



MIS231S1EIH4S6

Int.Step 12-72VDC, EtherNet/IP, AbsC-L, STO



General information

Description Int.Step 12-72VDC, EtherNet/IP, AbsC-L, STO, 4xM12. 2x4pF:EtherNetIP 17pF:8xDIO/AI+RS422+RS485 High Resolution: 409.600 step/rev. ±0.01 RPM, Programable (incl. current, position & velocity), with STO C-L + Abs Multiturn Enc. 4096/1024 CPR ± 5245 Revs Ø6.35x20Shaft: IP42 Motor: IP42 57x103 mm Holding Torque:0.97 Nm Radial Connector 12-72VDC - Mechanical Power: 177 W

Manufacture	JVL	Motor type	Integrated Stepper - Rotating
Motor resolution	409600	Encoder type	H4: H2 incr+absSingleturn and H3 serial/absMultiturn
Speed [Rpm]	3000.00	Power Peak [W]	177.00
Flange size	NEMA 23 - 57x57mm	Shaft size - Front [mm]	6.35 mm
Running torque [Nm]	0.97	Rated Winding current [A]	6.0
Holding torque [Nm]	0.97	Connectivity: Without module	Ethernet IP
Integrated PLC	Yes	PLC no. of DI/DO/AI	8
Closed loop	Yes	STO connector	Yes
Integrated gear	No	Gear ratio	
Brake	External brake option	Protection House/Shaft	
Shaft Double	No	Main supply [V]	12-72
Main supply UL [V]	12-60	Voltage type - Main	DC
Control voltage (CVI/O+) [VDC]	7-28	Control Voltage for UL recognized	7-30 VDC 150 mA + max 500 mA for user outputs
Weight net [kg]	1.02	MTBF 100% [Year]	13
Weight gross [kg]	1.15	MTBF 30% [Year]	15
Software	MacTalk		
CE Marked	Yes		



MIS231S1EIH4S6

Int.Step 12-72VDC, EtherNet/IP, AbsC-L, STO

General information



Approval - ROHS-3 Yes



Approval UL Yes. Recognized **UL Installation** Read more in usermanual about UL precautions



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

Motion Information:

Velocity Precision [+/-ppm]	Velocity Resolution [Rpm]
Acceleration / Deceleration Range [Rpm/s]	Acceleration / Deceleration Range [Rpm/s]
Electronic Gearing Ratio [Range / Resolution]	Country Of Origin DK
Tariff no 85015100	Tariff no US



