VIDAR
An ITT Company

TECHNICAL DATA SHEETS

SYNCHRONOUS RELUCTANCE MAGNET ASSISTED NEMA MOTOR
WITH EMBEDDED AC-LINK VARIABLE SPEED DRIVE

25 HP, 3600 RPM, 460V, 3PH, 60HZ, 284/6TS, TEFC, F3

Model: EMDX025H36EXS3ABAA

NAMEPLATE

OUTPUT	SPEED	FRAME	VOLTAGE	FREQUENCY	PHASE	RATED CURRENT
25 HP	3600 RPM	284/6TS	460 V	60 Hz	3	25.1 A
ENCLOSURE	**DUTY RATING**	**SERVICE FACTOR**	**INSULATION CLASS**	**MOTOR EFF. (%)**	**PDS EFF. (%)[1]**	**POWER FACTOR**
TEFC	CONT.	1.0	H	93.1%	90.3%	0.99
MAXIMUM SPEED	**MINIMUM SPEED**	**CONSTANT POWER**	**VARIABLE TORQUE**	**EFFICENCY CLASS**	**AREA CLASSIFICATION**	
4500 RPM	360 RPM	3600 to 4500 RPM	360 to 3600 RPM	IE4 / IES2	Class I Division II Groups A,B,C,D T4	

CALCULATED PERFORMANCE @ 460V 3PH 60HZ

Rated Load:	25.0 HP
Rated Speed:	3500 RPM
Rated Current:	25.1 A
Rated Torque:	37.5 ft-lbs
Number of Poles:	8
Output Frequency:	233.3 Hz

RATED LOAD	100%	75%	50%	25%
PDS EFF. (%)[1]	90.3%	88.5%	86.5%	80.1%
POWER FACTOR	0.99	0.99	0.98	0.95
CURRENT	25.1 A	18.7 A	12.9 A	7.2 A

NOISE LEVEL:

Noise Level: 85 dB(A)

Measured at 1m with tolerance of +3 dB(A)

RATED ENVIRONMENT

Amb. Temperature: -25 to 40°C (50°C with de-rate)

Max Elevation: 1000 m (2000 m with de-rate)

BEARINGS

Bearing Type NDE:	6310C3
Bearing Type DE:	6310C3
Lubricant Type:	Mobil Polyrex EM
Lubricant Interval:	3200 Hours
Bearing Seal DE:	Inpro/Bronze
Bearing Seal NDE:	Sealed

INSTALLATION

Terminal Box Mounting :	F3
Motor Lead Termination:	Ring Terminals
Approximate Weight:[2]	459 lbs
Overall 'C' Length:	30.3 in.
Shaft Rotation	Both (CW and CCW)
Shaft Diameter:	1.875 in.

AGENCY APPROVALS

Conforms to UL STD 121201 (Full Assembly)
Certified to CSA STD C22.2 No 213 (Full Assembly)
Conforms to UL STD 61800-5-1 (Converter)
Certified to CSA STD C22.2 No. 274 (Converter)
UR - UL Recognized (Motor)

THERMAL PROTECTION

Overload Protection:	Integral - 120% @ 60s / 150% @ 3s
Thermal Device - Winding:	2xKTY84 (1 Primary / 1 Back-Up)
Thermal Device - Converter:	Integral Temperature Monitoring
Thermal Device NDE Bearing:	None
Thermal Device DE Bearing:	None

GENERAL SPECIFICATIONS

Frame Material:	Cast Iron	Input Voltage:	460V +10% / -5%
Terminal Box Material:	Aluminum	Voltage Imbalance:	±3% phase to phase
Motor IP Rating:	TEFC - IP55	Input Frequency:	47-63 Hz
Terminal Box IP Rating:	IP66	Harmonic Current Distortion:	THDi < 5% @ 100% Load
Starting Method:	Integral Soft Start/Stop	RFI/EMI Filter:	EN55011 (CISPER 11): Class A (industrial): C3
Anti-condensation:	Integral w/ 460V mains	Safety Integrity Level:	IEC61508 SIL2, ISO13849-1 Category 3PL d
Speed Feedback Device:	Sensorless	Cooling Method:	IC411-TEFC
Keypad Interface:	External	Back EMF:[4]	4V/100RPM

NOTES

1. PDS Eff. - Power Drive System Efficiency is the combined motor and converter efficiency as defined by IEC 61800-9
2. Approximate weight subject to change after manufacturing
3. Values are preliminary averages subject to tolerances.
4. Motor contains permeant ferrite magnets. When shaft is rotated voltage can be generated at the motor terminals.

