JVL A/S | Bregnerødvej 127 | DK-3460 Birkerød | Denmark | Tel.(+45) 4582 4440 | www.jvl.dk | sales@jvl.dk

MAC1004M2-HAARDC2 Int.ServoAC 1000WS1 3.18Nm IP55 Abs EC 1xM16

General information

Description	Int.ServoAC 1000WS1 3.18Nm IP55 Abs EC 1xM16, WxHxL: 80x120x226 mm. 3000 RPM. 3.18 Nm RMS / 9.54 Nm Peak Long cooling fins, no fan, isolated P-/earth (standard), IP55, Incremental magnetic 8192 CPR + Absolute multiturn encoder 19bit, 3000 RPM, - isolated ground, Color: Black, Ø19x40±1 mm Round shaft, Built in EtherCAT. 4xM12. 2x4pF:EtherCAT 8pF:3IA/1O RS485, 1xM16 AC in (4pM)		
Manufacture	JVL	**Motor type**	Integr. AC-servo - Rotating
Main supply [V]	115, 230	**Voltage type - Main**	AC
Motor power [W]	1000	**Power Peak [W]**	2997
Duty Cycle	S1	**Max Duty Cycle [%]**	100
Continuous Torque	3.18	**Peak torque [Nm]**	9.54
Speed [Rpm]	3000	**Speed Max. [Rpm]**	3600
Encoder type	Abs. Multiturn Encoder	**Encoder [Counts/rev]**	8192
Integrated PLC	Yes	**Brake**	No
STO connector	No	**Fan mounted**	No
Integrated gear	No	**Gear ratio**	-
Flange size	80x80		
Shaft size - Front [mm]	19.00mm	**Shaft Type Output**	Round
Protection house	IP55	**Protection shaft**	IP55
Control voltage (CVI/O+) [VDC]	18-30		
PLC no. of DI/DO/AI		**PLC no. of DI/DO**	
Multifunction IOs	0		
Color	Black		

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General information

Software	MacTalk	**Interface**	EtherCAT
Approval - UL	Pending	**Approval TÜV - STO**	Assessment pending

Ambient Temperature range [°C]:		**Max. Amb. Temperature range - Torque derating:**	
Maximum Installation Altitude [m]:		**- Power Derating every 1000m over 1000m [%]:**	

Weight net [kg]	4.04	**Weight gross [kg]**	4.21
Country Of Origin	DK	**Tariff no**	85015220
Tariff no US			

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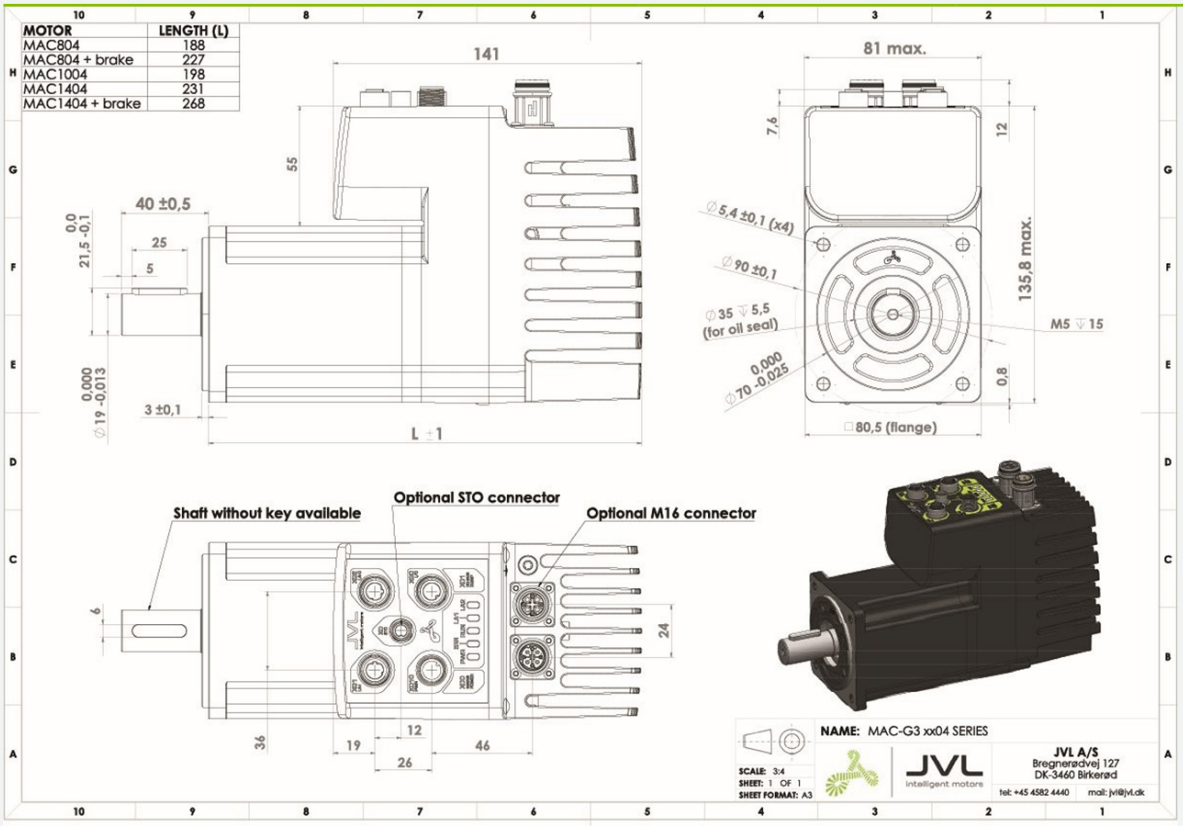
Mechanical information

