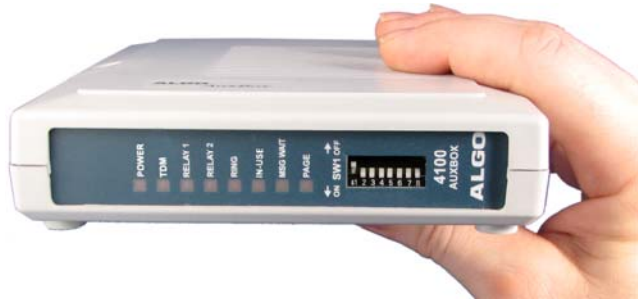




# Algo 4100 AuxBox

**Event Monitoring & Alerting Interface for  
Nortel TDM Digital Telephones**



## User Guide

Algo Communication Products Ltd.  
Toll-free (USA & Canada): 1.877.884.2546  
Tel: 604.454.3790 Fax: 604.437.5726  
sales@algosolutions.com  
support@algosolutions.com  
[www.algosolutions.com](http://www.algosolutions.com)

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## **Document Information**

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## Introduction

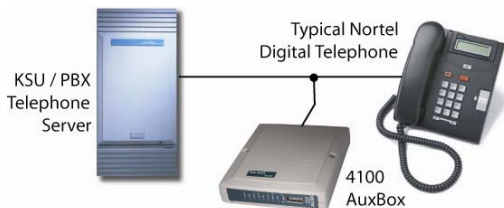
The 4100 AuxBox monitors activity of a Nortel TDM digital telephone and provides an easy-to-use interface for event notification, alerting, paging, and recording.

Simple to install at any point between the telephone server and a telephone (e.g. in the equipment room, or at the desktop), the 4100 provides dry contact closure and relay outputs for any two of the following events:

- telephone in-use (off-hook) indication
- message waiting, or
- ring status

In addition, the 4100 provides an audio output for:

- voice recording, and
- loudspeaker paging



**Figure 1 – Typical Connection to Telephone System**

## Popular applications

- Visual in-use notification, valuable for indicating to co-workers when a headset user is on an active call
- Quiet location visual ring indication in theaters, hospitals, and libraries
- Automatic headset switching based on in-use state for radio dispatchers
- Visual ring indication in night clubs or other loud locations
- Highly visible message waiting notification for important voicemail
- ACD queue threshold alerts (requires custom firmware – see page 19)

An analog audio output from the 4100 AuxBox can also be used for call recording (without need for a PC), intercom loud paging, or optional receive-only audio channel for radio station interviews.

## Features

- Works with any digital telephone for Norstar, Business Communication Manager (BCM), Meridian 1, or Communication Server 1000 (CS 1000)
- Connects to digital wire pair at the telephone location or in equipment room
- Cannot affect the telephone operation – completely passive
- Provides two relay outputs for operating external alerters
- Provides analog audio output
- USB port provided for user programmability or future firmware upgrades

## 4100 AuxBox Package Contents

- 4100 Digital AuxBox
- User Guide
- Telephone Line Cord
- Relay Cord
- Power Supply

## **Hardware Description**

The 4100 AuxBox is an electronic interface module that monitors a digital telephone line and provides outputs for event notification and call recording.

All settings for the 4100 AuxBox are made through the front panel Option Switches. Connections to external devices such as alerters or an analog recorder, are made on the back panel. The power input as well as the connections to the telephone equipment are also on the back panel.

In addition to the front panel Option Switches, the 4100 AuxBox provides a number of indication lights to communicate the status of the telephone system being monitored (see page 8).

Two dry contact closures are available on the rear of the 4100 AuxBox through 2.5mm (3/16") micro jacks labelled RELAY 1 and RELAY 2.

For voice recording, the 3.5mm (1/8") jack on the rear of the AuxBox provides an analog audio output.

