

INSTALLATION INSTRUCTIONS FOR FACTORY MUTUAL APPROVED INSTRUMENTS

PLEASE NOTE

Installation instructions must be strictly followed in compliance with Intrinsic Safety National Standard NEC 504 or ANSI/ISA RP 12.6 and the National Electrical Code.

DORAN SCALES, INC.

1315 PARAMOUNT PKWY. • BATAVIA, IL 60510

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SPECIAL NOTE

Doran Scales, Batavia, IL. is not responsible for the installation, use, or damages as a result of the installation or operation of the Model 8000MIS or the associated equipment used with it.

The Intrinsic Safety of the application is the responsibility of the customer and / or installer.

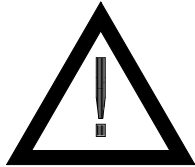
Revision: 1.3

Date: 12/97

1. INTRODUCTION TO INTRINSIC SAFETY

1.0 INTRODUCTION

This document is provided to supply information on Intrinsic Safety as it applies to the installation of Doran Scales equipment and accessories. Only Doran Scales approved equipment and accessories shown on the Control Drawings are to be used with an Intrinsically Safe application



CAUTION

The instruction and precautions in this document take precedence over any information contained in the Doran Scales Model 8000 Operating and Service Manual.

The installer/user should thoroughly read, be familiar with, and understand the requirements and any precautions or procedure associated with Intrinsically Safe installations.

1. WHAT IS FACTORY MUTUAL APPROVAL?

Factory Mutual Approval means that Factory Mutual, as an independent lab and as it applies to Doran Scales, has tested and has given Entity approval for the Doran Scales Model 8000MIS for use in Intrinsically Safe applications. The Model 8000MIS, when used with the proper equipment and options, will be Intrinsically Safe when used as a part of an Intrinsically Safe circuit.

The Model 8000IS scale system may incorporate any of the following and is limited to the listed combinations:

1. Load cells- Only those listed on Control Drawing 02-88060 may be used
2. Model 8000MIS indicator
3. Model 8000BIS battery pack or Model 8000AIS AC/DC Power Supply
4. Cable
5. Optional Remote Switch

Refer to the Control Drawing (7 sheets) for the specific device and electrical specifications for connection of the listed components.

Please note that only load cells listed on the Control Drawing may be used with the Doran Model 8000MIS as specified in the load cell manufacturers Control Drawing. The use of the listed load cell(s) ensures compatibility with the Doran Scale Model 8000MIS and can be installed in any mechanical structure that supports the appropriate load cell.

1.2 FACTORY MUTUAL ADHERENCE REQUIREMENTS

The following is a synopsis of the requirements that must be satisfied for a Factory Mutual approved installation.

- i. The Model 8000MIS indicator must have a nameplate indication FM approval (class, group, division) for the specific hazardous location with the model number and referencing the Control Drawing.
- ii. The Model 8000BIS battery pack must have a nameplate indicating model number, temperature code and a reference for the Control Drawing.
- iii. The Model 8000AIS AC/DC power supply must have a nameplate indicating F.M. approval (class, group, division) for the specific hazardous locations with the model number, and referencing the Control Drawing. The 8000AIS is used in place of the 8000BIS and 8000CIS.
- iv. All interconnections, wiring methods, sealing, fittings, grounding, etc. must be in accordance with the National Electrical Code and Intrinsic Safety National Standard.
- v. Only the device(s) listed in the Control Drawing may be used in the installation.

1.3 BARRIERS AND OPTIONS

The Model 8000MIS can support limited options for an Intrinsically Safe application. Only the RS232 serial data output and a remote push-button (simple apparatus) are supported per the Control Drawing. The Pepperl-Fuch barrier P/N Z366 or Z966 can be used with the RS232 serial data output with the appropriate wiring. The Pepperl-Fuch barrier P/N Z366 or Z966 can be used to allow a remote push-button in the safe area.

Barriers, buss bars and associated barrier hardware can be purchased as option from Doran Scale, Inc.

For customer supplied interfaces and devices, the following must be met:

- i. Cable and /or accessories must be exactly wired as illustrated in the Control Drawing.
- ii. Only barriers listed in the Control Drawing can be used.
- iii. A tamper proof ground must be supplied as shown to all barriers and equipment in a single point configuration to eliminate any ground potentials. Ground connections should be less than 1 ohm.
- iv. Requirement that the remaining circuits must not generate or be connected to any voltage in excess of 250 volts must be observed

2. UNPACKING AND INSTALLATION

2.1 OVERVIEW

Installation of all electrical equipment including indicator, barriers, and associated scaling must be in compliance with the National Electrical Code and the Intrinsic Safety National Standard.

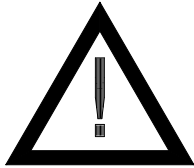
2.2 SCALE INSTALLATION

Scale installation involves locating the platform or weighing element(s) in the hazardous area and mounting the Model 8000MIS in a secure location, also in the hazardous area. The power for the Model 8000MIS can be provided by the Model 8000BIS rechargeable battery or the Model 8000AIS AC/DC Power Supply. The Model 8000BIS is the standard configuration and the Model 8000AIS is the alternate configuration and replaces the Model 8000BIS and Model 8000CIS. Both versions can not be utilized at the same time.

The use of conduit for options is not required except by the Plant Engineer's preference. All seals and accessories required to make the proper installation and maintain the separation of the hazardous and safe areas are the responsibility of the customer.

