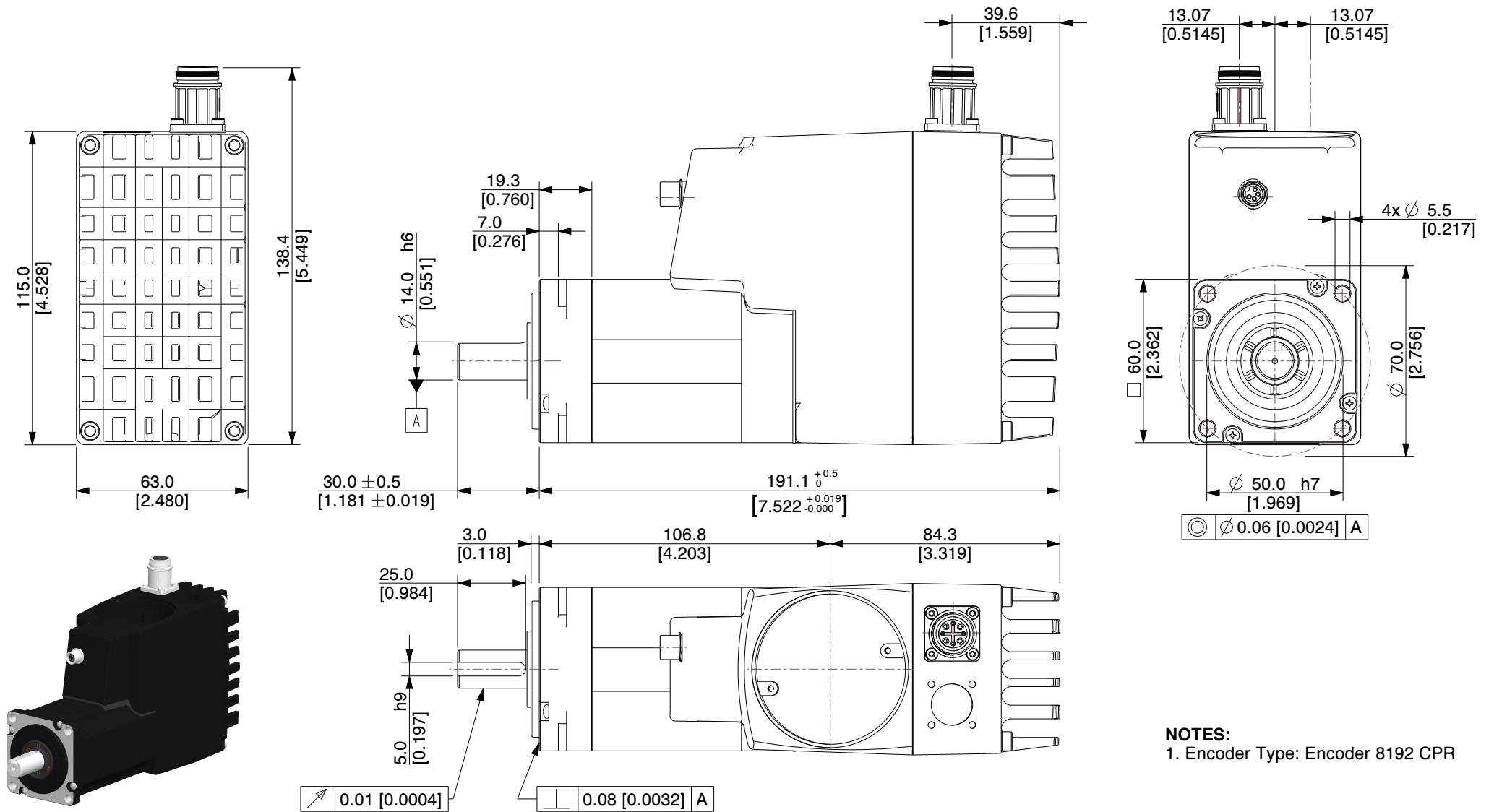


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Cable information

Item number	Mount on	Cable con 1 +Con 1 angle	Cable application	Wires no totally	Cable length [m]
Item description		Cable con 2 +Con 2 angle	Cable flexibility	Wire [mm2]	Connector 1 LED
M8 STO 4P Male 0°/4P Male 0° shl. Yel10m 2xCon		M08 4-pin male A-coded - n/a	Standard	0.2	No
WI1010-M08M4TM4T20P	Connector STO	M8 4-pin male A-coded - 180° Straight	STO	4	20
M8 STO 4P Male 0°/4P Male 0° shl. Yel20m 2xCon		M08 4-pin male A-coded - n/a	Standard	0.2	No
WI1010-M08M4V05P	Connector STO	M8 4-pin male A-coded - 90° Angled	STO	4	5
M8 STO 4Pin Male 90° Con. shl. Yel 5m 1xCon		Open Ended - n/a	Standard	0.2	No
WI1010-M08M4V10P	Connector STO	M8 4-pin male A-coded - 90° Angled	STO	4	10
M8 STO 4Pin Male 90° Con. shl. Yel 10m 1xCon		Open Ended - n/a	Standard	0.2	No
WI1010-M08M4VF4T01P	Connector STO	M8 4-pin male A-coded - 90° Angled	STO	4	1
M8 STO 4P Male 90°/4P Fem 0° shl. yel 1m 2xCon		M08 4-pin female A-coded - n/a	Standard	0.2	No
WI1010-M08M4VF4T02P	Connector STO	M8 4-pin male A-coded - 90° Angled	STO	4	2
M8 STO 4P Male 90°/4P Fem 0° shl. yel 2m 2xCon		M08 4-pin female A-coded - n/a	Standard	0.2	No
WI1010-M08M4VF4T03P	Connector STO	M8 4-pin male A-coded - 90° Angled	STO	4	3