One micro jack cord is supplied with the 4100 AuxBox. This cord may be used to directly connect into the "Remote" record-activation of a tape recorder, or cut in half and used to connect both relays to peripheral equipment wiring.

Two RJ12 telephone jacks are provided on the rear of the 4100 AuxBox for connection to the telephone system.

## Front Panel Description



### **POWER**

Light indicates device is powered.

### **TDM**

Winking once indicates connection to M1/Succession; Winking twice indicates connection to BCM / Norstar

### **RELAY 1**

Relay 1 is activated when light is on.

### **RELAY 2**

Relay 2 is activated when light is on.

### **RING**

Telephone is ringing when light is on

### **IN-USE**

Telephone is in-use (on handset, headset, or hands-free) when light is on

### **MSG WAIT**

Message waiting indication has been detected on the telephone when light is on

### **PAGE**

Voice call or page is in progress when light is on

### **SW1**

Refer to page 12 for an explanation of Option Switch settings and functions.



## Back Panel Description



### **USB**

Connect to USB port of PC (optional); Provides connectivity for custom programming and firmware upgrades. Contact Algo for more information.

### **POWER (24VDC 0.2A)**

Connect power adapter supplied with the unit

### **RELAY 1 / RELAY 2**

2.5mm mono jack supplying dry contact closure outputs

### **AUDIO**

3.5mm mono jack providing analog audio output

### **RJ12 JACKS**

Connect digital telephone in series using line in / line out configuration OR connect either jack to wire pair carrying digital signal

## Installation

### Telephone Connection

Two RJ12 telephone jacks are provided on the rear of the 4100 AuxBox. To connect to the telephone cable pair:

1. Disconnect your telephone line cord from the wall jack and connect to either one of the RJ12 telephone jacks on the 4100 AuxBox. Using the supplied telephone line cord, connect the second RJ12 telephone jack on the AuxBox to your telephone wall jack.
2. Ensure that your digital telephone is operational. This may take a few minutes depending on your telephone system.

**OR -**

1. The 4100 may be installed in a bridging configuration using either RJ12 jack. Maximum recommended cord length is 15 feet.

The TDM light on the front panel will show whether the telephone connection was successful. This light will be winking twice for Norstar / BCM, or once for Meridian 1 or Succession. Allow approximately eight seconds for this to begin.

Lift the telephone handset (or go off-hook with the speakerphone or headset) to turn on the “In-Use” light on the front panel of the 4100 AuxBox. This indicates that the unit is working properly.

## Mounting

The AuxBox may either be wall mounted, or may sit freely on a desktop.

For wall-mounting, secure the 4100 AuxBox using the supplied screws through the mounting holes in the cover.

## Telephone Voice Recording

The 4100 AuxBox may be used for voice recording of telephone conversations through the 3.5mm (1/8") analog audio output jack provided on the back panel using a customer supplied recording device that accepts an analog audio stream input.

Algo also offers a different model, the 4102 Digital AuxBox, specifically designed for call recording purposes. It includes everything you need to record all your telephone conversations on a standard Windows computer (refer to [www.algosolutions.com/4102](http://www.algosolutions.com/4102)). In contrast, the 4100 AuxBox provides a basic way to record without need for a PC.

