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Data Sheet for LV and MV Motors

04	2025/01/28	Issued For Approval				
03	2024/12/31	Issued For Approval				
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1	x	x			x		38							
2	x	x			x		39							
3	x	x			x		40							
4	x	x			x		41							
5	x	x					42							
6	x	x			x		43							
7	x	x					44							
8	x	x					45							
9	x	x					46							
10	x	x			x		47							
11	x	x					48							
12	x	x					49							
13	x	x					50							
14	x	x					51							
15	x	x			x		52							
16	x	x	x				53							
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2. Datasheet for MV Motor

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1. Datasheet for LV Motor

Item	Description	Unit	Purchaser's Requirements	Vendor's Response
1. General				
1.1	Location / Service		Suitable for Outdoor installation without protective shelter	
1.2	Industrial Type		Heavy Duty	
1.3	Altitude Above Sea Level		2550 m	
1.4	Humidity		Max.: 70 % Min.: 23 %	
1.5	Atmosphere		Dusty	
1.6	Seismic Condition		0.3g	
1.7	Ambient Temperature (Max./ Min.)		+40 °C / -25 °C	
2. ELECTRICAL CHARACTERISTICS				
2.1	Cable Entry info.		Will be Informed to Vendor after contract	
2.2	Industrial Type		Heavy Duty	
2.3	Earthing Facilities		Yes (One for Enclosure or Frame and the other one for terminal boxes)	
2.4	Location / Service		Outdoor/Indoor Area	
2.5	Installation (Motor Mounting)		Horizontal / Vertical Note: Vertically mounted motors with the air intake on top side shall have canopies to give suitable protection against the ingress of water along the shaft.)	
2.6	Torque Characteristics		See Note 4	
2.7	Service Factor		1.15 (VTC)	
2.8	Motor Type	04	Generally, Squirrel Cage Induction Motor (See Note 8)	
2.9	Manufacturer		As per Approved Vendor List (In otherwise acc. to project agreements)	

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Item	Description	Unit	Purchaser's Requirements	Vendor's Response
2.10	Stator Winding		6 leads (Delta/Star), Delta connection is preferred	
2.11	Winding Material (Stator/ Rotor)		Copper	
2.12	Winding Type (Form/Random)		Form	
2.13	Duty Cycle		S1 (Continuous)	
2.14	Insulation Class / Temp. Rise		F/B	
2.15	Voltage, Variations	V	400V±10%, 3ph (Motor Rated Power ≤250KW)	
2.16	Frequency, Variations	HZ	50HZ±5% (±%2 Stationary and ±5% Instantaneous)	
2.17	Rated Current	A	By vendor	
2.18	Number of Poles		By vendor	
2.19	Power Rating (Name Plate Rating)	kW	---KW @ Site Condition	
2.20	Absorbed Power	kW	VTs	
2.21	Power Factor	%		
	@2/4 Load		VTs	
	@3/4 Load		VTs	
	@Full Load		VTs	
	Locked Rotor		VTs	
2.22	Efficiency	%	Premium Efficiency	
	Efficiency Classification (IE Code)		Min. IE3	
	@2/4 Load		VTs	
	@3/4 Load		VTs	
	@Full Load		VTs	
	Locked Rotor		VTs	
2.23	Starting Power Factor		P.U.	

