Controllers are vital components in a control loop set-up. These devices maintain a processed variable (PV) at a set point (SP) or desired value, despite external conditions/disturbances. Therefore, controllers are directly linked with the regulation process within a control loop.

Power controllers are available in conventional or smart variants. Smart controllers are devices that enhance conventional capabilities and designs. These are made to resolve new challenges that may occur within an advanced control system. These advanced controllers are often distinguished by newer technologies, which include:

- A digital system
- Diagnostics in loop validation
- Modularity, flexibility, and scalability

**ASPYRE smart power controller**

Watlow’s ASPYRE power controller is a smart controller that is utilized by industries around the globe. The specialized product comes with a mark of assurance with a UL 508 rating. This is a standard of the industrial control equipment industry that is linked to safety and can reduce labor and project costs.
ASPYRE controllers are applied by heavy duty industrial companies in petrochemicals, heat treatment and power generation. For starters, the model is available between a range of 35-2100 amps to complement a wide variety of applications. A single high amp ASPYRE unit can serve as a cost-effective solution. This is ideal for applications utilizing multiple small units with low range amps.

**Flexibility, scalability and modularity**

Smart controllers can be easily adapted to the specific needs of users through various applications. Their high level of scalability means that industries may fulfill various applications with the same controller. This helps to reduce cost and time associated with set up within numerous industry functions.

Modular options for the family of ASPYRE power controllers are available. These span semiconductor fusing, number of control legs and the user interface. This means that they can be better tailored to your specific application needs.

These integrated power controllers offer an affordable choice, which can reduce the footprint of the total solution while regulating optimal operations. They also feature microprocessor-based firing and control modes that enable users to control a wide base of heater loads.

The list of available firing modes include:

- Delayed phase angle
- Burst firing
- Single-cycle
- Zero cross
- Delayed triggering

ASPYRE power controllers are compatible with several type of loads such as UV lamps, molybdenum disilicide and transformer-coupled loads. Additionally, ASPYRE controllers provide comprehensive protection and extend the life of connected loads.

**Diagnostics and communication options**

ASPYRE power controllers are equipped with diagnostic capabilities and a wide array of communication options that enable factory and equipment automation. These connections may be conveniently established via a vast range of protocols and include: Modbus® RTU, Modbus® TCP, EtherNet/IP™, Wi-Fi, Profibus, Profinet and USB devices.

Microprocessor based controllers enable users to acquire diagnostic measurements while controlling power at the same time, which is what makes them more capable or “smart” compared to traditional controllers. The user interface enables users to configure the controller via USB while being safely away from a high voltage environment.
Additionally, ASPYRE features a heater bakeout function that protects heaters on startup. This function purges residual moisture from inside the heater prior to applying full power which not only safe guards the heater from permanent damage but also reduces the time and effort required to manually precondition (or bake out) wet heaters.

ASPYRE power controllers are also fitted with integrated current/voltage sensors and fuses, which provide accurate measurements of desired values. These smart functions inform users of supply voltage levels and load resistance values, to provide a clear profile of operational statuses.

Users may choose to customize or fingerprint their systems by comparing start-up values with previous measurements. This capability ensures the uniformity in the operating environment of their processes each time.

The controller is available for single-phase or more complex 3-phase loads. The intelligent troubleshooting diagnostics stored within ASPYRE ensures that system errors are recorded and resolved with promptness.

Specifically, the larger models between 1100-2100 amps have built-in capabilities that detect blown fuses and a cooling fan function. This immediately draws the attention of users to affected parts for further action to be taken.

The design of the controller provides users with convenient access to semiconductor fuses. These are easily replaceable in the event of a power trip. These higher amp configurations are recommended for energy process applications that involve immersion heaters for higher temperature applications.

Additionally, ASPYRE units come with a highly intuitive application wizard that recommends control configurations according to detected loads. This makes control processes fuss-free and with minimal to zero downtime. Advanced diagnostic systems ensure that power controllers are running smoothly at all time thus eliminating the risks of sudden breakdowns.

**Digital compatibility**

Smart controllers offer digital user interfaces that are intuitive and conveniently accessed. ASPYRE power controllers are compatible with analog and digital outputs, which means that users have greater versatility in terms of system control functionality. Further, ASPYRE power controllers feature easy-to-read real character OLED designs, which are easily interpreted by technicians to achieve seamless operations.

The controller is designed with quick access to SCRs (Silicon controlled rectifiers), which minimizes system downtime. The controllers are conveniently configured for PC software that is available for download from Watlow.com (/en/products/controllers/software/aspyre-configurator). Users can gain quick access by plugging and playing from a USB port.
Smart controllers are revolutionary devices that offer highly intuitive and automatic processes that will optimize your industrial operations. Watlow's ASPYRE power controller is a specialized component that powers new possibilities for your facility.