MULTI PURPOSE DISTRIBUTION BOARD

GDB
MULTI PURPOSE DISTRIBUTION BOARD - IP41
Surface mounted 6 Way IP41 plastic DB, pre-fitted with DTS-16C20A Timer (see below) and 12 A Mini contactor (230V or 400V). Ideally suited to any device that requires automatic control For example: Geyser / Pump / Fan / Irrigation / Lights etc. The timer can be set to operate the On / Off functions of the contactor. It may also be "by-passed" if Manual intervention is required. The GDB does not include any protective device.
A Over / fault current device suitable for protection of the switched equipment, must be provided for separately.

TIME SWITCHES

TS18A
Program Dial: 24h. NO Power Reserve.
Programmable every: 30min.
Switching Contacts: 1 changeover.
Amperage: 16A@230V (resistive).
Din Mount

TS18
Program Dial: 24h. Power Reserve: 200 Hours.
Programmable every: 30min.
Switching Contacts: 1 changeover.
Amperage: 16A@230V (resistive).
Din Mount

GTS-16C20A-MR
7 Day Digital Timer.
Power Reserve: 150 Hours.
Min. Switching time: 1min.
*Suitable for schools/factories using pulse setting program. Minimum 1 sec.
Switching Contacts: 1 NO.
Amperage: 20A@250V (resistive).
Mini Rail.
1 Channel 16 On & 16 Off Operations.
8 Pluse and countdown functions.
LCD Display

DTS-16C20A
7 Day Digital Timer.
Power Reserve: 150 Hours.
Min. Switching time: 1min.
*Suitable for schools/factories using pulse setting program. Minimum 1 sec.
Switching Contacts: 1 changeover.
Amperage: 20A@250V (resistive).
Din Mount.
1 Channel 16 On & 16 Off Operations.
18 Pluse and countdown functions.
LCD Display

TS15
Program Dial: 24h.
Power Reserve: 72 Hours.
Slimline
Programmable every: 15min.
Switching Contacts: 1NO.
Amperage: 16A@250V (resistive).
Din Mount.

DTS-16C16A-AD
16A 12VDC 7 Day Digital Timer. Power Reserve: 150 Hours. Min. Switching time: 1min.
*For Solar or Low DC Voltage installations
Switching Contacts: 1 changeover.
Din Mount. 1 Channel 16 On & 16 Off Operations.
18 Pluse and countdown functions.
LCD Display

AHC-810
24 Hour 7 Day digital Timer.
Power Reserve: 150 Hours.
Min. Switching time: 1min.
Switching Contacts: 1 changeover
Amperage: 16A@250V (resistive).
Din Mount
1 Channel 22 On & 22 Off Operations.
LCD Display

AHC-812
24 Hour 7 Day digital Timer.
Power Reserve: 150 Hours.
Min. Switching time: 1min.
Switching Contacts: 2 changeover
Amperage: 16A@250V (resistive).
Din Mount
2 Channel 22 On & 22 Off Operations.
LCD Display

M3CR-A8
Multi Function Multi Range.
Operation: Delay - On OR Delay - Off (interval)
Time range: 0-30 sec/min/hrs.
Relay Contacts: 2 changeover 5A@ 230VAC (resistive)
Size: 48 x 48 - 230VAC.
8 Pin Base Mount

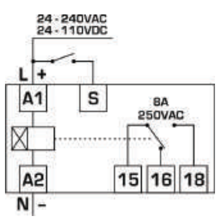
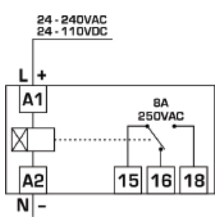
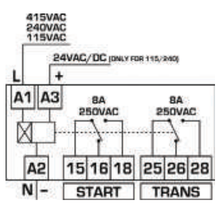
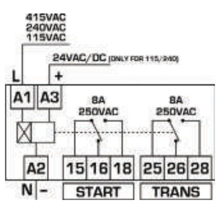
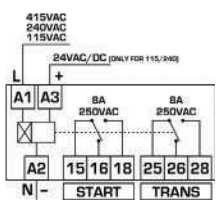
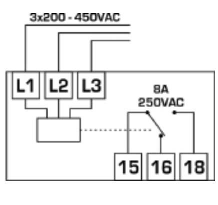
Temperature Controller
STG-8000 or STG-8000J 48 x 48 mm.
Range : 0-999°C Supply: 230 VAC. Output: 1 changeover- N/O - N/C- Common Alarm: 1 set point. Probe excluded

Type - J Thermo couple 2m Cable
PT - 100 Thermo couple 2m Cable

MICROIDEA
MONITORING & CONTROL DEVICES

MONITORING DEVICES
MULTI FUNCTION TIMER
ON DELAY TIMER
STAR DELTA TIMER
PHASE SEQUENCE RELAY

- DIN RAIL.
- RoHS compliant.
- Material: Self extinguishing VO

DTMSMM1 Multi-Function Timer	DTMSLD1 Timer 0.1s-10d (On Delay)	DTMVQD2 Star Delta Timer 24VAC/DC, 115VAC	DTMUQD2 Star Delta Timer 24VAC/DC, 240VAC	DTMOQD2 Star Delta Timer 415VAVC	FSTKII1S Phase Sequence Relay
					
FEATURES					
- Compact Size - 1 Module - Out 1 Contact SPDT - Time range 0,1s-10 days - 10 Function Selectable - Universal Supply - Din Rail EN50.022	- Compact Size - 1 Module - Out 1 Contact SPDT - Time range 0,1s-10 days - Energise after Delay - Universal Supply - Din Rail EN50.022	- Compact Size - 1 Module - Out 2 Contact SPDT - Time range: ST: 6-60 sec TR: 20-300 ms - Energise after delay - Universal Supply - Din Rail EN50.022	- Compact Size - 1 Module - Out 2 Contact SPDT - Time range: ST: 6-60 sec TR: 20-300 ms - Energise after delay - Universal Supply - Din Rail EN50.022	- Compact Size - 1 Module - Out 2 Contact SPDT - Time range: ST: 6-60 sec TR: 20-300 ms - Energise after delay - Universal Supply - Din Rail EN50.022	- Compact Size - 1 Module - Out 1 Contact Spot - Rotation Control - Loss Control - Energise after delay - Universal Supply - Din Rail EN50.022
TYPICAL WIRING & CONNECTION DIAGRAMS					
					
