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FANS AND HEATERS

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Small Compact Thermostat

NTL 10A-F / NTL 10B-F



- Large setting range
- Small size
- Simple to mount
- High switching performance

NTL 10A-F: Thermostat (normally closed); contact breaker for regulating heaters. The contact opens when temperature is rising.

NTL 10B-F: Thermostat (normally open); contact maker for regulating of filter fans and heat exchangers or for switching signal devices when temperature limit has been exceeded. The contact closes when temperature is rising.

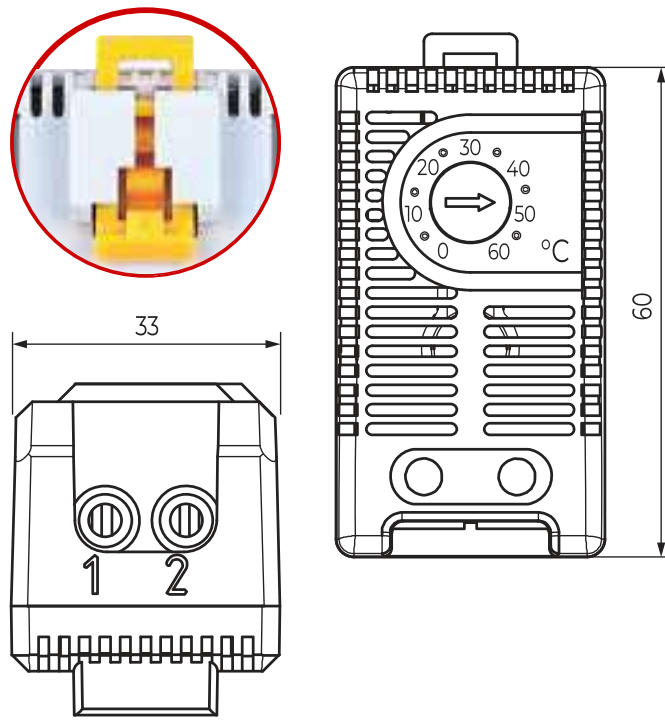
Patent Number:
ZL 2019 3 0327637.5

Technical Data

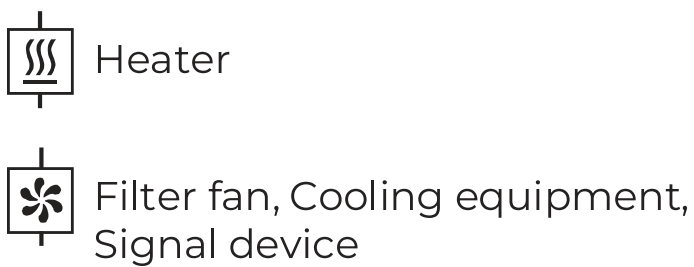
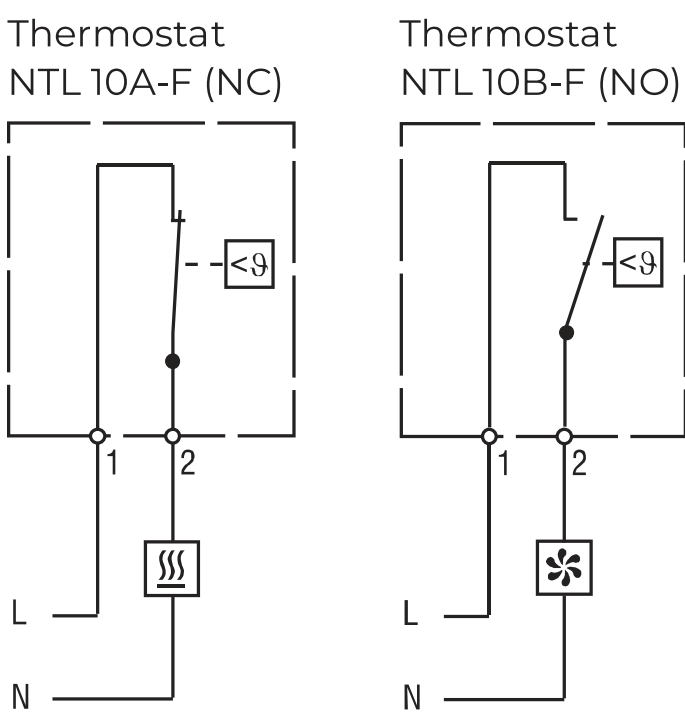
CE RoHS ISO9001 Patent

NTL 10A-F / NTL 10B-F	
Operating voltage	all AC/DC voltage
Switch temperature difference	+/-5°C
Sensor element	thermostatic bimetal
Contact type	snap-action contact
Service life	>100,000 cycles
Max. switching capacity	250VAC, 10 (2) A / 120VAC, 15 (2) A DC 30W at 24VDC to 72VDC
Max. inrush current	AC 16A for 10 sec.
Connection	2-pole terminal, clamping torque 0.5Nm max.: rigid wire 2.5mm ² (AWG 14) stranded wire* 1.5mm ² (AWG 16)
Mounting	clip for 35mm DIN rail, EN 60715
Casing	plastic according to UL94 V-0, light grey
Dimensions	60×33×43mm
Weight	approx. 40g
Fitting position	variable
Operating/Storage temperature	-45 to +80°C (-49 to +176°F)
Operating/Storage humidity	max. 90% RH (non-condensing)
Protection type	IP20

Fast Fixing Part



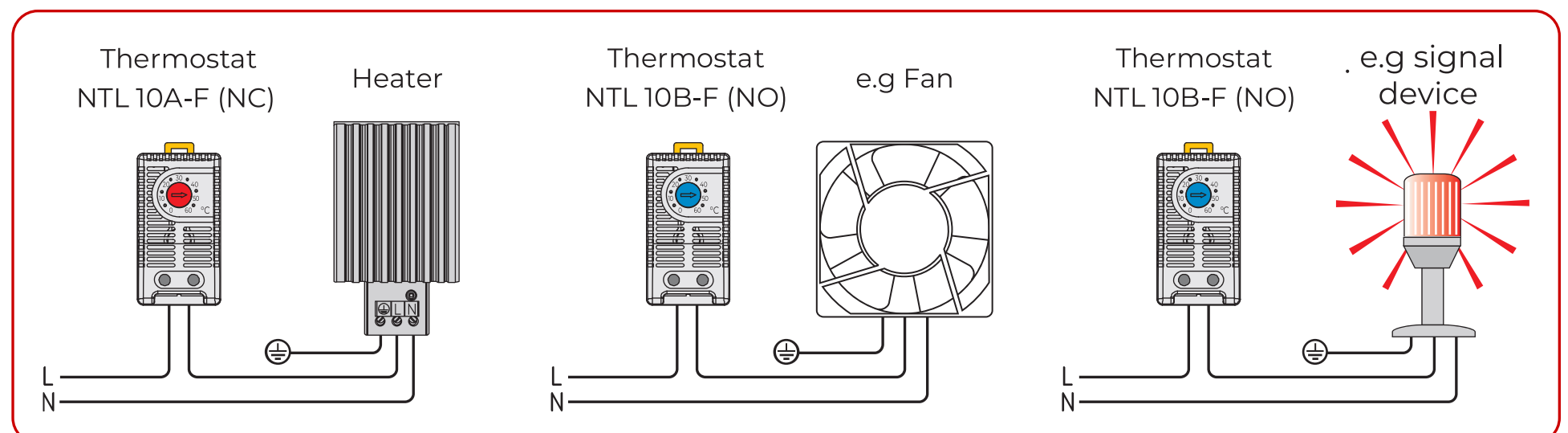
Connection Diagrams



* When connecting with wires, wire end ferrules must be used.

