STYRENE PARK OFFSITE

Document Title:

Condenser Data Sheet

Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED
R3	19-01-2025	FI	F.sh	M.O	A.M
R2	07-05-2024	IFA	F.sh	M.O	A.M
R1	09-04-2024	IFA	F.sh	M.O	A.M
R0	16-03-2024	IFA	F.sh	M.O	A.M

REVISION RECORD SHEET

Page	Revisions								Page	Revisions						
Page	R0	R1	R2	R3	R4	R5	R6			R0	R1	R2	R3	R4	R5	R6
1	X	X	X	X					41							
2	X	X	X	X					42							
3	X	X	X	X					43							
4	X	X	X	X					44							
5				X					45							
6				X					46							
7				X					47							
8				X					48							
9				X					49							
10				X					50							
11				X					51							
12				X					52							
13				X					53							
14				X					54							
15				X					55							
16				X					56							
17				X					57							
18				X					58							
19				X					59							
20				X					60							
21				X					61							
22				X					62							
23				X					63							
24				X					64							
25				X					65							
26				X					66							
27				X					67							
28				X					68							
29				X					69							
30				X					70							
31				X					71							
32				X					72							
33				X					73							
34									74							
35									75							
36									76							
37									77							
38									78							
39									79							
40									80							

Manufacturer			Heat exchanged	(kW)	257.
Model no.			Surface/Item-Finned tube	(m2)	1579.2
Customer			Bare tube	(m2)	68.101
Plant location			MTD, Eff.	(Deg. C)	6.8
Service			Transfer rate-Finned	(W/m2-K)	25.561
Type draft		FORCED	Bare tube, service	(W/m2-K)	592.73
Bay size (WxL)	(m)	2.65 x 6.4	Bare tube, clean	(W/m2-K)	679.13
No. of bays/Items		1			

Basic design data

Pressure design code		ASME VIII div 1	Structural code		UBC 97
Tube bundle code stamped		No.	Flammable service		Yes.
Heating coil code stamped		No.	Lethal/toxic service		No.

Performance Data - Tube Side

					In		Out	
Fluid name		Propane						
Total fluid entering	(kg/hr)	3015.5	Total flow rate (Liq/Vap)	(kg/hr)	0.0000 /	3015.5	3015.5 /	0.0000
Dew/bubble point	(Deg. C)	/	Water/Steam	(kg/hr)	0.0000 /	0.0000	0.0000 /	0.0000
	(Deg. C)		Noncondensables	(kg/hr)		0.0000		0.0000
Latent heat	(kJ/kg)		Molecular Wt. (Vap/Non-cond)		/		/	
Inlet pressure	(bar)	19.800	Density (Liq/Vap)	(kg/m3)	435.84 /	40.275	435.93 /	46.071
Pressure drop (All/Calc)	(bar)	0.100 / 0.018	Specific heat (Liq/Vap)	(kJ/kg-C)	3.6067 /	2.2738	3.6049 /	2.3920
Velocity (Allow/Calc)	(m/s)	/ 0.85	Thermal cond. (Liq/Vap)	(W/m-C)	0.0764 /	0.0253	0.0764 /	0.0238
Inside fouling resistance (m2-K/W)		0.000170	Viscosity (Liq/Vap)	(cP)	0.0730 /	0.0106	0.0730 /	0.0103
		In / Out						
Temperature	(Deg. C)	73.50 / 56.32						

Performance Data - Air Side

Air inlet temperature	(Deg. C)	48.00	Face velocity	(m/s)	3.15
Air flow rate/item	(m3/s)	45.529	Minimum design ambient temp	(Deg. C)	5.00
Mass velocity	(kg/s-m2)		Altitude	(m)	20.000
Air outlet temperature	(Deg. C)	52.28	Static pressure	(Pa)	102.95
Air flow rate/fan	(m3/s)	26.879			

Design, Material, and Construction

Design pressure	(barG)	22 + F.V	**Heating Coil**		NO.
Test pressure	(barG)		No. of tubes		
Design temperature	(Deg. C)	120.00	Tube outside diameter	(mm)	
Min. design metal temp.	(Deg. C)		Tube material		
Tube bundle			Fin material and type		
Size (WxL)	(m)	2.5 X 6.4	Fin thickness	(mm)	
No./Bay		1	ASME Code, Sec. VIII, Div. 1		
Number of tube rows		4	Heating fluid		
Bundles in parallel		1	Heating fluid flow rate	(kg/hr)	
Bundles in series			Temperature (In/Out)	(Deg. C)	/
Structure mounting		Grade	Inlet pressure	(bar)	
Pipe rack beams			Pressure drop (All/Calc)	(kPa)	/
Ladders, walkways, platforms			Design temperature	(Deg. C)	
Structure surface prep.			Design pressure	(bar)	
Header surface prep.			Inlet/Outlet nozzle		/
Louver		NO.	**Header**		
Material			Type		Plug
Action control			Material		SA-516 Gr70(N)
Action type			Corrosion Allowance	(mm)	3
			No. of passes		4
			Tube / Tubesheet		Strength weld

Design, Material, and Construction (continued)

Header (continued)					
Slope / Split	1% on last pass / No				
Plug material	SA 350 LF2 CL.1				
Gasket material	Soft Iron				
Nozzle	No.	Size, (in)	Rating/Facing		
Inlet	1	4	#300		
Outlet	1	2	#300		
Vent					
Drain					
Chemical Cleaning					
Min. Wall Thk.					
Tube					
Material	SA-334 6				
Tube outside diameter	(mm)	25.400			
Min wall thickness	(mm)	1.651			

No./Bundle			140
Length	(m)		6.096
Pitch	(mm)		69.850
Layout			Triangular
Fin			
Type			Extruded
Material			Aluminum
Thickness (Base / Tip)	(mm)		1 / 0.24
Selection temp.	(C)		
Outside diameter	(mm)		57.150
Fin density	(fin/meter)		433.1
ASME Code, Sec. VIII, Div. 1			
Customer Specifications			

Mechanical Equipment

Fan			RPM		1500
Manufacturer	Axial Fans Int Srl (or equivalent)		Service factor		
No./Bay	2		Enclosure		Exec / IP55
RPM	(Revs/min.)		Voltage		400
Diameter	(ft)	7	Phase		3
No. of blades			Cycle		50
Angle	(degrees)		Fan noise level	(dB)	max 85
Pitch adjustment	100% Manual		**Speed Reducer**		
Blade material	Aluminium		Type		V- belt
Hub material	Manufacturer Standard		Manufacturer		
@design temp	(kW)		No./Bay		2
@min. ambient temp			Service factor		
Tip speed			Speed ratio		
Driver			Support		
Type	Electrical		Vib. switch		YES
Manufacturer	OME ELECTRIC OR AVL		Enclosure		
No./Bay					
Driver (1)	(kW)	7.5			

Controls - Air Side

Air recirculation			Louvers		
Degree control of outlet process temp.			Positioner		
(Max. Cooling),+/-	/		Signal air pressure (bar)		
Action on control signal failure			From	To	
Fan pitch			From	To	
Louvers			Supply air pressure (bar)		
Actuator air supply			From	To	
Fan			From	To	

Shipping

Plot area (WxL)	(m)	2.65 x 6.4	Total weight, Dry / Wet	(Kg) (Based On HTRI)	11,800 / 12,300
Bundle weight	(kg)		Shipping	(kg)	
Bay	(kg)				

1) STD. nominated power.

Axial Fan Data Sheet for Condenser

AXIAL FAN DATA SHEET (PROJECT 1158) Qty = 4				
BASIC DATA				
1	Item No.		Air Cooler	
2	Quantity	Manual Adjustable Pitch	100%	
		Automatic Adjustable Pitch	-	
3	Positioner		NO	
4	BEARING BLOCK		YES	
5	Blade Material	Aluminum (ASTM,B-179)	YES	
		Fiber glass	NO	
6	Type of Air cooler/ Inlet		FORCED / CONICAL L/D=0.05	
7	Fan Diameter		7/ 2134	(ft /mm)
8	Fan Ring Diameter		2156	(mm)
9	Fan Ring Height		600	(mm)
10	Altitude		20	(m)
11	Relative Humidity		65	(%)
12	Temperature inlet /outlet		48 /52.28	(° C)
13	Actual flow		26.879	(m3/s)
14	Actual static pressure		102.95	(Pa)
15	Fan RPM		382	(rpm)
16	Tip speed		42.7	(m/s)
17	Motor power rating		7.5	(KW)
18	Noise level (at one meter)		85	(db)
19	Min Temperature		5	° C

Via A. Gramsci, 62 - 28050 Pombia (NO) Italy - Phone +39-0321-968311 - Fax +39-0321-958992
9660 Grunwald Road - Beasley Texas 77417 - Phone +1 -281-275 8390 - Fax +1 -281-275 8388
Kai Xuan Hua Yuan, 111 Zhong Cao Road, Shanghai 200030, P.R.China - Phone +86-2164-686460 - Fax +86-2164-686460

Customer Name	Job Reference
Job Name	
Item Number	Date **8/6/2024**

CHARACTERISTICS

Required Volume	**26.87**	m³/sec	Required Static Pressure	**102.95**	Pa
Pressure recovery	**0.00**	Pa	Fan static pressure	**102.95**	Pa
Velocity pressure	**28.98**	Pa	Total pressure	**131.93**	Pa
Air Temperature	**48.0**	°C	Site Elevation	**20.0**	m
Inlet Air Humidity (%)	**65.0**		Inlet Air Density	**1.068**	kg/m³
Fan diameter	**2134**	mm	Fan ring diameter	**2156**	mm
Blade Airfoil	**24L**	ALU	Rotor hub type	**B3**	
Speed	**382.0**	RPM	Blade Tip Speed	**42.68**	m/sec
N° blades	**4**		Blade Operating Freq. +/-5%	**722**	cpm
Static efficiency	**61.4**	%	Total efficiency	**78.7**	%
Blade pitch angle	**8.5**	(°)	Rotor shaft power	**4.5**	kW
Min. Ambient Temperature	**5.0**	°C	Rotor shaft power @ 5.0 °C	**5.3**	kW
			Rotor shaft power @ API point	**6.0**	kW
Pressure Margin (%)	**65** [1] / **95** [2]		Volume Margin (%)	**28** [1]	
Tip Clearance/D	**0.005**		Inlet	**Conical L/D=0.05**	
Diffuser angle (°)			Diffuser:Length/D		
Inlet Obstacle a/A			Inlet Obstacle x/D		
Outlet Obstacle a/A			Outlet Obstacle x/D		
Installation Type	**Forced**		Aerod axial force	**472**	N
Rotor total weight	**52**	kg			
Rotor inertia PD²	**35**	kg x m²			
Max residual unbalance	**13.1**	N			
Blade Failure Load	**3847**	N			
2 Blades Failure Load	**5441**	N			
Xs Static deflection	**55**	mm	Xr Running deflection	**43**	mm

