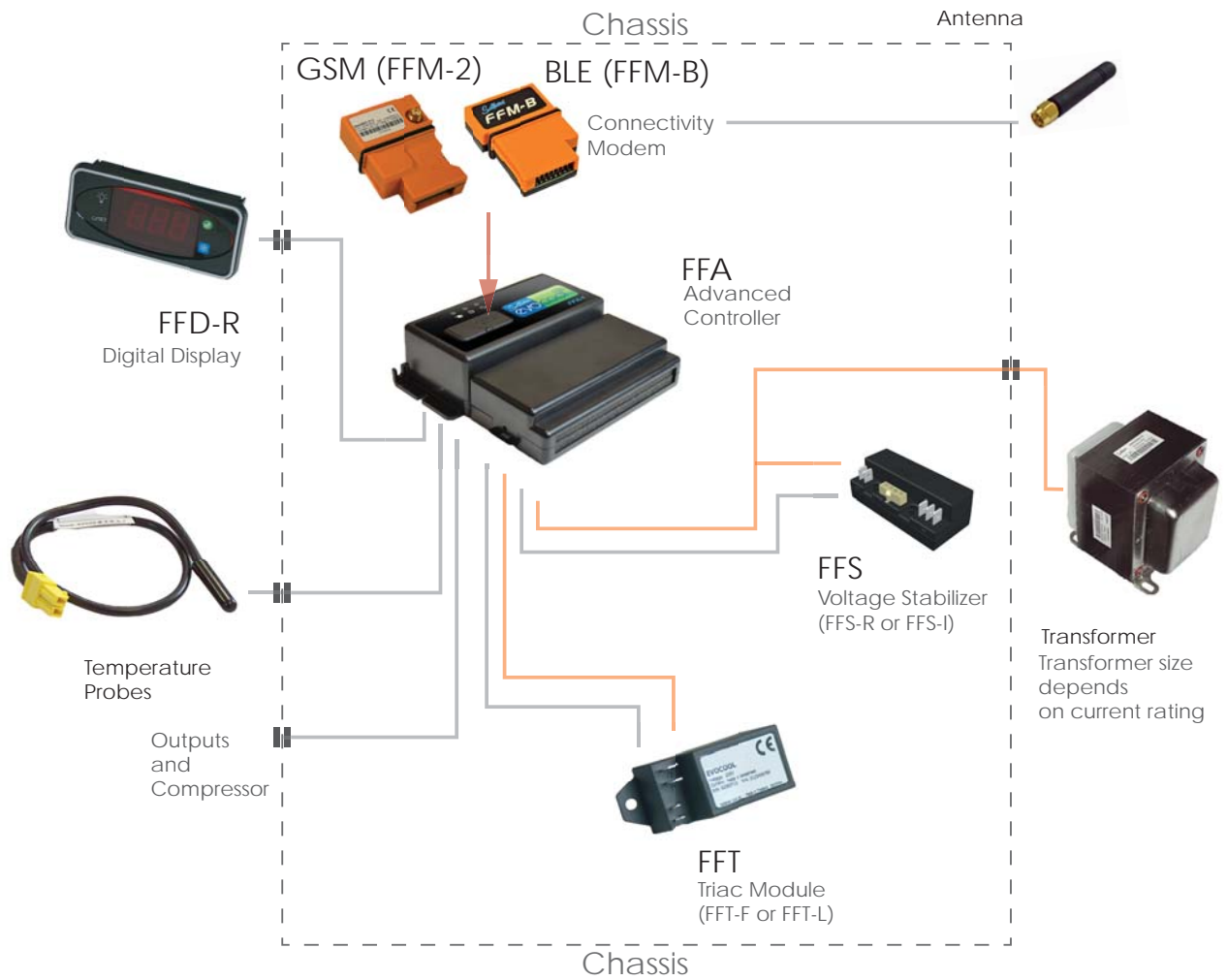


FF SYSTEM TECHNICAL SPECIFICATIONS

The most advanced refrigeration control system currently available for glass door merchandising coolers.

Unique expandability adding display, connectivity, voltage stabilisation, energy saving and long life compressor switching.



