Approvals

Marshalled Termination Assembly	Part Numbers	Agency Approvals
Analog Input 8-Channel 16 bit	6ES7650-1AA50-2XX0	CE EMC in accordance with EN61000-6-2 EN61000-6-4 ATEX in accordance with EN600079-0 EN600079-15 Safety: 8) EN 61131-2:2007 FM Approved: FM3600, FM3611, FM3810 Class I, Division 2, Groups A,B,C,D; Temperature code T4A at Ta = 60°C Class I, Zone 2, Group IIC; Temperature code T4 at Ta = 60°C cULus - UL508, CSA C22.2 No.142 cULus haz.loc. - UL1604, CSA C22.2 No.213 11) ISA 12.12.01, CSA C22.2 No.213 KEMA ATEX in accordance with EN 60079-15: 2005 and EN 60079-0 : 2006 II 3 G Ex nA II T4 T/C & RTD MTA II 3 G Ex nC IIC T4 All others C-Tick Temperature Range -25 to 60°C 2) TÜV (Functional Safety) IEC61508 (SIL3, Relay MTA's SIL 2) 3) Accessory TÜV when used with any Failsafe MTA 4) Accessory - used with F Analog Input 5) Accessory - used with F Analog Input MTA 6) UL60079-15 instead of UL1604 7) Class I, Division 2, Groups A,B,C,D; Temperature code T4 9) Not for use on MTAs with covers 10) See manual for special temperature restrictions
	6ES7650-1AA51-2XX0	
	6ES7650-1AA52-2XX0	
Analog Output 8-Channel 12 bit	6ES7650-1AB50-2XX0	
	6ES7650-1AB51-2XX0	
RTD Input 8-Channel	6ES7650-1AG50-2XX0	
	6ES7650-1AG51-2XX0	
TC Input 8-Channel	6ES7650-1AF50-2XX0	
	6ES7650-1AF51-2XX0	
Discrete Input 16-Channel 24 VDC	6ES7650-1AC10-3XX0	
	6ES7650-1AC11-3XX0	
F Relay Output 2) 10-Channel 24-150 VDC 120-230 VAC	6ES7650-1AM30-6XX0 6) 7) 10)	
	6ES7650-1AM31-6XX0 6) 7)10)	
Relay Output 16-Channel 24-150 VDC 120-230 VAC	6ES7650-1AM30-3XX0 6) 7) 10)	
F Analog Input 2) 6-Channel Failsafe	6ES7650-1AH50-5XX0	
	6ES7650-1AH51-5XX0	
F Analog Input HART 2) 6-Channel Failsafe	6ES7650-1AH61-5XX0	
	6ES7650-1AH62-5XX0 11)	
F Discrete Input 2) 12/24-Channel Failsafe 24 VDC	6ES7650-1AK10-7XX0	
	6ES7650-1AK11-7XX0	
F Discrete Output 2) 10-Channel Failsafe 24 VDC	6ES7650-1AL10-6XX0	
	6ES7650-1AL11-6XX0	
Power Monitor Board 3)	6ES7650-1BA02-0XX0 7)	
5.6V Diode Board 5)	6ES7650-1BB50-0XX0 9)	
	6ES7650-1BB51-0XX0 9)	
6.2V Diode Board 5)	6ES7650-1BC50-0XX0	
	6ES7650-1BC51-0XX0	
FET Switch Adapter 4) 5)	6ES7650-1BD50-0XX0	
	6ES7650-1BD51-0XX0	
Discrete Output 16-Channel 24 VDC	6ES7650-1AD10-2XX0	
	6ES7650-1AD11-2XX0 11)	
HART Analog Input 8-Channel	6ES7650-1AA61-2XX0 7)	
HART Analog Output 8-Channel	6ES7650-1AB61-2XX0 7)	

9.15 FET Switch Adapter

Part No. 6ES7650-1BD51-0XX0 or 6ES7650-1BD50-0XX0

9.15.1 Description

This section contains installation information and requirements for the Siemens FET Switch Adapter. The FET Switch Adapter (6ES7650-1BD51-0XX0 or 6ES7650-1BD50-0XX0) is used on the ET200M Marshalled Termination Assembly (MTA) (6ES7650-1AH51-5XX0 or 6ES7650-1AH50-5XX0), which interfaces with the Siemens ET 200M 6-Channel F Analog Input Module (6ES7 336-1HE00-0AB0, E-Stand 4 or higher).