TECHNICAL SPECIFICATIONS					
POWER SUPPLY: AC: 24V-240 Hz: 47-63 DC: 24V-110 Max Consumption: 8,5VA Time Range: 0,1s-10 days Min S Impulse: 25ms OUTPUT RELAY: Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity:95 RH% Weight: 65g Dimensions: 98 x 17,5 x 64mm	POWER SUPPLY: AC: 24V-240 Hz: 47-63 DC: 24V-110 Max Consumption: 8,5VA Time Range: 0,1s-10 days OUTPUT RELAY: Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity:95 RH% Weight: 60g Dimensions: 98 x 17,5 x 64mm	POWER SUPPLY: AC: 24V-115 Hz: 47-63 AC/DC: 24V Max Consumption: 3,9VA Time Range: ST: 6-60 sec TR:20-300ms OUTPUT RELAY (x2): Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity: 95 RH% Weight: 65g Dimensions: 98 x 17,5 x 64mm	POWER SUPPLY: AC: 24V-240 Hz: 47-63 AC/DC: 24V Max Consumption: 3,9VA Time Range: ST: 6-60 sec TR: 20-300ms OUTPUT RELAY (x2): Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity: 95 RH% Weight: 65g Dimensions: 98 x 17,5 x 64mm	POWER SUPPLY: AC: 415 Hz: 47-63 AC/DC: 24V Max Consumption: 3,9VA Time Range: ST: 6-60 sec TR: 20-300 ms OUTPUT RELAY (x2): Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity: 95 RH% Weight: 65g Dimensions: 98 x 17,5 x 64mm	POWER SUPPLY: AC: 3x200-450 Hz: 47-63 Max Consumption: 8VA(L1/L2) 1,2VA(L3) OUTPUT RELAY: Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity: 95 RH% Weight: 60g Dimensions: 98 x 17,5 x 64mm

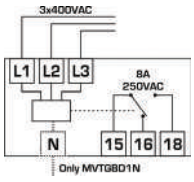
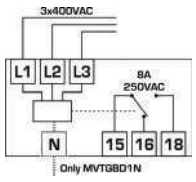
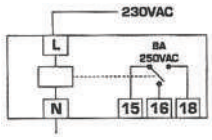
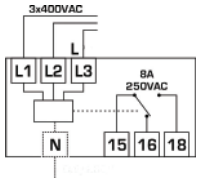
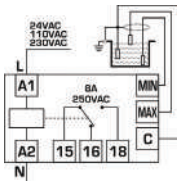
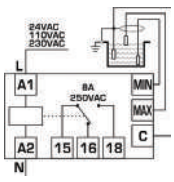
- DIN RAIL.
- RoHS compliant.
- Material: Self extinguishing VO

MVTGBD1S Under/Over Voltage Relay Phase Failure Phase Sequence	MVTGBD1N Under/Over Voltage Relay Phase Failure Phase Sequence +N	MVMFBD1 Under/Over Voltage Relay 1 Phase 230VAC	MVTGBD1 Under/Over Voltage Relay 3 Phase 415VAC	LRMFII1 Liquid Level Control Relay 230VAC	LRMGII1 Liquid Level Control Relay 415VAC
					

FEATURES

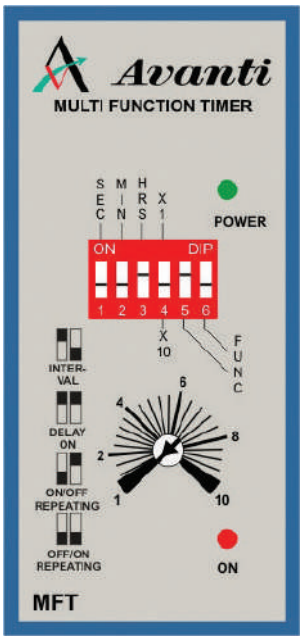
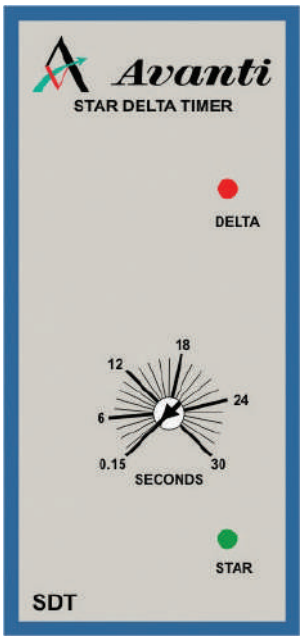
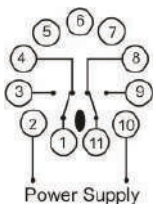
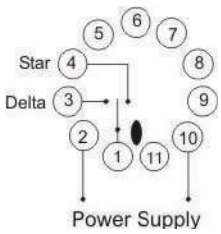
MVTGBD1S	MVTGBD1N	MVMFBD1	MVTGBD1	LRMFII1	LRMGII1
- Compact Size - 1 Module - Out 1 Contact SPDT -Adj Under: 75-95% Vn -Adj Over: 105-125% Vn - Time range 0,2-10 sec - De-energise after delay - Din Rail EN50.022	- Compact Size - 1 Module - Out 1 Contact SPDT -Adj Under: 75-95% Vn -Adj Over: 105-125% Vn - Time range 0,2-10 sec - De-energise after delay - N Loss - Din Rail EN50.022	- Compact Size - 1 Module - Out 1 Contact SPDT -Adj Under: 75-95% Vn -Adj Over: 105-125% Vn - Time range 0,2-10 sec - De-energise after delay - Din Rail EN50.022	- Compact Size - 1 Module - Out 1 Contact SPDT -Adj Under: 75-95% Vn -Adj Over: 105-125% Vn - Time range 0,2-10 sec - De-energise after delay - Din Rail EN50.022	- Out 1 Contact SPDT -For all conductive liquid - Automatic resetting - Adj. Sens. 2,5K to 100K - Din Rail EN50.022	- Out 1 Contact SPDT -For all conductive liquid - Automatic resetting - Adj. Sens. 2,5K to 100K - Din Rail EN50.022

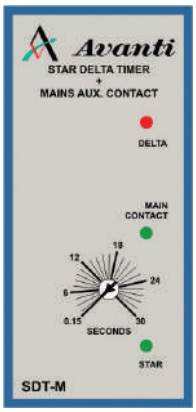
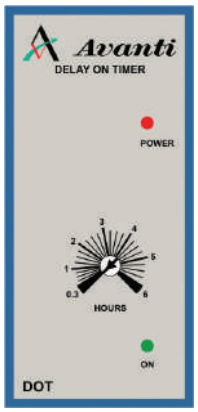
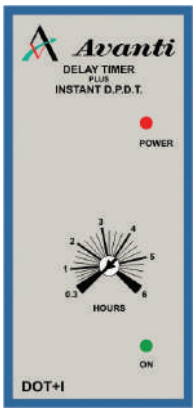
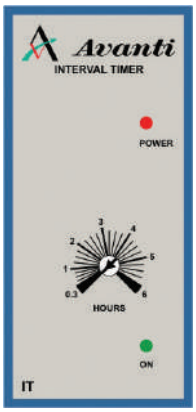
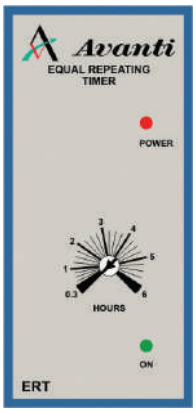
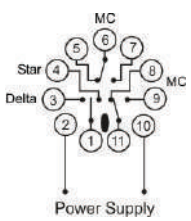
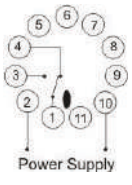
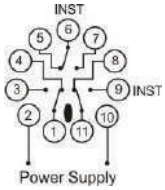
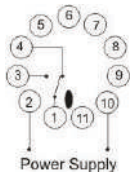
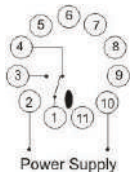
TYPICAL WIRING & CONNECTION DIAGRAMS

