San Ace 190*AD* 9ADTU type
## ACDC Fan

■ Features

High Static Pressure

This fan delivers a maximum static pressure of 1200 Pa.
They are ideal for blowing applications in air conditioning systems such as FFU (fan filter units) and air purifiers, which require high static pressure performance, and for cooling inverters and the housings of communication systems, which have high mounting density.

No DC Power Supply Required

With an embedded AC-DC converter, these fans can be driven by an AC power supply.
This eliminates the need for a high-capacity DC power supply, reducing overall costs.

Low Noise and High Energy Efficiency

The PWM control function enables the control of fan speed, contributing to lowering noise and improving energy efficiency of devices.
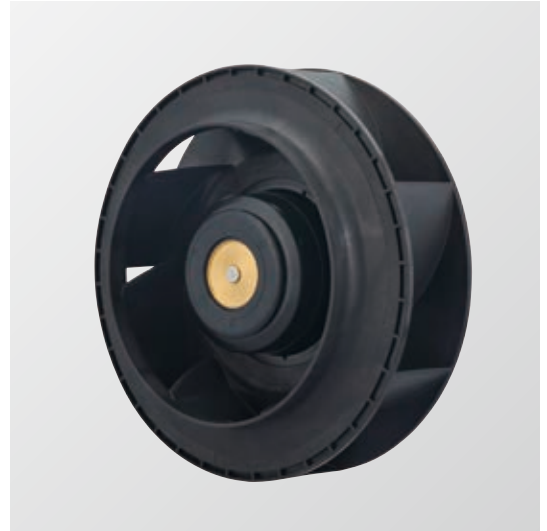
ø190 × 88 mm

■ Specifications When the optional inlet nozzle (109-1073) is mounted.

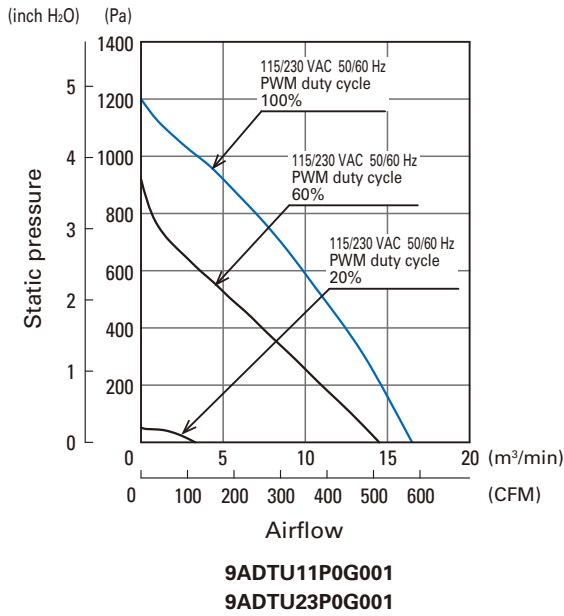The models listed below **have pulse sensors with PWM control function.**

Model no.	Rated voltage [V]	Operating voltage range [V]	Frequency [Hz]	PWM duty cycle* [%]	Rated current [A]	Rated input [W]	Rated speed [min⁻¹]	Max. airflow [m³/min]	[CFM]	Max. static pressure [Pa]	[inchH₂O]	SPL [dB(A)]	Operating temperature [°C]	Expected life [h]
9ADTU11P0G001	115	90 to 132	50/60	100	2.5	150	4800	16.5	583	1200	4.82	72	-25 ～ +60	40000/60°C (70000/40°C)
				20	0.3	10	1000	3.3	116	52	0.21	43		
9ADTU23P0G001	230	180 to 264		100	1.3	150	4800	16.5	583	1200	4.82	72		
				20	0.2	10	1000	3.3	116	52	0.21	43		