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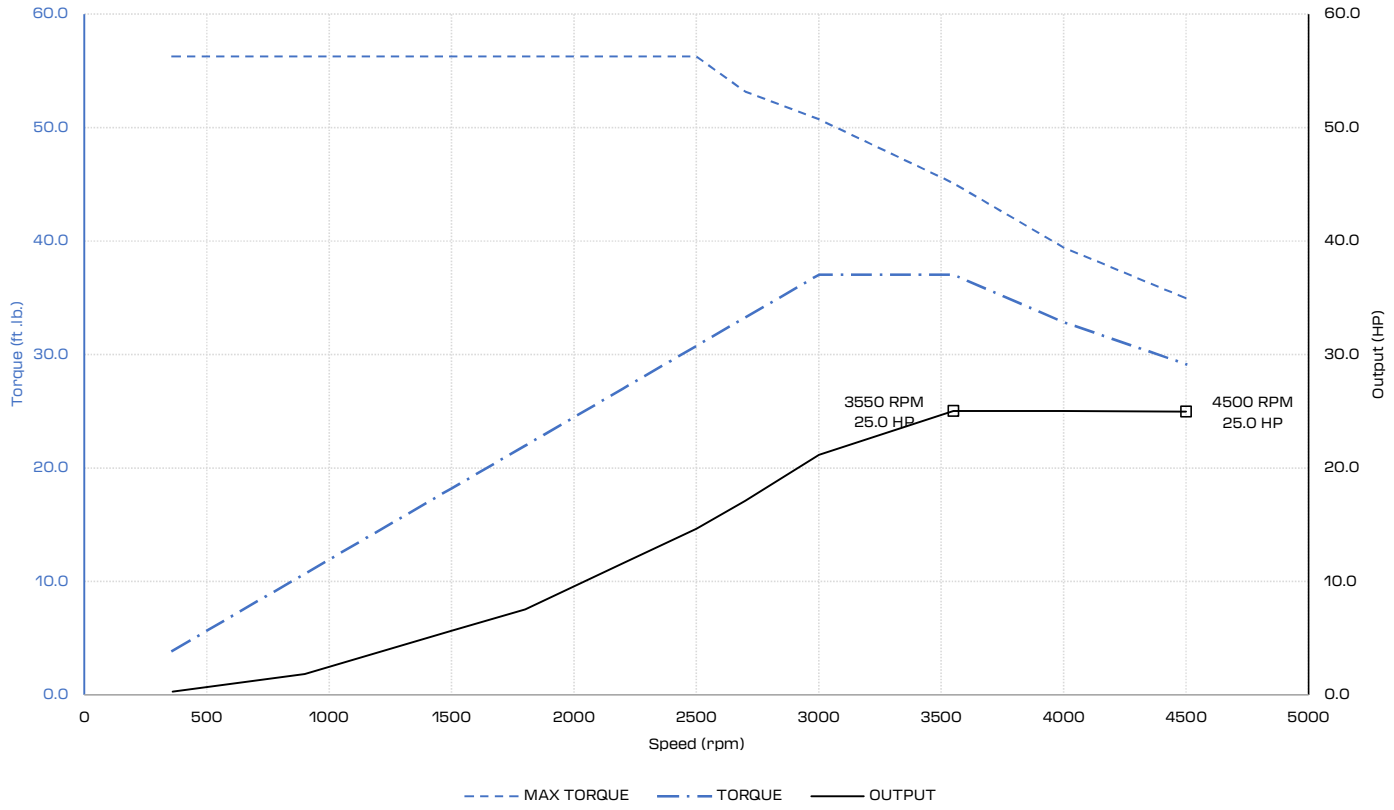
VARIABLE SPEED OPERATION CURVE



CALCULATED PERFORMANCE @ 460V 3PH 60HZ

		SPEED	MOTOR FREQ.	MAX. TORQUE	TORQUE	OUTPUT
Rated Load:	25.0 HP	RPM	HZ	FT-LBS	FT-LBS	HP
Rated Speed:	3500 RPM	360	24.0	56.3	3.9	0.3
Rated Current:	25.1 A	900	60.0	56.3	10.7	1.8
Rated Torque:	37.5 ft-lbs	1500	100.0	56.3	18.2	5.6
Number of Poles:	8	1800	120.0	56.3	22.0	7.5
Output Frequency:	233.3 Hz	2200	146.7	56.3	27.0	11.6
Service Factor:	1.0	2500	166.7	56.3	30.7	14.6
Insulation Class:	H	2700	180.0	53.2	33.3	17.1
Duty Rating:	CONT.	3000	200.0	50.7	37.0	21.1
Amb. Temperature:	-25 to 40°C	3550	236.7	45.1	37.0	25.0
Max Elevation:	1000 m	4000	266.7	39.4	32.8	25.0
		4500	300.0	35.0	29.1	25.0

