



APP #097

Revision History

| Date | Author | Description |
|----------|--------|--|
| 09-03-14 | JLM | Created initial version |
| 10-24-14 | JLM | Updated wiring diagram |
| 06-13-17 | DEW | Added info from Engineer change from Hanbell |

INT69HBY Diagnose Installation and Flash Code Description



OLDER MODELS (see back section)

INT69

INT69Y

INT69HBY

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Description - INT69HBY DIAGNOSE

Hanbell supplies INT69 HBY Diagnose for motor protection with monitoring functions of phase loss, phase sequence, motor temperature, and discharge temperature. The module has built in flash codes that are helpful for diagnosing safety faults.

In order to protect the compressor, each RC2 series compressor has been built with three PTC temperature sensors inside the motor coil and one at the discharge port neck of the compressor. These sensors are connected to the motor module to monitor coil temperature and discharge temperature. Up to 9 sensors can be connected in series and used with one module.

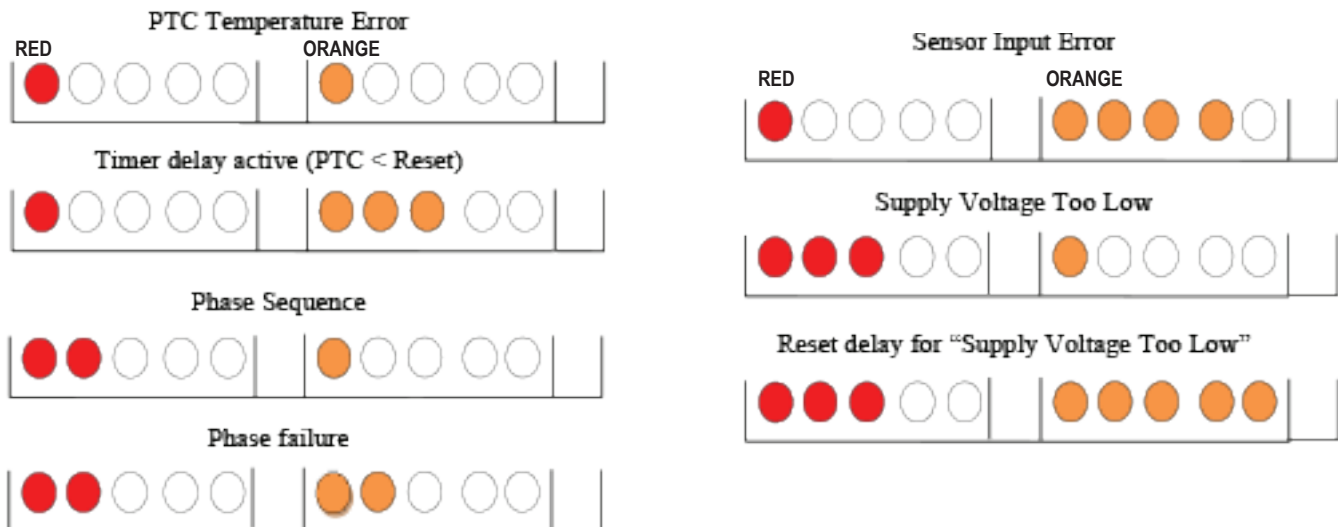
If the temperature in one of the positions monitored exceeds nominal response temperature of the respective PTC thermistor (230° F, 4.5kW±20%), the sensor resistance increases and the module trips (M1 and M2 open). The failure results in a lockout. The module resets when the response temperature drops 3kΩ(when temp

decreases below 212°F, 2.75kW±20%). 5 min delay for the first PTC failure, 60 min delay for the 2nd failure, latching lockout for the 3rd within 24 hour period. Monitoring is inactive for 20 seconds after motor stop to prevent nuisance trips from brief reverse rotation.

Phase failure (loss) and Phase sequence safety trips result in a first time lockout. Phase sequence monitoring is active 1 second after motor start for 10 seconds. Phase loss is monitored 1 second after motor start till motor stop.

Lockout and time delay can be cancelled by interrupting power to the module for 5 seconds. An optional power supply reset button can be added to electrical connection box.

