



SHYAMRAI ELECTRONICS

124 SARAT GHOSH GARDEN ROAD
"TRIBHUMI" Gr. FLOOR
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ESPC - 3



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1. ESP CONTROPLER ESPC VER III

1.0 Ambient Conditions:

Ambient Temperature	3 to 50 ° C (Max.)
Storage Temperature	0 to 80 ° C
Duty	Continuous operation (24 Hours a day)
Installation	Indoor (pressurized or AC Room)

2.0 Mains / Power Requirement for The Controller:

Nominal Input Voltage	24 VAC \pm 20%
Frequency	50 Hz \pm 7.5 %
Current	3 Amps (RMS) (Max.) 72 VA

3.0 GENERAL TECHNICAL DATA ESPC3:

Cut- Out for Mounting on the Panel	255 mm x 175 mm
Protection Class	IP 54
Input Signal Filter Voltage	400 micro Amps corresponding to 100% of Rated Precipitator / TR-set secondary Voltage(kV)
Input Signal Filter Current	1.0 Volts corresponding to 100% of Rated Precipitator / TR-set secondary Current (mA)
Input Signal Primary Current	C.T. Ratio = Rated TR-set primary current : 1 for displaying the Primary Current in the Controller
Input Signal Primary Voltage	P.T. Ratio = 500V : 5V for displaying the Primary Current in the Controller
Input Signal From Opacity Meter	4-20 mA, Isolated
Output Signal for Thyristor Firing	2 Nos. through Opto-coupler NPN transistor of 40V, 30mA rating.
Output Signals , 4-20mA, Isolated, DC, corresponding to secondary mA, secondary kV & Primary Amps	Yes

4.0 FEATURES IN CONTROLLER:

A to D Conversion through A to D Converter	Yes
Display Unit	LCD, Alpha Numeric, with 4 lines of 20 characters with 5x7 dot matrix, having back-lit facility for operation in poor light conditions.
Design of Controller Unit	Modular
Relay for Alarm & Trip	Yes



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Type of Alarm / Trip output	Potential Free Contacts
Type of Relay Contacts	230V, 5 Amps
Sheet Metal Enclosure for Controller	Yes, along with earthing terminals
Ambient Temperature	50 °C
Display for all the Electrical Parameters (like kV, mA, Primary Amps, Primary Volts, Mains Frequency etc.) in the Alpha-Numerical LCD Display of Controller	Values are displayed in numerical figures not in percentage
Analog Inputs	5 Nos.(minimum)
Arc Determination	Yes
Spark Determination	Yes
Display of Arc Rate	Yes
Display of Spark Rate	Yes
Spark Totaliser	Yes
Auxiliary Alarm Indicator	Yes
Display of the Mean Values of the Electrical Parameters	Yes
Back Corona Detection & Control Facility	Yes
Back Corona Knee Operation	Yes
Limit of Minimum kV level to be maintained During Back Corona Operation	Yes
Baud Rate	4800 / 9600
Communication to Remote Source / PMS PC	Yes, through RS-485 port
Display of Communication Address	Yes
Communication Protocol	MODBUS
Display of all the Electrical Parameters Limits	Yes
Energy Management Feature	Yes
Interfacing with External Alarm / Trip signals	Yes
Digital Inputs / Outputs	Yes, Optically Isolated
Instantaneous Wattmeter Display	Yes, in LCD display
Charge Ratio Mode	Yes
Charge Ratio Range	1-255
Charge Ratio ON indication	Yes
Intermittent energization rapping	Yes
Quench Mode	Yes, for Spark / Arc or Both
Quench cycle Setting	Yes
Operation Key Pad	Yes , Non-tactile keys, duly marked with the assigned function
Key Pad Programming	Yes
Manual Control	Yes
Manual Mode	Yes
Noise Immunity Circuitry	Yes
Non- Volatile Memory	Yes
Optical & Transformer SCR Isolation	Yes
Peak Secondary Current Limit	Yes
Peak Secondary Voltage Limit	Yes