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Item	Description	Unit	Purchaser's Requirements	Vendor's Response
2.24	Nominal Speed	rpm	VTS	04
2.25	Starting Method		☐ D.O.L ☐ VFD (As per Mechanical Data Sheet /Process Viewpoint)	
2.26	Starting Current (L.R.C)	A	VTS	
2.27	Acceleration Time	Sec	VTS	
2.28	Full Load Torque	N.m	VTS	
2.29	Starting Torque	% FLT	VTS	
2.30	Max.Torque (FLT)	%	VTS	
2.31	Pull-Up Torque / Break Down Torque	%	VTS	
2.32	Driven load moment of inertia GD2			
	Rotor	Kg.m ²	VTS	
	Load	Kg.m ²	VTS	
2.33	Withstand Fault Current on the Main Terminal Box (kA) / Duration Time		VTS	
2.34	No. of Starting per Hour			
	From Cold		3 Successive starts from Cold state (At max. ambient temperature)	
	From Hot		2 Successive starts from Hot state (At full load operating temperature)	
2.35	Time interval between two Consecutive starts			
	From Cold	Sec	VTS	
	From Hot	Sec	VTS	
2.36	Permissible locked rotor time (s)			
	@ 100% voltage		From Hot Condition ---- Sec. From Cold Condition ---- Sec.	
	@ 80% voltage		From Hot Condition ---- Sec. From Cold Condition ---- Sec.	
2.37	Torque-Speed Characteristics Curves (At 100% & 80% Rated Voltage)		VTS	
2.38	Current-Speed Characteristics Curves (At 100% & 80% Rated Voltage)		VTS	
2.39	Thermal Limit Curves (At 100% & 80% Rated Voltage)		VTS	

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Item	Description	Unit	Purchaser's Requirements	Vendor's Response
2.40	Power factor versus speed curves (At 100% & 80% Rated Voltage)		VTs	
2.41	Max Locked Rotor Current at Rated Volts (%FLA)		650%	
3. PROTECTION AND MEASUREMENT				
3.1	Motor Enclosure IP			
	Hazardous Area		IP65, explosion proof as per area classification	
	Non-Hazardous Area		IP55 according to IEC 60034-5	
3.2	Terminal Boxes IP		IP55 or better	
3.3	PT100 / PTCs (Thermistors) For Motor Windings		A) 18.5KW ≤ Motors (DOL/VFD) ≤132KW → 3×PTC B) 132KW < Motors (DOL/VFD) ≤250KW → 3×PT100	
3.4	PT100 for Motor Bearing		132KW < Motors (DOL/VFD) ≤250KW → 1×PT100	
3.5	Setpoint Data for Winding PTCs			
	Alarm	°C	130	
	Trip	°C	150	
3.6	Noise Level		Less than 85 dBA @ 1m	
4. MECHANICAL CHARACTERISTIC				
4.1	Equipment Tag No		Acc. To Equipment list	
4.2	Equipment Name		Acc. To Equipment list	
4.3	Equipment Supplier		VTs	
4.4	Enclosure/Frames		Cast Iron	
4.5	Frame Reference		VTs	
4.6	Frame Earth Bus		Required	
4.7	Cooling Method		Cooling Method For Motor: TEFC (IC411) Cooling Method For VFD Motor: (IC411 or IC416) (Note 7)	

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Item	Description	Unit	Purchaser's Requirements	Vendor's Response
4.8	Direction of Rotation (View on D.E.)		CW / CCW (Acc. To mechanical/Process data sheet)	
4.9	Rated Power for VFD Motor's External Fan	KW	VTs □400V □ 230V	
4.10	Fan material		Non-Sparking Design/ Corrosion Resistance/ Bi-directional/ Brass/Bronze/Aluminium	
4.11	Bearing Type and Material (For DE & NDE)		Anti-Friction type VTC	
4.12	Max. Bearing Housing vibration velocity	mm/sec	Acc. to IEC 60034-14	
4.13	Max. Shaft vibration Displacement	mills p-p	Acc. to IEC 60034-14	
4.14	Bearing Life		Not less than 50,000 hours for Belt drive application 100,000 hours for Direct drive application	
4.15	Lubricating			
	Grease/Oil/Other		Grease with premium grade (For outdoor services it shall be selected based on the Minimum ambient temp.)	
	Self / Forced		Self- Lubricated	
	Grease Relief Port (For regreasable Bearings)		Required	
	Bearing Lubrication Interval (Hour)		VTs	
4.16	Power Terminal Box			
	Type		VTs	
	Cable Box Entry ISO Metric Threaded		mm/Pg	
	Location From DE (TOP/LHS/RHS)		Top or RHS	
	Direction of Cable Entrance		4 Direction (If Top) and Bottom (If RHS)	