Important note: The contact system of the regulator is subjected to environmental influences, thus the contact resistance may change. This can lead to a voltage drop and/or self-heating of the contacts.

Examples of Connection



NTL 10A-F (NC Type)	NTL 10B-F (NO Type)	Setting Range
10ANCF01	10BNOF01	0 to +60°C

Dual Thermostat

NT 71-F



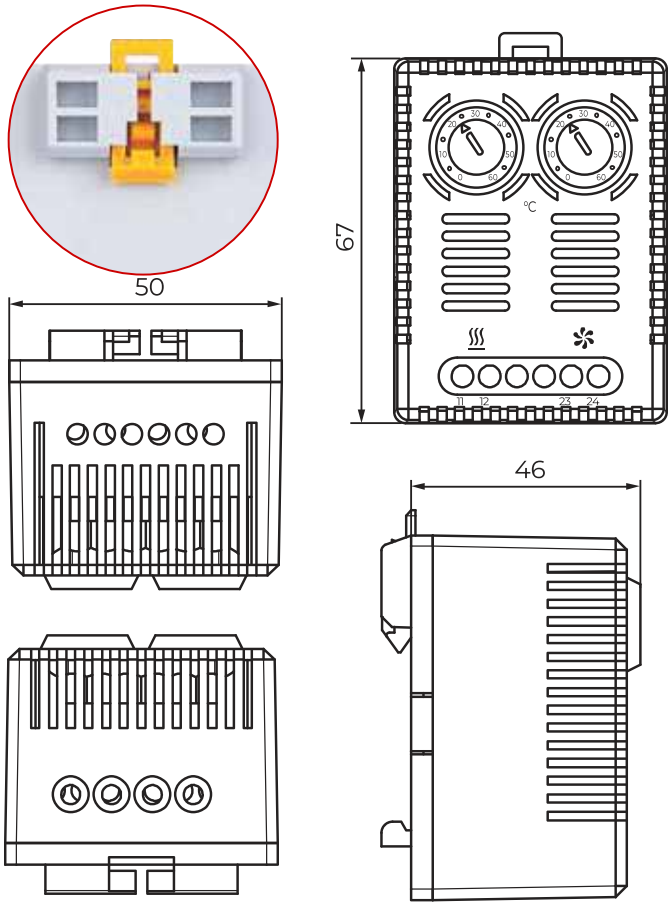
Patent Number:
ZL 2018 3 0402401.9

- **NO and NC in one casing**
- **Separate adjustable temperatures**
- **High switching capacity**
- **Terminals easily accessible**
- **Clip fixing**

Two thermostats in one casing:

Thermostat (contact breaker, normally closed) for regulating heaters. The contact opens when temperature is rising. Thermostat (contact maker, normally open) for regulating filter fans and heat exchangers or switching signal devices when temperature limit has been exceeded. The contact closes when temperature is rising. Heaters and cooling equipment can be switched independently from each other with a temperature offset as opposed to the usual change-over contacts.

Fast Fixing Part



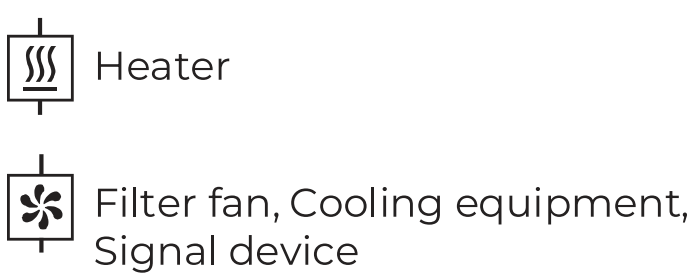
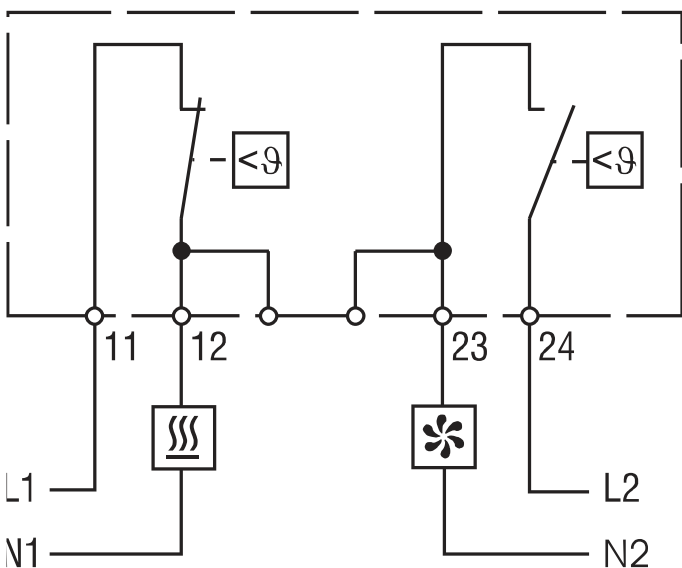
Technical Data

CE RoHS ISO9001 Patent

NT 71-F	
Operating voltage	all AC/DC voltage
Switch temperature difference	+/-5°C
Sensor element	thermostatic bimetal
Contact type	snap-action contact
Service life	>100,000 cycles
Max. switching capacity	250VAC, 10 (2) A
Max. inrush current	AC 16A for 10 sec.
Connection	4-pole terminal, clamping torque 0.5Nm max.: rigid wire 2.5mm ² (AWG 14) stranded wire* 1.5mm ² (AWG 16)
Mounting	clip for 35mm DIN rail, EN 60715
Casing	plastic according to UL94 V-0, light grey
Dimensions	67×50×46mm
Weight	approx. 90g
Fitting position	variable
Operating/Storage temperature	-45 to +80°C (-49 to +176°F)
Operating/Storage humidity	max. 90% RH (non-condensing)
Protection type	IP20