Motor type	Integr. AC-servo - Rotating	**Color**	Black
Rotor inertia [kgcm^2]	1.81	**Max inertia factor**	20
Duty Cycle	S1	**Max Duty Cycle [%]**	100
Encoder type	Abs. Multiturn Encoder	**Encoder [Counts/rev]**	8192
Precision Motor - Absolute [Deg -/+]	0.071	**Precision Motor - Max Load [Deg -/+]**	
Precision Motor - Repeatabillity [Deg -/+]	0.049		
Brake	No	**Brake - Go ON time [ms]**	-
Brake Holding torque [Nm]	-	**Brake - Go OFF time [ms]**	-
Brake Backlash (Play)			
Radial load [N]	392	**Radial load distance [mm]**	25
Axial load [N]	147		
Axial play [mm]	0.0	**Axial play force [N]**	147
Front bearing type	6004-ZZ	**Rear bearing type**	16002-ZZ
Integrated gear	No	**Gear ratio**	-
Gear efficiency [%]	< -	**Gear backlash [ArcMin]**	-
Motor length [mm]	198.0	**Motor width [mm]**	80.0
Motor height [mm]	135.8	**Protection house**	IP55
Customer Sealing	Standard		
Flange size	80x80	**Mounting holes front [mm]**	5.4
Motor diameter center front [mm]	70.0	**Bolt circle diameter front [mm]**	90.0
Flange material	Aluminium	**Flange Thickness [mm]**	8.00
Shaft size - Front [mm]	19.00mm	**Shaft Type Output**	Round
Shaft length Front [mm]	40.0	**Shaft material**	Steel 40Cr
Shaft Key included	-	**Shaft Key Dimension**	-
Shaft Seal	-	**Protection shaft**	IP55
Approval - ROHS-3	Yes	**Approval - UL**	Pending
Approval TÜV - STO	Assessment pending	**Approval - ATEX**	No
Datasheet - pdf	No	**User Manual**	Download

