

1050 SERIES POWER CONTROL UNITS Digital SCR Power Controllers



FEATURES

- State of the art “Book shelf style” packaging
- Direct temperature control
- Color touch screen for display interface
- Built in high speed network capability
- Integrated I²T fuse within touch proof package
- Single display capability for multiple controllers
- Expandable I/O interface for sophisticated system applications
- Web browser, product hosted, configuration tool
- Micro SD memory card for configuration file storage



INCREDIBLE FEATURES...at an affordable cost!

General Description

The Spang Power Electronics 1051, 1052, and 1053 Controllers are products based on Spang's 1050 control design.

The 1050 product family is well-suited for a wide variety of AC power applications. The 1050 product family are multi-processor-based designs that drive SCRs which feed a variety of industrial heating loads.

The design features:

- Short circuit protection
- Local or remote (networked) operation
- A variety of user-definable inputs and outputs
- The precise regulation of power, voltage, current, temperature, or open loop (duty cycle).

The Spang 1050 power controller series represent the next generation of power control for AC applications that require dependability, flexibility and unmatched performance.

Standard Features

The Spang 1050 Power Controller products offer the following standard features:

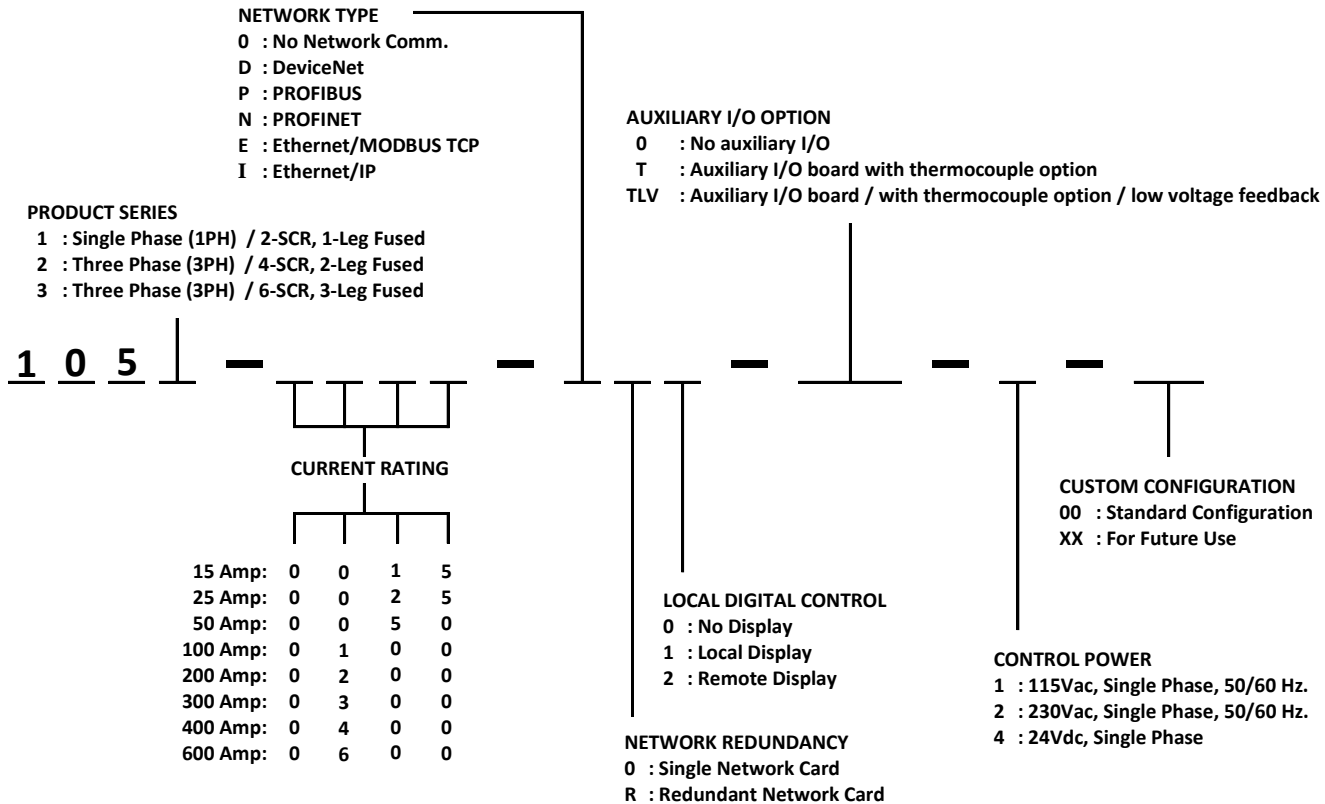
- **Flexibility.** Configurable operating modes, ratings, limits, external inputs, and setpoints. It also offers multiple firing modes for variable load types within the standard hardware package; i.e. phase angle and zero-crossover (burst firing) for direct or transformer coupled loads. For more information, reference the instruction manual for the specific 1050 product type and configuration options.
- **On-Board Diagnostics.** Fault and alarms memory (ten fault buffers and ten alarm buffers) provides data for analysis that may indicate a need for process modification, troubleshooting or preventative maintenance.
- **Computerized Setup and Calibration.** Web-based configuration application for setup, calibration, monitoring, control and diagnostics
- **Mechanical Design.** Touch-proof packaging prevents unintentional contact with hazardous voltage. A book-shelf style mechanical design allows efficient use of panel space when integrated into multi-unit system configurations.
- **Advanced Process and Fault Monitoring.** Real-time monitor of voltage, current, power, temperature (optional) and fault / alarm conditions. Real-time adjustment of the setpoint.
- **Network Interface,** allowing for remote control and monitoring of the 1050 using Ethernet MODBUS TCP supplied with the standard controller.