[1] according to API [2] at Design Pitch Angle

NOISE CHARACTERISTICS

Tolerance on sound values +/- 2 dB(A)

PWL (± 2)	SPL @	Inlet / outlet (± 2)	Side (± 2)
86 dB(A)	**1.0** m From Fan	**78** dB(A)	**65.8** dB(A)

Octave [Hz]	31.5	63	125	250	500	1000	2000	4000	8000

ROTOR MODEL 2134- 4-24L/B3T **PAC**

All data must be approved by Cofimco Fantastic.NET 2008.2.2

Via A. Gramsci, 62 - 28050 Pombia (NO) Italy - Phone +39-0321-968311 - Fax +39-0321-958992
9660 Grunwald Road - Beasley Texas 77417 - Phone +1 -281-275 8390 - Fax +1 -281-275 8388
Kai Xuan Hua Yuan, 111 Zhong Cao Road, Shanghai 200030, P.R.China - Phone +86-2164-686460 - Fax +86-2164-686460

Customer Name				Job Reference					
Job Name									
Item Number							Date	**8/6/2024**	
PWL [dB]	89.0	91.0	91.0	87.0	84.0	81.0	73.0	69.0	65.0
Inlet/Outlet SPL [dB]	81.0	83.0	83.0	79.0	76.0	73.0	65.0	61.0	57.0
Side SPL [dB]	68.8	70.8	70.8	66.8	63.8	60.8	52.8	48.8	44.8
Tolerance +/-	5.0	5.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0

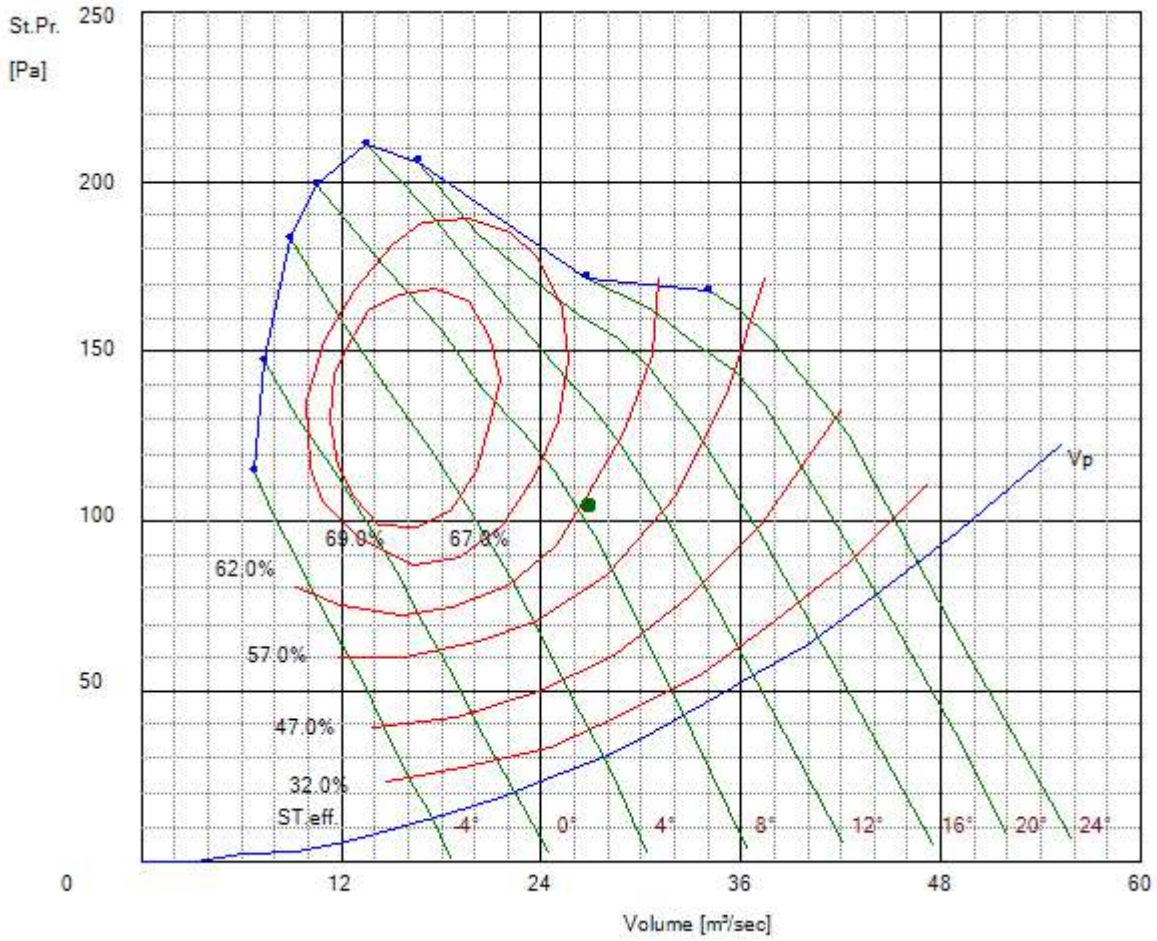
ROTOR MODEL 2134- 4-24L/B3T **PAC**

All data must be approved by Cofimco Fantastic.NET 2008.2.2

Via A. Gramsci, 62 - 28050 Pombia (NO) Italy - Phone +39-0321-968311 - Fax +39-0321-958992
9660 Grunwald Road - Beasley Texas 77417 - Phone +1 -281-275 8390 - Fax +1 -281-275 8388
Kai Xuan Hua Yuan, 111 Zhong Cao Road, Shanghai 200030, P.R.China - Phone +86-2164-686460 - Fax +86-2164-686460

Customer Name	Job Reference
Job Name	
Item Number	Date **8/6/2024**

STATIC PRESSURE vs VOLUME CURVE



Inlet Air Density 1.068 kg/m³
382 RPM = 42.68 m/sec
Pressure recovery 0.00 Pa
Rotor shaft power 4.5 kW
PWL (± 2) 86 dB(A)

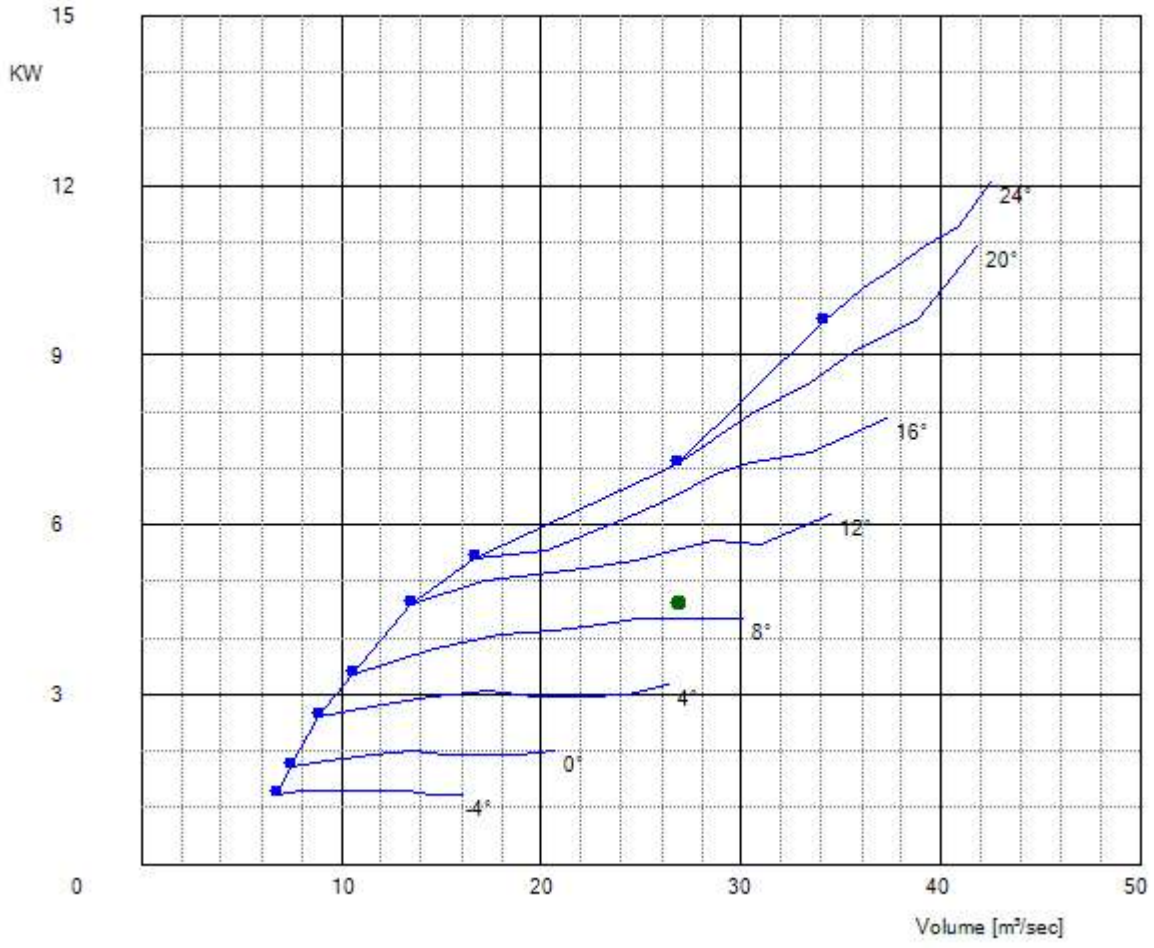
ROTOR MODEL 2134- 4-24L/B3T **PAC**

All data must be approved by Cofimco — Fantastic.NET 2008.2.2

Via A. Gramsci, 62 - 28050 Pombia (NO) Italy - Phone +39-0321-968311 - Fax +39-0321-958992
9660 Grunwald Road - Beasley Texas 77417 - Phone +1 -281-275 8390 - Fax +1 -281-275 8388
Kai Xuan Hua Yuan, 111 Zhong Cao Road, Shanghai 200030, P.R.China - Phone +86-2164-686460 - Fax +86-2164-686460

Customer Name	Job Reference
Job Name	
Item Number	Date **8/6/2024**

FAN POWER vs VOLUME CURVE



Inlet Air Density 1.068 kg/m³
382 RPM = 42.68 m/sec
Pressure recovery 0.00 Pa
Rotor shaft power 4.5 kW

