

MiniCAS

Description:

The Flygt MiniCAS modules are relays especially designed to simultaneously supervise pump motor thermal switches and Flygt pump leakage detectors FLS (Stator housing) and/or CLS (Water-in-oil) installed in each small to medium Flygt pump (Models 3085 through 3300) or mixer (Series 4600).

The MiniCAS is using only two wires for two or more sensors connected in series and actually includes two current sensitive mini-relays. The principle of operation is: a 12 VDC voltage is sent to the pump sensors and the current through the input circuit is fed through the current mini-relays. One mini-relay is an overcurrent relay, the other is an undercurrent relay.

- If a normally closed thermal switch, installed into the stator winding, opens due to overheating, or one of the connecting leads is broken, the undercurrent relay will de-energize, changing its contacts status. The MiniCAS will shut down the pump.

- If the Flygt leakage sensor (FLS or CLS) is activated, the current through the sensor will increase and the overcurrent relay will be energized, changing the status of its contacts. The MiniCAS will send a "Leakage" signal or shut down the pump, depending on the MiniCAS external connections.

Flygt MiniCAS relays are available in two interchangeable variants:

- **CURRENT PRODUCT** - MiniCAS/FUS produced in the U.S. with a "Manual/Auto Reset" selector switch, which allows the pump to restart in "Auto Reset" position after the stator cools down and the thermal switches re-close. (See Technical Data next page).

14-40 71 29 (MiniCAS/FUS -120VAC / 24 VAC / 24 VDC)
14-40 70 97 (Socket, 11-pin) – optional

- **LEGACY PRODUCT** - MiniCAS II produced in Sweden with external manual reset after an overtemperature tripping.

83 58 57 (MiniCAS II - 24VAC)
40-50 10 98 (MiniCAS II - 120VAC)
14-40 70 97 (Socket, 11-pin) – optional

MiniCAS FUS Technical Data (US version)

Operation Principle:	Current sensing
Environment:	-20 to 60°C (-4 to 140°F)
Supply Voltage:	120 VAC 50-60 Hz $\pm 10\%$, 24 VAC $\pm 10\%$, 24 VDC $\pm 10\%$
Relay Contact Rating:	3 A @ 240 VAC Form C
Voltage to Sensor:	12 VDC $\pm 10\%$
Values of Operation:	3.0 mA < I < 22 mA = OK conditions. I \leq 3.0 mA = High temp. $\pm 5\%$ (or interrupt). I \geq 22.0 mA = Leakage $\pm 5\%$ (or short circuit). (I = current measured by the MiniCAS/FUS). I > 64 mA $\pm 5\%$ = Shorted Sensor Green LED On = Supply Voltage present. Green LED Off = No Supply Voltage present.

Leakage

Contact:	3 A @ 240 VAC Form C (N.C. contact for interlocking)
Reset:	Automatic (N.O. contact for alarm)
LED Indicators:	Red LED On = Leakage indicated Red LED Off = No leakage indicated

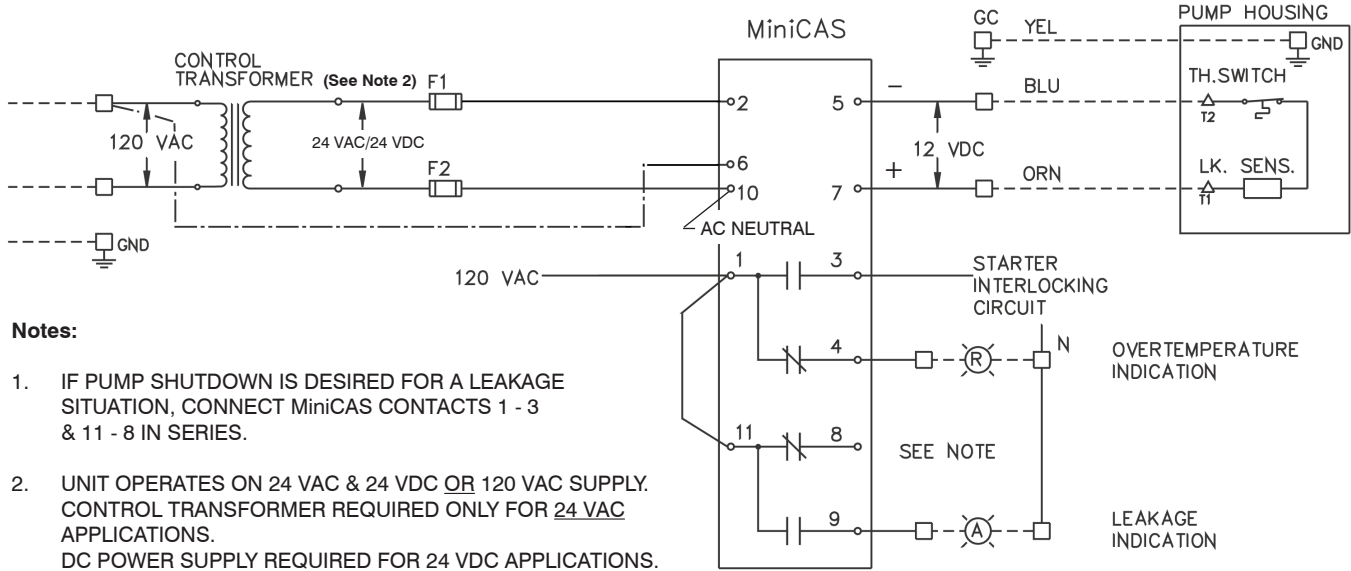
Temperature

Contact:	3 A @ 240 VAC Form C (N.C. contact for interlocking, N.O. contact for alarm)
Reset:	Manual - by interrupting the supply for 1 sec. or by setting the toggle switch in the "Manual" mode. Automatic - by setting the toggle switch in the "Auto Reset" mode.
LED Indicators:	Red LED On = Over-temperature indicated. Red LED Off = No Over-temperature indicated

Physical Size:	Width: 2-1/8" Height: 4-1/4" Depth: 3-1/2" (+ socket depth)
Part Number:	14-40 71 29 (MiniCAS/FUS) 14-40 70 97 (Socket, 11-pin) - optional
Approvals:	UL - File 222351

Wiring Diagram MiniCAS FUS (US version)

Wiring Diagram (MiniCAS/FUS)



Operation

The MiniCAS provides Motor Over Temperature and Seal Leakage protection for Flygt Submersible Pumps equipped with FLS or CLS sensors. The unit supplies 12 VDC to the sensor and measures the current through the sensor using protected, noise-filtered electronic circuitry. When sensor current is in the normal range, the Temperature Alarm Relay is activated to allow normal pump operation.

High Temperature Condition

In a motor High Temperature condition, the pump thermal contacts open and the current becomes zero. The Overtemp Indication is turned on and the Temperature Alarm Relay is deactivated, preventing pump operation. When the motor High Temperature condition has cleared, the unit will reset based on the position of the Alarm Reset Mode Select Switch (Auto or Manual). In the Auto position, the Overtemp Alarm resets automatically. In the Manual position, the Overtemp Reset Push-button must be pushed to clear the alarm.

Seal Leakage Condition

In a Seal Leakage condition, the Flygt FLS or CLS sensor decreases its internal resistance. The increased current is sensed, the Leakage Indication is turned on, and the Leakage Alarm Relay is activated.

Shorted Sensor Condition

If the sensor wires are shorted, a Shorted Sensor condition is indicated by activating the Leakage Alarm Relay and alternately flashing both the Leakage and Overtemp LED together with the Power LED. If the short is removed, the fault will automatically reset within 30 seconds.

Cleared Fault Indication

For both Overtemp and Seal Leakage conditions, a cleared fault indication is provided. If either condition has occurred, but has been automatically cleared, then the corresponding Indication will slowly flash. The flashing indication may be manually removed by pressing the Overtemp Reset Push-button.

MiniCAS II Technical Data (Swedish version)

Operation Principle:	Current sensing
Environment:	0-50°C (32-123°F) max 90% RH
Supply Voltages:	20-30 VAC 50-60 Hz, or 120VAC 50-60 Hz
Relay Contact Rating:	8 Amps @ 250 VAC
Voltage to Sensor:	12 VDC \pm 5%
Values of Operation:	3 mA < I < 22 mA = OK conditions. I < 3 mA = High temp. (or broken wire). I > 22 mA = Leakage (or short circuit). (I = DC current measured by the MiniCAS II).
LED Indicators:	Yellow LED: for Supply Voltage presence indication. Red LED: for Overtemperature indication. Red LED: for Leakage indication.
Reset:	Manual - for Overtemperature by interrupting power supply or pushing external push-button (NO), connected between terminals 6 and 2 (not supplied with the unit). Automatic - for Leakage
Physical Size:	Width: 33mm (1-21/64") Height: 79mm (3-7/64") Depth: 75mm (2-61/64")
Part Number:	83 58 57 (MiniCAS II - 24VAC) 40-50 10 98 (MiniCAS II - 120VAC) 14-40 70 97 (Socket, 11 pin) – optional

MiniCAS Specifications

Furnish and install one Flygt MiniCAS (Mini Control and Status) module to monitor the temperature and leakage detectors installed in each Flygt pump or mixer. The MiniCAS shall be capable of monitoring the thermal switches embedded in the stator end coils, the Flygt FLS (float switch type) water-in-stator-housing sensor, and the Flygt CLS (capacitive type) water-in-oil sensor. The MiniCAS shall monitor both the series connected thermal switches and leakage sensor(s) by outputting 12 VDC on a single two wire circuit. When both CLS and FLS leakage sensors are specified they shall be connected in parallel with each other and then in series with the thermal switches.

The MiniCAS circuitry shall operate on the current sensing principle whereby a change in temperature or leakage condition shall change the resistance of the associated sensor and thus alter the current in the sensing circuit. The MiniCAS shall contain two sets of form C dry contacts, one for overtemperature and one for leakage. The dry

contacts shall change status upon occurrence of an over temperature or leakage condition so as to indicate that condition to other control components in the pump control panel. In the case of an overtemperature, and in keeping with Flygt's warranty policy, the overtemperature dry contacts shall be used to trip the pump off line. The MiniCAS shall be designed to be plugged into a standard 11-pin circular socket. Detailed technical data and wiring connections shall be found in the MiniCAS Manual.