Connection Diagrams

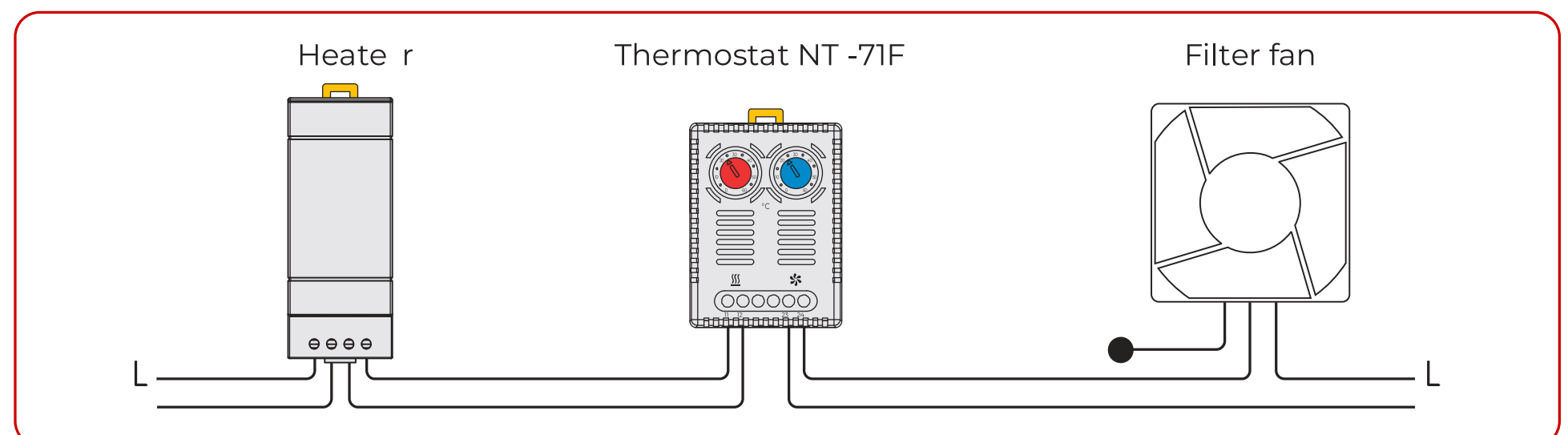
Connection Diagrams
Thermostat NT -71F (NC/NO)



* When connecting with wires, wire end ferrules must be used.

Important note: The contact system of the regulator is subjected to environmental influences, thus the contact resistance may change. This can lead to a voltage drop and/or self-heating of the contacts.

Examples of Connection



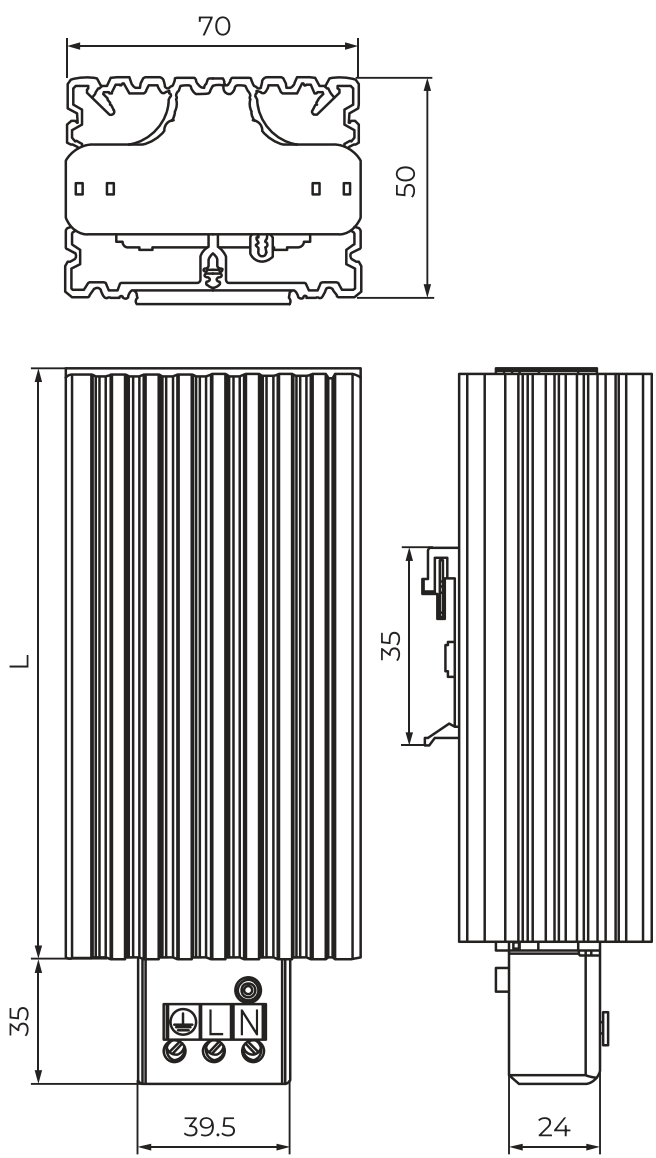
Part. No.	Setting Range		Setting Range	
71NCNOF01	Contact breaker (NC)	0 to +60°C	Contact maker (NO)	0 to +60°C

Semiconductor Heater

NTL 150 | 15W to 150W



Patent Number:
ZL 2014 3 0243995.5



- **With on/off indicator**
- **Pressure clamp connectors**
- **Dynamic heating up**
- **Wide voltage range**
- **Energy saving**
- **Clip fixing, Quick installation**

These heaters are used in enclosures where damage from condensation must be prevented, or where the temperature may not fall below a minimum value. The aluminium profile heater body design has a chimney effect and distributes the heat evenly. The heaters are designed for permanent operation. Pressure clamp connectors save time and simplify installation.