NOTES

1. Values are averages subject to tolerances.
2. Max Torque shown subject to overload and/or over temperature trips

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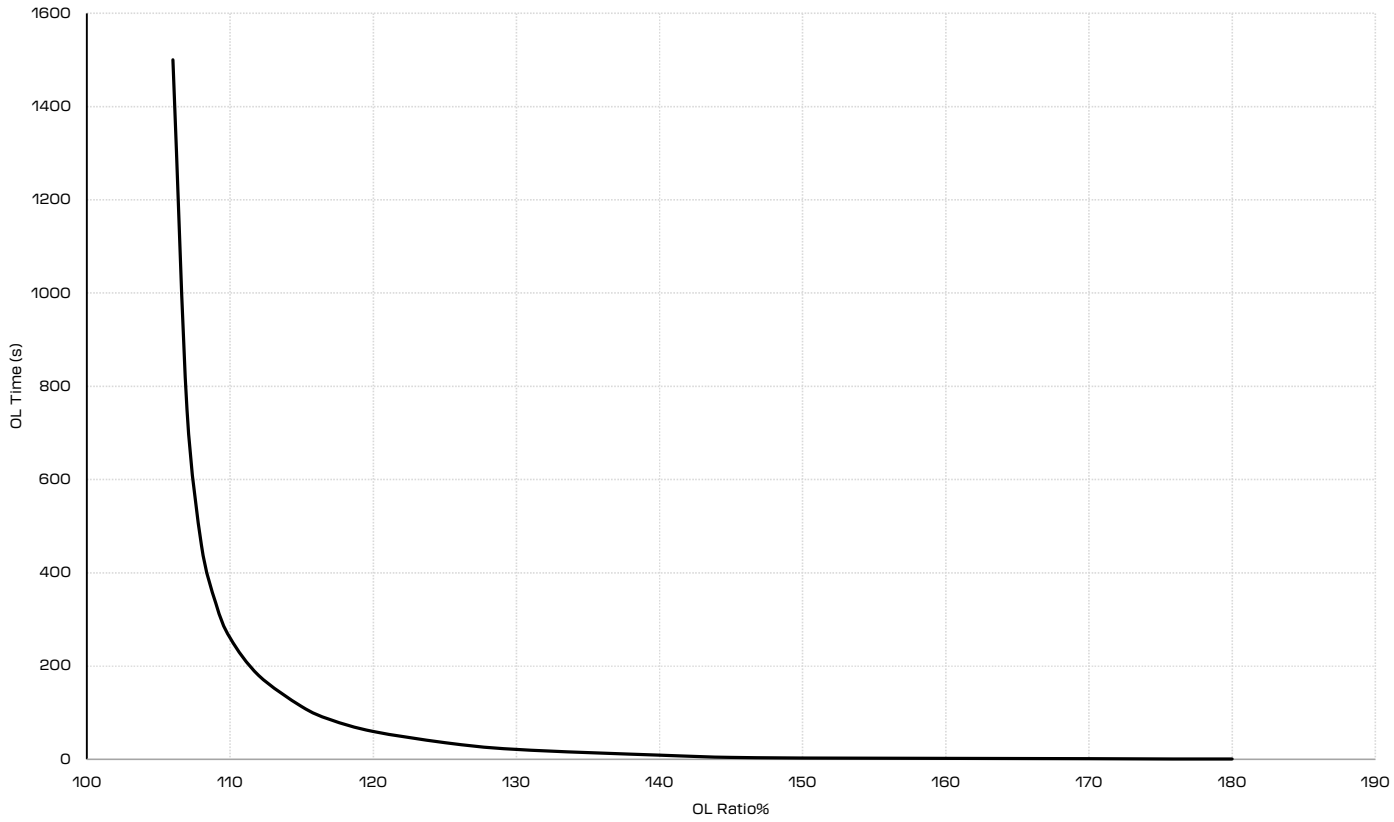
CURRENT OVERLOAD CURVE



Overload Ratio[1]	OL Time (s)	Recover Time (s)
106%	1500	309
110%	260	273
120%	60	198
140%	9	75
150%	3	43
170%	1.2	40
180%	1	40

NOTES

1. Ratio is based on the output current to the motor.
2. Overload protection is integral to the VIDAR motor. Separate motor overload protection is not required.