MAC1004M2-HAARDC2 Int.ServoAC 1000WS1 3.18Nm IP55 Abs EC 1xM16

Mechanical information

REACH SVHC document	Download	**No Dual Use**	Read more here



CAD 2D [PDF]	No	**CAD 2D [DWG]**	No
CAD 3D [DWG]	No	**CAD 3D [EASM]**	No
CAD 3D [IGES]	No	**CAD 3D [STEP]**	No

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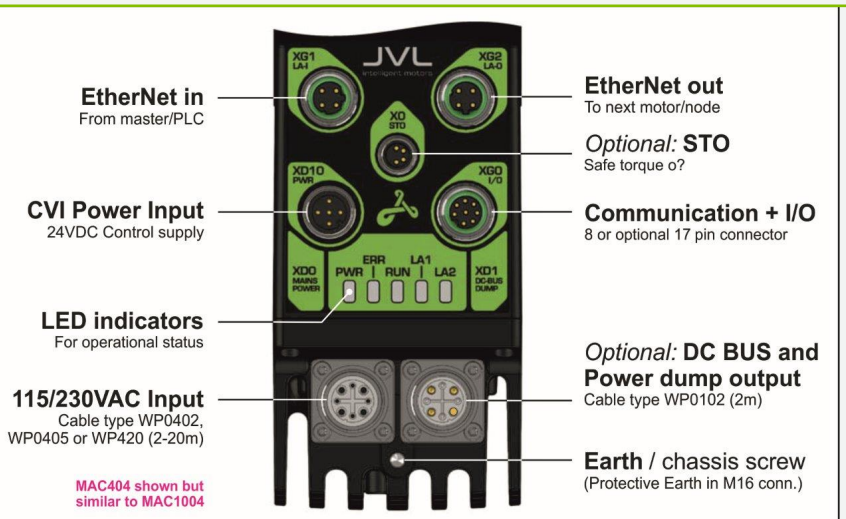
Connector information

Motor connectors



Connector XD0 Description	Power input: M16 4-pin male	**Connector XD0 Supplier**	JVL
Connector XD0 Direction	Straight		
Connector XD1 Description		**Connector XD1 Supplier**	JVL
Connector XD1 Direction			
Connector STO	No	**STO Connector Type**	
Connector XD10 label	CVI Power Input	**Connector XD10**	M12 5-pin male A-coded
Connector XG1 label	EtherCAT in	**Connector XG1**	M12 4-pin female D-coded Ethernet
Connector XG2 label	EtherCAT out	**Connector XG2**	M12 4-pin female D-coded Ethernet
Connector XG0 label	Communication + I/O	**Connector XG0**	M12 8-pin female A-coded
Connector XG1 RS485	No	**Connector XG2 RS485**	No
Connector XG0 RS485	Yes		

XD10 Pinout

"PWR" (XD10) - Power input. M12 - 5pin male connector

Signal name	Description	Pin no.	JVL Cable WI1000-M12F5TxxN	Isolation group
-	Not used	1	Brown	1
-	Not used	2	White	1
P-	Main supply ground. Connect with pin 5 *	3	Blue	1
CVI	Control and user output supply +7-32VDC. **DO NOT connect >32V to this terminal!**	4	Black	1
P-	Main supply ground. Connect with pin 3 *	5	Grey	1
Connector housing/metal is connected to earth and at JVL supplied cables also to the cable screen.				

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Connector information

XG1 Pinout

"LA-I" (XG1) Ethernet In connector - M12 - 4pin female connector "D" coded

Signal name	Description	Pin no.	JVL Cable WI1046-M12 M4TM4TxxT	Isolation group (See note)
Tx0_P	Ethernet Transmit channel 0 - positive terminal	1	-	2
Rx0_P	Ethernet Receive channel 0 - positive terminal	2	-	2
Tx0_N	Ethernet Transmit channel 0 - negative terminal	3	-	2
Rx0_N	Ethernet Receive channel 0 - negative terminal	4	-	2
Connector housing/metal is connected to earth and at JVL supplied cables also to the cable screen.				

XG2 Pinout

"LA-O" (XG2) Ethernet Out connector M12 - 4 pin female connector "D" coded

Signal name	Description	Pin no.	JVL Cable WI1046-M12 M4TM4TxxT	Isolation group (see note)
Tx1_P	Ethernet Transmit channel 1 - positive terminal	1	-	3
Rx1_P	Ethernet Receive channel 1 - positive terminal	2	-	3
Tx1_N	Ethernet Transmit channel 1 - negative terminal	3	-	3
Rx1_N	Ethernet Receive channel 1 - negative terminal	4	-	3
Connector housing/metal is connected to earth and at JVL supplied cables also to the cable screen.				

XG0 Pinout

"I/O" (XG0) - RS485 + I/O connector - M12 - 8pin female connector.

