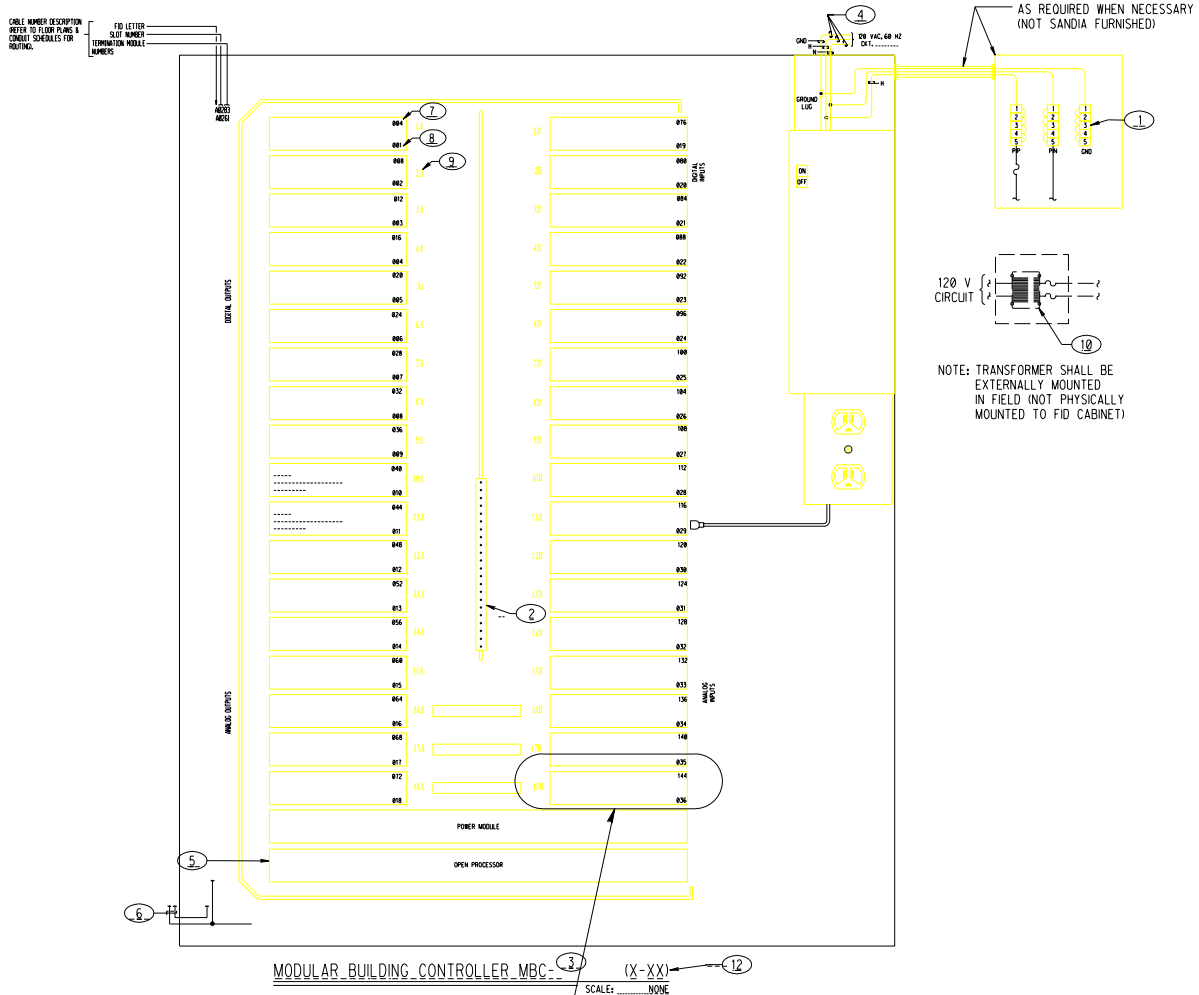
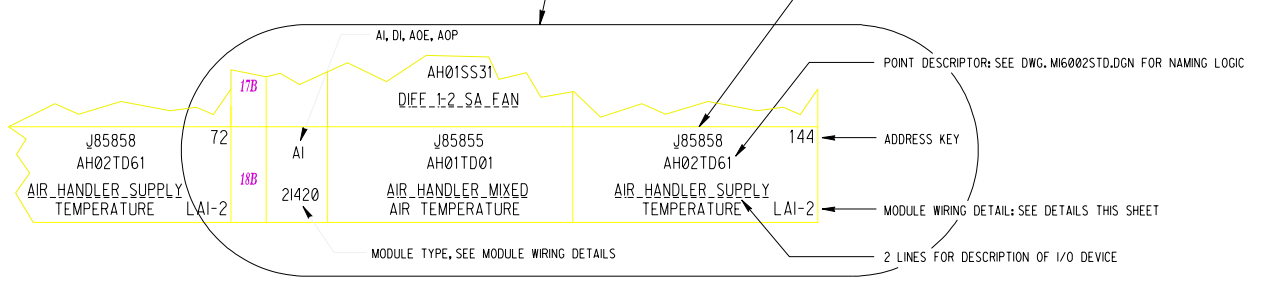