MIS231S1EIH4S6

Int.Step 12-72VDC, EtherNet/IP, AbsC-L, STO

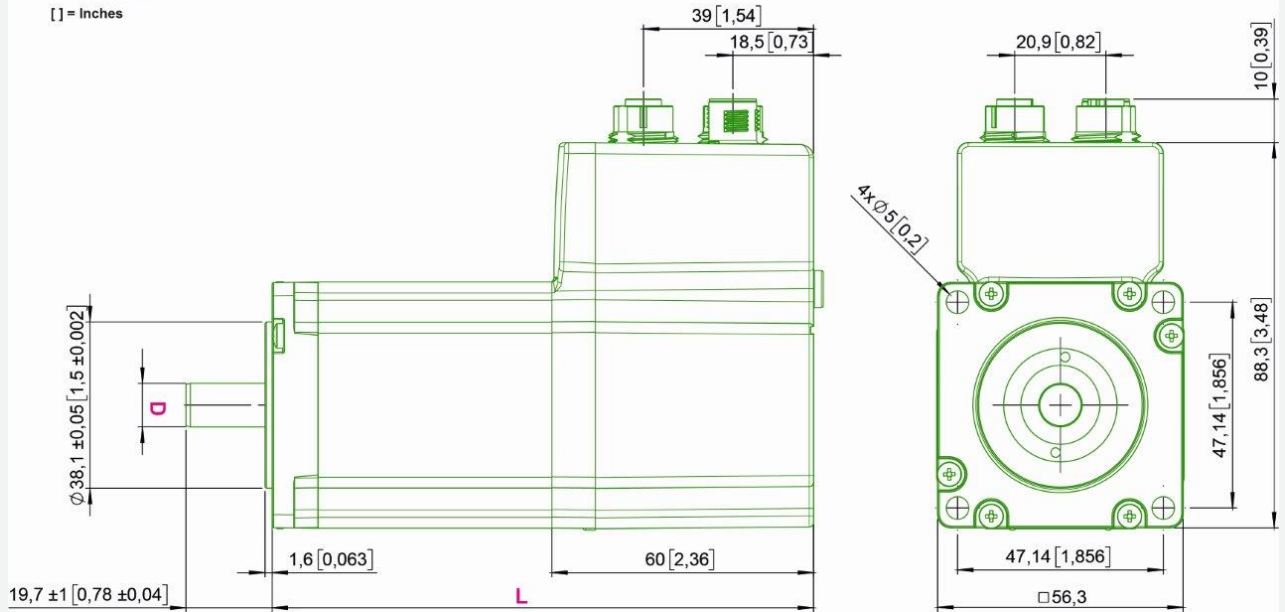
Mechanical information

Paint type

Motor Type	Length (L) ±1.0 [0.0787]	Shaft dia. (D) +0 / -0.013mm[0.000512]
MIS231S...	103 [4.06]	6.35 [0.25]
MIS232S...	124 [4.88]	6.35 [0.25]
MIS234S...	161 [6.34]	10.0 [0.3937]
MIS231T...	103 [4.06]	6.35 [0.25]
MIS232T...	124 [4.88]	10.0 [0.3937]

[] = Inches

This drawing covers only motor type MIS23xS and MIS23xT with radial connectors



Motor length [mm]	103	Motor width [mm]	56.4
Motor height [mm]	88.1	Protection house	IP42
Protection house	IP42	Protection shaft	IP42
Flange Type Front		Flange Type Rear	No
Motor diameter center front [mm]	38.1	Motor diameter center rear [mm]	
Bolt circle diameter front [mm]	66.6	Bolt circle diameter front [mm]	
Mounting holes front [mm]	5 mm	Mounting holes rear [mm]	
Flange Thickness [mm]		Flange material	Aluminium
Shaft Type Output	Round	Shaft Double	No
Shaft size - Front [mm]	6.35 mm	Shaft Type Rear	
Shaft length Front [mm]	20.0	Shaft size - Rear	-
Shaft material	Stainless steel AISI303	Shaft length Rear [mm]	
Shaft Key Dimension	-	Shaft Key included	Key NOT included
Integrated gear	No	Gear ratio	



