

System Trace®

Application Note:

SystemTrace® Electrical Isolation

Introduction

An ITCN customer needed to isolate their SystemTrace® module. Due to the requirement of electrically isolated chassis, several measures were required to ensure the appropriate electrical isolation between the SystemTrace VME cards and the chassis as well as to external ground. Further isolation was required to isolate the VME cards from one another when using the TSL time synchronization cabling.

The areas of isolation concern are:

- External Power Supply
- Front Panel isolation
- ST-201 Software
- TSL isolation
- Ethernet isolation

External Power Supply

The standard external power supply available with SystemTrace does not provide adequate input to output isolation. For this reason an alternate power supply was selected. Since this power supply is to be remotely mounted custom cabling is required. This section provides the details on the custom power supply and cabling.

The provided power supply is Acopian model #A5MT900. The output cable provided for the power supply to connect to the ST-201 card is provided in a 25 foot length. The power cable part number is ITCN 05-05518. The input cable for the power supply is a standard modular, 3 conductor, 18 AWG power cord. No ITCN part number is associated with this cable. Connection diagrams are included at the end of this application note.

TSL Isolation

The TSL isolation is accomplished by a special isolator and cables manufactured by ITCN.

TSL Isolator

The TSL Isolators provide galvanic isolation for the signals between multiple SystemTrace VME cards. The isolation module is described in the TSL Isolator user manual (ITCN 23-05505) it is delivered on a CD with the TSL Isolator (ITCN 01-05495). Each of the two halves of circuitry in these boxes are powered by the ST-201 through the TSL Isolator cables.

TSL Isolator Cables

The Isolator cables provide interconnection between the SystemTrace® Isolator connectors and the TSL Isolator box. These cables are slightly different than the standard TSL cables. These cables have wires that connect directly to the 5vdc return line instead of using a current limiting resistor. TSL Isolator cables are identified by a blue band on the cable ends and the ITCN part numbers of: 05-05501 (6'), 05-05521 (15'), and 05-05522 (30').

TSL Terminators

The TSL Terminator assemblies required a modification for use with the Isolation circuits. The updated ITCN part number for the TSL Terminators is 06-04358A. This terminator replaces the prior for use in all SystemTrace applications with or without TSL isolators.

Front Panel Isolation

The ST-201 front panel is directly connected to the 5v return plane on the circuit board. The target system chassis, however, does not connect the 5vdc return for the backplane to the chassis framing. Thus, the ST-201 front panel can not connect the two. Front panel isolation is accomplished by extending the face plate of the card from the chassis by 20mm. This is performed by using an 80mm extender card. 60mm extenders would have been required to allow the SystemTrace cards to mount appropriately, so an 80mm card was selected to provide the additional separation between the chassis and the SystemTrace front panel.

80mm Extender

The 80mm extender provided is DAWN VME model VMEXB80D part number 06-1003075.

Ethernet Isolation

Ethernet isolation is accomplished by a modification to the RJ-45 Ethernet connector on the ST-201 front panel. This connector had pin 7 removed effectively removing a ground reference pin from the circuit board.

ST-201 Software

The ST-201 VME monitor requires an updated software load to operate properly with the TSL Isolators. The updated bit file is ITCN part number 92-04805A.bit.

Contact ITCN's expert sales staff for detailed information about our test equipment and services at 800-439-4039, or visit our website at www.itcninc.com.

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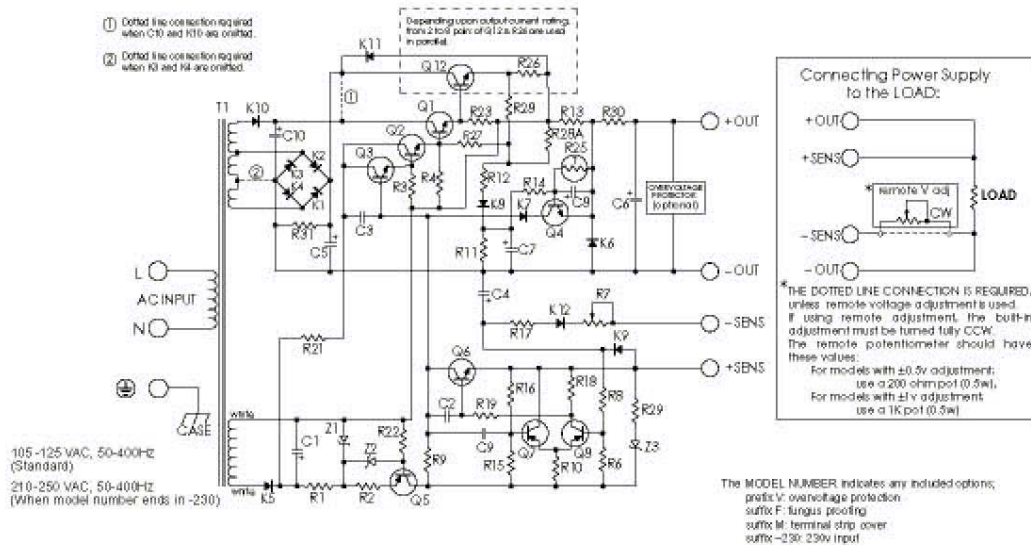


