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## Integrated Manufacturing Systems Troubleshooting

### Remote I-O Exercise – Instructor Copy

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Referring to the I/O Junction boxes:

The remote I/O modules are neither Allen Bradley nor Siemens (which you have studied.)

They have been manufactured by Telemecanique and are part of the Advantys STB hardware family of remote I/O products.

Please find and download a copy of the Components reference guide (2005) or the Advantys STB IP20 Distributed I/O (2007) manual.

Using the working drawings of the AMTEC Trainer and the downloaded information, answer/complete the following:

- 1) Identify all modules in the remote rack in the unload junction box (by number) and give a brief description of each modules function.

STBNIC2212 – Network Interface module – Ethernet adaptor module – interfaces between PLC and I/O Note: NIC information is the same for NIP

STBPDT3100k Power Distribution module – supplies 24v. Power to the modules for distribution... we are not using the power sources from the modules, but this must be fed or it causes a fault

STBDDI3725KC – 24v – 16 input card

STBDDO3705KC – 24V Digital Output card – 16 outputs.

STBACI0230K – Analog input card.

|STBACI0320K

STBDDO3705KC

STBDDO3705KC

STBDDO3705KC

- 2) Are the input modules sinking or sourcing? And how could you tell? (Be specific.) All sinking – Power connections see wire 10091 top of page 52 follow back to DC supply – or from Spec. sheet
- 3) How many inputs per module? 16 see speck sheet or drawings





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- 4) Identify all the indicators on the second module from the left and explain how to interpret them. **2 Lights IN and Out...interpretations below:**

IN	OUT	Meaning
on		sensor (input) field power is present
off		The module either: <ul style="list-style-type: none"><li>is not receiving sensor field power</li><li>has a blown fuse</li><li>has failed</li></ul>
	on	actuator (output) field power is present
	off	The module either: <ul style="list-style-type: none"><li>is not receiving sensor field power</li><li>has a blown fuse</li><li>has failed</li></ul>

- 5) Are the output modules sinking or sourcing? And how could you tell? (Be specific.) **Sourcing ... see wire number 08029 top of page 53 and follow back to DC supply. Or from Spec sheet.**
- 6) How many outputs per module? **16... prints or specs.**
- 7) Are the outputs fused on the output module? Where is the fuse located? Is there a blown fuse indicator? **Internal – electronic. Resets when fault has been cleared. Electronic fuse is per group of 8 outputs. Therefore short out one and it may affect its adjacent output... Note: when a short exists it takes out 8 outputs with no blow fuse indicator. Therefore I would suggest trying to force several outputs in the logic that are in the same group... if none of them are working, I would then suspect a short... start removing one wire at a time until the other outputs in the group, start working**
- 8) What is the Analog module connected to? And why? **Pressure switch has an analog output that provides the pressure display on the HMI**
- 9) On page 51 of the electrical prints, what would pin 7 (inside of the circle) typically be used for? **To provide the + 24v. Used on the left side of the inputs... remember sinking inputs...**
- 10) Why isn't it used for the above stated purpose? **Module can only supply one three wire input and this module ties to multiple 3 wire inputs... and it is common practice to feed all the inputs with the exact same input power... one less thing to be concerned about when troubleshooting.**
- 11) On the output card drawing (Page 53), what is Pin 2 (inside the circle) typically used for? **Supply individual output power (common side of the line... -24v.) to the output.**





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PRIMARY DEVELOPER: Glenn Wisniewski – Henry Ford College

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PAGE

3 of 4

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- 12) Why is it not used for that purpose? **System uses two +24v. Sources for output power... switched for motion causing outputs and un-switched for outputs that don't cause motion. Note input power is typically not switched. Switched means... with the safety processor and relays. Also this wiring is typical in panels and will be easier to trouble shoot for most electrical personnel.**

Please type up your findings and submit to the instructor. Please repeat the question along with your answers.





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PAGE	4 of 4

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