

Part 1 General

1.1 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with section 25 05 00 electrical general provisions
- .2 Include the following detail:
 - .1 A complete description of the system operation
 - .2 A complete description of each system component

1.2 SCOPE OF WORK

- .1 Submit shop drawings in accordance with section electrical general provisions Division 16 shall supply and install all equipment and accessories in order to provide a complete electrically supervised non-coded, Single Stage Addressable Fire Alarm System based on the Mircom FX-2000 Analog Fire Alarm Control Panel as described herein and as shown on the drawings.
- .2 On completion of the installation, the manufacturer's representative shall check the system proper operation and issue an inspection certificate
- .3 The contractor shall retain the services of Fire-Tech Systems Inc. to verify the system on completion of the installation.
- .4 The complete installation shall conform to the applicable sections of ULC S524-M06 and Local Code Requirements and Manitoba Electrical Code.

1.3 ACCEPTABLE MANUFACTURERS

- .1 The existing fire alarm is a Mircom FX2000 Series. New devices to match existing Mircom as supplied by Fire-Tech Systems Inc.

1.4 STANDARDS

- .1 System
 - .1 Must comply with applicable national and/or provincial/state building codes recognized at the time of installation.
 - .2 Must comply with the ULC/CAN-S524 Fire Alarm installation standards recognized at the time of installation.
 - .3 The system verification (see section 1.6 of this specification) must comply with the CAN/ULC - S537 verification standard recognized at the time of test.
 - .4 Installation must comply with requirements of local authority having jurisdiction.
- .2 Devices and Control Equipment

- .1 Equipment described in the following Part 2 Section must be listed under the current issue of the standard indicated
- .2 Manual Fire Alarm Stations: CAN/ULC S528
- .3 Heat Detectors: CAN/ULC S528, UL-521
- .4 Smoke Detectors: CAN/ULC S530, UL 268 268A
- .5 Audible Signal Devices: CAN/ULC S525, UL-464
- .6 Control and Related Equipment: CAN/ULC S527, UL-864
- .7 Visual Signals: UL1638

1.5 OPERATION AND MAINTENANCE

- .1 Provide Data to be incorporated into the maintenance manual specified herein and including the following:
 - .1 Operation and maintenance instructions for the complete Fire Alarm system to permit its effective operation and maintenance
 - .2 Technical data and illustrated parts lists with part numbers
 - .3 A copy of the final reviewed shop drawings

1.6 VERIFICATION

- .1 At the completion of the installation provide ULC Documentation stating that the system has been installed and that is operational in accordance with the Engineer's drawings and specifications.

Part 2 Products

2.1 FIRE ALARM CONTROL PANEL

- .1 System Control Unit
 - .1 The system control shall re-utilize the existing Mircom Series FX-2000. The control unit shall contain the microprocessor system operating software and non-volatile programmed memory. The unit shall be used to process all system information.
 - .2 The system control shall be capable of up to five (5) analog loops. Loop wiring shall be via a twisted, non-shielded pair with wire gauge to be determined by the following: Max. 40 ohms loop resistance and Max. of 0.5uf capacitance. Each loop shall be capable of communicating with up to 99 addressable sensor devices and 99 monitor output devices(198 points per loop).
 - .3 Store all system functionally and job specific data in non-volatile memory. System is to survive a complete power failure intact.
 - .4 System control unit shall be capable of supporting up to sixteen (16) conventional

hardwired adder modules (any combination of signal. Detection or relay modules) and/or fifteen (15) analog loops.

- .5 Provide a LCD Display Module of membrane style construction with a 4 line by 20 character Liquid Crystal Display. Use supertwist LCD technology and backlighting for high contrast visual clarity. In normal mode display the time, date, system condition and user definable message.
- .6 Provide visual indicators for the following common control functions: AC Power, alarm, supervisory, monitor, trouble, disable, and ground fault. Provide common control keys and visual indicators for reset, alarm, signal silence, trouble silence, fire drill and two custom programmable key/indicators. Any of the above mention system control units to provide 16 Zone configurable LED Annunciator with slide-in labels for zone definition with option to expand if necessary

2.2 EXPANSION MODULES

- .1 The ALC-198S Single Analog loop Controller Module provides an additional analog loop to the FX-2000 consisting of 99 Analog Sensors and 99 Addressable Modules.
- .2 The ALC-396S Dual Analog loop Controller Module provides an additional two (2) analog loops to the FX-2000 consisting of 99 Analog Sensors and 99 Addressable Module
- .3 The ALC-H16 Hardwired loop controller module allows the FX-2000 to support an additional sixteen (16) conventional hardwired adder modules. The hardwired modules are explained herein

2.3 DETECTION DEVICES

General: Setting a device shall be by a physical means. Use of rotary dial switches is acceptable. Devices that use electronic addressing or require the use of special programmers will not be accepted.