MIS231S1EIH4S6

Int.Step 12-72VDC, EtherNet/IP, AbsC-L, STO

Mechanical information

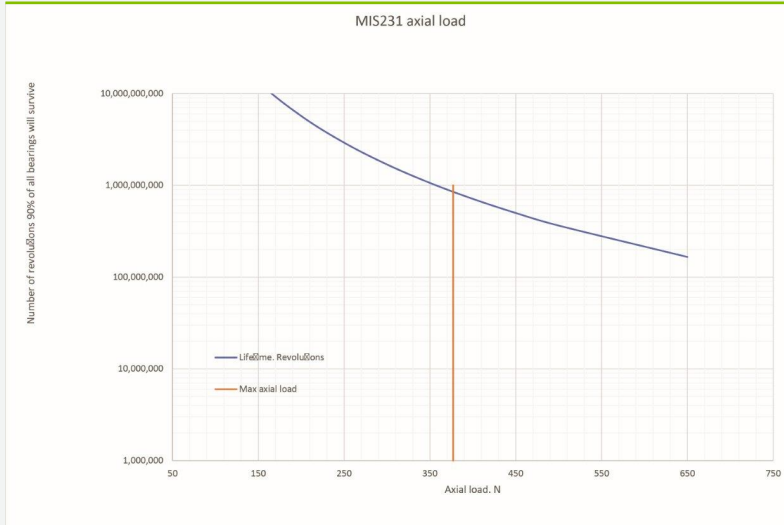
Gear efficiency [%]	< -	Gear backlash [ArcMin]	-
Brake	External brake option	Brake - Go ON time [ms]	-
Brake Holding torque [Nm]	-	Brake - Go OFF time [ms]	-
Rotor inertia [kgcm²]	0.3	Max inertia factor	40
Precision Motor - Absolute [Deg -/+]	0.35	Precision Motor - Max Load [Deg -/+]	
Precision Motor - Repeatability [Deg -/+]	0.15	Step angle [°/full step]	1.8°
CAD 2D [PDF]	Download	CAD 3D [STEP]	Download
CAD 2D [DWG]	No	CAD 3D [DWG]	No
CAD 3D [EASM]	Download	CAD 3D [IGES]	No
Datasheet - pdf		CAD file page	Link
User Manual	Download	WEB page	Link
Approval UL	Yes. Recognized	UL Installation	Read more in usermanual about UL precautions
STO connector	Yes	Approval - ATEX	No
Approval TÜV - STO	Yes	Oil resistant	
Temperature ambient [°C]	0...40 °C and 0...70 °C with derating of performance	Temperature storage	-40...70 °C
Humidity working	5...93% non-condensing	Vibration	5-25 Hz: +/-1.6mm, 25-500Hz: 4G, 1.0 oct./min
Shock	15G, 30ms. 6 x 1000 cycles in +/-X, +/-Y, +/-Z	Withstand Voltage	500 VDC between earth and supply ground
EMC in general	EMC Directive DIR2014/30/EU	EMC Emission	EN61800-3 / EN61000-6-3 / EN61000-6-4 all 2. enviroment
EMC Immunity	En IEC 61800-3 / EN61000-6-1 all 2. enviroment	Safety in general	LVD DIR2014/35/EU / EL61800 - USA and Canada only MIS34x products are pending
Safety wo STO	EN60950-1	Safety w STO	EN60950-1 / EN61508-1/-2 SIL3 / ISO13849-1/-2 / ISO62061 / EN61800-5-1/-2
Inviromental	IEC 60068-2-27, Test Ea. Shock test	Inviromental 2	IEC 60068-2-6, Test Fc. Vibration test
Inviromental 3	IEC 60068-2-2, Test Bd. covers temperaturerise/dry heat	Inviromental 4	IEC 60068-2-78, Perm. moisture/Damp heat, steady state
REACH SVHC document	REACH-SVHC Statement	Low voltage Directive	LVD conformity with EU standard: EN IEC 62368-1:2020/A11:2020
No Dual Use	Read more here		
Duty Cycle		Max Duty Cycle [%]	
Dutycycle UL	Read more in usermanual about UL precautions		
Front bearing type	6000ZZ	Rear bearing type	6000ZZ
Axial Load Max: Typical Term	Axial load Max Typical is a run of 10.800.000 revolutions at indicated load	Axial Load Max: Long Term	Axial load Max Long is a run of 1.440.000.000 revolutions at indicated load
Axial Load Max: Typical [N] (Bearing)	377	Axial Load Max: Long [N] (Bearing)	314



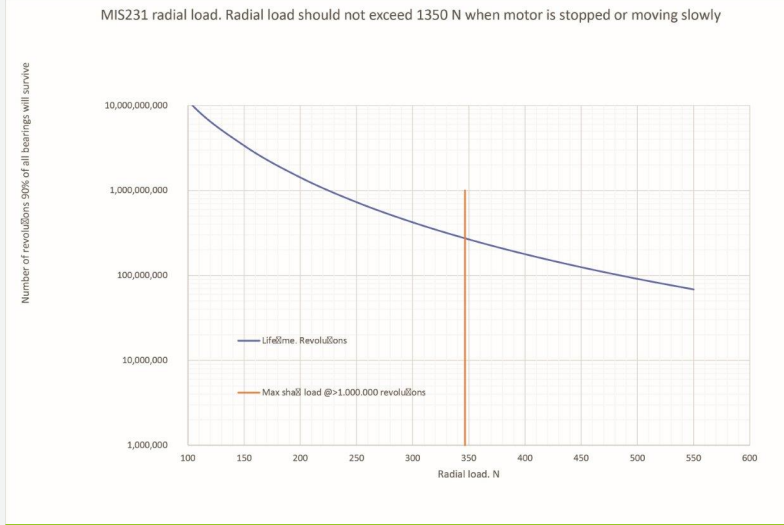
MIS231S1EIH4S6

Int.Step 12-72VDC, EtherNet/IP, AbsC-L, STO

Mechanical information



Radial Load Max Typical Term:	Radial load Max Typical is a run of 10.800.000 revolutions at indicated load	Radial Load Max Long Term:	Radial load Max Long is a run of 1.440.000.000 revolutions at indicated load
Radial Load Max: Typical [N] (Bearing)	346	Radial Load Max: Long [N] (Bearing)	282