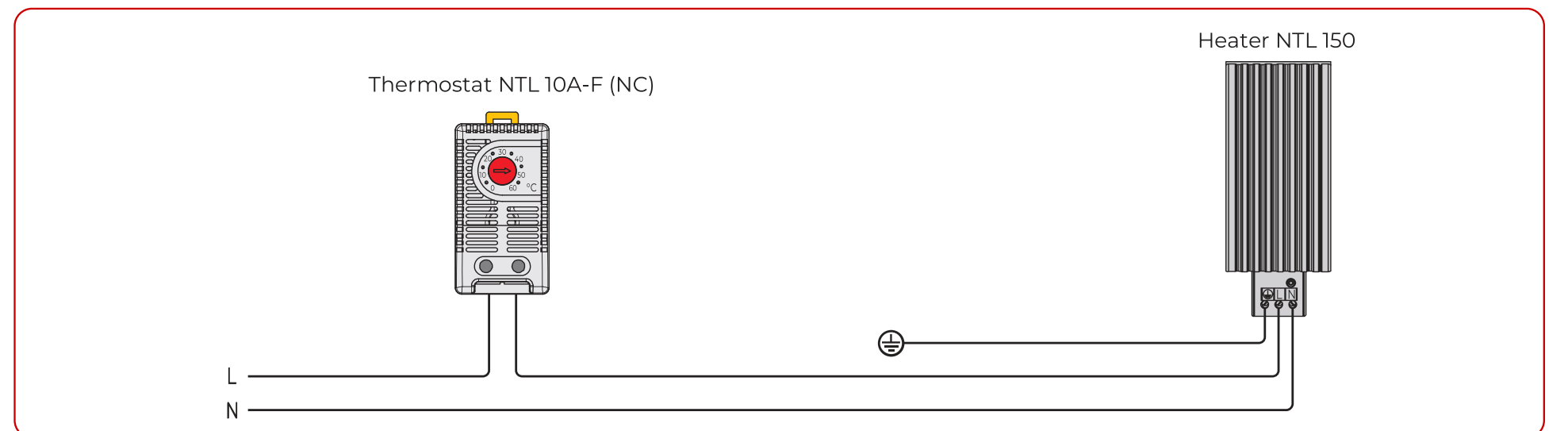
Technical Data

CE RoHS ISO9001 Patent

NTL 150	
Operating voltage	120-260V AC/DC or 12V DC or 24V DC or 48V DC* (min. 110V, max. 265V)
Heating element	PTC resistor - temperature limiting
Heater body	extruded aluminium profile, anodised
Connection	3 pressure clamps for stranded wire 0.5-1.5mm ² (with wire end ferrule) and rigid wire 0.5-2.5mm ²
Connection casing	plastic according to UL94 V-0, black
Mounting	clip for 35mm DIN rail, EN 60715
Fitting position	vertical airflow (air outlet up, connection on bottom)
Operating/Storage temperature	-45 to +70°C (-49 to +158°F)
Operating/Storage humidity	max. 90% RH (non-condensing)
Protection type/Protection class	IP20 / I (earthed)
Accessory	screw fixing, Art. No. 09024.0-00 (1 packing unit = 2 pieces)
Note	other voltages on request

* Operating with voltages below 140V AC/DC reduces heating performance by approx. 10%.

Examples of Connection



 Heater

 Filter fan, Cooling equipment, Signal device

Part. No.	Heating capacity *	Length (L)	Weight (approx.)
150015	15W	65mm	0.3kg
150030	30W	65mm	0.3kg
150050	50W	80mm	0.4kg
150075	75W	140mm	0.5kg
1500100	100W	140mm	0.5kg
1500150	150W	220mm	0.7kg

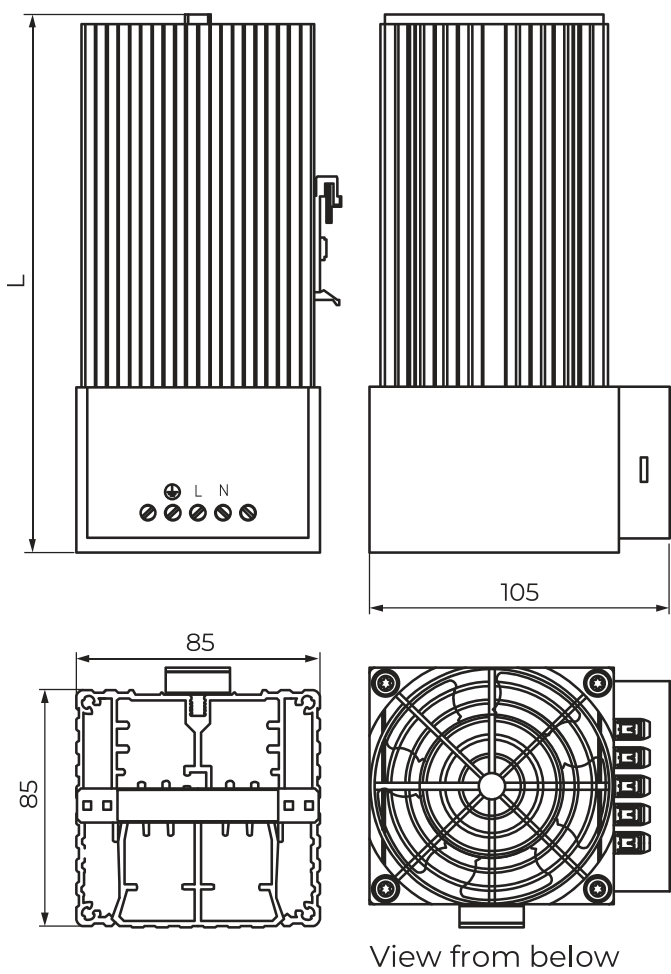
* at +20°C (+68°F) ambient temperature

Compact Semiconductor Fan Heater

NTL 400 | 150W to 500W



Patent Number:
ZL 2014 3 0246233.0



- **With ON/OFF indicator, when heating, indicator will be on, when stop heating, indicator will be off.**
- **Compact Design**
- **Clip fixing**
- **Long service life**
- **Temperature safety cut-out**

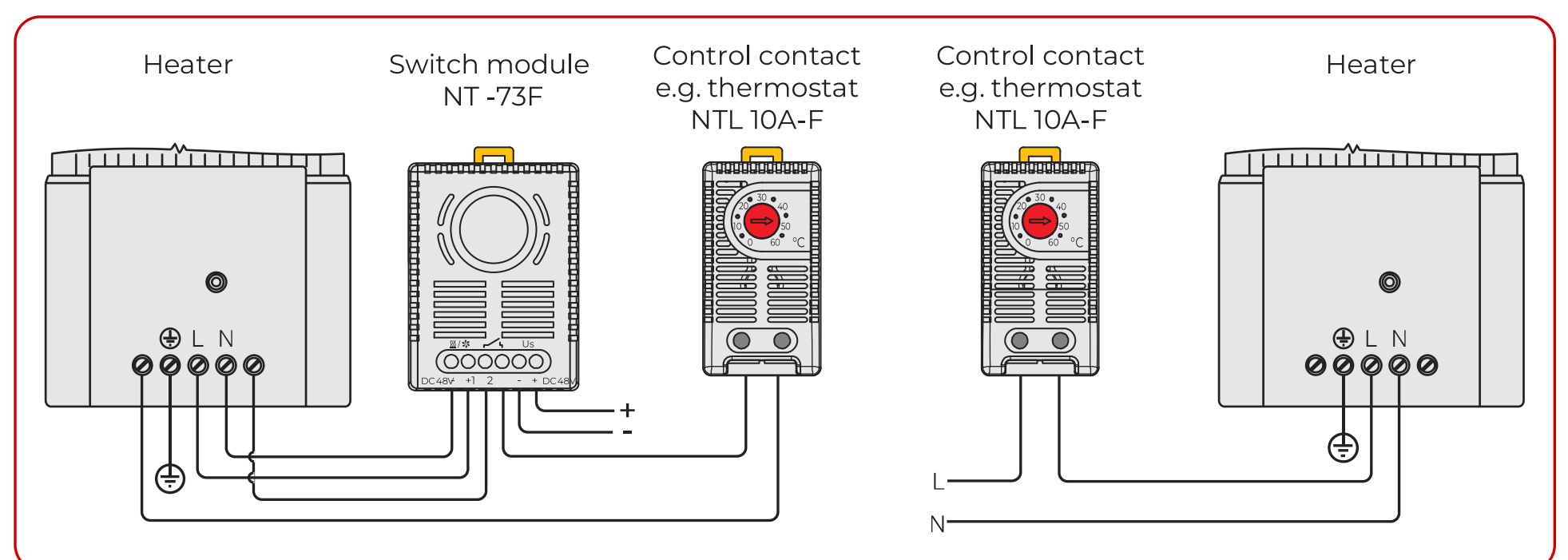
Compact fan heater prevents formation of condensation and frost. The integrated high-performance axial fan provides an evenly distributed interior air temperature in enclosures with electric/ electronic components.

