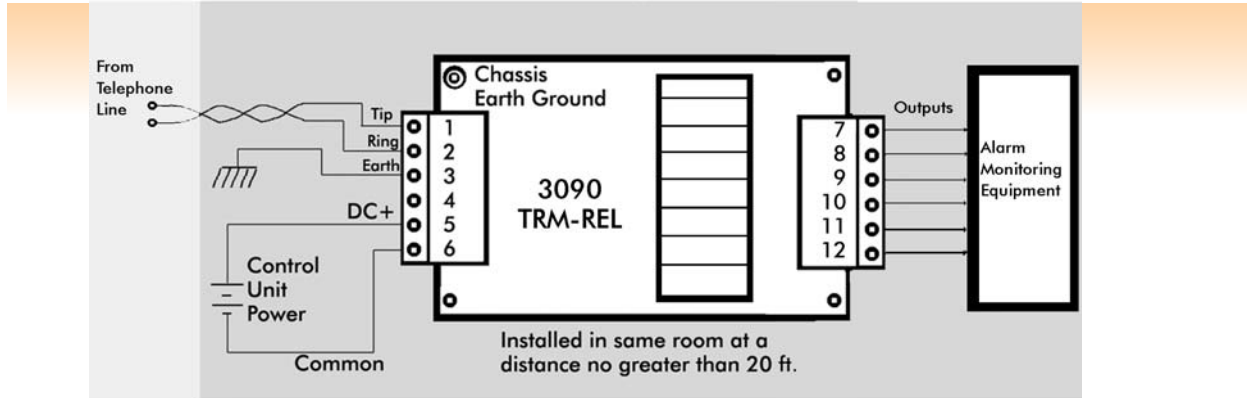


**3090 TRM-REL
 Tones Receiver Module w/Relay**



Wiring Diagram



Notes: 1) Use 18 AWG UL-listed wire.

General

A Tones pair is a product for communicating discrete alarm conditions over voice-grade phone lines. The pair consists of a transmitter and a receiver. The task of the transmitters is to translate contact closures or voltage reversals into tone variations whereas the task of the receivers is to translate the tone variations back into contact closures or voltage reversals.

The Tones Relay Module (TRM-REL) is a Tones receiver with relay outputs. It can provide either contact closures or voltage reversals at the outputs. The TRM-REL has two outputs, which are labeled Alarm1 and Alarm2. These outputs correspond directly to the Alarm1 and Alarm2 inputs of a TTM transmitter.

The 3090 TRM-REL is intended for connection to an input circuit of a receiving unit having compatible ratings.

Compatibility

The TRM-REL receiver is compatible with the following transmitters: TTM (3086), TTM-1 (3086-1) or TTM-RPS (3158) The TRM-REL receiver, when configured as RP, allows an external voltage input for applications requiring greater than the 5 VDC output of a standard TRM.

Installation

Connect the positive side of a 10-30 VDC Class 2 or Class 3 power limited source of supply to pin 5, and negative side to pin 6. Note that pin 6 is not an earth ground.

Connect pins 1 and 2 to a 600 ohm telephone line. These lines are electrically isolated from the main circuit of the TTM. These pins are interchangeable. Pin 3 is the earth ground. connect either this pin or the conductive mounting hole to an earth ground.

Interface

The signals provided for interfacing to receiving equipment are found on pins 7-12. Which pins require connections for your application are model dependent. Please see Models A through E to determine what type of signals are provided and on what pins they appear. The models are available according to output style. A model must be specified when placing an order. The description for each model follows in this datasheet.

3090 Pin description - Telco/power connections			
Pin #	Name	Type	Description
1	Tip	Input	Connects to one side of the telephone line
2	Ring	Input	Connects to the other side of the telephone line
3	Earth	Input	Earth ground
4			No connection
5	DC+	Input	Positive 10 - 24 volts DC power input
6	Common	Input	Negative DC power input

Keltron develops and manufactures secure, reliable, UL-listed fire and security alarm response management systems and components for the municipal and proprietary life safety markets. Products include radio fire alarm, coded fire alarm and high-line security systems, digital alarm receivers, universally compatible fire alarm control panel networking solutions and a full line of alarm annunciators. For more information, visit www.keltroncorp.com or contact us at 781-894-8710, or info@keltroncorp.com.

MODEL A
There are four dry contact outputs. This is for two zones, each zone has two dry contact outputs that indicate Secure and Alarm. Outputs for each zone are isolated from the main circuit of the TRM-REL as well as from each other. If the TRM-REL itself loses power, all outputs open.