Note: The two part numbers are interchangeable.

9.15.2 Operation

The FET Switch Adapter contains optically coupled electronic switches powered by the FAI modules VS supply. These switches break the input signal path and Mana when power is lost on the FAI module or if the power supply in the FAI module fails. See Figure 9–16.

This opening in the input signal path accomplishes two things:

- First, if the power fails, all the electronics in the module are removed from the circuit so that they cannot affect the other, still active, module.
- Second, when power is restored and the switches close, the FAI module re-integrates correctly into the configuration without causing bumps or process fluctuations.

9.15.3 Installation Requirements

See Section 2, *Installation*, before performing any installation and observe all warnings

The FET Switch Adapter is installed between **J1** on the MTA and the interconnecting cable to the FAI Module. It should be screwed down to prevent vibration or stress from disconnecting it from the MTA.

9.15.4 Maintenance

See Section 3, *Maintenance*, before performing any maintenance and observe all warnings

Under normal operation the switches in the FET Switch Adapter are energized and will conduct the input signal from the MTA to the FAI module input circuitry. Periodic maintenance of the FAI modules requires that the FET Switch Adapter operate correctly, so it should be tested when the FAI module is removed from service.

Figure 9–13 through Figure 9–16 show the FET Switch Adapter test setups.

Figure 9–13 5.6V FET Switch adapter Opto LED Test Setup

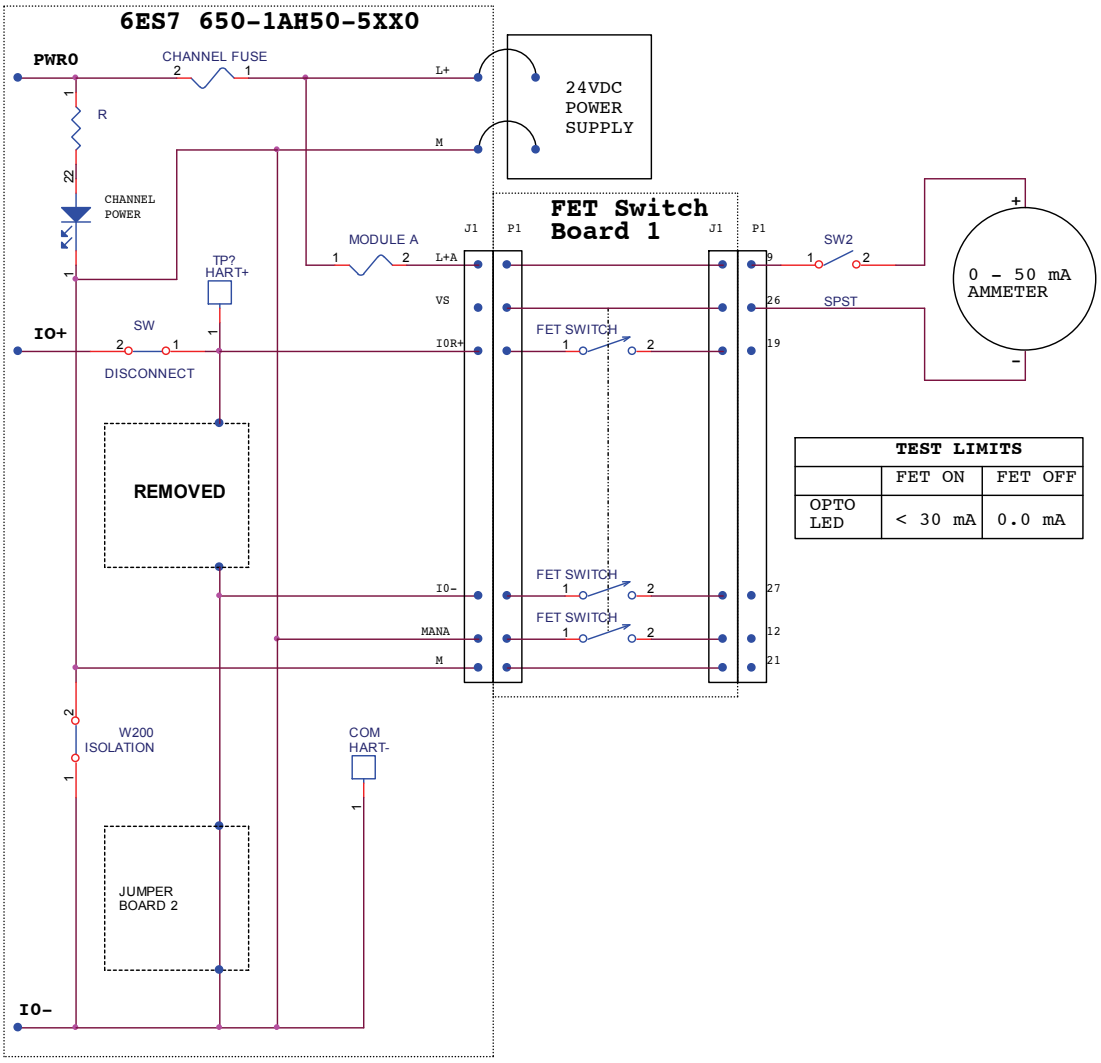
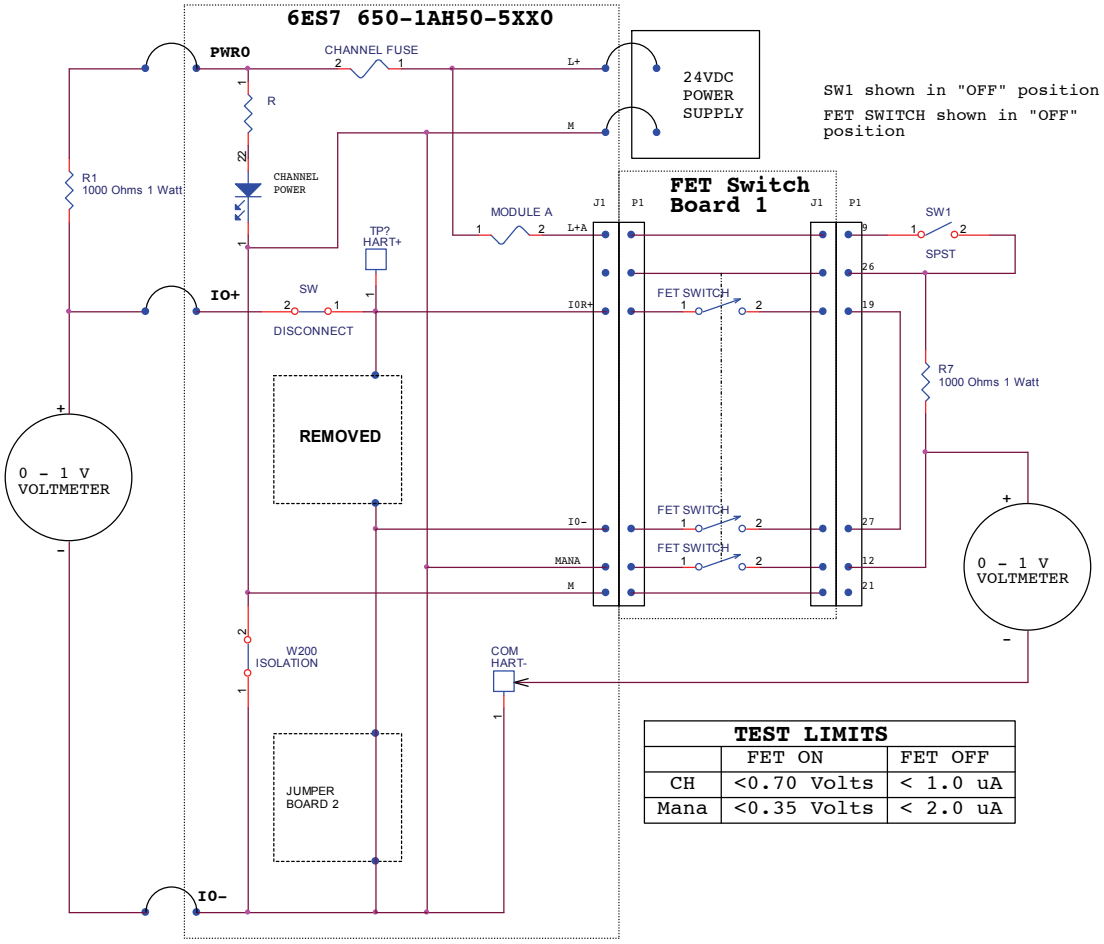