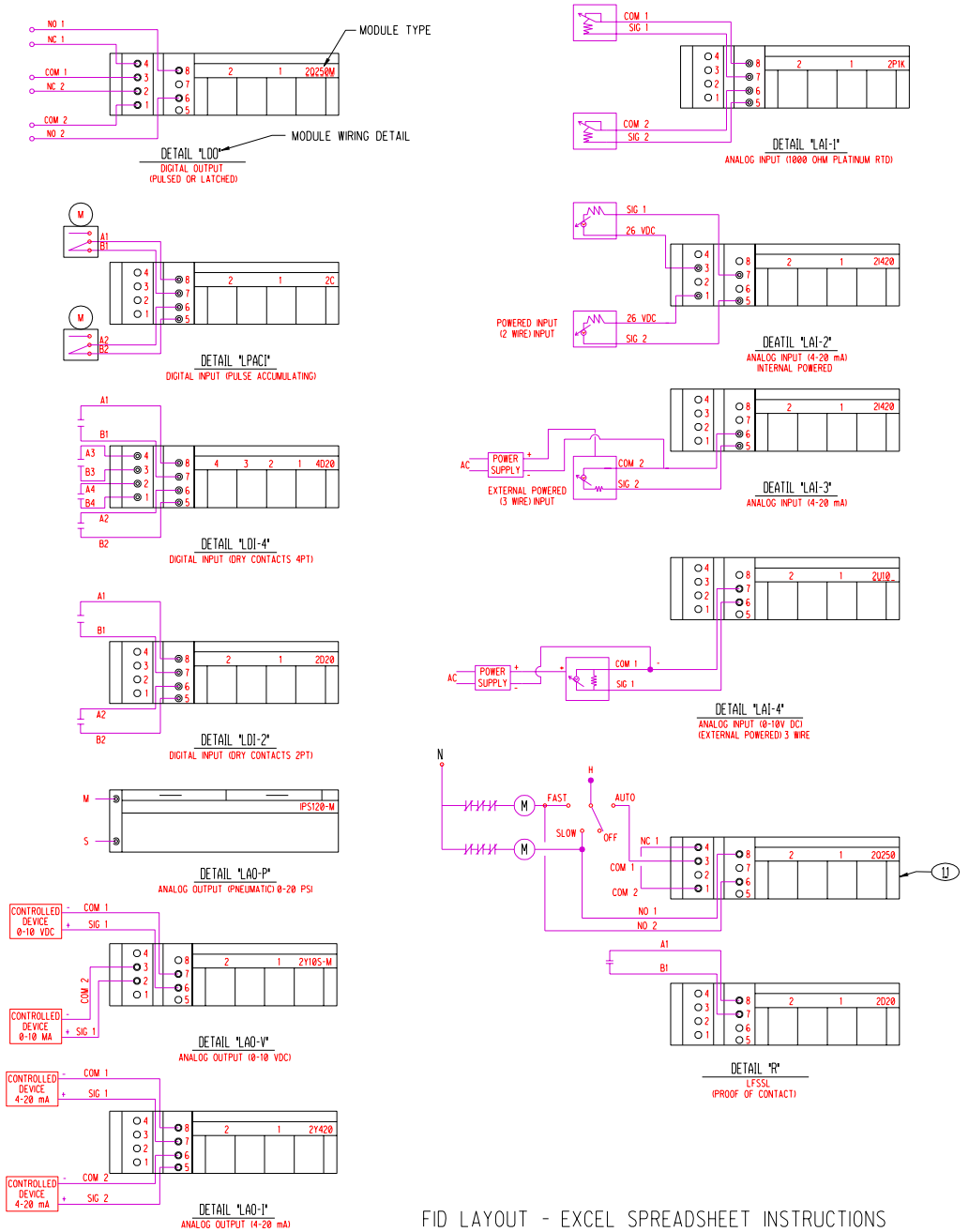