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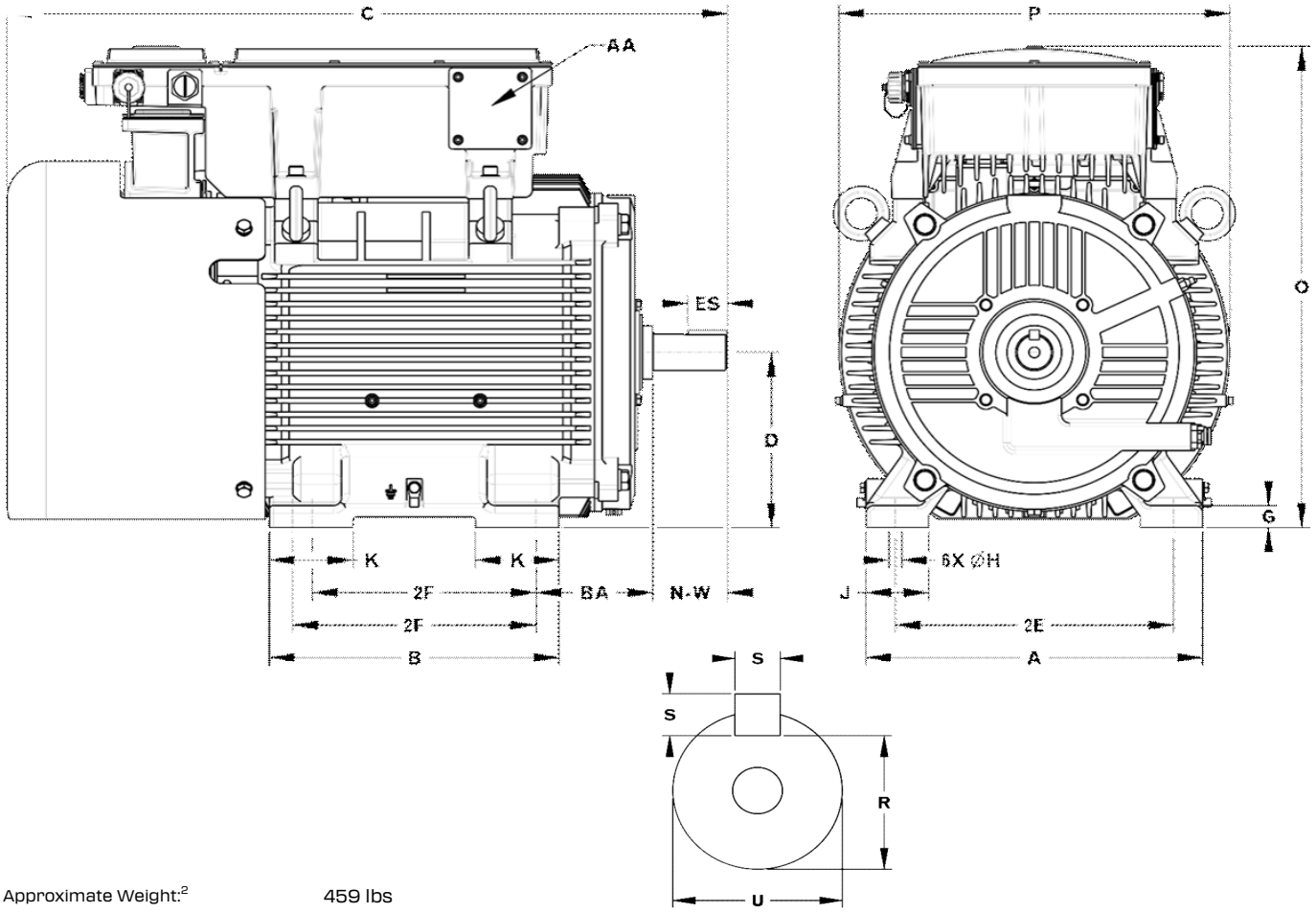
GENERAL ARRANGEMENT DRAWING



Approximate Weight:[2] 459 lbs

Terminal Box Mounting[3] F3

CRITICAL DIMENSIONS (IN.)

