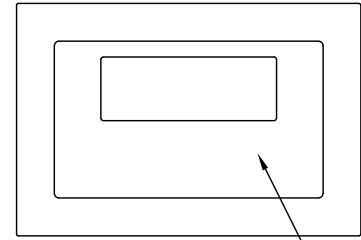


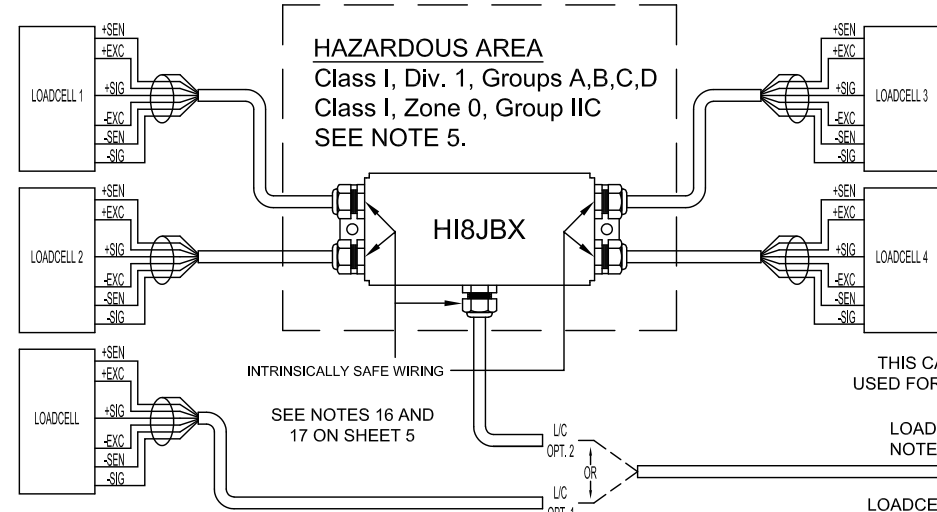
REV.	ECO/DDC	DESCRIPTION	DATE	DRAFT	CHECK	APV'D
A	----	RELEASED.	02-05-20	V.J.C.	T.N.	V.J.C.

LOAD CELL AND SUMMING BOARD INSTALLATION DIAGRAM

HI8100IS, HI8200IS INDICATOR



WARNING: DUE TO THE RISK OF ELECTROSTATIC CHARGE BUILDUP, CLEAN KEYPAD AND VIEW WINDOW ONLY WITH A DAMP CLOTH.



INDIVIDUAL LOAD CELLS SHALL BE 350 OHM OR GREATER.
1-4 350 OHM LOAD CELLS OR
1-4 1000 OHM LOAD CELLS CAN BE USED

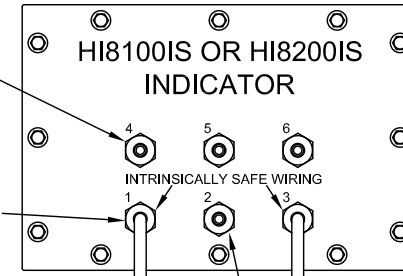
SEE NOTES 16 AND 17 ON SHEET 5

LOADCELLS MUST BE CERTIFIED FOR APPROPRIATE HAZARDOUS AREA AND ENTITY PARAMETERS. SEE NOTE 1

HAZARDOUS AREA
Class I, Div. 1, Groups A,B,C,D
Class II, Div. 1, Groups E,F,G
Class III, Div. 1
Zone 0, Group IIC
Zone 20, Group IIIC

CAUTION: SEE 0596-0341-01 FOR CABLE GLAND TORQUE AND CONDUCTOR SIZE RATINGS.

SEE TABLE 2 ON SHEET 3 OF CONTROL DRAWING 0594-0013



SEE SHEET 2 NOTE 2(a)

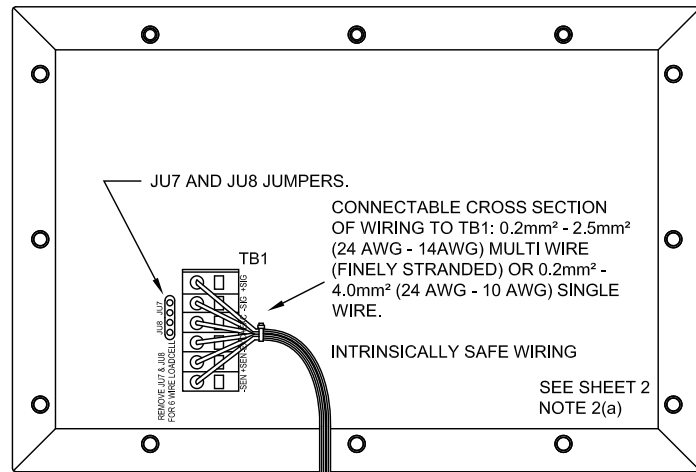
THIS CABLE GLAND MUST ONLY BE USED FOR LOAD CELL OR HI8JBX USE

LOADCELL CABLE, REFER NOTE 7 ON SHEET 5

WARNING: TO PREVENT FIRE OR EXPLOSION, DISCONNECT POWER BEFORE SERVICING.

STRAIN RELIEF CABLE ACCEPTABLE OUTER DIAMETER RANGE: 0.236in - 0.250in (6.0mm - 6.35mm)

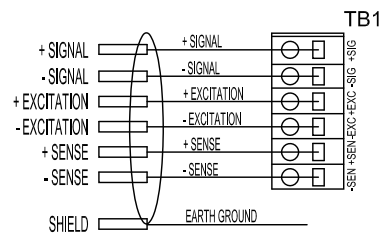
HI8100IS, HI8200IS INDICATOR INTRINSICALLY SAFE OUTPUT WIRING AND LOAD CELL CONFIGURATION JUMPERS



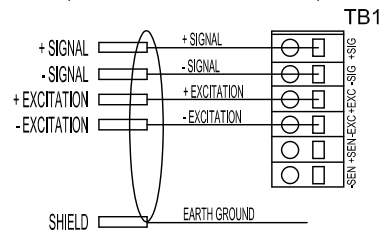
CAUTION: SEE 0596-0341-01 FOR HARDWARE TORQUE RATINGS. DO NOT DAMAGE CIRCUITRY OR ANY WIRES DURING PROCESS