Radial load distance [mm]	10	Axial play [mm]	
Axial play force [N]		Shaft Seal	



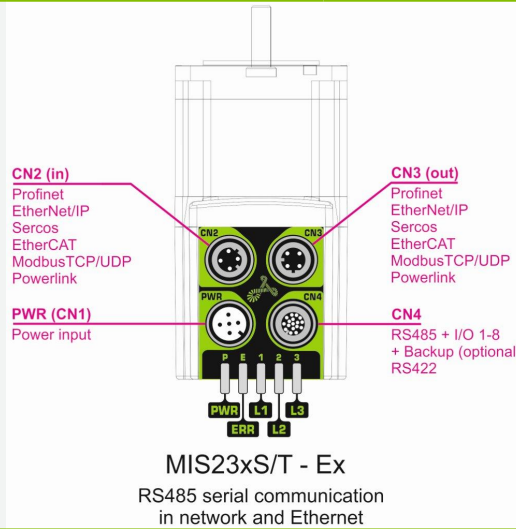
MIS231S1EIH4S6

Int.Step 12-72VDC, EtherNet/IP, AbsC-L, STO

Connector information

Connector 1 label	PWR	Connector 1	M12 5-pin male A-coded
Connector 2 label	CN2	Connector 2	M12 4-pin female D-coded Ethernet
Connector 3 label	CN3	Connector 3	M12 4-pin female D-coded Ethernet
Connector 4 label	CN4	Connector 4	M12 17-pin female A-coded
Connector 1 RS485	No	Connector 2 RS485	No
Connector 3 RS485	No	Connector 4 RS485	Yes

Motor connectors



Picture CN1

"PWR" (CN1) - Power input. M12 - 5pin male connector				
Signal name	Description	Pin no.	JVL Cable W11000-M12F5TxxN	Isolation group
P+	Main supply +7-72VDC. Connect with pin 2 *	1	Brown	1
P+	Main supply +7-72VDC. Connect with pin 1 *	2	White	1
P-	Main supply ground. Connect with pin 5 *	3	Blue	1
CVI	Control and user output supply +7-30VDC. DO NOT connect >30V to this terminal!	4	Black	1
P-	Main supply ground. Connect with pin 3 *	5	Grey	1

* Note: P+ and P- are each available at 2 terminals. Make sure that both terminals are connected in order to split the supply current in 2 terminals and thereby avoid an overload of the connector.

Picture CN2

"CN2" - Ethernet In port connector - M12 - 4pin female connector "D" coded				
Signal name	Description	Pin no.	JVL Cable W11046-M12M4S05R	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



MIS231S1EIH4S6

Int.Step 12-72VDC, EtherNet/IP, AbsC-L, STO

Connector information

Picture CN3

“CN3” - Ethernet Out port connector. M12 - 4 pin female connector “D” coded

Signal name	Description	Pin no.	JVL Cable WI1046- M12M4S05R	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

Picture CN4

“CN4” - RS485 + I/O + Backup (option) connector - M12 - 17pin female connector

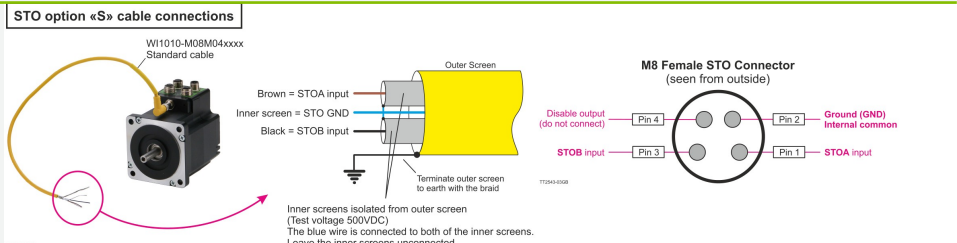
Signal name	Description	Pin no.	JVL Cable WI1009M12 M17TxXN	Isolation group (see note)
IO1	I/O channel 1. Can be used as input or output	1	Brown	1
GND	Ground intended to be used together with the other signals in this connector	2	Blue	1
IO2	I/O channel 2. Can be used as input or output	3	White	1
IO3	I/O channel 3. Can be used as input or output	4	Green	1
RS422: B1-	RS422 I/O terminal B-	5	Pink	1
IO4	I/O channel 4. Can be used as input or output	6	Yellow	1
RS422: A1-	RS422 I/O terminal A-	7	Black	1
RS422: B1+	RS422 I/O terminal B+	8	Grey	1
CVO	Supply output. Connected internally to the CVI terminal in the PWR connector. DO NOT connect >30V to this terminal!	9	Red	1
RS422: A1+	RS422 I/O terminal A+	10	Violet	1
IO5	I/O channel 5. Can be used as input or output	11	Grey/pink	1
IO6	I/O channel 6. Can be used as input or output	12	Red/blue	1
IO7	I/O channel 7. Can be used as input or output	13	White/Green	1
IO8	I/O channel 8. Can be used as input or output	14	Brown/Green	1
RS485: B0-	RS485 interface. Leave open if unused	15	White/Yellow	1
EXTBACKUP	Only for motors with the -H3 or -H4 option (abs. multi-turn encoder). This terminal can be connected to an external supply. Connect to ground (GND) if not used.	16	Yellow/brown	1
RS485: A0+	RS485 interface. Leave open if unused	17	White/grey	1

