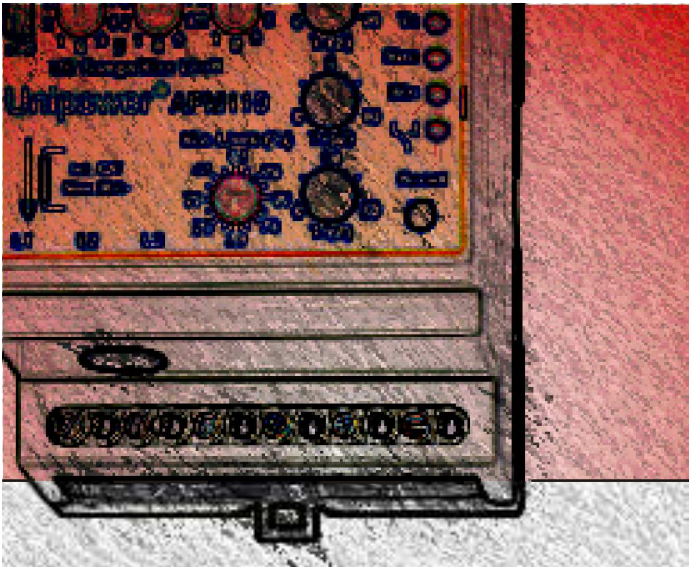


Pump Protection System

Pump Power Monitor System



The March May Pump Protector system is based around the APM 110E Power Monitor with an optional LED display Unit.

The system works by measuring the power absorbed by the pump in order to protect it from damage or to provide warnings of system problems and inefficiencies.

The basic principle is a comparison between the actual kW consumption with a pre-defined value based on the expected requirement of the pump at the duty point or that set at time of installation.

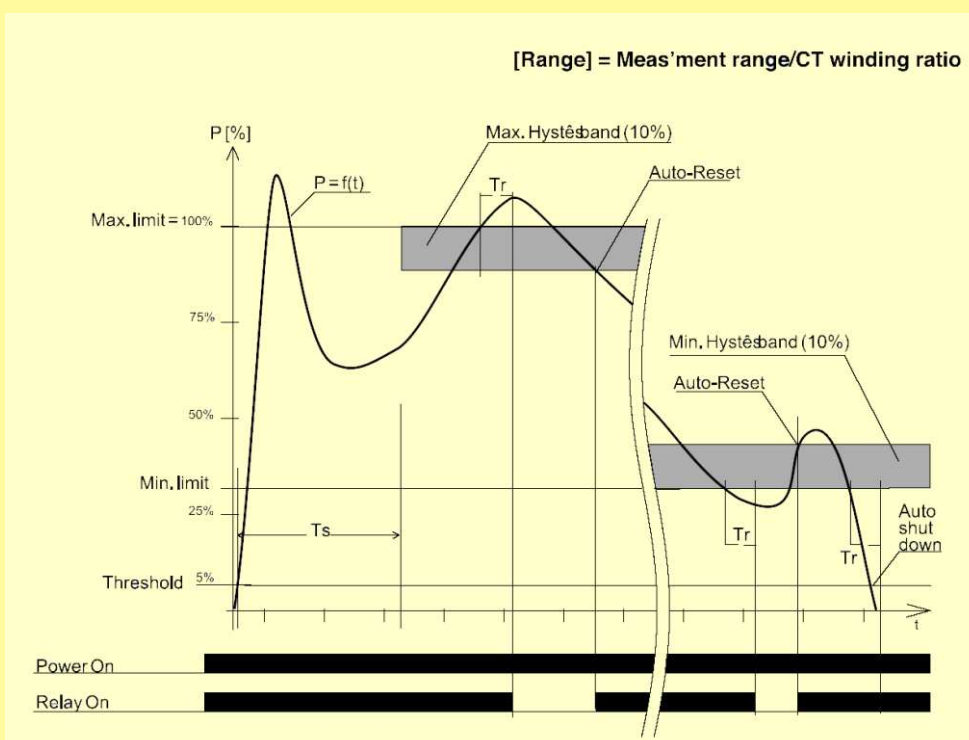
The APM 110E is extremely easy to install and to set up and can be used on it's own. The addition of the D10 Display unit gives more detailed information to help improve system efficiency and early warnings of potential problems.