CONNECT LOADCELL(S) CABLE THRU GLAND TO TB1 TERMINAL, REFER NOTE 4 ON PAGE 5

6-WIRE LOADCELL CONNECTION (REMOVE JU7 AND JU8)



4-WIRE LOADCELL CONNECTION (INSERT JU7 AND JU8)



OUTPUT ENTITY PARAMETERS					
DESCRIPTION (LOCATION)	U _o	I _o	P _o	C _o	L _o
LOADCELL (TB1)	7.14 V	0.7076 A	0.895 W	10.8 uF	71 uH

- THESE OUTPUTS MAY ALSO BE CONNECTED TO SIMPLE APPARATUS AS DEFINED IN ARTICLE 504.2 AND INSTALLED AND TEMPERATURE CLASSIFIED IN ACCORDANCE WITH ARTICLE 504.10(D) OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70), OR OTHER LOCAL CODES, AS APPLICABLE.
- SELECTED INTRINSICALLY SAFE EQUIPMENT/LOADCELLS (FOR USE WITH THESE INTRINSICALLY SAFE HARDY OUTPUTS) MUST BE THIRD PARTY LISTED AS INTRINSICALLY SAFE FOR THE APPLICATION (UNLESS DEEMED SIMPLE APPARATUS PER NOTE 1), AND HAVE INTRINSICALLY SAFE ENTITY PARAMETERS CONFORMING WITH TABLE 1 BELOW

TABLE 1	
I.S. Equipment/Loadcells	I.S. Hardy Outputs
V max (or U _i)	≥ Voc or Vt (or U _o)
I max (or I _i)	≥ Isc or It (or I _o)
P max, P _i	≥ Po
C _i + C _{ccable}	≤ Ca (or Co)
L _i + L _{ccable}	≤ La (or Lo)

- SEE PAGE 5 (NOTES FOR PAGE 1 OF CONTROL DRAWING No. 0594-0013)

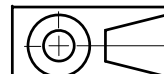
ITEM	QTY	0594-0013	SYSTEM CONTROL DRAWING, HI8000 SERIES	DESCRIPTION	COMMENTS
PARTS LIST					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: N/A DECIMALS: .XX = ±.03 .XXX = ±.010 ANGLES: ±0°, 30'		CONTRACT NO.		APPROVALS	
MATERIAL		DRAWN V. CHULA		DATE 11-04-19	
FINISH		CHECKED T. NORMAN		DATE 02-05-20	
DO NOT SCALE DRAWING		APPROVED V. CHULA		DATE 02-05-20	
		ISSUED V. CHULA		DATE 02-05-20	
		PRODUCTION		DATE	
TITLE		SIZE		FSCM	
SYSTEM CONTROL DRAWING, HI8000 SERIES		D 21316		DRAWING NO.	
				0594-0013	
REV.		A		FILE NAME: 594013A1.DWG	
				SCALE: NONE	
				SHEET 1 OF 5	



SYSTEM CONTROL DRAWING, HI8000 SERIES

SIZE D 21316 DRAWING NO. 0594-0013 REV. A

FILE NAME: 594013A1.DWG SCALE: NONE SHEET 1 OF 5



WARNING

READ AND UNDERSTAND COMPLETELY USER MANUAL NO. 0596-0341-01 FOR THESE DEVICES BEFORE INSTALLATION OR OPERATION

NOTES: UNLESS OTHERWISE SPECIFIED

PROPRIETARY NOTICE
ALL DATA AND INFORMATION CONTAINED IN OR DISCLOSED BY THIS DOCUMENT IS CONFIDENTIAL AND PROPRIETARY INFORMATION OF HARDY PROCESS SOLUTIONS INC. AND ALL RIGHTS THEREIN ARE EXPRESSLY RESERVED. BY ACCEPTING THIS MATERIAL THE RECIPIENT AGREES THAT THIS MATERIAL AND THE INFORMATION CONTAINED THEREIN IS HELD IN CONFIDENCE AND IN TRUST AND SHALL NOT BE USED, COPIED, REPRODUCED IN WHOLE OR IN PART, NOR ITS CONTENTS REVEALED IN ANY MANNER TO OTHERS, EXCEPT TO MEET THE SPECIFIC PURPOSE FOR WHICH IT WAS DELIVERED.

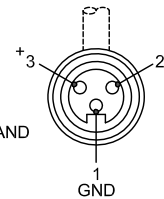
POWER SUPPLY INSTALLATION DIAGRAM

UNCLASSIFIED
(NON-HAZARDOUS)
AREA

UNCLASSIFIED (NON-HAZARDOUS AREA) OR HAZARDOUS AREA
Class I, Div 1, Groups B,C,D
Class II, Div 1, Groups E,F,G
Class III, Div. 1
Class I, Zone 1, Group IIC
Zone 21, Group IIIC



CAUTION: SEE 0596-0341-01 FOR CABLE GLAND TORQUE AND CONDUCTOR SIZE RATINGS.

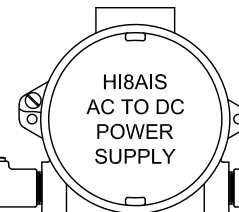


PIN 1: GREEN/YELLOW
PIN 2: BROWN
PIN 3: BLUE

AC MAINS
120VAC
50/60Hz
NOTE 3.

BLK: L
WHT: N
GRN: GND

CONDUIT, SEE NOTE 1.



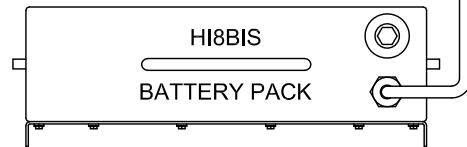
INTRINSICALLY SAFE WIRING

INTRINSICALLY SAFE WIRING, NOTE 2
SEE NOTE 2(a)

LG. 1m MAX.

OPTIONAL POWER EXTENSION CABLE.
HIWCB0234; 3m,
HIWCB0235; 6m.