It is also recommended that any cable runs that are part of the Intrinsically Safe circuit be marked with a bright blue tape. Blue cable could also be utilized.

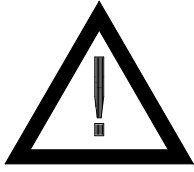
All Intrinsically Safe wiring should be located not less than 2 inches from Non-Intrinsically Safe wiring, unless separated by an insulating or ground partition.



*****CAUTION*****

Although the Model 8000MIS is approved as being Intrinsically safe, caution should always be observed in all areas designated as hazardous including the use of tools and equipment

CAUTION



If there are any doubts of whether the area is hazardous, the circuit is Intrinsically Safe, or any questions about the installation, consult the Plant Engineer or personnel responsible for the installation. All installation and / or maintenance should be coordinated with the plant engineer or the responsible personnel.

The scale should be securely mounted using the supplied mounting bracket to a table, wall or under a cabinet to prevent the scale indicator from being accidentally dropped or damaged. The indicator should be mounted for easy removal of the battery pack for recharging purposes.

2.2.1 INSTALLATION UTILIZING THE MODEL 8000BIS/8000CIS

In all cases, the indicator (Model 8000MIS) and the battery pack (Model 8000BIS) will be installed as a complete unit and at the same time the platform is installed. The Model 8000MIS and the Model 8000BIS are both considered Intrinsically Safe as an assembly unless there are options that need to be connected to the indicator (i.e. RS232 or remote switch). Once the options are installed per the Control Drawing and the electrical circuit has been determined to be Intrinsically Safe, then the complete assembly with the options can be considered Intrinsically Safe.

The Model 8000IS system when ordered with a platform includes the platform (unless specially ordered), Model 8000MIS indicator, Model 8000BIS battery pack and Model 8000CIS battery charger.

2.2.1.1 MODEL 8000BIS/8000MIS TYPE (D) INSTALLATION

The Model 8000MIS, Model, 8000BIS and the platform are approved for use in the hazardous area per the Control Drawing. The Battery pack must be removed from the hazardous area and taken into the safe area to be recharged with the Model 8000CIS. The Model 8000CIS battery charger MUST be located in the Safe area and is NOT Intrinsically Safe. The battery charger has two indicators on the top of the charger unit. The READY light will be on when the charger is plugged into 115VAC (220VAC optional). If the READY light remains off, 115VAC is not present, the battery is shorted, or the charger has a blown fuse. The CHARGING light will be on as long as charging current is supplied to the battery output connector. The battery is charged when the CHARGING light goes out.

The Model 8000BIS will operate the Model 8000MIS indicator for approximately 80 hr's (single load cell), after which the "BATT" enunciator on the face of the indicator will flash periodically to alert the operator that the battery pack needs recharging. To recharge the battery pack, unscrew the connector on the back of the indicator and loosen the two small knobs on the side of the mounting bracket and gently pull on the handle to remove the battery pack from the mounting

bracket. Once removed from the mounting bracket, take the battery pack connector into the battery charger connector. The battery pack will require about 24 hours to fully recharge. Once the time has elapsed, unplug the battery pack from the battery charger and take the battery pack into the hazardous area where the indicator is and place the battery pack in the mounting bracket. Once in place, tighten the two knobs on the sides of the mounting bracket to secure the battery pack. Plug the battery pack connector back into the indicator connector on the back of the indicator. The scale is now ready for use again.

An optional extra battery pack can be ordered for situations that require uninterrupted operation of the scale. The battery pack may be left plugged in the charger until ready to use.

For multiple load cell applications, battery life is significantly reduced. For example, with a four, 350 ohm load cell configuration, the low battery indication will begin at about 4 to 6 hours of continuous use a fully charged battery. After the low battery begins to flash, the indicator will operate for approximately 10 more hours before the indicator will shut off. Load cells with higher input impedance values will provide longer life as will systems with fewer load cells.

2.2.2 INSTALLATION UTILIZING THE MODEL 8000AIS

The Model 8000AIS is an AC/DC power supply that can be used for more permanent installations. The Model 8000BIS/CIS are not required in this installation. The power supply is designed to be intrinsically safe and can be mounted in the hazardous area following the Control Drawing. The power supply can also be mounted in the safe area with the output entering the hazardous area through an isolation wall utilizing proper sealing. The power supply can be thought of as a barrier and barrier installation techniques should be utilized when installing the power supply.

The power supply can be ordered for either 115VAC or 220VAC, 50/60 Hz operation. The selection is not a field selection since the entire power supply is potted and is not field accessible. The power supply will cease to function under fault conditions (over voltage, excess current, etc.) See section 2.2.5 for more information. The power supply must be returned to Doran Scales, Inc. for service if it fails to operate.

2.2.3 MODEL 8000AIS- TYPE A INSTALLATION

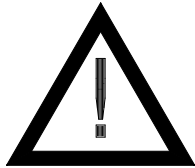
The Model 8000AIS can be installed within the hazardous area following the proper guidelines outlined in the Control Drawing. An adapter cable is supplied with the Model 8000MIS when ordered with the AC/DC power supply option for connection to the Model 8000AIS directly or through the use of an interconnect cable assembly. If the extension interconnect cable is required, see section 2.2.5.

When only the adapter cable is utilized, the power supply must be mounted within 2 feet of the 8000MIS. The model 8000AIS power supply and the Model 8000MIS must be securely mounted. The plug on the power cord supplied should be cut off and the strain relief around the cord removed from the power supply. The Model 8000AIS must have rigid threaded 1/2 inch conduit installed. The cord is then routed through the rigid conduit to a junction box approved for the classification for the area. The power connection is then completed in this junction box. The conduit must exit the hazardous area through the isolation wall with the proper sealing requirements followed and connections made to the AC power.