- .1 Addressable Manual Station
 - .1 The addressable alarm Manual Station shall be a Mircom series MS-401AD or MS710AD. The series 401 shall be constructed of red finished aluminum with rotary switches at the back to set the device address. Reset of the station shall be accomplished via a 1/8" screwdriver inserted from the front. The series MS-710 shall be high quality die-cast metal with rotary switches on the back of the device for address setting. The pull station is activated by means of a white "T" pull Handle. Reset of the pull station can be restricted to those with authorized use of a Key.
- .2 Addressable heat detectors
 - .1 The heat detector shall be a Mircom model MIX-5251 (RAP-135RoR, -AP-135FT, -HAP-200FT).
 - .2 The unit will have rotary switches for setting the device address
 - .3 The unit shall contain a dual thermistor sensing circuit to ensure rapid response and to virtually guarantee activation after the required 15 degree F per minute temperature rise.
 - .4 The detector sensing area shall permit 50 foot spacing between units in open area

applications. The unit shall mount on a standard model MIX-B210LPA addressable device base.

.3 Smoke Detectors

- .1 Model MIX-2551AP addressable smoke detector, uses the photo-electric principle for smoke detection. It shall be capable of communicating and controlling its status. The unit shall contain the rotary switches for address setting and shall mount on one of the bases listed below as specified on the plans.
- .2 Model MIX-2551TBA Acclimate Addressable smoke / heat detector, uses the photo-electric principle for smoke detection, and a 135 degree dual thermistor sensor for heat detection. It shall be capable of communicating and controlling its status. The unit shall contain the rotary switches for address setting and shall mount on one of the bases listed below as specified on the plans.

.4 Addressable Bases

- .1 Model MIX-B210LPA standard addressable base
- .2 Model B224RBA addressable base with relay
- .3 Model B224BIA addressable base with isolator (see description of M500X fault module following for details of isolator operation)

.5 Addressable Duct Smoke Detectors

- .1 Model DNR intelligent photoelectric duct detector, c/w MIX-2251BRA Head
- .2 Sampling tubes shall be the DST series available in 1.5, 3, 5, or 10 foot lengths as required

.6 Addressable Point Modules

.1 MIX-M500MAP Monitor Module

Monitor module MIX-M500MAP shall be used when one or more normally open (N.O.) conventional initiating devices is required to be addressable

- .1 One address per MIX-M500MAP, (regardless of the number of devices connected to it). The devices shall wire to the unit in a Class B or Class A configuration.
- .2 The MIX-M500MAP shall connect to the FX-2000 system via the address loop as any other addressable device, with the address set via the rotary switches on the unit and it shall mount on a standard 4 inch square electrical box.
- .3 Monitor module MIX-502MAP shall be similar to above but shall allow the use of 2-wire smoke detectors (not addressable type) within the conventional device circuit.
- .4 This shall require an additional 2 wires from the FX-2000 panel or remote power supply for device power).

