

Digital Input/Output Interface

Introduction

The Computerwise data collection terminals (ET2xx/EP210/TTxE) and time clocks (EC205/ED210) provide for optional digital counter inputs and/or relay outputs. These digital input/outputs interface to the terminal electronics using Solid State Relays (SSR) to provide electrical isolation. This document provides detailed information on how to connect and use these digital I/O options when they are installed in the terminal.

Digital Input Option

The digital input option provides four (4) solid state relay (SSR) inputs which can be read under software control. An "active" input will be read as a "1" and an inactive input will be read as a "0". In addition, each input will increment an eight (8) digit internal counter which can be read/cleared under software control. The counter will increment when the input changes from "inactive" to "active" state. The digital inputs must be active for at least 10 milliseconds and inactive for at least 10 milliseconds to accurately increment the counter. Therefore, the maximum count frequency is 50 counts/second.

Activation of the input requires a 5Vdc – 24Vdc signal applied between the "Counter +" and the "Counter –" inputs. If the activation device is a "dry contact" switch the internal power supply of the terminal can be used to activate the input. In this case, connect the "Counter +" signal to the terminal +12Vdc supply, connect the "Counter –" signal to one side of the "dry contact" and the other side of the "dry contact" to the terminal "Ground". When the switch closes the input will be activated using the internal terminal power (see fig. 1).

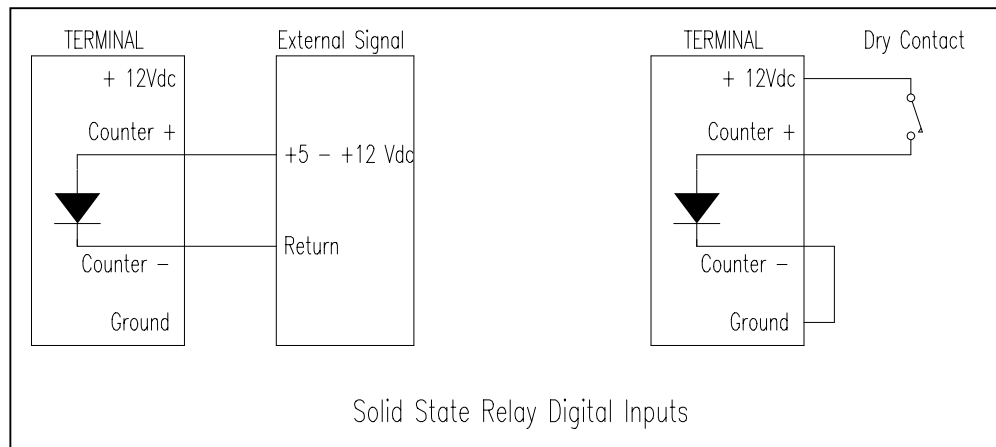


Figure #1

Digital Relay Output Option

The digital output option provides either two (2) or (4) solid state relay (SSR) outputs that can be individually activated under software control. Each relay has a single "form A" contact rated at 10va (100vdc, 100ma.) maximum. Typically, the SSR outputs are used to control an external relay which can switch a larger load (see fig. 2). The relay output can also be used to directly drive a 5Vdc logic level signal.

The internal terminal power can be used to drive an external 12Vdc relay. In this case, connect the external relay "+" to the terminal +12Vdc supply, connect the relay "-" to the "Relay N.O." contact and connect the "Relay COM" signal to the terminal "Ground" (see fig. 4). If a mechanical relay is used don't forget to include a clamping diode across the relay coil (see fig. 3).