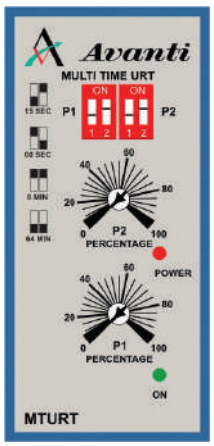
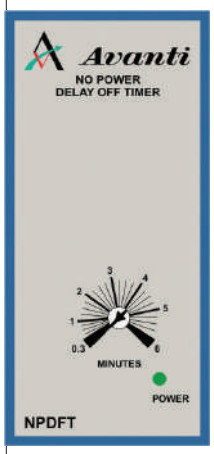
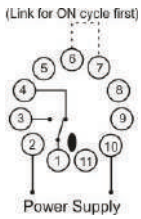
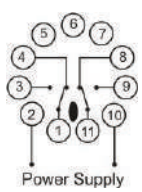
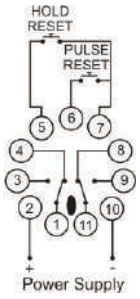
MVTGBD1S	MVTGBD1N	MVMFBD1	MVTGBD1	LRMFII1	LRMGII1
					

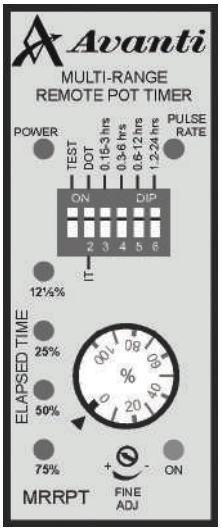
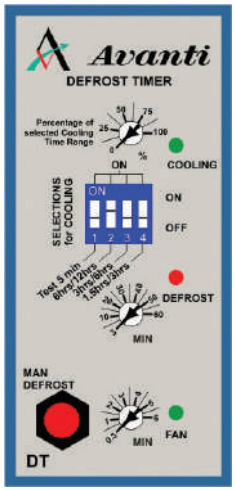
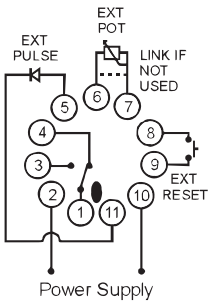
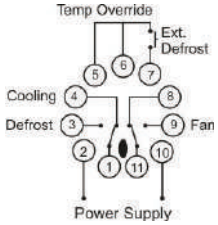
TECHNICAL SPECIFICATIONS

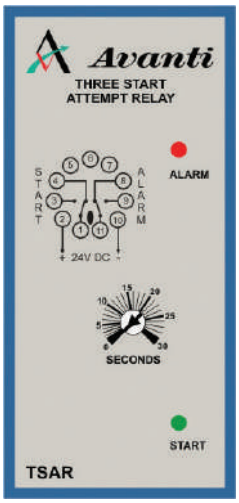
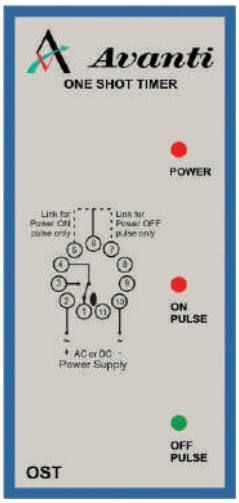
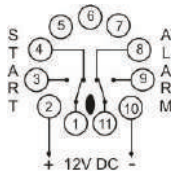
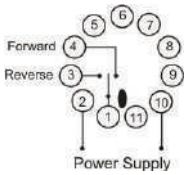
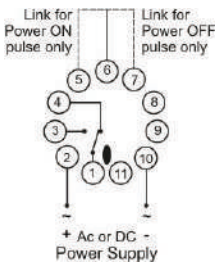
MVTGBD1S	MVTGBD1N	MVMFBD1	MVTGBD1	LRMFII1	LRMGII1
POWER SUPPLY: AC: 3 x 400 Hz: 47-63 Max Consumption: 15VA OUTPUT RELAY: Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity: 95 RH% Weight: 65g Dimensions: 98 x 17,5 x 64mm	POWER SUPPLY: AC: 3 x 400 +N Hz: 47-63 Max Consumption: 15VA OUTPUT RELAY: Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity: 95 RH% Weight: 65g Dimensions: 98 x 17,5 x 64mm	POWER SUPPLY: AC: 230V Hz: 47-63 Max Consumption: 15VA OUTPUT RELAY: Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity: 95 RH% Weight: 60g Dimensions: 98 x 17,5 x 64mm	POWER SUPPLY: AC: 3 x 400V Hz: 47-63 Max Consumption: 3,9VA OUTPUT RELAY: Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity: 95 RH% Weight: 60g Dimensions: 98 x 17,5 x 64mm	POWER SUPPLY: AC: 230 Hz: 47-63 Max Consumption: 6,5VA Max Cable length: 100m Isolation Input Probe 3kV OUTPUT RELAY: Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity: 95 RH% Weight: 120g Dimensions: 98 x 36 x 64mm	POWER SUPPLY: AC: 415 Hz: 47-63 Max Consumption: 6,5VA Max Cable length: 100m Isolation Input Probe 3kV OUTPUT RELAY: Contact: SPDT Current: 8A Voltage: 250VAC Temperature: Work:-10/+50°C Electrical Strength: 4kV Protection Degree: IP40 Relative Humidity: 95 RH% Weight: 120g Dimensions: 98 x 36 x 64mm

