TLR-D5F with OPU-D5F
Intelligent PI fan coil controller for floating actuators cabinet mounted base, wall mounted operation terminal.

Features

- PI temperature control for 2-pipe fan coil systems with floating valve actuator.
- Relays switching up to 10(6) A
- 2 TRIAC for floating control outputs
- Automatic fan control for three stage fans.
- Control for heating, cooling and fan only operation
- Cost saving option with economy functionality and set point limitation
- For large rooms: Master – Slave option: One terminal may drive up to 8 base units in parallel.
- External sensor or potential-free contact for remote control, external heat/cool changeover, or automatic changeover based on supply or outdoor temperature with selectable activation limits.
- Password protected programmable user and control parameters
- Temperature display in Celsius or Fahrenheit



Deluxe Version:
- Clock and time schedule functions with special options for schools and universities
- Clock keeps running for 48 h in case of power failure
- Display with blue backlight
- Infrared remote controller option:
  With special features for boost and delayed switching on or off

Applications

- Air/Water Systems:
  Fan Coil units for 2-pipe systems with one valve with options of
  - External temperature sensor or changeover sensor
  - Window contact, motion detector or changeover switch

General description

The TLR-D5F is a stand-alone electronic single loop controller with a fan control option and one PI heating or cooling sequence. The controller includes 1 NTC room temperature sensor and 3 relays outputs to control fan speeds and 2 TRIAC outputs for floating control. A detailed adaptation to local conditions is possible with the use of a simple configuration routine. The TLR-D5F can be configured using the standard operation terminal. No special tools or software is required. The TLR-D5F has been specifically developed to switch larger fans with switching power of up to 10 (6) A.

Ordering

A working controller consists of one operation terminal and at least one base unit.

Item name	Item code	Function	Type	Key-data
TLR-D5F-24	40-11 0037	24 VAC	Base unit	Fan coil controller with: 2 TI internal and external 3 DO (Relay) Fan control 2 DO (TRIAC) Binary control
TLR-D5F-230	40-11 0038	230 VAC		
OPU-D5F	40-10 0093	Standard	Operation Terminal	
OPU-D5F-D	40-10 0094	Deluxe		

Parameter preset

-W01	40-10 00xx-01	Cooling only	Add –Wx at the end of the Item Name or –x at the end of item code to order pre-configured model

Accessories

OPR-1	40-50 0001	2xAAA bat	Infrared remote controller
S-Tn10-2	40-20 0001	Flying lead sensor with 2 m cable	
SD-Tn10-12-2	40-20 0002	Flying lead duct sensor 12 cm immersion depth, 2m cable	
SD-Tn10-20-2	40-20 0003	Flying lead duct sensor 20 cm immersion depth, 2m cable	
SDB-Tn10-12	40-20 0051	Duct sensor with housing, 12 cm immersion depth	
SDB-Tn10-20	40-20 0004	Duct sensor with housing, 20 cm immersion depth	
SRA-Tn10	40-20 0005	Room sensor	
SOD-Tn10	40-20 0059	Outdoor sensor	

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Technical specifications

Caution! This device is intended to be used for comfort applications. Where a device failure endangers human life and/or property, it is the responsibility of the owner, designer and installer to add additional safety devices to prevent or detect a system failure caused by such a device failure. Vector Controls or its affiliates cannot be held liable for any damage caused by such a failure. Failure to follow specifications and local regulations may endanger life, cause equipment damage and void warranty.

