



## PRODUCT BID SPECIFICATION

### SENTRY io<sup>®</sup> Controller

#### *Small Point Fire and Gas Controller*

#### 1. Mechanical/Physical Characteristics

- a. **Size** Wall-mounted controller shall not exceed 22" x 17.62" x 9.5" (559 x 448 x 241 mm) in total size.
- b. **Weight** Unit shall not weigh more than 44 lb. (20 kg) [without battery].
- c. **Case Material** Robust fiberglass enclosure has pre-configured holes provided on the bottom surface of the enclosure (for ¾" NPT knockout or M20).
- d. **Hazardous Location Rating** Class 1, Division 2, Groups A, B, C, D.
- e. **Environmental Protection Rating:** Instrument shall be at minimum IP65 and NEMA 3X.
- f. **Temperature Range:** Normal operation: -4°F to 149°F (-20°C to 65°C).
- g. **Humidity Range:** 20% to 95% RH, non-condensing.
- h. **Configuration** Unit shall be easily configured from the integrated CPU/Logic Solver and 7" HMI touchscreen mounted in the enclosure door.
- i. **Display Location** Display shall be large 7" (178 mm) HMI touchscreen display (800x480 WVGA) with intuitive icons and stored multi-language capability.
- j. **Cable Entries** Unit shall have (7) ¾" NPT entries or (20) M20 cable entries pre-punched for easy cable connection to internal terminals for sensors, discrete inputs, relays, and analog outputs.
- k. **Expansion** Unit must be expandable in field [consult factory for assistance].

#### 2. Electrical Characteristics

- a. **Input Power:** 85-264 VAC, 50-60 Hz (auto-switching input).
- b. **Controller Power Consumption:** 1.4 Amps @ 24 VDC (controller only).
- c. **Field Device Power:** 8.6 Amps @ 24 VDC (max field device power available at 24 VDC).
- d. **Input signals supported** 4-20ma Analog with HART, discrete dry contact inputs.
- e. **Output signals supported** Dry relay contacts, analog outputs.
- f. **I/O Capacities:** 16 analog inputs, 6 discrete inputs, 56 relay outputs, 16 analog outputs.
- g. **Relays [common]** Controller shall have pre-configured common relays for any common alarm and any common fault.
- h. **Relays [mappable]** Controller shall have option for (49) mappable relays depending on the configuration and configured during SmartStart configuration process.
- i. **Digital communications** Modbus TCP/IP, EtherNet/IP/DLR, Modbus RTU (optional).

#### 3. Instrument Alarms

- a. **Visual Alarms** Instrument shall have bright and highly visible flashing indicators on the touchscreen to signal alarm conditions:
  - i. alarm—flashing red light.
  - ii. fault—flashing yellow light.
  - iii. system normal—steady green light.
- b. **Audible Alarm** Audible internal buzzer alarm shall be rated at 85 dB @ 30 cm on average at minimum and have two distinct tones for both alarm and fault:
  - i. alarm—steady tone.
  - ii. fault—intermittent tone (1 second on, 1 second off).
- c. **Alarm Set Points** Controller shall support either two independent alarm levels—A1 and A3—or three independent alarm levels—A1, A2, and A3. This shall be user-selectable during SmartStart commissioning. All set-points shall be adjustable from the touchscreen.

#### 4. Monitoring

- a. **Sensor Types** Controller shall accept virtually all 4-20 mA from fixed gas & flame detectors.
- b. **Discrete input Types** Contact inputs from smoke, heat detectors, pull stations, pushbuttons.
- c. **Event log** Unit shall be equipped with standard event data logging.

## 5. User Interfaces

- a. **Graphic User Interface (GUI)** Controller shall employ set-up configuration wizard (i.e., SmartStart), enabling easy configuration of user language, date/time, connected gas detectors, discrete input and output signals, and user-specified cause & effect operating logic.
- b. **Auto Identification Technology** Controller shall have option to synchronize and pre-populate details of HART-enabled MSA gas and flame detectors in 1 click during the commissioning initialization (i.e., EZ-ID).
- c. **Display Info** 7" (178 mm) HMI touchscreen display shall be easy to read:
  - i. all channels status at glance without scrolling.
  - ii. individual channel configuration and status.
  - iii. warning and error messages.
  - iv. menu-driven approach to configure all settings and control logic (i.e., cause/effect and voting).
  - v. provide alarm and fault histories.
  - vi. allow gas trending over time.
- d. **Output Signal** Unit must have Ethernet interface configurable for Modbus TCP/IP protocol, and RS485 interface configurable for Modbus RTU protocol is optional.
- e. **Networking Unit** Should be configured to become a stand-alone node on an EtherNet/IP network using Rockwell Automations device level ring (DLR) protocol, to connect multiple controllers in a single network.

## 6. Data Storage

- a. **Event Logging** Instrument shall be equipped standard with event data logging. Unit shall be able to download event archives via included SD card.
- b. **Capacity** Log capacity shall be no less than 100 latest events.
- c. **Record Content** Event log entries and HART diagnostics screen shall contain (depending on detector family and HART availability):
  - i. alarm: type, value, time, and date.
  - ii. Alarm clear: type, value, time, and date.
  - iii. calibration: pass/fail, time, and date [not all MSA detector families support this].
  - iv. fault codes/error non-shutdown: error type, time, and date.
  - v. End of life: reason, alarm minutes, month of life, time, and date [not all MSA detector families support this].
- d. **Data Transmission** 9600 baud rate.

## 7. Certifications

- a. **Electrical Safety and Performance Approvals** Controller must meet global approvals per:
  - i. cFMus (for electrical safety, hazardous locations and gas performance).
  - ii. ATEX and EMC Directives.
  - iii. IECEX.
  - iv. UKCA.
  - v. CE marking.
  - vi. Gas performance to the following standards: FM 6340, FM 6320, ANSI/ISA 92.00.01, ANSI/ISA 92.04.01, ANSI/FM/IEC/EN 60079-29-1, EN 50104.
- b. **Hazardous (Classified) Location Certification**
  - i. Class I, Division 2, Groups A, B, C, D; T5 Ta = -20°C to +65°C; Type 3X, IP65
  - ii. Class I, Zone 2, IIC T5 Ta = -20°C to +65°C, Type 3X, IP65
  - iii. Non-Incendive for Class I, Division 2, Groups A, B, C and D and Class I, Zone 2, Group IIC hazardous locations, indoors and outdoors (Type 3X, IP65) with ambient temperature rating of -20°C to +65°C.
- c. **Quality System** Instrument manufacturer must be certified according to ISO 9001 provisions.

## 8. Maintenance & Warranty

- a. **Maintenance** Normal maintenance shall be required according to instruction manual and applicable safety norms.
- b. **Warranty** The instrument shall have a full two-year warranty subject to proper installation and use [as specified per instruction manual and relevant documentation].

**9. The controller shall be an MSA SENTRY io.**