Flash Codes



Flash Code Overview

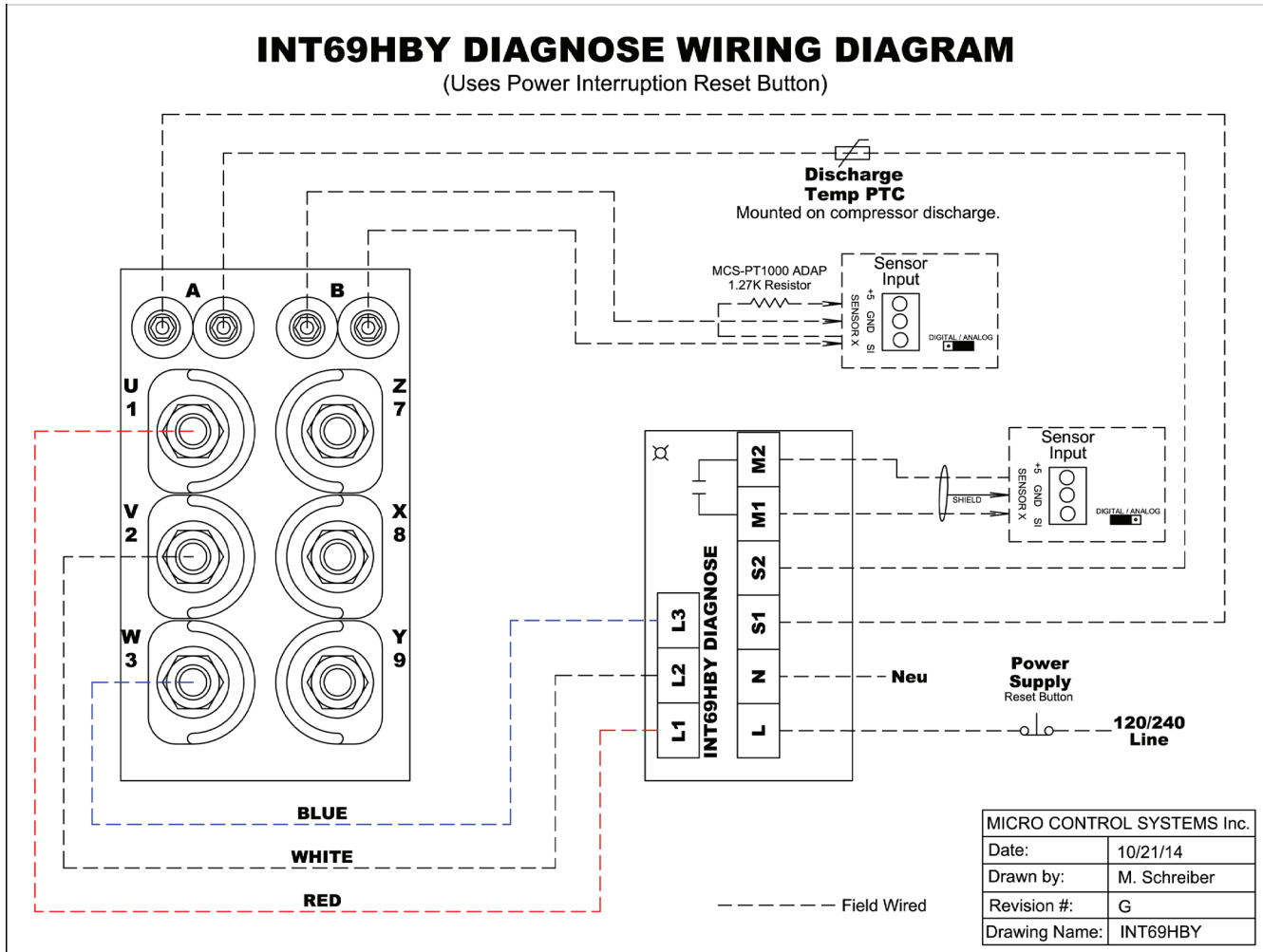
| | |
|---------------------|--|
| Green lit | Compressor Operational |
| Green flashing | Compressor Running |
| Red/Orange flashing | Error, Compressor is switched off; for description see table below |

| 1 st flashing sequence (Red LED) | 2 nd flashing sequence (Orange LED) | Description |
|---|--|--|
| 1 | 1 | Motor temperature; Static switch off, Permissible winding temperature exceeded |
| | 3 | Motor temperature; Reset delay after static switch off |
| | 4 | Motor temperature; Sensor input detected open circuit or short circuit |
| 2 | 1 | Motor voltage; Incorrect phasesequence |
| | 2 | Motor voltage; Phase failure/asymmetry |
| 3 | 1 | General; Supply voltage too low |
| | 5 | General; Reset delay after "General" error |

| Error | Active | Condition | Time delay |
|-------------------------------|---|--|---|
| Motor temperature static trip | Always | Rtrip 4,5kΩ ±20% Rreset 2,75kΩ ±20% | 1. / 24h 5min 2. / 24h 60min 3. / 24h locked out Time delay starts after cooling down |
| Operation cycle limitation | Always | >3 switch off within 30s | 5min |
| Phase sequence | 1s after motor start for 10s | | Locked out |
| Phase loss failure | 1s after motor start till motor stop, monitoring is inactive for 20 seconds after motor stop to prevent nuisance trips from brief reverse rotation. | | Locked out |

