

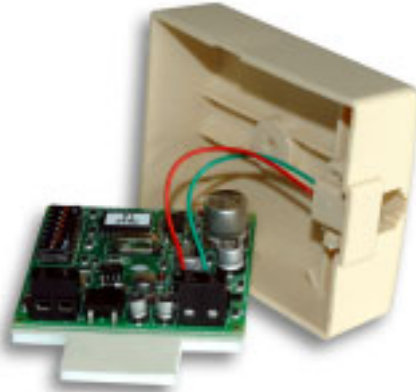


TECHNICAL Practice

TELECOM SOLUTIONS FOR THE 21ST CENTURY

TR-1
Programmable Tone/Pulse Toll Restrictor
March 15, 2004

Prevent Telephone Line Abuse with a Programmable Toll Restrictor



The **TR-1** is Touch Tone programmable and will restrict Touch Tone or pulse dialing on outbound calls.

The **TR-1** is a cost effective, user programmable Toll Restrictor, ideal for applications where unauthorized phone calls cannot be tolerated.

Concealed in a standard wall mount RJ11C jack, the **TR-1** is designed to allow or restrict local and/or specified long distance numbers. The **TR-1** provides a 40-number allow/restrict table, a 6-digit bypass code (allows authorized users unrestricted access), and an inbound/outbound call timer with disconnect.

Features

- Phone line powered
- Non-volatile E² memory
- Compatible with Touch Tone or rotary phones
- .5 to 49.5 minute call timer with disconnect
- Programmable allow or restrict table stores up to forty **12-digit phone numbers**, prefixes or area codes
- 6-digit bypass code for unrestricted access
- **Programmable to ignore phone system line access numbers**
- **Programmable ignore table stores up to twelve 12-digit phone numbers, ideal for *67, *69, etc.**
- Programmable maximum digit string length
- Concealed in a standard RJ11C jack
- **Allow or restrict 1-800 numbers**
- Operational alert tones
- Will not restrict dialing on inbound calls
- Allows emergency and toll free numbers

Applications

- Courtesy phones in banks, hotels, etc.
- Prevent outgoing calls on public phones, etc.
- Limit call times
- Force long distance calls through alternate long distance carriers
- Prevent the use of hand held dialers



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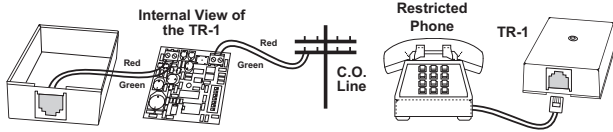
http://www.vikingelectronics.com

Specifications

Power: Phone line powered (24V DC @ 20 mA minimum)
Dimensions: 70mm x 57mm x 22mm (2.75" x 2.25" x .88")
Shipping Weight: .45 kg (1 lb)
Environmental: 0° C to 32° C (32° F to 90° F) with 5% to 95% non-condensing humidity
Connections: Phone- (1) RJ11 jack, Line- (2) screw terminals

Carefully review all emergency numbers required for your area prior to installing the toll restrictor. These emergency numbers could include, 911, fire, police, rescue, sheriff, poison center, etc. After installation of the toll restrictor is complete, make a test call to each of the emergency numbers for the area! This will allow you to verify that you have not inadvertently blocked any required emergency numbers.

Installation



1. Disconnect all wires from the existing phone jack.
 2. Set desired switch selections (see **Programming** section A below).
 3. Connect the red and green wires from the phone jack to the **J2** screw terminals.
 4. Connect the red and green wires from the C.O. line to the **J1** screw terminals.
 5. Mount the **TR-1** with the screw provided and connect phone to modular jack.
- Note:** Only the red and green wires are used. Tape any extra wires to prevent shorting.