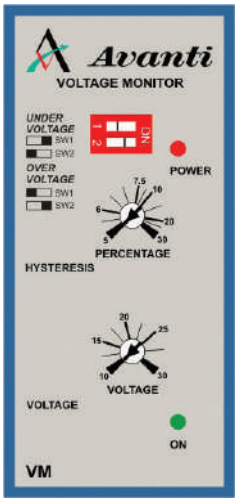
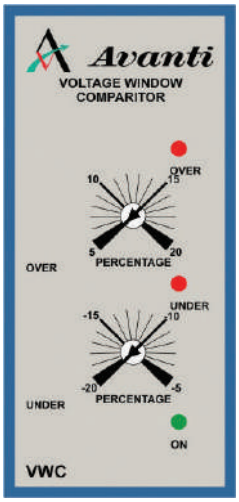
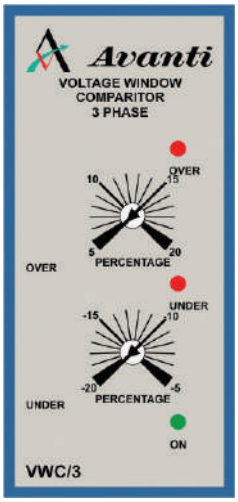
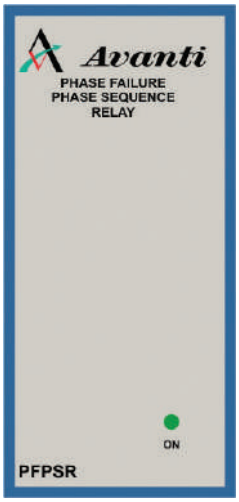
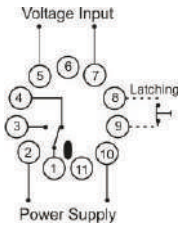
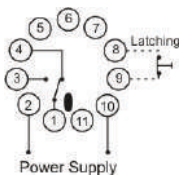
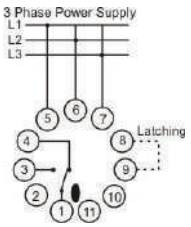
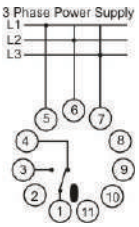
MODEL	A- MFT - Multi-range with Multi-Functions				A- SDT
	Time Ranges (Switch Selectable)		**Functions**		
	0,1 - 1 second 0,1 - 1 minute 0,1 - 1 hour	0 - 10 seconds 0 - 10 minutes 0 - 10 hours	Delay - On Interval Equal Repeating		0 - 30 seconds Other Times on request
FUNCTION	Delay-On	Interval	Equal Repeating ON/OFF	Equal Repeating OFF/ON	Star-Delta Timer
DESCRIPTION OF OPERATION	When power is applied the relay remains de-energised. After the pre-set time, the relay energises. Remove the power to reset.	When power is applied the relay energises. After the pre-set time, the relay de-energises. Remove power to reset.	When power is applied the relay switch ON and OFF continuously. The pre-set time is the same for both cycles. Remove the power to reset.	When power is applied the relay will remain OFF, then switch ON and OFF continuously. The pre-set time is the same for both cycles. Remove power to reset.	When the power is applied a neutral contact closes between 1 + 4 for a "Star" contactor connection. After a pre-set time this contact opens and pauses in the (open) position. After 25mS the contact closes between 1 + 3 for a "Delta" connection. This contact remains in this closed position until power is removed.
CONTROLS AND LABEL DATA					
WIRING DIAGRAM					
VOLTAGE	12V, 24V AC/DC		110V, 230V, 400V AC		12V, 24V AC/DC 110V, 230V, 400V AC

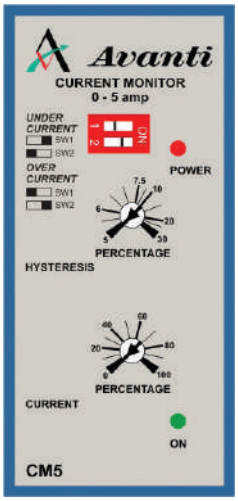
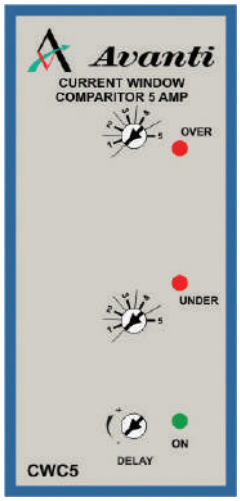
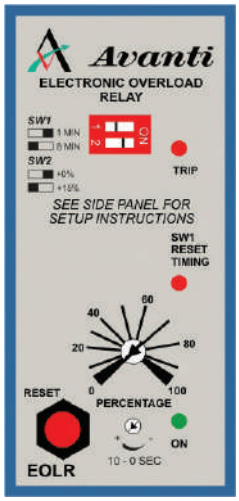
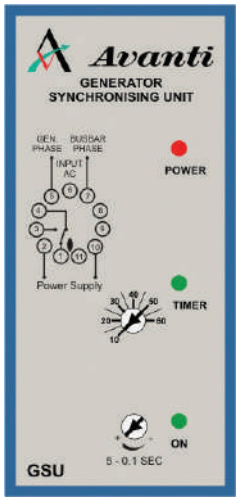
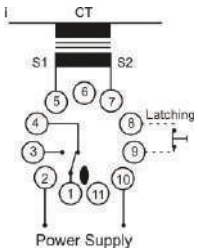
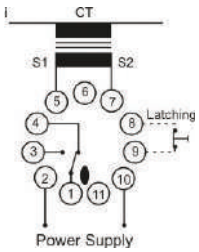
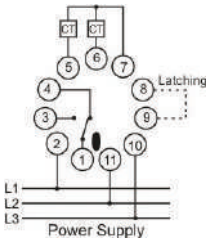
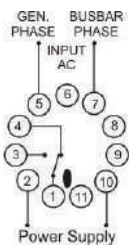
MODEL	A- SDT-M	A- DOT	A- DOT+I	A- IT	A- ERT
	Time Ranges				
	0 - 30 seconds Other times on request	0,3 - 6 seconds 0,3 - 6 minutes 0,3 - 6 hours		3 - 60 seconds 3 - 60 minutes 3 - 60 hours	
FUNCTION	Star Delta Timer with Main Contactor Control	Delay-On	Delay-On PLUS 2 Instant. DPDT contacts	Interval Timer - Delay-Off with Power On	Equal-Repeating Timer
DESCRIPTION OF OPERATION	Operation as per the normal SDT, but with the extra feature of 2 separate instantaneous change-over contacts. These contacts operate 40mS after the star contact closes. A green LED confirms the operation of these contacts. This feature offers the option of the "Star contactor" closing first followed by the "main contactor." The second spare set of contacts can be used as a starter holding or interlocking contact. This may dispense with contacts on the star & main contactor, etc.	When the power is applied the relay remains de-energised. After the pre-set time, the relay energises. Remove power to reset.	Operation as per "DOT" timer, but on power up, two DPDT contacts switch immediately. Remove power to reset.	When power is applied the relay energises. After the pre-set time, the relay de-energises. Remove power to reset.	When power is applied the relay will switch ON and OFF continuously. The pre-set time is the same for both cycles. This cycling continues until power is removed.
CONTROLS AND LABEL DATA					
WIRING DIAGRAM					
VOLTAGE	12V, 24V AC/DC 110V, 230V, 400V AC	12V, 24V AC/DC		110V, 230V, 400V AC	

