

XV110K - XV150K

FAN SPEED CONTROLLERS

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1 GENERAL WARNING

1.1 Please read before using this manual

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.

1.2 Safety Precautions

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical connections before any kind of maintenance.
- The instrument must not be opened.
- In case of failure or faulty operation send the instrument back to the distributor or to "Dixell s.r.l." (see address) with a detailed description of the fault.
- Consider the maximum power of the load (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.
- Fit the instrument away from heater sources and be sure to have sufficient air flow to allow a good thermal exchange.

2 GENERAL DESCRIPTION

The models **XV110K** (1000Watt) and **XV150K** (5000Watt) are speed controllers suitable for industrial and refrigeration applications in particular to control the air flow in condensing and evaporating and condensing processes. The regulation is made through 4 trimmers placed on the board while the load control is executed by a TRIAC with phase cut. The controllers are configurable to start the fans at the maximum speed for 10 seconds. The input signal can be ordered choosing among temperature probe NTC, 4/20mA or 0/1Vdc and 0/10Vdc signals.

3 OPERATING

Example of functioning with a condensing unit (direct): the probe must be fit where the sensor detects the most critic place of the condenser. Calibrate the Set trimmer to the temperature (or pressure) at which the fan runs at the maximum speed. Then calibrate the Diff trimmer to set the temperature (or

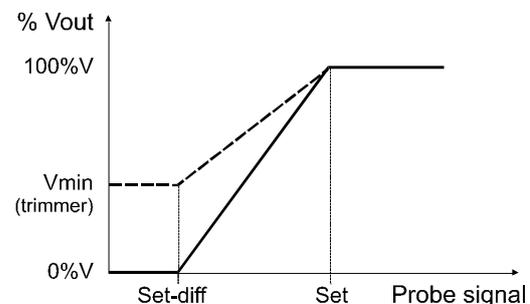
pressure) differential at which the fan is stopped. E.g. if the Set is 40°C and the Diff is 10°C, when the temperature is above 40° the fan runs at maximum speed, if the temperature is between 30° and 40° the fan speed is proportionally controlled. Below 30°C the fan is stopped.

4 COMMANDS

- Trimmer SET:** by turning clockwise this trimmer, the set is changed from the minimum to the maximum value (see table of the default values).
- Trimmer differential:** by turning clockwise this trimmer, the differential is changed from the minimum to the maximum value (see table of the default values).
- Trimmer V min:** by turning clockwise this trimmer, the minimum fan speed can be changed from 0 to 50% of the maximum voltage output.
- Trimmer Cut Off:** by turning clockwise this trimmer, the fan cut-off can be changed from 10 to 30% of the maximum voltage output.
- Green led:** this led signals when the load is being controlled.

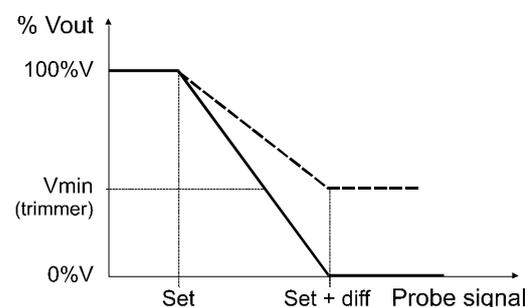
5 DIRECT AND INVERSE CONTROL

Direct action: if the input signal increases, the voltage output proportionally increases (condensing or cooling applications).



If the input signal is higher than the Set, the output signal is 230 Volt (fans are running at the maximum speed). When the signal decreases and enters the range between the Set and Set-Diff the output signal follows the temperature variation. Below the Set-diff value the output signal is always 0V (if no Vmin has been set).

Inverse action: if the input signal increases, the voltage output proportionally decreases (evaporating or heating applications).



If the input signal is lower than the Set, the output signal is 230 Volt (fans are running at the maximum speed). When the signal increases and enters the range between the Set and Set+Diff the output signal follows the temperature variation. Above the Set+diff value the output signal is always 0 Volt (if no Vmin has been set).

6 CONTROLS

6.1 Minimum fan speed

To avoid that the fan can be damaged with low voltage output, it is possible set a minimum voltage output (minimum speed). The range is selectable from 0 to 50% of the power supply.

6.2 Cut-off function

The Cut-off function drastically reduces the output to 0V, when the voltage on the load is lower than a percentage set with this trimmer. The range is selectable from 10 to 30% of the power supply. Example: if set to the middle position (15%), when the voltage on the load is lower than 15% of 230V, the fan immediately are stopped.

6.3 MAXIMUM FAN SPEED AT START UP (J2)

By closing the external jumper J2, each time that the fan restarts, it will run at maximum speed for 10 seconds.