2.2.4 MODEL 8000AIS - TYPE B INSTALLATION

The Model 8000AIS can be installed within the safe area following the proper guidelines outlined in the Control Drawing. An adapter cable is supplied for interfacing with a interconnect cable that exits the hazardous area though an isolation wall. The interconnect cable makes the connection to the AC/DC power supply within the safe area. The DC output of the power supply is considered Intrinsically Safe and should be treated as an intrinsically safe output from a barrier.

WARNING!



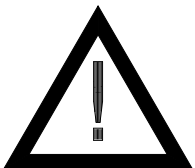
NON-WARRANTY DAMAGE TO THE POWER SUPPLY IS LIKELY IF THE OUTPUT IS CONNECTED TO A SHORTED OR LOW IMPEDANCE CIRCUIT. THE DC POWER CIRCUIT TO THE 8000MIS SHOULD BE CHECKED WITH AN OHMMETER BEFORE APPLYING POWER TO THE 8000AIS POWER SUPPLY. A READING OF LESS THAN 1000 OHMS INDICATES A PROBLEM. DO NOT APPLY POWER UNTIL THE CAUSE OF THE LOW IMPEDANCE IS FOUND AND CORRECTED.

Once mounted in the safe area, the Model 8000AIS can be connected to the proper power supply utilizing the supplied power cord.

2.2.5 INTERCONNECT CABLE

The interconnect cable is assembled utilizing the supplied plug and receptacle and customer supplied cable. The interconnect cable is simply used to extend the adapter cable in situations that require a longer run of cable between the Model 8000AIS and Model 8000MIS . The gauge and length of wire must be as specified in the Control Drawing (02-88060),

WARNING!



NON-WARRANTY DAMAGE TO THE POWER SUPPLY IS LIKELY IF THE OUTPUT IS CONNECTED TO A SHORTED OR LOW IMPEDANCE CIRCUIT. THE DC POWER CIRCUIT TO THE 8000MIS SHOULD BE CHECKED WITH AN OHMMETER BEFORE APPLYING POWER TO THE 8000AIS POWER SUPPLY. A READING OF LESS THAN 1000 OHMS INDICATES A PROBLEM. DO NOT APPLY POWER UNTIL THE CAUSE OF THE LOW IMPEDANCE IS FOUND AND CORRECTED.

When assembling the cable, the mating receptacle is placed at the end that interfaces with the adapter cable and the plug is mounted at the end that interfaces to the Model 8000AIS.

The legend for the 3 conductor connector is:

Receptacle (to Adapter Cable)		Plug (to Power Supply)
Pin A DC+ Power	to	Pin A -DC+ Power
Pin B DC- Power	to	Pin B - DC- Power
Pin C Chassis Ground	to	Pin C - Chassis Ground
Pin C - Shield	to	Pin C - Shield

3.0 MULTIPLE LOAD CELL AND BATTERY LIFE CONSIDERATIONS

The 8000IS Battery Powered and 8000AIS Line Powered Intrinsically Safe Indicators can be used in multiple load cell installations. Under all circumstances, the requirements of the Doran Control Drawing 02-88060 Rev. 10 must be met- refer to this for all installations.

1) Multiple load cell scales There are several precautions you must be aware of when using the Doran 8000IS or 8000AIS in multiple load cell applications.

- i. 8000IS or 8000AIS: For maximum scale performance, when using either indicator with a multiple load cell installation, matched output load cells are recommended as the FM control drawing does not allow trimming components.
- ii. 8000IS or 8000AIS AC Line Powered Indicator: Up to four (4) of any of the load cells listed on the approval chart on page 5 of the Doran control drawing 02-88060 Rev. 10 can be connected to the 8000AIS AC Line Powered Indicator.
- iii. 8000IS Battery Powered Indicator: When multiple load cells are connected to the 8000IS Battery Powered Indicator, the battery life will be decreased as described in the manual. Further, Doran does not recommend connecting and overall load lower than 175 ohms resistance on the excitation terminals of the 8000IS Battery Powered Indicator. The overall load is the input (excitation) resistance of one load cell divided by the number of load cells (e.g., four 1000 ohm load cells represent a load of $1000 / 4 = 250$ ohms.) The use of four 700 ohm load cells (overall load of 175 ohms) will degrade the battery life between charging to about 36 hours. Use of an overall load lower than 175 ohms will greatly decrease battery life or will not allow the 8000IS to function at all. Thus, four 350 ohm load cells will not work with the 8000IS Battery Powered Indicator. When using the 8000IS with multiple load cells, we recommend using 1000 ohm cells, such as the Revere SSB-D1 or HBM BLC or HBM TWM type.

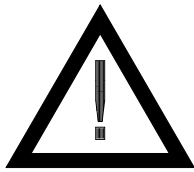
2) Single load cell scales: Both the 8000IS Battery Powered and 8000AIS AC Line Powered Intrinsically Safe Indicators can be used with any one (1) of the load cells listed on the approval

chart on page 5 of the Doran control drawing 02-88060 Rev. 10 without any degradation of performance

4. TROUBLE SHOOTING AND SYSTEM OVERVIEW

The troubleshooting of the Model 8000MIS should occur in the safe area and employ the use of spark-proof tools. Also, observe any safety precautions and equipment that may be required either by the installation of the customer. Follow the Model 8000 Operating and Service Manual for troubleshooting the scale portion of the installation. Any type of part replacement and for repair will require the assembly to be returned to Doran Scales, Batavia, IL. This will ensure that any repair to the assembly will remain in compliance with the F.M. approval.