FFA-1

ADVANCED CONTROLLER

The FFA-1 is the main base unit to which other modules can be connected. **Equipped with three outputs.**

Features

- Temperature control
- Energy saving
- Voltage protection
- Display interface
- Connections to FFT, FFS
- Microcontroller controller
- Aperture for FFM plug-in module
- Conformal coated circuit board
- SELV isolation
- Wide input voltage range option for use in India



Technical Specifications

Nominal voltage	230V AC
Operating voltage	230V -26% to +22%
Voltage range	180V to 260V AC
Withstand voltage	300V
Frequency	45-65Hz
Firmware features	Multiple, see separate firmware specification
Indicators	3 off LEDs
Probe inputs	4 x NTC 100K Ohm
Other inputs	Door switch, pressure switch
Outputs (x3 +2)	Compressor, evap fan, lights, condenser fan*, heater*. AC and DC switching certified relay for lights, evap, and condenser fan*
Compressor relay (x1)	8(6)A, 240V AC, 100,000 cycles
Evaporator fan relay (x1)	1(1)A, 240V AC, 400,000 cycles. Or 2A, 24V Dc, 400,000 cycles
Lights relay (x1)	2(2)A, 240V AC, 10,000 cycles. Or 4A, 24V DC (LED), 10,000 cycles
Condenser fan relay* (x1)	1(1)A, 240V AC, 400,000 cycles. Or 2A, 24V Dc, 400,000 cycles
Heater relay* (x1)	x(x)A, 240V AC, 100,000 cycles
Relays	HC compatible to IEC60079-15
Labels	Front label, serial label
Mounting	Chassis mount with two screws
Temperature range	-20 to +60°C (To be tested and confirmed)
Size	149 x 133 x 44mm
Weight	342g
IP rating	IP24
Approvals	CE, EN 60529, IEC 60730-1: 2010, IEC 60730-2-9:2008 + A1
Sollatek stock no.	92363100

*optional configuration, upon request

FFA-2

ADVANCED CONTROLLER

The FFA-2 is the main base unit to which other modules can be connected. **Equipped with four outputs.**

Features

- Temperature control
- Energy saving
- Voltage protection
- Display interface
- Connections to FFT, FFS
- Microcontroller controller
- Aperture for FFM plug-in module
- Conformal coated circuit board
- SELV isolation
- Wide input voltage range option for use in India
- Equipped with heater relay suitable for street coolers in sub zero environments