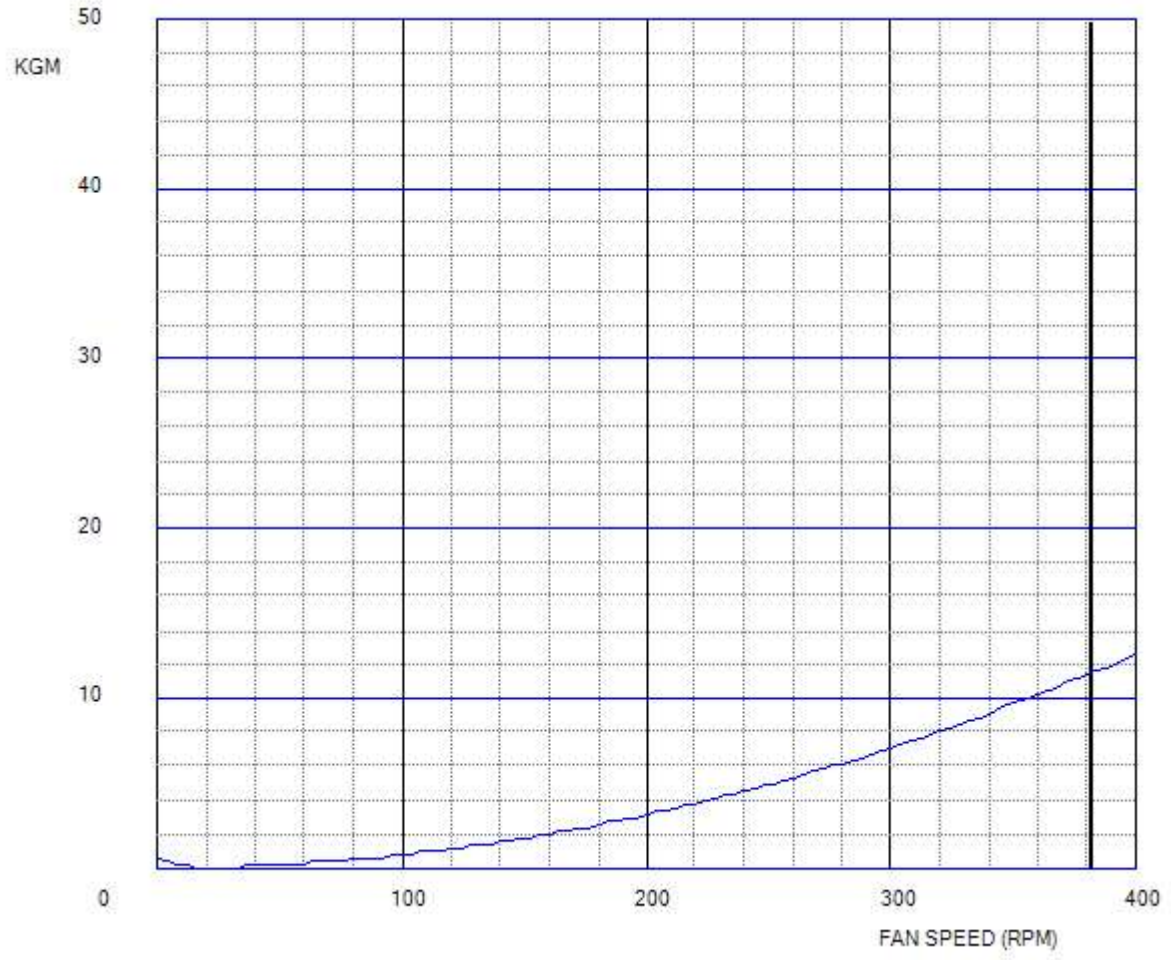
ROTOR MODEL 2134- 4-24L/B3T **PAC**

All data must be approved by Cofimco Fantastic.NET 2008.2.2

Via A. Gramsci, 62 - 28050 Pombia (NO) Italy - Phone +39-0321-968311 - Fax +39-0321-958992
9660 Grunwald Road - Beasley Texas 77417 - Phone +1 -281-275 8390 - Fax +1 -281-275 8388
Kai Xuan Hua Yuan, 111 Zhong Cao Road, Shanghai 200030, P.R.China - Phone +86-2164-686460 - Fax +86-2164-686460

Customer Name	Job Reference
Job Name	
Item Number	Date **8/6/2024**

TORQUE CURVE



Rotor shaft power 4.5 kW
RPM = 382.0
Torque @ 382.0 rpm = 11.5 kgm

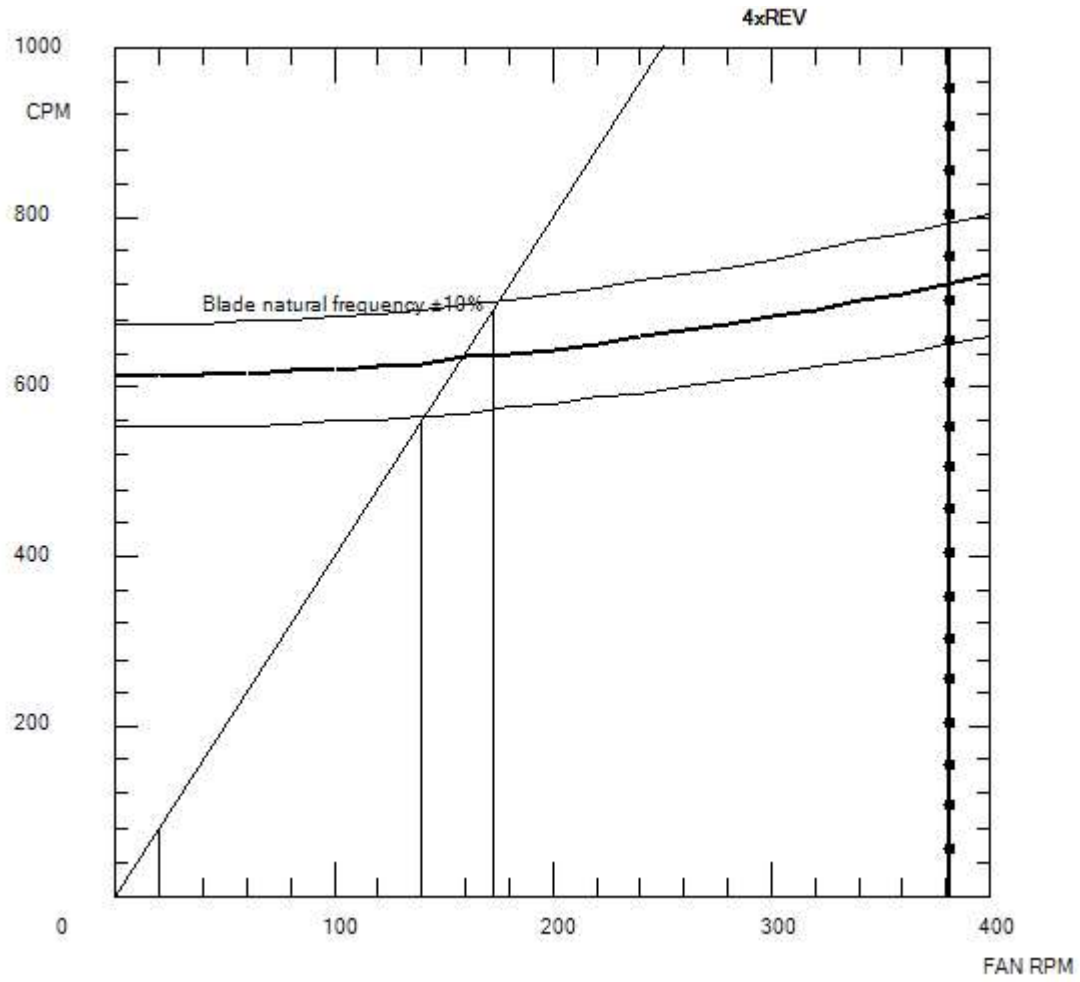
ROTOR MODEL 2134- 4-24L/B3T **PAC**

All data must be approved by Cofimco Fantastic.NET 2008.2.2

Via A. Gramsci, 62 - 28050 Pombia (NO) Italy - Phone +39-0321-968311 - Fax +39-0321-958992
9660 Grunwald Road - Beasley Texas 77417 - Phone +1 -281-275 8390 - Fax +1 -281-275 8388
Kai Xuan Hua Yuan, 111 Zhong Cao Road, Shanghai 200030, P.R.China - Phone +86-2164-686460 - Fax +86-2164-686460