WARNING



THERE ARE NO FIELD SERVICEABLE COMPONENTS IN THE 8000IS SYSTEM. Any repair or replacement of components will require the assembly be returned to the factory Doran Scales, Batavia, IL for repair.

Call the factory to obtain an RMA (Return Material Authorization Number) before returning any equipment for repair.

This concludes the Intrinsically Safe portion of the installation of the scale system. Consult the Model 8000 Operating and Service Manual for information regarding the operation of the scale.

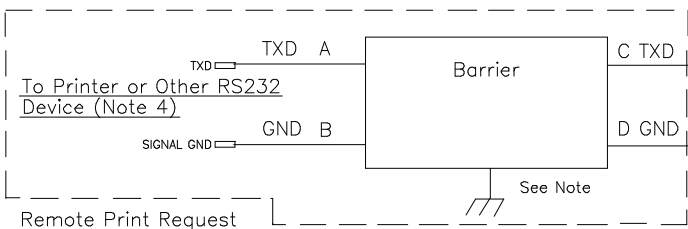
Non-Hazardous Area (Safe Area)

Isolation Wall

Hazardous Area

Class I,II,III Division 1 Groups A,B,C,D,E,F,G

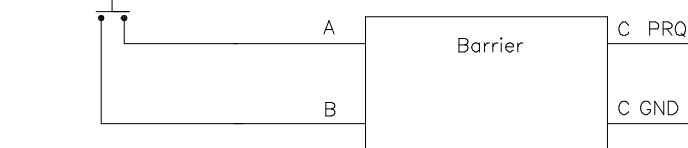
ECO No.	Revisions	Date	Rev.
92-42	Redraw, add multiple cells add shts 4,5	9/3/92	
92-42	Add Class 'G', SensorTronics Model 65023	2/4/93	7.0
93-28	Add more load cells, release blk, correct Doran model nos. on pg. 4	1/6/94	8.0
93-115	Add 8000AIS, Delete Entity Table	Not Rel.	9.0
97-113	Add Pepperi & Fuchs P/N Z966 Add sht.7	11/14/97	10
99-115	ADDED BARRIER NOTE.	5/25/99	11



RS232 Serial Data Output (To barrier)
+/- 9VDC 20ma TXD

Secondary Load Cell
(See Table Below)

- +EXCITATION
- +SIGNAL
- -SIGNAL
- -EXCITATION(GND)



Remote Print Request (To barrier)
+5VDC 1mA PRQ

Main Load Cell
(See Table Below)

- +EXCITATION
- +SIGNAL
- -SIGNAL
- -EXCITATION(GND)

Note: Barrier earth grounds (yellow/green) .7mm² connected to intrinsically safe earth ground (<= 1 ohm)

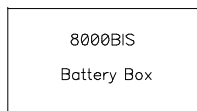
BARRIER TERMINAL #'s				
	A	B	C	D
Z366	21	11	23	13
Z966	8	5	1	4

Approved Barriers

Pepperl & Fuchs, Inc. Part No. Z366
or Part No. Z966

NOTE: Z366 BARRIER NOT APPROVED FOR INSTALLATIONS AFTER APRIL 28,1998

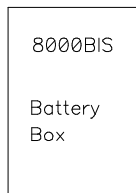
Battery Box (8000BIS) to be charged only in Non-Hazardous Area (Safe Area)



Power
110VAC 50/60 Hz
(220VAC 50/60 Hz optional)

Battery Box cable plugs into charger

Battery Charger
(Safe Area Only)



Remote Pushbutton
+5VDC 1uA RPB

Installation
Type D

- Notes:
1. P1 cable not to exceed 10 feet.
 2. Cable length not to exceed 50 feet
 3. See Notes on Page 5.
 4. The Printer or other RS232 Device and Barrier may be installed in an explosion proof housing located in The Hazardous Area. The explosion proof housing must be installed in accordance with all Regulations related to such Installation and in Accordance W/NATIONAL ELECTRICAL CODE.

DORAN SCALES

Title 8000IS SYSTEM CONTROL DIAGRAM

Size B	Number 02-88060	Rev 11
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Release Date 5-10-99	Rev. 11	By P.H.	ECO NO. 99-115	797 NO. 797-32	Date 2/24/94	Drawn by MDP
Filename 88060R11.S01				Sheet 1 of 7		