EXCEL SPREADSHEET MODULE LABELING DETAIL

SCALE: NONE

MODULE WIRING DETAILS



FID LAYOUT - EXCEL SPREADSHEET INSTRUCTIONS

1. CONTACT FACILITIES CONTROL SYSTEMS, ORG. 10848 FOR EXCEL SPREADSHEET TEMPLATE FILE FOR DESIGN OF FID (FIELD INTERFACE DEVICE) CABINET.
2. AFTER THE TEXT IN AN EXCEL SPREADSHEET CELL IS CHANGED, THE TEXT WILL CHANGE TO BLACK AND THE RETURN KEY WILL ADVANCE TO THE NEXT CELL/FIELD TO BE ENTERED.
3. TO INDICATED A FID MODULE SPACE THAT IS EMPTY, IN THE APPROPRIATE CELL ON THE EXCEL SPREADSHEET, PLACE THE CURSOR IN THE INDICATED CELL AND SPRESS THE SPACEBAR TO CLEAR THE CONTENTS OF THE CELL.
4. TO PLACE THE FID CABINET DESIGNATION AT THE BOTTOM OF THE SPREADSHEET, ON THE EXCEL MENU BAR, GO TO "VIEW", THEN "HEADER FOOTER". AFTER SELECTING THE "CUSTOM FOOTER" BUTTON, ENTER THE BUILDING NUMBER AND THE MBC FID DESIGNATION (IE., "A", "B" ETC.) SEE EXCEL FILE LABELING DETAIL, THIS SHEET.

0858 MBC A APOGEE

- IF APOGEE FIRMWARE (LEAVE BLANK IF NOT APOGEE FIRMWARE)
- FID CABINET DESIGNATION LETTER ("A", "B", "C", ETC.)
- MBC, CONVERSION OR EXPANSION
- FOUR (4) CHARACTER BUILDING NUMBER

