

DESCRIPTION:

THIS CONTROL DRAWING DESCRIBES THE INTRINSICALLY SAFE EQUIPMENT AND ASSOCIATED APPARATUS THAT TOGETHER FORM AN INTRINSICALLY SAFE SYSTEM.

ET-12000 PLUNGER LIFT CONTROLLER MAY BE CONFIGURED WITH ONE TO THREE LATCHING SOLENOID VALVES, AND EITHER A 5AH OR 7AH BATTERY. IT MAY ALSO BE CONFIGURED WITH EITHER A MODEL ET-12001-1007-0001 OR ET-12001-1007-0002 ELECTRONICS MODULE.

WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.

NOTES:

- THE ENTITY PARAMETERS OF ELECTRONICS MODULES ET-12001-1007-0001 AND ET-12001-1007-0002 ARE GIVEN IN TABLE 1. REFER TO SHEET 2 FOR CONNECTIONS TO ELECTRONICS MODULE ET-12001-1007-0001 AND SHEET 3 FOR CONNECTIONS TO ELECTRONICS MODULE ET-12001-1007-0002.
- THE INSTALLATION MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, SECTION 18.
- BARRIERS MUST NOT BE CONNECTED TO ANY DEVICE THAT USES OR GENERATES IN EXCESS OF 250 VOLTS RMS OR DC UNLESS IT HAS BEEN EVALUATED FOR PROPER ISOLATION FROM THE BARRIER. REFER TO ALL BARRIER APPLICATION INSTRUCTIONS.
- USE ONLY ET-12001-1008-0001 OR ET-12001-1008-0002 BATTERY ASSEMBLY.

REVISIONS			
REV	DESCRIPTION	YY/MM/DD	APPROVED
1	First release	11/01/19	TMD
2	correct error in Pmax units from mA to mW	11/10/17	TMD

NOTES CONTINUED:

- THREE WIRE SENSORS MUST BE APPROVED INTRINSICALLY SAFE DEVICES. REFER TO TABLE 1 FOR ENTITY PARAMETERS.
 PWR - SENSOR POWER INPUT
 SIG - SENSOR SIGNAL OUT
 COM - SENSOR CIRCUIT COMMON
- USE ONLY THE FOLLOWING VALVE ASSEMBLY COMBINATIONS:
 - ONE SINGLE VALVE ASSEMBLY (ET-12000-1011-0001) OR
 - ONE DUAL VALVE ASSEMBLY (ET-12000-1011-0002) OR
 - ONE SINGLE VALVE ASSEMBLY (ET-12000-1011-0001) AND ONE DUAL VALVE ASSEMBLY (ET-12000-1011-0002)
- REFER TO SHEET 4 FOR THE CIRCUIT CONNECTION OF COMMUNICATIONS INTERFACES COM1 AND COM2 WITH BARRIER OR CONVERTER.
- REFER TO SHEET 5 FOR THE CIRCUIT CONNECTION OR SOLAR PANEL WITH BARRIER OR CONVERTER.

TABLE 1: Entity Parameters

Solar Panel Input	RS485 Input (COM1/COM2)	COM1/COM2	CP/DP, LP, PAS (PWR, COM)	CP/DP, LP, PAS (SIG, COM)
Vmax = 15.5V	Vmax = 8.0V	Voc = 8.0V	Voc = 8.0V	Voc = 8.0V
I _{max} = 160mA	I _{max} = 160mA	I _{sc} = 108mA	I _{sc} = 81mA	I _{sc} = 0.80mA
C _i = 0.1µF	C _i = 0.0µF	C _a = 10µF	C _a = 10µF	C _a = 10µF
L _i = 0.0µH	L _i = 0.0µH	L _a = 50µH	L _a = 50µH	L _a = 50µH
P _{max} = 1.6W	P _{max} = 0.8W	P _{max} = 216mW	P _{max} = 162mW	P _{max} = 1.62mW

Extreme Telematics Corporation	Control Drawing			
	ET-12001 Plunger Lift Controller			
Tolerance: +/- 0.020"	SIZE A	FSCM NO.	DWG NO. ET-12001-1012-0000	REV 2
	SCALE N/A		SHEET	1 of 5

**HAZARDOUS LOCATION
Class 1, Zone 0, Group IIB**

**NON-HAZARDOUS LOCATION or
Class 1, Zone 1, Group IIB or
Class 1, Zone 2, Group IIB**

**Extreme Telematics Corp.
Model: ET-12001-1007-0001**



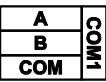
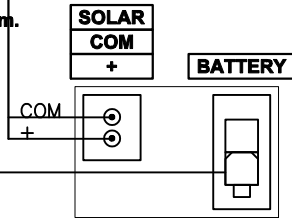
Serial Number:

216311

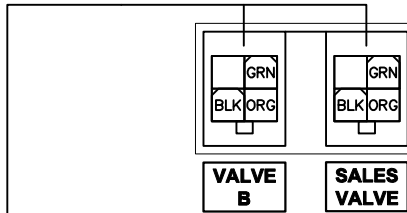
**INTRINSICALLY SAFE:
Exia, T3A, -40 °C ≤ Ta ≤ +70 °C, X
Class 1, Zone 0, Group IIB**

**ASSOCIATED EQUIPMENT:
[Exia], T3A, -40 °C ≤ Ta ≤ +70 °C, X
Class 1, Zone 0, Group IIB**

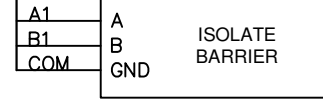
**RATINGS:
Battery Power 6Vdc nom.
Solar Panel 8Vdc nom.**



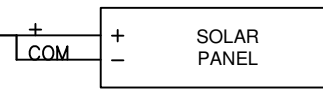
**WARNINGS: REFERENCE CONTROL DRAWING
ET-12001-1012-0000 FOR PROPER INSTALLATION.
USE ONLY INTRINSICALLY SAFE BATTERY PACK
ET-12001-1008-0001 OR ET-12001-1008-0002. DO
NOT REMOVE COVER UNLESS AREA KNOWN TO
BE SAFE.**



Label P/N: ET-12001-1010-0101 REV2



ENTITY PARAMETERS FOR COMMUNICATIONS INTERFACE COM1 ARE GIVE IN TABLE 1 ON SHEET 1. REFER TO SHEET 4 FOR THE CIRCUIT CONNECTION WITH ISOLATED BARRIER.



ENTITY PARAMETERS FOR SOLAR PANEL INPUT ARE GIVE IN TABLE 1 ON SHEET 1. REFER TO SHEET 5 FOR THE CIRCUIT CONNECTION WITH SOLAR PANEL OR ISOLATED BARRIER.

BATTERY ASSEMBLY
(NOTE 4)



3-WIRE PRESSURE SENSOR

3-WIRE ARRIVAL SENSOR

VALVE ASSEMBLIES

(NOTES: 1, 5)

(NOTE 6)

Plunger Lift Controller Electronics Module
P/N: ET-12001-1007-0001
(back view of module cover with door open)

Extreme Telematics Corporation	Control Drawing			
	ET-12001 Plunger Lift Controller			
Tolerance: +/- 0.020"	SIZE A	FSCM NO.	DWG NO. ET-12001-1012-0000	REV 2
	SCALE N/A		SHEET 2 of 5	

HAZARDOUS LOCATION
Class 1, Zone 0, Group IIB

NON-HAZARDOUS LOCATION or
Class 1, Zone 1, Group IIB or
Class 1, Zone 2, Group IIB

Extreme Telematics Corp.
Model: ET-12001-1007-0002



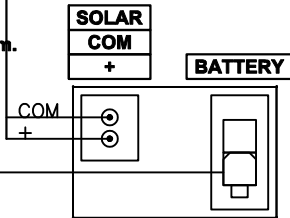
Serial Number:

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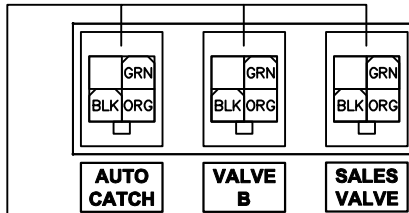
INTRINSICALLY SAFE:
Exia, T3A, -40 °C ≤ Ta ≤ +70 °C, X
Class 1, Zone 0, Group IIB

ASSOCIATED EQUIPMENT:
[Exia], T3A, -40 °C ≤ Ta ≤ +70 °C, X
Class 1, Zone 0, Group IIB

RATINGS:
Battery Power 6Vdc nom.
Solar Panel 8Vdc nom.

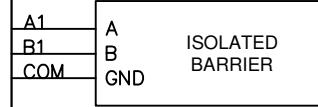


WARNINGS: REFERENCE CONTROL DRAWING
ET-12001-1012-0000 FOR PROPER INSTALLATION.
USE ONLY INTRINSICALLY SAFE BATTERY PACK
ET-12001-1008-0001 OR ET-12001-1008-0002. DO
NOT REMOVE COVER UNLESS AREA KNOWN TO
BE SAFE.