Programming

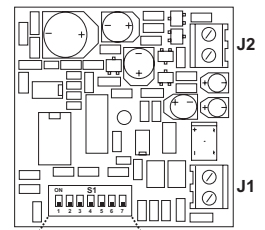
A. Pre-Programmed Switch Selections

The **TR-1** has DIP switches (see diagram right) that restrict different types of factory default dialing strings. Turning OFF the specified switch will ALLOW the dialing strings.

DIP Switch	Set switch ON to restrict or OFF to allow the following numbers...
1	"976" Metered Toll Calls (976, 1-976, 1-XXX-976)
2	Long Distance (1-XXXXXX, 10)
3	Operator Assisted Calls (0+)
4	"900" Metered Toll Calls (1-900)
5	Directory Assistance (555, 1-555, 1-XXX-555, 411, 1-411)
6	For Centrex or PABX's: Turn OFF to ignore the first 9 in 9+ dialing (programmable)

Internal View of the TR-1

Important: The **TR-1** components are sensitive to static electricity. Personnel and the work area should be grounded before handling.



DIP Switches (shown in factory settings)

B. Programming Switch 6 to Ignore Specific Outside Line Access Numbers

Switch 6 is factory set to ignore the first 9 in 9+ dialing. This feature is enabled by setting switch 6 to OFF. Switch 6 can be user programmed with up to eight 8-digit numbers. This feature is useful if you have an outside line access number other than "9" or multiple outside line access numbers. With this feature enabled (switch 6 OFF), if the phone number dialed does not start with your programmed outside line access number (number programmed in switch 6), it is allowed. This is useful for allowing extension dialing on phone systems. If the number dialed does start with the programmed line access number, all the digits following the access number will be allowed or restricted according to the selected programming.

1. Access the programming mode as explained in section D.
2. Enter your 1-8 digit line access number + ## + 6 + the position 1-8.
3. Repeat step 3 for each line access number programmed (up to 8 positions).
4. Set switch 6 to OFF to enable the "Ignore Line Access Number" features programmed in step 2.

C. Operational Alert Tones

1. Programming Tones

During programming, a double beep will be heard after entering a valid command or memory location. If an invalid command or number sequence is entered, it will be indicated by a triple beep. If an error is made, review the instructions, and re-program that location.

2. Operating Tones

With the call timer programmed, a double beep will be heard 30 seconds prior to time-out, followed by a triple beep immediately before the disconnect. The **TR-1** is capable of detecting hardware memory errors. If you come off hook and an error is detected, the unit will output 4 beeps and only allow 311 and 911 emergency dialing.

D. Accessing the Programming Mode

1. From a Touch Tone phone, call the phone connected to the **TR-1** on a C.O. line or analog PABX/KSU station.
2. Answer the phone connected to the **TR-1**. **Note:** Programming can be done from the calling phone or from the phone connected to the **TR-1**.
3. Enter * + current six-digit security code (factory set to **845464**). A double beep should be heard indicating programming mode has been accessed. **Note:** If a * entered as the first digit from off-hook conflicts with your C.O. or phone system features, a single (allowed) digit 1-9 may be entered prior to the * and six digit security code to enter programming. Example: **5*845464**

E. Security Code

The security code is a six-digit code that allows the user/installer to program the **TR-1**. To program your personal security code, follow step 1 below. **Note:** The security code is factory set to **845464 (V-I-K-I-N-G)**. The security code cannot contain a * or # and should not match the Bypass code.

1. Access the programming mode as explained in section D above and enter the new six-digit security code then enter #47.

F. Bypass Code

Note: The bypass code is factory set to **123456**. The bypass code is a six-digit user programmable code which allows authorized persons to make a single unrestricted call. To enable this feature the code must be preceded with a #. After receiving the code, the **TR-1** will disconnect. One unrestricted call will be allowed on the next off-hook condition. **Note:** If a # entered as the first digit from off-hook conflicts with your C.O. or phone system features, a single (allowed) digit 1-9 may be entered prior to the # and bypass code. **Example:** Come off hook and dial #**123456**, two beeps will be heard, then hang-up. The next call will be unrestricted. When that call is complete, hang up. The following calls will have full toll restriction.