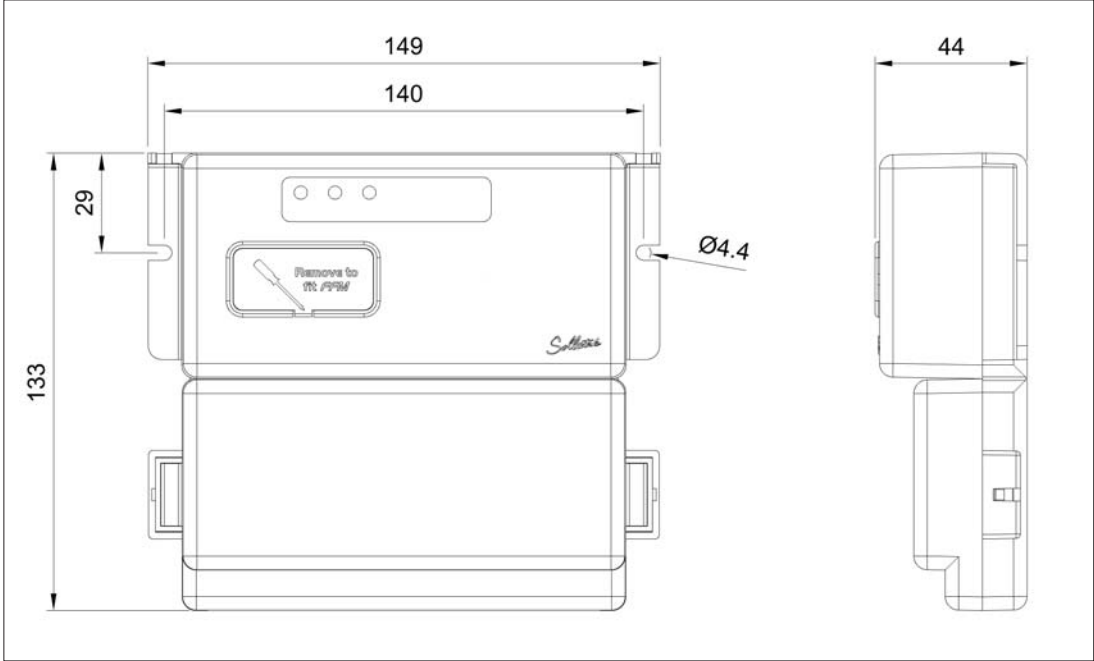
Technical Specifications

Nominal voltage	230V AC
Operating voltage	230V -26% to +22%
Voltage range	180V to 260V AC
Withstand voltage	300V
Frequency	45-65Hz
Firmware features	Multiple, see separate firmware specification
Indicators	3 off LEDs
Probe inputs	4 x NTC 100K Ohm
Other inputs	Door switch, pressure switch
Outputs (x3 +2)	Compressor, evap fan, lights, condenser fan*, heater. AC and DC switching certified relay for lights, evap, and condenser fan*
Compressor relay (x1)	8(6)A, 240V AC, 100,000 cycles
Evaporator fan relay (x1)	1(1)A, 240V AC, 400,000 cycles. Or 2A, 24V Dc, 400,000 cycles
Lights relay (x1)	2(2)A, 240V AC, 10,000 cycles. Or 4A, 24V DC (LED), 10,000 cycles
Heater relay (x1)	x(x)A, 240V AC, 100,000 cycles
Condenser fan relay* (x1)	1(1)A, 240V AC, 400,000 cycles. Or 2A, 24V Dc, 400,000 cycles
Relays	HC compatible to IEC60079-15
Labels	Front label, serial label
Mounting	Chassis mount with two screws
Temperature range	-20 to +60°C (To be tested and confirmed)
Size	149 x 133 x 44mm
Weight	342g
IP rating	IP24
Approvals	CE, EN 60529, IEC 60730-1: 2010, IEC 60730-2-9:2008 + A1
Sollatek stock no.	92363100

*optional configuration, upon request



Technical drawing



FFD-R

LED DISPLAY (RED 3 DIGIT)

The FFD-R is a digital display which connects via a cable to the FFA.

Features

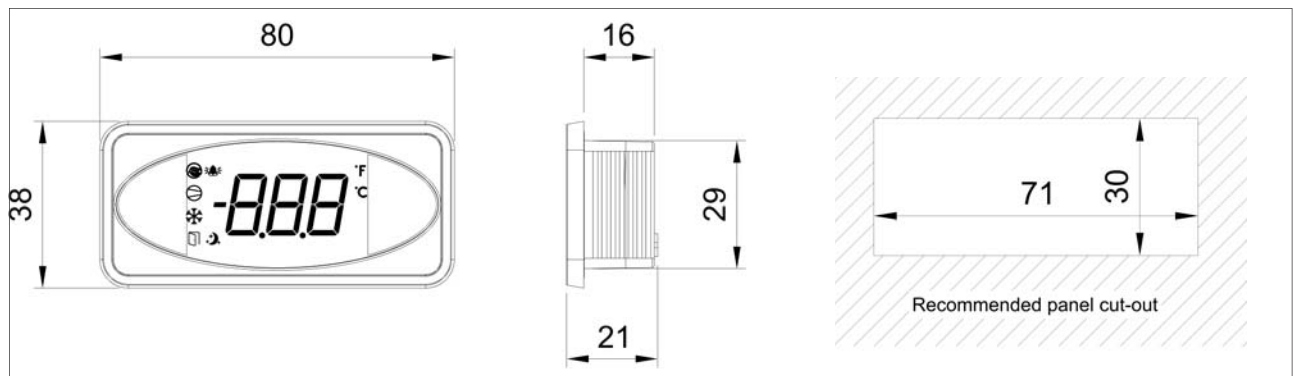
- Three digit LED, 7-segment display
- 4 buttons
- 8 additional indicators
- Conformal coated circuit board.
- Low profile, panel mount



Technical Specifications

LED colour	Red
Voltage	Supplied from FFA
Connection	Micro USB to FFA, custom cable
Temperature range	-20 to +60°C (To be tested and confirmed)
Size	80 x 38 x 21mm, 27mm deep incl. clips
Weight	37g
IP rating	IP65 (front), IP24 (rear)
Approvals	CE, EN 60529
Sollatek stock no.	92363DR0

Technical drawing



FFM-2

2G GSM CONNECTIVITY MODULE

The FFM-2 plugs into the FFA and provides connection to the GSM mobile phone network.

