ATI InstaTool™ Applications Note

ATI Instabus™ technology enables non-Quick Connect DeviceNet™ scanners to read end-of-arm tooling (EOAT) I/O within 1 second of tool coupling utilizing off-the-shelf DeviceNet™ I/O devices. This is accomplished with streamlined communications to the tooling and the creation of the ATI Instabus™ sub-network on the EOAT.

Only ATI-approved, off-the-shelf devices may be used on the EOAT. ATI product manuals for the specific control module being used contain a list of these approved devices.

Because of the streamlined communication, Instabus™ only supports certain combinations of I/O devices. *For example, you can not use an 8I/8O combination block with a 16O output block on the same EOAT.* The total amount of I/O supported on the EOAT is 160 points (or bits) with 20 nodes maximum. Refer to the following chart for possible combinations:

	Input-Only Devices		**Combination Input/Output or Output-Only Devices**	
Configuration	**8 Bits Produced Per Node (Input-Only)**	**16 Bits Produced Per Node (Input-Only)**	**16 Bits Consumed Per Node (Output-Only)**	**8 Bits Produced/8 Bits Consumed Per Node (Combination Input/Output) ***
1 **	Up to 20 nodes	None	Up to 7 nodes	None
2 **	Up to 20 nodes	None	None	Up to 7 nodes
3 **	None	Up to 10 nodes	Up to 7 nodes	None
4 **	None	Up to 10 nodes	None	Up to 7 nodes

* 4 Bits Produced/4 Bits Consumed Per Node (Combination Input/Output) devices are also supported; however, their bitmaps will be byte aligned with 1 byte allocated for produced data and 1 byte allocated for consumed data per node in the master-side bitmap. If the I/O coming from the I/O block is in its low nibble, the upper nibble will be ignored, i.e. the 4 bits allocated to the node will occupy the low nibble of its byte in the master-side bitmap. If the I/O coming from the I/O block is in its high nibble, the lower nibble will be ignored, i.e. the 4 bits allocated to the node will occupy the high nibble of its byte in the master-side bitmap.

** A maximum of 20 nodes total may be used per configuration.

An additional configuration is also supported. A single large I/O DeviceNet™ device (up to 160 bits produced and 160 bits consumed) may be used on the Instabus™. No devices other than the large I/O device can be used in this mode of operation. Among the devices supported include modular valve manifolds, for example. Only ATI-approved large I/O devices may be used. See ATI product literature for the control module being used for a list of approved devices.