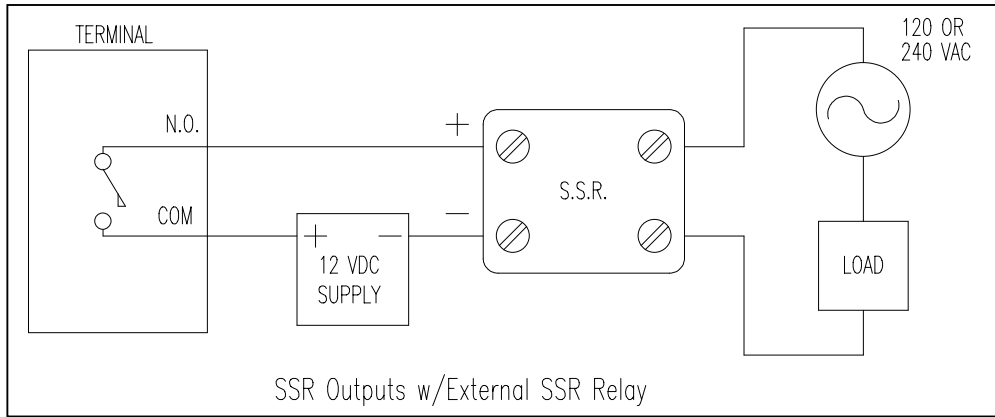


Figure #2

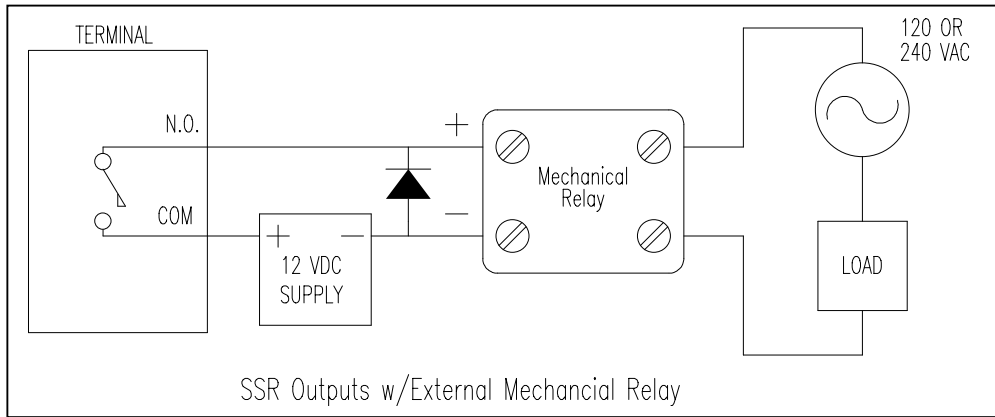


Figure #3

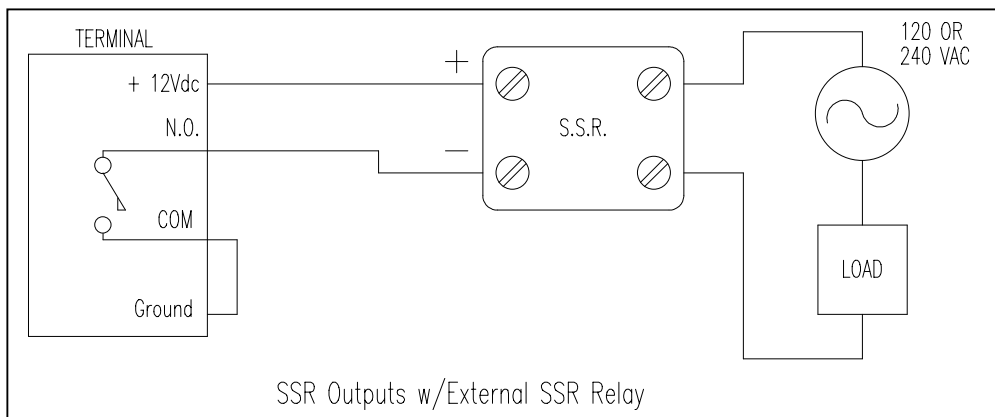


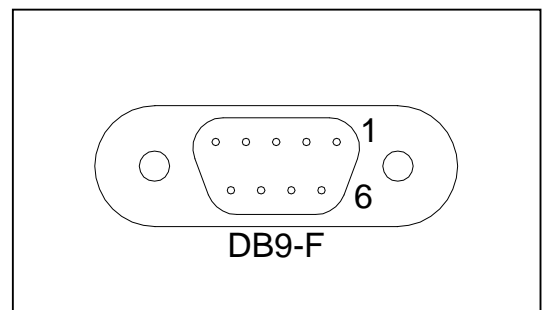
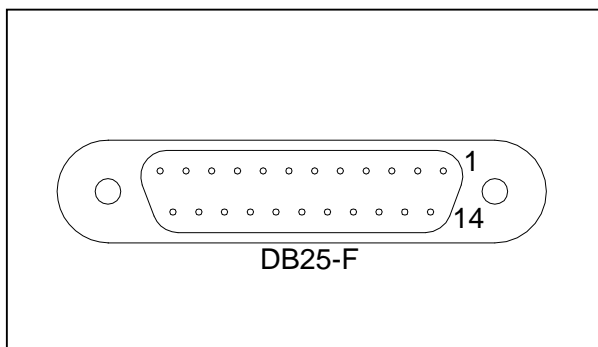
Figure #4

Digital I/O Interface Connections

The digital I/O interconnection to a terminal is based on the package style of the terminal. Terminals in the “desktop” package are provided with an external DB-25F or DB-9F connector which is typically attached to a tilt bracket (P/N 920410-2). Table 1 provides the signal definition for the DB-25F or DB-9F connector. For terminals in the “wall mount” or “bezel mount” package the interconnect is directly to the PCB using a dual row connector (MLH-2X16). Figure 5 shows the location on the PCB of the digital I/O header (J5) and Table 2 provides the signal definition for the header signals.