Features

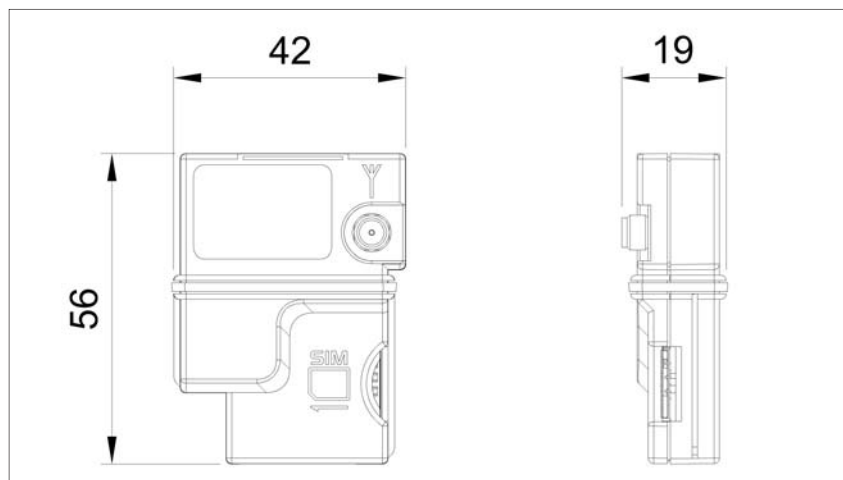
- Plug-in module
- Micro SIM card holder
- Battery
- 2G connectivity
- Conformal coated circuit board



Technical Specifications

Power	From FFA base unit
Internal battery	470 mA.Hr lithium polymer
Autonomy	10hrs (TBC)
Indicators	2x LEDs
Main connector	16 way for FFA
RF Connector	SMA socket
Temperature range	-20 to +60°C (TBC)
Size	42 x 56 x 19mm
Weight	30g
IP	IP24
Approvals	CE, CB, IEC 60730-1: 2011. IEC 60730-2-9: 2010. IEC 60950-1: 2005+A1+A2. EN 301 489-1 V1.9.2. EN 301 489-7 V1.3.1
Sollatek stock no.	92363M22

Technical drawing



FFM-B

BLUETOOTH (BLE) CONNECTIVITY MODULE

The FFM-B plugs directly into the FFA and provides connection to a Smart Phone/Tablet App via Bluetooth (BLE).

Key features

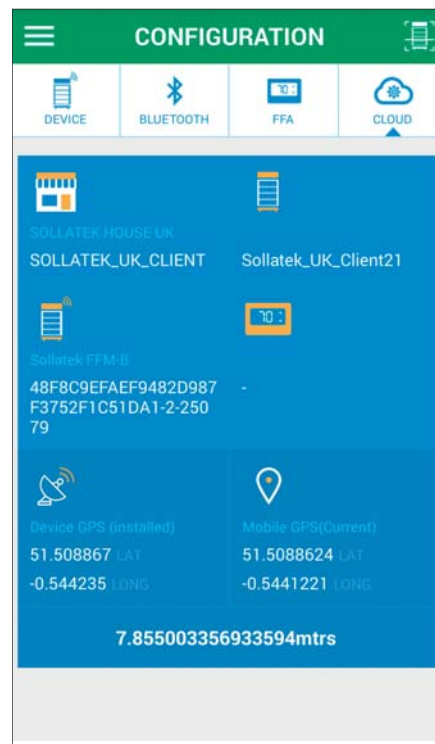
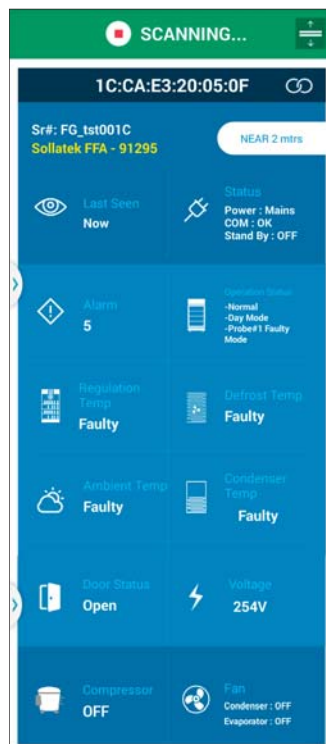
- The FFM-B receives and transmits a wide array of data collected from the FFA controller's multiple inputs
- Bluetooth low energy (BLE) connectivity to host device
- FFM-B module plugs directly into the FFA energy management device
- On board serial Flash with 16Mbit of data storage
- Optional built-in Primary battery with expected stand by lifetime of over 5yrs
- Ultra-low-power design