FRAME	2E	2F	H	BA	A	B
	11.00	9.50 \ 11.00	0.53	4.75	12.76	12.60
	C	D	G	J	O	K
	30.03	7.00	0.74	2.36	20.17	3.74
284/6TS	P	S	R	ES	N-W	U
	15.59	0.38	1.416	1.91	3.25	1.625
	AA	AB	HB	AJ	AK	BF

NOTES

1. Shaft key provided with motor.
2. Approximate weight subject to change after manufacturing.
3. Tapped bolt holes given in Unified National Coarse

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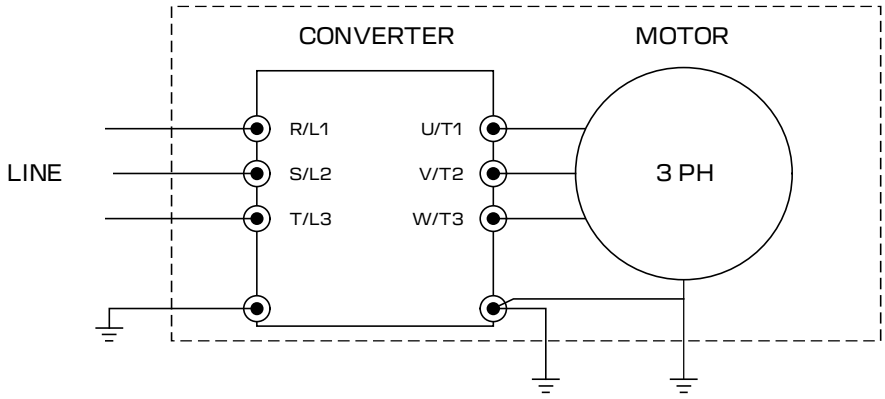
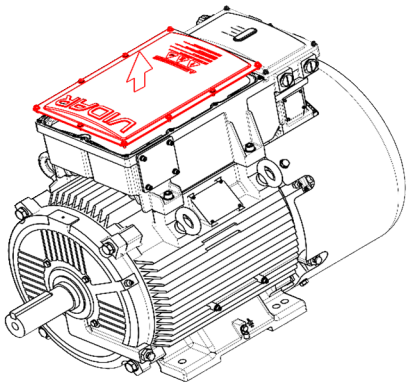
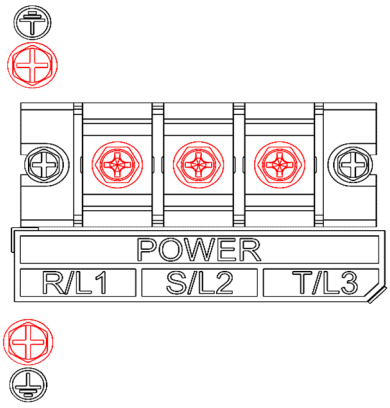
MOTOR WIRING DIAGRAM



INPUT POWER TERMINAL BOX



INPUT POWER TERMINALS (R/L1, 2/L2, T/L3)



TERMINAL	CONDUIT ENTRY	MAX. WIRE GAUGE	MIN. WIRE GAUGE	TORQUE SPEC. ± 10%
Main Circuit Terminal	2 x 1.50 in. NPT	6 AWG	8 AWG	32.6 lb-in
Ground Terminal		8 AWG	8 AWG	21.7 lb-in

NOTES

1. Motor can be either wye or delta connected.
2. For an ungrounded/floating delta or high resistance ground wye connection refer to the user manual to disconnect the EMI filter.
3. The motor will rotate counterclockwise (viewed from the shaft end) in the forward direction. To change the motor direction refer to the user manual to reverse the direction through the keypad or to permanently reverse the forward direction, switch two of the motor phases U/T1, V/T2, W/T3.