Optional Features

The optional features available for the 1050 power controllers allow further feature set customization to meet unique application requirements:

- **Expanded I/O,** including remote voltage, current and temperature (thermocouple) feedback as well as additional digital and analog I/O.
- **Network Interface,** allowing for remote control and / or monitoring of the 1051 power controller. Optional network interfaces:
 - I. DeviceNet
 - II. Profibus
 - III. Profinet
 - IV. Ethernet MODBUS TCP (optional card available when universal port is used for display connection).
 - V. ETHERNET/IP
- **Local or Remote Display (LDC).** Color touch-screen LCD display allows the user to control and monitor unit setpoints, output, and status.

Ordering Information



Multi-Unit Configurability

Bus Communications - Ethernet Network

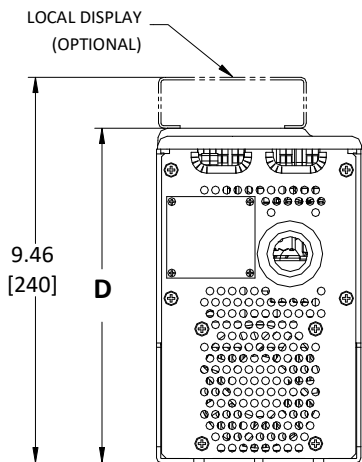
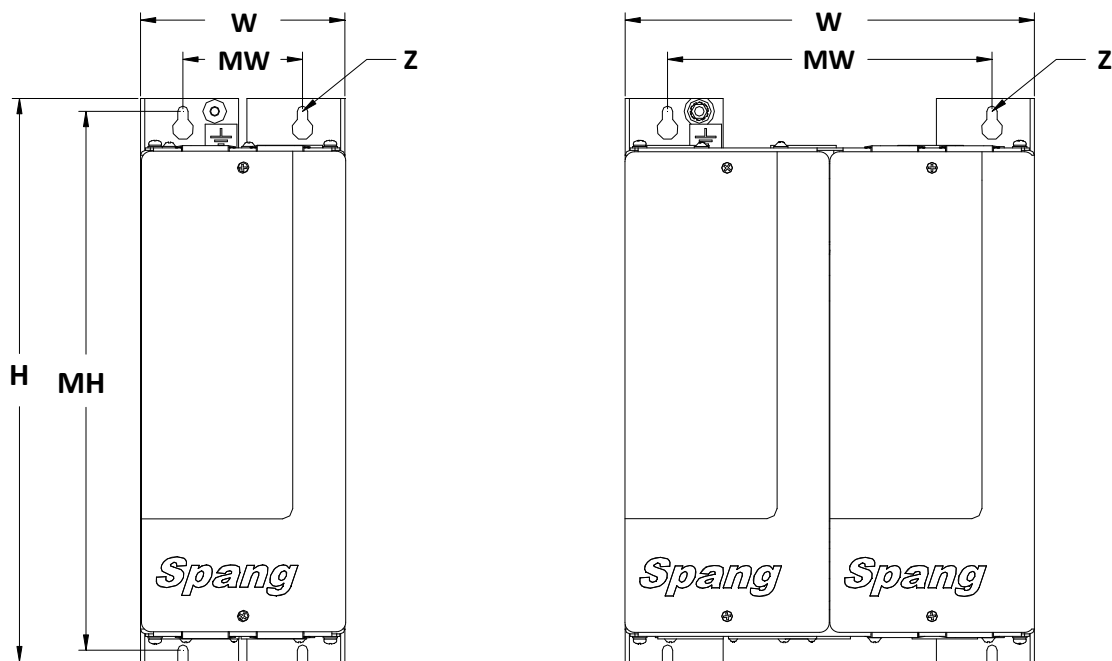