Technical Data

CE RoHS ISO9001 Patent

NTL 400	
Operating voltage	230VAC
Heating element	PTC resistor - temperature limiting
Temperature safety cut-out	to protect against overheating in case of fan failure, automatic reset
Heater body	anodised extruded aluminium profile
Surface temperature	max. +75°C (500W)
Axial fan, ball bearing	airflow, free flow 45m ³ /h (50Hz) or 54m ³ /h (60Hz) service life 50,000h at +25°C (+77°F)
Connection	internal connection terminal 1.5mm ² with strain relief, clamping torque 0.8Nm max.
Connection casing	plastic according to UL94 V-0, black
Mounting	clip for 35mm DIN rail, EN 60715
Fitting position	vertical airflow (air outlet up)
Operating/Storage temperature	-45 to +70°C (-49 to +158°F)
Operating/Storage humidity	max. 90% RH (non-condensing)
Protection type/Protection class	IP20 / I (earthed)
Note	other voltages on request

Examples of Connection



Part. No.	Heating capacity	Operating voltage	Length (L)	Weight (approx.)
400300.0	300W	230VAC, 50/60Hz	222mm	1.4kg

Filter Fan: NTL-F120, NTL-FF120

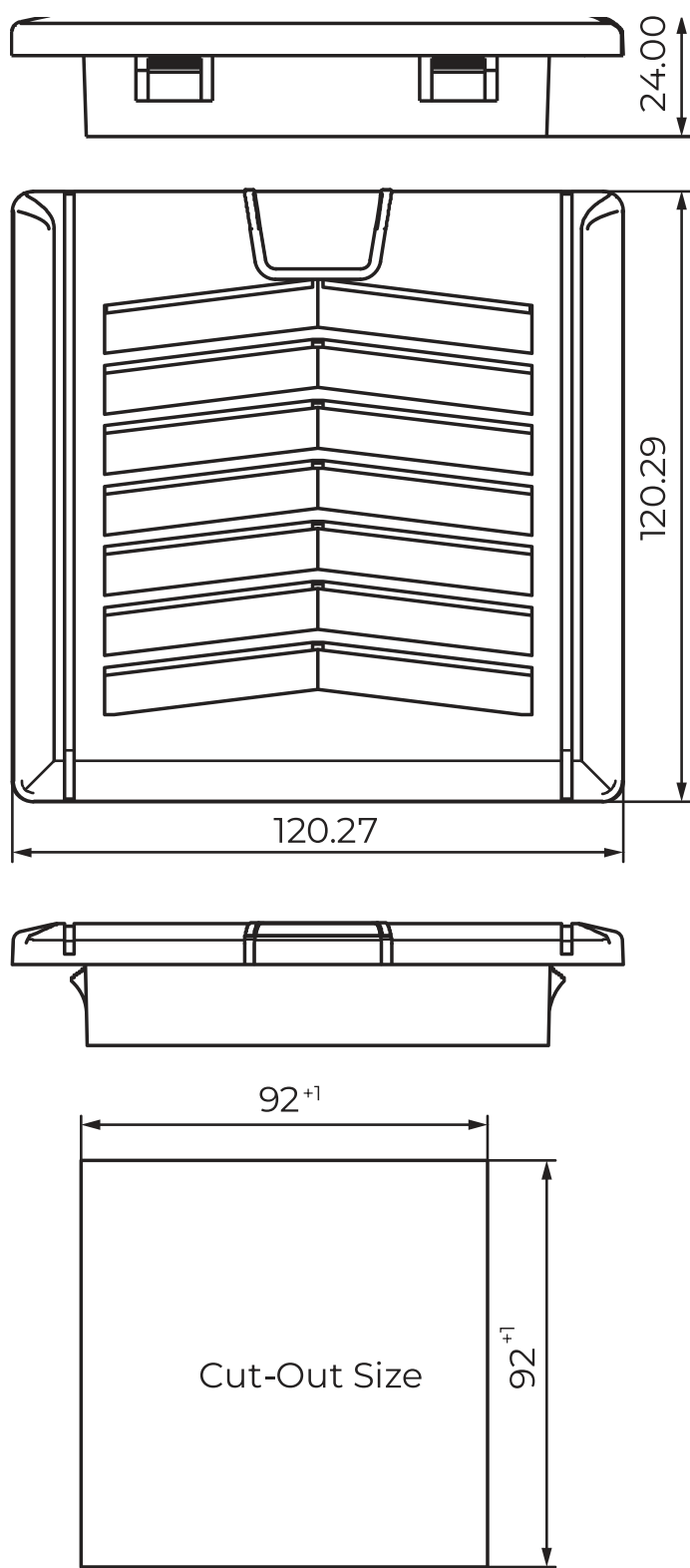
NTL-F120 | Exit Filter



NTL-FF120 | Filter Fan



Patent Number: ZL 2019 3 0322398.4



Technical Data

NTL-FF120	
Axial fan, ball bearing	service life L10 at +40°C (+104°F): min. 50,000h fan body aluminium, rotor metal
Connection	2 stranded wires, 300mm
Enclosure cut-out	92×92 ⁺¹ mm
Mounting frame	screw fixing type, easy to open the cover
Filter mat	G4 acc. to DIN EN 779, filtering degree 94%
Filter material	ABS material confirm to RoHS
Operating/Storage temperature	-25 to +65°C (-13 to +149°F) / -40 to +70°C (-40 to +158°F)
Operating/Storage humidity	max. 90% RH (non-condensing)
Protection type/Protection class	IP54 / I (earthed)

Examples of Connection

Part. No.	Power supply	Fan size (mm)	Air flow rate (free blow) (m ³ /h)	Air flow rate (with mat) (m ³ /h)	Power consumption (W)	Current consumption (A)	Noise level (dBA)
F120	-	without fan	-	-	-	-	-
FF120-230B-C	230VAC	80×80×38	39/48	24	13/10	0.078/0.062	27/30
FF120-24-C	24VDC	80×80×38	84	30	4.8	0.2	30

Filter Fan: NTL-F152, NTL-FF152

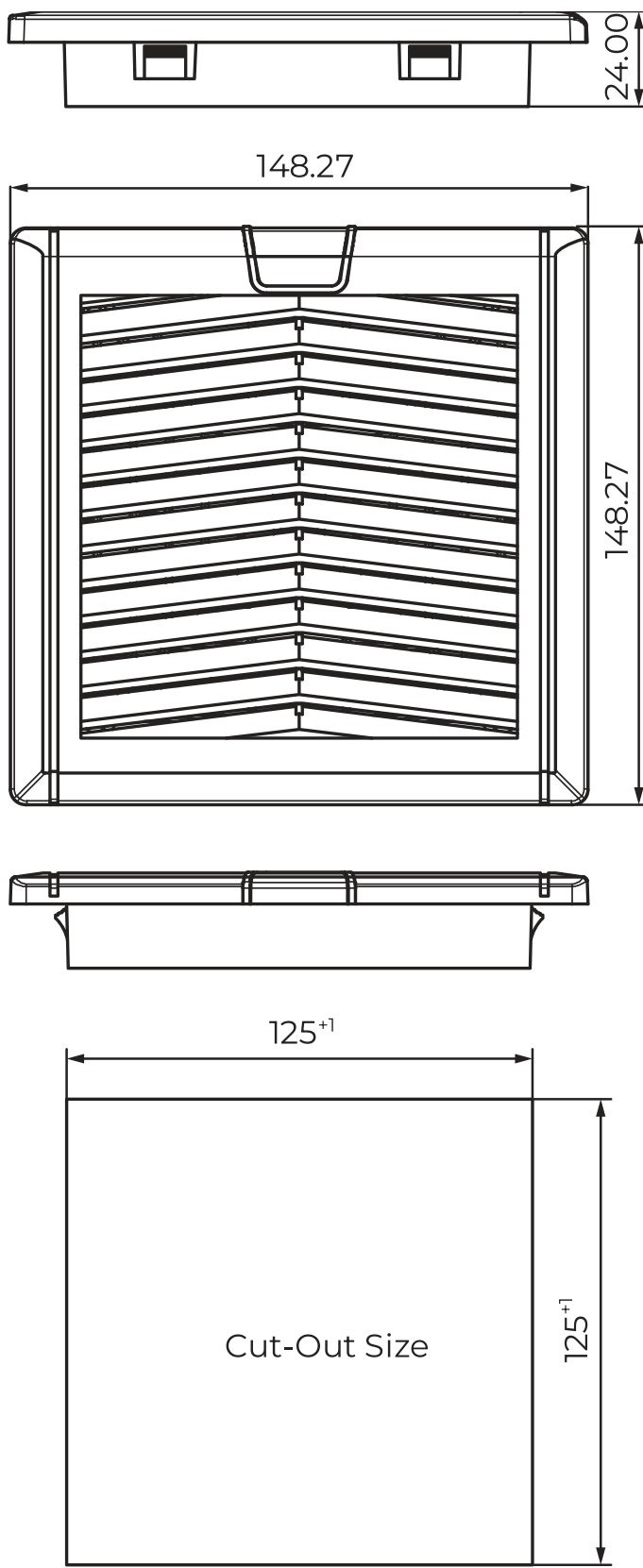
NTL-F152 | Exit Filter



NTL-F152 | Filter Fan



Patent Number: ZL 2019 3 0322398.4



Technical Data

NTL-FF152	
Axial fan, ball bearing	service life L10 at +40°C (+104°F): min. 37,000 h fan body aluminium, rotor metal
Connection	2 stranded wires, 160mm
Enclosure cut-out	125×125 ⁺¹ mm
Mounting frame	screw fixing type, easy to open the cover
Filter mat	G4 acc. to DIN EN 779, filtering degree 94%
Filter material	ABS material confirm to RoHS
Operating/Storage temperature	-25 to +65°C (-13 to +149°F) / -40 to +70°C (-40 to +158°F)
Operating/Storage humidity	max. 90% RH (non-condensing)
Protection type/Protection class	IP54 / I (earthed)

Examples of Connection

Part. No.	Power supply	Fan size (mm)	Air flow rate (free blow) (m ³ /h)	Air flow rate (with mat) (m ³ /h)	Power consumption (W)	Current consumption (A)	Noise level (dBA)
F152	-	without fan	-	-	-	-	-
FF152-230B-C	230VAC	120×120×38	138/162	100	21/18	0.12	43/48
FF152-24-C	24VDC	120×120×38	180	120	9.6	0.4	48