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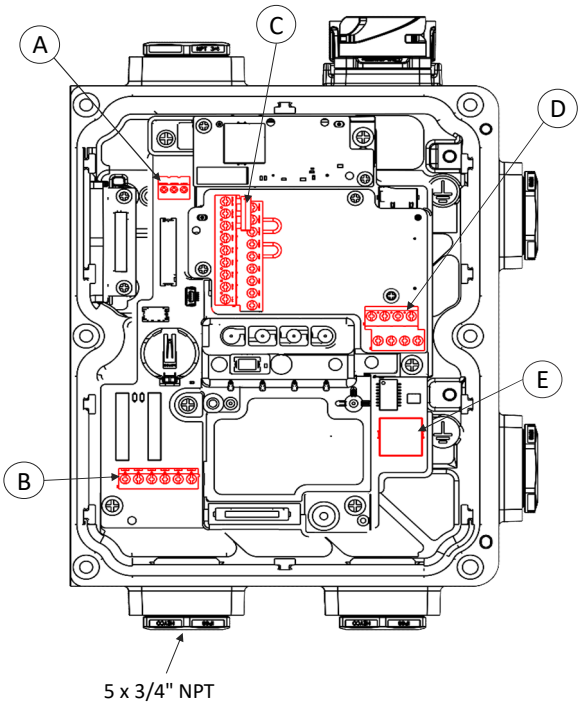
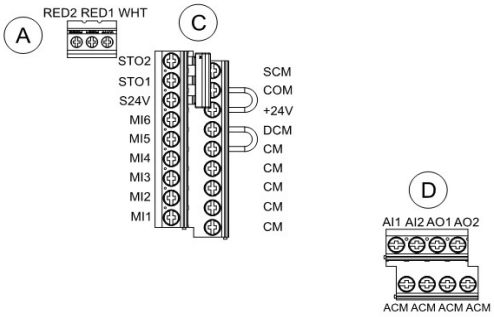
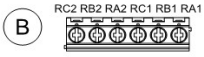
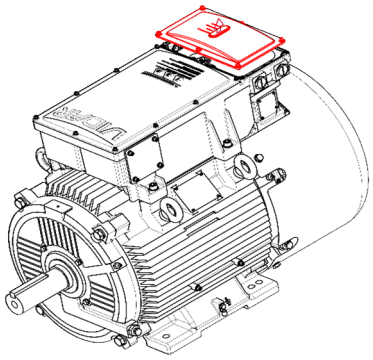
APPLICATION CONTROL WIRING INSTALLATION







APPLICATION CONTROL TERMINAL BOX



CONTROL WIRE SPECIFICATIONS

TERMINAL NAME	GROUP	CONDUCTOR	STIPPING LENGTH	MAX. WIRE GAUGE	MIN. WIRE GAUGE	TORQUE SPEC. ± 10%
RTD Terminal	A	Solid / Strand	0.25 in.	20 AWG	24 AWG	1.8 lb.-in.
Relay Terminals	B	Solid / Strand	0.25 in.	16 AWG	24 AWG	4.0 lb.-in.
Digital Terminals	C	Solid / Strand	0.25 in.	18 AWG	24 AWG	4.3 lb.-in.
Analog Terminals	D	Solid / Strand	0.25 in.	18 AWG	24 AWG	4.3 lb.-in.
Ethernet IP / TCP	E	RJ45 CAT 6				

NOTES

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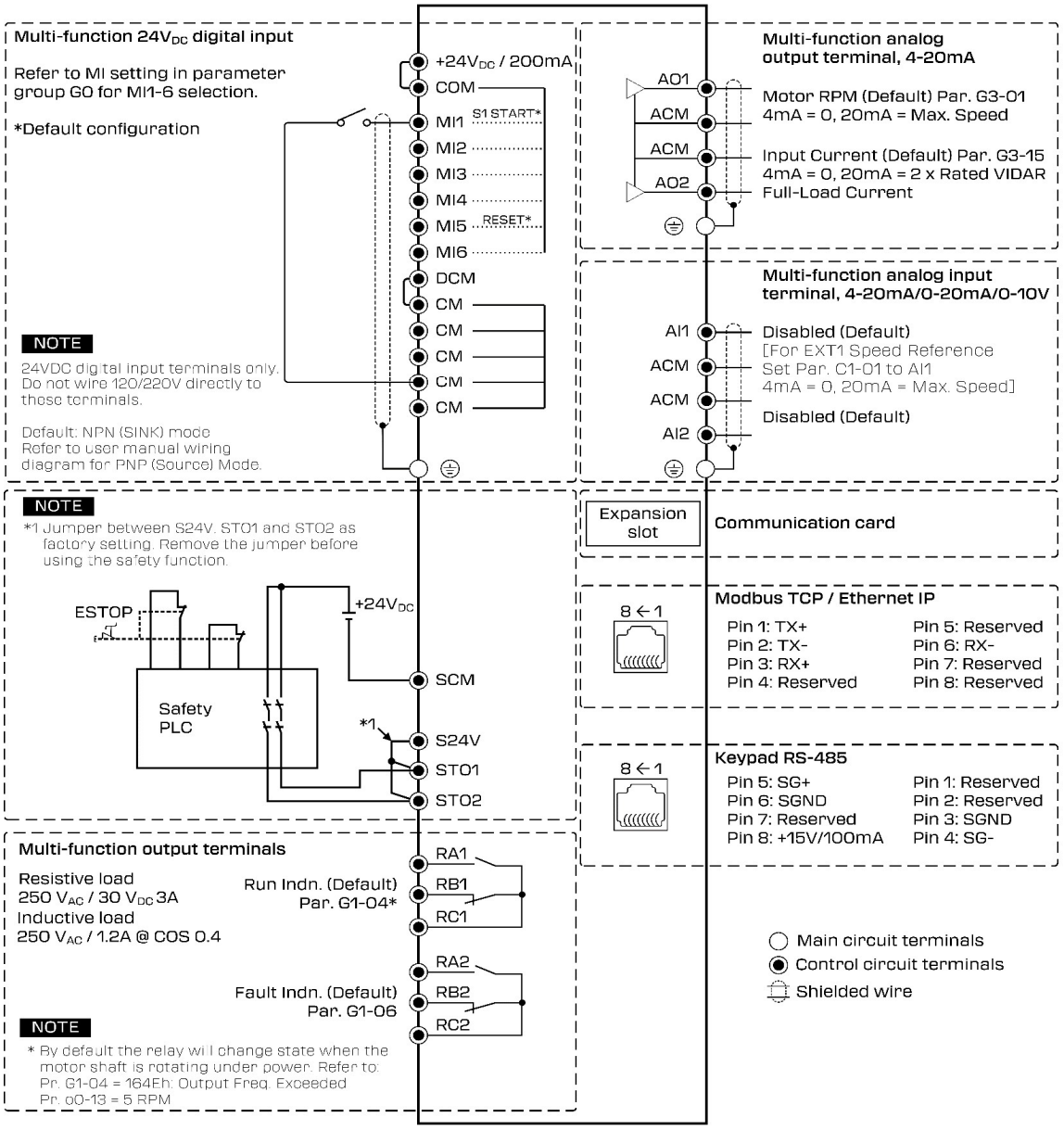
APPLICATION CONTROL WIRING DIAGRAM