Mobile App

- Intuitive App to display controller parameters: Temperature, Compressor status, Relay status, Alarm status, Door Openings and Asset Scanning
- Android and iOS based mobile App
- OTA update of FFM-B and FFA



Mobile phone Apps



For Technical drawing, refer to FFM-2

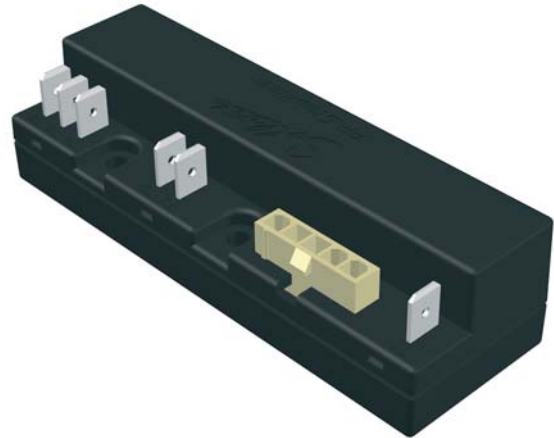
FFS-I

WIDE RANGE (INDIA VOLTAGE STABILISER MODULE)

The FFS-I is a module that connects to the FFA and provides voltage stabilisation for the cooler.

Features

- Corrects low and high voltages, allowing cooler to continue running reliably and without damage
- Separate module allows fitment only in markets that require it
- Substantially lower cost than traditional stabiliser options
- Transformer sized to cooler load (not shown)
- Designed for India with wide input voltage range
- Waveform synchronisation technology for enhanced reliability

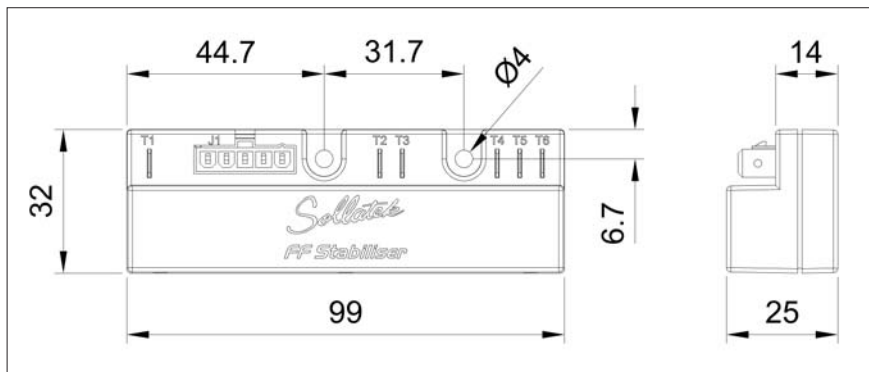


Technical Specifications

Input voltage range	110V – 285V AC
Output voltage range	200V – 245V
Operating frequency	45-65 Hz
Current rating	Various
Connections	Custom cables
Indications	None
Temperature range	-10 to +60°C
Size	99 x 32 x 25mm
Weight	112g
IP rating	IP 65, excluding terminals
Approvals	CE, EN 60529
Sollatek stock no.	923635I0

Model	Continuous rating	Short term rating
FFS-I-2A	2.25A	3.00A
FFS-I-03	3.00A	4.00A
FFS-I-4B	4.50A	6.00A

Technical drawing



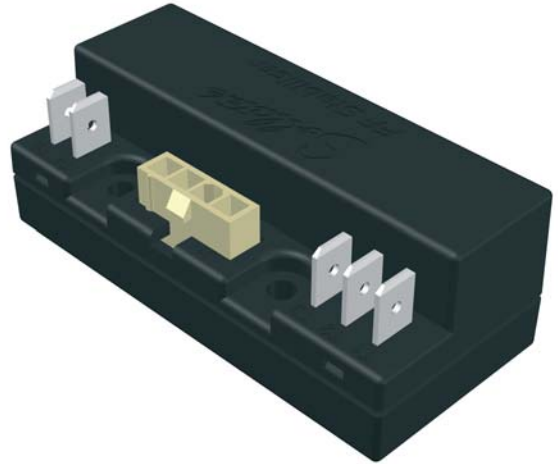
FFS-R

NORMAL RANGE (VOLTAGE STABILISER MODULE)

The FFS-R is a module that connects to the FFA and provides voltage stabilisation for the cooler.

