

SPECIFICATION FOR APPROVAL

Customer:

Description:	EC FAN		
Customer P/N:		REV:	
Delta Model NO.:	GTB028EUB16 N1	Safety Model NO.:	GTB028EUB16
Sample Rev:	X02	Issue NO:	
Sample Issue Date:		Quantity:	

1. SCOPE:

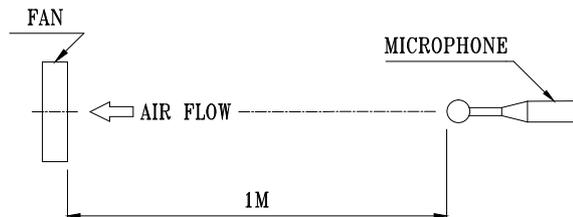
THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THIS CENTRIFUGAL FAN.

2. NOMINAL DATA:

UNLESS SPECIFIED, ALL READINGS AND TESTS ARE BASED ON 25 DEG C, 65% RH.

ITEM	DESCRIPTION
NOMINAL VOLTAGE	1 \emptyset 230 VAC 50/60Hz
NOMINAL VOLTAGE RANGE	1 \emptyset 200 - 277 VAC
INPUT POWER @ FREE-AIR	170 W
INPUT POWER @ MAX. LOAD	180 W
INPUT CURRENT (MAX)	1.00 A
SPEED	2020 R.P.M. (REF.)
MAX. AIR FLOW (AT ZERO STATIC PRESSURE)	2222 (MIN. 2000) M ³ /H 1308 (MIN. 1177) CFM
MAX. AIR PRESSURE (AT ZERO AIR FLOW)	569.7 (MIN. 461.4) Pa 2.287 (MIN. 1.852) inchH ₂ O
ACOUSTICAL NOISE (AVG.) @ FREE-AIR	73.0 (MAX 78.0) dB(A)

- NOTES: 1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 10 MINUTES.
 2. THE VALUES WRITTEN IN PARENS , (), ARE LIMITED SPEC.
 3. ACOUSTICAL NOISE MEASURING CONDITION:



NOISE IS MEASURED AT NOMINAL VOLTAGE IN FREE AIR IN ANECHOIC CHAMBER WITH B & K SOUND LEVEL METER WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE.

PART NO:

DELTA MODEL: GTB028EUB16 N1

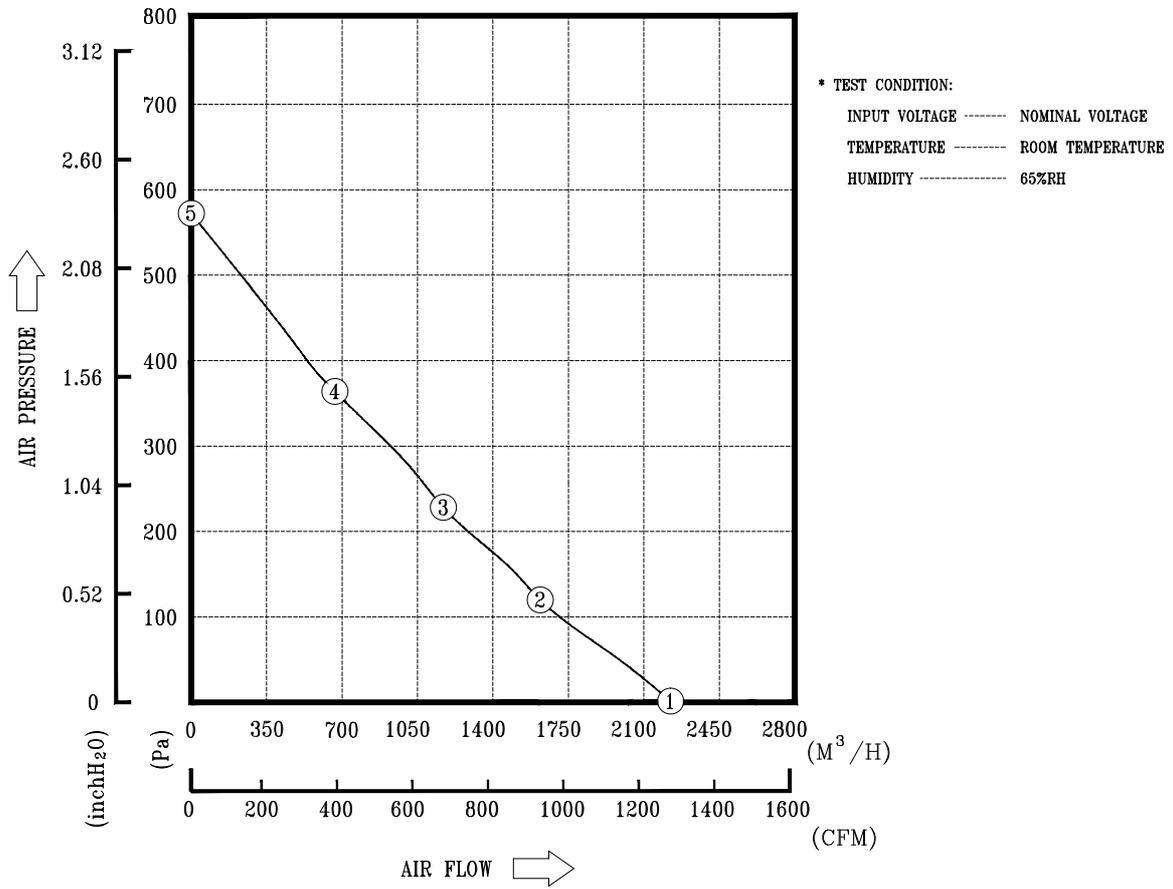
3. FEATURES:

DIRECTION OF ROTATION	CLOCKWISE, SEEN ON ROTOR
BEARING SYSTEM	BALL BEARINGS
WEIGHT	3.2 K.G. (REF.)
MATERIAL OF ELECTRONICS HOUSING	DIE-CAST ALUMINUM
MATERIAL OF IMPELLER	ALUMINUM SHEET
ELECTRICAL LEADS	LEAD WIRE
MOTOR PROTECTION	OVER TEMPERATURE PROTECTED
LEAKAGE CURRENT	<= 3.5 mA
INSULATION CLASS	B
TYPE OF PROTECTION	IP54
PROTECTION CLASS	I
POWER FACTOR CORRECTION	ACTIVE
OPERATING TEMPERATURE	-25~+60 °C (REF.)
STORAGE TEMPERATURE	-40~+70 °C (REF.)
EMC	EN61000-6-1 , EN61000-6-3 , EN61000-3-2/3
SAFETY	UL, cUL, TUV
LIFE EXPECTANCE	* 60,000 HOURS CONTINOUS OPERATION AT 40 °C WITH 15 ~ 65 %RH.
FUNCTIONS	- INPUT 0-10VDC/PWM FOR SPEED CONTROL - FAN SPEED SIGNAL OUTPUT - OUTPUT +10VDC(+/-10%), max. 10mA

PART NO:

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4. P & Q CURVE:



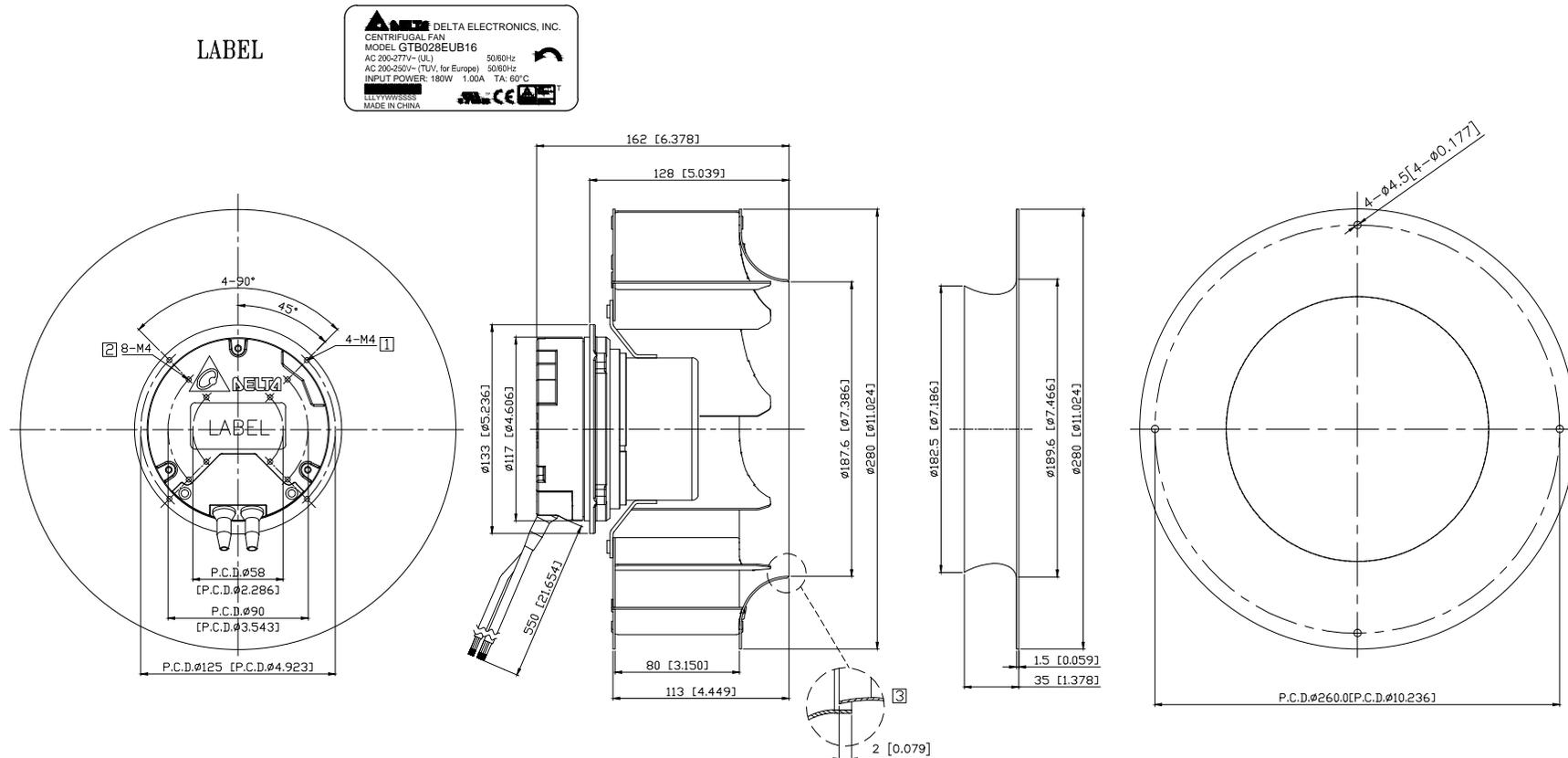
MEASURED DATA:

	P	Q	N	P1	I	Lp
	[Pa]	[M³/H]	[R.P.M.]	[W]	[A]	[dB(A)]
1	0	2223	2010	164	0.75	73.0
2	118.2	1607	1862	165	0.76	
3	235.2	1130	1822	162	0.76	
4	365.5	650.5	1922	164	0.75	
5	569.4	0	2274	110	0.54	

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5. DIMENSION DRAWING:



NOTE:

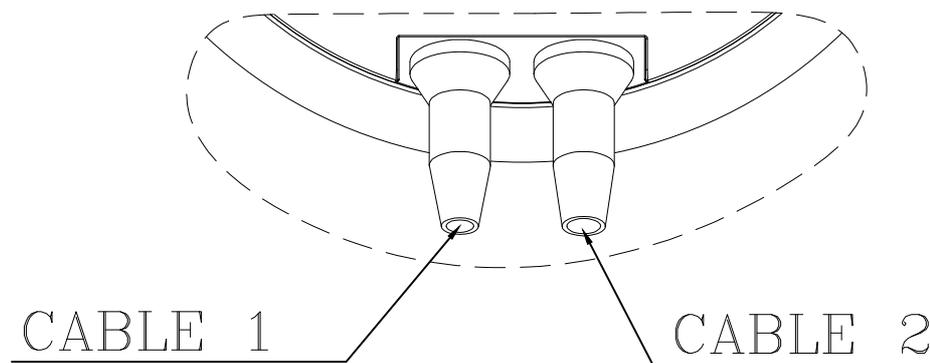
- ① DEPTH OF SCREW: 6~8mm.
- ② DEPTH OF SCREW: 6mm(max.).
- ③ ACCESSORY: INLET NOZZLE, ALL THE PERFORMANCE DATA ARE MEASURED WITH IT.
- 4 THIS PRODUCT IS RoHS COMPLIANT.

UNIT: mm [INCH]

PART NO:

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6. DEFINITION OF CABLE:

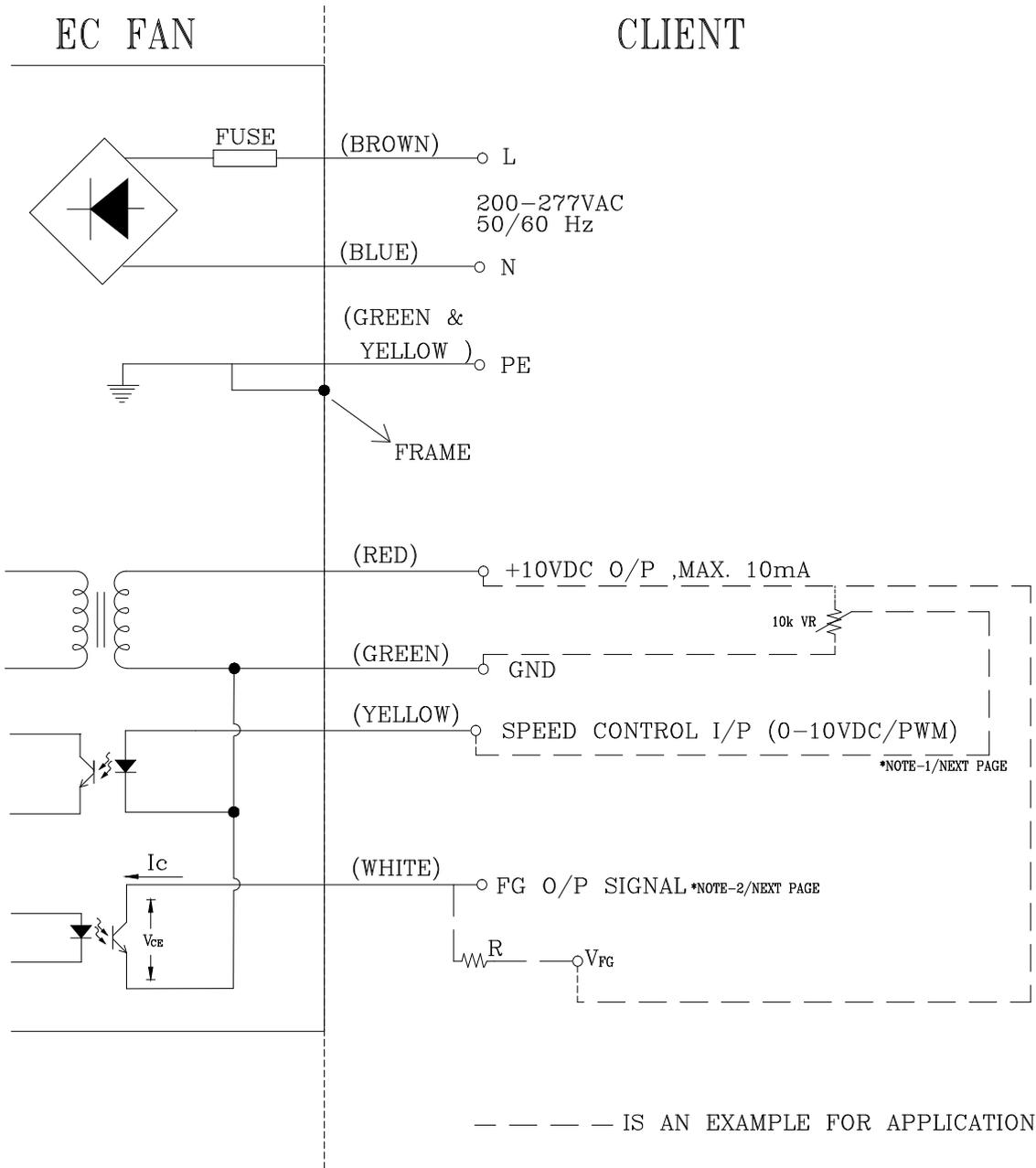


CABLE	COLOR	FUNCTIONS
1	GREEN	GND
1	RED	+10V
1	WHITE	FOO
1	YELLOW	PWM
2	BROWN	L
2	BLUE	N
2	GREEN/YELLOW	EARTH

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7. LEAD WIRE CONNECTION:



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8. FUNCTION CONTROL: VOLTAGE CONTROL

*NOTE-1: SPEED CONTROL SIGNAL

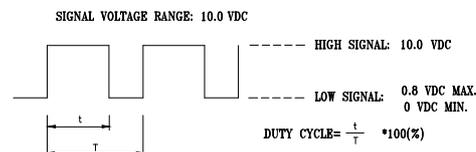
- THERE ARE TWO WAY TO CONTROL FAN SPEED.

A. VOLTAGE CONTROL

- CONTROL VOLTAGE RANGE SHALL BE 0-10 VDC.
- VOLTAGE AT 10VDC THE FAN WILL SPIN AT MAXIMUM SPEED.
- VOLTAGE HIGHER THAN 1.5 VDC, THE FAN WILL START UP.
- VOLTAGE LOWER THAN 0.5 VDC, THE FAN WILL STOP.

B. PWM CONTROL

- THE AMPLITUDE VOLTAGE SHALL BE 10VDC. (100Hz~100kHz)



- PWM DUTY HIGHER THAN 15 % , THE FAN WILL START UP.
- PWM DUTY LOWER THAN 5 % , THE FAN WILL STOP.

- THE SPEED COMPARISON WITH CONTROL LEVEL:

VOLTAGE(V)	PWM DUTY(%)	SPEED (R.P.M.) (REF.)
0.0	0	0
9.5	95%	2020

*NOTE-2: FREQUENCY GENERATOR (FG) SIGNAL

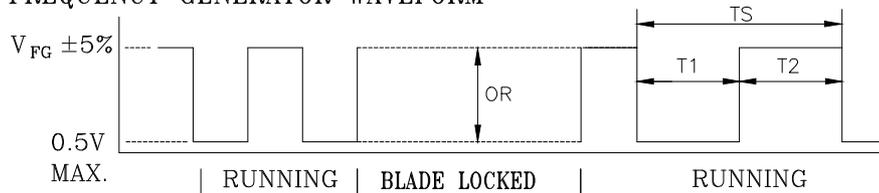
$V_{CE}(\text{sat})=0.7\text{V MAX.}$

$V_{FG}=20.0\text{V MAX.}$

$I_c =5\text{mA MAX.}$

$R \geq V_{FG}/I_c$

FREQUENCY GENERATOR WAVEFORM



$N=\text{R.P.M}$	1 PULSE PER REVOLUTION
$TS=60/N(\text{SEC})$	$T1=T2=1/2 TS$

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9. CONTROL LEVEL & SPEED CURVE:

