Installation Instructions

1.0   Introduction

The D928 module is used with the D9112B1, D7212B1, D9412, D9112, D7412, D7212, D9412G, D7412G, and D9124 Control Panels.

Before you install the D928 you should be familiar with the *Operation and Installation Guide* and the *Program Entry Guide* for the control panel you are installing.

2.0   Overview

2.1   Description

2.1.1   D9112B1 and D7212B1 Control Panels

The Bosch Security Systems D9112 and D7212 Control Panels use the D928 Dual Phone Line Switcher to transmit over a second phone line when the primary phone line is faulted. The control panel monitors the primary line and the D928 monitors the secondary line. If a signal is generated and the control panel senses that the primary phone line is bad, then it will attempt to use the secondary phone line to send the message. For further explanation, see the *Communication Failure* section of the appropriate *Operation and Installation Guide*. If trouble is detected, the control panel keeps the faulty phone line in memory.

Figure 1: D928 Phone Line Switcher

If the primary line is found to be electrically faulty, the D928 switches to the secondary line and reports the fault. With the Modem II, IIe, and IIIa² format, the control panel sends a PHONE LINE FAIL message to the D6500 and D6600 Receivers. The second line of the report indicates which phone line is in trouble. When using BFSK, the control panel sends a TROUBLE ZN B for trouble on the primary phone line and a TROUBLE ZN C for trouble on the secondary phone line.

The D928 uses the primary or secondary phone line to dial a primary, backup. or duplicate phone number.

Ground start systems: You cannot use the D928 on ground start systems for commercial fire applications.

2.1.2   9000 Series including "G" Series Control Panels

When the D928 is installed, the control panel will alternate between Phone Line 1 and Phone Line 2 to send its first report. For example, on Day 1 the control panel will attempt to first communicate on Phone Line 1. On Day 2, the control panel will switch and attempt to communicate on Phone Line 2.

Note 1:   Any time the control panel is reset or powered up or down, the next reported event will always attempt to call out on Phone Line 1 first.

Note 2:   If Phone Line 2 is not in service on "Day 2," the control panel will switch to the Primary Phone Line to send the report.

2.2   Specifications

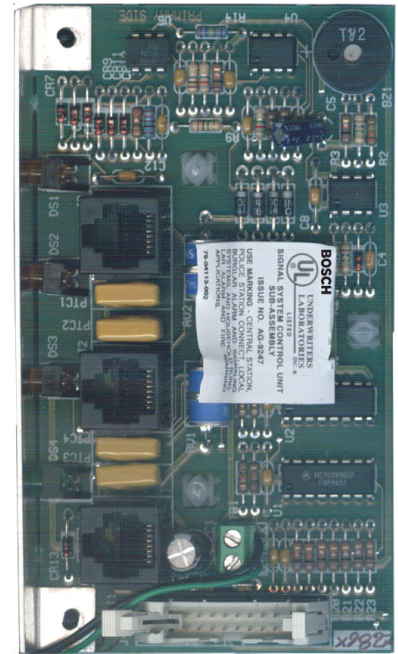| Current Required	Idle (average):	18 mA @ 13.8 VDC
	Maximum (average):	100 mA @ 13.8 VDC
	Operating Voltage:	10.2 to 13.9 VDC
Status Indicators	A sounder annunciates CPU failure. LEDs indicate:	• AC power • Primary phone line failure • Secondary phone line failure • Failure to communicate
Wiring Connections	3 Dual modular connector phone cords 1 Ribbon cable 2 Flying leads (green, black)	

2.3 CPU Failure Annunication

The D928 module has a circuit that monitors the operation of the control panel's CPU (Central Processing Unit). If the CPU fails, a buzzer on the D928 sounds as does a sounder in the control panel. You cannot reset this watchdog sounder when the CPU fails. The D928 stops sounding only when the control panel's CPU returns to normal operation.

2.4 Status LEDs

Four LEDs mounted on the front edge of the D928 module indicate primary phone line failure, secondary phone line failure, failure to communicate, and AC power status (see *Figure 3*). When programmed and operating normally, only the green AC power status LED should be lit.

2.4.1 Phone Line Failure LEDs

Two yellow phone line status LEDs (one for the primary line, one for the secondary line) light up when phone line voltage drops to 6.0 VDC or below. The control panel monitors the faulty telephone line for the programmed interval before indicating a trouble condition. For more information, see the description of **Phone Supv Time** in the *Program Entry Guide*.

2.4.2 Failure to Communicate LED

A yellow LED lights up when the control panel goes into communications failure. The LED is cleared when communication restores.

2.4.3 AC Power Status LED

The green AC power status LED lights up when the control panel is running on AC power. When AC power is not available, it is not lit.

3.0 Installation

3.1 Hardware/Software Compatibility

3.1.1 D9112B1, D7212B1

The D928 is not compatible with firmware revision 2.91 or lower or control panel board hardware revision 04-05958-003 or lower.

3.1.2 D9412, D9112, D7412, D7212, D9412G and D7412G

All software revisions are compatible with the D928.

3.2 Mounting

The D928 Dual Phone Line Switcher mounts inside the D8103, D8108A and D8109 Enclosures. Fasten the module to the inside of the enclosure in the lower right hand corner with the screws provided, see *Figure 2*.

> Mount the D928 so that the ribbon cable reaches the control panel.