Figure 9–14 FET Switch Adapter FET ON Test Setup

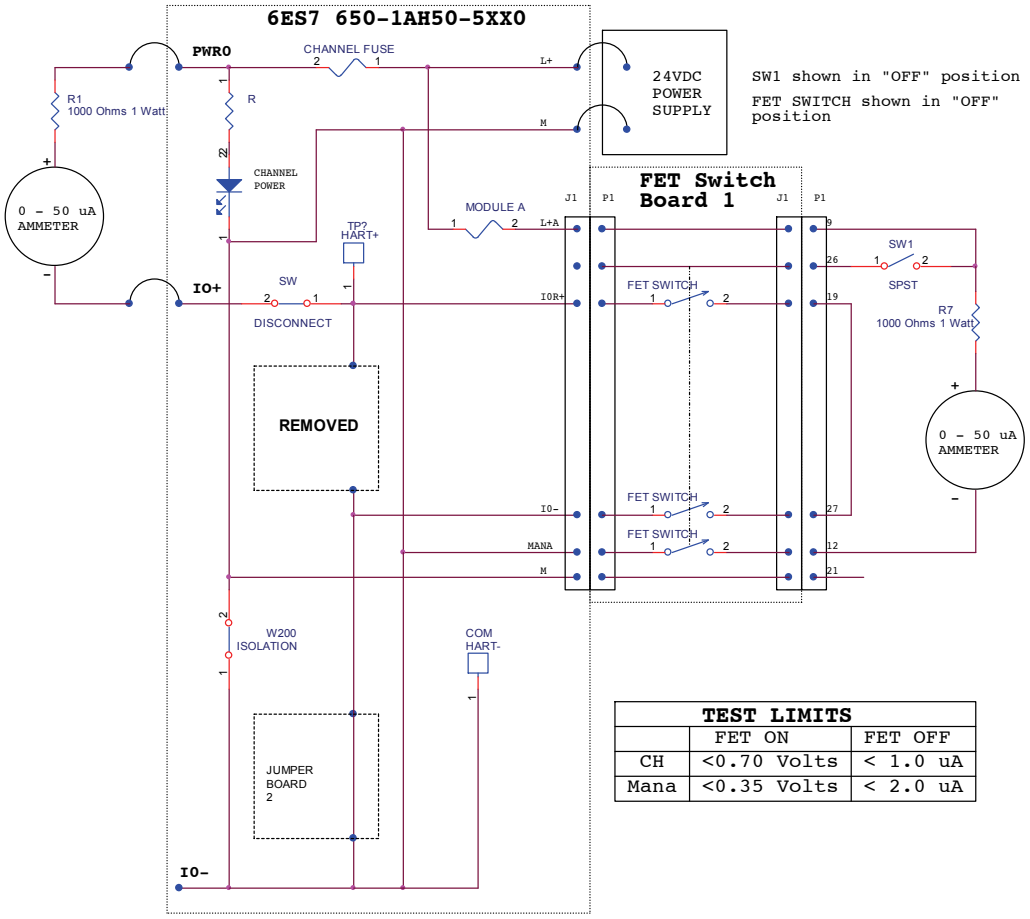


TEST LIMITS		
	FET ON	FET OFF
CH	<0.70 Volts	< 1.0 uA
Mana	<0.35 Volts	< 2.0 uA

FIELD TERMINAL CONNECTIONS				
CHANNEL	1K RESISTOR		VOLTMETER	
	FROM	TO	FROM	TO
CH 0	PWR0	I0+	I0+	I0-
CH 1	PWR1	I1+	I1+	I1-
CH 2	PWR2	I2+	I2+	I2-
CH 3	PWR3	I3+	I3+	I3-
CH 4	PWR4	I4+	I4+	I4-
CH 5	PWR5	I5+	I5+	I5-