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A

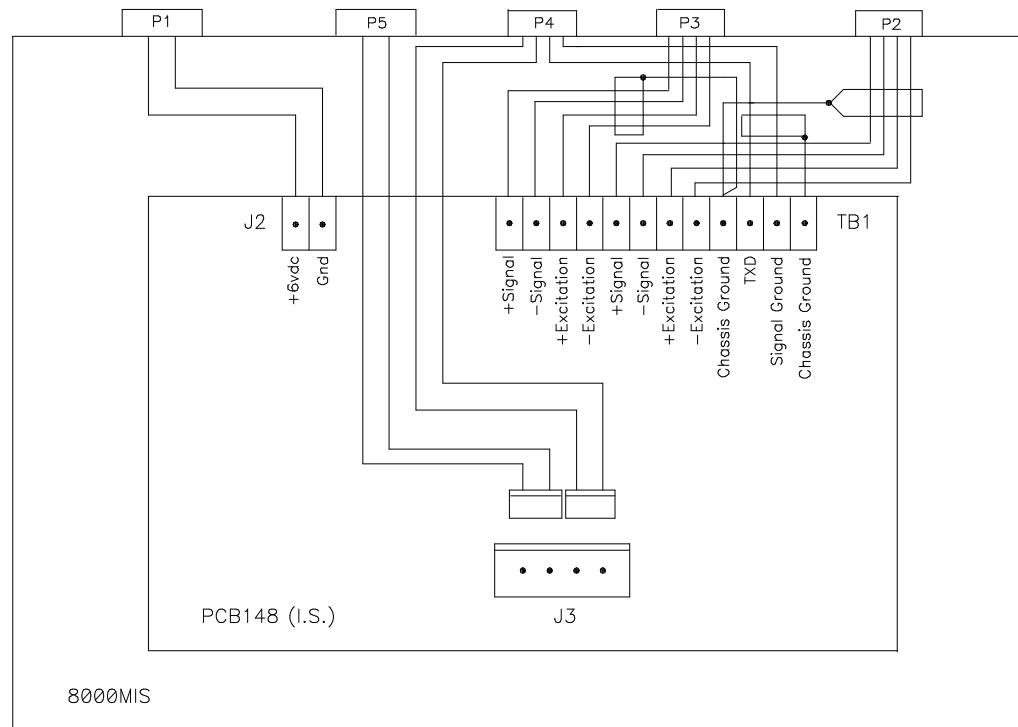
B

C

D

ECO NO.	REVISIONS	DATE
97-113	10 WAS SHEET 6.	11-14-97
99-115	111 SEE SHEET 5.	5-25-99

CONNECTION DIAGRAM



Notes:

- P1 : Battery Connector
- P5 : Remote Pushbutton Feed-Thru
- P4 : RS232 Data Output Feed-Thru
(See Sheet 1 for approved barriers)
- P3 : Secondary Load Cell Feed-Thru
- P2 : Main Load Cell Feed-Thru

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DORAN SCALES

Title 8000IS SYSTEM CONTROL DIAGRAM		
Size B	Number 02-88060	Rev 11
Date 2/24/94	Drawn by MDP	
Filename 88060R11.S02	Sheet 2 of 7	

Doran Scales Platform Model Structure

ECO NO.	REVISIONS	DATE
97-113	10 ADDED FLINTEC LOAD CELLS. ADD TEDEA SERIES 1000 L/C ADDED DORAN LOAD CELLS.	11-14-97
99-115	11 REMOVE TEDEA 1450 L/C	5-25-99

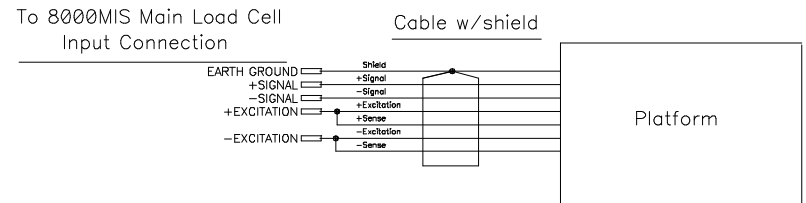
Platforms	Doran	Tedea	Load cell(s) Sensortronics	Revere	Flintec
7***P	1040 1042 1000 SERIES	1040 1042 1140 1030 1000 SERIES	NA	NA	PC1
DSP1***	1040 1042 1000 SERIES	1010 1040 1140 1015 1000 SERIES	60051	NA	PC1
DSP2***	1040 1042 1000 SERIES	1010 1040 1140 1015 1000 SERIES	60051	NA	PC1
DSP3***	1250 1260 1000 SERIES	1250 1000 SERIES	NA	NA	NA
DSP5****/1824	1250 1260 1000 SERIES	1250 1000 SERIES	NA	NA	NA
DSP5****/2424	1250 1260 1000 SERIES	1250 1000 SERIES	NA	NA	NA
DSP5****/3030	1250 1260 1000 SERIES	1250 1000 SERIES	NA	NA	NA
DXL7XXX	1022	1022			
DXL8XXX	1042 1040	1042 1040			

Notes: 1. See drawing 02-LBL105 for serial number tag
 2. Platform(s) to be used only with Doran Scales 8000MIS indicator per drawing 02-88060

3. Load cell cable specifications:
 Wire gauge(all wires): 24 gauge or larger
 Wire insulation material: SJO,SJT,PVC or equivalent
 Cable type:
 6 or 4 conductor
 1 drain wire with conductive plastic or braided shield

**** specifies capacity

Platform Connection Diagram



Note: The shield is normally connected to the platform via the drain wire. To ensure proper grounding, test for continuity between platform and shield.

The platform should be properly grounded to earth ground.

