Recommendations for Protection of YZ Odorizers

NJEX 6300/7300/8300

The following recommendations are based on YZ System's wiring control document for these odoriser systems. This document is attached as a final page for your reference.

If you totally want to protect one of these systems you need to have surge protection on all the inputs/outputs that are being used -- have wires connect to the terminals, as the wires act as 'antennas' for picking up the induced transients from nearby (up to 2 miles away) lightning discharges. If the solar power option is used, this protection would also include a protector on the power coming from the solar as each of the small PV cells act as a small antenna to pick up the transient energy and then these are all combined together to make a big transient.

Dry Contact / relays are fairly resistant to damage from transients since they are electrically isolated from the electronics of the rest of the PCB. If it is an incoming drive signal to open or close a relay on the board the relay can be damaged if it is a big transient, but again the solenoid is robust.

Since there isn't any DIN rail (or space to add one) this rules out the use of the ZeroDT I/O-24 units (each unit will protect 2 loops (4-wires) and only takes up ½ inch of DIN rail space). We will use ZeroDT Field protection units and either install them directly into the terminal block connectors along with field wiring conductors or splice them into that conductor. Another option that some customers choose is to add a small enclosure to the outside of the NJEX unit to route the wiring thru. Inside of this enclosure ZeroDT I/O-24 units are mounted to a properly Grounded DIN rail.

Here are the recommendations for protection of the SYSTEM & COMMS INPUTS/OUTPUTS: (The recommended ZeroDT unit to used for each of the inputs/Outputs is noted with after each in parentheses with a **blue font color**)

System Inputs

Analog Input … 4-20ma (Flow Rate Signal from RTU) … #2+ / #3– **(ZeroDT 24-1)**

Pulse Input (Rarely used) (Dry Contact / IMAC) … #5+ / #6– *leave unprotected*

Comm Inputs

Modbus … RS-485 Comm 1 … #14+ / #15– **(ZeroDT 24-1)**

Modbus … RS-485 Comm 2 … #11+ / #12– **(ZeroDT 24-1)**

If both Comm 1 and Comm2 are used (all 4 lines) **(use ZeroDT 24-2)**

System Outputs

Alarm Output (Relay) … #17+ / #18– *leave unprotected*

Odorant Output (Scaling Pulse) … #19+ / 20 **(ZeroDT 24-1, however if this is a short cable (<10') I might leave it unprotected, otherwise it is best to protect it)**

If you want to protect all 4 pairs shown above:

- *Analog Input,*
- *Comm 1*
- *Comm 2*
- *Odorant Output*

then you could use quantity 2 of the ZeroDT 24-2 units as each protects 2 pairs (instead of quantity 4 of the ZeroDT 24-1 single pair protectors) with the leads going to the appropriate connections on the terminal blocks.

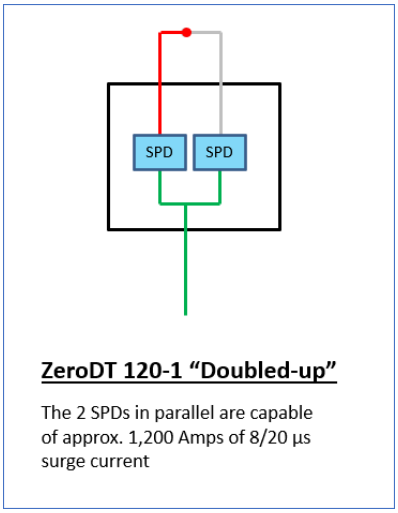
This leaves us with just the Incoming Power to protect.