Customer Name	Job Reference
Job Name	
Item Number	Date **8/6/2024**

CAMPBELL DIAGRAM



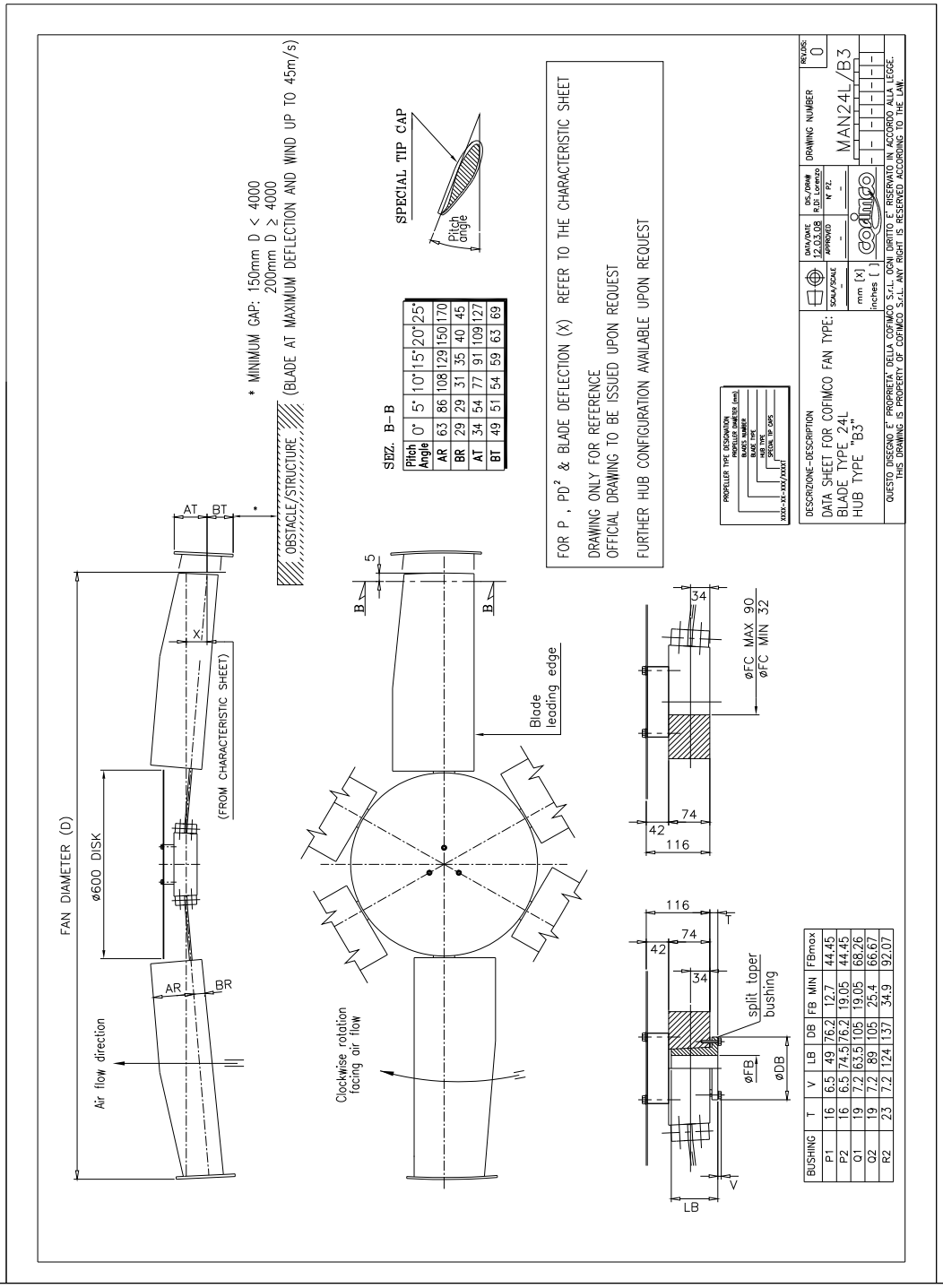
N° blades 4
382 RPM = 42.68 m/sec

ROTOR MODEL 2134- 4-24L/B3T **PAC**

All data must be approved by Cofimco Fantastic.NET 2008.2.2

Via A. Gramsci, 62 - 28050 Pombia (NO) Italy - Phone +39-0321-968311 - Fax +39-0321-958992
9660 Grunwald Road - Beasley Texas 77417 - Phone +1 -281-275 8390 - Fax +1 -281-275 8388
Kai Xuan Hua Yuan, 111 Zhong Cao Road, Shanghai 200030, P.R.China - Phone +86-2164-686460 - Fax +86-2164-686460

Customer Name	Job Reference
Job Name	
Item Number	Date **8/6/2024**



ROTOR MODEL 2134- 4-24L/B3T **PAC**

All data must be approved by Cofimco Fantastic.NET 2008.2.2

Electrical Motor Data Sheet for Condenser

MOTOR BASIC DATA (1158)		
INSTALLATION SITE		
QUANTITY/ Tag number		4/ RU0001A-M-02, RU0001A-M-03, RU0001B-M-02, RU0001B-M-03
BRAND-MODEL		Marathon- E3ABL
RATED POWER		7.5 kw
SUPPLY VOLTS		400±5%
FREQUENCY		50±2%
NUMBER OF POLE		4
WINDING CONNECTIONS/ROTATION		Delta
COUPLING TYPE		V-Belt(Belt & Pulley)
NOMIAL SPEED		1500 rpm
DUTY CATEGORY		S1
INVERTER DUTY		YES
ALTITUDE		20 m
AMBIENT TEMPRATURE MIN/MAX		5/48 C
RELATIVE HUMIDITY (RH)		65%
STARTING METHOD		2-DOL /2-VFD
CABLE GLAND SUPLIED		YES
DIRECTION OR ROTATION		Both
ISULATION CLASS/TEMP. RISE		F/B
COOLING		(IC 411)
AREA CLASSIFICATION		Ex db IIB T4
WINDING TEMPERATURE . DETECTORS (PTC RELAY)		N.A
ANTI-CONDANATION HEATER (SPACE HEATER)		N.A
MOUNTING (TYPE OF INSTALATION)		IMV3
PROTECTION DEGREE FOR MOTOR/FOR TERMINAL BOX		IP55//IP55
ROTOR CAGE MATERIAL (AL)		CAST IRON
PAINT SYSTEM		STANDARD COLOR-RAL (5015)
CABLE TYPE AND SIZE (FEEDER CABLE BY CLIENT)	MAIN	18~21 mm
	HEATER	N.A
	PTC	N.A
THERED (GLAND) ENTRY	MAIN	2XM32
	HEATER	N.A
	PTC	N.A
EARTH TERMINALS		IN & EXT
MAX NOISE LEVEL (AT ONE METER)		< 85
LIFTING DEVICE		YES
DRAIN PLUGS		NO
NO OF PHASE		3
IE (EFFICIENCY CLASS)		IE=3
PF (COS &)		0.84
TYPE TEST		NO
MOTOR SUITABLE FOR VCDS (Y/N)		NO
CURVE & OUTLINE & COMPLETE CATALOUGE (Y/N)		YES

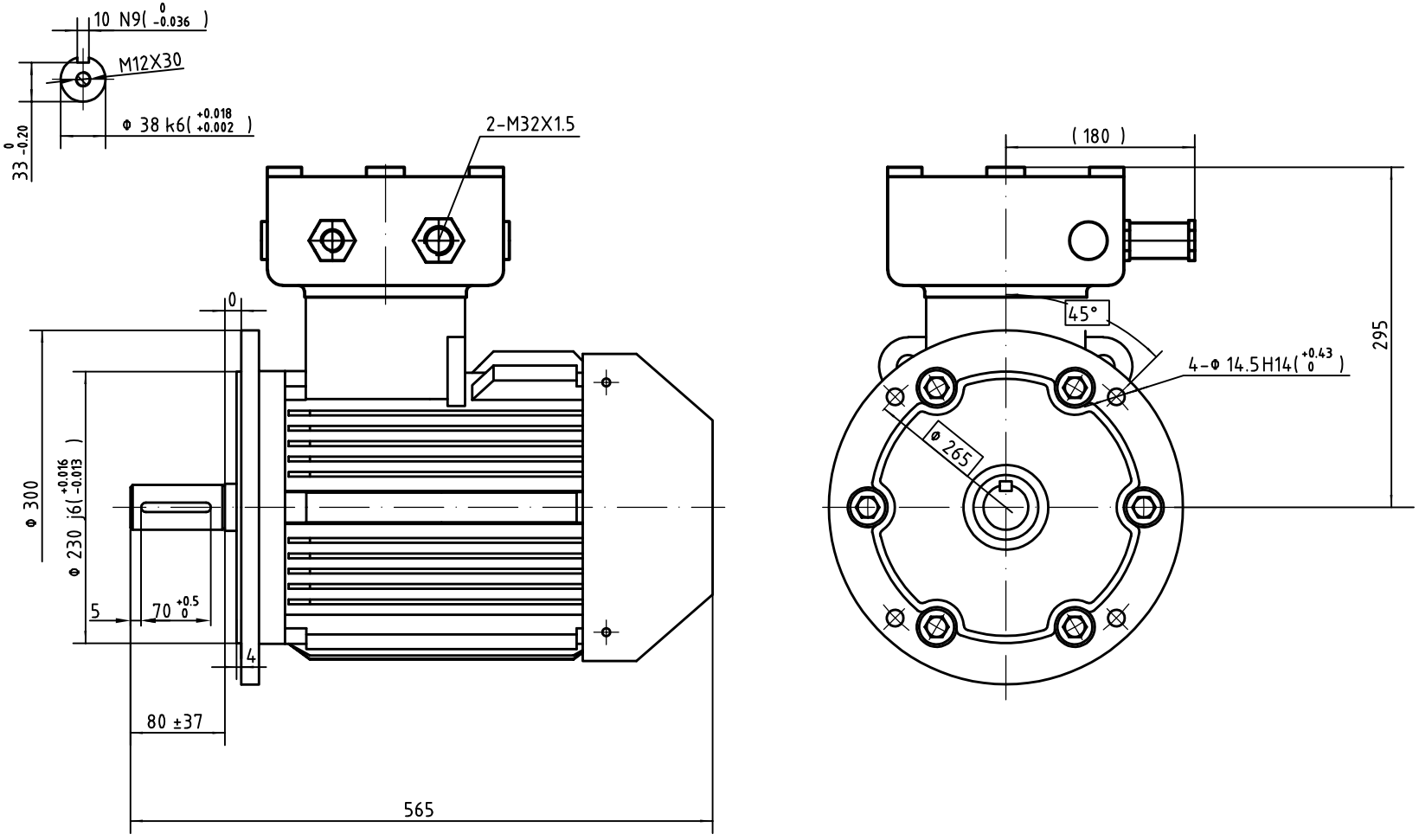
marathon® Motors

Squirrel Cage Induction Motor Data Sheet

Accreditation (National)	IEC 60079
Hazardous Classification	Ex db IIB T4
Series Model Type	E3ABL
Frame Size	132M
Rated Output Power	7.5 kW
Rated Speed	1465 r/min
Number of Poles	4 Pole
Number of Phases	3 Phase
Voltage	400 V
Frequency	50 Hz
Duty Cycle	S1
Service Factor	1.00
Operating Altitude	1000 masl
Insulation Class	F (155°C)
Temperature Rise	80K (B class)
Ambient Temperature	-15°C ~ 50°C
Method of Cooling	IC411 (TEFC - Totally Enclosed Fan Cooled)
Degree of Protection (Ingress Level)	IP55
Material of Construction	Cast Iron
Connection	△/Y
Full Load Current [I_N]	14.43
Locked Rotor Current [I_L / I_N]	7.50
Full Load Torque [T_N]	48.89 Nm
Locked Rotor Torque [T_L / T_N]	2.0
Breakdown Torque [T_B / T_N]	2.3
Efficiency Class	**IE3**

Load	**100% load**	**75% load**	**50% load**
Efficiency	90.4%	90.3%	89.7%
Power Factor (cos φ)	0.84	0.79	0.69

Bearing Configuration (DE / NDE)	Ball Bearing / Ball Bearing
Bearing Series Type	**DE:** 6208-2Z/C3 **NDE:** 6208-2Z/C3
Bearing Lubrication Type	Grease - ESSO UNIREX N2
Vibration	1.6 mm/sec
Moment of inertia (kg.m²)	0.0488
Direction of Rotation	CW or CCW
Sound Pressure Level	75 dB(A)
Final Colour	RAL 5010
Paint Specification	2 Pack Epoxy
Mounting Options	B5 /V3
Terminal Box Position	Top Terminal Box