Appendix
Diagrams

Acopian Model #A5MT900

Acopian SERIES A POWER SUPPLIES

Acopian modular power supplies are ideally suited to all applications where compact, high performance and high reliability power supplies are required. Modular construction and barrier strip interconnections provide mounting and wiring convenience and flexibility. All models have floating outputs which may be used floating, with either the positive or negative side grounded, and/or in series with another supply(ies). All have built-in short circuit protection and provision for remote sensing of output voltage at the load for applications where voltage regulation is critical. They are conservatively rated for operation at ambient temperatures to +71°C.

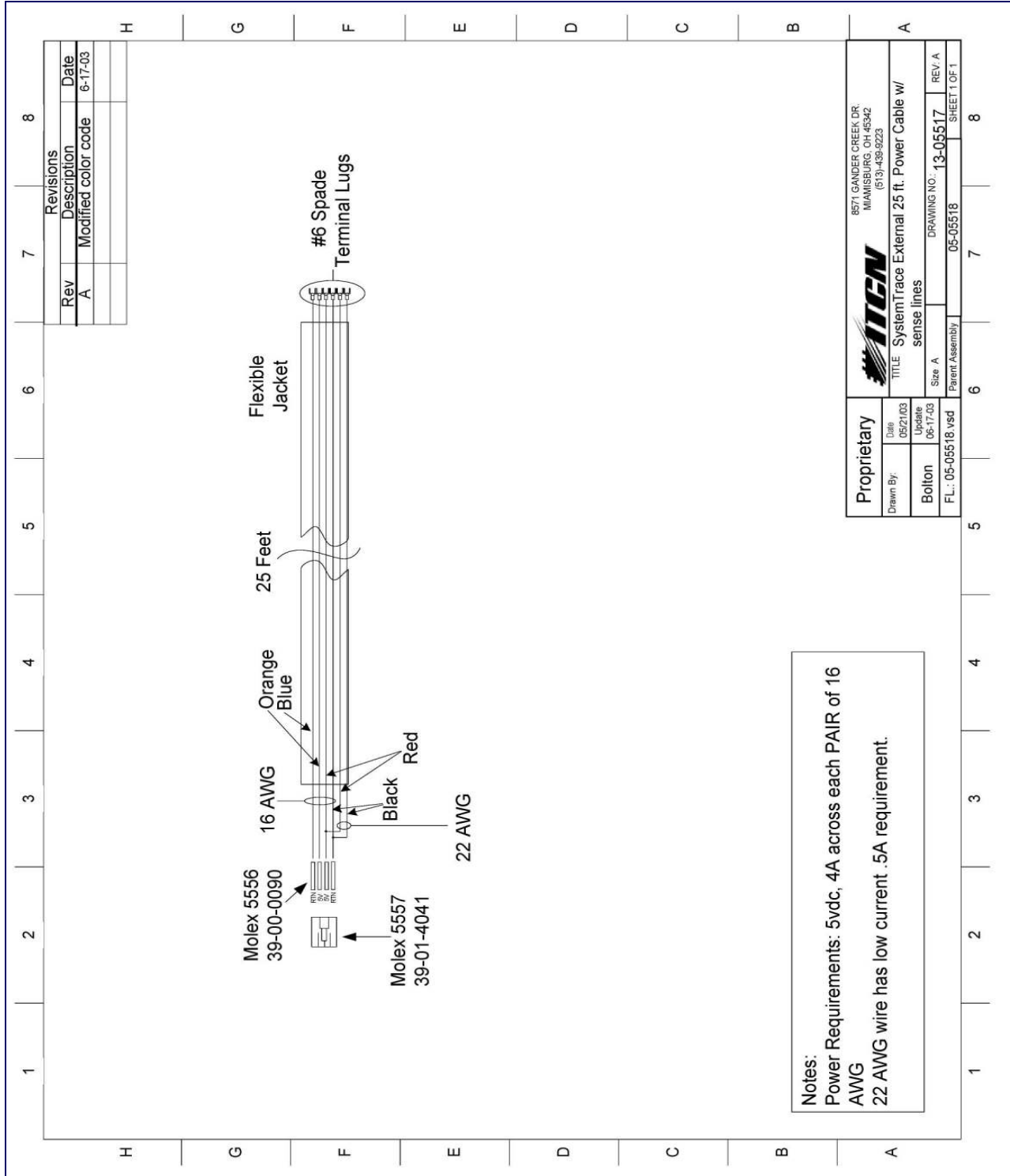


CAUTION: To provide protection from risk of fire, include in the AC input wiring a 250V time-delay fuse with the amp rating listed below: (These fuse ratings are for 115V input models only; contact factory for fuse ratings for 230V input models.)

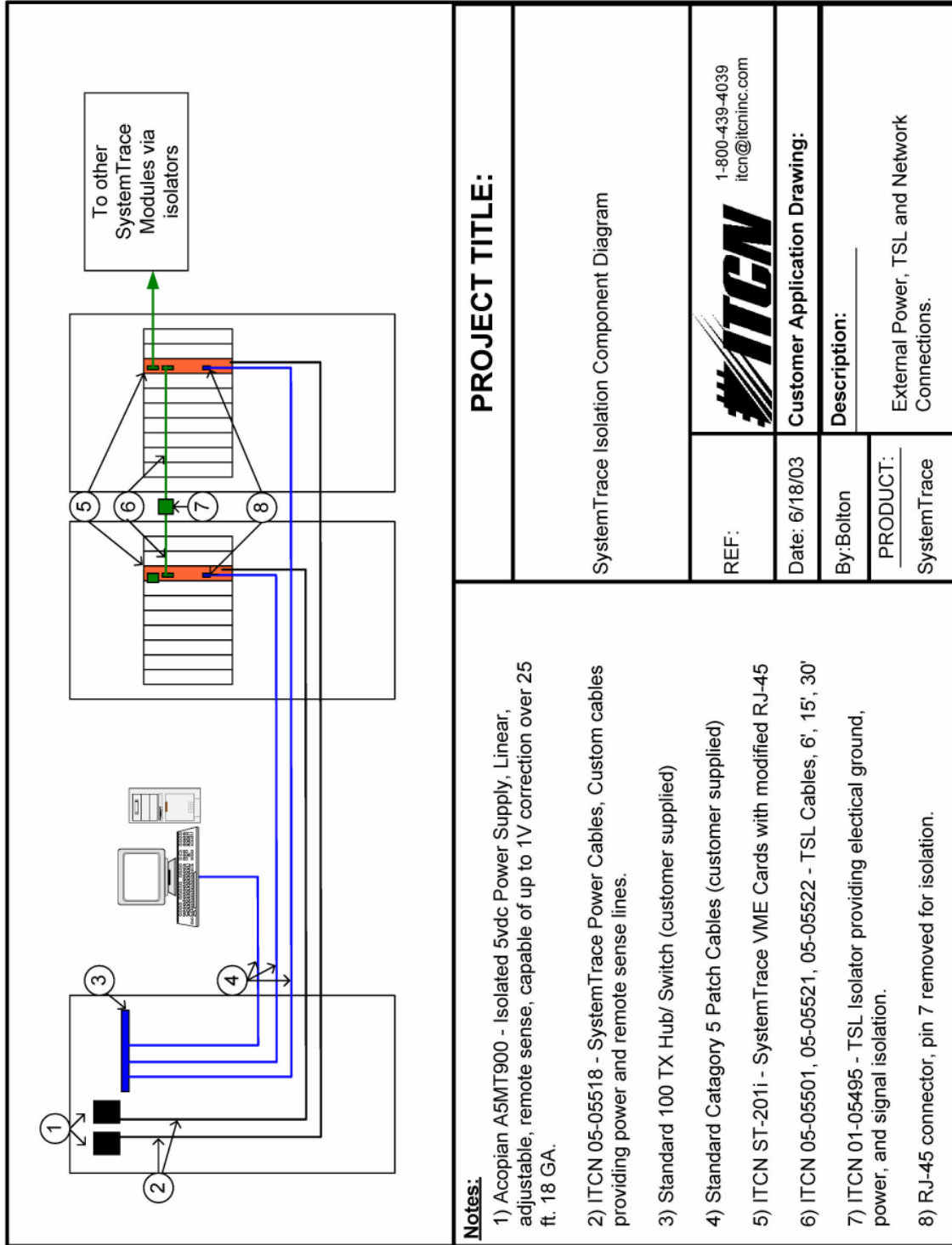
MODEL	Fuse size	MODEL	Fuse size	MODEL	Fuse size	MODEL	Fuse size	MODEL	Fuse size
A1 5MT600	8/10	A6MT1100	2-1/2	A15MT300	1-1/4	A28H1400	8	A75MT60	1