Technical Specifications

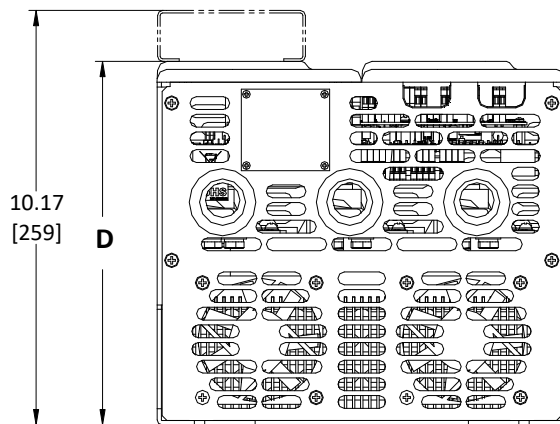
Input voltage	20 to 600 VAC
Input line frequency	47 to 63 Hz.
Control power	115VAC or 230VAC, 50/60 Hz or 24Vdc
Output voltage rating	0 to 600 VAC maximum
Output current ratings	See ordering information.
Ambient temperature	0 to 50°C ambient
Humidity	Up to 95% non-condensing
Max Elevation	1,000 m. above sea level
Cooling	Fan power above 50A PCU; either 115VAC or 230VAC, 50/60 Hz
Regulation	± 1%
Analog control reference	One (1) configurable voltage (0-10 V), current (4-20 mA), or potentiometer; 12 bit A/D conversion
Temperature reference (optional)	One (1) thermocouple input; 24 bit A/D conversion
Digital control reference	PC based configuration application, Remote Display, or network communications card
Input voltage and current feedback (internal)	Contains voltage and current feedbacks for input voltage and current
Output voltage feedback (internal)	Contains voltage feedback for output voltage
Relay contact	One (1) Normally Open (N.O.) and One (1) Normally Closed (N.C.), "Form C" type – configurable functionality
Analog outputs	Standard: Two (2) configurable voltage (0-5 V) or current (4-20 mA). Optional: Four (4) more; same configurable functionality.
Analog interface isolation	Differential inputs for sink or source signals. Sourcing outputs, commons are tied common and ground referenced.

Digital inputs	Standard: Enable / Inhibit, Remote / Local, Two (2) configurable inputs as alarm, fault, timed alarm, timed fault, fault reset, or output on. Optional: Two (2) more; same configurable functionality
Digital outputs	Standard: One (1) Form-C with dry-type contacts configurable as alarms, faults, no fault, OK to Run, or Run (firing output). Optional: Three (3) open-collector outputs; same configurable functionality
LED indicators	HEARTBEAT 1 & 2 – flashing Green indicates processors are running
	ENABLE – steady Green indicates 'Unit Enabled'
	RUN – steady Green indicates 'Output On'
	ALARM – steady Yellow indicates alarm
	FAULT – steady Red indicates fault
Universal comm. / configuration port	Ethernet port for PC based browser access, Display connection, or Ethernet MODBUS TCP network com
Over temperature monitoring	One (1) internally mounted thermal sensor.
Short circuit protection	Integrally mounted I ² t fuse SCCR: 100kA @ 50/60Hz 3 rd party, laboratory tested design.
Transient voltage protection	RC networks across the SCRs (no MOVs)
Protection	IP20 with appropriately sized (user installed) power cable through power cable access holes.
Network connectivity	Ethernet MODBUS TCP is provided as a standard network interface. Optional network communication interfaces available are DeviceNet, Profibus, Profinet, Ethernet MODBUS TCP, or Ethernet/IP
Certifications	UL, cUL, CE, RoHS, WEEE

Physical Dimensions: 15 - 200 Amp



1051



1052 / 1053

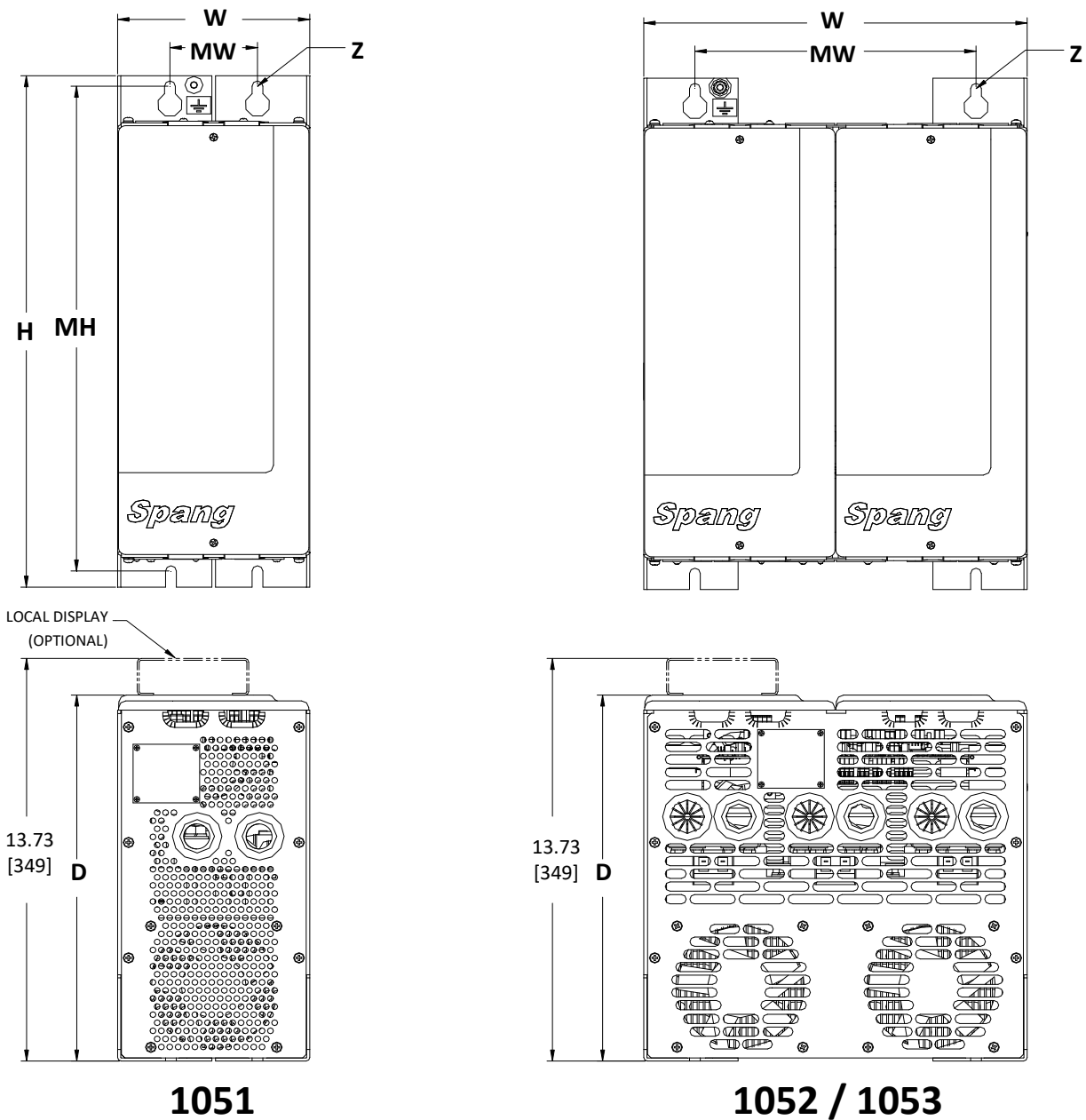
Dimension: Inches [mm]

Product	Amperage	W	MW	H	MH	D	Z
1051	15 – 200A	5.06 [129]	2.95 [75]	13.82 [351]	13.22 [336]	8.21 [209]	0.26 [6.5]
1052*	15 – 200A	10.14 [258]	8.04 [204]	13.82 [351]	13.22 [336]	8.92 [227]	0.26 [6.5]
1053	15 – 200A	10.14 [258]	8.04 [204]	13.82 [351]	13.22 [336]	8.92 [227]	0.26 [6.5]

1052* = Design / layout does not include the center phase shown above.