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Item	Description	Unit	Purchaser's Requirements	Vendor's Response
	Internal ground Stud		Yes	
4.17	Terminal Box for PTC/PT100 Sensors		Yes	
	Location From NDE (LHS/RHS)		VTS	
	Direction of Cable Entrance		Bottom	
4.18	Terminal Box for Space Heater		Yes, Space Heater is required for Motors Equal and Above 45 kW	
	Location From DE (LHS/RHS)		RHS	
	Direction of Cable Entrance		Bottom	
	Space Heater /Power Consumption		400/230VAC (VTS) / -----Watt	
4.19	Cable Gland Size		For main terminal box: VTS For Aux. terminal box: M20	
4.20	Base Plate		VTS	
4.21	Outline Dimension	m	VTS	
4.22	Total Motor Weight	kg	VTS	
4.23	Lifting Eye		Required	
4.24	Name plate		Stainless Steel	
4.25	Painting Color		Color is Preferably RAL7035 or manufacturer's standard	

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2. Datasheet for MV Motor

Item	Description	Unit	Purchaser's Requirements	Vendor's Response
1. General				
1.1	Location / Service		Suitable for Outdoor installation without protective shelter	
1.2	Industrial Type		Heavy Duty	
1.3	Altitude Above Sea Level		2550 m	
1.4	Humidity		Max.: 70 % Min.: 23 %	
1.5	Atmosphere		Dusty	
1.6	Seismic Condition		0.3g	
1.7	Ambient Temperature (Max./Min.)		+40 °C / -25 °C	
2. ELECTRICAL CHARACTERISTICS				
2.1	Cable Entry info.		Will be Informed to Vendor after contract	
2.2	Industrial Type		Heavy Duty	
2.3	Earthing Facilities		Yes (One for Enclosure or Frame and the other one for terminal boxes)	
2.4	Location / Service		Outdoor/Indoor Area	
2.5	Installation (Motor Mounting)		Horizontal/Vertical Note: Vertically mounted motors with the air intake on top side shall have canopies to give suitable protection against the ingress of water along the shaft.)	
2.6	Torque Characteristics		See Note 4	
2.7	Service Factor		1 (VTC)	
2.8	Motor Type	04	Generally, Squirrel Cage Induction Motor (See Note 8)	
2.9	Manufacturer		As per Approved Vendor List (In otherwise acc. to project agreements)	
2.10	Stator Winding		6 leads (Delta/Star), Delta connection is preferred	
2.11	Winding Material (Stator/ Rotor)		Copper	
2.12	Winding Type (Form/Random)		Form	

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Item	Description	Unit	Purchaser's Requirements	Vendor's Response
2.13	Duty Cycle		S1 (Continuous)	
2.14	Insulation Class / Temp. Rise		F/B	
2.15	Voltage, Variations	V	6.6kV±10%, 3ph	
2.16	Frequency, Variations	HZ	50HZ±5% (±%2 Stationary and ±5% Instantaneous)	
2.17	Rated Current	A	By vendor	
2.18	Number of Poles		By vendor	
2.19	Power Rating (Name Plate Rating)	kW	---KW @ Site Condition	
2.20	Absorbed Power	kW	VTs	
2.21	Power Factor	%		
	@2/4 Load		VTs	
	@3/4 Load		VTs	
	@Full Load		VTs	
	Locked Rotor		VTs	
2.22	Efficiency	%	Premium Efficiency	
	Efficiency Classification (IE Code)		Min. IE3	
	@2/4 Load		VTs	
	@3/4 Load		VTs	
	@Full Load		VTs	
	Locked Rotor		VTs	
2.23	Starting Power Factor		P.U.	
2.24	Nominal Speed	rpm	VTs	
2.25	Starting Method		□D.O.L □VFD (As per Mechanical Data Sheet /Process Viewpoint)	
2.26	Starting Current (L.R.C)	A	(VTs)	
2.27	Acceleration Time	Sec	VTs	
2.28	Full Load Torque	N.m	VTs	
2.29	Starting Torque	% FLT	VTs	
2.30	Max.Torque (FLT)	%	VTs	
2.31	Pull-Up Torque / Break Down Torque	%	VTs	
2.32	Driven load moment of inertia GD2			
	Rotor	Kg.m²	VTs	
	Load	Kg.m²	VTs	
2.33	Withstand Fault Current on the Main Terminal Box (kA) / Duration Time		VTs	
2.34	No. of Starting per Hour			