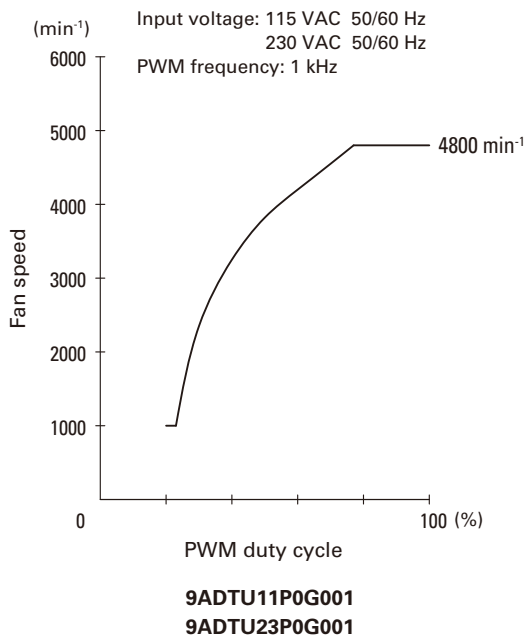* PWM input frequency is 1 kHz; models without specifications at 0% PWM duty cycle have zero fan speed at 0%.

■ Common Specifications

☐ Material ································ Motor case: Aluminum (Black coating), Impeller: Plastic (Flammability: UL 94V-0)
☐ Expected life ························· Refer to specifications
    (L10 life: 90% survival rate for continuous operation in free air at 60°C, rated voltage)
    Expected life at 40°C is for reference only.
☐ Motor protection function ··············· Locked rotor burnout protection
☐ Dielectric strength ···················· 50/60 Hz, 1500 VAC, for 1 minute (between lead wire conductors and motor case)
☐ Insulation resistance ·················· 10 MΩ or more with a 500 VDC megger (between lead wire conductors and motor case)
☐ Sound pressure level (SPL) ············· At 1 m away from the air inlet
☐ Operating temperature ················· Refer to specifications (Non-condensing)
☐ Storage temperature ·················· -30 to +70°C (Non-condensing)
☐ Lead wire ···························· AC power input L: Orange N: Gray Ground Yellow / Green
    +10 VDC output Red ⊖Black Sensor Yellow Control Brown
☐ Mass ······························· 1600 g

■ Airflow - Static Pressure Characteristics

(inch H₂O) (Pa)

Static pressure

- 115/230 VAC 50/60 Hz PWM duty cycle 100%
- 115/230 VAC 50/60 Hz PWM duty cycle 60%
- 115/230 VAC 50/60 Hz PWM duty cycle 20%

Airflow (m³/min) (CFM)

9ADTU11P0G001
9ADTU23P0G001

■ PWM Duty - Speed Characteristics Example

(min⁻¹)

Input voltage: 115 VAC 50/60 Hz
230 VAC 50/60 Hz
PWM frequency: 1 kHz

4800 min⁻¹

Fan speed

PWM duty cycle (%)

9ADTU11P0G001
9ADTU23P0G001

PWM Input Signal Example

Input signal waveform
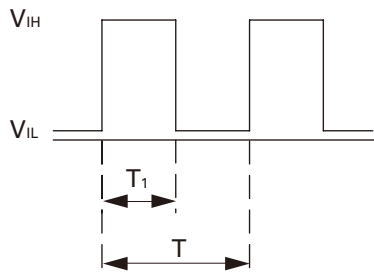
$V_{IH} = 2.8$ to 10.5 V $V_{IL} = 0$ to 0.5 V

PWM duty cycle (%) = $\dfrac{T_1}{T} \times 100$ PWM frequency 1 (kHz) = $\dfrac{1}{T}$
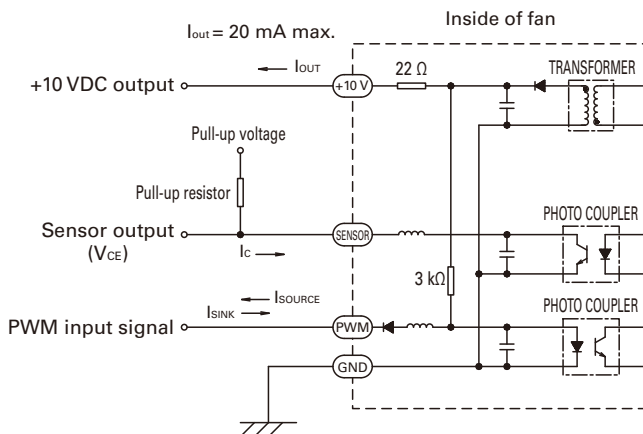
Current source (Isource) = 5 mA max. (when control voltage is 0 V)