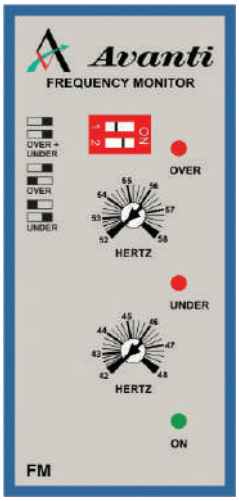
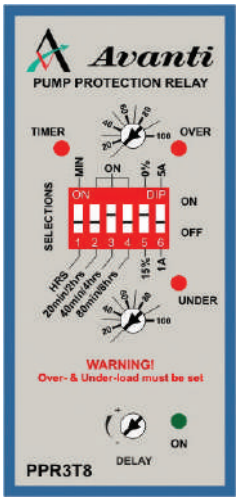
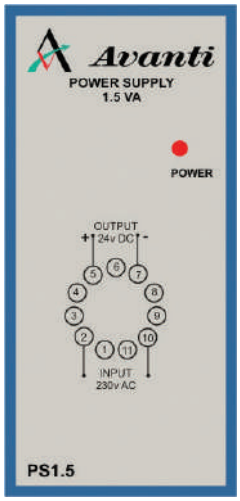
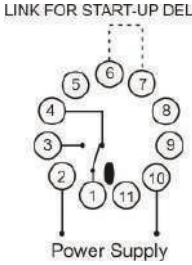
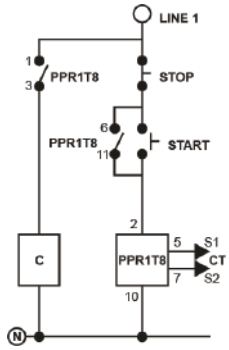
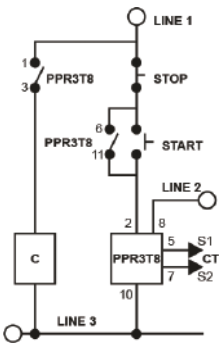
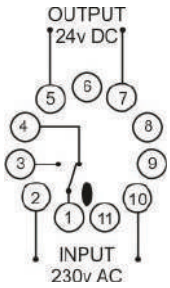
MODEL	A- MTURT	A- NPDFT	(Pulse reset)	A- IRT	(Hold reset)
	Time Ranges				
	Selectable 15 & 60 Seconds 8 & 64 Minutes	0,3 - 6 seconds 3 - 60 seconds 0,3 - 6 minutes	0,3 - 6 seconds 0,3 - 6 minutes 0,3 - 6 hours		3 - 60 seconds 3 - 60 minutes 3 - 60 hours
FUNCTION	Unequal - Repeating Timer with ON or OFF first. Link pins 6 + & for ON first.	No power Delay-Off timer.	Interval Timer with Pulse Rest. A contact closes momentarily between pins 6 + 7 (eg: N/O Button)		Interval Timer with Hold Reset. A contact closes and holds between pins 5 + 7
DESCRIPTION OF OPERATION	When power is applied the relay will remain de-energised for the 1st pre-set time period, then switch OFF. This cycling continues until power is removed (No link on 6 + 7). Each adjusting pot has 2 DIP switches, which can be configured to offer 4 time ranges each. Eg: Pot 1 = 15 sec Pot 2 = 64 min Extended time ranges available on order.	When power is applied the relay will switch ON. When the power is removed the relay remains ON until the pre-set time has been elapsed. Note: The timer must be energised for 50% of the preset time.	Pulse Reset: The relay remains de-energised on power up until a reset occurs. When the pulse contact is closed the relay energises for the set time period then switches OFF irrespective of the length of the pulse. A string of pulses that are shorter than the set time period will reset the timer and the relay will remain energised until the last pulse occurs when the timing cycle will time-out and the relay will de-energise until the next reset pulse occurs.		Hold Reset: The relay remains de-energised on power up until a reset occurs. When the reset contact closes the relay energises. When the reset contact opens the relay de-energises after the pre-set time. The relay stays de-energised until another reset occurs. If the hold contact is closed before the time period has elapsed the time cycle is cancelled and the relay will remain energised.
CONTROLS AND LABEL DATA					
WIRING DIAGRAM					
VOLTAGE	12V, 24V, AC/DC		110V, 230V, 400V AC		

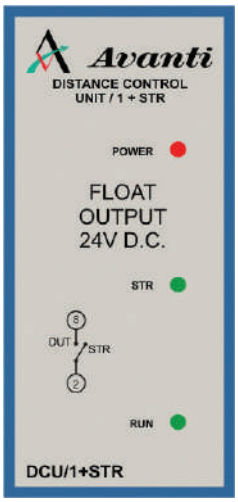
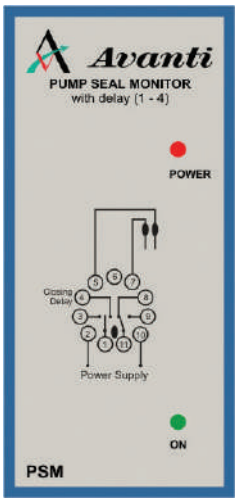
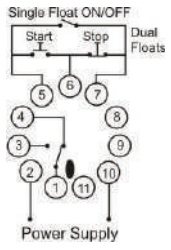
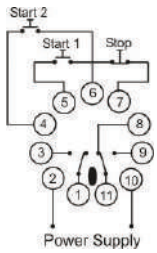
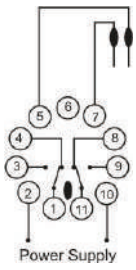
MODEL	A- MRRPT	A- DT
	Time Ranges	
	10 min - 3 hrs 20 min - 6 hrs 40 min - 12 hrs 80 min - 24 hrs	Cooling: 3 - 6 Hrs, 6 - 12 Hrs Defrost: 3 - 60 mins Fan: 0,3 - 6 mins
FUNCTION	Multi-Range Timer with "Delay-On" or "Interval" function. For use with or without a remote POT	Defrost Timer
DESCRIPTION OF OPERATION	Used mainly as an automatic STOP for irrigation pump starters. The remote POT, with pulse timing light and reset button, is fitted to a starter door providing time setting without opening starter. The "interval" timing function is selected for this operation. The unit is fitted with a Power, Pulse timing, Relay On and 4 Elapsed Time percentage lights. A Fine-Time Tuning setting knob is also available based on, the faster or slower the pulse, the shorter or longer the set time becomes. An optional external reset button can be fitted. If pushed, the timer is reset back to the present time. The timer can also be used together with a "FMA" flush mount assembly. This dispenses with Remote POT, and makes the percentage and flashing lights visible to the user. All settings are therefore done on the timer without any remote required.	The unit has two cooling ranges which are selectable: 3-6 hours, and 6-12 hours. On power up, with terminals 5+6 linked, the timer starts the cooling cycle. After a 0,3 - 6 Minute pause, the fan operation starts. The cooling duration is set for a time :3-12 hours. After the set cooling time, the defrost cycle starts, which can be set for a duration of 3-60 minutes. During this cycle the fan control is also switched off, after the defrost cycle has elapsed, the cooling cycle restarts, but without the fan operation. The fan will restart after the set period of 0,3 to 6 minutes. If the link between pins 5 + 6 is disconnected, the unit will remain in the cooling/fan mode. If reconnected the defrost cycle will once again be operational. Three LED's indicate the status of either cooling, fan or defrost.
CONTROLS AND LABEL DATA		
WIRING DIAGRAM		
VOLTAGE	230V, 4000V AC	12V, 24V, AC/DC 110V, 230V, 400V AC

