

March 30, 2011

Finding the replacement modules.

The first step to replacing existing installed SixTRAK, EtherTRAK or RemoteTRAK modules is map the existing I/O count in the legacy modules to EtherTRAK-2 modules. Look at the total I/O count and break that out into the EtherTRAK-2 product line. Using the legacy module to EtherTRAK-2 replacement matrix below will help with this selection. For example, two ST-AI-20M-16H modules could be replaced by one E2-32AI20M-D module. Please see the examples below. In the below example moving to EtherTRAK-2 modules will be a more than 20% savings in total module cost.

SixTRAK Model	I/O count		EtherTRAK-2 replacement
ST-AI-20M-016H ST-AI-20M-016H	32 Analog Inputs	→	E2-32AI20M-D
ST-DI-024-16H ST-DI-024-16H	32 Discrete Inputs	→	E2-32DI24-D
ST-AO-20M-04F	4 Analog Outputs	→	E2-8AO20M-D
ST-DO-DC2-16H ST-DO-DC2-16H	32 Discrete Outputs	→	E2-32DO24-D
RemoteTRAK			
RemoteTRAK	I/O count		EtherTRAK-2 replacement
RM-16AI2-H	16 Analog Inputs	→	E2-32AI20M-D
RM-8DI2-U RM-8DI2-U	16 Discrete Inputs	→	E2-16DI24-D
RM-8AO2-F	8 Analog Outputs	→	E2-8AO20M-D
RM-16DO2-H	16 Discrete Outputs	→	E2-32DO24-D
EtherTRAK			
EtherTRAK	I/O count		EtherTRAK-2 replacement
ET-8INS-U ET-8INS-U	16 Analog Inputs	→	E2-16ISOTC-D or E2-16ISO20M-D
ET-16DI2-H	24 Discrete Inputs	→	E2-32DI24-D
ET-8DI2-8DO2-H	8 Discrete Outputs	→	E2-32DO24-D
ET-8AI2-4AO2-H	8 Analog Inputs 4 Analog Outputs	→	E2-16AI-8AO-D

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EtherTRAK-2 Replacement Matrix

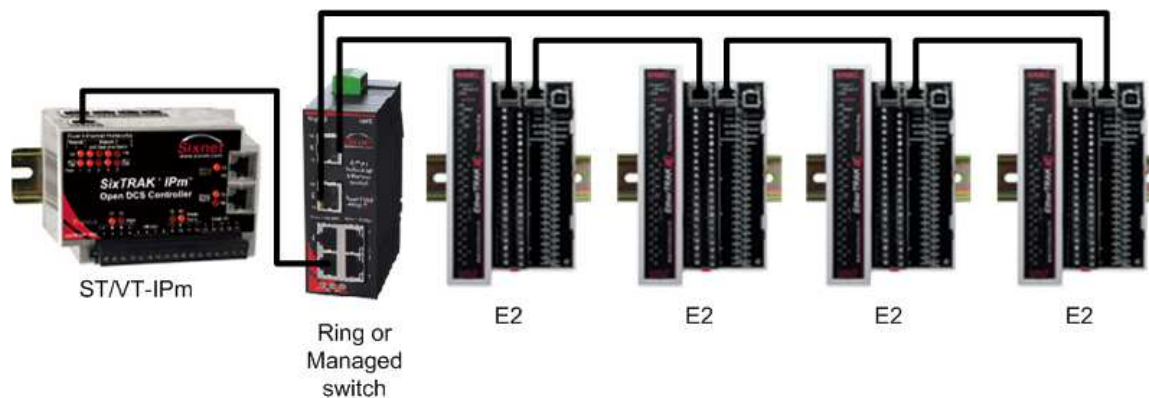
Legacy module list					EtherTRAK-2 replacement				
SixTRAK	DI	DO	AI	AO	EtherTRAK-2	DI	DO	AI	AO
ST-DI-024-08F/U	8	0	0	0	E2-16DI24-D	32	0	0	0
ST-DI-120-08F/U	8	0	0	0	E2-16DIAC-D	16	0	0	0
ST-DI-024-16H	16	0	0	0	E2-32DI24-D	32	0	0	0
ST-MIX16880-D	16	8	8	0	E2-MIX24880-D	24	8	8	0
ST-MIX12884-D	12	8	8	4	E2-MIX248820-D	24	8	8	2
ST-DI-024-32D	32	0	0	0	E2-32DI24-D	32	0	0	0
ST-DI-CNT-08U	8	0	0	0	E2-16CNT-D (Coming Soon!)	16	0	0	0
ST-DO-DC1-08F/U	0	8	0	0	E2-16DO24-D	0	16	0	0
ST-DO-DC2-16H	0	16	0	0	E2-32DO24-D	0	32	0	0
ST-DO-RLY-06U	0	6	0	0	E2-16DORLY-D	0	16	0	0
ST-AI-INS-08U	0	0	8	0	E2-16ISOTC/ 16ISO20M-D	0	0	16	0
ST-AI-20M-08F	0	0	8	0	E2-32AI20M-D	0	0	32	0
ST-AI-20M-16H	0	0	8	0	E2-32AI20M-D	0	0	32	0
ST-AI-10V-08F	0	0	8	0	E2-32AI10V-D	0	0	32	0
ST-AI-RTD-06U	0	0	6	0	E2-10RTD -D	0	0	10	0
ST-AI-RTC-06U	0	0	6	0	Special Request	0	0	10	0
ST-AO-20M-04F	0	0	0	4	E2-8AO20M-D	0	0	0	8
ST-AO-20M-08F	0	0	0	8	E2-8AO20M-D	0	0	0	8
RemoteTRAK	DI	DO	AI	AO	EtherTRAK-2	DI	DO	AI	AO
RM-8DI2-F	8	0	0	0	E2-16DI24-D	16	0	0	0
RM-8DI2-U	8	0	0	0	E2-16DI24-D	16	0	0	0
RM-16DI2-H	16	0	0	0	E2-32DI24-D	32	0	0	0
RM-8DO2-F	0	8	0	0	E2-16DO24-D	0	16	0	0
RM-16DO2-H	0	16	0	0	E2-32DO24-D	0	32	0	0
RM-8AI2-F	0	0	8	0	E2-32AI20M-D	0	0	32	0
RM-16AI2-H	0	0	16	0	E2-32AI20M-D	0	0	32	0
RM-8INS-U	0	0	8	0	E2-16ISOTC/ISO20M-D	0	0	16	0
RM-4AO2-F	0	0	0	4	E2-8AO20M-D	0	0	0	8
RM-8AO2-F	0	0	0	8	E2-8AO20M-D	0	0	0	8
RM-4DI2-4AI2-U	4	0	4	0	E2-MIX24880-D	16	0	32	0
RM-4DI2-4DO2-U	4	4	0	0	E2-MIX24880-D	16	32	0	0
RM-RTU-8440-F	8	4	4	0	E2-MIX24880-D	16	8	8	0
EtherTRAK	DI	DO	AI	AO	EtherTRAK-2	DI	DO	AI	AO
ET-16DI2-H	16	0	0	0	E2-32DI24-D	32	0	0	0
ET-16DO2-H	0	16	0	0	E2-32DO24-D	0	32	0	0
ET-16AI2-H	0	0	16	0	E2-32AI20M-D	0	0	32	0
ET-8INS-U	0	0	8	0	E2-16ISOTC/ISO20M-D	0	0	16	0
ET-8CNT-U	8	0	0	0	E2-16DICNT-D (coming soon!)	16	0	0	0
ET-8DI2-8DO2-H	8	8	0	0	E2-MIX24880-D	24	8	8	0
ET-8DI2-8AI2-H	8	0	8	0	E2-MIX24880-D	24	8	8	0
ET-8AI2-4AO2-H	0	0	8	4	E2-16AI-8AO-D	0	0	16	8
ET-4RTD-4DI2-U	4	0	4	0	E2-10RTD/E2-16DI24-D	16	0	10	0
ET-MIX24880-D	24	8	8	0	E2-MIX24880-D	24	8	8	0

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Network Planning.

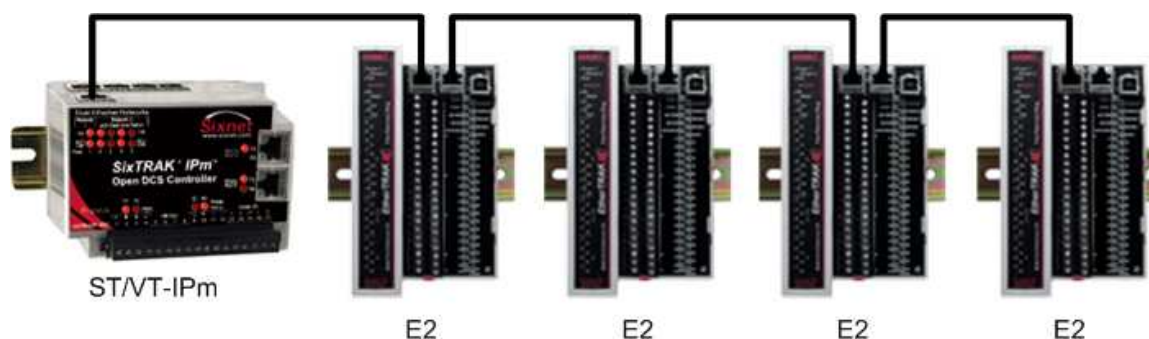
The next step to look at is how the EtherTRAK-2 modules will be connected in the Ethernet network. The EtherTRAK-2 modules have four different network configuration options. Consider the network requirements when considering which options. The four basic options are defined below with benefits. The options below are not meant to describe in detail the network of every application. Instead this information should be used as a guideline to select the best approach for the individual application. For more information on configuration of these options in the EtherTRAK-2 please see the EtherTRAK-2 user manual.

Network option 1 – Fault tolerant ring



The EtherTRAK-2s in the “ring” mode and coupled with a Sixnet switch with ring algorithm have the capability of being connected in a fault tolerant ring. Any one Ethernet connection can be cut or disconnected and the communication will recover as quickly as 5ms per hop. This option offers the best in fault recovery and performance.

Network option 2 – Ethernet pass-thru (switch elimination mode)

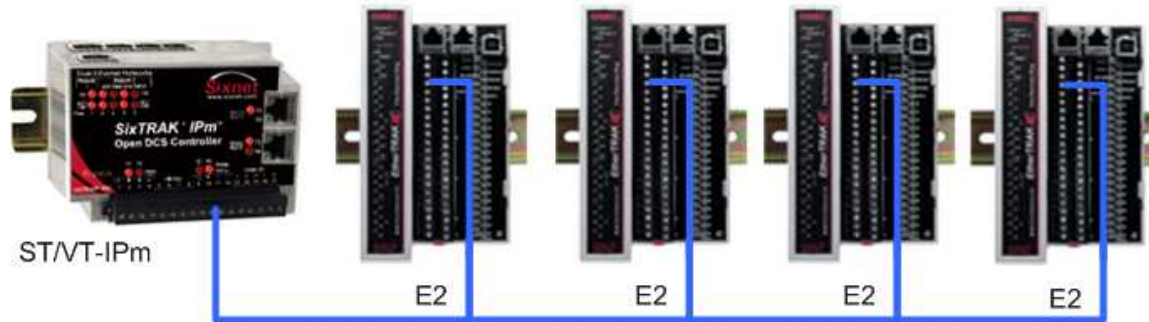


The two Ethernet ports on the EtherTRAK-2 can be configured into a two port switch (pass-thru mode). The EtherTRAK-2 modules are daisy chained to create a string of modules. This option is the most economical, but does not support redundant Ethernet

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links. When a cable is disconnected or EtherTRAK-2s logic module is disconnected the modules in line after the disconnection will not be accessible through the Ethernet network.

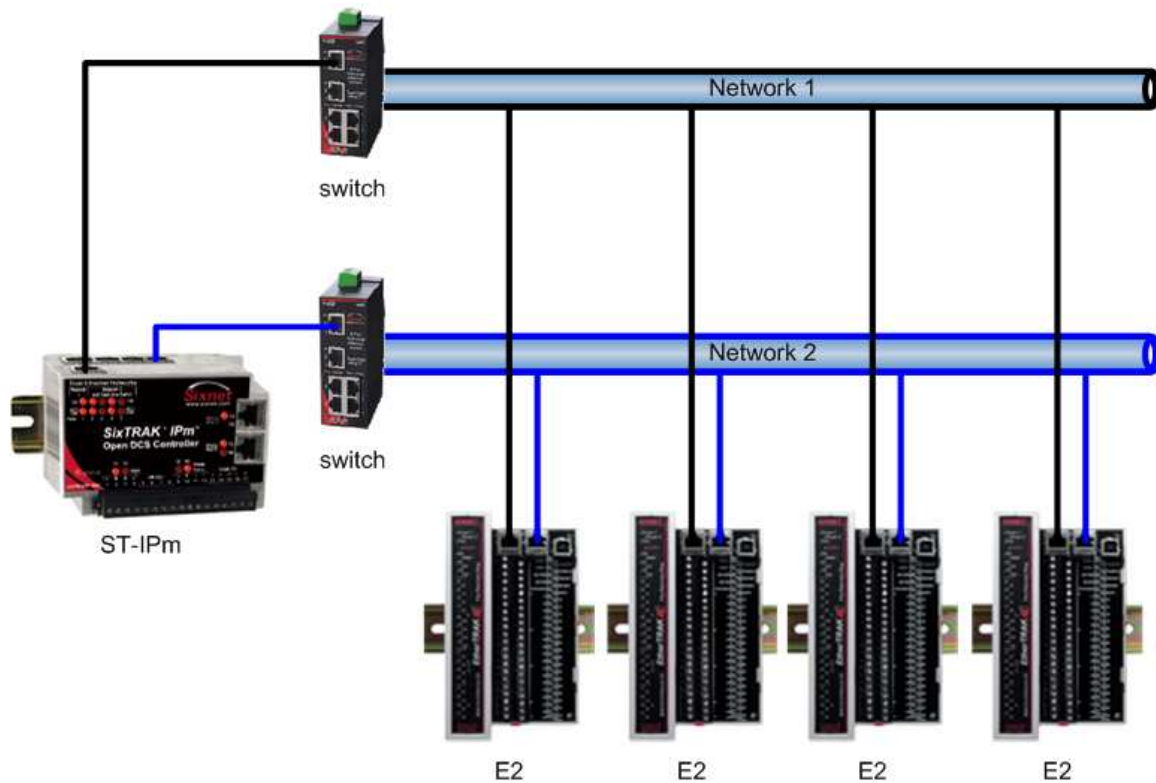
Network 3 option – serial port daisy chain



EtherTRAK-2s support RS485 master and slave modes. When configured for slave the configuration above may be used. This network configuration is economical because no extra equipment is used. There is no support for redundant communications, so when the RS485 cable is disconnected the modules down the line will not be accessible.

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Network 4 option – two network



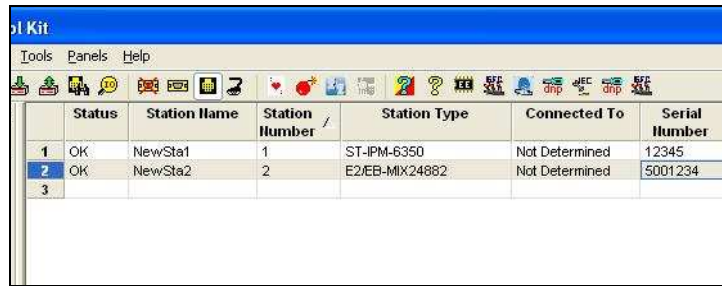
This configuration utilizes the two network mode on the EtherTRAK-2. Two network modes put each of the Ethernet ports in separate subnets. This type of configuration when connected to a RTU or computer with multiple network interfaces allows for a redundant connection. When the connection from one network is disconnected the second network will take over.

Configuration.

There are some differences between the SixTRAK and EtherTRAK-2 module within the SIXNET I/O Tool Kit configuration. The below explains how to add EtherTRAK-2 modules to an IPm controller.

EtherTRAK-2's are added to Sixnet project file as a separate station. In figure1 below an ST-IPm-6350 and the E-MIX24882-D are pictured in the same project file.

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	Status	Station Name	Station Number	Station Type	Connected To	Serial Number
1	OK	NewSta1	1	ST-IPM-6350	Not Determined	12345
2	OK	NewSta2	2	E2/EB-MIX24882	Not Determined	5001234
3						

Figure 1

Since they are configured as two separate devices communication between the devices must be configured. To do this; create a remote I/O link module in the I/O modules tab of the IPm controller. Figure 2 shown below shows how the remote I/O link module can be added by clicking the “Add New Module” button in the I/O modules tab.

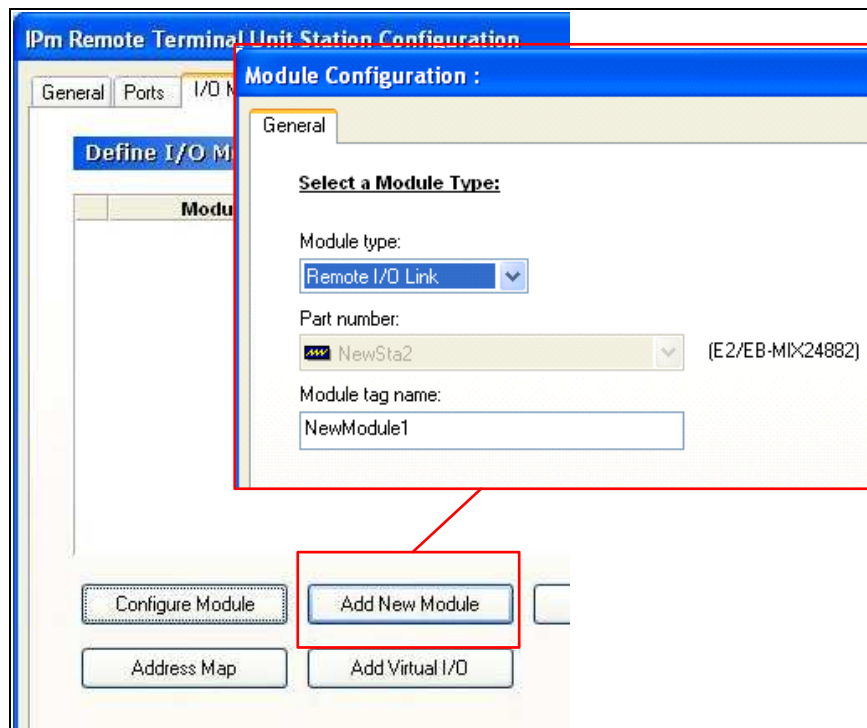


Figure 2

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Once selected the Remote I/O Link wizard will step through the process of configuring the EtherTRAK-2 module. In the first window of the wizard a name should be configured (See figure 3).



Figure 3

In the remote I/O link options tab the communication parameters can be defined. The typical set up will be using UDP or TCP/IP and the EtherTRAK-2's destination IP (See Figure 4).

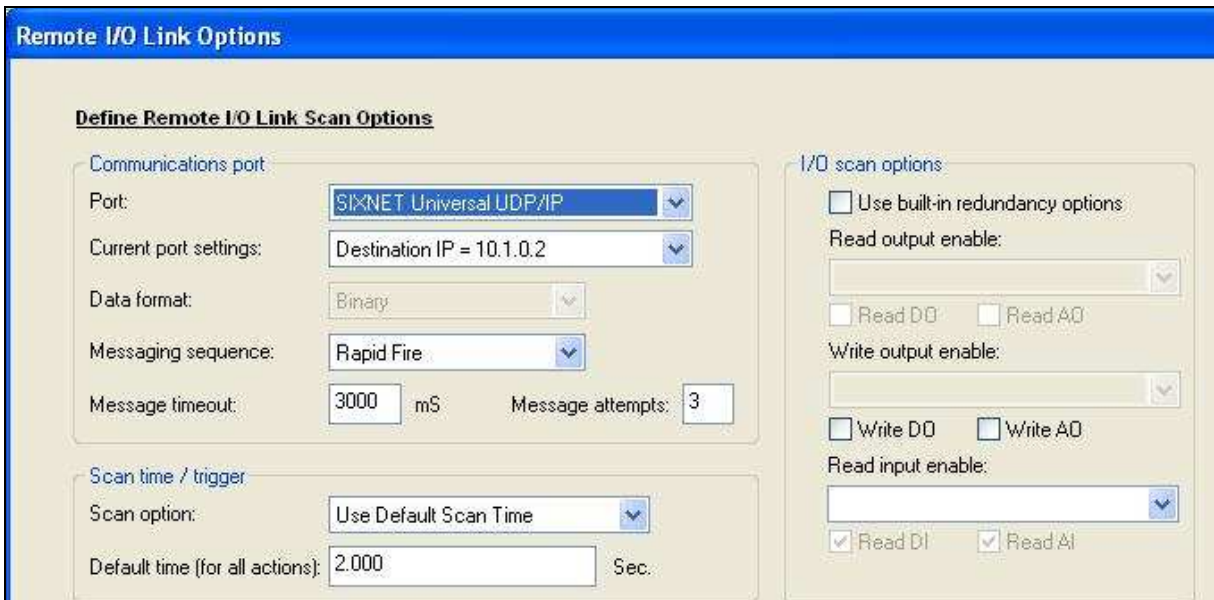


Figure 4

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Discrete options and analog options are parameters that define which registers in the IPm controller will be used (See Figure 5 and 6).

Figure 5

Figure 6

The discrete and analog tags windows are where the register tag names are configured. If the tags were already defined in the EtherTRAK-2 module configuration, then they can be imported into the IPm configuration using the import remote I/O tags button (See Figure 7 and 8).

I/O Type	I/O Address	I/O Tag Name	OFF Message	ON Message	Feature
D IN	X0				N/A
D IN	X1				N/A
D IN	X2				N/A
D IN	X3				N/A
D IN	X4				N/A
D IN	X5				N/A
D IN	X6				N/A
D IN	X7				N/A
D IN	X8				N/A
D IN	X9				N/A
D IN	X10				N/A
D IN	X11				N/A
D IN	X12				N/A
D IN	X13				N/A
D IN	X14				N/A
D IN	X15				N/A
D IN	X16				N/A
D IN	X17				N/A

Figure 7

I/O Type	I/O Address	I/O Tag Name	Range	Feature 1	Feature 2
A IN	AX0		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
A IN	AX1		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
A IN	AX2		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
A IN	AX3		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
A IN	AX4		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
A IN	AX5		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
A IN	AX6		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
A IN	AX7		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
CNT	AX8		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
CNT	AX9		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
CNT	AX10		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
CNT	AX11		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
CNT	AX12		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
CNT	AX13		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)
CNT	AX14		N/A (Virtual)	N/A (Virtual)	N/A (Virtual)

Figure 8

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