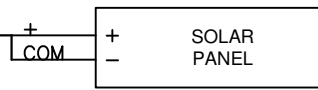
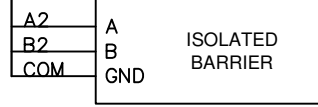


Label P/N: ET-12001-1010-0102 REV2

Plunger Lift Controller Electronics Module
P/N: ET-12001-1007-0002
 (back view of module cover with door open)

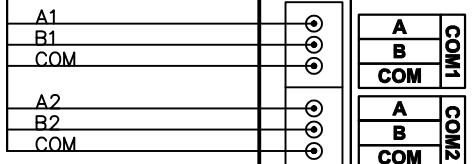


ENTITY PARAMETERS FOR COMMUNICATIONS INTERFACES COM1 AND COM2 ARE GIVE IN TABLE 1 ON SHEET1. REFER TO SHEET 4 FOR THE CIRCUIT CONNECTION WITH ISOLATED BARRIER.



ENTITY PARAMETERS FOR SOLAR PANEL INPUT ARE GIVE IN TABLE 1 ON SHEET 1. REFER TO SHEET 5 FOR THE CIRCUIT CONNECTION WITH SOLAR PANEL OR ISOLATED BARRIER.

BATTERY ASSEMBLY
 (NOTE 4)



3-WIRE PRESSURE SENSOR

3-WIRE PRESSURE SENSOR

3-WIRE ARRIVAL SENSOR

VALVE ASSEMBLIES

(NOTES 1, 5)

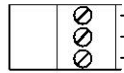
(NOTE 6)

Extreme Telematics Corporation	Control Drawing			
	ET-12001 Plunger Lift Controller			
Tolerance: +/- 0.020"	SIZE A	FSCM NO.	DWG NO. ET-12001-1012-0000	REV 2
	SCALE N/A		SHEET 3 of 5	

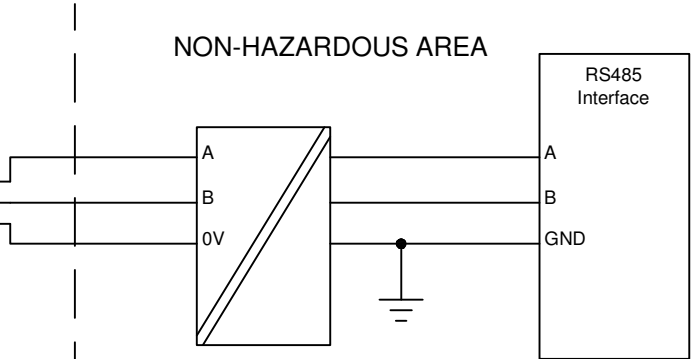
HAZARDOUS AREA

NON-HAZARDOUS AREA

COM1



Weidmuller connector
p/n 1615680000
connect to COM1 header on
electronics module.



APPROVED SAFETY BARRIER
WITH ENTITY PARAMETERS:

$U_o \leq 8.0 \text{ V}$
 $I_o \leq 160 \text{ mA}$
 $C_o \geq 0.1\mu\text{F} + C_{\text{cable}}$
 $L_o \geq 0.0\mu\text{H} + L_{\text{cable}}$

NOTES:

THE ENTITY PARAMETERS FOR COM1 AND COM2 INTERFACES ARE GIVEN IN TABLE 1 ON SHEET1. ELECTRONICS MODULE ET-12000-1007-0001 DOES NOT HAVE A COM2 INTERFACE. ELECTRONICS MODULE ET-12000-1007-0002 HAS BOTH COM1 AND COM2 INTERFACES.

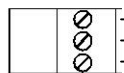
BARRIERS MUST NOT BE CONNECTED TO ANY DEVICE THAT USES OR GENERATES IN EXCESS OF 250 VOLTS RMS OR DC UNLESS IT HAS BEEN EVALUATED FOR PROPER ISOLATION FROM THE BARRIER. REFER TO ALL BARRIER APPLICATION INSTRUCTIONS.

BARRIER OUTPUTS ARE WIRED TO CONNECTOR PLUGS MANUFACTURED BY WEIDMULLER. THE WEIDMULLER PART NUMBER IS "1615680000".

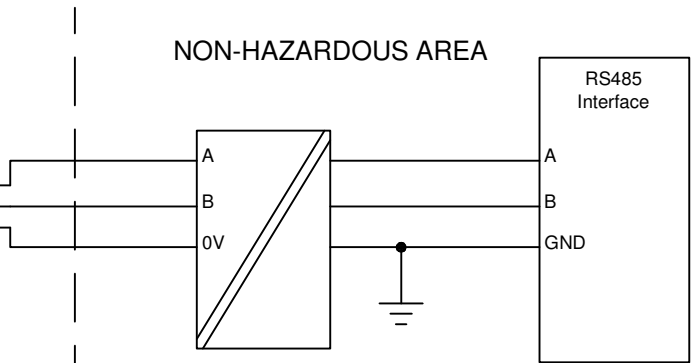
HAZARDOUS AREA

NON-HAZARDOUS AREA

COM2

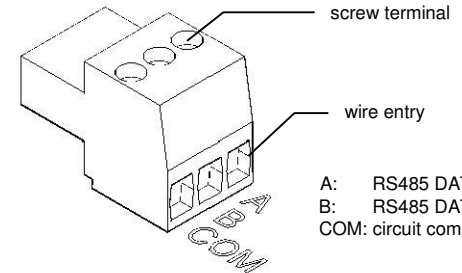


Weidmuller connector
p/n 1615680000
connect to COM2
header on electronics module.



