

eyePower Features
Version 1.3
22nd September 2015

SAFETY NOTICE

End users must be made aware that power outlets are remote controlled
This unit is not certified for safety isolation of the electrical supply



INPUTS / OUTPUTS

Single or dual changeover inputs fitted with 20A powerCON. The unit is rated for 20A total, no need for a front panel breaker which would affect fusing discrimination with the upstream 20A supply. Fourteen 10A IEC outputs are fitted, together with dual supply, RS422/485, Ethernet and external sensor options on the rear panel.

INTERNAL DISTRIBUTION

Bryant Unlimited mains units do not rely on PCB tracks for power distribution, all units are hand wired with crimped cables and soldered busbars. Installation fault currents can be surprisingly high, a 10A fuse can pass 30A for 30 seconds worst case. I²R heating of the distribution is then 9 times higher than normal running. PCBs can be damaged in this time with failure possibly in the long term rather than immediate. Even for short circuits connected to the unit, technical installations often have low loop impedances with high fault currents of kA that the distribution must withstand before the fuse ruptures.

FUSING

Outlets are 10A rated to the unit maximum of 20A. Factory fit is 3.15A fuses which suits most loads and provides clear discrimination between supply and outlet fusing. Customers can uprate fuses as required.

RELAY SWITCHING

Relays are high quality, 20A rated with a tagged output wired direct to the 10A IEC outlets. Standard relays are preferred, this latest unit reduces relay power consumption and heating by 70%. Relays hardly get warm using PWM, a technique now favoured in the automotive industry to save energy.

VOLTAGE PRESENCE DETECT

Supply voltage is detected after each fuse and after each relay, using a circuit which consumes 0.25W total for over 30 measurements. Some other designs consume this much power for each presence detect and do not check both fuse and relay.

CURRENT MEASUREMENT

Current measurement is performed with high sensitivity current transformers. Unlike cheap, PCB mounted shunt resistors there are no heating issues and reliability is maintained by simply passing the output cable through the centre of the transformer rather than routing via PCB. With no direct connection to the supply, there are no issues when measuring current throughout supply voltage disturbances. Currents from mA to 40A (70A peak) can be monitored.

1-WIRE (TM) SENSORS

Dallas/Maxim sensors can be connected. Sixteen are supported for local connection, allowing for temperature, humidity and GPIs in addition to the standard four GPIs if required.

MACRO PROGRAMS

Bryant Unlimited already have thousands of SMS units in service that allow user programmable sequences for outlet and GPI interactions. eyePower has this functionality at its core giving the optional web interface access to complicated sequences to meet any requirement. Even the front panel switch can access these macro routines so the switch is extremely versatile. The unit can also redefine GPI and switch use according to live requirements.



MONITORING SYSTEM

Fully equipped, eyePower uses 22 separate 24 bit, oversampling A-D converters together with a number of 10 bit ADC to measure diverse parameters including neutral/earth, residual current and "DC on the mains". You cannot manage what you cannot measure and eyePower gives unparalleled access to mains power information. Even after years of work the development team are still surprised by loads that exhibit strange behaviour when monitored on a graph. Traditional current and voltage figures do not give a clear picture of the dynamic behaviour of modern equipment and Bryant Unlimited are looking forward to further software developments for a hardware platform that will extract useful information about the state of the user's power distribution.

DISCRETE MICROCONTROLLERS

Relay control, display and measurement, Ethernet are all performed by separate microcontrollers. It is a simple matter to combine all the program code into one processor but dedicated microcontrollers increase reliability. Ethernet code is particularly complicated and should not be combined with basic relay functions, however the processors do communicate constantly.

OLED DISPLAY

A full colour front panel display allows menu-driven access to unit status that will change over time to meet users' needs.

ETHERNET

Custom developed 10/100Mbit Ethernet module with PoE as standard that can power the entire unit and its logging/reporting through power failure or brown out. The powerful, 32 bit processor will meet the demands of future developments. There is a software road map with upgrade policy and user requests will be considered to develop the different methods of access and control. The initial web browser with dynamic voltage/current graphs demonstrates the standard of features that can be expected.

CONTROLLER PSU

The PSU is high quality, a linear supply with over-specified components that runs much cooler than a cheap switched mode unit with limited life. Linear supplies are more tolerant to supply harmonics and voltage dips.

MANUFACTURING STANDARDS

The units and sub-assemblies are manufactured in the UK to a very high standard using the highest quality components. Design and manufacturing teams take pride in the units they produce. Compliance with current European standards is assured, which unfortunately is not true for all MDUs on the market.