

BURNY 1400 Plus

BURNY 1400 Plus is a complete and fully-integrated shape-cutting control and drive system for use with either oxyfuel or plasma cutting machines



Performance Benefits

The BURNY 1400 Plus Operator Control System provides companies with a complete and fully-integrated shape-cutting control system in one enclosure. It is available from the Burny Division of Cleveland Motion Controls, internationally recognized as leaders in the development of controllers for the shape-cutting industry, improving productivity and reducing costs.

The BURNY 1400 Plus Control System offers users single-source control system responsibility and single-source reliability. It is easy to operate and offers a variety of design features to increase shape-cutting quality and accuracy, increasing productivity and reducing production costs.

The BURNY 1400 Plus Operator Control System is available for use with new machinery or to retrofit older thermal cutting machines.

Design Features

The BURNY 1400 Plus Operator Control System includes a fully-integrated BURNY 2.5 Plus Shape-Cutting Control, fully-integrated oxyfuel and plasma process controls, fully integrated torch controls, and a fully-integrated ServoPak® 120 watt pulse-width-modulated Drive System.

The BURNY 1400 Plus integrates the BURNY 2.5 Plus Control, with a processor that is over 300% faster than its predecessor. It has 512K of part program storage. In addition, the BURNY Plus Control uses FLASH memory instead of EPROMS, enabling users to easily connect a laptop computer and download new software or new part programs.

The BURNY 1400 Plus Operator Control System is recommended for almost any shape-cutting machine using an oxyfuel or plasma cutting process.

- Reduces costs and increases shape cutting productivity
- Provides single-source control system responsibility
- Integrates a full-featured BURNY® Plus Control that is over 300% faster; including faster processing, faster downloading and faster kerf calculation
- Incorporates a fully-integrated built-in drive amplifier system
- Incorporates fully-integrated plasma and oxyfuel controls
- Incorporates fully-integrated torch controls
- User-friendly

Complete and fully-integrated shape-cutting control & drive system for use with either oxyfuel or plasma machines

Full Function Shape-Cutting Control

The BURNY 1400 Plus Operator Control System includes a fully-integrated new BURNY 2.5 Plus Control, one of the easiest, fastest and most cost-efficient shape-cutting controls available today. Numerous standard features include RS

232/422 communications and up to 512K of non-volatile memory, chain cutting, automatic plate alignment, a built-in library of 53 pre-programmed shapes, and an independent Jog Keypad. With the BURNY 2.5 Plus, users can



create and modify their own programs and send and receive part programs from an off-line programming center.

Fully-Integrated Process Controls & Torch Controls

The BURNY 1400 Plus includes all necessary process control switches for either oxyfuel or plasma processes, including preheat, ignite, high preheat, and cutting oxygen. An adjustable pierce time potentiometer is included for control of machines equipped with two-stage piercing cycle capabilities.

Plasma start and stop control are also fully-integrated, enabling the control to

generate automatic cutting sequences for either automated plasma cutting or for manual control. There are also complete torch controls for up to six stations and an Auto mode position for integrating external torch height controls.

Fully-Integrated Drive Controls

The BURNY 1400 Plus Operator Control System also includes a fully-integrated ServoPak® 120 watt pulse-width-modulated drive system. With fast response, low power consumption, and a wide dynamic speed range, this servo drive provides reliable performance and improved cut quality. If a larger drive is required, the BURNY 1400 Plus is available with external servo outputs so that Burny specialists can performance-match it to the exact size and weight of your machine.