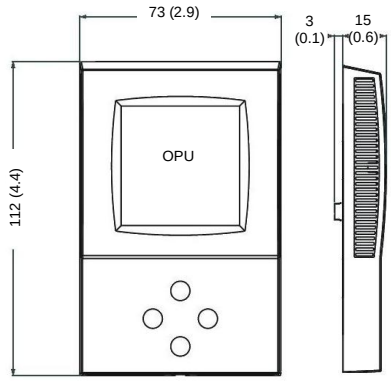
Power supply	Operating voltage	TLR-D5F-24	24 VAC ± 10 %, 50/60 Hz, SELV to HD 384, Class II transformer, 48VA max
		TLR-D5F-230	230 VAC ± 10 %, 50…60 Hz
	Power consumption	TLR-D5F-24	Max. 3 VA
		TLR-D5F-230	Max. 5 VA
	Electrical connection	Terminal connectors	Wire 0.34…2.5 mm² (AWG 22…13)
	Deluxe type only: Power backup for clock		Min 48 h if charged for 24 h
Signal inputs	Temperature Input	Range	0…50 °C (32…122 °F)
		Accuracy	0.5 °C, 1 °F
Signal outputs	Digital switching outputs		DO1 to DO3
		Switching type	Relays
		AC Switching power	0…250 VAC 10(6) A max. each output
	TRIAC outputs		DO4…DO5
		AC Switching power	24…250 VAC, 0.5 A max.
	Insulation strength		
	between relays contacts and system electronics:		4000 VAC to EN 60730-1
	between neighboring relays contacts		1250 VAC to EN 60730-1 1<>2<>3
	between relay and TRIAC output groups:		4000 VAC to EN 60730-1 1/2/3<>4/5
Communication Base - Terminal	Communication type		Digital: peer to peer
		Cable type	Copper wire 0.8…2.5 mm² (AWG18…AWG13), shielded twisted pair
Environment	Operation		To IEC 721-3-3
		Climatic conditions	class 3K5
		Temperature	0…50 °C (32…122 °F)
		Humidity	< 95 % RH non-condensing
	Transport & storage		To IEC 721-3-2 and IEC 721-3-1
		Climatic conditions	class 3K3 and class 1K3
		Temperature	-25…70 °C (-13…158 °F)
		Humidity	< 95 % RH non-condensing
		Mechanical conditions	class 2M2
General Terminal	Safety class		III (IEC 60536)
	Degree of protection		IP30 to EN 60529
	Material	Cover, back part	ABS plastic (UL94 class V-0)
		Mounting plate	Galvanized Steel
	Color		White RAL 9003
	Dimensions (H x W x D)		112 x 73 x 18 mm (4.4 x 2.9 x 0.8 in)
	Weight incl. package:	OPU-D5F	180 g (6.3 oz)
		OPU-D5F-D	190 g (6.7 oz)
	Weight (controller only)		70 g (2.8 oz)
General Base	Safety class		II (IEC 60536)
	Degree of protection		IP20 to EN 60529
	Housing material		PC+ABS plastic (UL94 class V-0)
	Color		Gray (RAL 7001 / 7035)
	Dimensions (H x W x D)		57 x 147 x 115 mm (2.25 x 5.8 x 4.5 in)
	Weight inc. package	TLR-D5F-24	340 g (12.0 oz)
		TLR-D5F-230	440 g (15.5 oz)

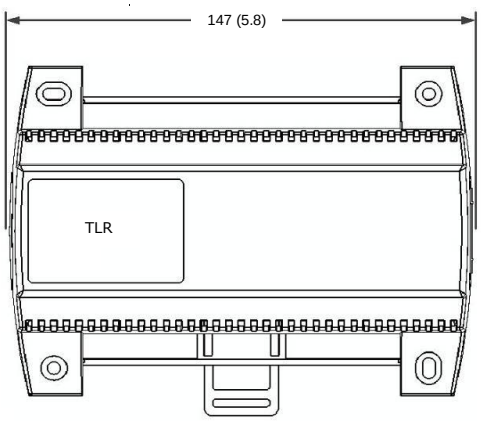
Product testing and certification

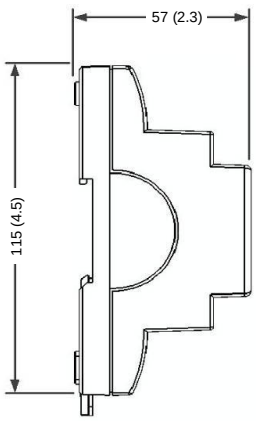
CE Declaration of conformity — Information about the conformity of our products can be found on our website www.vectorcontrols.com on the corresponding product page under "Downloads"

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Dimensions [mm] (inch)