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Percentage Current	0-100%
Step Setting	Yes
Ramp Setting	Yes
Pedestal / Fast Ramp mode	Yes
Remote / Local Indication	Yes
Power Down Rapping Mode	Yes
Power Down Rapping Mode Indication	Yes
Primary Current Hi Alarm & Trip facility	Yes
Password Protection	Yes, password shall be available to protect against unauthorized modification in the controller settings etc.
Display of Accumulated Sparks	Yes
Display of On Line Spark Rate	Yes
Display of Corona Power (Sec. kV & mA)	Yes
Display of kWh of Corona Power	Yes
Load Status-1 & 2 Modes	Yes, to load the pre set parameters in controller (set mA, set kV, Step, Ramp etc.) based upon plant load conditions changing contacts from remote PLC/DCS.
Time Totaliser for HT ON time	Yes
Peak / Mean Display select for Secondary kV	Yes
Calibration of Elec. parameters (kV, mA, Pri. Amps, Primary Volts etc.) in the Controller	Yes, Through Keypad
Spark sensitivity	Yes
Tx. Oil Temp. Alarm	Yes
Tx. Bottom Float Trip	Yes
SCR Temp. Trip	Yes
Digital Output for Hooter / Buzzer	Yes
Optional Alarm - 1 & 2	Yes, text is user configurable
Optional Trip - 1 & 2	Yes, text is user configurable
4 - 20 mA DC Output	Yes

5.0 ALARM MESSAGE:

The following alarm messages shall be displayed on the bottom line of LCD display. In case of alarm, the alarm message remains on the screen until acknowledged / reset by the operator.

SR. NO.	ALARM MESSAGE	DESCRIPTION
1	AC CURRENT HIGH	PRIAMRY AC CURRENT HIGH TRIP
2	DC UNDERVOLTAGE	SEC. DC VOLTAGE LOW TRIP
3	DC OVERVOLATGE	SEC. DC VOLTAGE HIGH TRIP
4	SINGLE SCR FIRING	SINGLE SCR FIRING TRIP
5	SYNC. FAIL	SYNCRONISING SIGNAL FAIL TRIP
6	TOP FLOAT	TOP FLOAT ALARM OF TR-SET



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7	BOTTOM FLOAT	BOTTOM FLOAT TRIP OF TR-SET
8	TX. OIL TEMP. HIGH - 1	TX. OIL TEMP. HIGH ALARM OF TR-SET
9	TX. OIL TEMP. HIGH - 2	TX. OIL TEMP. HIGH TRIP OF TR-SET
10	SCR TEMP. HIGH	SCR TEMP. HIGH TRIP
11	CO HIGH	CO HIGH TRIP
12	OVERLOAD	OVERLAOD TRIP DUE TO AC CURRENT HIGH
13	OPTIONAL ALARM-1	USER CONFIGURABLE
14	OPTIONAL ALARM-2	USER CONFIGURABLE
15	OPTIONAL TRIP-1	USER CONFIGURABLE
16	OPTIONAL TRIP-2	USER CONFIGURABLE

6.0 ALARM ACKNOWLEDGE AND ALRM RESET FUNCTION LOGIC:

Whenever Alarm / Trip faults occurs, corresponding Alarm / Trip text message appear on the LCD.

The reset key is used for Accepting & then resetting the fault.

On occurrence of Trip faults "HT" is made "OFF". If the Alarm / Trip fault persists then "HT" cannot be made "ON" & if the reset key is pressed again, the relays remain in energized condition & the text message will continue appearing on the LCD. Similar operation can be performed through remote using the Acknowledge / Reset Push Button.

It is possible to edit the text of the Optional Alarm / Optional Trip function by the user.

7.0 RATING OF THE TRSETS:

Any rating and make of TR-sets are compatible for which these controllers shall be used.

8.0 INSPECTION / TESTS TO BE CONDUCTED :

Following tests are carried out on these controllers at our works by Customer's Testing Agency:

- a) Visual and dimensional checking.
- b) Detailed functional checking including calibration.

9.0 COMMISSIONING ASSISTANCE:

Shyamrai Electronics, on request from the customer, deposes their expert commissioning engineers for commissioning of the Controllers, against a service charge. **Shyamrai Electronics** also imparts a technical training on the operation / function / maintenance of their controllers to the client's engineers during the commissioning at no extra cost.



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HOW TO REACH US :

For ,

- ? Reliability
- ? Quality
- ? Technical Support,

Please send all your correspondence to :

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