Filter Fan: NTL-F204, NTL-FF204

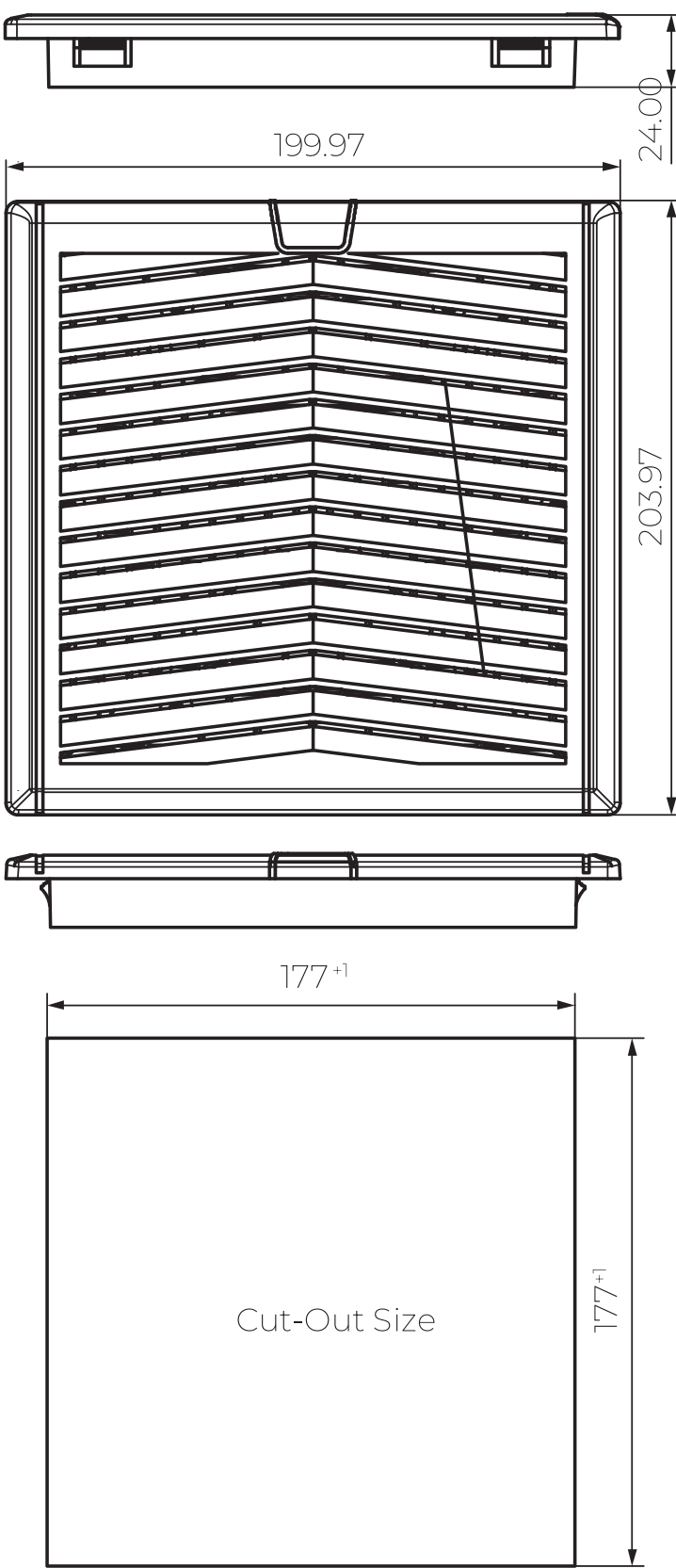
NTL-F204 | Exit Filter



NTL-F204 | Filter Fan



Patent Number: ZL 2019 3 0322398.4



Technical Data

NTL-FF204	
Axial fan, ball bearing	service life L10 at +40°C (+104°F): min. 65,000h fan body aluminium, rotor metal
Connection	3-pole clamp for 2.5mm ² , clamping torque 0.8Nm max.
Enclosure cut-out	177×177 ⁺¹ mm
Mounting frame	screw fixing type, easy to open the cover
Filter mat	G4 acc. to DIN EN 779, filtering degree 94%
Filter material	ABS material confirm to RoHS
Operating/Storage temperature	-25 to +65°C (-13 to +149°F) / -40 to +70°C (-40 to +158°F)
Operating/Storage humidity	max. 90% RH (non-condensing)
Protection type/Protection class	IP54 / I (earthed)

Examples of Connection

Part. No.	Power supply	Fan size (mm)	Air flow rate (free blow) (m ³ /h)	Air flow rate (with mat) (m ³ /h)	Power consumption (W)	Current consumption (A)	Noise level (dBA)
F204	-	without fan	-	-	-	-	-
FF204-230E-C	230VAC	172×150×51	272/316	200	26/28	0.23/0.2	52/62
FF204-24B-C	24VDC	172×150×51	374	260	12	0.5	48

Filter Fan: NTL-F255, NTL-FF255

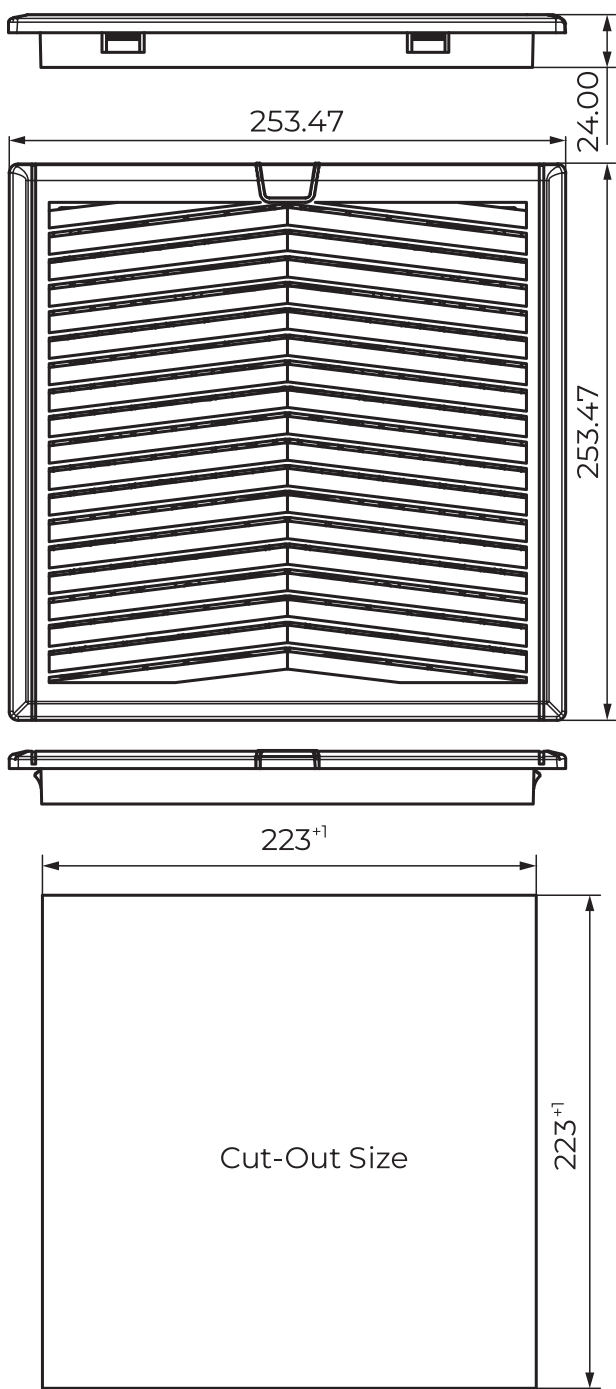
NTL-F255 | Exit Filter



NTL-F255 | Filter Fan



Patent Number: ZL 2019 3 0322398.4



Technical Data

NTL-FF255	
Axial fan, ball bearing	service life L10 at +40°C (+104°F): min. 56,000h rotor metal
Connection	3-pole clamp for 2.5mm ² , clamping torque 0.8Nm max.
Enclosure cut-out	223x223 ⁺¹ mm
Mounting frame	screw fixing type, easy to open the cover
Filter mat	G4 acc. to DIN EN 779, filtering degree 94%
Filter material	ABS material confirm to RoHS
Operating/Storage temperature	-25 to +65°C (-13 to +149°F) / -40 to +70°C (-40 to +158°F)
Operating/Storage humidity	max. 75% RH (non-condensing)
Protection type/Protection class	IP54 / I (earthed)

Examples of Connection

Part. No.	Power supply	Fan size (mm)	Air flow rate (free blow) (m ³ /h)	Air flow rate (with mat) (m ³ /h)	Power consumption (W)	Current consumption (A)	Noise level (dBA)
F255	-	without fan	-	-	-	-	-
FF255-230D-C	230VAC	200×200×60	800/1000	400	48/63	0.23/0.28	63/66
FF255-24B-C	24VDC	200×200×60	1008	480	24	1	68

Filter Fan With Rain-Resistance Hood: NTL-F152-W, NTL-FF152-W

NTL-F152-W | Exit Filter



NTL-FF152-W | Filter Fan



Patent Number: ZL 2019 3 0322398.4

Fan filters play a crucial role in maintaining an optimal climate within enclosures and cabinets housing electrical/electronic components. By introducing filtered outside air into the enclosure while expelling heated internal air, they effectively lower the interior temperature, preventing the formation of localized hot spots and safeguarding electronic components from overheating.