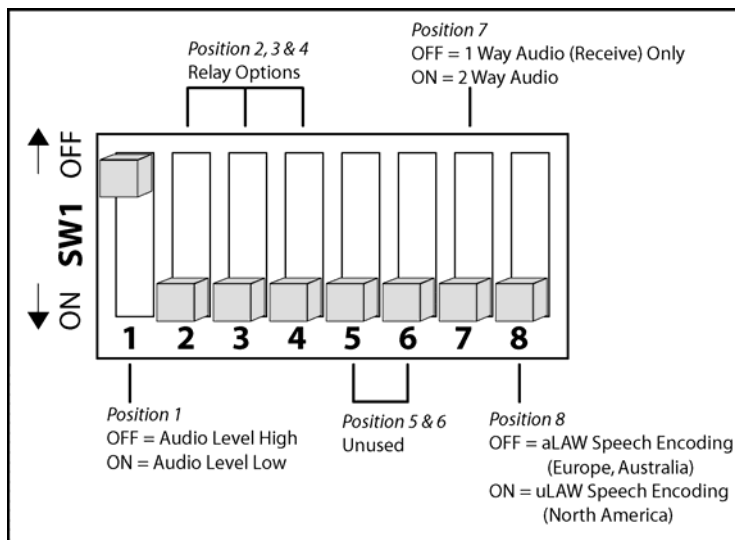
## Setting Option Switches

Eight option switches are accessible through the front panel of the 4100 AuxBox. These switches allow the user to configure the unit's operation to match the desired application.

Switch #	Description
1*	Audio Level Switch. Set the switch to the OFF (UP) position for nominal -12dBm audio level. Set the switch to the ON (DOWN) position for nominal 0dBm audio level.
2	Used to set Relay Options for external alerting equipment (refer to Table 2 on page 14)
3	
4	
5	Unused
6	
7*	Set the switch to the OFF (UP) position for recording 1-way audio (receive only) or to the ON (DOWN) position for normal 2-way audio (default position).
8*	Speech encoding setting. Set the switch to the ON (DOWN) position for North American telephone applications or to the OFF (UP) position for Europe and Australia. Incorrect settings can result in garbled audio.

**Table 1 - Option Switch Descriptions**









- \* Note: Switches 1, 7, and 8 are only important if the 4100 AuxBox is to be used for call recording.



**Figure 2 - 4100 Front Panel Switches**

## Setting Relay Options

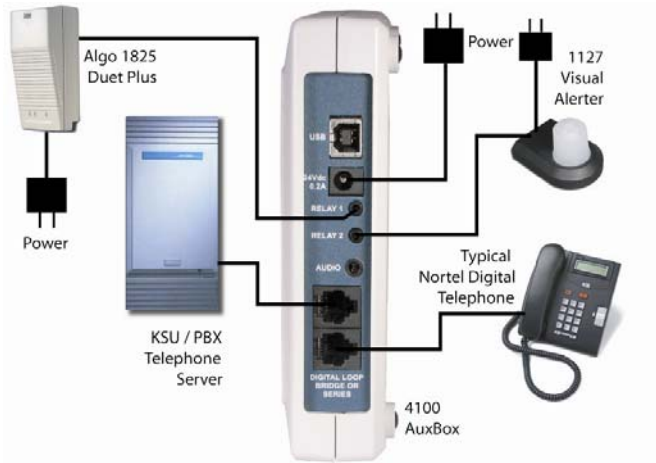
The 4100 AuxBox is equipped with two relays that provide dry-contact outputs to interface with external devices, such as Algo’s Visual and Audible Alerters (see page 24). The dry-contact functionality may be configured using Option Switches 2 to 4, as illustrated below.

Switch Settings	Relay 1	Relay 2
	Ring	In-Use
	Ring	Page
	Ring	Message Waiting
	In-Use	Page
	In-Use	Message Waiting
	Page	Message Waiting
	In-Use	In-Use
	Available for custom applications. Contact Algo.	