Current sink (Isink) = 0.1 mA max. (when control voltage is 10 V)

Control terminal voltage = 11.5 V max. (when control terminal is open)

When the control terminal is open,
fan speed is the same as when PWM duty cycle is 100%.
Either TTL input, open collector or open drain can be used for
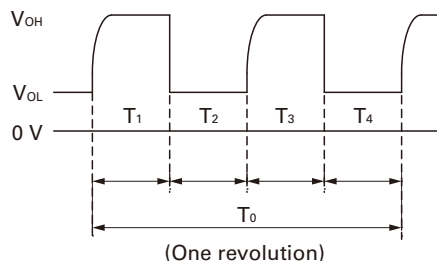PWM control input signal.

Example of Connection Schematic

$I_{out} = 20$ mA max.

Inside of fan

I_{OUT}

+10 VDC output   +10 V   22 Ω   TRANSFORMER

Pull-up voltage

Pull-up resistor

Sensor output   SENSOR   PHOTO COUPLER
(V_{CE}) I_c

3 kΩ

I_{SOURCE}

PWM input signal I_{SINK} PWM   PHOTO COUPLER

GND

$V_{CE} = +27.6$ V max.

$I_c = 10$ mA max. [$V_{OL} = V_{CE}$ (SAT) = 1 V max.]

Pull-up resistor = 5 kΩ max.