YZ NJEX can be powered 3 ways:

- **External DC Power**
  - J2 -- 28 Vdc (150 mA)
  - J1 -- I.S. External DC Power - 24.2 Vdc (372 mA)

  (If either External DC Power option is utilized, use a ZeroDT 24-1 where the external power conductors are first landed in the unit)
- **AC Power**
  - LPS-120/240, Line Power Supply (85 to 250 Volts AC, <1/10th Amp) *this can be on a maximum of a 15 Amp circuit per the installation instructions.*

  (If AC power (120 VAC) is used the recommendation would be to use a ZeroDT 120-1 in a 'Doubled-up' configuration to provide overvoltage protection to the Line or Hot conductor (the Neutral conductor is bonded to Ground at the Service Entrance of the AC power. The units RED and WHITE leads are connected to the Hot/Line conductor and the GREEN Lead is connected to the Neutral conductor)



- **Solar Power**
    - SPS-12, Solar Panel and power supply/batteries

    (Use a ZeroDT 24-1 at either J1 or #1 & #2 of TB2 to protect against overvoltage transients on the 24-volt DC power being fed to the NJEX unit.)

If you have any questions regarding these recommendations do not hesitate to give us a call (713-614-8737) or send an email info@zerodt.net

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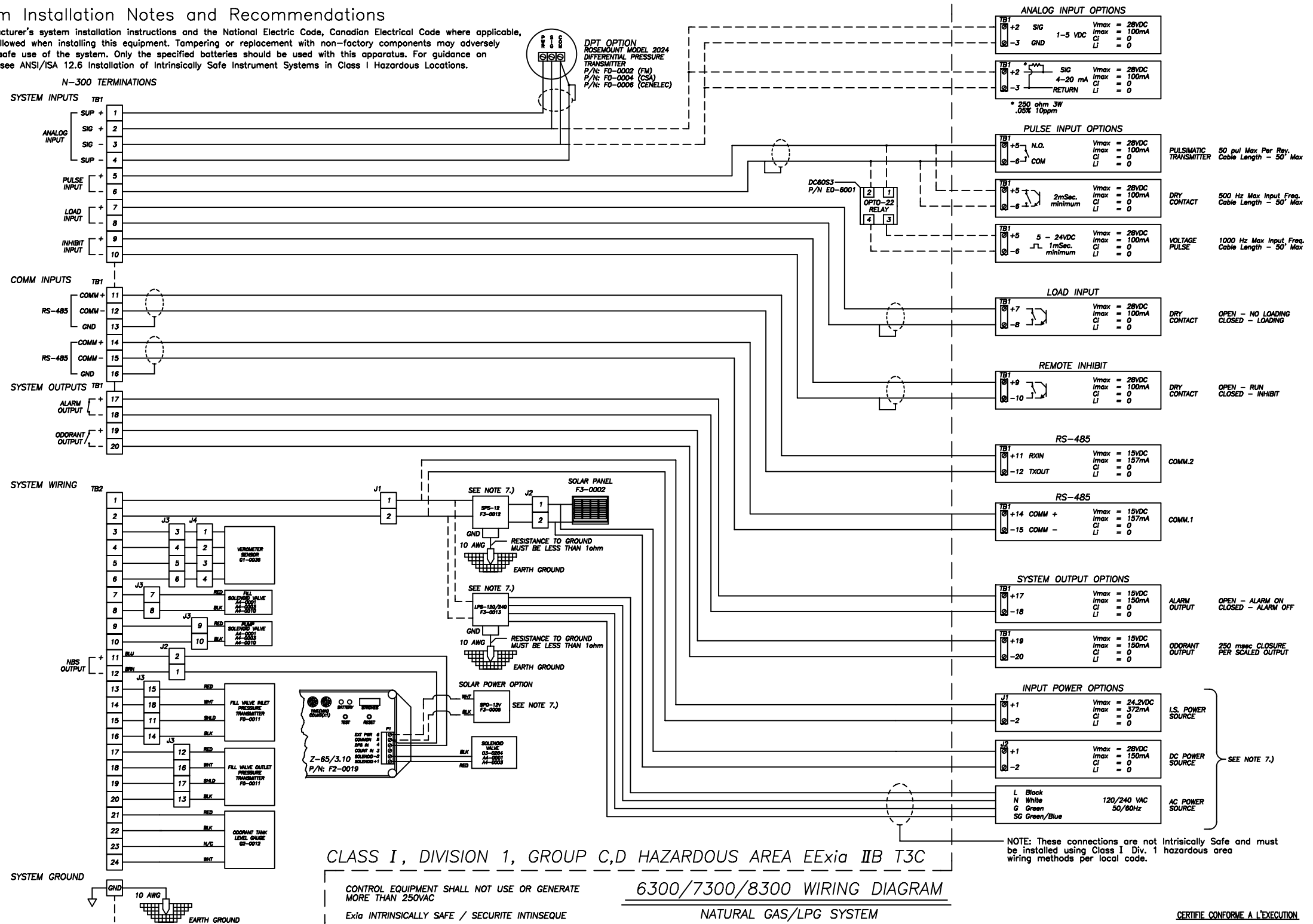
System Installation Notes and Recommendations