**Table 2 – Option Switch Settings for Relays 1 & 2**

## Application Examples

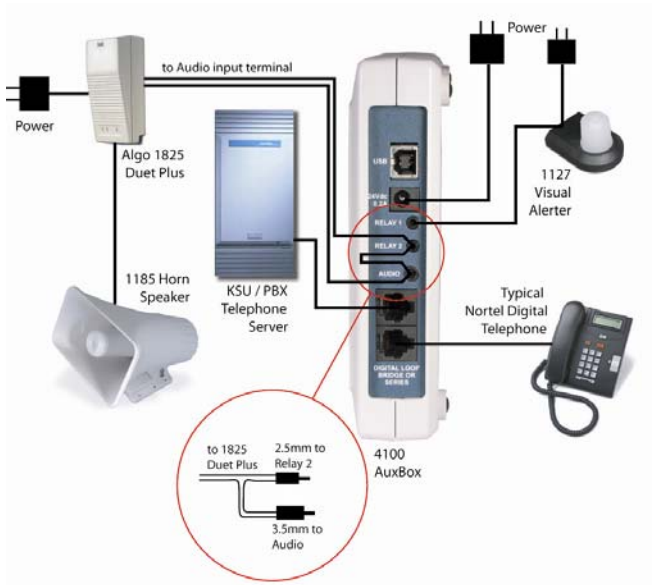
### Loud Ringing & Message Waiting



This diagram shows the 4100 AuxBox with an Algo 1825 Duet Plus for loud ringing (using Relay 1) and with the Algo 1127 Visual Alserter for Message Waiting notification (using Relay 2). For this application, (in accordance with Table 2 on page 14) front panel switches 2, 3 and 4 should be set as shown at right.



## Set Paging and In-Use Notification

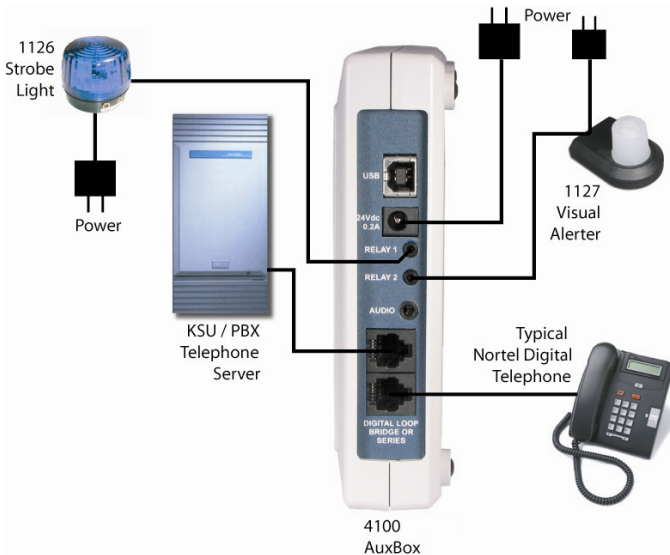


This diagram shows the 4100 AuxBox with an 1825 Duet Plus and 1185 Horn Speaker for paging (using Relay 2) and with the 1127 Visual Alerter for In-Use notification (using Relay 1). For this application, front panel switches 2, 3 and 4 should be set as shown at right. Contact Algo for instructions on required cables.





## Strobe Light Ringing & In-Use Notification



This diagram shows the 4100 AuxBox with an 1126 Strobe Light for Ring (using Relay 1) and an 1127 Visual Alserter for desktop In-Use notification (using Relay 2). For this application, front panel switches 2, 3 and 4 should be set as shown at right.



## Desktop Call Recording



This diagram shows the 4100 AuxBox connected to a standard tape recorder using the Audio output. For this application, front panel switch #1 should be set to ON (DOWN) and switches 7 and 8 should be set according to the application requirements (see page 12). If required, the recording equipment can be controlled by one of the output relays programmed to provide In-Use (Off-Hook) indication as described on page 14.

## Custom AuxBox Firmware Programming

Algo offers custom firmware programming services for all of its AuxBox products, including the 4100 AuxBox.

Custom firmware modifications are sometimes required to optimize AuxBox operation with a particular telephone system or process. As an example, modifications to AuxBox firmware can allow customers to set up special thresholds for Automatic Call Distribution (ACD) queues to provide important visual or audible alerting of queue status.

Contact Algo for more information.