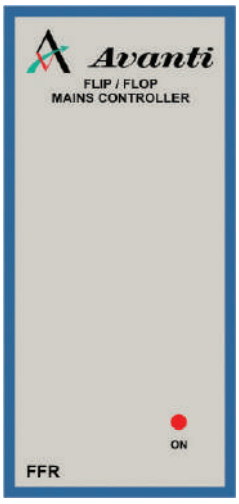
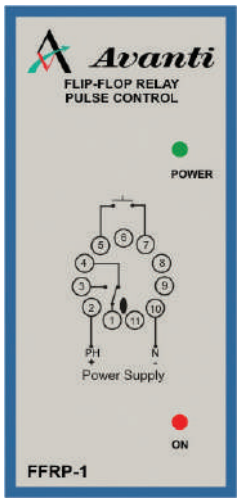
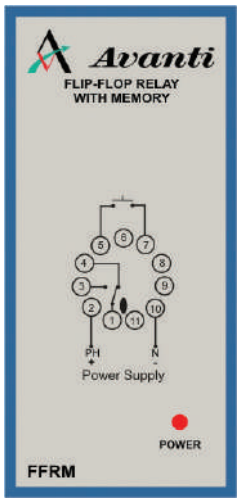
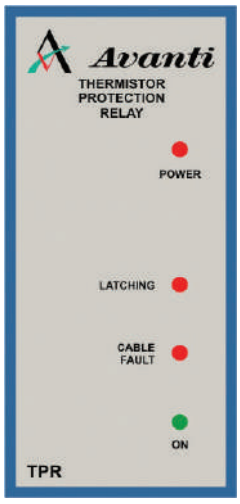
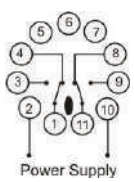
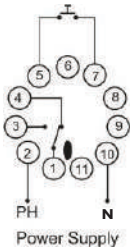
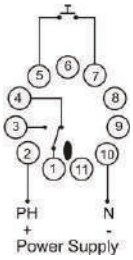
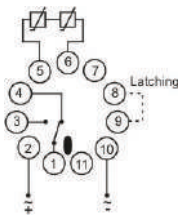
MODEL	A- TSAR	A- FRT/P	A- OST
	TIME RANGES		
	0 - 30 Seconds Other times on request	0,3 - 6/3 - 60 seconds 0,3 - 6/3 - 60 minutes 0,3 - 6/3 - 60 hours	
FUNCTION	Three Start Attempt Relay	Forward Reverse Timer + Pause	One Shot Timer
DESCRIPTION OF OPERATION	To start generating sets up to maximum of 3 attempts. On power up the relay energises for the pre-set time. With a successful start the power must be removed. On failure to start the relay de-energises for the same pre-set time. The second and the third attempt will be made in the same manner. If failure persists after 3 attempts an alarm relay is energised.	When the power is applied there is a delay before the contacts 1 + 4 close. Contacts 1 +4 then remain closed for the "forward" (ON) time period.After this time contacts 1+4 open. After an adjustable pause time (OFF period) contacts 1 + 3 close and remain closed for the "reverse" (ON) time. The forward and reverse time periods are the same. After the reverse time, the unit goes into pause mode again. This forward, pause, reverse cycle is repeated until power on terminals 2 + 10 is removed.	On power up with the terminals 5 + 6 linked, the relay will energise for a set period of 0,5 seconds (ON pulse). On power up with terminals 6 + 7 linked, the relay will not energise. Only after power is removed will the relay energise for 0,5 seconds (OFF pulse). A pulse for Power-ON and Power-OFF is possible by leaving terminals 5, 6 + 7 all disconnected (no links fitted).
CONTROLS AND LABEL DATA			
WIRING DIAGRAM			
VOLTAGE	12V, 24V DC	12V, 24V AD/DC 110V, 230V, 400V AC	12V, 24V AC/DC 110V, 230V, 400V AC

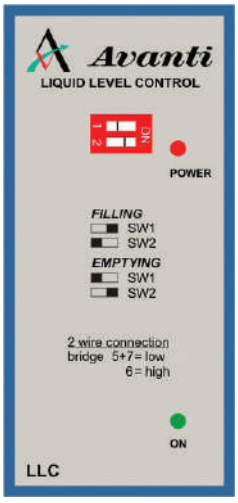
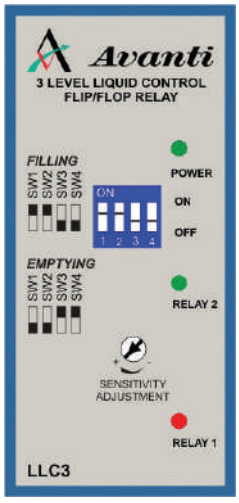
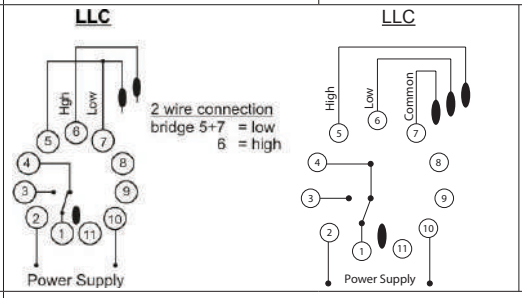
MODEL	A- VM	A- VWC	A- VWC/3	A- PFPSR
PRODUCT	Voltage Monitor Over and Under Switch Selectable	Voltage Window Comparitor "Single Phase"	Voltage Window Comparitor "Three Phase"	Phase Failure Phase Sequence Relay
DESCRIPTION OF OPERATION	The unit monitors a separate supply connected to terminals 5 + 7. On power-up the relay energises, providing the monitored voltage on pins 5 + 7 is within the set limit, the relay wil remain de-energised. Under voltage monitoring is selectable by SW1 and over voltage monitoring is selectable by SW2. The difference between the trip and recovery level "Hysteresis" is adjustable between 5 and 30%. A latch facility is between terminals 8 + 9. Latching is disabled for approx. 10 seconds at start-up. Monitors: 10 - 30AC/DC 100 - 300V AC 200 - 600V AC	The "VWC" monitors its own supply and responds to both over and under voltage. The relay is energised when the voltage remains between the over and under voltage pre-set thresholds. If the voltage rises above the over voltage set point or falls below the under set point the relay de-energises. LED indication is provided for both conditions. The relay energises when the voltage recovers to within the 2% hysteresis band. A latch facility is between terminals 8 + 9. Latching is disabled for approx. 10 seconds at start-up.	The unit derives its power from the monitored three phase supply. The relay is energised when the voltage is maintained between the over and under voltage set points. If the voltage rises above the over voltage set point, the relay de-energises. LED indication is provided for both conditions. The relay energises when the voltage recovers to within the 2% hysteresis band. A latch facility is between terminal 8 + 9. Latching is disabled for approx. 10 seconds at start-up. **Note:** For Motor Control this unit is NOT a Phase Failure Relay	When power is applied the relay energises after approx. 1 second. The unit only operate if all 3 phases are present and in the correct sequence. The unit is also sensitive to excessive phase imbalance. The relay LED will illuminate when phases are in the correct sequence. If not, swap any 2 phases connected to terminals 5, 6 + 7 to obtain the correct phase sequence, which will then be confirmed by the illumination of the LED.
CONTROLS AND LABEL DATA				
				