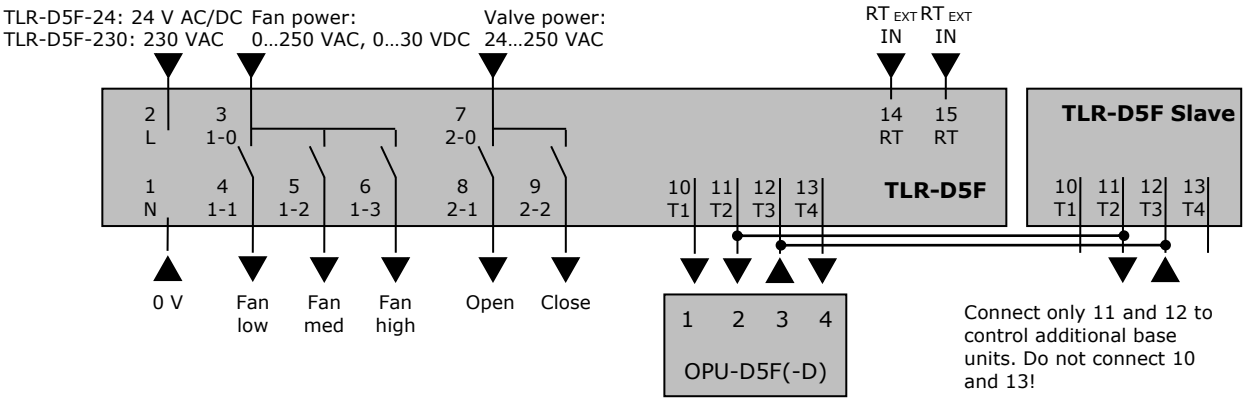






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Wiring diagram



Description:

1	**N**	Power supply:	TLR-D5F-24:	0 VAC, 24 VDC
			TLR-D5F-230:	0 VAC
2	**L**	Power supply:	TLR-D5F-24:	24 VAC, 24 VDC
			TLR-D5F-230:	230 VAC
3	**1-0**	Switched common for fan:	0…250 VAC, 0…30 VDC	
4	**1-1**	Binary output:	Fan speed low	
5	**1-2**	Binary output:	Fan speed medium	
6	**1-3**	Binary output:	Fan speed high	
7	**2-0**	Switched common for valve:	24…250 VAC	
8	**2-1**	Binary output:	Valve (open)	
9	**2-2**	Binary output:	Valve (close)	
10	**Term1**	Terminal connection 1	Connect to operation terminal	
11	**Term2**	Terminal connection 2	Connect to operation terminal	
12	**Term3**	Terminal connection 3	Connect to operation terminal	
13	**Term4**	Terminal connection 4	Connect to operation terminal	
14	**RT**	External temperature input:	Sxx-Tn10 or open contact	
15	**RT**	External temperature input:	Sxx-Tn10 or open contact	

Installation base

The housing of the TLR base unit is a robust plastic enclosure. The controller may be mounted in any orientation by surface mounting on a wall or in a cabinet. 4 mounting-holes for screws up to 4 mm diameter are provided. Mounting onto a standard 35 mm DIN rail is also possible.
When mounting note the following:

- The controller should not be freely accessible after mounting. A protective housing should be used, if mounted outside an electrical cabinet.
- ***Ensure adequate air circulation to dissipate heat generated during operation***.
- Local installation regulations must be observed.

Installation terminal

1. Install the mounting plate directly to the wall, or flush to the mounting box. Make sure that the nipple with the front holding screw is facing down. Make sure the screw heads do not stand out more than 5 mm of the surface of the mounting plate.
2. Connect the wires of the terminals to the communication wires according wiring diagram
3. Slide the two latches located on the top of the front part into the hooks of the mounting plate.
4. Lower the front part until located flat on the wall and the mounting plate is not visible anymore. Make sure the connection cable does not get into the way.
5. Tighten the front holding screw to secure the front part to the mounting plate.

Connection base to terminal

- Max. distance: 200 m (565 ft.)
- Twisted pair copper wires may be used for wiring in an EMC-safe environment. In an impaired EMC environment use only shielded cables. The operating voltage must comply with the requirements for safety extra-low voltage (SELV) as per EN 60730.
- 1 terminal may drive up to 8 base units. See wiring for parallel connections. Total wire distance should not exceed 200 m.
- Conductor resistance will influence external temperature reading. 450 Ω will result in an increase of 1 °C (2 °F). Compensate using UP-08 if external temperature is used to control unit.

Selection of actuators and sensors

Temperature sensors: Use only approved NTC sensors to achieve maximum accuracy. See ordering for details.

Binary auxiliary devices: E.g. fans and actuators. Do not directly connect devices that exceed maximum switching currents as detailed under technical specifications. Observe startup current of fans.

Floating actuators: Actuators with constant running time are recommended

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