## Specifications

### General

Dimensions	Width - 5-3/4" (145mm) Depth - 6-3/4" (175mm) Height - 1-1/2" (42.5mm)
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### Telephone Connection

Compatibility	M7100, M7208, M7310, M7324, T7100, T7208, T7316, T7316E, T7406, M2006, M2008, M2216, M2616, M3901, M3902, M3903, M3904, M3905, M2250 (contact Algo for M2250 wiring details)
Loop Limit	3500 ft (1065m) M1 / Succession 2600 ft (800m) Norstar / BCM
Connection	Line-in/Line-out in series or bridge tap < 15ft (4.6m)

### Power Supply

North America	117V 60Hz to 24 Vdc 200mA adapter
UK	230V 50Hz to 24 Vdc 200mA adapter
Europe/Australia	Contact Algo or your distributor

**Analog Audio Output**

Connection	3.5mm audio jack
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Level	0 dBm or -12 dBm output 600 Ohms
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**Relay Outputs (2 provided)**

Connection	2.5mm audio jack
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Voltage	Max 30V SELV
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Current	Max 50mA non-inductive
---------	------------------------

Function	Ring, In-Use (Off-Hook), Message Waiting, or Page (depending on SW1 Settings)
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**Cables Included**

Relay	6 feet (1.8m) 2.5mm plug to 2.5mm plug
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Telephone	7 feet (2.1m) 6-conductor telephone line cord
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## Warranty and Repair

The 4100 AuxBox is warranted to be free of defects in material and workmanship for a period of 18 months from the date of manufacture. A label on the bottom of the 4100 AuxBox identifies the manufacturing code in the year and week format (0420YYXXXX for the twentieth week of 2004).

If you need to return the product for repair, please contact Algo Communication Products Ltd for a Return Merchandise Authorization (RMA) number and instructions prior to shipment. All products returned for repair should be shipped freight prepaid with the RMA# clearly visible on the package. Products will be returned freight collect for out-of-warranty repairs or returned prepaid for warranty repairs in Canada or the USA.

In North America, ship product for repair with RMA# to:

Algo Communication Products Ltd.  
Repair Centre  
4500 Beedie Street  
Burnaby, BC  
Canada, V5J 5L2

Outside of North America, please contact Algo for the name of the nearest repair centre.

## Contact Information

Algo Communication Products Ltd.  
4500 Beedie Street  
Burnaby, British Columbia  
Canada, V5J 5L2  
[www.algosolutions.com](http://www.algosolutions.com)

### Sales

1.604.454.3790, Fax: 1.604.437.5726  
Email: [sales@algosolutions.com](mailto:sales@algosolutions.com)

North American Support  
Toll Free: 1.877.884.2546  
Email: [support@algosolutions.com](mailto:support@algosolutions.com)

Europe, Middle East, Africa:  
Support Email: [EMEAsupport@algosolutions.com](mailto:EMEAsupport@algosolutions.com)  
Sales Email: [EMEAsales@algosolutions.com](mailto:EMEAsales@algosolutions.com)

## Optional Enhancement Products

### 1825P Duet Plus

Multi-application loud ringer and paging amplifier for business telephone systems in an office or industrial environment.

[www.algosolutions.com/1825](http://www.algosolutions.com/1825)



### 1185 Horn Speaker

Weatherproof, 8 Ohm horn speaker can be used to significantly increase the volume of the 1825P Duet Plus Ringer above.

[www.algosolutions.com/1185](http://www.algosolutions.com/1185)



### 1127P Visual Alerter

A desktop or mountable visual indicator for message waiting, in-use or ring. Designed to be visible from all angles. Available in red, green, or blue.

[www.algosolutions.com/1127](http://www.algosolutions.com/1127)



### 1126P Strobe Light

A highly visible indicator available with clear, red, amber, or blue lens.

[www.algosolutions.com/1126](http://www.algosolutions.com/1126)



**Algo Communication Products Ltd.**

Toll-free (USA/Canada) 1.877.884.2546 Tel: 604.454.3790 Fax: 604.437.5726

[sales@algosolutions.com](mailto:sales@algosolutions.com) [support@algosolutions.com](mailto:support@algosolutions.com)

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