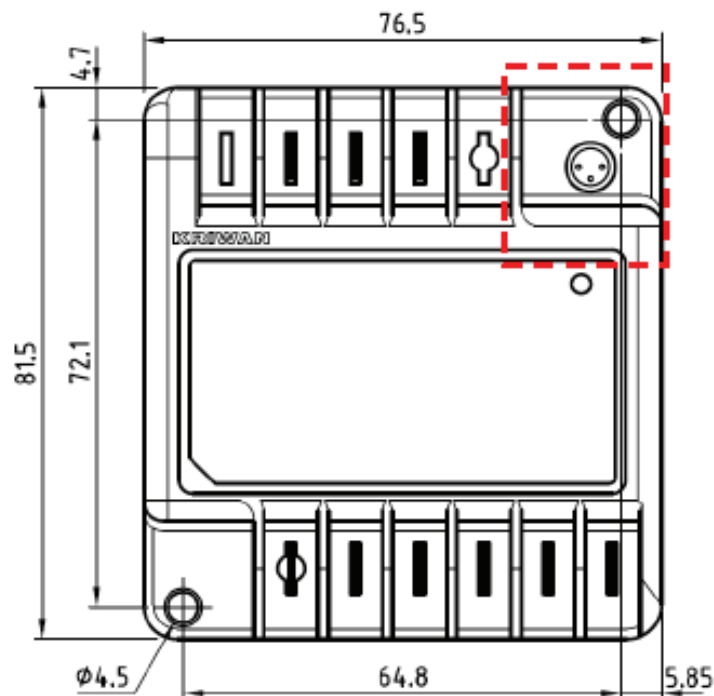
How to Wire INT69HBY Diagnose

The following diagram shows the proper wiring connections for the module. The module is connected to L1, L2 and L3 for phase monitoring. Stake on connectors at terminal “A” are connected in series with the discharge PTC and wired back to S1 and S2.






Technical Data

| | |
|---|--|
| Supply | AC 50/60Hz 115-240V -15...+10% 3VA |
| Permitted ambient temperature | -30...+70°C |
| Temperature measuring circuits -Type -Number of sensors -R25, total -Max length connection line | 1-2 AMS sensors in series Alternative 1-9 sensors acc. To DIN 44081, DIN 44082 in series <1.8KΩ Trip -- 4.5KΩ ±20% Reset -- 2.75KΩ ±20% 30m |
| Short circuit monitoring System PTC | typical < 30Ω |
| Motor voltage | 3 AC 50/60 Hz 200-690V ±10% |
| Reset of lock-out or time delay | Power off > 5s, only possible without active error |
| Output relay Normally Open contact Mechanical service life | Max. AC 240V, 2,5A, C300 min AC/DC > 24V, >20mA Approx. 1 million switching cycles |
| Protection class acc. to EN 60529 | IP00 |
| Connection type | 6,3mm connectors |
| Housing material | PA, glass-fiber-reinforced |
| Mounting | Screw mounting |
| Weight | Approx. 200g |
| Interface | Diagnose Port (DP) |
| Dimensions | Refer to dimensions below in mm |



OLDER MODELS - INT69, IN69Y and INT69HBY**Comparison among INT69, INT69Y and INT69HBY**

| | INT69 | INT69Y | INT69HBY |
|--|--|---|--|
| |  |  |  |
| Supply voltage | Single voltage AC 40...60Hz 200...240V Or AC 40...60Hz 100...120V ±10% 3VA | Dual voltage AC 50/60Hz 115/120V AC 50/60Hz 230/240V -15...+10% 3VA | Dual voltage AC 50/60Hz 115/120V AC 50/60Hz 230/240V -15...+10% 3VA |
| Ambient temp range. | -30...+60°C | -30...+70°C | -30...+70°C |
| Time relay after cool down | 3K below response temp | 5min ± 1min | -static trip 1 st : 5min 2 nd : 60min 3 rd : lockout -dynamic trip (locked rotor) lockout |
| Phase monitor | - | 3 AC 50/60Hz 200...600V active window : t ₀ + 1s...t ₀ + 6s | 3 AC 50/60Hz 200...575V ±10% active window : t ₀ + 1s...t ₀ + 11s |
| After response of phase monitor -Phase sequence -Phase loss -Reset / cancel lockout | - | lockout within 5s lockout within 5s mains reset for 5s | lockout lockout mains reset for 5s |
| Reset button | - | - | Installed at lateral side of terminal box by Hanbell or installed at preferred position by customer |

INT69 - Single Voltage - There were no Flash Codes used on the INT69 model.