EXCEL FILE LABELING DETAIL

SCALE: NONE

GENERAL NOTES

1. ALL CABLE TO BE PULLED CONTINUOUS FROM MODULAR BUILDING CONTROLLER (MBC) TO FINAL TERMINATION POINT WITH NO SPLICES ALLOWED.
2. ALL DO WIRE SHALL BE #14 TYPE THHN OR TFFN BLACK. ALL DI WIRE SHALL BE #20 TWISTED STRANDED PAIR W/BLUE SHEATH.
3. ALL AO & AI WIRE SHALL BE # 20 TWISTED SHIELDED STRANDED PAIR W/ WHITE SHEATH. CONDUCTOR COLORS SHALL BE BLACK/RED OR BLACK/WHITE WITH BLACK DESIGNATING POSITIVE.
4. LABEL ALL WIRING IN MBC CABINET, AND AT ALL DEVICES, WITH PERMANENT BRADY TYPE LABELS OR EQUAL, USING POINT DESCRIPTOR FOR EACH POINT.
5. ALL WIRING IN MBC CABINET SHALL BE NEATLY BUNDLED USING REUSABLE HOOP & LOOP TIES, TERMINATED BY CONTRACTOR AND ACCEPTED BY SANDIA INSPECTOR.
6. ALL FIELD CONDUITS SHALL TERMINATE IN WIREWAY MOUNTED ABOVE OR BELOW MBC CABINET. ON HINGE SIDE OF CABINET, MAKE SURE THAT CONDUIT DOES NOT INTERFERE WITH DOOR OPENING.
7. COIL 2' OF BUILDING LEVEL NETWORK (BLN) COMMUNICATIONS TRUNK CABLE IN LOWER RIGHT OF MBC CABINET. CONNECTION SHALL BE MADE BY EMCS PERSONNEL.
8. DEVICE CABLE SHIELDS TO BE TERMINATED AT GROUND TERMINATION STRIP. TERMINATION TO BE IN MBC CABINET. SEE KEYED NOTE (2).
9. ALL DEVICES RESIDING ON THE BUILDING LEVEL NETWORK SHALL BE CONNECTED IN A DAISY CHAIN FASHION. NO STUBS OR TEES ARE PERMITTED.
10. CABLE FOR BUILDING LEVEL NETWORK SHALL BE #24 AWG TWISTED LOW CAP SHEILDED PAIR W/ORANGE PLENUM RATED SHEATH. BLACK CONDUCTOR TO DESIGNATE NEGATIVE. NO POWER CIRCUITS OR DIGITAL OUPUT CIRCUITS SHALL BE RUN IN THE SAME CONDUIT WITH BLN WIRES.
11. MODULE PLACEMENT INSTRUCTIONS (MBC-40 CABINET)
    A. DIGITAL OUTPUT MODULE PLACEMENT SHALL START AT SLOT 1A AND PROCEED IN AN ASCENDING ORDER IN COLUMN A TOWARD THE CENTER OF THE COLUMN.
    B. ANALOG OUTPUT MODULE PLACEMENT SHALL START AT SLOT 18A AND PROCEED IN DESCENDING ORDER IN COLUMN A TOWARD THE CENTER OF THE COLUMN.
    C. DIGITAL INPUT MODULE PLACEMENT SHALL START AT SLOT 1B AND PROCEED IN ASCENDING ORDER IN COLUMN B TOWARD THE CENTER OF THE COLUMN.
    D. ANALOG INPUT MODULE PLACEMENT SHALL START AT SLOT 18B AND PROCEED IN DESCENDING ORDER IN COLUMN B TOWARD THE CENTER OF THE COLUMN.
12. WIRING OF FLOOR LEVEL NETWORK (FLN) DEVICES :
    A. DEVICES RESIDING ON A FLN SHALL BE CONNECTED IN A DAISY CHAIN FASHION (SAME AS THE BUILDING LEVEL NETWORK).
    B. UP TO 3 FLN NETWORKS CAN BE CONNECTED TO ONE CONTROLLER.
    C. UP TO 32 DEVICES CAN BE CONNECTED TO EACH FLN NETWORK.
    D. FLN'S WITH VFC'S CANNOT CONTAIN OTHER TYPES OF DEVICES.
    E. FLN 24V POWER WIRING SHALL BE #18 TWISTED STRANDED PAIR WITH WHITE SHEATH. BLACK CONDUCTOR TO DESIGNATE NEGATIVE. A MAXIMUM OF 5 TERMINAL EQUIPMENT CONTROLLERS SHALL BE ALLOWED PER POWER CIRCUIT. FLN COMMUNICATION CABLE SHALL BE THE SAME TYPE USED FOR THE BUILDING LEVEL NETWORK.
    F. FLN COMMUNICATION CABLE AND POWER CABLE SHALL BE RUN IN SEPARATE EMT COUNDUITS THAT MEET SANDIA NATIONAL LABORATORY ELECTRICAL STANDARDS.
13. KEEP ALL MBC CABINETS A MINIMUM OF 5' (1.5 METERS) AWAY FROM POWER SOURCES GREATER THAN 100 KVA AND ANY VARIABLE FREQUENCY CONTROLLERS.