Note: Cable Gland not Included

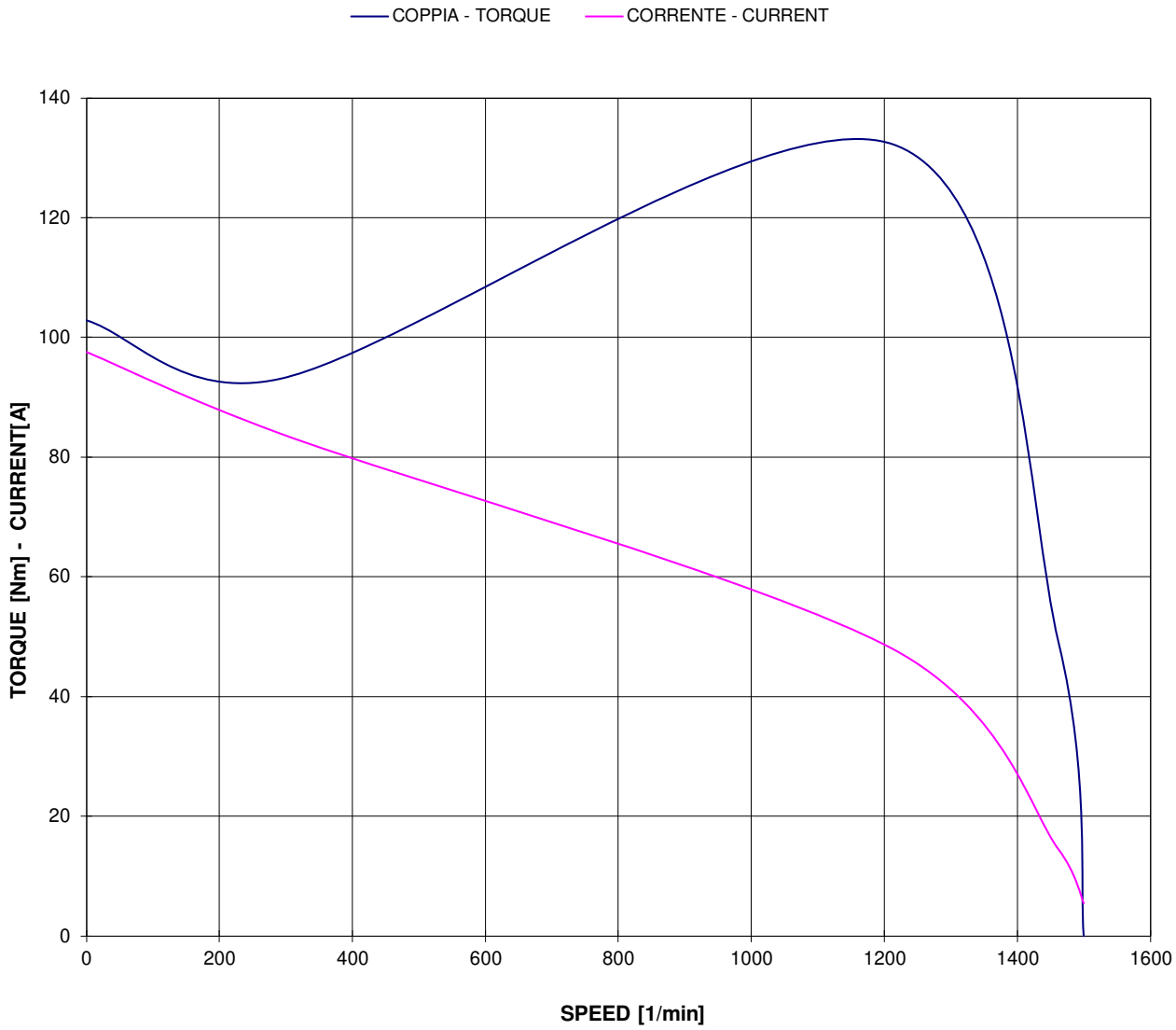
DRAWING REVISION	REVISION BY	DATE
ECO	APPROVED BY	DATE
ECO DESCRIPTION		

DRAWN BY	marathon™ Motors
DATE	
APPROVED BY	DESCRIPTION: E3ABL 132M B5
DATE	
REFERENCE	MATERIAL / PROCESS/FINISH
FIRST ANGLE PROJECTION	SIZE B / DRAWING NUMBER / SHEET

marathon Motors

TORQUE/CURRENT-SPEED DIAGRAM

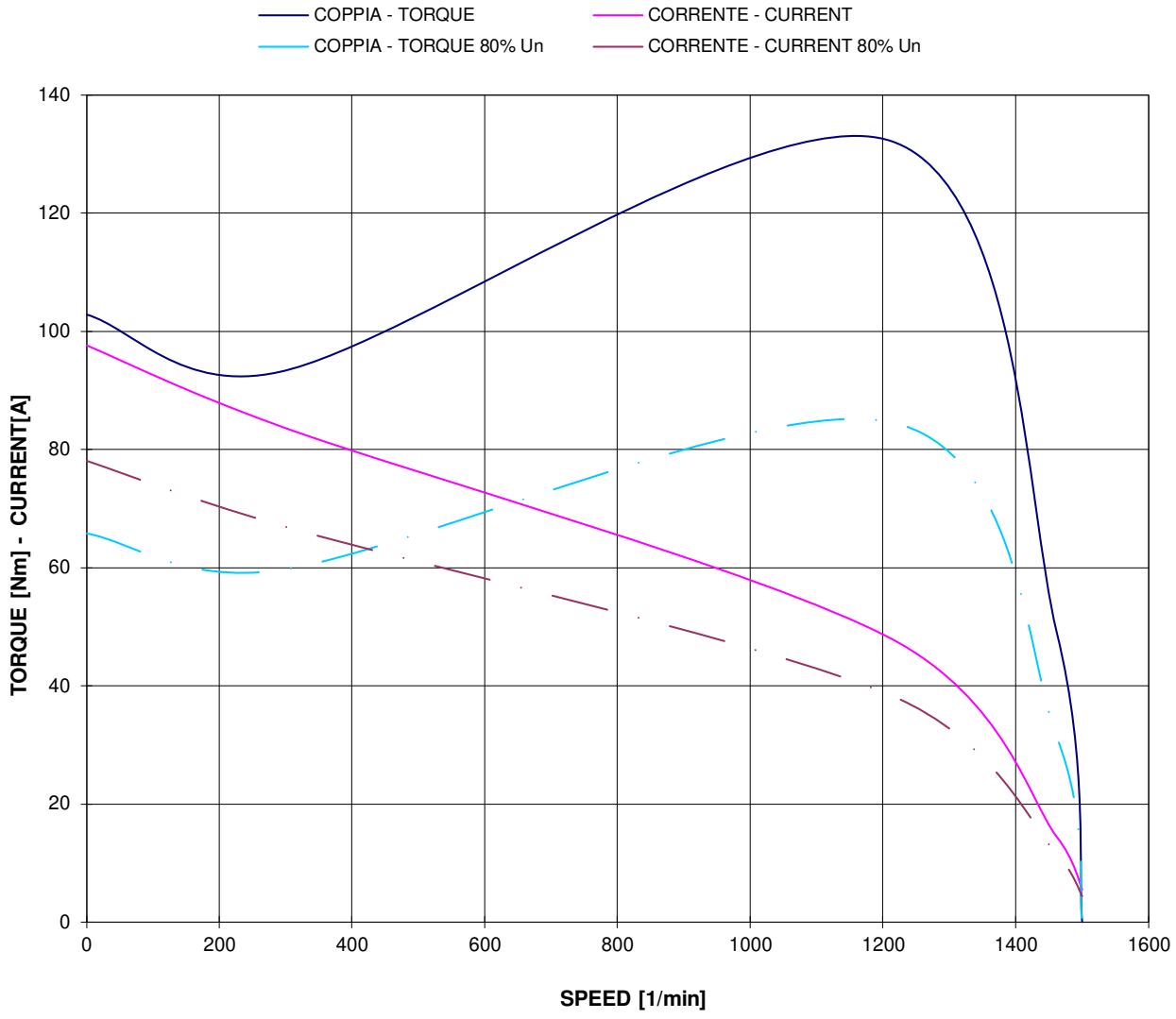
Motore / Motor	**E3ABL 132M 4**	
Potenza nominale / Rated power	7.50	kW
Poli / Pole	4	
Tensione - Frequenza / Voltage - Frequency	400 - 50	V - Hz
Corrente / Rated current	14.43	A
Velocità / Speed	1462	rpm
Coppia / Torque	48.99	Nm



Data obtained by calculation method

TORQUE/CURRENT-SPEED DIAGRAM (Reduced voltage)

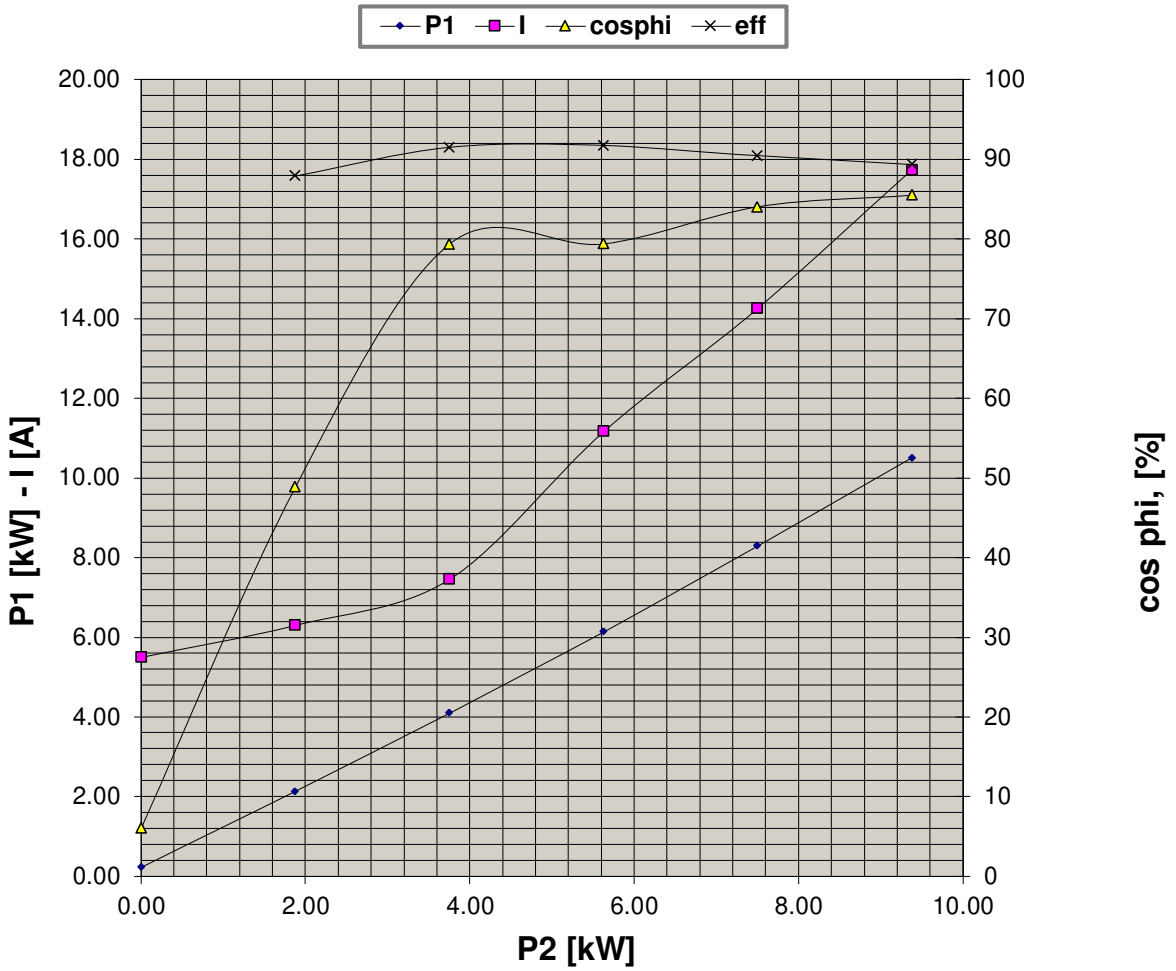
Motore / Motor	**E3ABL 132M 4**	
Potenza nominale / Rated power	7.50	kW
Poli / Pole	4	
Tensione - Frequenza / Voltage - Frequency	400 - 50	V - Hz
Corrente / Rated current	14.43	A
Velocità / Speed	1462	rpm
Coppia / Torque	48.99	Nm



