



## TF428/TF228/TF223 Series

### BACnet Thermostat Driver

### INSTALLATION GUIDE

#### When Installing This Product



**Caution: Must be cut off the power before installation to prevent electric shock.**

1. Read this instruction carefully. Failure to follow the instruction might damage the product or cause a hazardous condition.
2. Check ratings given in instruction and on the product label to ensure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is completed, check out product operation as provided in the instruction.
5. When the product working, the door of the control cabinet must be closed, or the protection cover installed.

#### Specifications

Communication	BACnet MS/TP
Power supply	110-230VAC 50/60Hz
Ambient operating limits	-10°C to 48°C
Ambient storage limits	-30°C to 65°C
Humidity limits	5-90% RH, non-condensing
Internal power consumption	6VA
Protection class	IP20

#### BACnet Communications

The driver communicates with other module/component through EIA-485 BACnet protocol.

Parameter	Definition
Cable Type	18AWG-24AWG (1-0.5mm) Twist pair, shielded
Character impedance	100-120 ohm
Capacitance	<100pF/m
Maximum communication distance	1000m
Network topology	Daisy Chain
Recommended maximum node number	<40
Baud rate	9600, 19200, 38400, 76800 (auto detect)

#### Termination Resistors

Matched terminating resistors are required at each end of a segment bus wired across (+) and (-). Use matched precision resistors rated 1/4W, ±5%, 80 - 130 Ohms. Ideally, the value of the terminating resistors should match the rated characteristic impedance of the installed cable. For example, if the installed EIA-485 BACnet cable has a listed characteristic impedance of 120 Ohm, install 120 Ohm matched precision resistors.

#### Shield Terminating

Following proper EIA-485 BACnet cabling shield grounding procedures is important to minimize the risk of communication problems and equipment damage caused by capacitive coupling. Capacitive coupling is caused by placing EIA-485 BACnet cabling close to lines carrying higher voltage. The shield should be grounded on only one end of the segment (typically the router end). Tie the shield through using the SHLD on the driver.

#### Sylk communication

The driver can be connected with one and only one wall module through Sylkbus. The Sylk terminals are connected with two-core wire. The maximum connection length is 60 meters.

#### LED indications

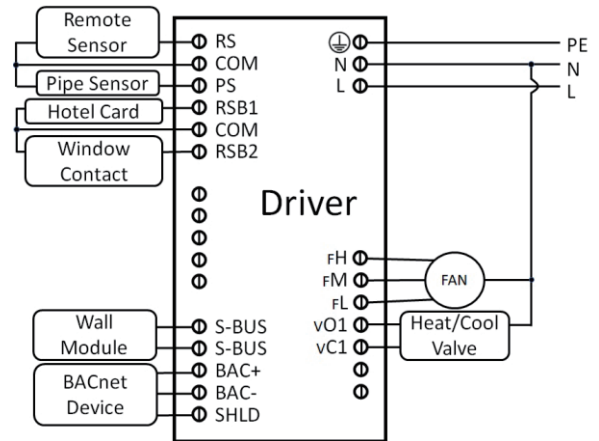
The driver has one 2-color LED to indicate device state as following:

LED Status	BACnet State Description
Green blinking off once in 2.5 sec	The processor is running, but there is no MS/TP token
Green blinking off twice in 2.5 sec	The processor is running and there is an MS/TP token
Green blinking off thrice in 2.5 sec	The processor is running and there is MS/TP communication
Solid off	There is no power, the processor is not running, or the processor is dead
Red blinking	Configuration data is error

