**COMMERCIAL KITCHEN SAFETY DEVICE SYSTEM**

PART 1 – GENERAL

1.1 SUMMARY:

1. Furnishings and installation of the Commercial Kitchen CO Detection, Nat Gas Detection, and Gas Solenoid Interlock Safety Device System as shown on the Drawings as herein specified.

1.2 SCOPE OF WORK:

1. Provide CO Detection, Natural Gas Detection, and Gas Solenoid interlock safety device system for each Commercial Kitchen as shown on the Drawings.

1. Each system shall include, but not be limited to, a utility controller panel with emergency stop button, Natural Gas detectors, CO Detectors, Normally closed gas solenoid valves, and shielded remote emergency stop buttons. Electrical contractor to make all wiring interconnections. The Plumbing Contractor shall provide all materials. Installation shall be in accordance with Part 3 of this section.

1.3 CODES AND REGULATIONS:

1. NFPA 70, National Electrical Code.
2. NFPA 72, National Fire Alarm Code.
3. NFPA 90A, Installation of Air conditioning and Ventilation Systems.
4. Americans with Disabilities Act.
5. Uniform Building Codes (UBC).
6. Local and State Building Codes.
7. All requirements of the local Authority Having Jurisdiction.

1.4 WARRANTY:

1. Provide a manufacturer’s parts warranty covering 3 Years from date of completion.
2. Refer to Division 01 section “Warranties”

1.5 MANUFACTURER:

1. Canadian Gas Safety MERLIN is the Basis of Design. Contact CGS Office for product information and pricing info@canadiangassafety.com
   1. SUBMITTALS:
2. Comply with Division 01 Section “Submittals Procedures”
3. Product Data:
4. Manufacturer
5. Model Number
6. Catalogue Data sheet with Photographs
7. Wiring and equipment connection diagrams clearly showing factory equipment and field installed equipment.
8. Provide all equipment, devices, conduit, operating power and other provisions for the Commercial Kitchen Gas Interlock Safety System.
9. Shop Drawings
10. Include plans, elevations, sections and mounting and attachments details.
11. Indicate dimensions, weights, loads, and required clearances, method of field assembly, components, and location and size of each field connection.
12. Wiring Diagrams
13. Detail wiring for signal, power and control wiring
14. Operation and Maintenance Data
15. Include in Emergency, Operation and Maintenance manuals.
16. Refer to Division 01 Section “Operation and Maintenance Data”
17. Manufacturer’s recommended detailed installation instructions.
18. Equipment is not to be ordered without approved submittals

PART 2 – PRODUCTS

2.1 PRODUCTS IN THIS SECTION:

1. All Products and Devices for a complete Commercial Kitchen CO Detection and Gas Solenoid Safety Device System with all components designed to operate together as a system. The system shall and be UL listed and labelled and be as listed in the Equipment Schedule of the Section.

2.2 MERLIN UTILITY CONTROLLER:

At each Commercial Kitchen hood and elsewhere as shown on Drawings, provide a **model # Merlin2000X** Utility Controller with fascia panel mounted switches to activate remote solenoids, relays to control natural gas. Controller shall have integrated printed circuit board and Microprocessor with adaptable programming features. Controller shall provide line voltage signals for output circuits. Controller shall utilize and operate a pressure transducer to perform a pressure drop test on the natural gas line before allowing gas to be supplied. Controller shall continuously check incoming gas supply pressure throughout operation. Controller shall provide inputs for remote EPO’s and Gas Sensors. The Controller shall be equipped with an Authority Key Lock that restricts activation of output signals to the operator. Controller shall be provided with a fascia mounted EPO button. Output signals will require Key Lock authority for re-set. Controller shall include two in-built current monitors to interlock with the mechanical ventilation.

2.3 MERLIN CAUTION SIGN:

At each Control Panel location provide model # **CGSLABELKS.** Caution sign will be posted above the Control Panel to indicate the proper procedure for resetting the system in case of system activation including but not limited to systems with standing pilots to avoid gas exposure or possible explosion.

2.4 SOLENOID VALVE:

At each Commercial Kitchen and where shown on Drawings, provide UL approved Canadian Gas Safety **GSV** solenoids for Gas services. All solenoids shall be normally closed and fail closed on loss of power. Number of solenoids, intended use and pipe sizes are as noted in Equipment Schedule or Drawings.

2.5 FUEL GAS SENSOR:

Where shown on Drawings and in Equipment Schedule, furnish and install a CGS Merlin Natural /Methane Gas Sensor **model # CGSNGiS** in order to detect raw fuel gas within the Commercial Kitchen area. Integrate Fuel Gas Sensor with the Controller.