G. Maximum Digit String Length

This programmable feature restricts the maximum number of digits allowed to be dialed. It can be set from 01-99. If a number longer than the maximum digit length is entered, a triple beep will be heard and the call will be disconnected.

To Enable: Enter two digits (01-99) + #49 in programming.

To Disable: Enter #49 in programming.

H. Call Timer

The call timer feature allows the **TR-1** to automatically disconnect after a specified time. The timer begins with any dialing, Touch Tone or pulse. It can be programmed in 30 second increments (49.5 minutes maximum). When the call timer is enabled, a double beep will be heard 30 seconds prior to time out, followed by a triple beep just before the disconnect. **Note:** With switch 6 OFF, numbers that do not start with 9 will not activate the call timer.

To Enable the Call Timer: Enter two digits (01-99) + #48.

To Activate the Call Timer on Outbound Calls Only: Enter *6.

To Disable the Call Timer: Enter #48.

To Activate the Call Timer on Inbound & Outbound Calls : Enter *7.

I. User Programmable Allow/Restrict Table

This table is used to store user-defined dialing strings (see **Programming Features** section P). It can store up to forty 12-digit allow or restrict numbers. This table can be set to either allow or restrict; it cannot be set to do both simultaneously. This table is useful when you would like to allow or restrict specific numbers not covered by the switches 1-5. **Note:** This table has priority over the internal jumper programming.

J. User Programmable Ignore Table

This table is used to store user-defined dialing strings. It can store up to twelve 12-digit Ignore numbers. This feature is useful for ignoring the first few digits dialed such as Central Office control codes like *67 (block caller I.D. for one call). All digits dialed following the programmed ignore number will be allowed or restricted according to the selected programming. **Example:** Programming the **TR-1** to ignore *67. Enter **67#60

K. Wild Card

The wild card feature (*1) is used to allow or restrict numbers 0-9 in that digit specified. For example, to restrict numbers 800, 810, 820, 830... simply program the TR-1 with **8 * 1 0 #** + memory location. **Note:** With a * or # as the 1st digit, the following six digits can NOT be a wild card (*1).

L. Programming a * or a

Since the TR-1 uses * and # for specific programming functions, you must enter ** to input a single * and ## to input a single # into the dialing string you wish to allow or restrict. **Note:** A * or # can NOT be programmed as the second digit, due to conflicts with the security and bypass codes.

M. Allow All Other/Restrict All Other Numbers

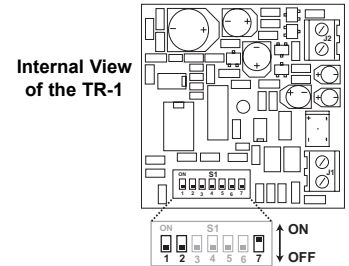
Allow all other numbers: Enter * 4 in programming.

Restrict all other numbers: Enter *5 in programming.

Note: The TR-1 is factory set to allow all other numbers that are not programmed into the Allow/Restrict Table or covered by switches 1-5.

N. Entering Programming Without a Security Code

This mode is useful if you have forgotten your security code and need to enter programming. Set switches 1 and 2 to OFF, and set switch 7 to ON as shown in the diagram to the right. Have someone call the phone connected to the TR-1. Answer and enter * followed by ANY six digits. Two beeps should be heard indicating you have entered the programming mode. Enter your new security code (six digits + #47) and any other programming needed, then hang-up and place the switches back to their original positions.



O. Turning On/Off the TR-1

Note: With the TR-1 turned OFF, all dialing will be unrestricted.

Turn on the TR-1: Enter *9 in programming.

Turn off the TR-1: Enter *8 in programming.

P. Programming Features Quick Reference

Note: The User Programmable Allow/Restrict table can be set to Allow OR Restrict, NOT both simultaneously.

