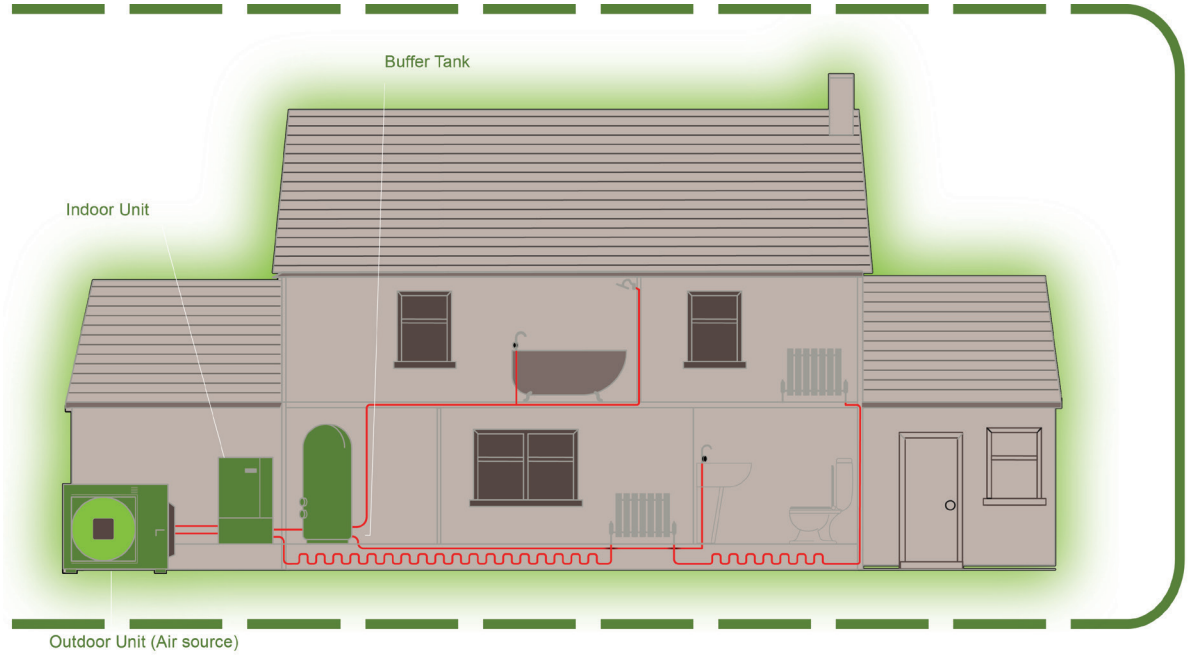
> Relays for Heat Pumps

Green Energy Relays.

FCL Components' relays support the development of green energy

As a technology-driven enterprise, FCL components develops automotive, signal and power relays to meet market requirements. A strong focus is to design and manufacture innovative and sustainable relay products with high quality standards for a range of applications including home appliances, alternative energy, electrical vehicles, solar panels, heat pumps and more.

Combining experience and technology has resulted in a portfolio dedicated to heat pumps, supporting switching of valves, compressors, fans, resistive heating elements, pumps and thermostats.



Valve/ Fan	Resistive Heating Element	Compressor	Thermostat	Controller	Pump
FTR-F3: 1 form A, 1 form C 3A/5A/10A, 250VAC/30VDC	FTR-K1: 1 form A, 1 form C 16A, 250VAC/24VDC	FTR-K1: 1 form A, 1 form C 16A, 250VAC/24VDC	FTR-B4: 2 form C 1A, 30VDC/ 0.3A, 125VAC	JS: 1 form A, 1 form C 8A-250VAC	JS: 1 form A, 1 form C 8A-250VAC
NY: 1 form A 5A, 250VAC/30VDC	FTR-K1HA: 1 form A 20A, 250VAC/24VDC	FTR-K3: 1 form A 20/25A/32A, 250VAC		FTR-MY: 1 form A 5A, 250VAC/30VDC	FTR-K1: 1 form A, 1 form C 16A, 250VAC/24VDC
MY: 1 form A 5A, 250VAC/30VDC					

fig. application example heat pumps

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Creating Customer Centric Technology.

EU regulations restricts the use of refrigerant gases that depletes the ozone layer and has a global warming potential. These low flammable gases will be replaced by e.g. R290 (propane) which is a highly flammable refrigerant. With more flammable gases, ignition sources are a safety challenge. Relays are regarded as ignition sources. Therefore, the need for explosion proof relays.

Safety first, Atex

Relay's can, in some cases related to the use of propane, be seen as an ignition source.
Arcing can occur between the contacts when the relay is in operation, and ignite in combination with e.g. R290 (propane) refrigerant and the air, which can cause an explosion.