Signal	Quad I/O	Dual I/O	Quad Out	Quad In	Dual Out	Dual In
	DB-25F	DB-9F	DB-9F	DB-9F	DB-9F	DB-9F
Relay #1 N.O.	1	1	1		1	
Relay #1 COM	14	6	6		6	
Relay #2 N.O.	2	2	2		2	
Relay #2 COM	15	7	7		7	
Relay #3 N.O.	3		3			
Relay #3 COM	16		8			
Relay #4 N.O.	4		4			
Relay #4 COM	17		9			
Not Used	5					
Not Used	18					
Count #1 +	6	3		1		1
Count #1 -	19	8		6		6
Count #2 +	7	4		2		2
Count #2 -	20	9		7		7
Count #3 +	8			3		
Count #3 -	21			8		
Count #4 +	9			4		
Count #4 -	22			9		
Not used	10					
Not used	23					
+12Vdc	11				9	9
Ground	24	5	5	5	5	5
+12Vdc	12				8	8
Ground	25				4	4
Not used	13					

Table #1



Pin #	Signal	Pin #	Signal
1	+12Vdc	2	Output Relay #1 COM
3	Gnd	4	Output Relay #1 NO
5	+12Vdc	6	Output Relay #2 COM
7	Gnd	8	Output Relay #2 NO
9	+12Vdc	10	Output Relay #3 COM
11	Gnd	12	Output Relay #3 NO
13	+12Vdc	14	Output Relay #4 COM
15	Gnd	16	Output Relay #4 NO
17	+12Vdc	18	Input Relay #1 +
19	Gnd	20	Input Relay #1 -
21	+12Vdc	22	Input Relay #2 +
23	Gnd	24	Input Relay #2 -
25	+12Vdc	26	Input Relay #3 +
27	Gnd	28	Input Relay #3 -
29	+12Vdc	30	Input Relay #4 +
31	Gnd	32	Input Relay #4 -

Table #2

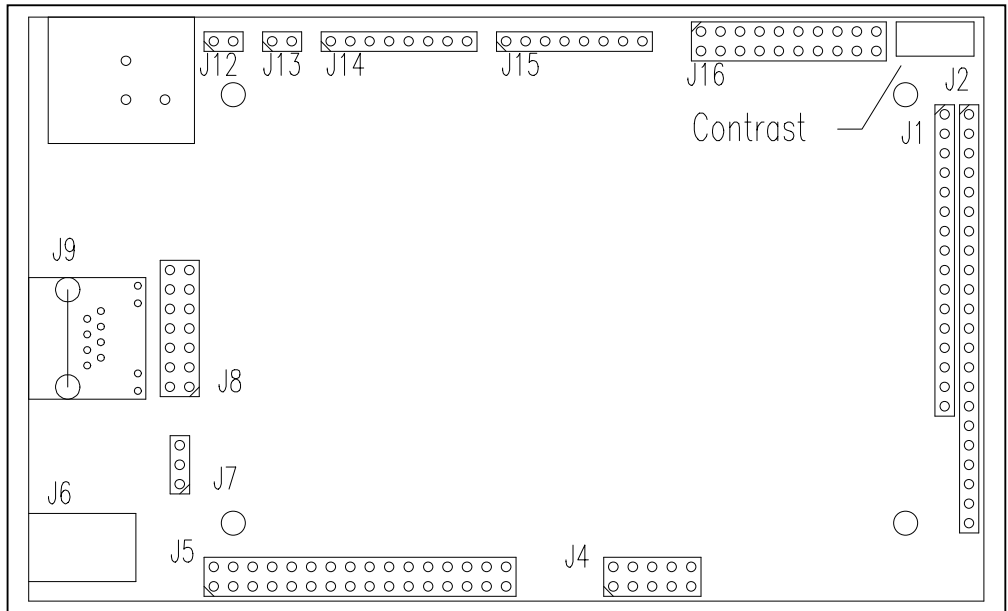


Figure #5