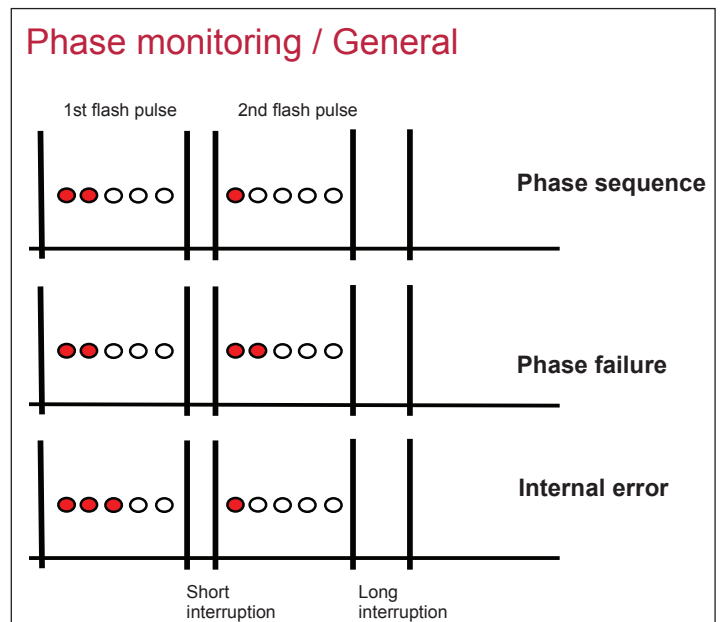
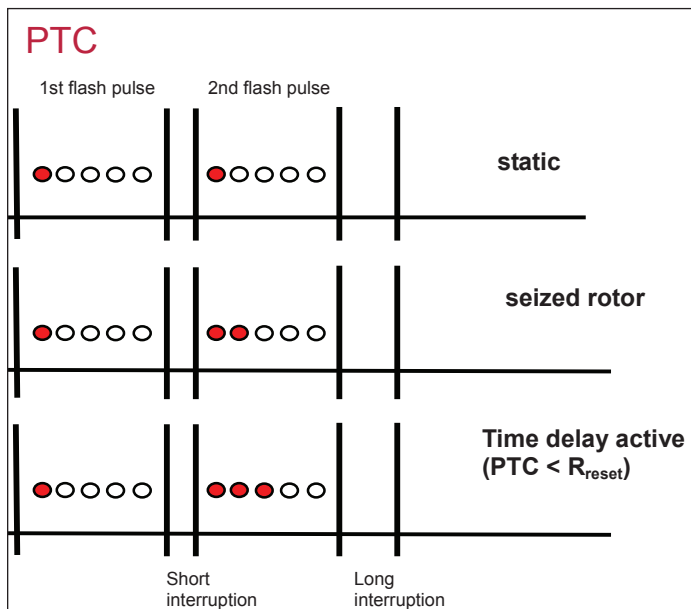
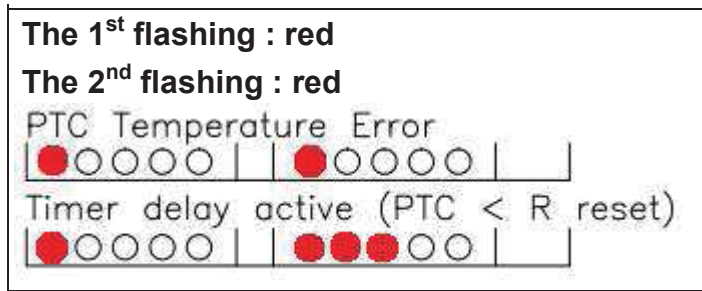
INT69Y - Dual Voltage -

| | |
|---------------------|---|
| Green Lit | Compressor operational |
| Green Flashing | Compressor running |
| Red/Orange Flashing | Error, compressor is switched off; see description on right |

Codes used for INT69Y

| 1st flashing sequence (LED red) | 2nd flashing sequence (LED orange) | Description |
|---------------------------------|------------------------------------|---|
| 1 | 1 | Motor temperature: Static switch-off, Permissible winding temperature exceeded |
| | 2 | Motor temperature: Dynamic switch-off, Temperature rise in the motor winding unusually fast |
| | 3 | Motor temperature: Reset delay after static switch-off |
| | 4 | Motor temperature: Sensor input detected open circuit or short circuit |
| | 5 | Motor temperature: Reset delay after dynamic switch-off |
| 2 | 1 | Motor voltage: Incorrect phase sequence |
| | 2 | Motor voltage: Phase failure/asymmetry |
| 3 | 1 | General: Supply voltage too low |
| | 5 | General: Reset delay after "General" error |

Blink Code INT69HBY



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