Features	Digits	Memory + Location
Programmable Allow/Restrict table (factory cleared)	1 - 12 digits	+ #00 to #39
Clear a number in the Allow/Restrict table	(none)	+ #00 to #39
Set all programming to factory default	(none)	+ #44
Set jumpers to factory default	(none)	+ #45
Clear the entire allow/restrict table (positions 00 - 39)	(none)	+ #46
Security code (factory set to 845464)	6 digits	+ #47
Call timer (01 - 99 in 30 second increments, factory disabled)	2 digits	+ #48
Maximum number of digits allowed to dial (01 - 99, factory disabled)	2 digits	+ #49
Bypass code (factory set to 123456)	6 digits	+ #50
Clear the entire Ignore table (positions 60 - 71)	(none)	+ #51
Programmable Ignore table (factory cleared)	1 - 12 digits	+ #60 to #71
Clear a number in the Ignore table	(none)	+ #60 to #71
Entering a single Touch Tone *	**	
Entering a single Touch Tone #	**	
Clear all numbers programmed in switch 6	*06	
Allow toll-free numbers 800, 822, 833, 844, 855, 866, 877, 888 (factory setting)	*07	
Restrict toll-free numbers 800, 822, 833, 844, 855, 866, 877, 888	*08	
Entering a single digit Wild card	*1	
Set user programmable table to Allow	*2	
Set user programmable table to Restrict (factory setting)	*3	
Allow all other numbers (factory setting)	*4	
Restrict all other numbers	*5	
Activate call timer on outbound calls only (factory setting)	*6	
Activate call timer on inbound and outbound calls	*7	
Turn the TR-1 off	*8	
Turn the TR-1 on (factory setting)	*9	
Jumper 6 PABX line access numbers (factory set to 9)	1-8 digits + ## + 6 + position 1-8	

Programming Examples

To complete these examples, you must start by following steps 1-3:

1. Call the phone connected to the TR-1 on a C.O. line or analog PABX/KSU station.
2. Answer the phone connected to the TR-1. The following programming can be done by the calling phone or the phone connected to the TR-1.
3. Enter a * followed by the six-digit security code (factory set to 845464), a double beep should be heard.

A. Programming the TR-1 to Restrict All Outbound Calls, Including 1-800 Calls

4. Enter *3 (a double beep should be heard) *5 (a double beep should be heard).
5. Enter *08 (a double beep should be heard).
6. Hang-up.

B. Programming a New Security Code of 123456 and a Bypass Code of 654321

4. Enter 123456#47 (a double beep should be heard).
5. Enter 654321#50 (a double beep should be heard).
6. Hang-up.

C. Using the Wild Card Feature to Allow Only 700, 710, 720, 730, 740, 750, 760, 770, 780 and 790 Numbers in Location 26

4. Enter *2 (a double beep should be heard) *5 (a double beep should be heard).
5. Enter 7*10#26 (a double beep should be heard).
6. Hang-up.

D. Programming the TR-1 with a Maximum Call Length of 10 Minutes for Inbound and Outbound Calls and the Capability of Dialing Only 7 Digit Numbers

4. Enter 20#10 (a double beep should be heard).
5. Enter 07#49 (a double beep should be heard).
6. Enter *7 (a double beep should be heard).
7. Hang-up.

E. Programming the TR-1 to Allow 1-715, 1-612 and 1-414 Area Codes and Restrict All Other Numbers

4. Enter *2 (a double beep should be heard) *5 (a double beep should be heard).
5. Enter 1715#00 (a double beep should be heard).
6. Enter 1612#01 (a double beep should be heard).
7. Enter 1414#02 (a double beep should be heard).
8. Hang-up.

Note: When programming the TR-1, it is not necessary to hang-up and re-enter programming to program the next memory location. All user programming can be done consecutively.

For your records and ease in programming, write down the numbers and check off the features in the spaces below before programming. **Note:** If you want to restrict/allow a number that begins with the digit 1, you must program the digit "1" first. Example: 17153868861.