2.6 MERLIN CARBON MONOXIDE SENSOR:

Where shown on Drawings and in Equipment Schedule, furnish and install a Merlin CO Sensor model # **CGSCOTFT** in order to detect high levels of CO within the area. Minimum of 2 CO sensors per hood. Integrate CO Sensor with the Controller. Locate sensor as shown in Drawings and per manufacturer’s recommendations.

2.7 MERLIN REMOTE EMERGENCY STOP BUTTON

Where shown on Drawings and in Equipment Schedule, furnish and install a Merlin Remote Emergency Stop Button model # **CGSEGOTW** in order to ensure system shutdown remotely in case of an Emergency. Remote Emergency stop shall read “EMERGENCY GAS OFF” Integrate Remote Emergency Stop Button(s) with the Controller. Locate button(s) as shown in Drawings and per manufacturer’s recommendations.

PART 3 – INTERGRATION AND CONFIGERATION

* 1. Building Automation or Management Systems (BMS):

1. Where shown on Drawings, provide low voltage integration wiring from each Controller to connection point on BMS. Merlin2000X Controller provides a NO, COM and NC relay output for BAS / BMS integration, the relay will change state in “Alarm” or “Gas On”. The Merlin Controller can accept low voltage signal from Fire Alarm to shutdown utilities in case of fire alarm. Final connection by others.
   1. SYSTEM CONFIGURATION:
2. Panic Alarm Re-Set:

Unless stated elsewhere on Drawings, The Controller shall only re-set from panic alarm after engagement of the authority key on fascia panel and after local panic alarm has been re-set.

1. Fire Alarm Re-set:

Unless stated elsewhere on Drawings, the Utility Controller shall be configured so that continued fire alarm signal to Controller shall prevent re-set.

1. Panic Buttons:

Each Controller shall be configured so that pressing Panic Buttons will disable all utilities. Each Controller shall be configured so that Gas services will automatically shut down in all alarm modes.

1. Natural Gas Sensor:

Where shown in Drawings, unit shall integrate with Controller and shut down all designated outputs upon detection of Natural Gas. Each Controller can utilize up to three fuel gas sensors.

1. Carbon Monoxide Sensors:

Where shown in Drawings, unit shall integrate with Controller and shut down all designated outputs upon detection of unsafe levels of CO gas. Each Controller can utilize up to six CO Detectors.

PART 4 – EXECUTION

4.1 INSTALLATION:

1. Install in accordance with manufacturer’s recommendations and instructions. Verify manufacturer’s mounting heights to comply with ADA or other standards.
2. Finish and install all devices as shown in Drawings and as specified herein. Where device is to be installed by other trades, furnish and then turn over to appropriate trade for installation.
3. Furnish, install and make final connections to monitoring and Panic Buttons as indicated on Drawings and specified herein. Furnish and install low voltage and volt free control wiring from Utility Controller to connection point on BMS. Final connection by others.

4.2 PLUMBING:

1. Make final connections to all piping systems where indicated by Drawings and specifications. Install in accordance with SECTION 221116

4.3 ELECTRICAL:

1. Electrical Contractor shall furnish all conduit and wiring, making final wiring connections to all equipment as indicated by Drawings and specifications. Contractor shall be responsible for all system configurations, integration, test and start-up.

PART 5 – SYSTEM TEST AND START-UP

1. Prior to placing the Merlin2000X Utility Controller System into service, perform ALL Start-Up procedures and checklists as stated in Manufacturer’s Operations and Maintenance Procedure
2. Verify that all components and devices comply with manufacturer’s requirements and recommendations and that all devices and installations conform to Drawings and specification requirements.
3. Upon completion of ALL Start-Up tests, place the system into service. Complete all warranty registration documents. Submit originals with other project related closeout and O & M documentation. Review all operating procedures with a representative of the owner. Provide all System Authority Keys to the owner’s representative.

PART 6 – EQUIPMENT SCHEDULE

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| Product | Model | Description | Remarks |
| Commercial. Kitchen Control Panel | Merlin2000X | Utility Control, Vent. Interlock & Gas Proving | Can handle up to 3 Gas Solenoid Valves and 6 CO Detectors. |
| CAUTION SIGN | WARNING LABEL | RESET SYSTEM PROCEDURE | SEE REMARKS IN PRODUCTS SECTION 2.3 |
| CO Sensor | CGSCOiS | Carbon Monoxide | \* |
| NG Sensor | CGSNGiS | Natural Gas | \* |
| Remote Emergency Stop | CGSGOTW | Remote emergency stop button | Unlimited number of em stops can be used provide as shown on plans. |
| Solenoid Valve | CGS GSV SERIES | As per Drawings and specifications | Gas “NORMALLY CLOSED” |

\* All sensors should be mounted for the desired gas requirements. Consult manufacturer for recommendations and requirements.