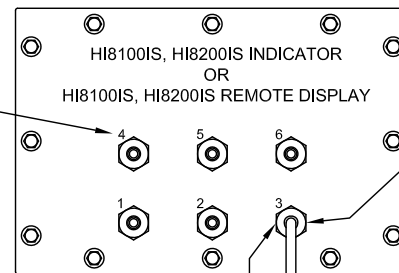
HI8CHG
BATTERY CHARGER



CHARGE BATTERY IN AN UNCLASSIFIED (NON-HAZARDOUS) AREA ONLY

HAZARDOUS AREA
Class I, Div 1, Groups A,B,C,D
Class II, Div 1, Groups E,F,G
Class III, Div. 1
Zone 0, Group IIC
Zone 20, Group IIIC

SEE TABLE 2
ON SHEET 3
OF CONTROL
DRAWING
0594-0013



ELECTRICAL CONNECTION ONLY; DO NOT USE THIS PORT FOR ANY FIBER OPTIC CONNECTION



CAUTION: SEE 0596-0341-01 FOR CABLE GLAND TORQUE AND CONDUCTOR SIZE RATINGS.

INTRINSICALLY SAFE WIRING

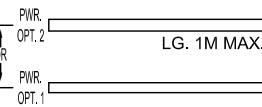
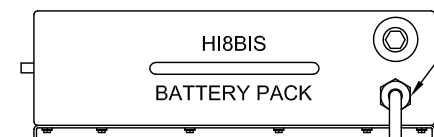
SEE NOTE 2(a)

HAZARDOUS AREA
Class I, Div 1, Groups A,B,C,D
Class II, Div 1, Groups E,F,G
Class III, Div. 1
Zone 0, Group IIC
Zone 20, Group IIIC



CAUTION: SEE 0596-0341-01 FOR CABLE GLAND TORQUE AND CONDUCTOR SIZE RATINGS.

INTRINSICALLY SAFE WIRING



LG. 1M MAX.

WARNING: POWER DOWN INDICATOR/REMOTE DISPLAY BEFORE REMOVING BATTERY PACK. BATTERY PACK MUST BE CHARGED IN AN UNCLASSIFIED (NON-HAZARDOUS) AREA ONLY

NOTES: UNLESS OTHERWISE SPECIFIED:

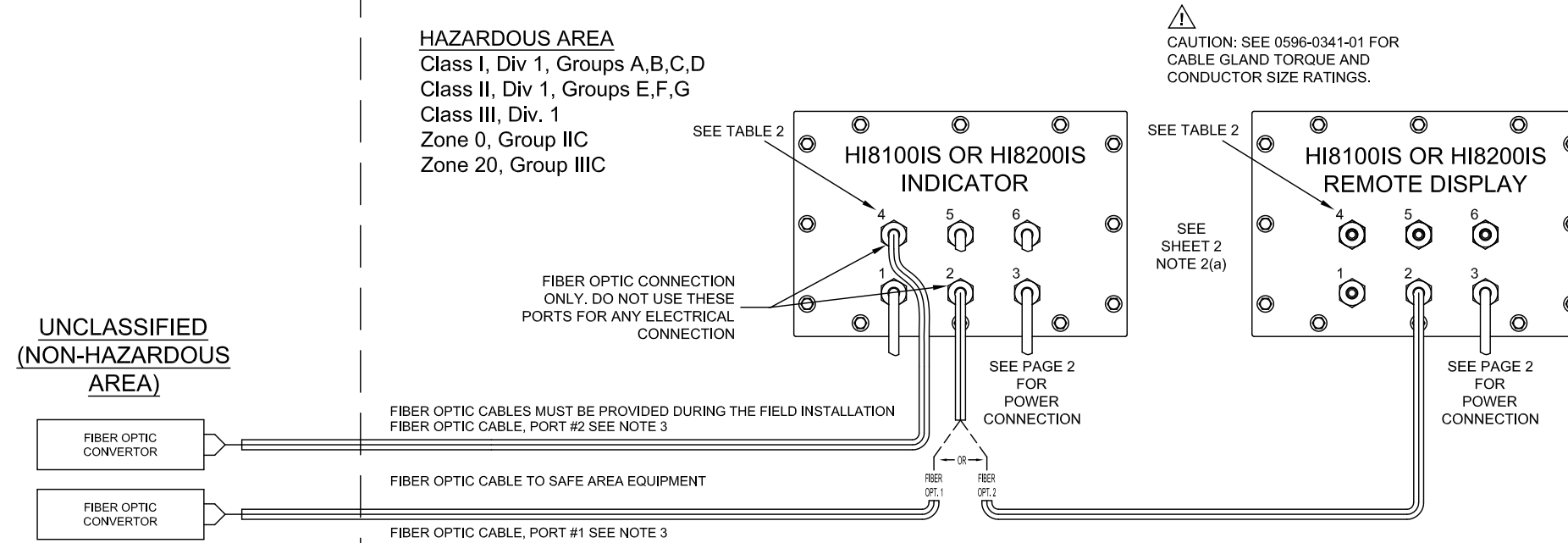
1. CONDUIT, FIELD WIRING AND SEALS SHALL COMPLY WITH NATIONAL AND LOCAL CODES OF THE AUTHORITY HAVING JURISDICTION (AHJ)
2. INTRINSICALLY SAFE WIRING BETWEEN POWER SUPPLY AND INDICATOR/REMOTE DISPLAY SHALL USE ONLY FACTORY SUPPLIED CABLES.
 - 2.a. BEFORE INSTALLATION, AND BEFORE CONNECTING/DISCONNECTING ANY FACTORY SUPPLIED CABLES, OR ANY FIELD WIRING FOR THE HI8100IS/HI8200IS INDICATOR/REMOTE DISPLAY, ENSURE CONNECTORS ARE FREE OF DUST/DEBRIS AND ENSURE NO POTENTIALLY IGNITABLE DUST ATMOSPHERES ARE PRESENT.
3. MAXIMUM NON-HAZARDOUS LOCATION VOLTAGE (Um) MUST NOT EXCEED 120V AND MUST BE AC ONLY.
4. ALL GROUNDING CONNECTIONS MUST BE LESS THAN 1 OHM RESISTANCE TO EARTH GROUND.
5. OPERATING AMBIENT TEMPERATURE RANGE: -10°C TO +40°C
6. BATTERY CHARGER RATED AMBIENT IS -10°C TO +30°C
7. INTRINSICALLY SAFE WIRING SHALL BE IDENTIFIED AS SUCH WITH LABELS PLACED NO MORE THAN 7.62M (25FT) APART. THE COLOR LIGHT BLUE IS INTERNATIONALLY RECOGNIZED AS IDENTIFYING INTRINSICALLY SAFE WIRING.
8. SEE PAGE 5 (NOTES FOR PAGE 2 OF CONTROL DRAWING No. 0594-0013)