.2 MIX-M501MAP Monitor Module

- .1 Monitor module MIX-M501MAP shall perform the identical function as MIX-M500MA but in a Class B device configuration only.
- .2 The compact size of the MIX-M501MAP shall allow the unit to be mounted within virtually any size electrical box or, in most cases, behind an actual alarm device.
- .3 MIX-M500RA Intelligent Output Relay Module
 - .1 Output module MIX-M500RAP shall be used if e an addressable field relay (form C contact) is required.
 - .2 The unit shall be capable of being programmed to operate under specified alarm and/or trouble conditions within the FX-2000 panel.
 - .3 The MIX-M500RAP shall contain the rotary switches for addressing and shall mount on a standard 4 inch square electrical box.
- .4 M500X Fault Isolator Module
 - .1 Fault indicator module M500X (also referred to as an isolator module) shall be used where required or indicated on the plans.
 - .2 On the address loop, the fault indicator shall provide isolation of short-circuited sections of the address loop, preventing the entire loop from becoming inoperable and allowing address devices and modules in the non shorted sections to continue to function properly.
 - .3 The M500X shall mount on a standard 4 inch square electrical box. Note also that the fault isolation function described here shall also be contained within the B524BIA smoke detector base described previously.
- .5 End-of-Line Devices:
 - .1 One-watt type resistors mounted within outlet boxes separate from those for other devices at the locations indicated. Provide on the coverplate for each such device on approved nameplate, engraved "END-OF-LINE RESISTOR" or with an approved symbol. Provide red lamacoid plate with white 6mm letters identifying zone.

2.4 FIRE ALARM AUDIBLE SIGNALS

- .1 Mircom HRA Series, Red colour, (HWA White Colour) Electronic Horn. Temporal/Non-Temporal, Electro-Mechanical or 3000Hz Tone Selectable. High or Low Volume. Suitable for wall or Ceiling mount applications. Complete with universal mounting plate

2.5 FIRE ALARM AUDIBLE/VISUAL SIGNALS

- .1 Mircom P2R Series, Red colour, (P2W White) 15-110 cdl Selectable Strobe, c/w Electronic Horn as above. Suitable for wall mounting only. c/w: Universal Mounting Plate.

- .2 Mircom PC2 Series, 15 – 110cdl selectable, c/w Electronic Horn as above. Suitable for Ceiling Mount Only. c/w: Universal Mounting Plate.

2.6 FIRE ALARM VISUAL SIGNALS

- .1 Mircom SRA Series, Red colour, (SWA White) 15 – 110 cdl Selectable. Suitable for wall mounting only. c/w: Universal Mounting Plate.
- .2 Mircom SCW Series, White colour, 15 – 110 cdl Selectable. Suitable for ceiling mounting only.
c/w: Universal Mounting Plate.
- .3 Mircom SCWHA Series, White colour, 135 – 185 cdl Selectable. Suitable for ceiling mounting only.
c/w : Universal Mounting Plate.

Part 3 Execution

3.1 INSTALLATION SCHEDULE

- .1 System must be complete, approved and operational for completion date or contractor could be held accountable for costs associated with late opening.
- .2 Do not commence any item of work affecting any part of the existing system until all necessary materials are on site for that item of work. Having started such an item, carry out work continuously until that portion of the system is restored to full operation.
- .3 Ensure that in no case will the voltage drop to any signal exceed 10%. Use Class B connections for all initiation circuits, Class A for signal circuits.

3.2 WIRING

- .1 Provide all necessary supply interconnecting, and remote signal wiring, in accordance with the manufacturer's wiring diagrams and the requirements of the Electrical Code and the Inspection Authority.
- .2 Provide terminal cabinets, complete with terminal blocks for wiring convenience at various junction points in the system where recommended by the manufacturer.
- .3 All conductors shall be cut at each station, detector and bell and connections shall be made in the approved manner to ensure proper supervision of the wiring. This will involve using four screws at each device.

3.3 TESTING AND INSPECTION

- .1 The manufacturer's representative shall make an inspection of the fire alarm equipment, including those components necessary to the direct operation of the system such as manual stations, thermal and smoke-actuated detectors and controls, whether or not manufactured by the manufacturer. The inspection shall comprise an examination and test of such equipment for the following:

- .2 That the type of equipment installed is that designated by the specifications.
- .3 That the wiring connections to all equipment components show that the installer undertook to have observed ULC and UL requirements.
- .4 That all products-of-combustion (smoke) detectors have been properly calibrated and adjustments set correctly.
- .5 That equipment of the manufacturer's manufacture has been installed in accordance with the manufacturer's recommendations and that all alarm-initiating, annunciation and signaling devices of whatever manufacture have been operated or tested to verify their operation.
- .6 That supervisory wiring of those items of equipment connected to a supervised circuit is operating and that the wiring, having been met to the satisfaction of inspecting officials.
- .7 Testing to be done in the presence of the local building inspector and local Authority Having Jurisdiction
- .8 Fire alarm system shall be verified as per CAN/ULC-S537-04

END OF SECTION