VOLTAGE	10 - 30V AC 110V, 230V, 400V AC	12V, 24V AC 110V, 230V, 400V AC	230V AC 400V AC	230V AC 400V AC

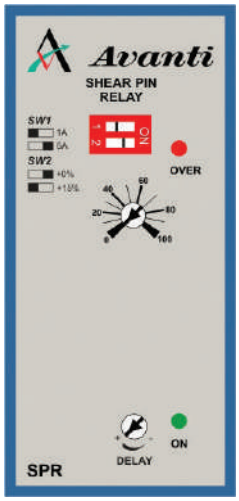
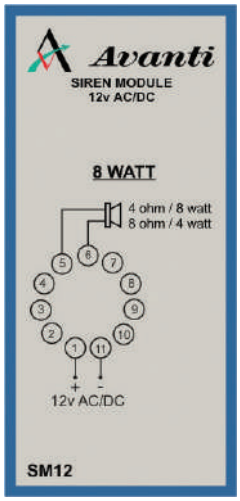
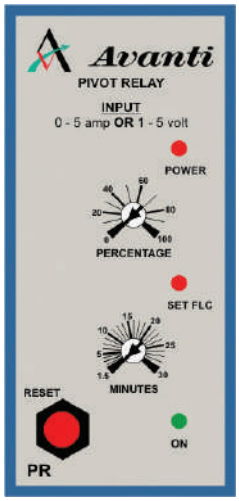
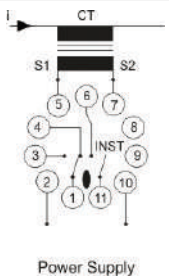
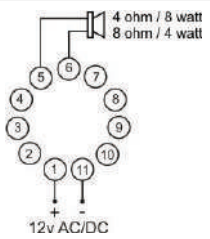
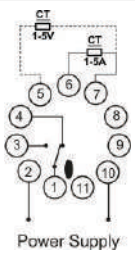
MODEL	A- CM	A- CWC	A- EOLR	A- GSU
PRODUCT	Current Monitor Over and Under Switch Selectable	Current Window Comparitor	Electronic Overload Relay with Phase failure Protection	Generator Synchronising Unit
DESCRIPTION OFOPERATION	The unit interfaces with 5 Amp secondary CT's. When power is applied the relay energises immediately, ignoring load conditions for 10 seconds. The relay will de-energise when the load is over or under the pre-set value, depending on the switch selection. The difference between the trip and recovery level "Hysteresis" is adjustable between 5 and 30%. A latch facility is available between terminals 8 + 9.	The unit interfaces with 5 Amp secondary C.T's. When power is applied the relay energises immediately, ignoring load conditions for 10 seconds. After the start-up delay, the relay will remain energised whilst the current is maintained between the pre-set over and under load limits. If the load rises or falls beyond the set limits the relay de-energises. A LED indicates if an over or under load condition has occurred. "Hysteresis" is set at 2%. A latch facility is available between terminals 8 + 9. Adjustable response delay 1 - 10 sec on request.	Interfacing with 2 standard 5 amp current transformer units, the "EOLR" is designed for overload protection of motors. A start-up delay of 10 seconds is only initiated once load is monitored by the current transformers. A 15% above set point switch, together with a trip response timer of 0-10 seconds, makes the unit easy to set up. After trip condition, a timer prevents a rest function allowing the motor to cool down. This reset time switch selectable for either 1 or 8 minutes. The unit has a reset button as well as 2 terminals for remote reset, which must be linked should local resetting on the unit be required. There are 3 LED's indicating "Relay-On," "Trip" and "Reset Timing"	The GSU monitors the Voltage between L1 of a generator to L1 of mains bus bar, or a 2nd generator for parallel operation. The voltage difference between these 2 phases is measured. When the acceptable limit is reached (adjustable 5-30 volts), a pre-set timer (0,5-5 seconds) prevents immediate activation. After the set time, the voltage must still be within the set limits ensuring that the frequency of both supplies are within the acceptable synchronising limit. Then only will synchronisation take place and the relay will be energised. (20-60V units on request)
CONTROLS AND LABEL DATA				
WIRING DIAGRAM				
VOLTAGE	110V, 230V, 400V AC			230V, 400V AC

MODEL	A- FM	A- PPR - 1T8 - 23	A- PPR - 3T8 - 40	A- PS1.5
PRODUCT	Frequency Monitor 42-58Hz Over, Under & Window Switch selectable	Pump Protection Relay with phase Failure Protection and Underload Restart Timer Function - 230V	Pump Protection Relay with phase Failure Protection and Underload Restart Timer Function - 400V	Regulated Power Supply 1,5 VA
DESCRIPTION OFOPERATION	When power is applied with terminal 6 + 7 linked the relay energises immediately ignoring frequency conditions for ±10 seconds. Without link 6 + 7, the relay will only energise when the frequency is within the pre-set limits. The unit can be used for over or under conditions, as well as over and under window sensing limits. LED indication is offered for both over and under frequency faults. The relay de-energises if there is deviation from these set limits. The Hysteresis is set to 0,5Hz to prevent relay chatter during small deviations in frequency.	The PPR is designed for use on motors which require sensitive overload and underload protection and is particularly suitable for offering good protection on borehole and pump set motors. The PPR offers phase failure protection which is voltage or current dependent. On power up all 3 phases must be present and connected in the following manner. L1 is used for the PPR ON/ OFF control energising the unit on terminal 2. L2 connects to terminal 8. L3 connects to terminal 10. On single phase units, terminal 10 is connected to Neutral. During running the phase failure protection is dependent on the current transformer and if the PPR is set correctly, it will respond extremely fast. Both overload and underload have Set/Trip point LEDs with a common adjustable 0-10 second trip delay timer. There is fixed start-up delay of 5 seconds. A 50/5 CT, with a option of 3 connections (turns through CT), and 1 & 5 amp DIP switch selection provides various settings for motors 0.37kW to 7.5kW. For larger motors any size ring CT with a 5 amp secondary can b be used. The PPR is fitted with a underload re-start timer controlled by 4 DIP switches offering 6 time settings from 20 minutes to 8 hours (for borehole recovery). If the installation is fitted with a discharge valve and ammeter, the over and under setting combinations are numerous with loads very easy to simulate.		Provides a 1,5 VA regulated 24 Volt DC supply from a 230 Volt AC power source. Used as a 24 Volt DC power source for sensitive electronic equipment.
CONTROLS AND LABEL DATA				
WIRING DIAGRAM				
VOLTAGE	230V, 400V AC	230V AC	400V AC	230V, 400V AC

MODEL	A- DCU	A- DCU/2	A- PSM
PRODUCT	Distance Control Unit	2 Pump Distance Control Unit	Pump Seal Monitor
DESCRIPTION OF OPERATION	To control water levels in dams and reservoirs over long distances. Float Switch - 2 Wire control: When the float contact is closed between terminals 5 + 7, the relay is energised - Open to de-energise. 2 Float Switch - 3 Wire control: Stop float - normally closed contact connected to terminals 6 + 7. Start Float - normally opens across terminals 5 + 6. Closing 5 + 6 energises the relay and remains energised until stop float opens contact between 6 + 7. Voltage on float terminals = 24V DC. Distance: Up to 4km long using 1.5mm copper wire cable.	To control water levels in sumps, dams, tanks, etc. Operation is the same as the normal DCU but this unit can control 2 pumps operating at different levels. 3 Float switch (24V DC) - 4 Wire control: Stop float - normally closed contact connected to terminals 6 + 7. First start float - normally open connected to terminals 5 + 6. Second start float - normally open connected to terminals 4 + 6. Closing 5 + 6 (1st start float) will energise relay No. 1 and closing 4 + 6 (2nd start float) will energise relay No.2. Both start relays will remain energised until the stop float opens between terminals 6 + 7. This system is used for "Duty Pump" and "Stand-by Pump" applications. Where only one pump with an alarm is required, relay No.1 is used for the pump and relay No. 2 for the alarm. Where 2 pumps and alarm are required, a normal DCU can be used for the alarm operation. If this system is used, a seperate float must be used dedicated to this DCU. The interconnection of the two 24 Volt float outputs of the DCU/2 and DCU must be avoided at all times.	Designed for use on submersible pump motors incorporating a built-in oil bath. The relay energises on application of power if water enters the bath through a faulty pump seal, the relay de-energises.
CONTROLS AND LABEL DATA			
WIRING DIAGRAM			
VOLTAGE	230V, 400V AC		230V, 400V AC