The Fan filter series incorporates cutting-edge air-flap outlet technology, enabling it to achieve a remarkable airflow rate. Its innovative ratchet mechanism ensures secure mounting, providing both stability and a tight seal. This standard installation configuration situates the filter fan in the lower section of the enclosure, facilitating the expulsion of stale air from the enclosure (airflow direction “Out”). Comprising a filter fan and exit filter, this system offers comprehensive ventilation solutions for various installations.

Technical Data

NTL-FF152-W	
Axial fan, ball bearing	service life L10 at +40°C (+104°F): min. 37,000 h fan body aluminium, rotor metal
Connection	2 stranded wires, 160mm
Enclosure cut-out	125x125 ⁺¹ mm
Mounting frame	screw fixing type, easy to open the cover
Filter mat	G4 acc. to DIN EN 779, filtering degree 94%
Filter material	ABS material confirm to RoHS
Operating/Storage temperature	-40 to +70°C (-40 to +158°F)
Operating/Storage humidity	max. 90% RH (non-condensing)
Protection type/Protection class	IP56 / I (earthed)

Examples of Connection

Part. No.	Power supply	Fan size (mm)	Air flow rate (free blow) (m ³ /h)	Air flow rate (with mat) (m ³ /h)	Power consumption (W)	Current consumption (A)	Noise level (dBA)
F152W	-	0.156	without fan	-	-	-	-
152W230B	230VAC	0.64	120×120×38	138/162	19/15	0.11/0.105	43/48
152W24	24VDC	0.4068	120×120×38	179.76	9.6	0.4	48

Pressure Compensation Device

DA 284 / 284M12

- High degree of protection
- Waterproof membrane
- Easy to install

Technical Data

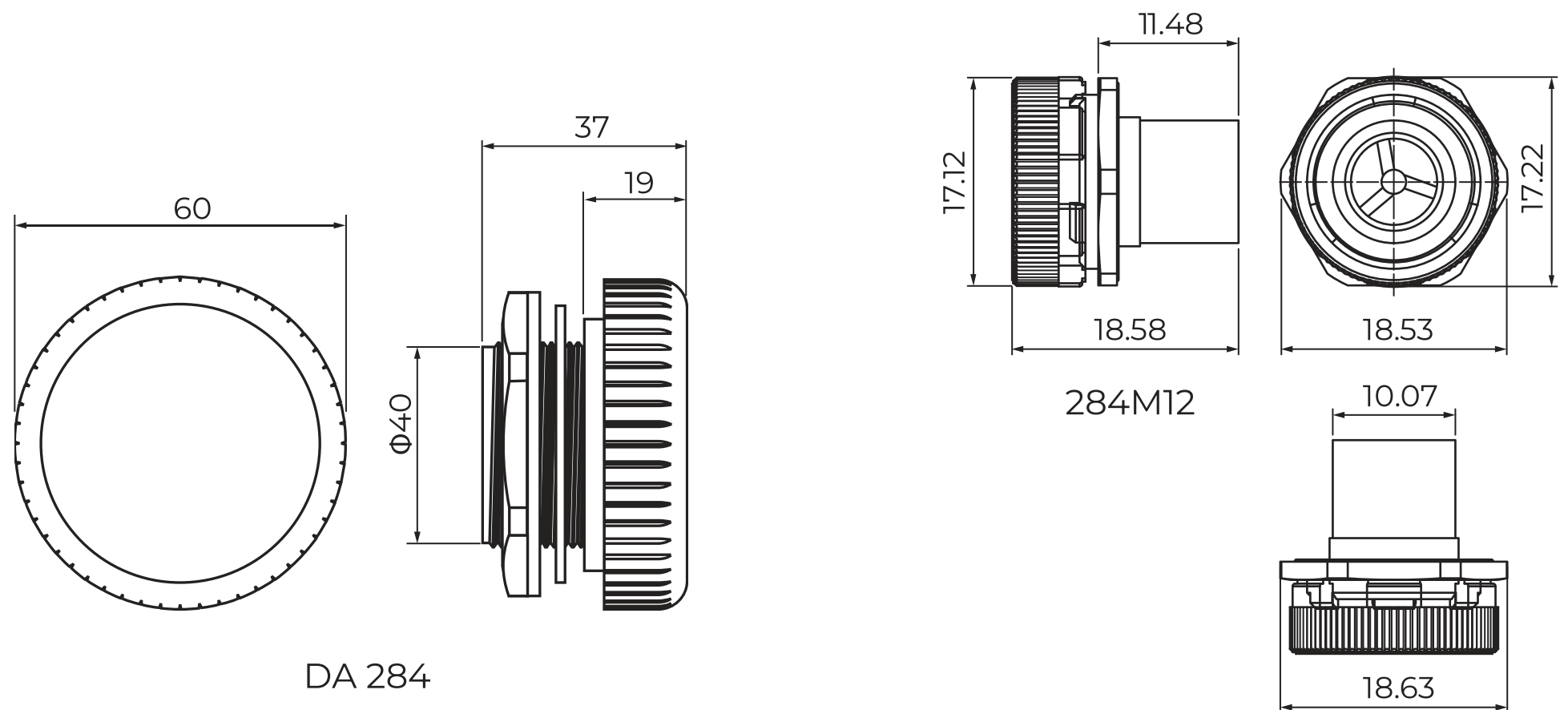
CE RoHS ISO9001 Patent

DA 284

Mounting	thread M40×1.5 or M12×1.5 with nut
Torque	M40: 5Nm (max. 10Nm), M12: 0.5Nm (max. 1Nm)
Depth in enclosure	M40: approx. 16mm, M12: approx. 8mm
Sealing	sealing gasket NBR
Material	plastic, light grey
Filter	waterproof membrane
Dimensions	M40: Ø60×37mm, M12: Ø17×17.5mm
Fitting position	variable
Protection	IP66



Installation: Make cut-out Ø40.5+0.5mm in enclosure wall for size M40 or Ø12+0.2mm for size M12, and mount pressure compensation device with nut. Please make sure that the sealing gasket is put in place on the outer side panel of the enclosure. For optimal pressure compensation we recommend to use two devices on opposite sides towards the top of the enclosure.



Part. No.	Protection type	Weight (approx.)
28400.0-01	IP66	45g
284M12	IP66	20kg



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