Load Cell Wiring Color Code

Function	Tedea	Sensortronics	Revere	HBM
Shield	Bare/Grn	Bare/Yel	Org	Yel
+Signal	Red	Grn	Grn	Wht
-Signal	Wht	Wht	Wht	Red
+Excitation	Grn	Red	Red	Grn
-Excitation	Blk	Blk	Blk	Blk
+Sense	Blu	NA	NA	NA
-Sense	Brn	NA	NA	NA

DORAN SCALES

Title 8000IS SYSTEM CONTROL DIAGRAM		
Size B	Number 02-88060	Rev 11
Date 2/24/94	Drawn by MDP	
Filename 88060R11.S03	Sheet 3 of 7	

07/29/1999

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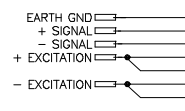
ECO NO.	REVISIONS	DATE
97-113	10 ADD FLINTEC AND DORAN LOAD CELLS.	11-14-97
99-115	11 REMOVE TEDEA 1450	5-25-99

Integral Summing Board

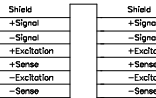
Part No. PCB167

Multiple Load Connection Diagram

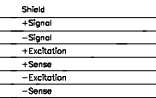
To Main Load Cell Input
On 8000MIS



TB5

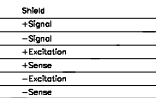


TB1



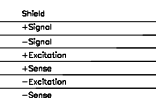
Load Cell 1

TB2



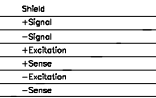
Load Cell 2

TB3



Load Cell 3

TB4



Load Cell 4

Doran Scales Floor Platform Models

Load Cell(s)
(interchangeable)

DMSdddd

(4) Tede Model 1250,
1000 SERIES

DSSdddd

(4) Sensortronics
Model 65023,65016,65058

(4) Revere Model SSB,5123,9123

(4) HBM Model BLC,HLC,SB3

(5) FLINTEC SERIES SB,PC

(6) DORAN MODEL 1250,1260,
1000 SERIES.

Legend:

DSS is Doran Scales Stainless Steel

DMS is Doran Scales Mild Steel

dddd represents the dimensions

Platforms have integral summing board

Notes: 1. See previous pages for cable specifications and installation notes

2. The multiple load cell connections can be used in Doran Scales Platforms or other mechanical structures following the System Diagram

3. 1 to 4 load cells can be used of any Mfr. or model

DORAN SCALES			
Title 8000IS SYSTEM CONTROL DIAGRAM			
Size B	Number 02-88060	Rev 11	
Date 2/24/94	Drawn by MDP		
Filename 8800R11.S04	Sheet 4 of 7		

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APPROVED LOAD CELLS FOR USE WITH 8000MIS

TEDEA	SENSORTRONICS	REVERE	HBM	FLINTEC	DORAN
1040	60001	363 BSP	C1 BBS	SERIES PC	1022
1140	60050	9363 5123	C3H... BLC	SERIES SB	
1250	60036	263D 5103	C2 HLC	SERIES RC	1042
		SSB 9103	C6... JRT	SB14	1250
1030		S123 5102	U1... RSC	SB15	1260
		9123 6762	U2A SB3	SLB	
1010		692B CP	Z6... TWM	PC6	
1015	65058	92 GOZINTA	PW... Z8...	RC2	
3410	65040	93 USP	USB SBF	PC2	
3411	65023(TOOL STEEL)	62H 662A	PLC BLF	PBX-G	
3420	65023(S.S.)	63H 5222	PWS	PBX	
3421	65016(TOOL STEEL)	42 5423		CPM	
9010	65016(S.S.)	43 392C		HMI	
1035	60040	462		ZLB	
1038	60030	HPS			
1046	60018	5723			
1240	60051	5223			
1241	60048(TOOL STEEL)	5223			
	60048(S.S.)	652			
1000 SERIES	65024	HSB			
3400 SERIES	65059				
620	65061				
355	60008				
	60045				
	60048				
	65083S				

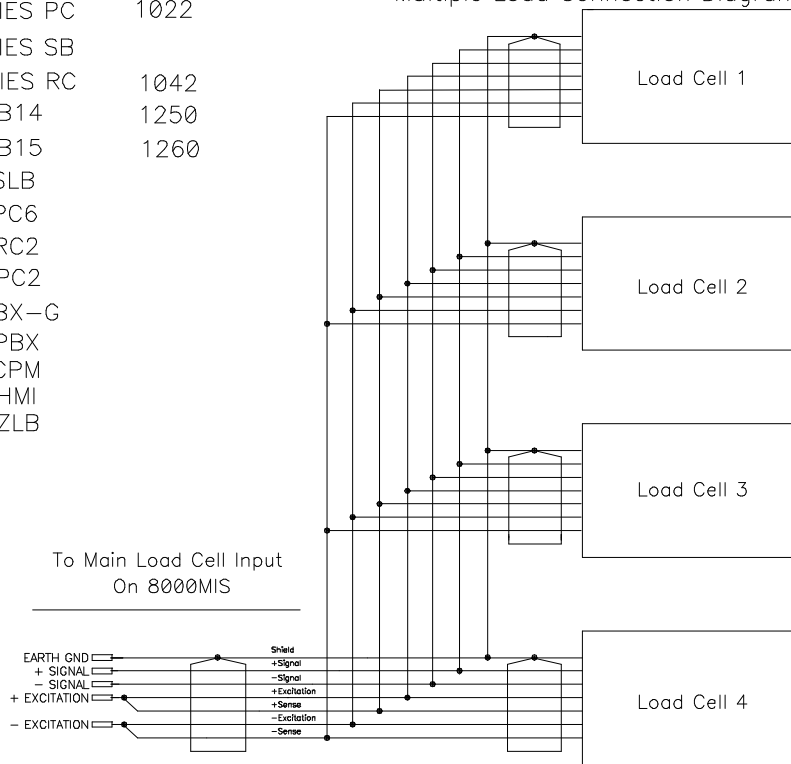
ARTECH	
20210	SS 70310
SS 20210	70510
30210	SS 70510
SS 30210	80210
30310	SS 80210
SS 30310	80210E
30310 (CB)	SS 80210E
SS 30310 (CB)	80310
30410	SS 80310
SS 30410	90210
40310(1KLE-7.75)	
40310(50-1K)	90310
50210	
60210	
SS 60210	
70210	
SS 70210	
70310	

NOTES:

- Load cells to be Factory Mutual Approved
- Load cells to be 350 ohm or greater only.
- No components are to be used for trimming or connection purposes. See Note 5 for exceptions. (ie. no resistors, capacitors, inductors, potentiometers, etc.)
- Doran Scales 8000MIS approval valid only when used in accordance with drawing no. 88060
- A zero offset resistor of 50 Kohm or greater may be placed between +/- signal and +/- excitation to provide zero dead load compensation. The resistor must be a 1/8 watt or greater, 25 ppm, 1% tol., metal film resistor.

