DOOR OPERATOR & ELECTRONICS DIVISION

DASMA TECHNICAL DATA SHEET

#379

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Telephone Entry/Access Control Systems
Purposes, Types and Installation Basics

Introduction

One of the most common methods to regulate or control physical access through entry and/or exit to/from a controlled area, protected area or a restricted area by electrical, electronic or mechanical means is through the use of an Access Control System (ACS) or a Telephone Entry System (TES). This Technical Data Sheet, intended for general users or specifiers, describes the purpose, types, communication channels and installation basics.

- Controlled Area – A room, office, building, facility, premise, or grounds to which access is monitored, limited, or controlled.
- Protected Area - A room, office, building, facility, premise, or grounds to which access is monitored and limited and/or controlled, whereby the authorized person of the access control system may grant access to non-authorized persons.
- Restricted Area - A room, office, building, facility, premise, or grounds to which access is monitored, limited and strictly controlled, whereby only the administrator of the access control system shall issue credentials that will lead to access.

Note: For more comprehensive information, please refer to specific manufacturer's instruction manuals.

Telephone Entry and Access Control Systems should be listed to UL294, “The Standard for Access Control System Units”.

Purpose

A TES is an access control device, which can be a part of a larger ACS, that is used primarily to control visitor access into controlled, protected or restricted areas, such as gated communities, apartment complexes, multi-use buildings, businesses, etc. More advanced systems can also be configured to control authorized personnel (resident, tenant, employee, etc.) access into, and within, these areas.

For visitor access control, the basic function of the TES is to establish a communication channel (via a telephone service) from the controlled entry point to a person within the controlled, protected or restricted area. Once communication is established, the visitor will identify themselves to the resident/tenant who can then grant or deny access to the visitor. The most common method to grant access is to simply press '9' on the telephone handset (or cell phone) sending a DTMF (Dual Tone Multi Frequency) signal to the TES. The TES will then respond to the signal and activate a relay causing the gate/door to open.

In more advanced access control systems, the TES can also be used to control access to several different entry points with card readers, keypads, RF devices and others.

Types: Auto-dialers

Most TES are essentially Auto-dialers. They store pre-programmed phone numbers (residents/tenants) in the system memory. A visitor wanting to contact a particular resident/tenant will look for that person in the system directory (the directory can be electronic or printed), where a 'directory code' is shown next to the resident/tenant name. The visitor then enters the directory code on the system keypad, which will then call the telephone number associated with that particular directory code. Modern systems typically have a form of electronic directory that allows for a single touch or press of a button to establish contact with the desired resident/tenant.

ACS also supports auto-dialer functionality. The ACS stores pre-programmed contact information (resident/tenants) in its memory. A visitor that wants to contact a particular resident/tenant can search for that person in the system directory. The visitor can select the desired resident/tenant name which will cause the ACS to place either an audio phone call or a video call to the selected resident/tenant.

It should be noted that an individual cannot walk up to the TES/ACS and use the keypad to place a telephone call. The TES/ACS can only 'call' those telephone numbers stored within its memory.

Types: Shared Line Systems (No Phone Bill, No Phone Line, Telephone Intercom)

These type TES connect in series with an incoming POTS line. To initiate communication, the TES will seize the telephone wiring going into the house or apartment and will temporarily connect the wires to the TES control board. In essence, the TES now becomes the phone company. It can ring all the house telephones and both parties can speak and converse.

In a shared line system, a resident/tenant does not need Central Office phone service to be connected to the TES. They simply need telephone wiring (usually already pre-installed) in their living space and a telephone handset. The TES simply calls into the handset and uses it as an intercom. These type systems are popular in low income housing developments where some residents/tenants may not have telephone service.

Communication Channels (does not apply to shared line systems)

The TES/ACS requires a communication channel to be able to establish voice communications (and Data for programming) from the visitor to the resident/tenant. There are three different methods in use today to provide this channel.