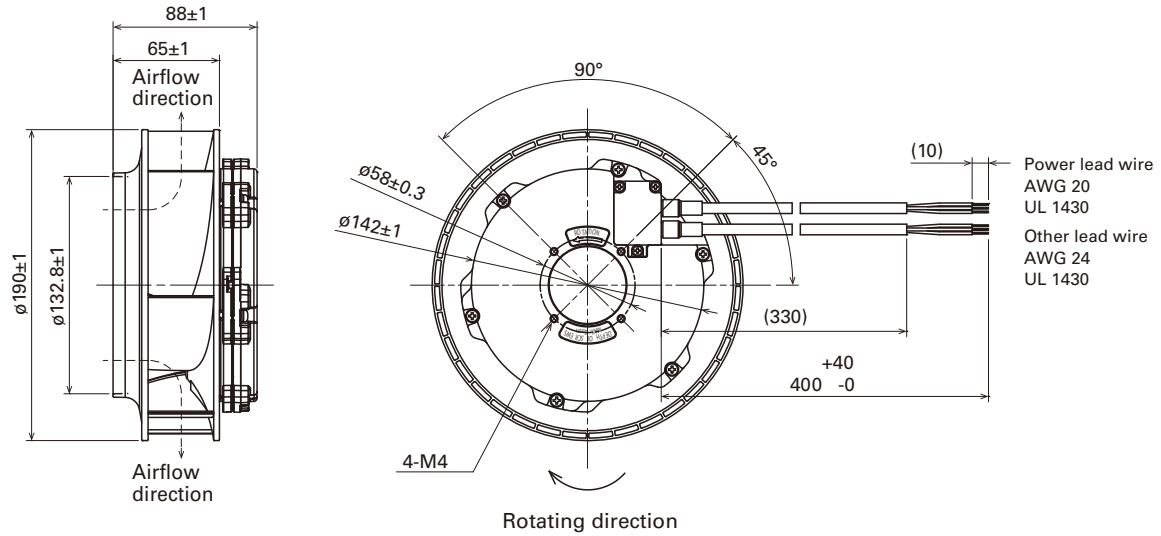## Specifications for Pulse Sensors

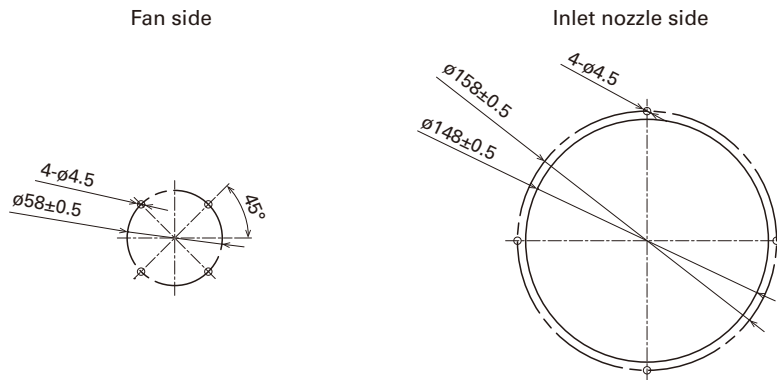Output circuit: Open collector

Output waveform

In case of steady running

V_{OH}

V_{OL}

0 V T_1 T_2 T_3 T_4

T_0

(One revolution)

$T_{1 \text{ to } 4} \doteqdot (1/4)\, T_0$

$T_0 = 60/4N$ (s)

N = Fan speed (min^{-1})

■ Dimensions (unit: mm)

88±1
65±1
Airflow direction
ø190±1
ø132.8±1
Airflow direction

90°
45°
ø58±0.3
ø142±1
(10)
Power lead wire
AWG 20
UL 1430
Other lead wire
AWG 24
UL 1430
(330)
+40
400 -0
4-M4
Rotating direction

■ Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)

Fan side

4-ø4.5
ø58±0.5
45°

Inlet nozzle side

ø158±0.5
ø148±0.5
4-ø4.5

■ Reference Diagram for Mounting

Inlet nozzle
Finger guard
Fan

(2)
(ø128)
Inlet nozzle
Fan
(100)
(14)
Bolt length: 6 mm max.
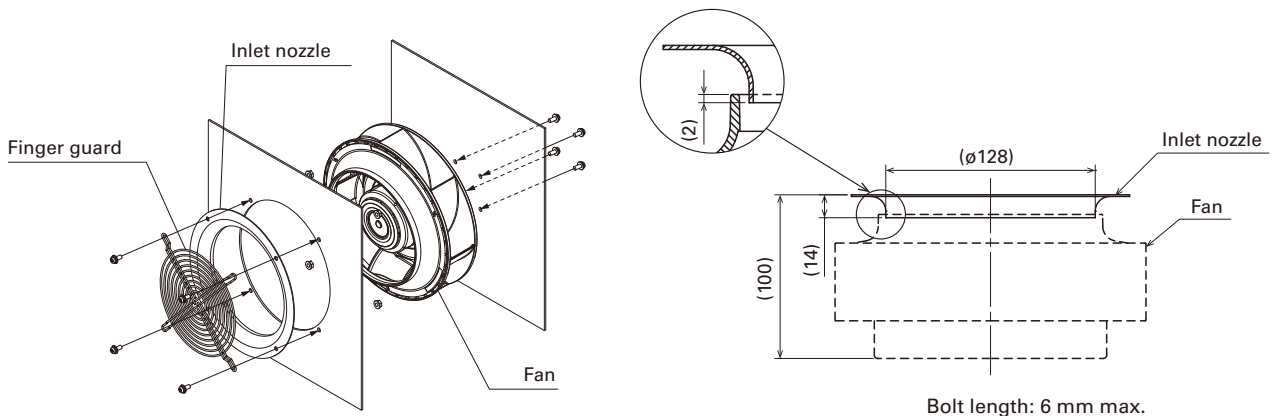
Notice

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● For protecting fan bearings against electrolytic corrosion near strong electromagnetic noise sources,
  we provide effective countermeasures such as Electrolytic Corrosion Proof Fans and EMC guards. Contact us for details.

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