Features

- Corrects low and high voltages, allowing cooler to continue running reliably and without damage
- Separate module allows fitment only in markets that require it
- Substantially lower cost than traditional stabiliser options
- Transformer sized to cooler load (not shown)
- Waveform synchronisation technology for enhanced reliability

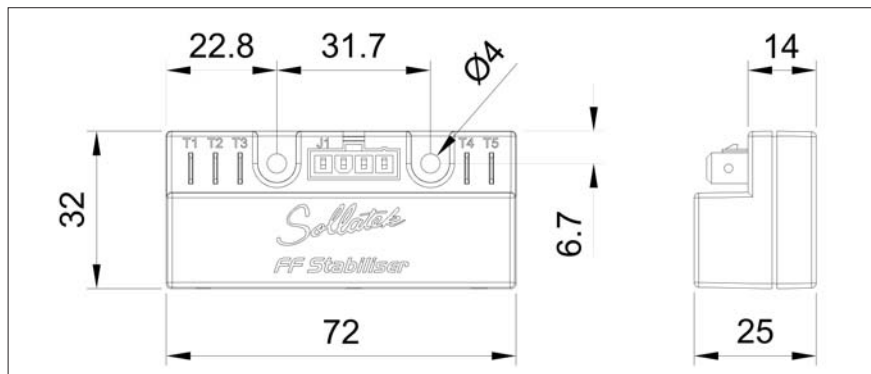


Technical Specifications

Input voltage range	145V – 285V AC
Output voltage range	190V – 250V
Operating frequency	45-65
Current rating	Various
Connections	Custom cables
Indications	None
Temperature range	-10 to +60°C
Size	72 x 32 x 25mm
Weight	78g
IP rating	IP 65, excluding terminals
Approvals	CE, EN 60529
Sollatek stock no.	92363SR0

Model	Continuous rating	Short term rating
FFS-R-1B	1.50A	2.00A
FFS-R-2A	2.25A	3.00A
FFS-R-03	3.00A	4.00A
FFS-R-4B	4.50A	6.00A
FFS-R-06	6.00A	8.00A
FFS-R-7B	7.50A	10.0A

Technical drawing



FFT-L

LONG LIFE SWITCHING MODULE

The FFT-L is an external module that fits inside the electrical box and connects to the FFA.

The FFT-L operates in conjunction with the compressor relay within the FFA and greatly increases its switching life.

Features

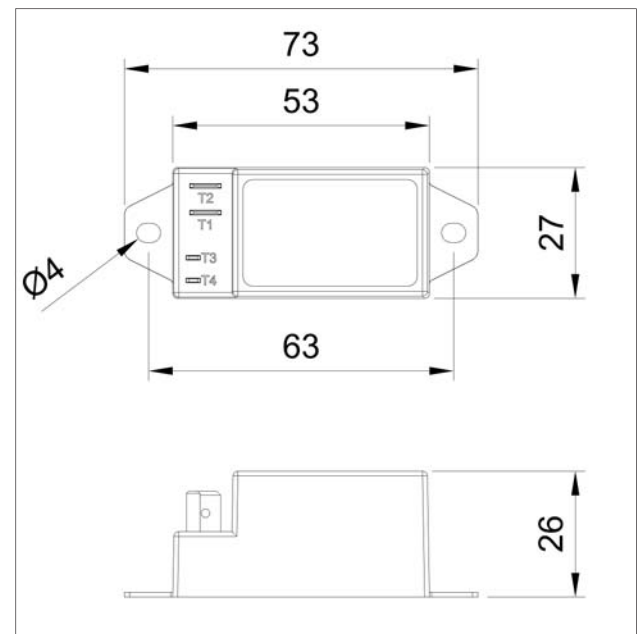
- Compact external module that connects to the FFA
- Mounts on metal electrical box to avoid the need for a heat sink
- Handling the in-rush current through its electronic power switching circuitry diverting compressor in-rush current away from the compressor relay
- Prevents an arc forming on the compressor relay contacts when turning off
- Allows higher current compressors or dual compressors to be used



