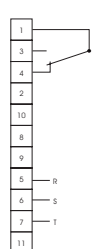
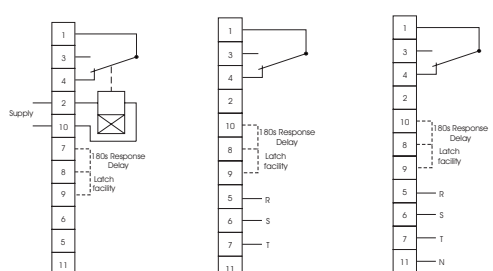


Monitoring devices



Function	Phase failure / sequence relay		Over / under voltage monitor (incorporating phase failure)		
Model	SF1	SF1/K	V1E	V3E	V3E/N
Description of operation	<p>The relay will only operate while all three phases are present and in sequence.</p> <p>Provides effective protection of phase failure / phase reversal / excessive phase and "UNDER" limits and all imbalance and phase angle error.</p> <p>SF1/K with sensitivity adjustment</p>		<p>single phase</p> <p>Monitors own supply. Relay will only operate whilst the supply voltage is within the presettable "OVER" and "UNDER" voltage limits and all three phases present and in sequence.</p> <p>Providing effective power supply supervision and protection.</p> <ul style="list-style-type: none"> • Phase failure protection • Phase reversal protection • Over / under voltage protection 	<p>3 phase</p>	<p>3 phase + N</p>
Standard Voltages	AC: 110, 230, 400, 525V ±15%		AC: 110, 230, 400, 525V ±15%		
Galvanic isolation	110, 230, 400, 525V are equipped with internal transformer, providing effective galvanic separation of the electronic circuitry from supply voltage. (Test volts: 2kV)				
Monitoring parameters	Phase failure / reversal / excessive Phase imbalance and phase angle error.		<p>Upper: +5 ÷ +20%</p> <p>Lower: -5 ÷ -20% of nominal voltage.</p> <p>Phase failure / reversal</p> <p>A 10 sec start-up delay is incorporated if 8 + 10 are not bridged. If 8 + 10 are bridged a 180s response delay is enabled by bridging pins 8 + 9.</p>		
Hysteresis	2% fixed		5% fixed		
General information	Measured voltage same as supply		Effective protection of "over" or "under" voltage combined with phase failure/rev.		
Contact rating	10A 250VAC		10A 250VAC		
Consumption	±3VA		±3VA		
Repeat accuracy	0.5%				
Technical information	Sensitivity beyond regenerated EMF.		Measuring range equals the rms value of a sinusoidal voltage.		
LED indication	"Relay on" (Phases in sequence)		"Overvolts" and "Undervolts"		
Connection Diagram					
Price					



Monitoring devices



Frequency monitor	Current monitor over/under		Voltage monitor
H1E	LA5	WA5	V1C
<p>The relay is energised as long as measured frequency is within the presettable "UPPER" (50-56 Hz) and "LOWER" (45-50 Hz)</p>	<p>The module directly interfaces with conventional 5A CTs. The relay will only operate as long as monitored current remains below the pre-set limit or above the pre-set limit. Hysteresis 5-50% (the difference between the trip and recovery level) can be adjusted. (WA5 has over + under setting knobs). A 10 sec start-up delay can be enabled by rear mounted dip switches.</p> <p> <input type="checkbox"/> "OVER CURRENT" <input type="checkbox"/> "UNDER CURRENT" </p>		<p>This relay monitors a separate voltage input (Pins 5 + 7). The relay will only operate as long as the monitored voltage remains "BELOW" the pre-set over voltage limit or "ABOVE" the pre-set overvoltage limit. Hysteresis 5-50% (the difference between the trip and recovery level) can be adjusted.</p> <p> <input type="checkbox"/> "OVER VOLTAGE" <input type="checkbox"/> "UNDER VOLTAGE" </p>
AC: 24, 48, 110, 230, 400, 525V ±15%	AC: 24, 48, 110, 230, 400, 525V ±15% DC: 12, 24, 48V ±15%		AC: 24, 48, 110, 230, 400, 525V ±15% DC: 12, 24, 48V ±15%
110, 230, 400, 525V are equipped with internal transformer, providing effective galvanic separation of the electronic circuitry from supply voltage. (Test volts: 2KV)			
<p>Adjustable bandwidth Lower: 44-50 Hz Upper: 50-56 Hz</p> <p>A 10 sec start-up delay enabled by bridging Pins 7 + 11. A latch facility can be enabled by bridging Pins 8 + 9.</p>	<p>LA5/5 0-5A adjustable LA5/1 0-1A adjustable LA5/D 4-20mA / 0-50mV 40-200mA</p> <p> <input type="checkbox"/> OVER CURRENT <input type="checkbox"/> 10sec START-UP DELAY <input type="checkbox"/> UNDER CURRENT <input type="checkbox"/> NO START-UP DELAY </p>		<p>0.10- 10VAC (rms) or DC 0.4- 40VAC (rms) or DC 40-400VAC (rms) or DC 60-600VAC (rms) or DC</p> <p> <input type="checkbox"/> "ON" 10sec START-UP DELAY <input type="checkbox"/> "OFF" </p>
0.5 Hz (fixed)	5-50% (adjustable)	5% (pre-set)	5-50% (adjustable)
H1E has separately adjustable "UPPER" and "LOWER" settings	Selectable: • "Over" or "Under" current detection • 1A or 5A Current input • 10sec start-up delay • Latch facility		Monitored voltage and supply separate. Latch facility (Pins 8 + 9)
10A 250VAC	10A 250VAC		10A 250VAC
±3VA	±3VA		AC: ±3VA DC: ±100mA
1%	0.5%		
supply frequency 44-58 Hz	external shunt provided for CT protection		input impedance 500kΩ max. input voltage 690V
"Over" "Under" "Relay on"	"Relay on" "Power on" "Over" + "Under" Current		"Relay on" and "Power on"