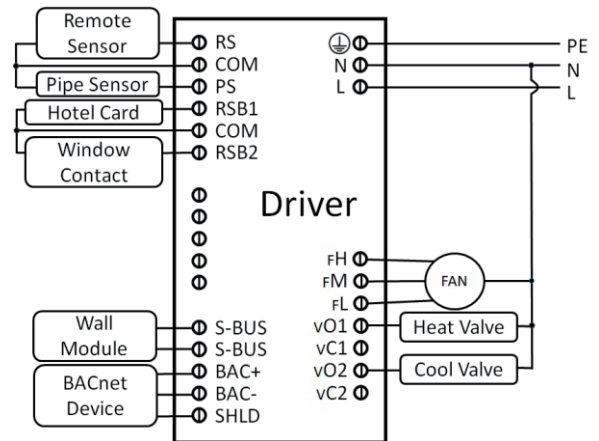


## Terminal Definition

No	Symbol	Description
1	RS	Remote Sensor Input (NTC20K)
2	COM	Common
3	PS	Pipe Sensor Input (NTC20K)
4	RSB1	Hotel Card (Dry Contact)
5	COM	Common
6	RSB2	Window Contact (Dry Contact)
7	VM	Valve Modulating Output
8	COM	Common
9		Not Used
10		Not Used
11		Not Used
12	S-BUS	Sylkbus
13	S-BUS	Sylkbus
14	BAC+	BACnet+
15	BAC-	BACnet-
16	SHLD	BACnet Shield
17	⊕	Protective Earthing Wire
18	N	Neutral Wire
19	L	Live Wire
20	FH	High Speed Fan
21	FM	Medium Speed Fan
22	FL	Low Speed Fan
23	vO1	Heating / Cooling Valve Open
24	vC1	Heating / Cooling Valve Close
25	vO2	Cooling Valve Open, 4 Pipes Only
26	vC2	Cooling Valve Close, 4 Pipes Only