When using the D928 with a fire system, it must be mounted inside an enclosure that is UL Listed for fire, such as the D8108A or D8109 Enclosure.
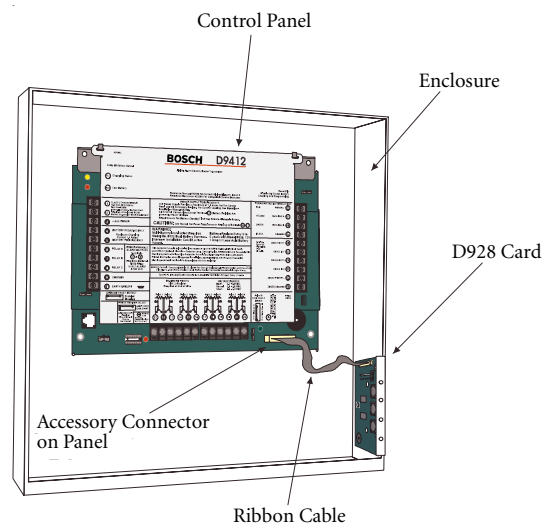

Figure 2: D928 Mounting Location

3.3 Wiring

1. The D928 has two flying leads; connect the green lead to Terminal 2 on the control panel to monitor AC power.

2a. D9112B1, D7212B1, D9412, D9112, D7412, D7212:

   Connect the black lead on the D928 to Terminal 10 on the control panel. This provides surge protection for the two incoming phone lines. This is also a ground reference for the AC LED.

2b. D9412G, D7412G:

   Connect the black lead on the D928 to Terminal 9 on the control panel. This provides surge protection for the two incoming phone lines. This is also a ground reference for the AC LED.
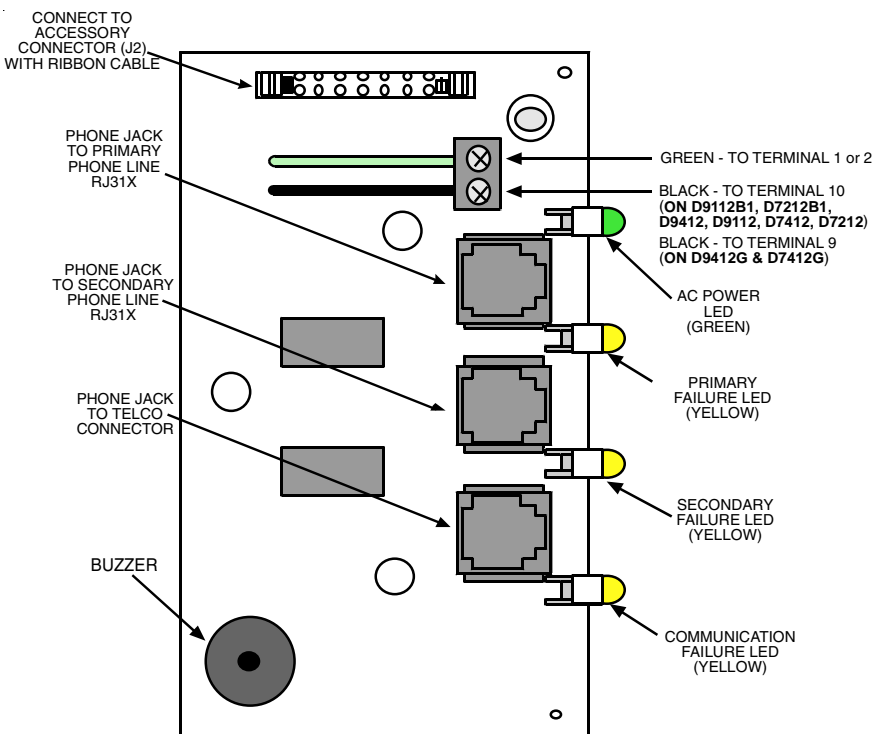
CONNECT TO ACCESSORY CONNECTOR (J2) WITH RIBBON CABLE

PHONE JACK TO PRIMARY PHONE LINE RJ31X

PHONE JACK TO SECONDARY PHONE LINE RJ31X

PHONE JACK TO TELCO CONNECTOR

BUZZER

GREEN - TO TERMINAL 1 or 2

BLACK - TO TERMINAL 10 (ON D9112B1, D7212B1, D9412, D9112, D7412, D7212)

BLACK - TO TERMINAL 9 (ON D9412G & D7412G)

AC POWER LED (GREEN)

PRIMARY FAILURE LED (YELLOW)

SECONDARY FAILURE LED (YELLOW)

COMMUNICATION FAILURE LED (YELLOW)

Figure 3: D928 Wiring and Phone Connections

3.4 Phone Connections

1. Plug one end of the ribbon cable provided with the D928 into J4 on the D928. Plug the other end of the ribbon cable into the ACCESSORY connector on the control panel.

2. Plug one end of the D162 phone cord provided with the D928 into the TELCO jack. Plug the other end of the phone cord into the TELCO jack on the control panel. Refer to the table below for phone cord lengths.

3. Plug one end of a D161 or D162 phone cord into J1 on the D928. Plug the other end of the phone cord into the RJ31X for the primary phone line. Refer to the table below for phone cord lengths.

4. Plug one end of a D161 or D162 phone cord into J2 on the D928. Plug the other end of the phone cord into the RJ31X for the secondary phone line. Refer to the table below for phone cord lengths.

Phone Cord	Length
D161	2.4 m (8 ft)
D162	61 cm (2 ft)

4.0 Programming

To use the D928, program *Two Phone Lines* and *Phone Supv Time* in the control panel. See the *Phone* section in the appropriate *Program Entry Guide* for programming instructions.