The manufacturer's system installation instructions and the National Electric Code, Canadian Electrical Code where applicable, must be followed when installing this equipment. Tampering or replacement with non-factory components may adversely effect the safe use of the system. Only the specified batteries should be used with this apparatus. For guidance on installation see ANSI/ISA 12.6 Installation of Intrinsically Safe Instrument Systems in Class I Hazardous Locations.



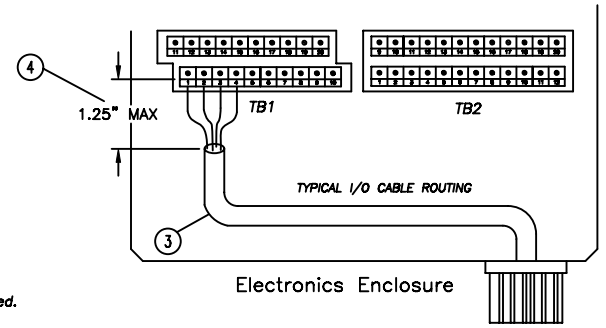
6300/7300/8300 WIRING DIAGRAM

NATURAL GAS/LPG SYSTEM

$V_{MAX} \geq V_{OC}$
$I_{MAX} \geq I_{SC}$
$C_A \geq C_I + C_{CABLE}$
$L_A \geq L_I + L_{CABLE}$

For CSA Certification:

1. *Analog input option and pulse input option should not be connected at the same time.*
2. *Barriers must be CSA certified with entity parameters and must be connected in accordance with manufacturers instructions.*
3. *All system I/O wiring must be shielded/grounded twisted pair cable. Typical routing path shown.*
4. *Strip system I/O cable insulation and shield a maxiumum of 1 1/4" from conductor ends.*
5. *Solar Panel and DC power input option for the SPS-12 cannot be connected at the same time.*
6. *SPS-12 and LPS 120/240 power supplies cannot be connected at the same time.*
7. *SPS-12, SPO-12, and LPS 120/240 power supplies are not ATEX (European) certified.*
8. *No two input power options can be connected at the same time.*



CERTIFIE CONFORME A L'EXECUTION

SIGNATURE DATE

** NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT PRIOR CSA APPROVAL.

REV	DATE	DESCRIPTION
5	6/29/07	ECO-10267 [DPM]
4	8/5/04	ECO-0270 [REH]
3	2/3/04	ECO-0259 [REH]
2	9/26/03	ECO-0248 [REH]
1	3/2/01	Added Notes 5 & 6 Added DC Power Option [REH]

REVISIONS

YZ SYSTEMS, INC.
3101 POLLOK CONROE, TEXAS 77303

DRAWING NO: 1E-0345 R5
SCALE: NTS
DESCRIPTION: NJEX 63/73/8300 WIRING CONTROL DOCUMENT
SHEET 1 OF 1
C SIZE

DRAWN: REH DATE: 2/21/01
CHECKED: DATE:
APPROVED: DATE: