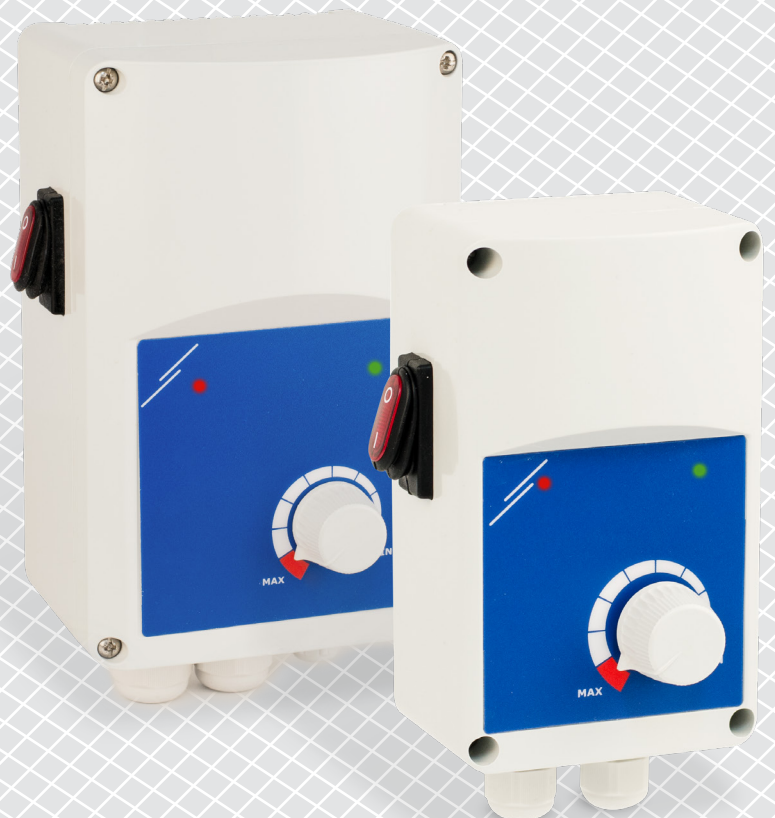


# ITRS-9

## ELECTRONIC FAN SPEED CONTROLLER

Mounting and operating instructions



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## SAFETY AND PRECAUTIONS

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Read all the information, the datasheet, Modbus map, mounting and operating instructions and study the wiring and connection diagram before working with the product. For personal and equipment safety, and for optimum product performance, make sure you entirely understand the contents before installing, using or maintaining this product.



For safety and licensing (CE) reasons, unauthorised conversion and /or modifications of the product are inadmissible.



The product should not be exposed to abnormal conditions, such as extreme temperatures, direct sunlight or vibrations. Long-term exposure to chemical vapours in high concentration can affect the product performance. Make sure the work environment is as dry as possible; avoid condensation.



All installations shall comply with local health and safety regulations and local electrical standards and approved codes. This product can only be installed by an engineer or a technician who has expert knowledge of the product and safety precautions.



Avoid contacts with energised electrical parts. Always disconnect the power supply before connecting, servicing or repairing the product.



Always verify that you apply appropriate power supply to the product and use appropriate wire size and characteristics. Make sure that all the screws and nuts are well tightened and fuses (if any) are fitted well.



Recycling of equipment and packaging should be taken into consideration and these should be disposed of in accordance with local and national legislation / regulations.



In case there are any questions that are not answered, please contact your technical support or consult a professional.

## PRODUCT DESCRIPTION

The ITRS9 series of electronic speed controllers regulate the speed of single-phase (110–240 VAC / 50–60 Hz) voltage controllable motors by varying the supplied voltage. The ITRS9 controllers offer automatic power supply detection, thermal contacts (TK) for motor overheating protection, an alarm output, NO (open contact) and NC (closed contact) inputs for remote start / stop. The minimum and maximum speed are internally adjusted via trimmers. The series features an unregulated output for connecting a valve, lamp, damper, etc. The output is regulated by a potentiometer in the range between the minimum output voltage and the supply voltage. There are two start-up modes - kick start and soft start, selectable via a jumper.