DIAGNOSTIC TABLE

Problem	Symptom	Pump Type
SG of liquid too high	Over power	Centrif/PD
Liquid viscosity too high	Over power	Centrif/PD
Increase in pipe discharge friction	Over power	Pos Dis placement
Increase in pipe discharge friction	Under power	Centrifugal
Running dry	Under power	Centrif/PD
Starved inlet	Under power	Centrif/PD
Insufficient NPSH available	Under power	Centrif/PD
Siezed pum p head	Under power	Centrif/PD
Shut dis charge valve	Over power	Pos Dis placement
Shut dis charge valve	Under power	Centrifugal

Power Consumption Curve



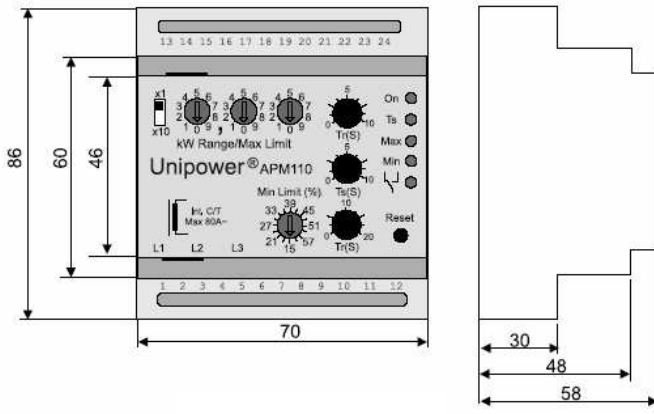
The figure to the left shows a typical AC-motor power consumption curve (ex. Pump) immediately after power has been applied to the motor.

At the bottom of the figure a bar is shown indicating the position of the relay (On/Off). The figure also shows the application of Start timer T_s , Reaction timer T_r and hysteresis

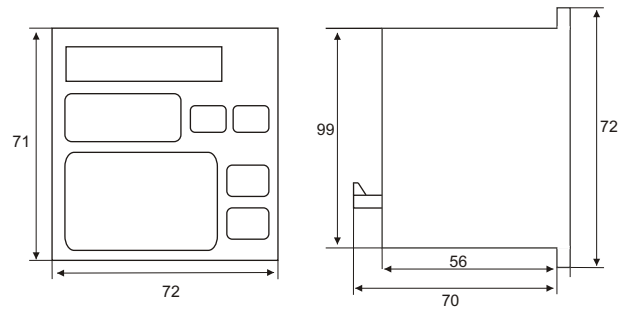
DIMENSIONS

Dimensions in mm not to scale specifications are subject to change

APM 110E



PCU D10



TECHNICAL DETAILS

APM 110E Monitor

Mechanical

Housing:	Upper part: Lexan UL94V-0 Lower part: Noryl UL94V-0
Mounting:	M36 for 35mm DIN rail CT dim: Max 10 mm lead-in
Terminals:	Max 16 A. Max 2,5 mm ² Use 60/75 copper (CU) wire only Terminal tight torque: 7lbs/in, 0,79Nm
Protection class:	IP40 (housing). IP20 (connector).
Temperature range:	-15 - +50 °C.
Weight:	Approx 300g
Dimensions:	D 58 x B 70 x H 86 mm.

Electrical

Supply:	1x120VAC or 1x230VAC ± 10%
Voltage Range:	3x230 to 3x575VAC
Current range:	Internal max. 0-80 A, Ext. N/5A C.T.
Power range:	Max 80 kW using internal current sensor
Cosrange:	0.2-1
Frequency range:	50 / 60 Hz.
Consumption:	3VA
Relay spec.:	250 VAC/5A.
Control inputs	+8-30VDC Galvanic isolated
Reference output	0-10VDC, for test only Ext. DSP output: 10V/50mA max
Standards	CE mark to: EN61326/A2, EN61010-1 UL certified: UL508, File E194022

PCU D10

Mechanical

Housing:	Noryl
Mounting:	Panelmounting Cut-out: 68 x 68 mm
Protection class:	IP54
Temperature range:	-15 - +50 °C.
Weight:	Approx 140g
Dimensions:	D 70 x B 72 x H 72 mm.

Electrical

Supply:	10Vdc (From APM110) Cable length: max 50m
Consumption:	<1VA
Control Inputs:	12-30v DC
Analogue Output:	1) Iout. 4-20mA (Passive) Supply: 15-30V dc Max Load (15Vdc) :136? Max Load (30Vdc) :818? 2) Iout. On/Off (Passive) Off=1mA On=22mA

MAGNETIC DRIVE PUMPS



Large centrifugal
For aggressive chemicals.



Compact centrifugal with
DC motors
For milder chemicals



Single stage centrifugal
For milder chemicals.



Multi stage centrifugal
For mild or aggressive
liquids.



Brass centrifugal
For high temperature
liquids.



Single stage turbine
For mild or aggressive
liquids.



Submersible centrifugal
For milder liquids.