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CONTROL WIRING SPECIFICATION

Terminals	Terminal Function	Description
+24V	+24V power supply	+24 V_{DC} ± 10% 200 mA
COM	Digital control signal common (Sink)	Multi-function input common terminal
MI1 | M6	Multi-function 24VDC Digital Input Selection 1-6	MI1-MI6 support three-wire / two-wire control Refer to the MI setting in Parameter Group G0 for MI1-MI6 function selection. Source Mode: ON: activation voltage ≥ 15 VDC OFF: cut-off voltage ≤ 5 VDC Sink Mode: ON: activation voltage ≤ 9 VDC OFF: cut-off voltage ≥ 19 VDC
DCM	Digital signal common	Digital signal common
CM	Extended digital signal common	Extended digital signal common
RA1	Multi-function relay output 1 (N.O.) a	To output various kinds of monitoring signals such as motor drive in operation, frequency reached, and overload indication. Resistive Load 3 A (N.O.) / 3 A (N.C.) 250 VAC 3 A (N.O.) / 3 A (N.C.) 30 VDC Inductive Load (COS 0.4) 1.2 A (N.O.) / 1.2 A (N.C.) 250 VAC 1.2 A (N.O.) / 1.2 A (N.C.) 30 VDC
RB1	Multi-function relay output 1 (N.C.) b	
RC1	Multi-function relay common (Relay)	
RA2	Multi-function relay output 2 (N.O.) a	
RB2	Multi-function relay output 2 (N.C.) b	
RC2	Multi-function relay common (Relay)	
AI1 | AI2	Multi-function analog input	The two analog input formats both support 0-20 mA / 4-20 mA (default) and 0-10 V Voltage type input resistance: 20 kΩ Current type input resistance: 250 Ω
AO1 | AO2	Multi-function analog output	The two analog outputs both support 0-+10V / 0-20 mA / 4-20 mA (default) Under voltage mode (0-10 V), the max. output current is 2 mA Voltage type load limit: > 5 kΩ Current type load limit: < 500 Ω
ACM	Analog Signal Common	Analog signal common terminal
STO1	Default short circuit of STO1-STO2-S24V (disable STO function). Only provide Source trigger mode. Built-in STO/SIL2 according to IEC61800-5-2, EN 61508 SIL2/ EN ISO 13849-1 PLd STO1-SCM; STO2-SCM ON: voltage ≥ 15 VDC STO1-SCM; STO2-SCM OFF: voltage ≤ 5 VDC S24V-SCM only use for STO1 and STO2 circuit	
STO2		
S24V		
SCM	STO1, STO2 and S24V common	
RJ45_KPD	RJ45 keypad connection	PIN1, 2, 7: Reserve | PIN3, 6: SGND | PIN4: SG- | PIN5: SG+ PIN8: +15V/100 mA
RJ45_EIP	PJ45 Ethernet IP / Modbus TCP connection	PIN1: TX+ | PIN2: TX- | PIN3: RX+ | PIN6: RX- | PIN4, 5, 7, 8: Reserved
WHT	RTD temperature detector - white wire	Only apply to three-wire RTD temperature detector
RED1	RTD temperature detector - red wire	
RED2	RTD temperature detector - red wire	