STANDARD DESIGN, CONSTRUCTION AND FUNCTIONAL SPECIFICATIONS

- Includes a BURNY 2.5 Plus Shape-Cutting Control with Jog Keypad. (See the BURNY 2.5 Plus data sheet for a complete listing of specifications.)
- Membrane front panel with ISO 7287 international standard symbols.
- Gas functions with six Station Selects.
- Six Torch capacity with DPDT Relay Outputs for AC or DC Lifters.
- Auto Height capability with relay outputs to control auto height enables.
- Adjustable timers to command All Up of the Lifters after High Preheat and Cut Off.
- To maximize safety, no high voltage wiring is on the front panel, 24 volt logic is used instead.
- Arc squelching Resistor / Capacitor snubbers on outputs.
- Larger Control Transformer to handle additional relays' power requirements.
- Relay Card utilizing the Motorola MC68HC05P9 high-density complementary metal-oxide semiconductor (HCMOS) microcontroller unit (MCU). Wire jumpers connect input AC Lines as source for Solenoids and Lifters or voltage can be customer supplied.
- Solenoid relay outputs are:
 - Auxiliary
 - High Cut O₂ (2nd stage)
 - High Preheat
 - Ignitor
 - Low Cut O₂ (1st stage)
 - Low Preheat
 - Marker
 - Oxy-Vent
- Plasma relay outputs are:
 - Plasma Start
 - Plasma Stop
 - Height Sensor Disable
- There are twelve lifter relay outputs, consisting of an up and down relay for each motorized torch station. The MCU commands the torches All Up after the High Preheat and after the Cutting Oxygen solenoids turn off. The time duration that the All Up relay remains on is adjustable via two potentiometers within the control.
- Six Station Select outputs can be directed by either the Gas On relay or the Cutting Oxygen On relay.
- Auto Height Outputs are manipulated by the MCU. The Levitator® Auto Mode is enabled during High Preheat and when the Cutting Oxygen is on.
- A two-pole potential free Clutch Relay is wired to a six-point terminal block inside the control for customer use.
- Drive included with the BURNY 1400 Plus is a 120 watt Pulse-Width-Modulated (PWM) DC drive.
- Should a larger drive be required, external Servo outputs are provided to control optional external ServoPak Drive Systems
- A speed reference card has been added to provide the High and Low speed reference adjustments.
- RS232/422 adapter is a standard feature in the BURNY 1400 Plus Control System.
- Preheat Gases switch is a three-position toggle switch:
 - Up Momentary On Torches Ignite
 - Middle Maintained On Low Preheat is On
 - Down Maintained Off Gas Relay is Off
- High Preheat switch is a three-position toggle switch:
 - Up Maintained On High Preheat is On
 - Middle Maintained Off High Preheat is Off
 - Down Maintained Auto CNC controls High Preheat
- O₂ switch is a three-position toggle switch:
 - Up Momentary On Low and High Cut O₂ are On
 - Middle Maintained Auto CNC controls Cut O₂
 - Down Maintained Off Low and High Cut O₂ are Off
- Aux switch is a two-position toggle switch:
 - Up Maintained Auto Aux is controlled by High cut O₂
 - Down Maintained Off Aux Output is off
- Plasma / Gas select is a two-position toggle switch:
 - Up Maintained On Plasma Cutting Mode is selected
 - Down Maintained On Oxygen Cutting Mode is selected
- Clutch switch is a two-position toggle switch:
 - Up Maintained On The Clutch Relay is on
 - Down Maintained Off The Clutch Relay is off
- Station selects are three-position toggle switches:
 - Up Maintained On Station on and Auto Height Auto
 - Middle Maintained On Station on and Auto Height Manual
 - Down Maintained Off Station off and Auto Height Manual
- Speed Range Select is a three-position toggle switch:
 - Up Maintained High Speed Reference is in High Range
 - Middle Maintained Low Speed Reference is in Low Range
 - Down Maintained Off Speed Reference is Zero
- All Up switch is a two-position toggle switch:
 - Up Momentary On Lifter Up relays are energized
 - Down Maintained Off Lifter relays operate normally
- Lifter switches are three-position toggle switches:
 - Up Momentary On Lifter Up Relay is energized
 - Middle Maintained Off Lifter relays are not energized
 - Down Momentary On Lifter Down Relay is energized
- Pierce Time adjustment potentiometer:
 - Range 0-20 seconds Controls time duration between first and second Cut O₂
- Speed adjustment potentiometer:
 - Range 0 - max. speed Controls machine speed during cutting and jogging
- Incoming power can be 115 or 230 volts AC 50/60 Hz.
- Internal 115 volt AC cooling fan is used to provide air circulation.
- Large Emergency Stop push-button on the side of the control breaks the power line for safe operation.
- Enclosure is dust tight and the connectors, transformers, fuses, door and hinge are gasketed.
- Enclosure is 16-gauge cold rolled steel and plated and painted to provide a high level of corrosion protection.
- Panel base plate is 0.125" aluminum and the graphics layer is 10 mil polycarbonate. The panel is textured and highly scratch and chemical resistant.
- Special precautions have been taken to guard against high frequency plasma noise from disturbing the sensitive electronics.
- Eight Grounding screws have been provided to attach the 360 degree cable clamps to the back of the enclosure.
- Four holes have been provided on the bottom of the enclosure for ease of mounting.
- Five fuses are standard in the BURNY 1400 Plus Operator System:
 - An incoming power fuse
 - A Station power fuse

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