1. The TES/ACS is connected to the Internet via a network cable/router. This connection provides both data (for programming purposes) and voice (VoIP) connections for the TES. This connection can also provide video/audio connection for the ACS (between the visitor and the resident/tenant).

2. For ACS, cellular service can be utilized for programming (data) transfers, audio (voice) and video/audio purposes.

3. A POTS (Plain Old Telephone Service) line is used for voice and programming (via modem to modem) purposes. This type of connection should not be recommended as telecommunication providers are changing their lines and switches to support digital services and some are eliminating support for POTS lines altogether. Modems are considered to be obsolete and the newer digital infrastructure does not support modem to modem communications. It should also be noted that modem communications will not work over cellular or VoIP connections.

Installation Basics: Mounting

Telephone Entry Systems often include multiple solid state control boards interconnected inside the system housing, memory chips, microprocessors or other modular components. This may make the system vulnerable to vibration, which may result in faulty performance of the system. Make sure the TES is mounted on a solid, stable mounting platform, some of which may include:

- Mounting Post
- Wall Mounting
- Column or Pilaster

Areas that should be avoided:

- Fence panels
- Fence post
- Adjacent to a spring loaded pedestrian gate

***WARNING**: A person should not be able to reach around, over, under, or through an automated gate to operate a TES or ACS. The entry system devices should be located at least 6 feet away from such a gate.*

For those TES that will be used for pedestrian entry into a building, office, pool area, etc., you need to consider ADA requirements. See DASMA Technical Data Sheet #365 for dimensions to consider when installing an accessible communications system.

Installation Basics: Wiring

- Use the correct type of wire and wire gauge for the application.
- If wire runs are underground, be sure the wire is rated for a wet environment.
- Do not share power with a door strike or magnetic lock.
- Ground the unit per manufacturer's recommendations.
- Use external surge suppression.
- Use continuous (no splices) interconnect wire.

If a ground rod is used, it should be at minimum an 8' copper rod. If a surge suppresser is used, the length of the ground wire from the suppresser ground to the ground rod should be 3' or less for best performance. The ground wire from the TES to the ground rod should be of greater length than the ground wire from the suppresser ground to the ground rod. The ground wire should be kept as straight as possible and should be a minimum 12 AWG. Check your local NEC code for local grounding requirements.

Unit Handling and Placement

- Try not to touch board components unless you are grounded.
- It is best to face a system device with a display either north or south so that direct sunlight does not make the display hard to read.

- Try to avoid mounting a system device in direct proximity to AC power lines as they may induce audio hum.
- Data/audio lines should ALWAYS be in a separate conduit from power lines.
- Keypads and card readers for pedestrian usage should be mounted in accordance with ADA requirements.

UL294 Performance Level Definitions for Access Control Systems

The access control performance levels for the product or equipment is specified by the manufacturer.

Feature	Level I	Level II	Level III	Level IV
Destructive attack	no attack test	withstand attack test for 2 minutes	Withstand attack test for 5 minutes or generate an alarm event in 2 minutes	Withstand attack test for 5 minutes, generate an alarm in 2 minutes which cannot be silenced for 2 minutes
Line security	No line security	Standard line security	Encrypted line security 128 bit	Encrypted line security 256 bit
Endurance	1000 cycles	25,000 cycles	50,000 cycles	100,000 cycles
Standby power	No secondary power source	Can maintain normal operations for a minimum of 30 minutes (see 7.17)	Can maintain normal operation for a minimum of 2 hours (see 7.18)	Can maintain normal operation for a minimum of 4 hours (see 7.19)
Single Point Locking Device with Key Locks (see 34.2.2)	No attack test on key lock	Picking, Lock Bumping and Impression tests for key locks from Table 11.1 of the Standard for Key Locks, UL 437	All key lock attack resistance tests from Table 11.1 of the Standard for Key Locks, UL 437	