6.4 Trigger signals (Master / slave J3)

To control different loads having more than the rating plate of the instrument, the trigger out can be used to connect another speed controller provided with the trigger in terminals.

MASTER

By closing the 2-3 position of the jumper J3 the instrument is set as master, therefore the control function is repeated through terminals 5 and 6 to a slave instrument.

SLAVE

By closing the 1-2 position jumper J3 the instrument is set as slave, therefore it can receive the trigger signal to the terminals 7 and 8, the controller will follow exactly the function executed by the master instrument itself.

When using the three phases power supply, both the Master and the Slave must be connected to the same phase.

6.5 Changing the action type with current or voltage input models (J2)

All the instruments having a 4/20mA or 0/1Vdc and 0/10Vdc inputs, can change the action by means of J2 jumper. Jumper closed = direct action (condensing), jumper open = reverse action (evaporating).

7 ANTI CONDENSING KIT (OPTIONAL)

This heater element, called XV -ACK, can be used to warm the air inside the IP55 box, in order to permit the correct functioning of the instrument when it is used in critical applications up to -40°C below zero. In this case connect the element on the faston near the power supply terminals 4 and 5. The order code for this optional heater element is DG 000001 00.

8 INSTALLING AND MOUNTING

The instruments shall be mounted on panel. The temperature range allowed for correct operation is 0 - 60 °C. By using the heater element XV-ACK, the temperature of the environment where the instrument is placed, can reach -40 °C

Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate nearby the instrument.

9 ELECTRICAL WIRING

The instruments are provided with Kress screw terminals to connect the input signals and Faston 6.3mm to connect the power supply and the load. The 6.3mm faston placed on the heat sink must be connected to the ground. The two 6.3mm faston terminals near the power supply terminals 4 and 5, can be used to connect the heater XV-ACK when the temperature of the outside environment is too low.

Before connecting cables make sure the power supply complies with the instrument's requirements. Separate the input signal cable from the power supply cables, from the outputs and the power connections. Do not exceed the maximum current allowed on the output terminals.

10 OUTPUT STATUS FOR FAULTY PROBE

Open probe (direct action)	0 Volt
Short circuited probe (direct action)	0 Volt

Open probe (inverse action)	230 Volt
Short circuited probe (inverse action)	230 Volt

11 TECHNICAL DATA

Housing: open board or IP55 box.

Case: plastic box (only for IP55 model).

Mounting: panel with screw.

Connections: KRESS terminals;
Faston 6.3mm for power loads.

Power supply: 230Vac, ± 10% 50/60Hz.

Power absorption: 1VA max.

Maximum load: XV110K controls up to 1000Watt .

XV150K controls up to 5000Watt.

Input: NTC or 4/20mA or 0/1 and 0/10Vdc.

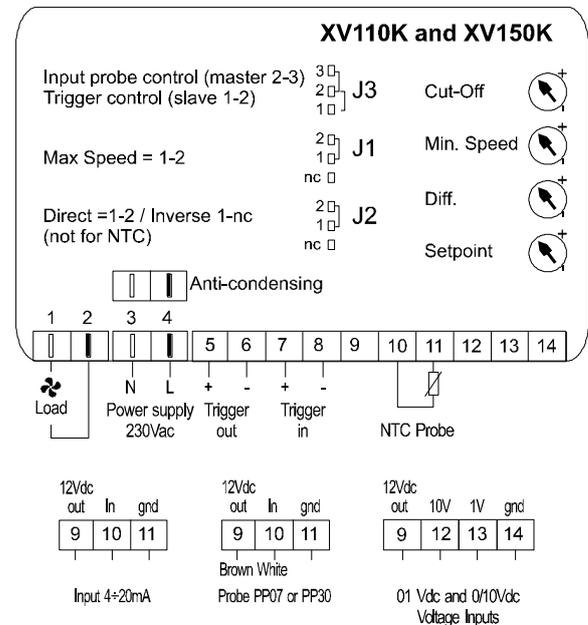
Range: depending on the probe.

Operating temperature: 0÷60 °C, down to -40°C with the XV-ACK Heater element.

Storage temperature: -30÷85 °C.

Relative humidity: 20÷85% (not condensing).

12 CONNECTIONS



13 DEFAULT VALUES

Input	Action	Set range	Diff
NTC	Direct	0÷60°C	1÷30°C
NTC	Reverse	-40÷+10°C	1÷30°C
4/20mA	Direct	4÷20mA	1÷10mA
4/20mA	Reverse	4÷20mA	1÷10mA
0/1Vdc	Direct	0÷1Vdc	0÷0,5V
0/1Vdc	Reverse	0÷1Vdc	0÷0,5V
0/10Vdc	Direct	0÷10Vdc	0÷5V
0/10Vdc	Reverse	0÷10Vdc	0÷5V