Model A Output Equivalent Circuit

Pin#	Name	Description
7	Common1	
8	Secure1	makes contact to Common1 when zone 1 is secure
9	Alarm1	makes contact to Common1 when zone 1 is in alarm
10	Common2	
11	Secure2	makes contact to Common2 when zone 2 is secure
12	Alarm2	makes contact to Common2 when zone 2 is in alarm

MODEL B
There are three dry contact outputs that indicate Alarm 1, Alarm 2 or Trouble. The Trouble contact is closed during Alarm 1, Alarm 2, and Secure. It opens during trouble. Alarm contacts both open during trouble. Contacts are isolated from the main circuit of the TRM-REL as well as from each other. If the TRM-REL itself loses power, all outputs open.

Model B Output Equivalent Circuit

Pin#	Name	Description
7	Alarm1	makes contact to Alarm1' when zone 1 is in alarm
8	Alarm1'	
9	Alarm2	makes contact to Alarm2' when zone 2 is in alarm
10	Alarm2'	
11	Trouble	breaks contact with Trouble' during line trouble
12	Trouble'	

MODEL C
There are two sets of simple EOL outputs. Each zone services a pair of wires providing multi-level outputs. On the TRM-REL board is a network consisting of resistors and relays. The relays close in a manner to produce the following total resistance for the three different states, for each zone. Namely, 18 KΩ for secure, 2.3 KΩ for alarm and open for trouble. Outputs are isolated from the main circuit of the TRM-REL as well as from each other. If the TRM-REL itself loses power, all outputs open.

Model C Output Equivalent Circuit

Pin#	Name	Description
7		
8	EOL1	first zone EOL output (Alarm1)
9	EOL1'	first zone EOL output
10		
11	EOL2	second zone EOL output (Alarm2)
12	EOL2'	second zone EOL output

MODEL D
There is a four-level EOL output. On the TRM-REL board is a network consisting of resistors and relays. The relays close in a manner to produce the following total resistance for the four different states: 18 KΩ for secure, 2.3 KΩ for Alarm 1, 7.4 KΩ for Alarm 2, and open for trouble. The output is isolated from the main circuit of the TRM-REL. If the TRM-REL itself loses power, the output opens.

Model D Output Equivalent Circuit

Pin#	Name	Description
7		
8		
9	EOL	EOL output
10	EOL'	EOL output
11		
12		

MODEL E*
There are two RP (Reverse Polarity) outputs. Pins 7 and 10 accept DC power from an external supply. Pin 7 is positive and 10 negative. The voltage (Vx) is whatever meets the user's application. Pins 8 and 9 are the outputs for Alarm1. During secure pin 8 connects to pin 7 and pin 9 to 10. In other words pin 8 is positive and pin 9 negative. Hence the labels RP1+ and RP1-. During alarm, pin 8 connects to pin 10 and pin 9 to 7, i.e. the voltage reverses. The same principle applies to Alarm 2. The above mentioned pins are isolated from the main circuit of the TRM-REL. If there is a line trouble or if the TRM-REL itself loses power, then all relays open.

Model E Output Equivalent Circuit

Pin#	Name	Description
7	VX+	positive external voltage
8	RP1+	first zone RP output. Positive during Secure
9	RP1-	first zone RP output. Negative during Secure
10	VX-	negative external voltage
11	RP2+	second zone RP output. Positive during Secure
12	RP2-	second zone RP output. Negative during Secure

3090 SPECIFICATIONS

Connection	Pluggable Terminal Block
Min Supply Voltage	10VDC
Max Supply Voltage	24VDC
Supply Current	70mA
Contact (output)	
Contact voltage	50 V MAX
Contact current	50 mA MAX
RP Voltage level	5V or External
Response time	50 ms (Alarm & Secure) 150 ms (Trouble)
Tone (input)	
Number of wires	2 per board
Impedance	600 ohm
Level	-30 dBm (min)
Other features	Isolation and Lightning protection
States	Alarm, Secure, Trouble
Supervision	Absence of tones results in Trouble
Communication medium	Two wire Telco direct line (2000 or 3000 series) or Twisted Pair
Communication method	Frequency modulation
Frequency range	600 Hz .. 1700 Hz
Environmental	
Operating temperature	9 to 49°C
Storage temperature	-25 to 70°C
Relative Humidity	20 to 85% Non-Condensing
Dimensions (LxWxH)	
3090 (PC board)	5.0" x 3.5" x 1.0"
KBX1 (enclosure)	6.0" x 5.0" x 1.75"
Weight	
3090 (PC board)	0.2 lb. (no relays) 0.34 lb. (8 relays)
Relay	0.0175 lb.
KBX1 (enclosure)	0.52 lb.

*Provision is made for deriving Vx from the internal 5 volt or the voltage on pins 5 and 6. Resistors are placed in series at pins 7 and 10 for protection purpose.

Model E8
Only one RP output (RP1) is generated. Alarm on input 2 at the TTM causes a Trouble on RP1 **but only if RP1 is Secure**. An Alarm on RP1 is not affected by input 2.
Caution: Make no connections to pins 10,11 or 12.