Q. User Programmable Allow/Restrict Table

Number (1-12 digits)	Location	Number (1-12 digits)	Location	Check the Features in Use	
_____	#00	_____	#20	___	*2 Set user programmable table to allow
_____	#01	_____	#21	___	*3 Set user programmable table to restrict
_____	#02	_____	#22	___	*4 Set all other numbers to allow
_____	#03	_____	#23	___	*5 Set all other numbers to restrict
_____	#04	_____	#24	___	*6 Enable call timer on outbound calls only
_____	#05	_____	#25	___	*7 Enable call timer from off-hook
_____	#06	_____	#26	___	*8 Turn TR-1 off
_____	#07	_____	#27	___	*9 Turn TR-1 on
_____	#08	_____	#28	___	*07 Allow 1-800 numbers
_____	#09	_____	#29	___	*08 Restrict 1-800 numbers
_____	#10	_____	#30		
_____	#11	_____	#31	Number	
_____	#12	_____	#32	_____	(6-digits) #47 Security Code
_____	#13	_____	#33	___	(2-digits) #48 Maximum time limit
_____	#14	_____	#34	___	(2-digits) #49 Maximum digit length
_____	#15	_____	#35	_____	(6-digits) #50 Bypass Code
_____	#16	_____	#36		
_____	#17	_____	#37		
_____	#18	_____	#38		
_____	#19	_____	#39		

S. Switch 6 Programming

(Ignore PABX Line Access Numbers)

___ Disabled (Switch ON)

___ Enabled (Switch OFF)

Position: **Number (1-8 digits)** **Location**

1.	_____	##61
2.	_____	##62
3.	_____	##63
4.	_____	##64
5.	_____	##65
6.	_____	##66
7.	_____	##67
8.	_____	##68

R. User Programmable Ignore Table

Number (1-12 digits)	Location	Number (1-12 digits)	Location
_____	#60	_____	#66
_____	#61	_____	#67
_____	#62	_____	#68
_____	#63	_____	#69
_____	#64	_____	#70
_____	#65	_____	#71

FCC Requirements

Type of Service

The TR-1 is designed to be used on standard device telephone lines. The TR-1 is connected to the telephone line by means of a screw terminal. Connection to telephone company-provided coin service (central office implemented systems) is prohibited. Connection to party line service is subject to State tariffs.

Telephone Company Procedures

The goal of the telephone company is to provide you with the best service it can. In order to do this it may occasionally be necessary for them to make changes in their equipment, operations, or procedures. If these changes affect your service of the operation equipment, the telephone company will give you notice in writing, allowing you to make any changes necessary to maintain uninterrupted service. If you have any questions about your telephone line, such as, how many pieces of equipment you can connect to it, the telephone company will provide you information upon request. In certain circumstances, it may be necessary for the telephone company to request information from you, concerning the equipment which is connected to your telephone line. Upon request of the telephone company, provide the FCC registration number and the ringer equivalence number (REN) of the equipment which is connected to your line; both of these items are listed on the equipment label. The sum of all the REN's on your telephone lines should be less than five in order to assure proper service from your telephone company. In some cases, a sum of five may not be usable on a given line.

If Problems Arise

If any of your telephone equipment is not operating properly, you should immediately remove it from your telephone line as it may cause harm to the telephone network. If the telephone company notes a problem, they may temporarily discontinue service. When practical, they will notify you in advance of this disconnection. If notified, you will be given the opportunity to correct the problem and informed of your right to file a complaint with the FCC.

In the event repairs are ever needed on your Viking product, they should be performed by Viking Electronics, Inc. and or an authorized representative of Viking Electronic, Inc.. For more information contact Viking Product Support at (715)386-8666.

FCC Part 15 Limitations

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will have to correct the interference at his own expense.

Product Support Line...715.386.8666

Fax Back Line...715.386.4345

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