## ARTICLE CODES

Code	Rated max. current, [A]	Fuse (5*20 mm), [A]
ITRS9-15-DT	1,5	F 3,15 A H 250 VAC
ITRS9-30-DT	3,0	F 5,0 A H 250 VAC
ITRS9-50-DT	5,0	F 8,0 A H 250 VAC
ITRS9-60-DT	6,0	(6,3*32) F 10,0 A H 250 VAC
ITRS9100-DT	10,0	(6,3*32) F 16,0 A H 250 VAC

## INTENDED AREA OF USE

- Fan speed control of voltage controllable motors in ventilation systems
- For indoor use only

## TECHNICAL DATA

- Supply voltage: 110–240 VAC / 50–60 Hz
- Power switch with LED indication
- Automatic supply voltage detection
- Regulated output current rating:  $I_{max.} = 1,5 \text{ A} / 3 \text{ A} / 5 \text{ A} / 6 \text{ A} / 10 \text{ A}$ , depending on the product version
- Unregulated output: 230 VAC,  $I_{max.} = 2 \text{ A}$
- Alarm output: 230 VAC,  $I_{max.} 0,5 \text{ A}$ 
  - ▶ Alarm status: 230 VAC
  - ▶ No alarm status: 0 VAC
- Soft start or kick start mode
- Trimmers for minimum and maximum output voltage adjustment
- Normal operation green LED indication
- Alarm operation red LED indication
- Enclosure:
  - ▶ plastic R-ABS, UL94-V0
  - ▶ grey colour (RAL 7035)
- Protection standard: IP54 (according to EN 60529)
- Storage temperature: -40–50 °C
- Operating ambient conditions:
  - ▶ temperature: -20–35 °C
  - ▶ relative humidity: 5–95 % rH (non-condensing)

## STANDARDS

- Low Voltage Directive 2014/35/EU
- EMC 2014/30/EU:
  - ▶ EN 61000-6-2: 2005 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments. Amendment AC:2005,
  - ▶ EN 61000-6-3:2007 Electromagnetic compatibility (EMC) - Generic standards. Emission standard for equipment in residential environments. Amendment A1:2011 and AC:2012
  - ▶ EN 61326-2-3:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-3: Particular requirements - Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning
- RoHS Directive 2011/65/EU



## WIRING AND CONNECTIONS

<b>L</b>	Line, power supply (110–240 VAC / 50–60 Hz)
<b>N</b>	Neutral
<b>L1</b>	Unregulated output, $I_{max} = 2\text{ A}$
<b>PE</b>	Earth terminal
<b>U2</b>	Regulated output to the motor - neutral
<b>U1</b>	Regulated output to the motor - line
<b>TK</b>	Thermal cut-out contact
<b>AL</b>	Alarm output, 230 VAC, $I_{max} = 0,5\text{ A}$
<b>NO</b>	Normally open contact
<b>NC</b>	Normally closed contact
<b>Connections</b>	Cable cross section: max. $2,5\text{ mm}^2$ ; Cable gland clamping range: 5–10 mm (ITRS9-60 & ITRS9100) 3–6 mm

## OPERATIONAL DIAGRAMS

<p><b>Control curve</b></p>	<p><b>Kick start mode</b></p>
<p><b>Ranges of minimum and maximum output voltage adjustment trimmers</b></p>	<p><b>Soft start mode</b></p>

## ATTENTION

To disable the ON / OFF switch (1,5 A and 3,0 A versions ONLY!) connect the 230 VAC supply voltage to the unregulated output (L1). In this case, do not connect the power supply to L.

## MOUNTING INSTRUCTIONS IN STEPS

Before you start mounting the unit, read carefully **"Safety and Precautions"**. Choose a smooth surface for installation (a wall, panel, etc.).

### Follow these steps:

1. Make sure that the controller is switched off.
2. Unscrew the front cover and open the enclosure. Mind the wires that connect the potentiometer with the printed circuit board.
3. Fix the unit to the wall or panel using the provided screws and dowels. Mind the correct mounting position and unit mounting dimensions. (See **Fig. 1 Mounting dimensions** and **Fig. 2 Mounting position**).

**Fig. 1 Mounting dimensions**

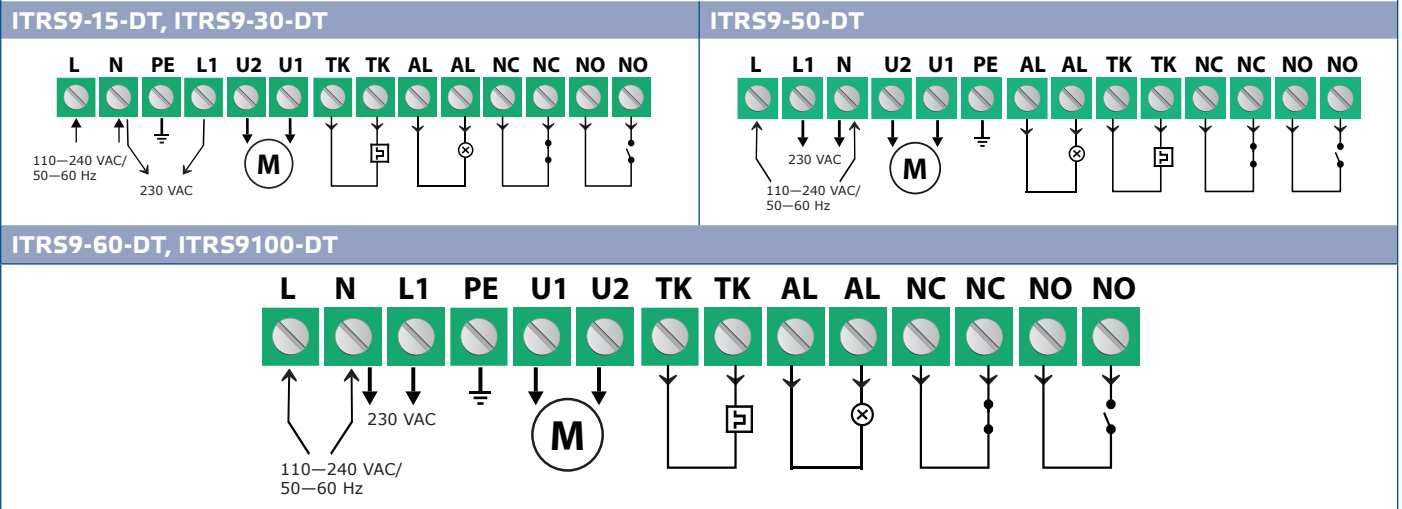
Article code	A	B	C	D	E	F
ITRS9-15-DT	162 mm	96 mm	75 mm	71 mm	108,8 mm	Ø 4,2
ITRS9-30-DT	162 mm	96 mm	75 mm	71 mm	108,8 mm	Ø 4,2
ITRS9-50-DT	162 mm	96 mm	93 mm	71 mm	108,8 mm	Ø 4,2
ITRS9-60-DT	205 mm	124 mm	97 mm	102 mm	140 mm	Ø 4,6
ITRS9100-DT	205 mm	124 mm	97 mm	102 mm	140 mm	Ø 4,6

**Fig. 2 Mounting position**

Correct	Incorrect

4. Insert the cables through the cable glands and do the wiring according to the wiring diagram (see **Fig. 3**) while adhering to the information from section **"Wiring and connections"** above.
  - 4.1 Connect the motor / fan (terminals U2, U1 and PE);
  - 4.2 Connect the power supply terminals (L and N);
  - 4.3 If applicable, connect the unregulated output (terminals L1 and N). It can be used to supply a 230 VAC valve, lamp, etc. L1 is powered while the regulated output is active and connecting an item to it is optional.
  - 4.4 Connect the motor overheating protection (terminals TK). If no motor overheating protection is available, the two TK connection points must be connected via a bridge. As standard, there is a bridge between the TK terminals.
  - 4.5 If applicable, connect the alarm output (terminals AL).
  - 4.6 If applicable, connect the normally closed and normally open contacts for external or remote ON / OFF switching (terminals NO, NC).

**Fig. 3 Wiring and connections**



**ATTENTION**

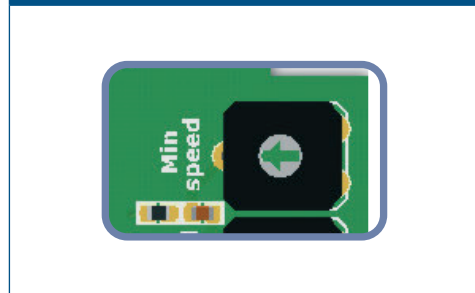
*Make sure you use cables with an appropriate diameter.*

**ATTENTION**

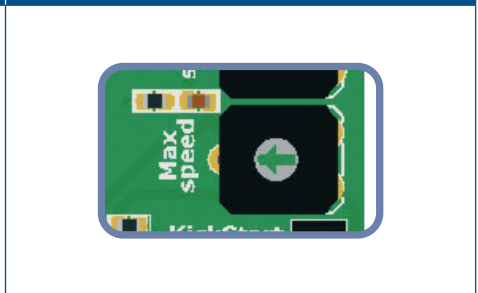
*Make sure the connections are correct before you power the unit.*

- Adjust the minimum output voltage using the minimum speed trimmer (if necessary). The factory pre-set is 45 % and it can vary within the range 30–60 % of the supplied voltage. See **Fig. 4 Min. speed trimmer**.
- Adjust the maximum output voltage using the maximum speed trimmer (if necessary). The factory pre-set is 100 % and it can vary within the range 70–100 % of the supplied voltage. See **Fig. 5 Max. speed trimmer**.

**Fig. 4 Min. speed trimmer**

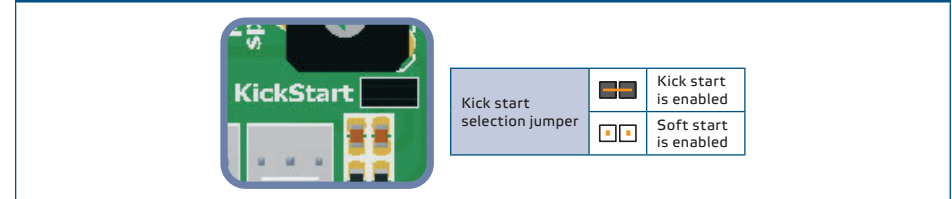


**Fig. 5 Max. speed trimmer**



- Select kick start or soft start using the jumper shown in **Fig. 6 Kick start jumper**. The kick start duration time is 8–10 s. By default the jumper is connected, i.e. the pre-set mode is kick start. Keep the jumper installed or remove it depending on your start mode selection.

**Fig. 6 Kick start jumper**



indicates closed position of the jumper)

- Close and fix the cover.
- Switch on the power supply.

## VERIFICATION OF INSTALLATION INSTRUCTIONS

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### ATTENTION

*Use only tools and equipment with non-conducting handles when working on electrical devices.*

1. Close the NC (normally closed) contact pair.
2. Open the NO (normally open) contact pair.
3. Close the TK (thermal) contact pair.
4. If "Kick start" mode has been selected, i.e. the jumper is connected, make sure that the motor runs at maximum speed for 8–10 seconds. After this period, it will run according to the potentiometer position. If "Soft start" mode has been enabled, the motor goes from minimum speed to the speed selected by the potentiometer during the first 8–10 seconds.
5. If this is not the case, check the connections and the settings again.

#### LED indications

**The two LEDs on the controller cover indicate the following:**

1. If the green LED is ON, it indicates normal operation.
2. Blinking green LED indicates activated NC or NO contact. The controller stops.
3. If the red LED is ON, it indicates TK detection. The motor is overheated, therefore the controller stops because alarm is activated. In this case, you must restart the controller via the illuminated ON/OFF switch.
4. If both LEDs blink, the potentiometer is disconnected and the controller stops.

## TRANSPORT AND STORAGE

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Avoid shocks and extreme conditions; stock in the original packing.

## WARRANTY AND RESTRICTIONS

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Two years from the delivery date against defects in manufacturing. Any modifications or alterations to the product after the date of publication relieve the manufacturer of any responsibilities. The manufacturer bears no responsibility for any misprints or mistakes in this data.



### ATTENTION

*Use only fuses of the type and rating specified above; otherwise, loss of warranty will ensue.*

## MAINTENANCE

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In normal conditions this product is maintenance-free. If soiled, clean with a dry or damp cloth. In case of heavy pollution, clean with a non-aggressive product. In these circumstances the unit should be disconnected from the supply. Pay attention that no fluids enter the unit. Only reconnect it to the supply when it is completely dry.