WARNING
READ AND UNDERSTAND COMPLETELY USER MANUAL NO. 0596-0341-01 FOR THESE DEVICES BEFORE INSTALLATION OR OPERATION

HARDY PROCESS SOLUTIONS			
TITLE SYSTEM CONTROL DRAWING, HI8000 SERIES			
SIZE	FSCM	DRAWING NO.	REV.
D	21316	0594-0013	A
FILE NAME: 594013A1.DWG		SCALE: NONE	SHEET 2 OF 5

FIBER OPTIC INTERFACE



NOTES: UNLESS OTHERWISE SPECIFIED:

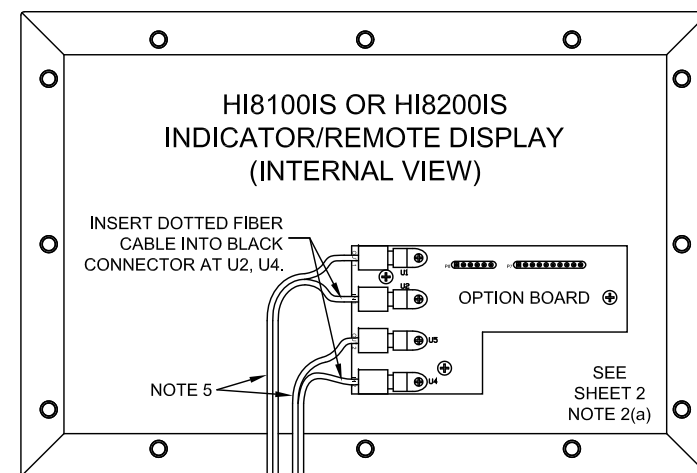
1. OPERATING AMBIENT TEMPERATURE RANGE: -10°C TO +40°C (EXCEPT HI8CHG RANGE: -10°C TO +30°C)
2. NOTE: THE HI8100IS OR HI8200IS REMOTE DISPLAY REQUIRES A SEPARATE POWER SUPPLY OR BATTERY PACK.
3. ANY FIBER OPTIC CABLES SHALL BE INSTALLED IN ACCORDANCE WITH ARTICLES 500.8, 501.10, 501.15, 502.10, 502.15, 503, 505.15, 505.16, 506.9, AND 506.15 OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) OR OTHER LOCAL CODES, AS APPLICABLE
4. MODEL HI8FB WAS EVALUATED AS OPEN EQUIPMENT. OPEN EQUIPMENT IS INTENDED TO BE FIELD INSTALLED WITHIN A SEPARATE OVERALL ENCLOSURE OR END-PRODUCT EQUIPMENT ENCLOSURE.
5. RUN EACH CABLE PAIRS THRU GLAND TO THE DEVICES FIBER OPTIC PORTS. INSERT MARKED CABLE TO RCV(IN) PORT AND THE UNMARKED TO XMT(OUT) PORT.

TABLE 2

I/O Port Number	HI8100IS Indicator	HI8200IS Indicator	HI8100IS Remote Display	HI8200IS Remote Display
1	L	L	(SS)	(SS)
2	F	F	F	F
3	P	P	P	P
4	F	F	(SS)	(SS)
5	RS	RS	(SS)	(SS)
6	RS	RS	(SS)	(SS)

KEY:

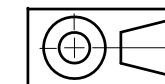
- L - LOAD CELL OR HI8JBX CONNECTION
- F - FIBER OPTIC ONLY
- P - I.S. POWER INPUT ONLY
- RS - REMOTE SWITCH OUTPUT ONLY
- (SS) - STAINLESS STEEL PLUG



FIBER OPTIC CABLE 1
 OUT 1 & IN 1
 (USE ONLY FOR REMOTE DISPLAY)
 OR
 (USE FOR FIBER OPTIC CONVERTOR)

FIBER OPTIC CABLE 2:
 OUT 2 & IN 2
 (USE ONLY FOR FIBER OPTIC CONVERTOR)
 OR
 NO FIBER OPTIC CABLES TO U5, U4 FOR
 REMOTE DISPLAY

CAUTION: SEE 0596-0341-01 FOR HARDWARE TORQUE RATINGS. DO NOT DAMAGE CIRCUITRY OR ANY WIRES DURING PROCESS



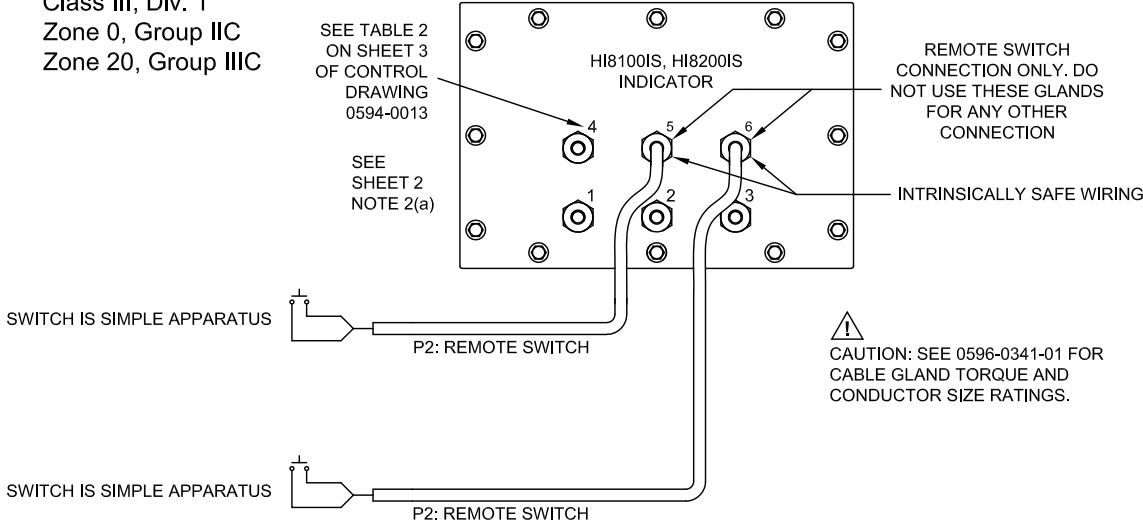
WARNING

READ AND UNDERSTAND COMPLETELY USER MANUAL NO. 0596-0341-01 FOR THESE DEVICES BEFORE INSTALLATION OR OPERATION

HARDY PROCESS SOLUTIONS			
TITLE SYSTEM CONTROL DRAWING, HI8000 SERIES			
SIZE	FSCM	DRAWING NO.	REV.
D	21316	0594-0013	A
FILE NAME:	594013A1.DWG	SCALE: NONE	SHEET 3 OF 5