* Note: Isolation group indicate which terminals/circuits that a galvanic connected to each other. In other words group 1, 2, 3 and 4 are all fully independently isolated from each other. Group 1 correspond to the housing of the motor which may also be connected to earth via the DC or AC input supply.

Connector STO

M8 4-pin female A-coded

Picture STO Con





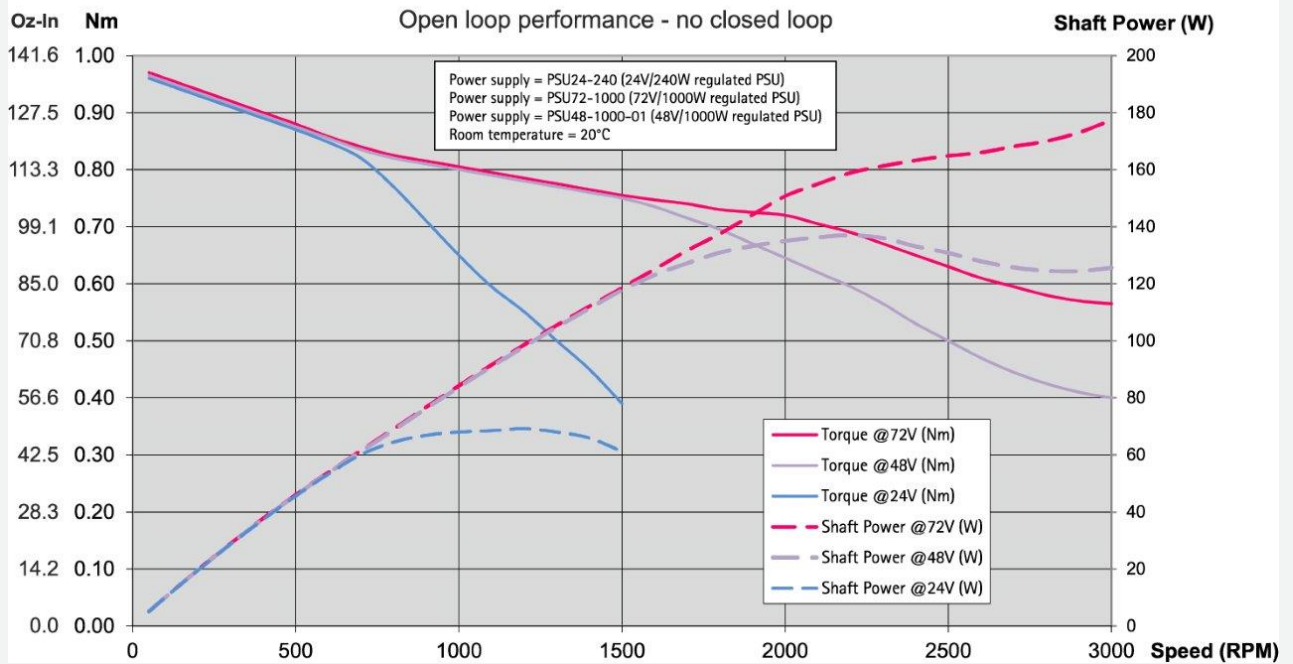
MIS231S1EIH4S6

Int.Step 12-72VDC, EtherNet/IP, AbsC-L, STO

Torque, force and Power information

Supply Volt 1 [V]		Power Peak 1 [W]	
Supply Volt 2 [V]	24	Power Peak 2 [W]	69.00
Supply Volt 3 [V]	48	Power Peak 3 [W]	137.00
Supply Volt 4 [V]	72	Power Peak 4 [W]	177.00
Holding torque [Nm]	0.97	Running torque [Nm]	0.97
Detent torque [Nm]			

