




SINGLE BOARD ESP CONTROLLER

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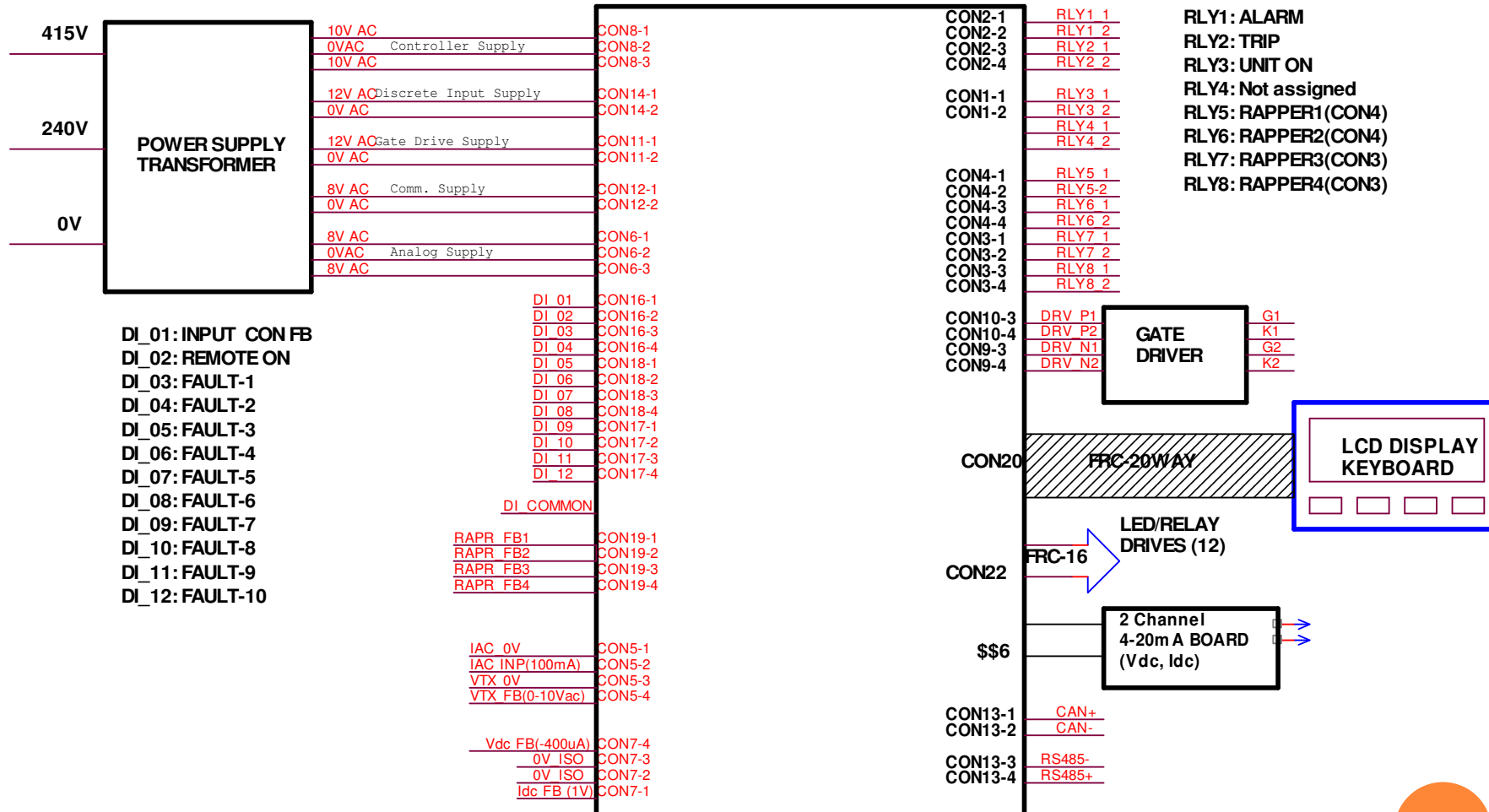
MAIN CONTROL CARD DETAILS