Technical Specifications

Current rating	Up to 16A (TBC)
Indicators	None
Power connectors	6.3mm Faston (0.25")
Control connector	Custom cable
Temperature range	-20 to +60°C (TBC)
Size	73 x 27 x 26mm
Weight	57g
IP rating	IP 65, excluding terminals
Approvals	CE, EN 60529
Sollatek stock no.	92363TL0

Technical drawing



FFT-F

ENERGY SAVING & LONG LIFE SWITCHING MODULE

The FFT-F is a triac based unit providing energy saving (through voltage optimisation), long life and soft start to the compressor.

Features

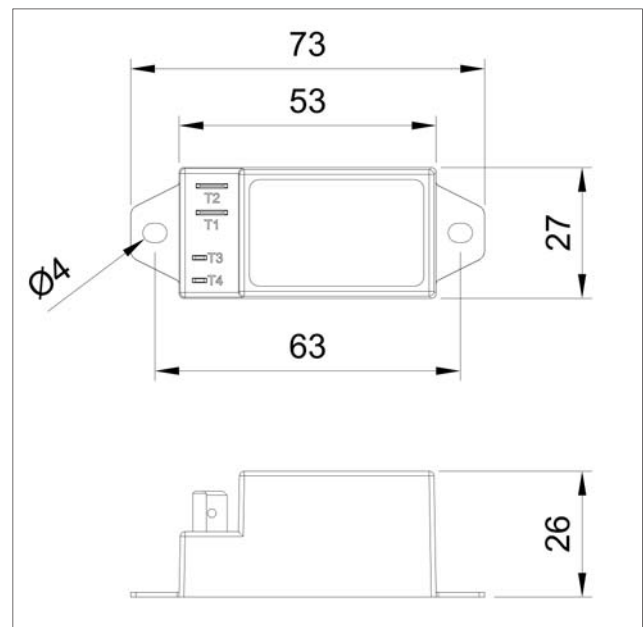
- Compact external module that connects to the FFA
- Mounts on a metal electrical box using it as a heat sink, reducing size and cost
- Provides ultra high number of switching cycles for the compressor
- Soft start feature reduces 'flicker' on the electricity supply when the compressor starts and extends compressor service life
- Energy save feature matches incoming voltage to optimum compressor voltage to reduce energy consumption and extends compressor service life
- Removes the need for a compressor relay in the FFA



Technical Specifications

Current rating	Up to 16A (TBC)
Indicators	None
Power connectors	6.3mm Faston (0.25")
Temperature range	-20 to +65°C (TBC)
Control connector	Custom cable
Size	73 x 27 x 26mm
Weight	57g
IP rating	IP 65, excluding terminals
Approvals:	CE, EN 60529
Sollatek stock no.	92363TF0

Technical drawing



TEMPERATURE PROBES

NTC temperature sensors that connecting to the FFA to measure evaporator temperature, return air temperature, ambient temperature, etc.

Features

- Sensitive thermistor element for accurate measurement
- Robust construction
- Different lengths and diameters available



Technical Specifications

Probe diameter	5mm
Lead length	0.3m (Other lengths available on request)
Sensor type	NTC thermistor
Temperature range	-20 to +60°C
Cable	2-core, 26 AWG double insulated
Connector	Open lead
IP rating	IP66 at probe end
Sollatek stock no.	8M293310

Sollatek's **expertise** extends **worldwide** through **local networks**



Global and Local

With a customer base across the world and a local presence in more than 50 countries, Sollatek is able to provide support services wherever you are.



SOLLATEK UK LTD.

Tel: +44 (1753) 214 500

sales@sollatek.com

www.sollatek.com

For more information on Sollatek's Refrigeration Control Range refer to the FreoRange Catalogue. or visit www.sollatek.com

Sollatek (UK) Ltd.
Sollatek House, Waterside Drive, Langley, Slough SL3 6EZ UK

ISO9001: 2008 accredited company

All weights and dimensions are approximate. Specifications are subject to change without prior notice. © Sollatek (UK) Limited 2012. All Rights Reserved. SOLLATEK and the SOLLATEK device are the trade marks of the Sollatek group of companies.