Data obtained by calculation method

PERFORMANCE CURVES

Motore / Motor	**E3ABL 132M 4**	
Potenza nominale / Rated power	7.50	kW
Poli / Pole	4	
Tensione - Frequenza / Voltage - Frequency	400 - 50	V - Hz
Corrente / Rated current	14.43	A
Velocità / Speed	1462	rpm
Coppia / Torque	48.99	Nm

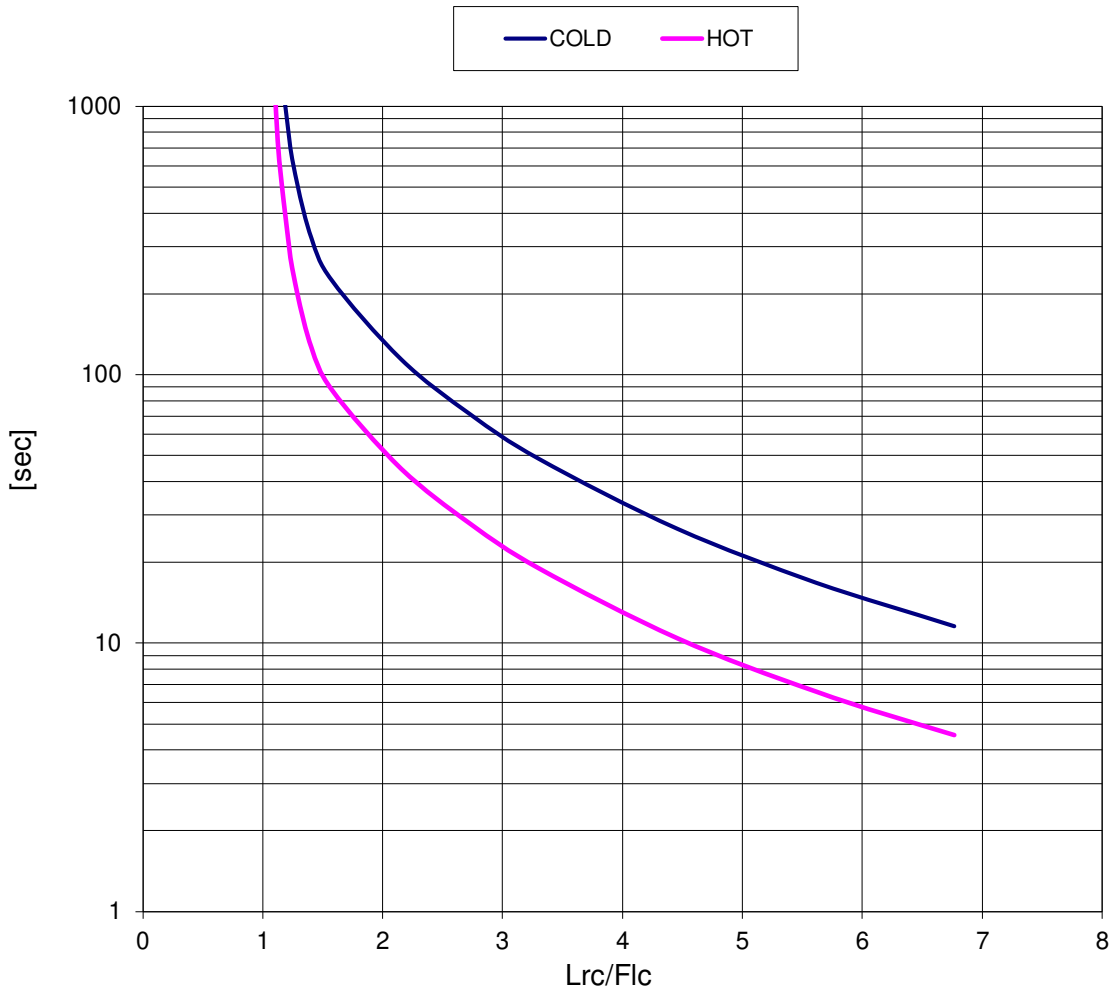


Data obtained by calculation method

marathon Motors

THERMAL WITHSTAND CURVE

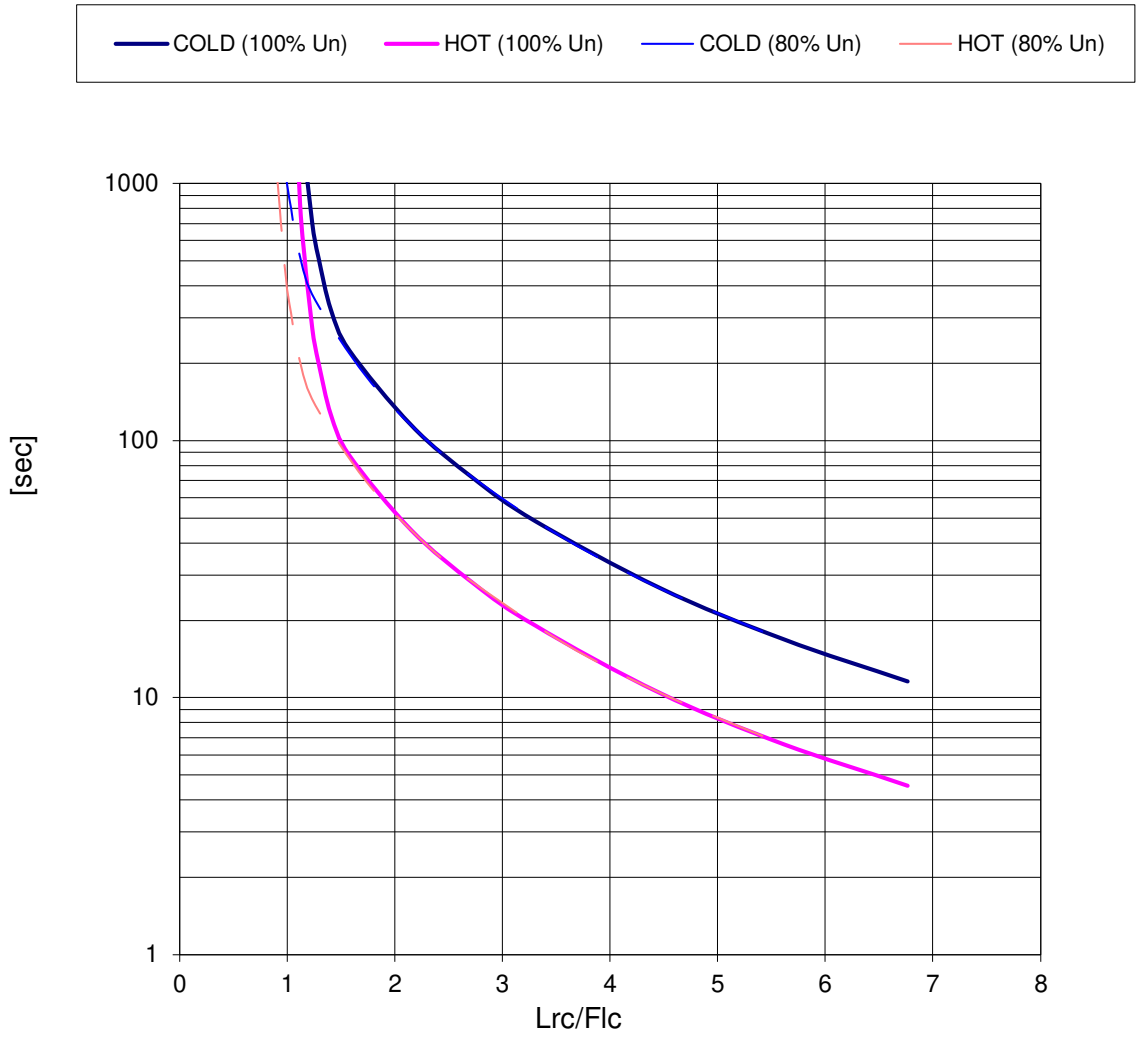
Cliente / Customer	0	
Impianto / Plant	-	
ITEM	**-**	
Numero d'offerta / Offer Number	2024	
	-	
Motore / Motor	**E3ABL 132M 4**	
Potenza nominale / Rated power	7.50	kW
Poli / Pole	4	
Tensione - Frequenza / Voltage - Frequency	400 - 50	V - Hz
Corrente / Rated current	14.43	A
Velocità / Speed	1462	rpm
Coppia / Torque	48.99	Nm



Data obtained by calculation method

THERMAL WITHSTAND CURVE (Reduced voltage)

Motore / Motor	**E3ABL 132M 4**	
Potenza nominale / Rated power	7.50	kW
Poli / Pole	4	
Tensione - Frequenza / Voltage - Frequency	400 - 50	V - Hz
Corrente / Rated current	14.43	A
Velocità / Speed	1462	rpm
Coppia / Torque	48.99	Nm



Data obtained by calculation method

Belt & Pulley Data Sheet for Condenser

DATA SHEET FOR PULLEY BELT TRANSMISSION				
BASIC DATA FOR TRANSMISSIONS				
1	Customer items/DTT items	AIR COOLER		
2	Belt type	V-Belt		
3	Total quantity of belt			2Set
4	Motor power	(KW)		7.5
5	Motor frame size			-
6	Speed motor	(rpm)		1440
7	Speed fan	(rpm)		382
8	Speed ratio			3.76
9	Minimum service factor			1.4
10	Real service factor			1.8
11	Min. Max. Center Distance	(mm)		835 ±85
12	Center distance	(mm)		754.3
13	Belt width<QTY	(mm)		-- /2Set
14	Belt order info			CAPXPA2332
15	Belt drive life	(Hours)		V- belt estimated life~20000
16	Transmitted power	(kW)		13.75
17	Driver	QTY		2
		code		PBT106SPA2
		Pitch Dia	(mm)	106
		Pitch of Groove	(mm)	-
		Number of Grooves		2
		Width		-
		Bush no		1610
		Bore	(mm)	-
		Material/Weight		GG20 /-
18	Driven	QTY		2
		code		PBT400SPA2
		Pitch Dia	(mm)	400
		Pitch of Groove	(mm)	-
		Number of Grooves		2
		Width		-
		Bush no		2517
		Bore	(mm)	-
		Material/Weight		GG 20 /-
19	Deflection force	(N)		-
20	Deflection	(mm)		-
21	Maximum tension	(N)		561
22	Noise	dB(A)		85