M8 STO 4P Male 90°/4P Fem 0° shl. yel 3m 2xCon		M08 4-pin female A-coded - n/a	Standard	0.2	No
WI1010-M08M4VM4V10P	Connector STO	M8 4-pin male A-coded - 90° Angled	STO	4	10
M8 STO 4P Male 90°/4P Male 90° shl. Yel 10m 2xCon		M08 4-pin male A-coded - n/a	Standard	0.2	No
WI1010-M08M4VM4V20P	Connector STO	M8 4-pin male A-coded - 90° Angled	STO	4	20
M8 STO 4P Male 90°/4P Male 90° shl. Yel 20m 2xCon		M08 4-pin male A-coded - n/a	Standard	0.2	No
WP0102	PDO Connector type	M16 4-pin male - 0° Straight	Power Dump	4	2
MAC404-1404/MAC400 DC-bus/PD 2m 0°		Open Ended - n/a	Standard	0.75	n/a
WP0105	PDO Connector type	M16 4-pin male - 0° Straight	Power Dump	4	5
MAC404-1404/MAC400 DC-bus/PD 5m 0°		Open Ended - n/a	Standard	0.75	n/a
WP0110	PDO Connector type	M16 4-pin male - 0° Straight	Power Dump	4	10
MAC404-1404/MAC400 DC-bus/PD 10m 0°		Open Ended - n/a	Standard	0.75	n/a
WP0120	PDO Connector type	M16 4-pin male - 0° Straight	Power Dump	4	20
MAC404-1404/MAC400 DC-bus/PD 20m 0°		Open Ended - n/a	Standard	0.75	n/a



NOTES:
1. Encoder Type: Encoder 8192 CPR

JVL A/S
Bregnerødvej 127
DK-3460 Birkerød
Denmark



JVL
www.jvl.dk

PART NUMBER:

MAC400-D2-CRGM

PART DESCRIPTION:

Integrated Stepper Motor



A4

SCALE	NTS
UNIT	MM [Inch]

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