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Item	Description	Unit	Purchaser's Requirements	Vendor's Response
	From Cold		3 Successive starts from Cold state (At max. ambient temperature)	
	From Hot		2 Successive starts from Hot state (At full load operating temperature)	
2.35	Time interval between two Consecutive starts			
	From Cold		VTS	
	From Hot		VTS	
2.36	Permissible locked rotor time (s)			
	@ 100% voltage		From Hot Condition ----- Sec. From Cold Condition ---- Sec.	
	@ 80% voltage		From Hot Condition ----- Sec. From Cold Condition ---- Sec.	
2.37	Torque-Speed Characteristics Curves (At 100% & 80% Rated Voltage)		VTS	
2.38	Current-Speed Characteristics Curves (At 100% & 80% Rated Voltage)		VTS	
2.39	Thermal Limit Curves (At 100% & 80% Rated Voltage)		VTS	
2.40	Power factor versus speed curves (At 100% & 80% Rated Voltage)		VTS	
2.41	Max Locked Rotor Current at Rated Volts (%FLA)		650%	
3. PROTECTION AND MEASUREMENT				
3.1	Motor Enclosure IP			
	Hazardous Area		IP65, explosion proof as per area classification	
	Non-Hazardous Area		IP55 according to IEC 60034-5	
3.2	Terminal Boxes IP		IP55 or better	
3.2	PT100 / PTCs (Thermistors) For Motor Windings		6×PT100 (2 PT100 for each phase)	
3.3	PT100 for Motor Bearing		2×PT100	
3.4	Setpoint Data for Winding PTCs			
	Alarm	°C	VTS	
	Trip	°C	VTS	
3.5	Noise Level		Less than 85 dBA @ 1m	
4. MECHANICAL CHARACTERISTIC				
4.1	Equipment Tag No		Acc. To Equipment list	
4.2	Equipment Name		Acc. To Equipment list	

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Item	Description	Unit	Purchaser's Requirements	Vendor's Response
4.3	Equipment Supplier		VTS	
4.4	Enclosure/Frames		Cast Iron	
4.5	Frame Reference		VTS	
4.6	Frame Earth Bus		Required	
4.7	Cooling Method		Cooling Method for Motor: TEFC (IC411) Cooling Method for VFD Motor: (IC411 or IC416) (Note 7)	
4.8	Direction of Rotation (View on D.E.)		CW / CCW (Acc. To mechanical/Process data sheet)	
4.9	Rated Power for VFD Motor's External Fan	KW	VTS □400V □230V	
4.10	Fan material		Non-Sparking Design/ Corrosion Resistance/ Bi-directional/ Brass/Bronze/Aluminium	
4.11	Bearing Type and Material (For DE & NDE)		Anti-Friction type VTC	
4.12	Max. Bearing Housing vibration velocity	mm/sec	Acc. to IEC 60034-14	
4.13	Max. Shaft vibration Displacement	mills p-p	Acc. to IEC 60034-14	
4.14	Bearing Life		Not less than 50,000 hours for Belt drive application 100,000 hours for Direct drive application	
4.15	Lubricating			
	Grease/Oil/ Other		Grease with premium grade (For outdoor services it shall be selected based on the Minimum ambient temp.)	
	Self / Forced		Self- Lubricated	
	Grease Relief Port (For regreasable Bearings)		Required	
	Bearing Lubrication Interval (Hour)		VTS	
4.16	Power Terminal Box			