Note: All dimensions to $\pm(1)$ mm.

Physical Dimensions: 300 - 400 Amp



1051

1052 / 1053

Dimension: Inches [mm]

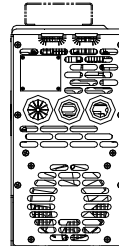
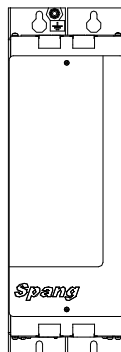
Product	Amperage	W	MW	H	MH	D	Z
1051	300 – 400A	6.31 [160]	2.95 [75]	17.44 [443]	16.54 [420]	12.48 [317]	0.35 [9]
1052*	300 – 400A	12.59 [320]	9.24 [235]	17.44 [443]	16.54 [420]	12.48 [317]	0.35 [9]
1053	300 – 400A	12.59 [320]	9.24 [235]	17.44 [443]	16.54 [420]	12.48 [317]	0.35 [9]

1052* = Design / layout does not include the center phase shown above.

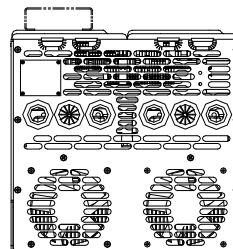
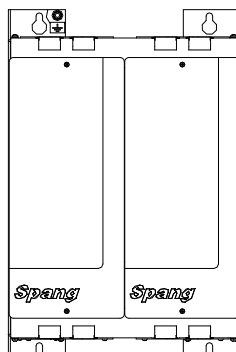
Note: All dimensions to $\pm(1)$ mm.

Physical Dimensions: 600 Amp

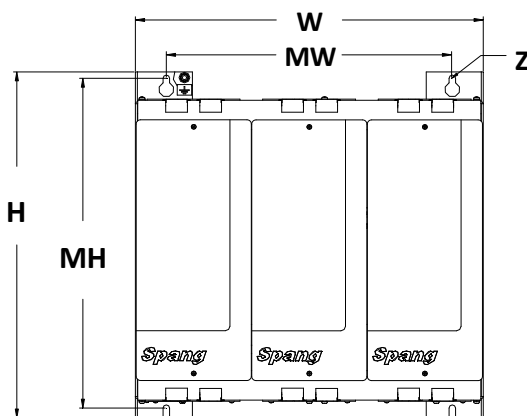
1051



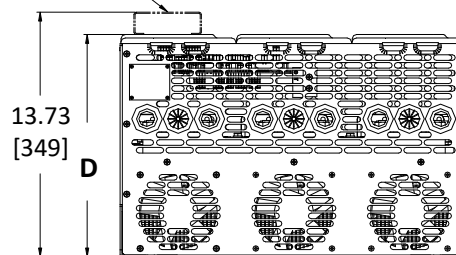
1052



1053



LOCAL DISPLAY
(OPTIONAL)



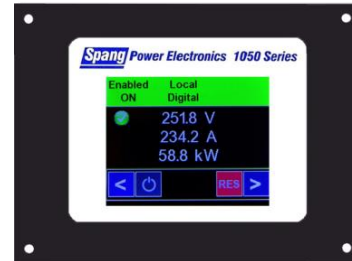
Dimension: Inches [mm]

Product	Amperage	W	MW	H	MH	D	Z
1051*	600A	6.31 [160]	2.95 [75]	19.41 [493]	18.50 [470]	12.48 [317]	0.35 [9]
1052*	600A	12.59 [320]	9.24 [235]	19.41 [493]	18.50 [470]	12.48 [317]	0.35 [9]
1053	600A	18.89 [480]	15.53 [395]	19.41 [443]	18.50 [470]	12.48 [317]	0.35 [9]

1051* / 1052* = Dimensional reference locations similar to the 1053 shown above.

Note: All dimensions to $\pm(1)$ mm.

1050 SERIES DIGITAL SCR POWER CONTROLLERS



For more information, visit us at www.spangpower.com