REMOTE SWITCH WIRING

HAZARDOUS AREA
 Class I, Div 1, Groups A,B,C,D
 Class II, Div 1, Groups E,F,G
 Class III, Div. 1
 Zone 0, Group IIC
 Zone 20, Group IIIC

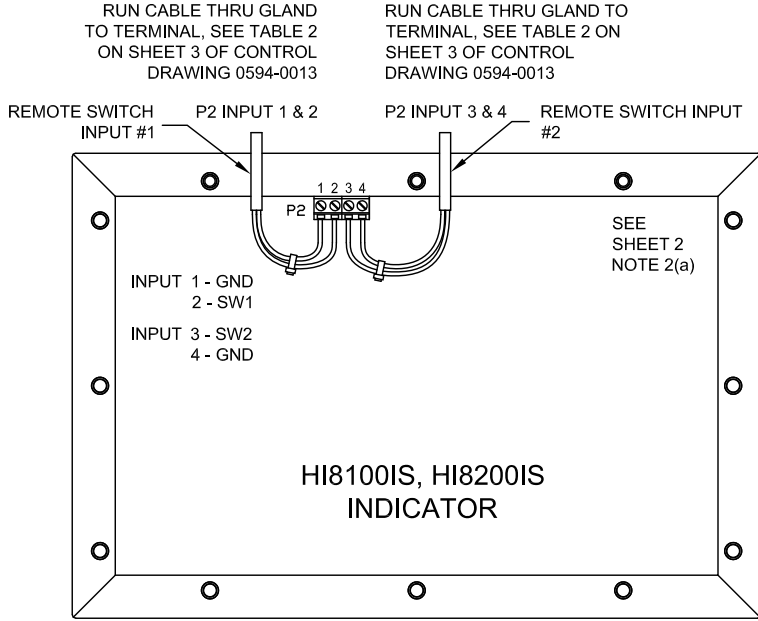


OUTPUT ENTITY PARAMETERS					
DESCRIPTION (LOCATION)	U _o	I _o	P _o	C _o	L _o
REMOTE SWITCH #1 & #2	7.14 V	0.133 A	0.217 W	13.5 uF	2.02 mH

NOTES: UNLESS OTHERWISE SPECIFIED:

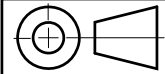
1. THE HARDY I.S. OUTPUT CABLE MUST BE CONNECTED TO A SUITABLE GROUND ELECTRODE PER THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70), THE CANADIAN ELECTRICAL CODE OR OTHER LOCAL INSTALLATION CODES, AS APPLICABLE. THE RESISTANCE OF THE GROUND PATH MUST BE LESS THAN 1 OHM.
2. OPERATING AMBIENT TEMPERATURE RANGE: -10°C TO +40°C (EXCEPT HI8CHG RANGE: -10°C TO +30°C)
3. INTRINSICALLY SAFE WIRING SHALL BE IDENTIFIED AS SUCH WITH LABELS PLACED NO MORE THAN 7.62M (25FT) APART. THE COLOR LIGHT BLUE IS INTERNATIONALLY RECOGNIZED AS IDENTIFYING INTRINSICALLY SAFE WIRING.
4. THE OUTPUT CURRENT OF THESE INTRINSICALLY SAFE HARDY OUTPUTS IS LIMITED BY A RESISTOR SUCH THAT THE OUTPUT VOLTAGE-CURRENT PLOT IS A STRAIGHT LINE DRAWN BETWEEN OPEN-CIRCUIT VOLTAGE AND SHORT-CIRCUIT CURRENT.
5. SELECTED INTRINSICALLY SAFE EQUIPMENT/SWITCHES (FOR USE WITH THESE INTRINSICALLY SAFE HARDY OUTPUTS) MUST BE THIRD PARTY LISTED AS INTRINSICALLY SAFE FOR THE APPLICATION (UNLESS DEEMED SIMPLE APPARATUS PER NOTE 11 ON SHEET 4, AND HAVE INTRINSICALLY SAFE ENTITY PARAMETERS CONFORMING WITH TABLE 1 BELOW.

TABLE 1		
I.S. Equipment/Switches		I.S. Hardy Outputs
V max (or U _i)	≥	V _{oc} or V _t (or U _o)
I max (or I _i)	≥	I _{sc} or I _t (or I _o)
P max, P _i	≥	P _o
C _i + C _o	≤	C _a (or C _o)
L _i + L _o	≤	L _a (or L _o)