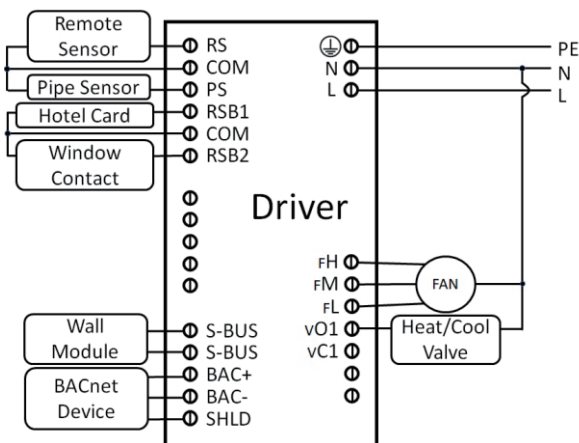


2-Pipe with VC6013/VC6011/VN6013 Valve

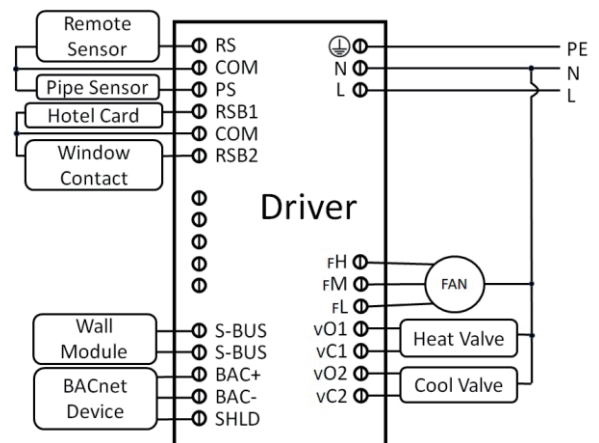


4-Pipe with VC4013/VC4011/VN4013 Valve

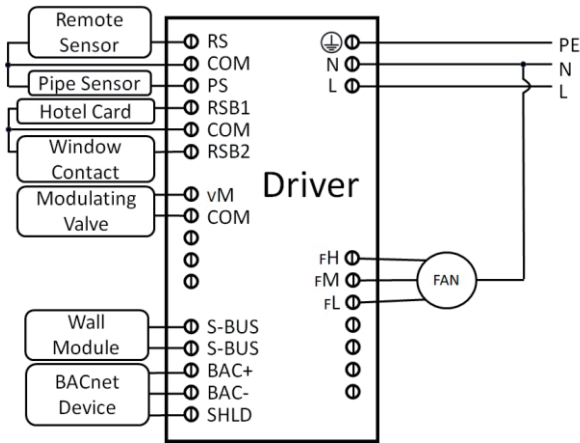
## Terminal Wiring



2-Pipe with VC4013/VC4011/VN4013 Valve

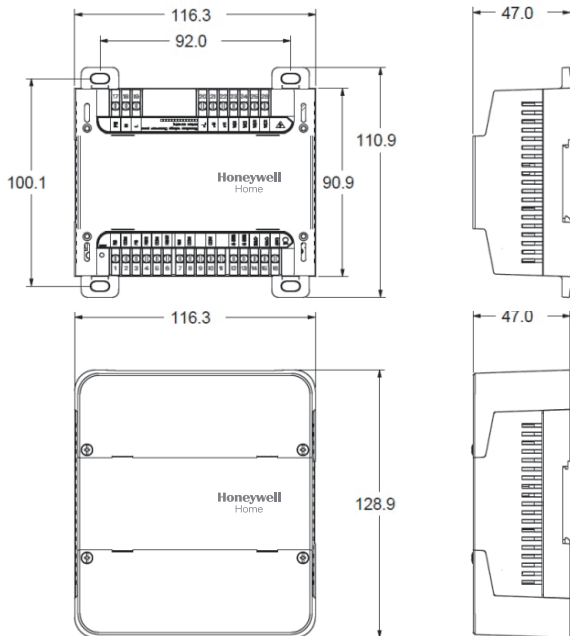


4-Pipe with VC6013/VC6011/VN6013 Valve



2- Pipe with VC7931 Valve

### Dimensions (mm)



### Before installation

Review the installation guide and datasheet before installing the driver.

- Make sure the devices are installed and used in physical security place and network, only the authorized person could operate the devices and access to the network.
- Make sure the security of installation and maintenance for the network and upper plant controllers, the detailed information could refer to the plant controllers' instruction.
- Make sure the devices are all in the isolated internal network.

### Mounting

The driver enclosure is constructed of a plastic base plate and two DIN rail hooks. The cover does not need to be removed from the base plate for either mounting or wiring.

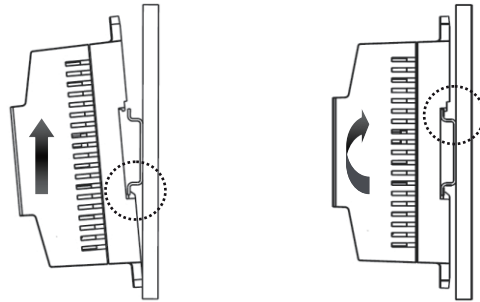
The driver can be mounted in any orientation. Ventilation openings are designed into the cover to allow proper heat dissipation, regardless of the mounting orientation.

**!** The terminal screws must be locked tightly after wiring.

**NOTE: The driver must be mounted in a position that allows clearance for wiring, servicing, and removal.**

The driver mounts to DIN rail (standard EN50022; 7.5mm x 35mm).

1. Holding the driver with its bottom tilted in towards the DIN rail, hook the two bottom tabs on the back of the driver onto the bottom of the DIN rail.
2. Pull up and rotate the driver to make sure the two-tops snap of the driver onto the DIN rail.



### Fuse exchange

**!** Must cut off the power before replacing.

The driver has a built-in fuse, and the cover of the control module should be removed when replacing. Please wear insulating gloves during the replacement process to prevent damage to the circuit board.

### Hazardous Substances and Content in the Product.

Parts	Hazardous substances					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
PCBA	X	O	O	O	O	O
This table is based on SJ/T 11364.						
O: the hazardous substances content in the related part are less than the limit in GB/T 26572 standard.						
X: the hazardous substances content in the related part are more than the limit in GB/T 26572 standard.						

Other parts all conform to China RoHS requirements.



WEEE Directive 2012/19/EU

At the end of the product life dispose of the packaging and product in a corresponding recycling centre. Do not dispose of the unit with the usual domestic refuse. Do not burn the product.



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www.resideo.com Country of origin: China

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