ECO NO.	REVISIONS	DATE
97-113	10 ADD FLINTEC LOAD CELLS. ADD DORAN LOAD CELLS. ADD TO TEDEA AND SENSORTRONICS.	11/14/97
99-115	11 ADD ARTECH CELLS. ADD FLINTEC PBX, CPM, HMI & ZLB. DELETE TEDEA 1450, 1130. SENSORTRONICS 60023, 60016.	5-25-99

Multiple Load Connection Diagram



DORAN SCALES

Title 8000IS SYSTEM CONTROL DIAGRAM		
Size B	Number 02-88060	Rev 11
Date 2/24/94	Drawn by MDP	
Filename 88060R11.S05	Sheet 5 of 7	

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ECO NO.	REVISIONS	DATE
97-113	10 ADDED NOTE 6 TO 8000AIS	11-14-97
99-115	11 SEE SHEETS 1,2,4,5,7.	5-25-99

Hazardous Area
Class I,II,III Div. 1, Grp A-G
Installation Type A

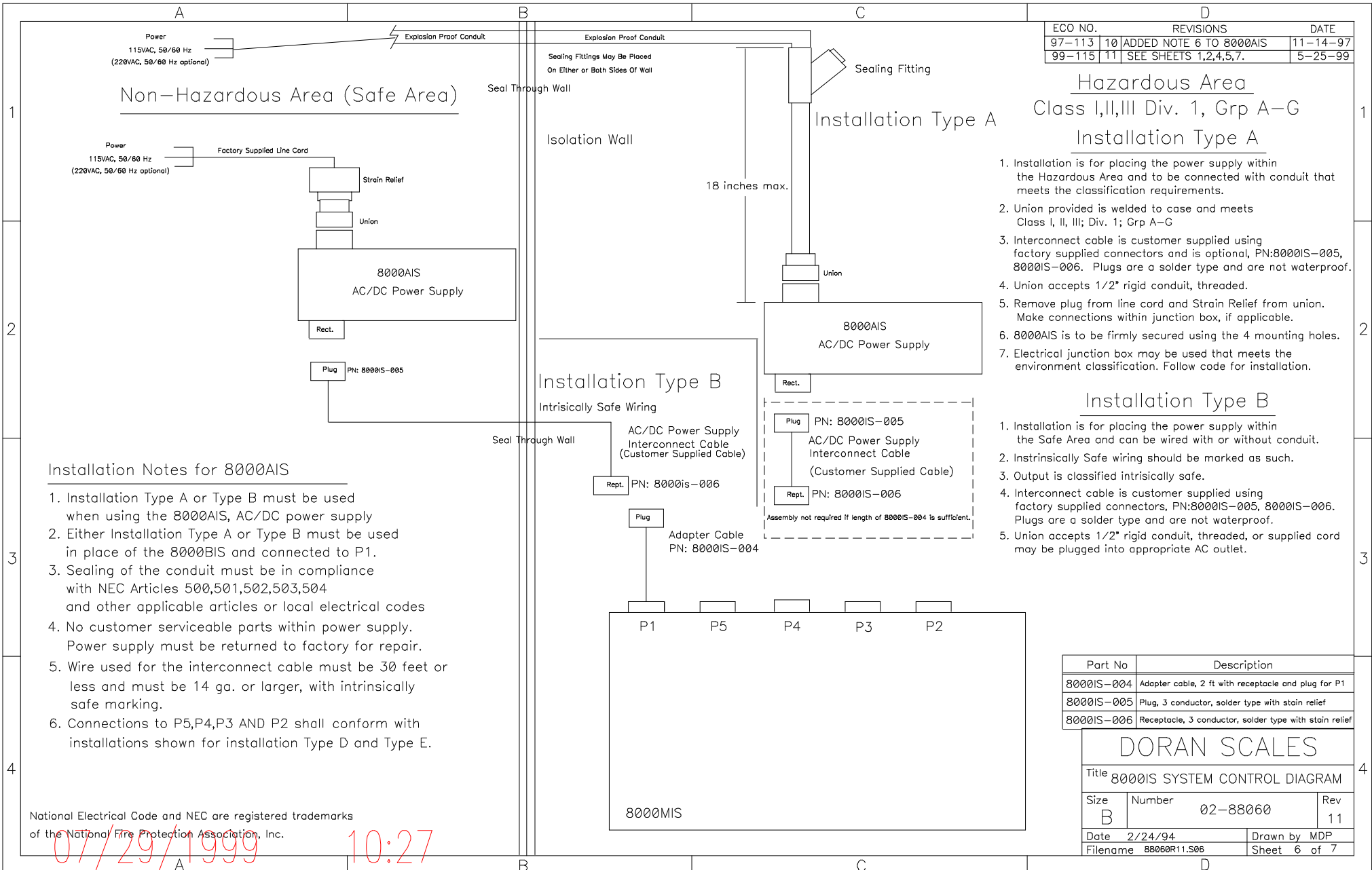
1. Installation is for placing the power supply within the Hazardous Area and to be connected with conduit that meets the classification requirements.
2. Union provided is welded to case and meets Class I, II, III; Div. 1; Grp A-G
3. Interconnect cable is customer supplied using factory supplied connectors and is optional, PN:8000IS-005, 8000IS-006. Plugs are a solder type and are not waterproof.
4. Union accepts 1/2" rigid conduit, threaded.
5. Remove plug from line cord and Strain Relief from union. Make connections within junction box, if applicable.
6. 8000AIS is to be firmly secured using the 4 mounting holes.
7. Electrical junction box may be used that meets the environment classification. Follow code for installation.