Signal name	Description	Pin no.	JVL Cable WI1000-M12 M8TxxN	Isolation group (See note)
IN1	Digital input 1 (24V) or analogue input 0-5V	1	White	1
IN2	Digital input 2 (24V) or analogue input 0-5V	2	Brown	1
OUT1	Digital output max. 300mA. Supplied from CVO.	3	Green	1
GND	Ground intended to be used together with the other signals in this connector	4	Yellow	1
RS485: B0-	RS485 MacTalk interface. Leave open if unused	5	Grey	1
RS485: A0+	RS485 MacTalk interface. Leave open if unused	6	Pink	1
IN3	Digital input 3 (24V) or analogue input 0-5V	7	Blue	1
CVO	Supply output. Connected internally to the **CVI** terminal in the PWR connector. Max 700 mA. **DO NOT connect >30V to this terminal!**	8	Red	1
Connector housing/metal is connected to earth and at JVL supplied cables also to the cable screen.				

CON Main

"MAINS POWER" (XD0) connector M16 - 4 pin male connector

Signal name	Description	Pin no.	JVL Cable WP0402	Isolation group (see note)
Neutral	Neutral used for 115 or 230VAC phase input	A	Blue	4
L1	115VAC supply input	B	Red	4
L2	230VAC supply input	C	Brown	4
PE (Earth)	Protective earth terminal	Earth	Green/Yellow	4
Connector housing/metal is connected to earth and at JVL supplied cables also to the cable screen.				

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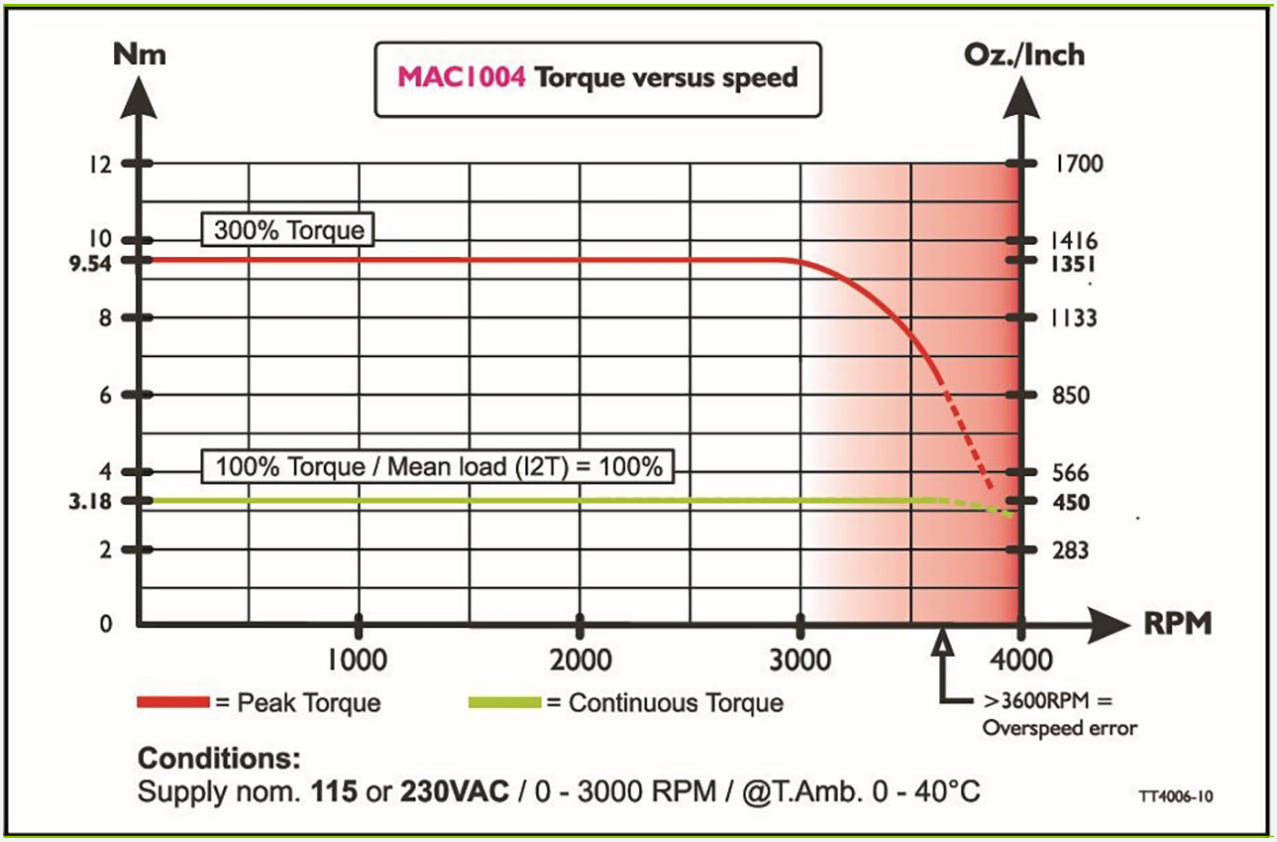
Torque, force and Power information