MODEL	A- FFR	A- FFRP-1 & A- FFRP-2	A- FFRM	A- TPR
PRODUCT	Mains Controlled Flip-Flop Relay	Flip-Flop Relay Pulse Controlled Single Pole & Double Pole	Flip-Flop Relay with Memory	Thermistor Protection Relay
DESCRIPTION OFOPERATION	Used for alternating two pumps for duty and stand-by operation. Applying power for 30 seconds or longer and then removing the power will cause the relay to alter its state. The relay will remain in this new state until the power is re-applied and once again removed when it will then return to the initial position.	With power on terminals 2 + 10 and pulse on terminals 5 + 7 , the relay energises. A second pulse will de-energise the relay and it returns to its normal state. On loss of power on terminals 2 + 10; the relay, if energised, will de-energise and return to its original OFF state (NO MEMORY).	With power on terminals 2 + 10 a closure or pulse across terminals 5 + 7 will cause the relay to energise. A second pulse on terminals 5 + 7 will reset the relay to its normal state. After loss and re-power on terminals 2 + 10, the status of the relay, at that time, will not alter. Only after another closure or pulse on terminals 5 + 7 will the relay once again alter its state (MEMORY).	Interfacing with PTC sensors as per DIN44081 (Thermistors) embedded in the motor windings, the TPR offers excellent motor protection. The LED's indicate trip conditions for motor overheat, cable fault (short or open circuit) as well as the relays latch condition. Latching is enabled by bridging terminals 8 + 9. Open circuit voltage <=2,5V. Short circuit current= 1ma (Max). Maximum cold resistance of 1 to 6 sensors connected - 1500Ω Triggering threshold 3100Ω ± 10% Recovery threshold 1650Ω ± 10%
CONTROLS AND LABEL DATA				
WIRING DIAGRAM				
VOLTAGE	10V, 30V AC/DC 10V, 230V, 400V Ac			110V, 230V, 400V AC

MODEL	A- LLC	A- LLC3	A- AEL
PRODUCT	Liquid Level Control "Filling & Emptying" DIP Switch Selectable	3 Level liquid Level Control "Filling & Emptying" with duty cycling DIP Switch Selectable	Aquaman Electrode
DESCRIPTION OF OPERATION	Used in conjunction with 3 conductive probes connected to terminals 5 (high), 6 (middle/low) and 7 (bottom/ common). Filling: When liquid drops below the middle probe, the relay energises. The relay remains energised until the level reaches the high level probe and then de-energises. Emptying: When the liquid rises above the high probe, the relay energises. The relay de-energises when the liquid falls below the middle probe. Sensitivity - 50Ω Use "AEL" Aquaman hanging probes.	Used for control of water levels in tanks and sumps over short distances. The LLC3 controls 2 pump relays operated at different levels for "Duty" and "Standby" operation. The unit automatically alternates the pump relays between duty and standby using a built-in flip-flop action. There are 4 DIP switches available to select emptying or filling Filling: Sw 1 + 2 - ON (up position); Sw 3 + 4 - OFF (down position) Emptying: Sw 1 + 2 - OFF(down position); Sw 3 + 4 - ON (up position) Avanti AEL probes: connected to the terminals: 5 - "High;" 6 - "Middle;" 7 - "Low;" 8 - "Common" Filling: If the level is below probe 7 - "Low" both relays will energise and when the level reaches probe 5 - "High" both relays will de-energise. When the level drops below probe 6 - "Middle" relay 1 will energise and de-energise when the level reaches probe 5 - "High." The next on cycle with probe 6 - "Middle" out of the water, relay 2 will energise (alternating). If the level continues to fall and goes below the probe 7 - "Low," both pumps will energise and only de-energise when probe 5 - "High" is reached (all probes in the water). Emptying: When a rising level reaches probe 6 - "Middle," relay 2 energises and de-energises when probe 7 - "Low" is reached. On the next rising level to probe 6 - "Middle" - relay 1 will energise (alternating). If the level continues to rise and probe 5 - "High" is reached, both relays will be energised (Duty & Standby) and when the level reaches probe 7 - "Low" both relays will de-energise.	Installation Instructions: 1) Strip PVC wire 25mm long 2) Feed cover/cap onto wire. Large threaded opening facing stripped end. 3) Connect copper wire through stud hole, between nut and washer. **Do not** wind around stud and ensure copper wire tip does not extend past edge of the washer. 4) Cover connection and exposed copper with compound. Ensure compound extends in the conical shape 25mm up the wire. 5) Screw on cap. Use extruded excess compound to seal wire inlet (Sealing compound supplied with probe).
CONTROLS AND LABEL DATA			
WIRING DIAGRAM			
VOLTAGE	230V, 400V AC		

MODEL	A- SPR	A- SM12	A- PR
PRODUCT	Shear Pin Relay	Siren Module	Pivot Relay
DESCRIPTION OF OPERATION	This unit designed for fast tripping of overload conditions up to a maximum of a running current plus 15%. The current is monitored through a current transformer and the unit is fitted with a 1 amp or 5 amp selector switch. A knob is provided for fine tuning of the input current with the trip position incorporating an over current light. A response timer is provided for setting up a trip time from virtually 0 to a maximum of 8 seconds. This device offers excellent protection of machinery where there is a possibility of accidental or intentional jamming. To reset the unit after a trip condition, power must be removed and then re-instated.	The unit requires a 12V AC or DC supply. On application of the supply voltage it produces a "yelp" signal (8 watts) through a remote speaker, which must be connected to pins 5 + 6. Recommended speaker is an 8Ω - 10W speaker (see below). 10VA AC "TX" plug-in power supply is available for use with this unit. SM Speaker: Horn Speaker: 80mm 8Ω 10 watt Part No: 4060SPEAK	On application of power the relay energises. If the pivot draws less than the pre-set current setting, the relay will open after the time set on the over-ride timer. On shut-down the unit can be reset with the button provided. This unit is used to switch off the pump preventing over-watering should the pivot stand in one position. The "PR" can operate on a 1-5 Volt or 1-5Amp sensor. The pins 5,6 + 7 are used to select either the voltage or current sensing.
CONTROLS AND LABEL DATA			
WIRING DIAGRAM			
VOLTAGE	110V, 230V, 400V AC	12V AC/DC	10V - 30VAC/DC 110V, 230V, 400V AC