Installation Type B

1. Installation is for placing the power supply within the Safe Area and can be wired with or without conduit.
2. Intrinsically Safe wiring should be marked as such.
3. Output is classified intrinsically safe.
4. Interconnect cable is customer supplied using factory supplied connectors, PN:8000IS-005, 8000IS-006. Plugs are a solder type and are not waterproof.
5. Union accepts 1/2" rigid conduit, threaded, or supplied cord may be plugged into appropriate AC outlet.

Part No	Description
8000IS-004	Adapter cable, 2 ft with receptacle and plug for P1
8000IS-005	Plug, 3 conductor, solder type with strain relief
8000IS-006	Receptacle, 3 conductor, solder type with strain relief

DORAN SCALES		
Title 8000IS SYSTEM CONTROL DIAGRAM		
Size B	Number 02-88060	Rev 11
Date 2/24/94	Drawn by MDP	
Filename 88060R11.S06	Sheet 6 of 7	



Installation Notes for 8000AIS

1. Installation Type A or Type B must be used when using the 8000AIS, AC/DC power supply
2. Either Installation Type A or Type B must be used in place of the 8000BIS and connected to P1.
3. Sealing of the conduit must be in compliance with NEC Articles 500,501,502,503,504 and other applicable articles or local electrical codes
4. No customer serviceable parts within power supply. Power supply must be returned to factory for repair.
5. Wire used for the interconnect cable must be 30 feet or less and must be 14 ga. or larger, with intrinsically safe marking.
6. Connections to P5,P4,P3 AND P2 shall conform with installations shown for installation Type D and Type E.

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Non-Hazardous Area (Safe Area)

Hazardous Area
Class I,II,III Division 1 Groups A,B,C,D,E,F,G

ECO No.	Revisions	Date
92-42	Redrow, add multiple cells add shts 4,5	9/3/92
92-42	7.0 Add Class 'G', Sensor-Tronics Model 65023	2/4/93
93-28	8.0 Add more load cells, release blk, correct Doran model nos. on pg. 4	1/6/94
93-115	9.0 Add 8000AIS, Delete Entity Table	Not Rel.
97-113	10 Added Sheet 7	5/30/97
99-115	11 ADD BARRIER NOTE	5-25-99

To Printer

Remote Print Request

Note: Barrier earth grounds (yellow/green) .7mm² connected to intrinsically safe earth ground (<= 1 ohm)

BARRIER TERMINAL #'s	A	B	C	D
Z366	21	11	23	13
Z966	8	5	1	4

NOTE: Z366 BARRIER NOT APPROVED FOR INSTALLATIONS AFTER APRIL 28, 1998.

Battery Box (8000BIS) to be charged only in Non-Hazardous Area (Safe Area)

Power
110VAC 50/60 Hz
(220VAC 50/60 Hz optional)

Battery Box cable plugs into charger

Battery Charger
(Safe Area Only)

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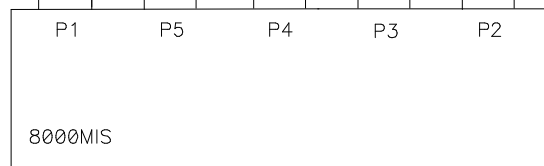
Isolation Wall

RS232 Serial Data Output (To barrier)
+/- 9VDC 20ma TXD

Remote Print Request (To barrier)
+5VDC 1mA PRQ

Remote Pushbutton
+5VDC 1uA RPB

8000BIS
Battery Box



Secondary Load Cell
(See Table Below)

- +EXCITATION
- +SIGNAL
- -SIGNAL
- -EXCITATION(GND)

Main Load Cell
(See Table Below)

- +EXCITATION
- +SIGNAL
- -SIGNAL
- -EXCITATION(GND)

Seal Thru Wall

Isolation Wall

Approved Barriers

Pepperl & Fuchs, Inc. Part No. Z366
Z966

INSTALLATION
TYPE E

Installation Notes For 8000 BIS

1. Installation TYPE D or TYPE E must be used when using the 8000 BIS BATTERY BOX.
2. Load Cell Signals are INTRINSICALLY SAFE.

- Notes: 1. P1 cable not to exceed 10 feet.
2. Cable length not to exceed 50 feet.
3. See Notes on Page 5.

DORAN SCALES

Title 8000IS SYSTEM CONTROL DIAGRAM

Size B Number 02-88060 Rev 11

Date 5/30/97 Drawn by MDP
Filename 88060R11.S07 Sheet 7 of 7

Release Date	Rev.	By	ECO NO.	797 NO.
5-10-99	11	P.H.	99-115	797-32