KEYED NOTES

1. TERMINAL STRIPS PIP, PIN, FUSE, AND GND LOCATED IN CONNECTING 120 VAC EXPANSION CABINET. USE EXISTING KOCKOUT LOCATED AT UPPER RIGHT HAND SIDE OF CABINET. MBC CABINET DOES NOT PROVIDE 120V POWER FOR EXTERNAL TRANSFORMERS OR 24V DEVICE POWER. SEE KEYED NOTE 10.
2. COPPER GROUND TERMINATION STRIP WITH 20 TERMINATION POINTS. ALL SHIELD WIRE ANALOG I/O TO BE TERMINATED ON THIS BUS. TWO SHIELD WIRES MAY BE TERMINATED ON A SINGLE POINT. BUS INSTALLED BY INSTALLATION TECHNICIAN.
3. MBC ENCLOSURE AND INTERNAL COMPONENTS INCLUDING GROUNDING STRIP ARE SANDIA FURNISHED EQUIPMENT (SFE) CONTRACTOR SHALL MOUNT MBC AND TERMINATE POINTS ACCORDING TO LAYOUT.
4. CONNECT POWER PER MANUFACTURER'S INSTRUCTIONS.
5. FLN CONNECTOR LOCATED ON LEFT SIDE OF INSTALLED CONTROLLER MODULE. INSTALL LAN TRUNK BETWEEN MBC, AND ANY INSTALLED LAN CONTROLLER.
6. WHEN USING ANALOG OUTPUT PNEUMATIC MODULES, MAIN AND SIGNAL AIR ENTERS AND LEAVES LOWER LEFT SIDE. 1½" PNUEMATIC GUAGES TO BE LOCATED ADJACENT TO THEIR RESPECTIVE MODULES. PNEUMATIC FITTING SHALL NOT INTERFERE WITH DOOR OPENING.
7. POINT MODULE ADDRESS KEY (NON APOGEE).
8. POINT MODULE ADDRESS KEY (APOGEE).
9. POINT SLOT: ALL MBC-40 CABINETS HAVE A TOTAL OF 36 SLOTS AVAILABLE FOR MODULES, 18 IN EACH COLUMN. AN MBC-24 CABINET HAS A TOTAL OF 20 SLOTS AVAILABLE, 10 IN EACH COLUMN.
10. EXTERNALLY MOUNT 24 VAC TRANSFORMER(S) TO PROVIDE POWER TO VALVES, ACTUATORS AND EQUIPMENT CONTROLLERS. TRANSFORMERS SHALL BE NO LARGER THAN 100 VA. MAXIMUM LOAD PER TRANSFORMER NOT TO EXCEED 80 VA. IF MORE THAN ONE TRANSFORMER IS NECCESSARY, BALANCE THE LOADS.
11. ONLY CASE WHERE DIGITAL OUTPUT WITHOUT MANUAL OVERRIDE WILL BE USED.
12. TRUNK AND NODE NUMBER TO BE ASSIGNED BY SNL.

REV	DATE	DESCRIPTION	DWN	CKD	APP
B	2/01/02	UPDATE	EG	MFR	
A	5/1/02	UDS MODS	EG	FL	

P.O.
PROJECT NO.

U.S. DEPARTMENT OF ENERGY
KIRTLAND AREA OFFICE — ALBUQUERQUE, NEW MEXICO

SANDIA NATIONAL LABORATORIES

FID MODULE WIRING DETAILS & MBC CABINET DETAIL

P.O.	0839422
PROJECT NO.	
DRAWN BY	E. L. GORE
CHECKED BY	D. J. DOBIAS
SNL ENGR	C. A. EVANS
DATE	10/12/99

MECHANICAL — STANDARD

SIZE D+ — DRAWING NO MI5001STD — SEQ. 143

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