SIT S.p.A
Viale A. Volta, 2 - 20047 Cusago (MI) - Italy
+39 02 89144 1
www.sitspa.it
info@sitspa.it - export@sitspa.it

INPUT DATA

Transmission type	2 Pulleys power transmission
Product family	NEXT®
Type	Narrow Raw Edge (XPZ,XPA,XPB,XPC)
Section	XPA

Power [kW]	7.50
Speed [RPM]	1440.0
Torque [Nm]	49.7
Required service factor	1.4

BELT

Code	CAPXPA2332
Length [mm]	2332.00
Number of belts / ribs [-]	2

RESULT

Resulting service factor	1.8
Transmissible power [kW]	13.75
Linear speed [m/s]	8.0
Center-to-center [mm]	754.3

PULLEYS

	Solid hub pulley code	Taper bushing code	External	Number of ribs	Pulley diameter [mm]	X [mm]	Y [mm]
Driver	PT106SPA2	PBT106SPA2	No	2	106.00	0	0
Driven	PT400SPA2	PBT400SPA2	No	2	400.00	754.26	0

	Transmission ratio	Speed [RPM]	Wrap angle [°]	Power [kW]	Torque [Nm]	Static shaft load [N]
Driver	--	1440.0	157.5	7.50	49.7	1693.3
Driven	0.26	381.6	202.5	7.50	187.7	1693.3

TENSIONING

Maximum tension [N]	561	**Minimum tension [N]**	432

		Vibration frequency method	
	Free segment length [mm]	**New belt frequency [Hz]**	**Run-in belt frequency [Hz]**
Driver-Driven	739.8	52 ± 2%	46 ± 2%

06 October, 2024

MESSRS: Damafin Thermal Technology Co.
Iran - Tehran - 14th km of Tehran-Karaj special road –
Iran Khodro South Boulevard - Zamyad Street - No 4

Letter of conformity & Declaration of anti-static properties

Ref. order: PAE03029, 1158

Here enclosed we testify that the below mentioned belts:

Item code	Description	Quantity
CAPXPA2332	SIT NEXT® MC NARROW V-BELT Section XPA, Datum length Ld (mm) 2332	8

Are conform to Standards ISO 13050, and are antistatic according to ISO 9563 (Timing belts) and BS3790-1995, ISO 1813: 1998 (E) (V-Belts).

All belts have been inspected according SIT Spa ISO 9001 quality procedure.

Yours Faithfully,

Emiliano Dalla Nave
Sales Export Manager

SIT S.p.A.
Viale A.Volta, 2
20047 Cusago (MI)
ITALY
address

Tel. +39 02 89144.1
Fax +39 02 89144.291
www.sitspa.it
info@sitspa.it - export@sitspa.it
contacts

Via G. Carminati, 15
24012 Val Brembilla (BG)
Tel. 034598131
Fax 034599374
factory

Vibration Switch Data Sheet for Condenser

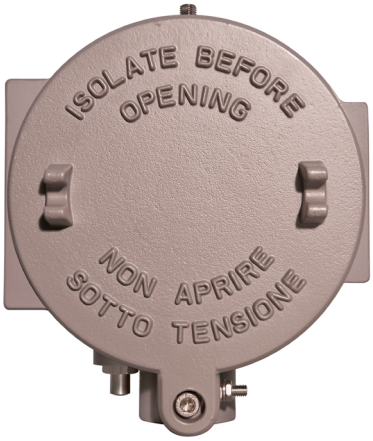
Vibration Switch Data sheet															
Basic Data								Manufacturer Data							
1	PROJECT- Customer item		1158					1	Manufacturer / Origin	SAMI/ WIKA/Italy					
2	Quantity		4					2	Type - Model	VBS SPDT without M20*2.5					
3	Tag No.		VS-RU0001A-01A VS-RU0001A-01B VS-RU0001B-01A VS-RU0001B-01B					3	Enclosure material	Cast aluminum painted					
4	Area classification	IEC	Yes					4	Certification	According to 2014/34/EU ATEX Exd IIC T5					
5		NEMA	Yes					5	Working	HORIZENTAL	Yes	VERTICAL	Yes		
6	Enclosure		Exd					6	Wiring entry(type-size)	M20					
7	Reset		Electric	NO	Manual	YES		7	CABLE GLAND	M20*1.5					
8	Switch contacts		SPDT	YES	DPDT	NO		8	RANGE	0-5g					
9	Protection		IP 65					9	TEMP CLASS	T5					
10	Zone - Gas group		2					10	Normal Operation Temp	(-20, 55) ℃					
11	RANGE - SET POINT		(0- 5 g)												
12	Temperature class		IIB-T3					11	Set point adjust	2g					
13	Ambient temp. min/max		(5 To 48) ℃					12	RESET	MANUAL					
14	Humidity (RH) (%)		80%					13	PROTECTION	IP65					
15	Altitude (m)		20					14	Installation	With fixing base or bracket. The vibration sensitive axle is perpendicular or axial to the switch fixing base					
16	Contact rating		24VDC, 1A					15							
17	Start-up delay		N.A					16							
18	MOUNTING		Yes					17							
19	Housing		CAST ALOMINIUM					18							
20	Thered size - TYPE		M20 @ 1.5					19							

Compact vibration switch, flameproof enclosure Ex D
Model VBS

for further approvals see page 4

Applications

- Monitor excess of vibrations in machinery equipments
- Safety-critical applications in chemical and petrochemical industries, oil and gas, power generation, including nuclear power plants, water/wastewater, mining
- Ventilation / Air conditioning
- Pumps & compressors, turbines
- Engines, motors & generators



Model VBS

Special features

- Robust switch enclosure from aluminium alloy
- Frequency sensitivity up to 60 Hz (< 3600 RPM)
- SPDT or DPDT contacts, up to AC 380 Vac, 15 A
- Calibration: up to 5 g with outer calibration screw

Description

The Vibration switches have been developed to protect the rotating equipments against increase in vibration due to operating anomalies or failures that could damage the entire machinery.
The high quality of the products and manufacturing in accordance with ISO 9001 ensure reliable monitoring of your machine. During the production phase the switches are 100% calibrated and tested.

The switches are of mechanical type. The robust switch enclosure from aluminium alloy can withstand the rough and corrosive operating conditions of the process industry.

To adjust the set point simply open the access cover plate. The access to the terminal block for the electrical connection is protected by a screw-on lid, which is secured with a screw-type lock against unauthorised intervention.
The vibration switches have a fequence sensitivity up to 60Hz and can be calibrated up to 5g acceleration directly in field.

Vibrations Switches contain a spring inside the body.
The excessive vibration, beyond a defined range, causes the movement of the spring, which consequently activates the switch through magnetic attraction.
The position of the magnet in relation to the spring can be changed to match the desired threshold value.
Disengaging the magnet from the spring will reset the Vibration Switch.

In order to ensure operation as flexible as possible, the Vibration switches are fitted with micro switches which enable the switching of an electrical load of up to AC 380V 15A directly.

Data sheets showing similar products and accessories:

Battery-operated signal converter; model FLC-406; see data sheet FL 20.08
Signal converter; model FLC-608; see data sheet FL 20.05
Flow meter; model FLC-2300; see data sheet FL 20.06

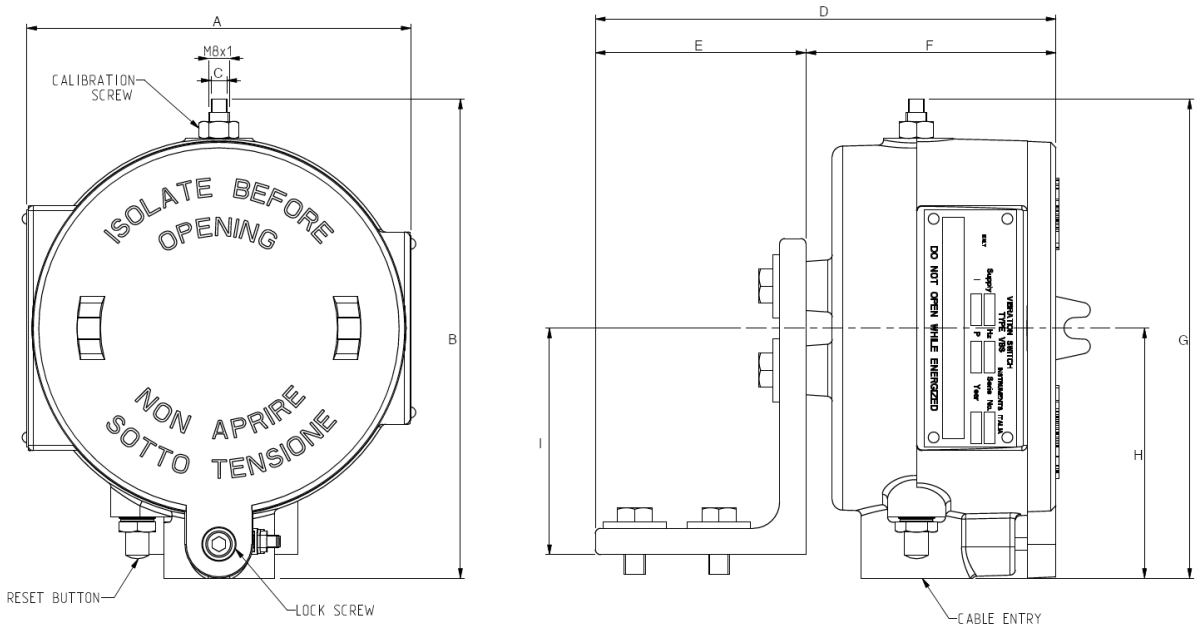
Specifications

Specifications	
Enclosure material	High resistance aluminium alloy. Max copper content: 1%
Ignition protection	CESI Flameproof, Ex d IIC T6 or T5 Gb
Switch enclosure	Epoxy resin coated and tamper-proof junction box and terminal box provided together with the equipment
Peak vibration range	5 g
Calibration	0 to 5g with outer calibration screw [1]
Frequency sensitivity	0 to 60 Hz (0 ÷ 3600 RPM)
Mechanical protection	IP 65 & CE mark
Working axes	2 Axis only (A-B see picture)
Ambient Temperature	■ -20°C +40°C for temperature class T6 ■ -20°C +55°C for temperature class T5
Capacity of contacts	■ SPDT 15A @ 0÷380 Vac ■ DPDT 10A @ 0÷250 Vac
Start-up delay	Optional reset coil required [2]
Reset	■ Local reset is provided as standard ■ Electrical Remote Reset can be supplied as optional
Weight	3 kg (including bracket and fixing screws)
Earth screws	Internal and external
Terminal box	Suitable for cable up to 2,5 mm^2
Installation	With fixing base or bracket. The vibration sensitive axle is perpendicular or axial to the switch fixing base
Label	Laser-engraved stainless steel nameplate fixed to the body, containing the following information: ■ Manufacturer name ■ Model ■ Serial Number ■ Range ■ Purchase Order number ■ Tag number
Reset coil	■ None ■ 115/120 Vac ■ 220/230 Vac ■ 24 Vdc
Electrical connection	■ M20 X 1,5 ■ ¾" NPT-F ■ 1/2" NPT-F
Switch contacts	■ SPDT ■ DPDT

[1] The vibration switches are provided with a standard pre-set factory set-point. The set-point of the instrument strongly depends on the intensity of the natural vibration produced by the equipment during the normal operation. The final calibration of the vibration switch must be done on field according to the peculiarity of machinery on which the device is installed. For this reasons, due to the huge variables that depend on the equipment and application, WIKA does not provide any customized set-point or any calibration certificate of the instrument.