A1 5MT900	1-1/4	A6H1600	2-1/2	A15MT550	2	A30MT210	1-1/2	A75MT100	1-1/2
A1 5MT1200	1-1/2	A6H2100	4	A15MT800	3	A30MT300	2	A75MT200	3
A1 5H2200	3	A6H2800	5	A15H1150	4	A30MT500	3	A75HT400	6-1/4
A1 5H3200	4	A7MT500	1-1/4	A15H1500	6-1/4	A30H750	5	A75HT660	8
A2MT600	8/10	A7MT800	2	A15H1900	6-1/4	A30H1000	6-1/4	A80MT50	1-1/4
A2MT1200	2	A7MT1000	2-1/2	A16MT650	2-1/2	A30H1400	8	A80MT80	1-1/2
A3MT600	1	A8MT500	1-1/4	A18MT210	1	A32MT180	1-1/4	A80MT150	3
A3MT900	1-1/2	A8MT800	2	A18MT450	2	A32MT250	2	A80HT330	6-1/4
A3MT1200	2	A8MT1050	2-1/2	A18MT650	3	A32HT900	6-1/4	A80HT440	8
A3H1700	2-1/2	A8H2000	5	A18H1400	6-1/4	A36MT130	1	A100M70	2
A3H2000	2-1/2	A8H2800	6-1/4	A18H1800	8	A36MT230	2	A100MT130	3
A3H3000	4	A9MT1000	2-1/2	A20MT200	1	A36MT400	3	A100HT300	6-1/4
A3 3MT600	1	A10MT450	1-1/2	A20MT400	2	A36HT800	6-1/4	A100HT400	8
A3 3MT800	1-1/2	A10MT750	2	A20MT600	3	A36HT1100	8	A120M60	1-1/4
A3 3MT1200	2	A10MT1000	3	A20H60	4	A48MT120	1-1/2	A120MT120	3
A3 3H1700	2-1/2	A10H1400	4	A20H1300	6-1/4	A48MT180	2	A120HT250	6-1/4
A3 3H2200	3	A10H1800	5	A20H1600	8	A48MT300	3	A120HT350	8
A3 3H3200	5	A10H2500	6-1/4	A24MT210	1-1/4	A48HT600	6-1/4	A125MT150	1-1/4
A5MT510	1	A12MT400	1-1/2	A24MT350	2	A48HT850	8	A125MT120	3