MIS231S motor torque and shaft power versus speed





MIS231S1EIH4S6

Int.Step 12-72VDC, EtherNet/IP, AbsC-L, STO

Electrical information

Main supply [V]	12-72	Main supply Min-Max [V]	7-90
Main supply UL [V]	12-60	Main supply Max UL [V]	7-60
Rated motor current [A]	5.2	Control voltage (CVI/O+) [VDC]	7-28
Control Voltage (CVI) Min-Max [VDC]	7-30	Control Voltage for UL recognized	7-30 VDC 150 mA + max 500 mA for user outputs
CVI current wo Ethernet and output (12/24VDC) [mA]	90/55	Current Ethernet option (12/24VDC) [mA]	120/60
Current brake option [mA]	-	Current for 1 Dig. output - max [mA]	350
Max current CVI [A]			
Encoder type	H4: H2 incr+absSingleturn and H3 serial/absMultiturn	Encoder Resolution (H2)	H2 - 4096 Singleturn AbsEnc - Semi multiturn
Encoder Resolution (H3)	H3 - 1024 Multiturn AbsEnc	Encoder revolutions	+/-5242
PLC no. of DI/DO/AI	8	Analogue voltage	0-5VDC 12bit
Dig. Input impedans	30 Kohm	Counter frequency max	12MHz
Standard used		Standard used 2	
Resistance [Ohm]		Induction [mH]	



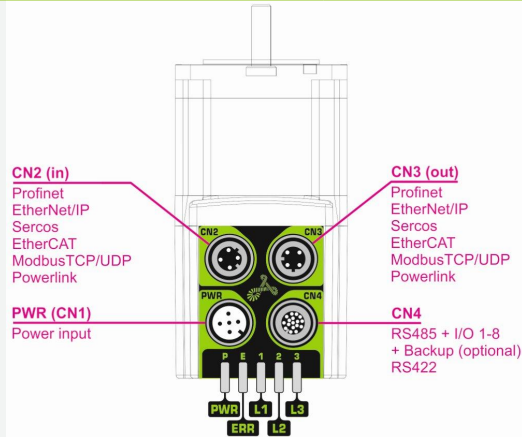
MIS231S1EIH4S6

Int.Step 12-72VDC, EtherNet/IP, AbsC-L, STO

Communication information

Software	MacTalk	Connector 2 RS485	No
Connectivity: Without module	Ethernet IP	Connector 3 RS485	No
		Connector 4 RS485	Yes

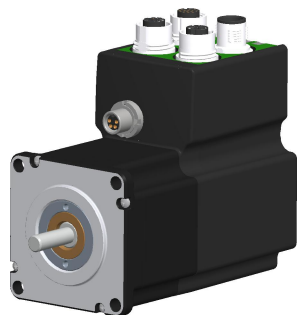
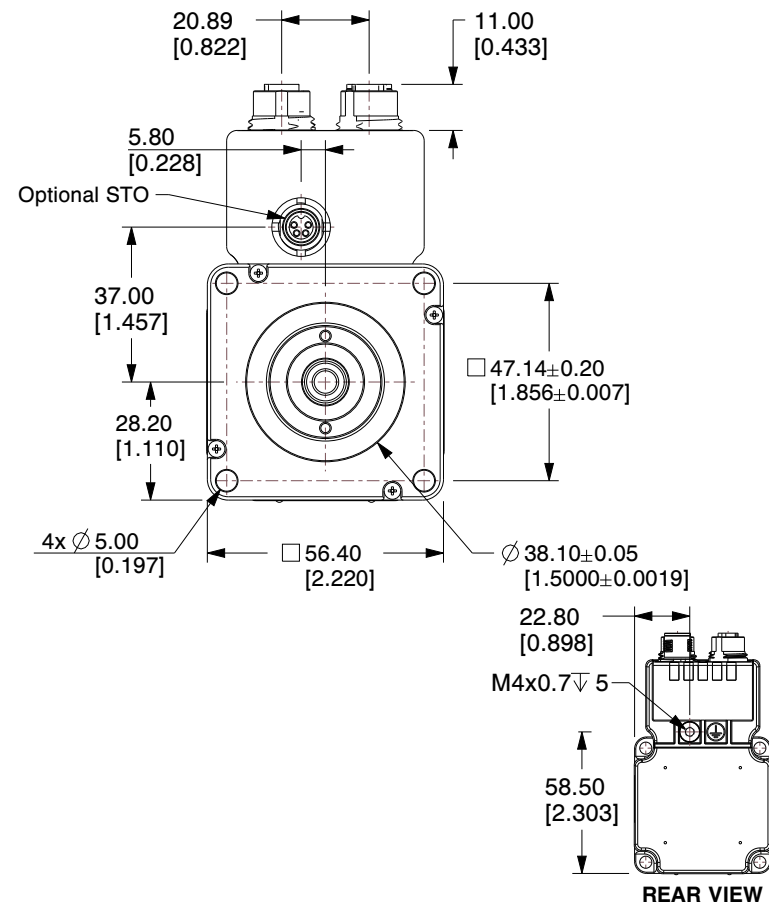
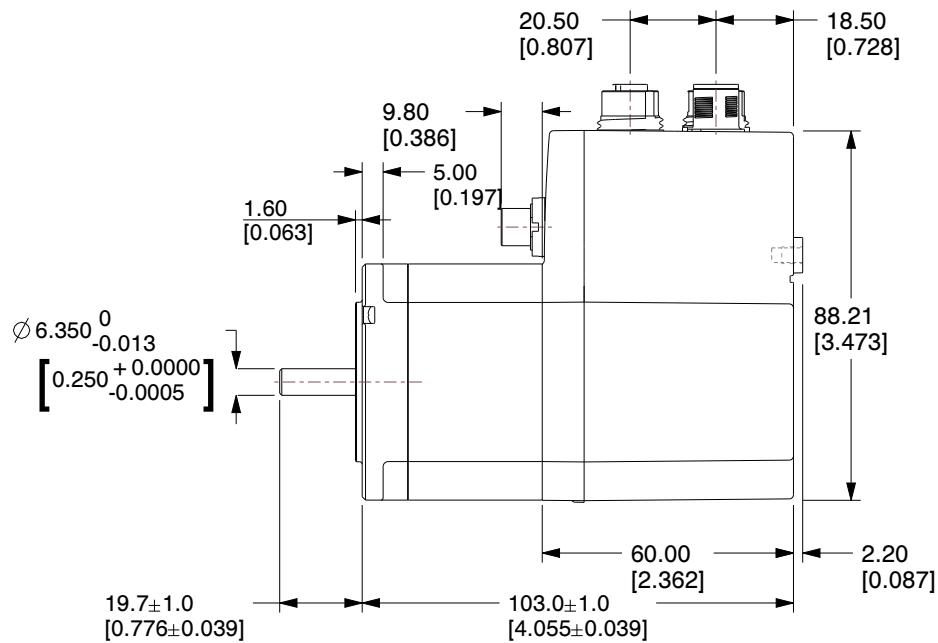
Motor connectors



MIS23xS/T - Ex
RS485 serial communication
in network and Ethernet

e-PLC Files

Ethernet, PLC demo files



NOTES:

1. Operation Modes : Passive, Position, Gear, Velocity.
2. Tolerance for torque and power is $\pm 10\%$.
3. Shaft - AISI 303 Stainless steel.
4. Front Bearing: 3202-2RS Double row angular contact.
5. Encoder Type: Internal, magnetic, absolute multiturn Closed loop ready.
Resolution per rev.: Displayed: 409600 counts - internal: 4096 counts.

JVL A/S
Bregnerødvej 127
DK-3460 Birkerød
Denmark



PART NUMBER:

MIS231S1EIH4S6

PART DESCRIPTION:

Integrated Stepper Motor

	A4	SCALE	NTS
		UNIT	MM [Inch]

Unless specifically stated otherwise, this drawing is the property of JVL A/S and no feature embodied herein may be disclosed except as previously authorized