RMS torque [Nm]	3.18	**Peak torque [Nm]**	9.54
Supply Volt 1 [V]	1x115	**Velocity max 1 [Rpm]**	3600
Supply Volt 2 [V]	1x230	**Velocity max 2 [Rpm]**	3600
Supply Volt 3 [V]		**Velocity max 3 [Rpm]**	
Supply Volt 4 [V]		**Velocity max 4 [Rpm]**	



MAC1004M2-HAARDC2 Int.ServoAC 1000WS1 3.18Nm IP55 Abs EC 1xM16

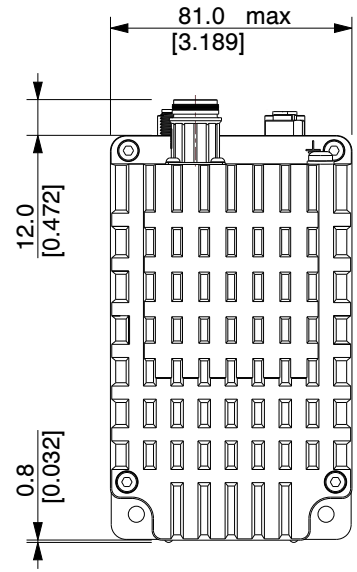
Electrical information

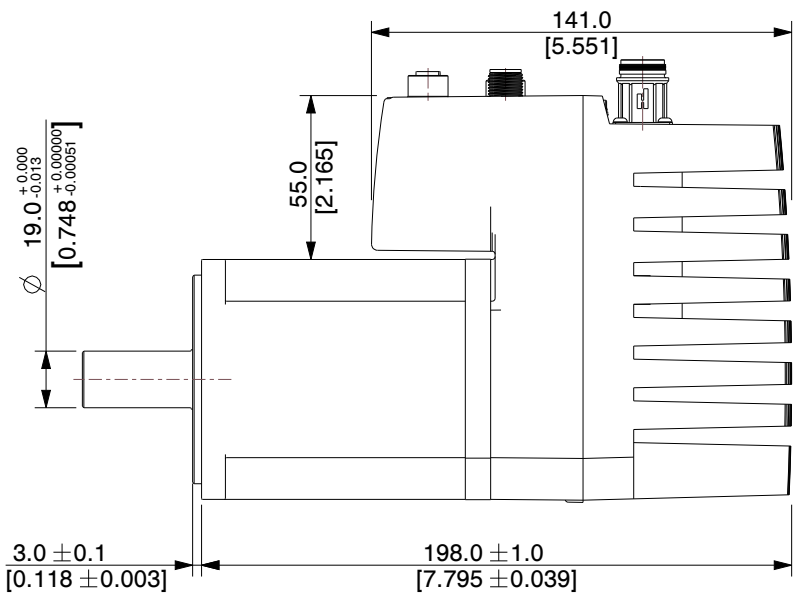
Main supply [V]	115, 230	**Main supply Min-Max [V]**	90-260
Main Voltage possible	1x115VAC, 1x230VAC	**Inrush current -Main max [A]**	< 5
Input Voltage Frequency			
Recommended fuse	T10A@230VAC / T15A@115VAC If automatic use class D	**P- isolated from Earth (Low Voltage ground (P-) isolated from housing)**	Yes
Internal Power-Dump Resistance [Ohm]	150	**Internal Power-Dump Power [W]**	10
PD connection - Int/Ext	Int/Ext PD in Parallel		
External Power-Dump Resistance Minimum value [Ohm]	20	**External Power-Dump Max Current [A]**	25
Control voltage (CVI/O+) [VDC]	18-30	**Control Voltage (CVI) Min-Max [VDC]**	18-32
Max current CVI [A]	0.25		
PLC no. of DI/DO/AI		**PLC no. of DI/DO**	
Dig. Input impedans	30k 0-5 V	**PLC DO max current [mA/DO]**	350
PLC AIN voltage [VDC]	0-5 VDC, 12 bit	**PLC AIN Min-Max [VDC]**	-10 / +30
PLC AIN Max Tol. [%]	±2		
Multifunction IOs	0	**PLC MF low level [VDC]**	-
PLC MF high level [VDC]	-	**PLC MF Max level [VDC]**	0-5 V -7 -> +12
MTBF 30% [Year]	-	**MTBF 100% [Year]**	-
Temperature Error [°C]			