APPROVED SAFETY BARRIER
WITH ENTITY PARAMETERS:

$U_o \leq 8.0 \text{ V}$
 $I_o \leq 160 \text{ mA}$
 $C_o \geq 0.1\mu\text{F} + C_{\text{cable}}$
 $L_o \geq 0.0\mu\text{H} + L_{\text{cable}}$



A: RS485 DATA A
B: RS485 DATA B
COM: circuit common

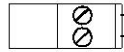
Weidmuller p/n 1615680000

Extreme Telematics Corporation	Control Drawing			
	ET12001 Plunger Lift Controller			
Tolerance: +/- 0.020"	SIZE A	FSCM NO.	DWG NO. ET-12001-1012-0000	REV 2
	SCALE N/A		SHEET 4 of 5	

HAZARDOUS AREA

NON-HAZARDOUS AREA

SOLAR



Weidmuller connector
p/n 1615670000
connect to SOLAR
header on electronics module.

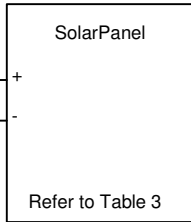


TABLE 3: Mono-crystalline Solar Panel Specifications	Rated (+/-3%)	*Maximum
Peak Power (5% Tolerance)	1.1W	1.6W
Open Circuit Voltage (Voc)	9.8V	13V
Short Circuit Current (Isc)	149mA	160mA
Max. Power Voltage (Vm)	8.16V	
Max. Power Current (Im)	135mA	
Temperature Coefficient of Voc (%/C)	-0.40	
Temperature Coefficient of Isc (%/C)	+0.08	
Temperature Coefficient of Pm (%/C)	-0.55	

*Maximum values over -40C to +60C panel temperature.

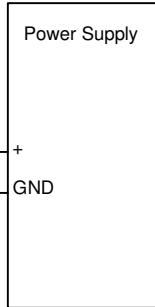
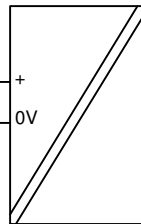
HAZARDOUS AREA

NON-HAZARDOUS AREA

SOLAR

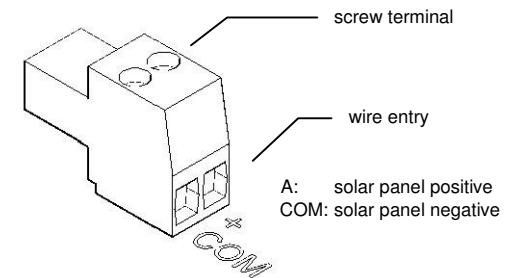


Weidmuller connector
p/n 1615670000
connect to SOLAR
header on electronics module.



APPROVED SAFETY BARRIER
WITH ENTITY PARAMETERS:

$U_o \leq 15.5 \text{ V}$
 $I_o \leq 160 \text{ mA}$
 $C_o \geq 0.1\mu\text{F} + C_{\text{cable}}$
 $L_o \geq 0.0\mu\text{H} + L_{\text{cable}}$



Weidmuller p/n 1615670000

NOTES:

THE ENTITY PARAMETERS FOR THE SOLAR INTERFACE ARE GIVEN IN TABLE ON SHEET1.

BARRIER MUST NOT BE CONNECTED TO ANY DEVICE THAT USES OR GENERATES IN EXCESS OF 250 VOLTS RMS OR DC UNLESS IT HAS BEEN EVALUATED FOR PROPER ISOLATION FROM THE BARRIER. REFER TO ALL BARRIER APPLICATION INSTRUCTIONS.

BARRIER OUTPUTS ARE WIRED TO CONNECTOR PLUGS MANUFACTURED BY WEIDMULLER. THE WEIDMULLER PART NUMBER IS "1615670000".

Extreme Telematics Corporation	Control Drawing			
	ET12001 Plunger Lift Controller			
Tolerance: +/- 0.020"	SIZE A	FSCM NO.	DWG NO. ET-12001-1012-0000	REV 2
	SCALE N/A		SHEET 5 of 5	