⚠ CAUTION: SEE 0596-0341-01 FOR HARDWARE TORQUE RATINGS. DO NOT DAMAGE CIRCUITRY OR ANY WIRES DURING PROCESS

6. CAPACITANCE AND INDUCTANCE OF THE FIELD WIRING FROM THE INTRINSICALLY SAFE EQUIPMENT/SWITCHES TO THESE INTRINSICALLY SAFE HARDY OUTPUTS SHALL BE CALCULATED AND MUST BE INCLUDED IN THE SYSTEM CALCULATIONS AS SHOWN IN TABLE 1. CABLE CAPACITANCE, C_o, PLUS INTRINSICALLY SAFE EQUIPMENT CAPACITANCE, C_i MUST BE LESS THAN THE MARKED CAPACITANCE, C_a (OR C_o), SHOWN ON ANY I.S. HARDY OUTPUTS USED. THE SAME APPLIES FOR INDUCTANCE (L_o, L_i AND L_a OR L_o, RESPECTIVELY). WHERE THE CABLE CAPACITANCE AND INDUCTANCE PER FOOT ARE NOT KNOWN, THE FOLLOWING VALUES SHALL BE USED: C_o = 60 pF/ft., L_o = 0.2 uH/ft.
7. WHERE MULTIPLE CIRCUITS EXTEND FROM THE SAME PIECE OF ASSOCIATED APPARATUS OR INTRINSICALLY SAFE DEVICE (WHERE ALL PINS ARE NOT STATED AS COMBINED AND/OR DIFFERENT ENTITY PARAMETERS ASSIGNED), THEY MUST BE INSTALLED IN SEPARATE CABLES OR IN ONE CABLE HAVING SUITABLE INSULATION. REFER TO ARTICLE 504.30(B) OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) AND INSTRUMENT SOCIETY OF AMERICA RECOMMENDED PRACTICE ISA RP12.06 FOR INSTALLING INTRINSICALLY SAFE EQUIPMENT.
8. INTRINSICALLY SAFE CIRCUITS MUST BE WIRED AND SEPARATED IN ACCORDANCE WITH ARTICLE 504.20 OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) OR OTHER LOCAL CODES, AS APPLICABLE.
9. THESE INTRINSICALLY SAFE HARDY OUTPUTS HAVE NOT BEEN EVALUATED FOR USE IN COMBINATION WITH ANOTHER DEVICE WITH ANY OUTPUTS.
10. FOR INSTALLATIONS IN WHICH BOTH THE C_i AND L_i OF THE INTRINSICALLY SAFE APPARATUS/SWITCHES EXCEEDS 1% OF THE C_a (OR C_o) AND L_a (OR L_o) PARAMETERS OF THESE INTRINSICALLY SAFE HARDY OUTPUTS (EXCLUDING THE CABLE), THEN 50% OF C_a (OR C_o) AND L_a (OR L_o) PARAMETERS ARE APPLICABLE AND SHALL NOT BE EXCEEDED. THE REDUCED CAPACITANCE SHALL NOT BE GREATER THAN 1 uF FOR GROUPS C AND/OR D, AND 600 nF FOR GROUPS A AND B. THE VALUES OF C_a (OR C_o) AND L_a (OR L_o) DETERMINED BY THIS METHOD SHALL NOT BE EXCEEDED BY THE SUM OF ALL OF C_i PLUS CABLE CAPACITANCES AND THE SUM OF ALL OF THE L_i PLUS CABLE INDUCTANCES IN THE CIRCUIT RESPECTIVELY.
11. THESE INTRINSICALLY SAFE HARDY OUTPUTS MAY ALSO BE CONNECTED TO SIMPLE APPARATUS AS DEFINED IN ARTICLE 504.2 AND INSTALLED AND TEMPERATURE CLASSIFIED IN ACCORDANCE WITH ARTICLE 504.10(D) OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70), OR OTHER LOCAL CODES, AS APPLICABLE.



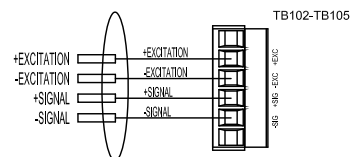
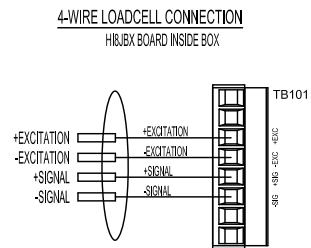
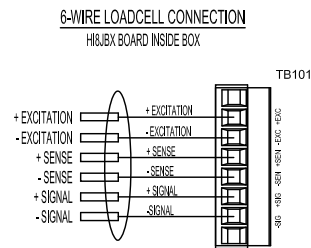
WARNING
 READ AND UNDERSTAND COMPLETELY USER MANUAL NO. 0596-0341-01 FOR THESE DEVICES BEFORE INSTALLATION OR OPERATION

HARDY PROCESS SOLUTIONS			
TITLE SYSTEM CONTROL DRAWING, HI8000 SERIES			
SIZE	FSCM	DRAWING NO.	REV.
D	21316	0594-0013	A
FILE NAME: 594013A1.DWG		SCALE: NONE	SHEET 4 OF 5

NOTES FOR PAGE 1 OF CONTROL DRAWING No. 0594-0013

NOTES:

- SEE PAGE 1
- SEE PAGE 1
- SEE PAGE 1
- CONNECT THE LOADCELL CABLE SHIELD WIRE TO THE THREADED STUD ADJACENT TO SEALING GLAND. TO ASSURE PROPER GROUNDING, TEST FOR CONTINUITY BETWEEN PLATFORM(LOAD CELL) AND SHIELD. THE PLATFORM SHOULD BE PROPERLY GROUNDED TO EARTH.
- THE HARDY I.S. OUTPUT CABLE MUST BE CONNECTED TO A SUITABLE GROUND ELECTRODE PER THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70), THE CANADIAN ELECTRICAL CODE OR OTHER LOCAL INSTALLATION CODES, AS APPLICABLE. THE RESISTANCE OF THE GROUND PATH MUST BE LESS THAN 1 OHM.
- OPERATING AMBIENT TEMPERATURE RANGE: -10°C TO +40°C
- LOADCELL CABLE LENGTH: 75 FEET MAX FOR THE 4-WIRE LOADCELLS, AND 50 FEET MAX FOR THE 6-WIRE LOADCELLS. THESE MUST INCLUDE TOTAL LENGTH OF CABLE STARTING AT INDICATOR AND ENDING AT EACH LOADCELL (ALL COMBINED).
- H18JBX JUNCTION BOX IS TYPE 1, IP20 FOR DRY INDOOR LOCATIONS.
- THE OUTPUT CURRENT OF THESE INTRINSICALLY SAFE HARDY OUTPUTS IS LIMITED BY A RESISTOR SUCH THAT THE OUTPUT VOLTAGE-CURRENT PLOT IS A STRAIGHT LINE DRAWN BETWEEN OPEN-CIRCUIT VOLTAGE AND SHORT-CIRCUIT CURRENT.
- SELECTED INTRINSICALLY SAFE EQUIPMENT/LOADCELLS (FOR USE WITH THESE INTRINSICALLY SAFE HARDY OUTPUTS) MUST BE THIRD PARTY LISTED AS INTRINSICALLY SAFE FOR THE APPLICATION (UNLESS DEEMED SIMPLE APPARATUS PER NOTE 1 ON SHEET 1), AND HAVE INTRINSICALLY SAFE ENTITY PARAMETERS CONFORMING WITH TABLE 1 ON SHEET 1.
- CAPACITANCE AND INDUCTANCE OF THE FIELD WIRING FROM THE INTRINSICALLY SAFE EQUIPMENT/LOADCELLS TO THESE INTRINSICALLY SAFE HARDY OUTPUTS SHALL BE CALCULATED AND MUST BE INCLUDED IN THE SYSTEM CALCULATIONS AS SHOWN IN TABLE 1 ON SHEET 1. CABLE CAPACITANCE, C_{cable} , PLUS INTRINSICALLY SAFE EQUIPMENT CAPACITANCE, C_i MUST BE LESS THAN MARKED CAPACITANCE, C_a (OR C_o), SHOWN ON ANY I.S. HARDY OUTPUTS USED. THE SAME APPLIES FOR INDUCTANCE (L_{cable} , L_i AND L_a OR L_o , RESPECTIVELY). WHERE THE CABLE CAPACITANCE AND INDUCTANCE PER FOOT ARE NOT KNOWN, THE FOLLOWING VALUES SHALL BE USED: $C_{cable} = 60 \text{ pF/ft}$, $L_{cable} = 0.2 \mu\text{H/ft}$.
- WHERE MULTIPLE CIRCUITS EXTEND FROM THE SAME PIECE OF ASSOCIATED APPARATUS OR INTRINSICALLY SAFE DEVICE (WHERE ALL PINS ARE NOT STATED AS COMBINED AND/OR DIFFERENT ENTITY PARAMETERS ASSIGNED), THEY MUST BE INSTALLED IN SEPARATE CABLES OR IN ONE CABLE HAVING SUITABLE INSULATION. REFER TO ARTICLE 504.30(B) OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) AND INSTRUMENT SOCIETY OF AMERICA RECOMMENDED PRACTICE ISA RP12.06 FOR INSTALLING INTRINSICALLY SAFE EQUIPMENT.
- INTRINSICALLY SAFE CIRCUITS MUST BE WIRED AND SEPARATED IN ACCORDANCE WITH ARTICLE 504.20 OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) OR OTHER LOCAL CODES, AS APPLICABLE.
- THESE INTRINSICALLY SAFE HARDY OUTPUTS HAVE NOT BEEN EVALUATED FOR USE IN COMBINATION WITH ANOTHER DEVICE WITH ANY OUTPUTS.
- FOR INSTALLATIONS IN WHICH BOTH THE C_i AND L_i OF THE INTRINSICALLY SAFE APPARATUS/LOADCELLS EXCEEDS 1% OF THE C_a (OR C_o) AND L_a (OR L_o) PARAMETERS OF THESE INTRINSICALLY SAFE HARDY OUTPUTS (EXCLUDING THE CABLE), THEN 50% OF C_a (OR C_o) AND L_a (OR L_o) PARAMETERS ARE APPLICABLE AND SHALL NOT BE EXCEEDED. THE REDUCED CAPACITANCE SHALL NOT BE GREATER THAN $1 \mu\text{F}$ FOR GROUPS C AND/OR D, AND 600 nF FOR GROUPS A AND B. THE VALUES OF C_a (OR C_o) AND L_a (OR L_o) DETERMINED BY THIS METHOD SHALL NOT BE EXCEEDED BY THE SUM OF ALL OF C_i PLUS CABLE CAPACITANCES AND THE SUM OF ALL OF THE L_i PLUS CABLE INDUCTANCES IN THE CIRCUIT RESPECTIVELY.
- H18JBX LOAD CELL I.S. WIRING BELOW
- H18JBX OUTPUT ENTITY PARAMETERS BELOW



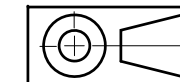
OUTPUT ENTITY PARAMETERS					
DESCRIPTION (LOCATION)	U_o	I_o	P_o	C_o	L_o
LOADCELL (TB102-TB105)	7.14 V	0.7076 A	0.895 W	10.8 μF *	71 μH **

* C_o (subtract) $C_{loadcell_cable_from_Indicator}$
** L_o (subtract) $L_{loadcell_cable_from_Indicator}$

NOTES FOR PAGE 2 OF CONTROL DRAWING No. 0594-0013

NOTES:

- NOTES 1-8 SEE PAGE 2
- THE ELECTRONICS LOCATED IN THE BARRIER CIRCUIT OF MODEL H18AIS FORMS AN INTRINSICALLY SAFE SYSTEM WHEN ONE INDICATOR/REMOTE DISPLAY MODEL H18100IS/H18200IS IS CONNECTED TO ITS INTRINSICALLY SAFE OUTPUT CABLE AS SHOWN ON SHEET 2, AND THE INDICATOR/REMOTE DISPLAY MODELS H18100IS/H18200IS ARE SUITABLE FOR USE IN HAZARDOUS AREAS AS SHOWN ON THIS CONTROL DRAWING NO. 0594-0013. NO OTHER DEVICES ARE SUITABLE FOR DIRECT CONNECTION TO THE INTRINSICALLY SAFE OUTPUT CABLE OF MODEL H18AIS, AND THE ONLY ADDITIONAL DEVICES/CONFIGURATIONS THAT MAY BE CONNECTED TO THE INDICATOR/REMOTE DISPLAY MODELS H18100IS/H18200IS ARE SHOWN ON THIS CONTROL DRAWING NO. 0594-0013
- THE OUTPUT CURRENT OF THE MODEL H18AIS ASSOCIATED APPARATUS IS LIMITED BY A RESISTOR SUCH THAT THE OUTPUT-VOLTAGE PLOT IS A STRAIGHT LINE DRAWN BETWEEN OPEN-CIRCUIT VOLTAGE AND SHORT-CIRCUIT CURRENT.
- ASSOCIATED APPARATUS MODEL H18AIS MUST BE INSTALLED IN AN ENCLOSURE SUITABLE FOR THE APPLICATION IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) FOR INSTALLATION IN THE UNITED STATES, THE CANADIAN ELECTRICAL CODE FOR INSTALLATIONS IN CANADA, OR OTHER LOCAL CODES, AS APPLICABLE.
- THE ASSOCIATED APPARATUS MODEL H18AIS MUST BE CONNECTED TO A SUITABLE GROUND ELECTRODE PER THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70), THE CANADIAN ELECTRICAL CODE OR OTHER LOCAL INSTALLATION CODES, AS APPLICABLE. THE RESISTANCE OF THE GROUND PATH MUST BE LESS THAN 1 OHM.
- INTRINSICALLY SAFE CIRCUITS MUST BE WIRED AND SEPARATED IN ACCORDANCE WITH ARTICLE 504.20 OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) OR OTHER LOCAL CODES, AS APPLICABLE.
- THIS ASSOCIATED APPARATUS MODEL H18AIS HAS NOT BEEN EVALUATED FOR USE IN COMBINATION WITH ANOTHER ASSOCIATED APPARATUS.
- THE ELECTRONICS LOCATED IN THE MODEL H18BIS BATTERY PACK FORMS AN INTRINSICALLY SAFE SYSTEM WHEN ONE INDICATOR/REMOTE DISPLAY MODELS H18100IS/H18200IS IS CONNECTED TO ITS INTRINSICALLY SAFE OUTPUT CABLE AS SHOWN ABOVE, AND THE INDICATOR/REMOTE DISPLAY MODELS H18100IS/H18200IS ARE SUITABLE FOR USE IN HAZARDOUS AREAS AS SHOWN ON THIS CONTROL DRAWING NO. 0594-0013. NO OTHER DEVICES ARE SUITABLE FOR DIRECT CONNECTION TO THE INTRINSICALLY SAFE OUTPUT CABLE OF MODEL H18BIS, AND THE ONLY ADDITIONAL DEVICES/CONFIGURATIONS THAT MAY BE CONNECTED TO THE INDICATOR/REMOTE DISPLAY MODELS H18100IS/H18200IS ARE SHOWN ON THIS CONTROL DRAWING NO. 0594-0013.
- THE OUTPUT CURRENT OF THE MODEL H18BIS IS LIMITED BY A RESISTOR SUCH THAT THE OUTPUT VOLTAGE-CURRENT PLOT IS A STRAIGHT LINE DRAWN BETWEEN OPEN-CIRCUIT VOLTAGE AND SHORT-CIRCUIT CURRENT.
- MODEL H18JBX MUST BE INSTALLED IN AN ENCLOSURE SUITABLE FOR THE APPLICATION IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) FOR INSTALLATION IN THE UNITED STATES, THE CANADIAN ELECTRICAL CODE FOR INSTALLATIONS IN CANADA, OR OTHER LOCAL CODES, AS APPLICABLE.
- INTRINSICALLY SAFE CIRCUITS MUST BE WIRED AND SEPARATED IN ACCORDANCE WITH ARTICLE 504.20 OF THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) OR OTHER LOCAL CODES, AS APPLICABLE.
- THIS BATTERY PACK MODEL H18BIS HAS NOT BEEN EVALUATED FOR USE IN COMBINATION WITH ANOTHER POWER SOURCE OR ASSOCIATED APPARATUS.
- THE INDICATOR/REMOTE DISPLAY MODEL H18100IS/H18200IS IS PROVIDED WITH A PERMANENTLY CONNECTED CABLE HAVING THE FOLLOWING CHARACTERISTICS:
TURCK PART NO. RSM 30-2M UL/C-UL LISTED (E141522)
RATED 300 V, 9 A, 105C
3 WIRES, 18 AWG
IP67 INGRESS PROTECTION
MAXIMUM CAPACITANCE PER FOOT: 23.6 pF/ft
MAXIMUM INDUCTANCE PER FOOT: 41.985 $\mu\text{H/ft}$
MINIMUM CABLE JACKET INSULATION: 1.806 mm
- THE MODEL H18BIS IS PROVIDED WITH A PERMANENTLY CONNECTED CABLE HAVING THE FOLLOWING CHARACTERISTICS:
TURCK PART NO. RKM 30-2M UL/C-UL LISTED (E141522)
RATED 300 V, 9 A, 105C
3 WIRES, 18 AWG
IP67 INGRESS PROTECTION
MAXIMUM CAPACITANCE PER FOOT: 23.6 pF/ft
MAXIMUM INDUCTANCE PER FOOT: 41.985 $\mu\text{H/ft}$
MINIMUM CABLE JACKET INSULATION: 1.806 mm
- THE MODEL H18AIS IS PROVIDED WITH A PERMANENTLY CONNECTED CABLE HAVING THE FOLLOWING CHARACTERISTICS:
TURCK PART NO. RKM 30-2M UL/C-UL LISTED (E141522)
RATED 300 V, 9 A, 105C
3 WIRES, 18 AWG
IP67 INGRESS PROTECTION
MAXIMUM CAPACITANCE PER FOOT: 23.6 pF/ft
MAXIMUM INDUCTANCE PER FOOT: 41.985 $\mu\text{H/ft}$
MINIMUM CABLE JACKET INSULATION: 1.806 mm
- SUITABILITY FOR INSTALLATION IN PARTICULAR APPLICATIONS IS AT THE DISCRETION OF THE AUTHORITY HAVING JURISDICTION (AHJ).
- THE OPTIONAL POWER EXTENSION CABLES HIWCB0234 AND HIWCB0235 MAY ONLY BE THE FOLLOWING TYPES IF USED:
TURCK PART NO. P-RSM RKM 30-026-3M OR P-RSM RKM 30-026-6M
UL/C-UL LISTED (E141522)
RATED 300 V, 9 A, 105C
3 WIRES, 18 AWG; AND 1 FOIL SHIELD, 20 AWG
IP67 INGRESS PROTECTION
MAXIMUM CAPACITANCE PER FOOT: 76.8 pF/ft
MAXIMUM INDUCTANCE PER FOOT: 41.985 $\mu\text{H/ft}$
MINIMUM CABLE JACKET INSULATION: 1.806 mm
- SUITABILITY FOR INSTALLATION IN PARTICULAR APPLICATIONS IS AT THE DISCRETION OF THE AUTHORITY HAVING JURISDICTION (AHJ).



WARNING
READ AND UNDERSTAND COMPLETELY USER MANUAL NO. 0596-0341-01 FOR THESE DEVICES BEFORE INSTALLATION OR OPERATION

HARDY PROCESS SOLUTIONS			
TITLE SYSTEM CONTROL DRAWING, H18000 SERIES			
SIZE	FSCM	DRAWING NO.	REV.
D	21316	0594-0013	A
FILE NAME: 594013A1.DWG		SCALE: NONE	SHEET 5 OF 5