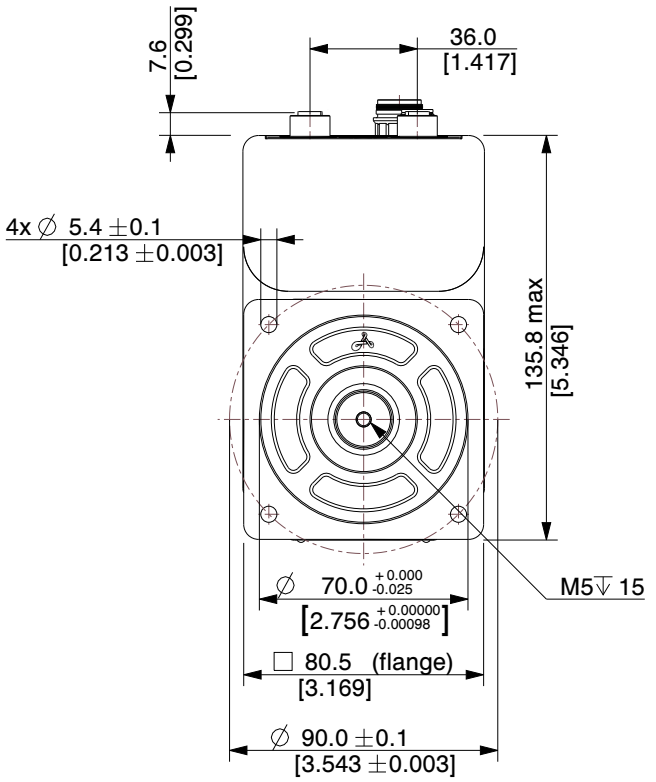
MAC1004M2-HAARDC2 Int.ServoAC 1000WS1 3.18Nm IP55 Abs EC 1xM16

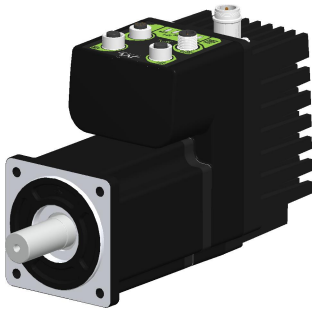
Communication information

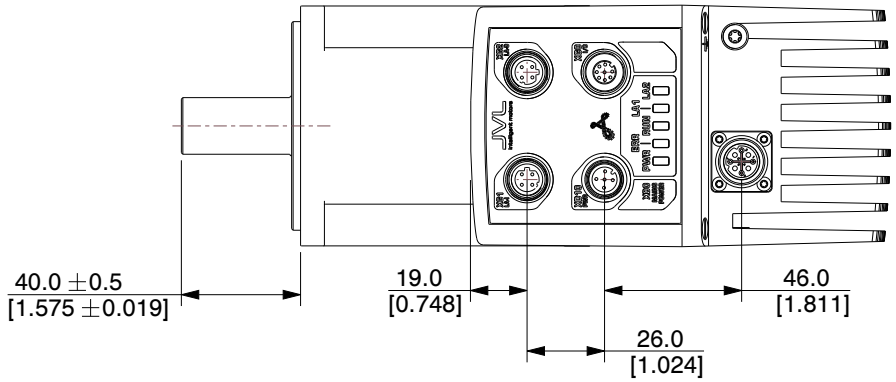
Software	MacTalk	
Connectivity: **Without module**	EtherCAT	**e-PLC Files**
Ethernet, PLC demo files		











NOTES:
1. Encoder Type: Absolute multiturn 4096 Rev. Single 8192 CPR

JVL A/S Bregnerødvej 127 DK-3460 Birkerød Denmark	JVL www.jvl.dk
PART NUMBER:	**MAC1004M2-HAARDC2**
PART DESCRIPTION:	**Integrated Stepper Motor**
A4	SCALE: NTS UNIT: MM [Inch]