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Item	Description	Unit	Purchaser's Requirements	Vendor's Response
	Type		VTS	
	Cable Box Entry ISO Metric Threaded		mm/Pg	
	Location From DE (TOP/LHS/RHS)		Top or RHS	
	Direction of Cable Entrance		4 Direction (If Top) and Bottom (If RHS)	
	Internal ground Stud		Yes	
4.17	Terminal Box for PTC/PT100 Sensors		Yes	
	Location From NDE (LHS/RHS)		VTS	
	Direction of Cable Entrance		Bottom	
4.18	Terminal Box for Space Heater		Required for all MV Motors	
	Location From DE(LHS/RHS)		RHS	
	Direction of Cable Entrance		Bottom	
	Space Heater		400/230VAC (VTS)	
4.19	CTs for Motor Differential Protection (Class X)		Required for Motors higher than 1000 kW (Note: The secondary CT- connections shall be wired and cabled to a separate terminal box)	
4.20	Cable Gland Size		For main terminal box: VTS For Aux. terminal box: M20	
4.21	Base Plate		VTS	
4.22	Outline Dimension	m	VTS	
4.23	Total Motor Weight	kg	VTS	
4.24	Lifting Eye		Required	
4.25	Name plate		Stainless Steel	
4.26	Painting Color		Color is Preferably RAL7035 or manufacturer's standard	

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Item	Description	Unit	Purchaser's Requirements	Vendor's Response
NOTE: 1- Rated Power shall be calculated as bellow: P = (Required Mechanical power) * (API factor) Required Mechanical power <22KW → API factor = 1.25 22KW≤ Required Mechanical power <55KW → API factor = 1.15 55KW≤ Required Mechanical power → API factor = 1.1 2- All motors controlled by VFD shall be equipped with insulated bearings at both drive and non- drive ends. 3- Exterior surface finish shall be the manufacturer's standard corrosion-resistant paint system. 4- Motors shall have an equivalent NEMA design B torque characteristics for normal operating conditions. For high starting torque applications motors shall have an equivalent NEMA Design C characteristic. Motors for use with VFDs shall have IEC "N" (NEMA Design B) torque characteristics, unless specifically noted otherwise. 5- Installation, Operation & Maintenance Instruction, Dimensional Outline Drawing, Certified Test Report & Written Statement shall be prepared by Vendor. 6- Motors for VFD service shall have insulation design to withstand peaks of 1600V having a 0.1 microsecond rise time (400V design), (As per NEMA standard MG1 part 31.4) 7- VFD motors shall have independent driven fans if required. (Considering IC416 or other cooling systems is based on the supplier's recommendation) 8- This item could be change based on manufacturer's recommendations and technology. 04 REMARKS: NDE: Non-Drive End DOL: Direct On-Line V: Vertical Mounted RHS: Right Hand Side H: Horizontal Mounted LRC: Locked Rotor Current, API: American Petroleum Institute TEFC: Totally Enclosed Fan Cooled FLT: Full Load Torque VFD: Variable Frequency Drive VTS: Vendor to Specify VTC: Vendor to Confirm P.U: Per Unit				

Important Note:

- A. Vendor Shall Consider All Derating Factor (Temperature & Altitude) According to Site Conditions, And Submitted for Approval.
- B. This Data Sheet should be filled-in for each type of motor based on its power consumption, type of starting and voltage level with their motor tag numbers (based on Purchaser Motor List), signed-up, stamped, & submitted to purchaser with the Vendor offer.
- C. Vendor shall provide and issue the important data required to design the related structure /foundation.