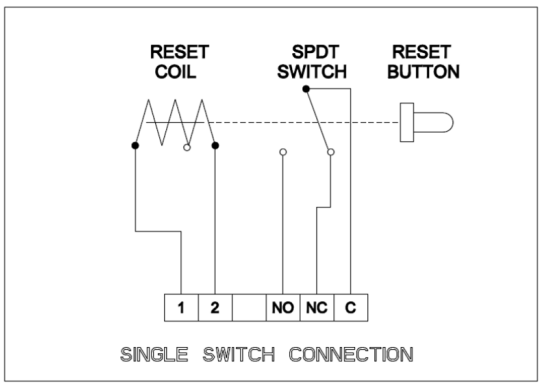
[2] Apply voltage to the reset coil to stop bounces for at least 20 seconds after the machine has started

Dimensions

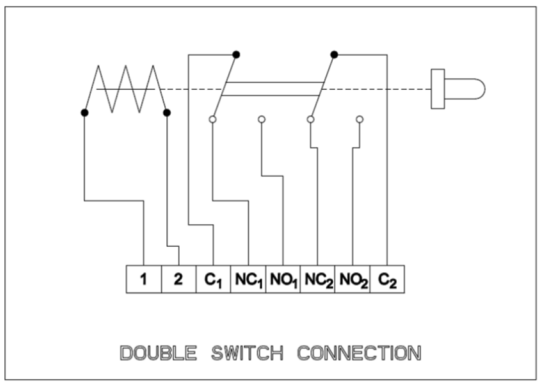


Dimensions in mm [in]								
A	B	C	D	E	F	G	H	I
146 [5.75]	182 [7.16]	6 [0.24]	175 [6.89]	80 [3.15]	95 [3.74]	182 [7.16]	95 [3.74]	86 [3.38]

Single Switch Connection Electrical Diagram



Double Switch Connection Electrical Diagram



Ordering Information

Item Number	Reset coil	Switch contacts	Electrical connections
81647076	24 VDC	DPDT	¾“ NPT-F + ½“ NPF-F adapter
81647079	24 VDC	DPDT	3/4" NPT-F direct
81647080	24 VDC	DPDT	M20x1,5 + Cable gland 11-18mm adapter
81647083	24 VDC	DPDT	M20x1,5 direct
81647077	24 VDC	SPDT	¾“ NPT-F + ½“ NPF-F adapter
81647078	24 VDC	SPDT	3/4" NPT-F direct
81647081	24 VDC	SPDT	M20x1,5 + Cable gland 11-18mm adapter
81647082	24 VDC	SPDT	M20x1,5 direct
81647168	110 VAC	DPDT	¾“ NPT-F + ½“ NPF-F adapter
81647165	110 VAC	DPDT	3/4" NPT-F direct
81647087	110 VAC	DPDT	M20x1,5 + Cable gland 11-18mm adapter
81647084	110 VAC	DPDT	M20x1,5 direct
81647167	110 VAC	SPDT	¾“ NPT-F + ½“ NPF-F adapter
81647166	110 VAC	SPDT	3/4" NPT-F direct
81647086	110 VAC	SPDT	M20x1,5 + Cable gland 11-18mm adapter
81647085	110 VAC	SPDT	M20x1,5 direct
81647170	220 VAC	DPDT	¾“ NPT-F + ½“ NPF-F adapter
81647173	220 VAC	DPDT	3/4" NPT-F direct
81647174	220 VAC	DPDT	M20x1,5 + Cable gland 11-18mm adapter
81647177	220 VAC	DPDT	M20x1,5 direct
81647171	220 VAC	SPDT	¾“ NPT-F + ½“ NPF-F adapter
81647172	220 VAC	SPDT	3/4" NPT-F direct
81647175	220 VAC	SPDT	M20x1,5 + Cable gland 11-18mm adapter
81647176	220 VAC	SPDT	M20x1,5 direct
81647072	Without	DPDT	¾“ NPT-F + ½“ NPF-F adapter
81647068	Without	DPDT	3/4" NPT-F direct
81647074	Without	DPDT	M20x1,5 + Cable gland 11-18mm adapter
81647071	Without	DPDT	M20x1,5 direct
81647073	Without	SPDT	¾“ NPT-F + ½“ NPF-F adapter
81647069	Without	SPDT	3/4" NPT-F direct
81647075	Without	SPDT	M20x1,5 + Cable gland 11-18mm adapter
81647070	Without	SPDT	M20x1,5 direct

Approvals

Logo	Description	Country
CE	**- EU Declaration of conformity** **- RoHS directive** **- ATEX directive** **- II 2G**	European Union

Approvals and certificates, see website

WIKA Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30
63911 Klingenberg/Germany
Tel. +49 9372 132-0
Fax +49 9372 132-406
info@wika.de
www.wika.de

VFD Data Sheet for Condenser

PRODUCT-DETAILS

ACS880-01-025A-3

LV AC industrial wall-mounted single drive, IEC: Pn 11 kW, 25 A, 400 V (ACS880-01-025A-3)

General Information

Global Commercial Alias	ACS880-01-025A-3
Product ID	3AUA0000107992
ABB Type Designation	ACS880-01-025A-3
EAN	6438177557197
Catalog Description	LV AC industrial wall-mounted single drive, IEC: Pn 11 kW, 25 A, 400 V (ACS880-01-025A-3)
Long Description	The ACS880-01 drives are customized to meet the particular needs of specific industries, such as oil and gas, mining, metals, chemicals, cement, power plants, material handling, pulp and paper, sawmills, marine, water and wastewater, food and beverage, and automotive. They can control a wide range of applications, including cranes, extruders, winches, winders, conveyors, mixers, compressors, centrifuges, test benches, elevators, extruders, pumps and fans. The ACS880-01 comes in one compact package for easy installation and commissioning. The drive can be installed on the wall as standard and in a cabinet as an option. The drive offering includes enclosure classes up to IP55, making it suitable for most environments and installations. ACS880-01 drives have all the essential features built-in. These features include as standard a choke for harmonic filtering as well as options like a brake chopper, EMC filter and communication protocol adapter, functional safety, external output filters and I/O extension modules.

Ordering

Country of Origin	Finland (FI)
Customs Tariff Number	85044085
HS Code	850440-- Electrical transformers, static converters (for example, rectifiers) and inductors.- Static converters
Invoice Description	ACS880-01-025A-3 PN: 11.0 kW, IN: 25 A
Made To Order	Yes
Minimum Order Quantity	1 piece
Order Multiple	1 piece
Quote Only	No
Selling Unit of Measure	piece

Dimensions

Product Net Weight	8.4 kg 18.519 lb
Product Net Depth / Length	249 mm 9.803 in
Product Net Height	409 mm
Product Net Width	155 mm 6.102 in
Package Level 1 Depth / Length	574 mm
Package Level 1 Height	304 mm
Package Level 1 Width	256 mm
Package Level 1 Units	1 carton

Technical

Number of Phases	3
Degree of Protection	IP21
Enclosure Type NEMA	Type1
Altitude	4000 m
	5 ... 95
Sound dB (A)	59 dB(A)
Multiple Battery Information	Lithium Coin, CR2032, 220 mAh, 3 V, 2 pcs, 6 g
Frequency (f)	47.5 ... 63 Hz
Frame Size	R2
Input Voltage (U_{in})	380 ... 415 V
Mounting Type	Wall-mounted
Communication Protocol	CAN DeviceNet EtherNet/IP MODBUS Other Bus Systems PROFIsafe PROFIBUS PROFINET IO
Number of Hardware Interfaces	Industrial Ethernet 0 Other 4 Parallel 0 PROFINET 0 RS-232 0 RS-422 0 RS-485 1 Serial TTY 0 USB 1
Includes	Control unit PC connection
Analog Inputs	2
Analog Outputs	2
Number of Digital In/Outputs	6 / 2

Output Current, Heavy-Duty Use (I_{HD})	17 A
Output Current, Light-Overload Use (I_{LD})	24 A
Output Current, Normal Use (I_n)	25 A
Output Power, Heavy-Duty Use (P_{HD})	7.5 kW
Output Power, Light-Overload Use (P_{LD})	11 kW
Output Power, Normal Use (P_n)	11 kW
Apparent Power Output	17 kV·A
Efficiency Level	IE2
Standby Loss	23 W

Complete Drive Module Efficiency (61800-9-2)

Operating Point Frequency / Current	Absolute Loss	Relative Loss	Efficiency
0 / 25 %	126 W	0.7 %	87.9 %
0 / 50 %	168 W	1.0 %	91.3 %
0 / 100 %	301 W	1.7 %	92.2 %
50 / 25 %	135 W	0.8 %	93.4 %
50 / 50 %	185 W	1.1 %	95.2 %
50 / 100 %	342 W	2.0 %	95.6 %
90 / 50 %	203 W	1.2 %	97.0 %
90 / 100 %	412 W	2.4 %	97.0 %

Temperature Rating	Maximum 40 °C

Classifications

ETIM 8	EC001857 - Frequency converter =< 1 kV
ETIM 9	EC001857 - Frequency converter =< 1 kV
UNSPSC	39122001

Environmental

SCIP	090be974-b30f-4eaa-b924-275d6a7f6686 Finland (FI)
Simplified SCIP	05ba9c4c-0f14-4b63-8f0d-9dfe97cea5ce Belgium (BE) fe7f4acc-a128-4e0d-bb0e-9401a4fbb99c Netherlands (NL) c8260a35-2ae0-4c51-8f1f-f45f223f38d1 Denmark (DK) 2ba4b589-d362-4a71-960c-db11fa23c371 Spain (ES) 16d426ed-87d2-41b8-a6a6-becce45ad9b6 Portugal (PT) 83eb23c1-e520-4509-b458-e0f3f5d3e025 Estonia (EE)
WEEE Category	5. Small Equipment (No External Dimension More Than 50 cm)

Additional Information

Product Name	Frequency converter

Categories

Drives → Low Voltage AC Drives → Industrial Drives → ACS880 single drives → ACS880-01 - Wall-mounted single drive