A5MT600	1-1/4	A12MT650	2	A24MT550	3	A50MT100	1-1/4	A125HT250	6-1/4
A5MT900	2	A12MT900	3	A24H60	4	A50MT150	2	A125HT350	8
A5MT1200	2-1/2	A12H1300	4	A24H1200	6-1/4	A50MT270	3	A150MT100	3
A5H1700	3	A12H1700	5	A24H1500	8	A50HT600	6-1/4	A150HT300	8
A5H2200	4	A12H2100	6-1/4	A28MT210	1-1/2	A50HT800	8		
A5H3200	6-1/4	A13MT350	1-1/4	A28MT300	2	A60MT85	1-1/4		
A6MT490	1	A13MT800	3	A28MT500	3	A60MT120	2		
A6MT600	1-1/4	A14MT300	1-1/4	A28H600	5	A60MT250	3		
A6MT850	2	A14MT800	3	A28H1100	6-1/4	A60HT500	6-1/4		
						A60HT700	8		



External 25 ft Power Cable w/Sense Lines



Connection Diagram



Notes:

- 1) Acopian A5MT900 - Isolated 5vdc Power Supply, Linear, adjustable, remote sense, capable of up to 1V correction over 25 ft. 18 GA.
- 2) ITCN 05-05518 - SystemTrace Power Cables, Custom cables providing power and remote sense lines.
- 3) Standard 100 TX Hub/ Switch (customer supplied)
- 4) Standard Category 5 Patch Cables (customer supplied)
- 5) ITCN ST-201i - SystemTrace VME Cards with modified RJ-45
- 6) ITCN 05-05501, 05-05521, 05-05522 - TSL Cables, 6', 15', 30'
- 7) ITCN 01-05495 - TSL Isolator providing electrical ground, power, and signal isolation.
- 8) RJ-45 connector, pin 7 removed for isolation.