P1 CONNECTIONS		
CHANNEL	WIRE	
	FROM	TO
CH 0	19	27
CH 1	20	28
CH 2	38	46
CH 3	23	47
CH 4	40	15
CH 5	8	32
Mana	26	R7b
	R7a	12
	R7a	VM+
	COM HART-	VM-

Figure 9–15 FET Switch Adapter FET OFF Test Setup

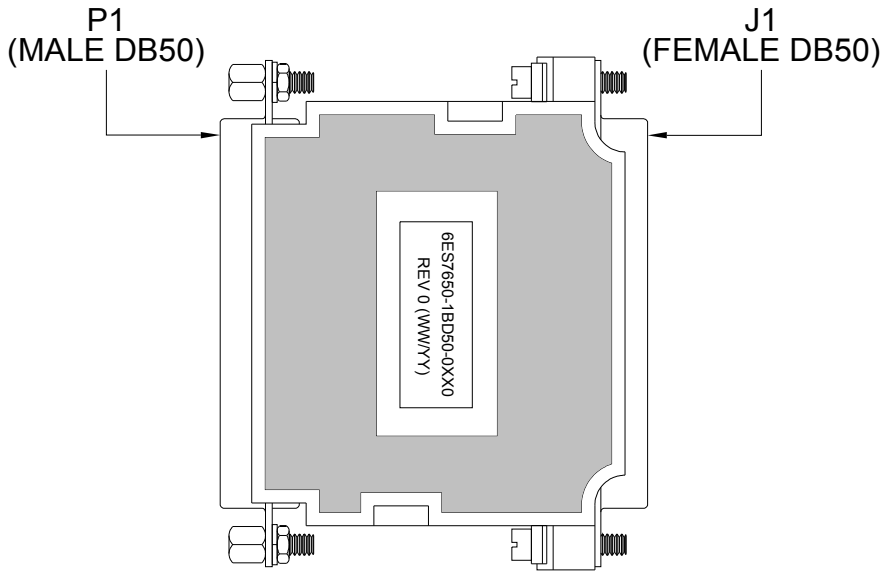


TEST LIMITS		
	FET ON	FET OFF
CH	<0.70 Volts	< 1.0 uA
Mana	<0.35 Volts	< 2.0 uA

FIELD TERMINAL CONNECTIONS				
CHANNEL	1K RESISTOR		AMMETER	
	FROM	TO	FROM	TO
CH 0	PWR0	AM+	R1	I0+
CH 1	PWR1	AM+	R2	I1+
CH 2	PWR2	AM+	R3	I2+
CH 3	PWR3	AM+	R4	I3+
CH 4	PWR4	AM+	R5	I4+
CH 5	PWR5	AM+	R6	I5+

P1 CONNECTIONS		
CHANNEL	WIRE	
	FROM	TO
CH 0	19	27
CH 1	20	28
CH 2	38	46
CH 3	23	47
CH 4	40	15
CH 5	8	32
Mana	9	R7a
	R7b	AM+
	12	AM-

Figure 9–16 FET Switch Adapter Assembly



9.15.5 Technical Specifications

Technical Specifications for FET Switch Adapter (6ES7650-1BD51-0XX0 or 6ES7650-1BD50-0XX0)	
Dimensions	
L x W x D – inches	2.5 x 2.75 x 0.75
L x W x D – mm	63.5 x 69.9 x 50.8 x 20
Power Use	
FAI Vs	25 mA
Environmental	
Ambient Temperature	-25C to +60C
Humidity	5% to 95% Non-condensing