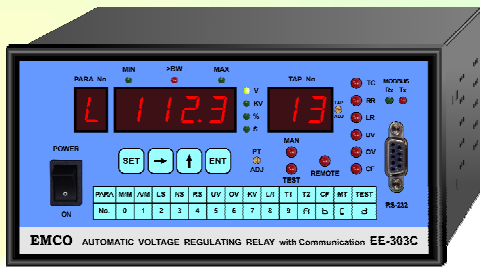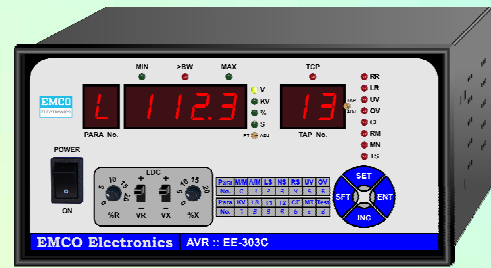# AVR : EE-303 & EE-303C with IEC-61850 or MODBUS

(Modbus + IEC-61850)

(Communication + LDC)

Emco Electronics AVR EE-303C comes with Industry standard protocol like **IEC-61850**. It is a Microcontroller based Relay used for regulating the secondary voltage of Power Transformer using OLTC. Independent time delays can be set for first control pulse & subsequent pulses. Built-in TPI displays Tap no. of Power Transformer. In Manual mode, Tap Raise/Lower pulses can be given through the front panel switches. Test mode for self test of AVR, AVR Remote disable facility, Min, Max Voltage and Tap change count memory storage is available. RS-232 and RS-485 (MODBUS) communication facility is available inE-303C

Features

- ❖ Microcontroller based architecture with A/D converter
- ❖ Built-in Tap Position Indicator up to 35 Taps
- ❖ Readout of Pri. & Sec. voltages and Tap No
- ❖ Two independent timers for first and subsequent pulses
- ❖ Independent Lower, Raise & Nominal value settings
- ❖ Linear or Inverse Time response
- ❖ Tap Change in Progress indication

- ❖ Blocking for UV, OV, CF & Max / Min Tap No.
- ❖ Auto / Manual mode of operation
- ❖ Test mode for testing AVR
- ❖ Minimum & Maximum PT Voltage & Tap Counter display
- ❖ Single pulse or continuous pulse operation
- ❖ RS232 & MODBUS Communication (in EE-303C)
- ❖ Remotely disabling of AVR

Technical Specifications

Auxiliary Supply	:	110/230V AC ±15%, 50Hz, 15VA
PT Supply	:	110V AC, 50Hz, 1.5VA
Nominal Setting (NS)	:	85 to 140V in steps of 0.1 V
Lower Setting (LS)	:	+0.5 to +9% of NS in steps of 0.1%
Raise Setting (RS)	:	-0.5 to -9% of NS in steps of 0.1%
UV Blocking	:	60 to 95% of NS in steps of 0.1%
OV Blocking	:	105 to 130% of NS in steps of 0.1%
Primary Voltage (KV)	:	0-999.9 KV corresponding to NS in steps of 0.1KV
Time delay (T1) betn. deviation & 1st pulse	:	10 to 180 sec, Linear or Inverse Response
Time delay (T2) betn. consecutive pulse	:	0 to 11 sec, where 0 is continuous operation; 11 - T2 = T1
Control Fail Delay	:	300 to 900 sec. in steps of 0.1 sec.
Auto / Manual Mode (A/M)	:	Selects Auto or Manual mode of Operation
Test mode	:	Allows AVR to be tested for all conditions through indication by LEDs. Relay contacts are blocked during TEST mode

Maximum Tap No.	:	1 to 35 with 1KE/user defined step resistance
AVR Disable (Remote Operation)	:	I/P through potential free NO contact at remote end
Tap Change in Progress	:	I/P through potential free NO contact from OLTC
TPI Input	:	1K step resistor chanin (35 Taps max.)
Relay Outputs	:	1 pair of NO contacts for Raise, Lower, UV, OV & CF 1 pair of NC contacts for Manual mode
Control Pulse	:	2 seconds ON time
Contact Rating	:	5A @ 240V AC or 24V DC
Operating Temp.	:	0°C to 45°C
Panel Cutout	:	92 mm (H) x 188 mm (W)
Overall size	:	96 x 192 x 220 mm (H x W x D)
Weight	:	3Kgs approx.
Options	:	1. Auxiliary Fail Relay (NO Contacts) 2. 4-20mA TPI Output for SCADA 3. Line Drop Compensation (LDC)

Additional features in EE-303C:

❖ Communication	:	**1. IEC-61850 Communication Protocol.**
		or
		2. 1 RS-232 port for Parameter Setting with computer software
		3. 1 RS-485 port for MODBUS Communication
❖ Readable Parameters	:	PT, KV, MIN, MAX, TAP No., TAP Count
❖ Programmable Parameters	:	NOM Vg, L Set (%), R Set (%), KV, UV (%), OV (%), T1 (S), T2 (S), CFR (S), Max. Tap, Oper. Mode (A/M), Timer Mode (L/I).

Product specifications are subject to change without notice.

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(An ISO 9001:2015 Co.)