Degree of risk and condition of explosion material:
Relay must not be located at a high-risk zone:
- zone 0 (high risk area)
- zone 1, (less high-risk area, explosion risk possible location), vapor and liquid
- zone 2 (low risk area, no explosion possible location) Electromechanical relays for zone 2

Atex Compliant Relays

To ensure safety, relays are needed compliant to the ATEX Directive covering equipment and protective systems intended for use in potentially explosive atmospheres in accordance with IEC 60079 testing method.
- IEC 60079-0 (general)
- IEC 60079-1 (flux free cover, RTII)
- IEC 60079-15 (plastic sealed cover, RTIII)

FCL Components' relay solution to meet the satefy challenge

Explosion proof certification

The relay supplier must verify that the relay does not explode in accordance with IEC 60079 testing method. Testing is done by the UL safety house by opening/closing contacts in a flammable gas environment.

> Relay Product portfolio compliant with IEC 60079 standards

Series name		FTR-MY	FTR-F3	JS	FTR-K1	
Spec	Contact rating	5A	5-10A	8A	Max. 20A	10-16A
	Protection structure	Plastic sealed	Plastic sealed	Plastic sealed	Plastic sealed	Flux free
	Contact form	1 form a	1 form a	1 form a, 1 form c	1 form a, 1 form c	
	Dimension (WxLxH)	5 x 20 x 12 (Slim)	7 x 20.3 x 15 (Small)	10 x 29 x 12.5 (Low profile)	12.7 x 29 x 15.7 (Low profile)	
Compliance with IEC		IEC60079-15 (Ex) II 3 G Ex nC IIC Gc	IEC60079-15 (Ex) II 3 G Ex nC IIC Gc	IEC60079-15 (Ex) II 3 G Ex nC IIC Gc*	IEC60079-15 (Ex) II 3 G Ex nC IIC Gc*	IEC60079-1 (Ex) II 3 G Ex dc IIA Gc*

**Approvals can be in process*

Glow wire

FCL Components offers relays in compliance with glow wire for end products (GWEPT IEC/EN 60695-2 safety standard). Glow wire testing is done by the VDE safety house to evaluate material flammability of non-metallic materials. These relays use fire resistance plastic materials to protect the relay against fire and ignition.

FCL Components also offers explosion proof (Atex) relays in combination with glow wire properties. For more info, contact us

> Product portfolio relays for Heat Pumps

Thermostat	FTR-B4 Relay		1A, 30VDC/ 0.3A-125VAC	Slim profile signal relay, low power consumption
Resistive Heater	FTR-K1 FTR-K1 HA		16A-250VAC 20A-250VAC	Low profile relay, high inrush current 78A/120A, and high temperature capability up to 105 deg C. Atex IEC60079-15, (Ex) II 3 G Ex nC IIC Gc* (plastic sealed), Atex IEC60079-1 (Ex) II 3 G Ex dc IIA Gc* (flux free) Low profile relay, high current version
Controller	JS -KS JS FTR-MY		8A-250VAC 8A-250VAC 5A-250VAC	High insulation compact relay, inrush current capability 65A* High insulation compact relay, Atex IEC60079-15 Atex (Ex) II 3 G Ex nC IIC Gc* Slim type, high temp range, Atex IE60079-15 (Ex) II 3G Ex nC II C Gc
Compressor	FTR-K1 FTR-K1-HA FTR-K3		16A, 250VAC 20A-250VAC 20-25A, 250VAC	Peak 80A inrush current Atex IEC60079-15, (Ex) II 3 G Ex nC IIC Gc* (plastic sealed), Atex IEC60079-1 (Ex) II 3 G Ex dc IIA Gc* (flux free) Low profile relay, high current version High power Relay
Fan	NY FTR-F3		5A, 250VAC 5-10A, 250VAC	Slim type, high temperature range High density mounting relay, high insulation
Pump	JS JS-KS FTR-K1		8A, 250VAC 8A-250VAC 16A, 250VAC	Low profile, space saving, Atex IEC60079-15 (Ex) II 3 G Ex nC IIC Gc* High insulation compact relay, inrush current capability 65A* Low profile relay, high inrush current 78A/120A, and high temperature capability up to 105 deg C. Atex IEC60079-15, (Ex) II 3 G Ex nC IIC Gc* (plastic sealed), IEC60079-1 (Ex) II 3 G Ex dc IIA Gc* (flux free)
Valves	NY FTR-F3 FTR-MY		5A, 250VAC 5-10A, 250VAC 5A-250VAC	Slim type, high temperature range High density mounting relay, high Insulation. Atex IEC60079-15 (Ex) II 3 G Ex nC IIC Gc Slim type, high temp range, Atex IE60079-15 (Ex) II 3G Ex nC II C Gc

**Approvals can be in process*

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