DISPLAY DETAILS



INTERCONNECTION DETAILS



HARDWARE DETAILS

- 16 digital Inputs (Optically Isolated)
- 8 Relays
- 12 Drives (DO) for Relay/ LED
- Analog feedbacks
 - Output voltage (Vdc)
 - Output Current (Idc)
 - Input Voltage (Vac1)
 - Input Current (Iac)
 - Transformer Primary (Vac2)
- Isolated RS-485 and CAN 2.0B interface
- Flash memory and RTC for event logging up to 6 months
- >100 Configurable parameters with non-volatile storage
- In built drive for 2 SCRs
- Suitable for standard feedback levels Idc (0 to +1V) and Vdc (0 to -400uA)
- On board power supply (with one external transformer)
- Isolated 4-20mA outputs, 2 nos (optional plug-in board)
- Signal conditioning with isolation of all analog signals



STANDARD INTERFACE FOR 1PH ESP

○ RELAYS

- Relay1: Alarm Status
- Relay2: Trip Status
- Relay3: Unit On Command
- Relay4: Spare
- Relays 5-8: Rapper Control

○ Discrete Inputs:

- DI-1: Input Contactor status feedback
- DI-2: Remote ON Command
- DI-3 to DI-12: User Configurable (NO/NC and Message)
- DI-13 to DI-16: Rapper Feedback

○ Analog Feedbacks

- Vdc (-400uA), Idc (1Vdc), Iac Input (0-0.1A), Vtx (10V rms)

○ 12 nos of LED/ Relay drives, user configurable



CONTROL FEATURES

- Configurable discrete inputs
 - NC/NO selection
 - Trip/ Alarm selection
 - All discrete inputs are digitally filtered with flexible hysteresis time
- Editable messages to each discrete inputs
- True digital control with real signals without hardware averaging
- Digital PID control for Vdc and Idc regulation.
Step_less change over between Vdc and Idc control
- Fast sampling of analog signals, ~100 samples/ cycle with guaranteed half cycle control/ correction
- Intelligent and flexible Spark detection and control



SOFTWARE FEATURES

- Intelligent Spark control with multiple logics to take care of all load conditions (no hardware)
- High speed sampling and signal processing
- True RMS values display
- Input kVA, kW, Powerfactor display
- Output kW, kWhr, Run Hours display
- PC interface for status view and waveform capture
- Also Idc, Vdc waveform capture during sparking, with selectable duration, pre and post timings



ESP CONTROLS

- Spark Rate control
 - Industry's most accurate spark rate control
 - Spark rate maintain from the moment of new setting, no tuning time required
 - di/dt and dv/dt analysis for all the possible spark conditions
- Charge Ratio
 - Cycle skipping count, settable from 1 to 255
 - Base level kV setting (0-50%)
- Back Corona Detection and Control
 - Detection without reducing I_{dc} level very much
 - No loss of filtering during detection
 - Configurable with about 6 settings
 - Interval setting, 5min to 12 Hours, settable in HH:MM:SS format
- Rapper Control
 - 4 rapper relays
 - Individually selectable ON and OFF timings
 - Rapper Failure detection for active rappers



USER INTERFACE (LCD + KEYBOARD)

- 4x20 LCD display
- Full numeric keyboard for easy operation
- Unit ON/ OFF (dedicated) soft keys
- Status LEDs
- Easy to use menu system for system configuration, parameter view, status view
- Discrete input Configuration (NO/NC, Alarm/Trip, Enable)
- Message Editing feature for discrete inputs
- Dedicated row for continuous status display
- Event download to excel format with 'parameter snapshot' of all important parameters at the time of event
- MODBUS RTU interface for remote operation
- All other parameters available as per standard features



SUMMARY

- Control Cards / system already Developed and tested with actual ESP control units
- Spark rate, BC control and all others parameters like charge ratio etc already tested and established
- Basic hardware and software tested for Single phase ESP application
- Easily extendable for 3 Phase ESP control

THANK YOU