NOTES

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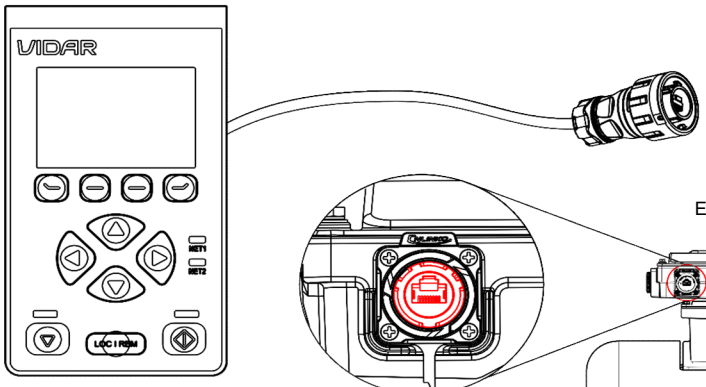
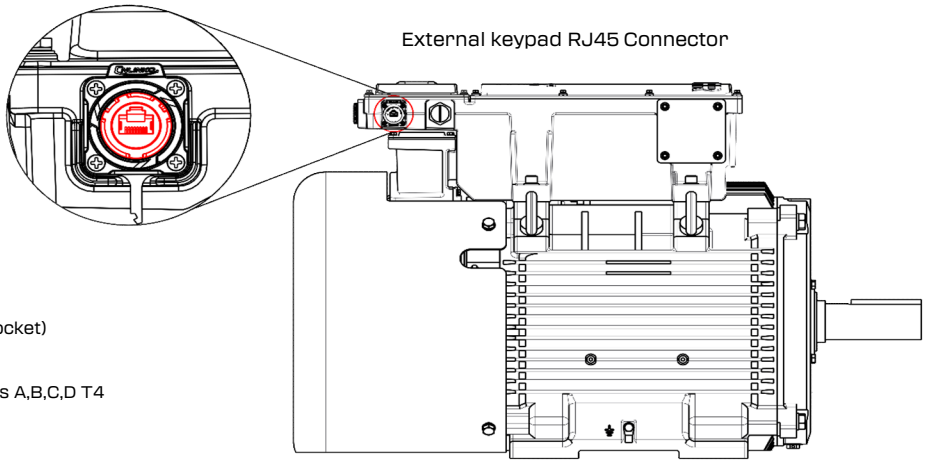
UNIVERSAL KEYPAD INTERFACE

EMD-KT-KP-CC01



External keypad RJ45 Connector



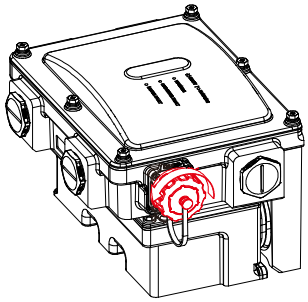
Communication Protocol: RS-485, RJ45 (socket)

Standard cable length: 5M / 16FT

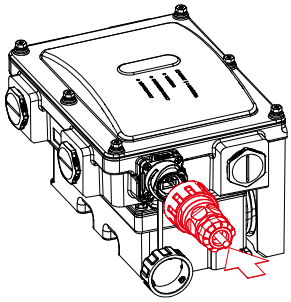
Area Classification: Class I Division II Groups A,B,C,D T4

KEYPAD CONNECTION INSTRUCTIONS

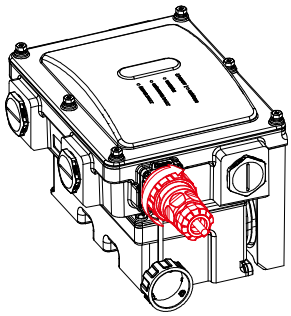
STEP 1
Remove waterproof cover



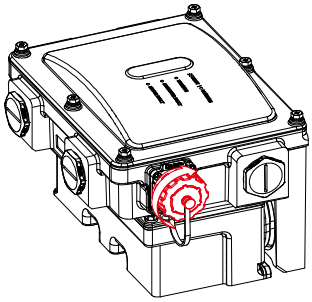
STEP 2
Insert the RJ45 waterproof keypad connector



STEP 3
Rotate keypad connector clockwise to enable keypad



STEP 4
Reverse steps to remove and replace waterproof cover



NOTES

1. Universal external keypad sold separately.
2. For keypad remote mounting refer to user's manual.

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