

# GENERALIZED A.C./D.C. CONVERTER FED D.C. MOTOR SPEED CONTROL EXPERIMENTAL SET UP

HALF BRIDGE & FULL BRIDGE CONVERTER MODE

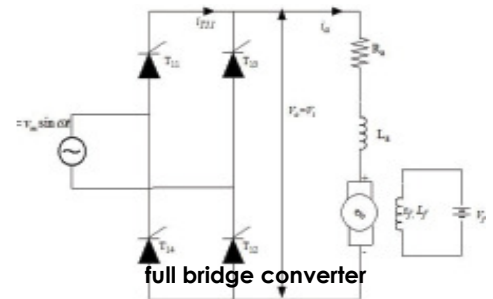
ADSCRMOTOR-Series

## Introduction & operating principle:

ADSCRMOTOR series of generalized S.C.R. based A.C./D.C. controlling speed/[position of Separately excited D.C. Motor set ups/tools are available in half wave, Full wave, half bridge, full bridge (single phase/three phase) topologies with/without source transformer, offers general experimental facility to characterize motor armature voltage/current behavior, delayed commutation viz-viz change in firing angle, smoothing/stray inductance, source resistance and switching frequency and impact of controller gains on steady state/transient behaviour. A few model has facility to simulate Bode/nyquist response of complete set up. These are available in more than 5 regular and custom specification models virtually offering all research and development/academic solution. These useful diagnostic tool for all U.G./P.G. power electronic laboratories apart from on-conventional resources, railway, defense, automobile, medical, and many research & development applications,.

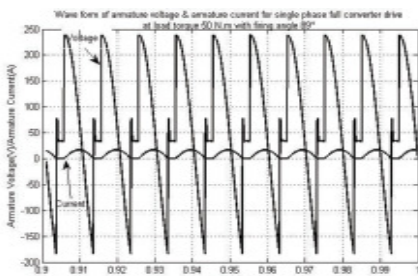
## Operating Principle:

In Half bridge/full bridge/half wave convertor fed by low voltage transformer, converter works in controlled mode when are fired at angle alpha, current flows and continue till next half cycle depending on inductance/load resistance. This effect limits not only firing angle but effects average voltage and current both apart from ripple factor, form factor, ripple factor. Delayed firing effects control range as well. While working in feed back, these parametric variation effects controllability and stability

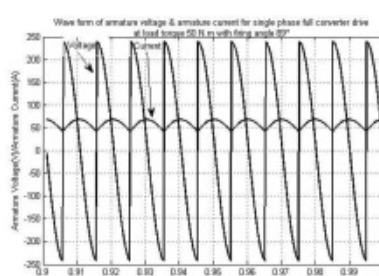


## Benefits:

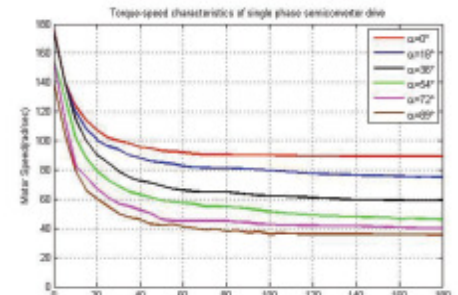
Simple installation and operational compatibility /Consistent Bode/nyquist/real time plot S.C./Over/under voltage protection



Full wave converter at 89 firing angle  
50 Nm load



Full wave converter at 89 firing angle  
135 Nm load



Torque/speed behavior at different firing angle  
Power 500-2000 watts

## Electrical/Mechanical specifications of of A.C./D.C. Converter driving D.C. Motor set up

MODEL	V.A.	Vin A.C.	Vout D.C	Frequen cy response	%Firing angle range	Inductance/ source resistance step	controllers
ADSCRMOTOR-010	1000.0	0-110/220	0-200	0-400 Hz	0-100%	Three	PID/SLM
ADSCRMOTOR05	2000.0	0-110/220	0-200	0-400 Hz	0-100%	Three	PID/SLM

## General specification of generalized S.C.R. based A.C./D.C. converter set ups :

Operating voltage: 24/48/72/96 220 volts D.C.  
 Output voltage: depending on gain,load, duty but above unity  
 Watts: 500/1000/2000/5000 watts  
 Parametric variation: source resistance, smoothing inductance, firing angle Frequency, load in three steps  
 Controller type gain parameter: PID and sliding mode,highain topologies: half wave, Full wave, half bridge, full bridge  
 frequency response: real time/bode/nyquist  
 Display: speed/torque/frequency  
**Repeatability of O/P voltage: 100 percent**  
 Display: 3 digit LED/LCD for source resistance, smoothing inductance, firing angle, Frequency, load, efficiency, voltage, current PID and sliding mode in three steps

Interface: analogue;0-10 volts D.C. to state variables  
 Protection: S.C./Over/under voltage/over temperature indication

## Dimensional specs of on line AC TO AC CONVETER :

ADSCRMOTOR 010 15x24x20 inch 16 kg ADSCRMOTOR DCB-05 18x24x24 inch 26



ADSCRMOTOR 01

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