# 12-34-0000

## Relay Output Expansion Module

# PRODUCT MANUAL

Version 1.02

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# Salcom Product Documentation

This document is designed to familiarise you with Salcom products and guide you through the hardware, configuration, installation and overall system management.

Salcom is an environmentally conscious company and in an effort to conserve paper no longer prints manuals with shipped products.  All relevant documentation can be downloaded in PDF form from our website www.salcom.com

## Warranty and Disclaimer

Salcom products are warranted for a period of 12 months from the date of purchase against faulty materials and workmanship. Should any fault occur the unit should be returned to the vendor, freight pre-paid. Please include a description of the fault to assist with prompt return. Any unauthorised alterations or repairs will invalidate the warranty.

All information provided in this document is carefully prepared and offered in good faith as a guide in the installation, use and servicing of Salcom products. Installers must ensure that the final installation operates satisfactorily within the relevant regulatory requirements. Salcom accept no responsibility for incorrect installation. We reserve the right to change products, specifications and installation data at any time without notice

## Product Overview

The 12-34 is a low cost scalable relay output solution. Each 12-34 can allow 4 relays to be controlled using the Salcom relay control protocol. The 12-34 can be daisy chained to allow any number of relays to be controlled.

A green and red LED display operational status, a chart displaying status codes can be found in section 4 - Connections. A 12-terminal connector is used to bring all connections from the 4 relays out. The relays are not mains rated.

Programming software is not required for this product. On startup, the firmware version number, monoshot timer settings and unit ID are displayed, and can be changed.

The relay unit connects directly to a 12-84 receiver or PC serial port without any special configuration requirements. The 12-84 can be configured to send all relay control packets down the serial port to all other units.

# Installation and Connections

The power supply is connected via the green power connector to +13.8 Volts and Ground. The supply input is protected against reversed connection.
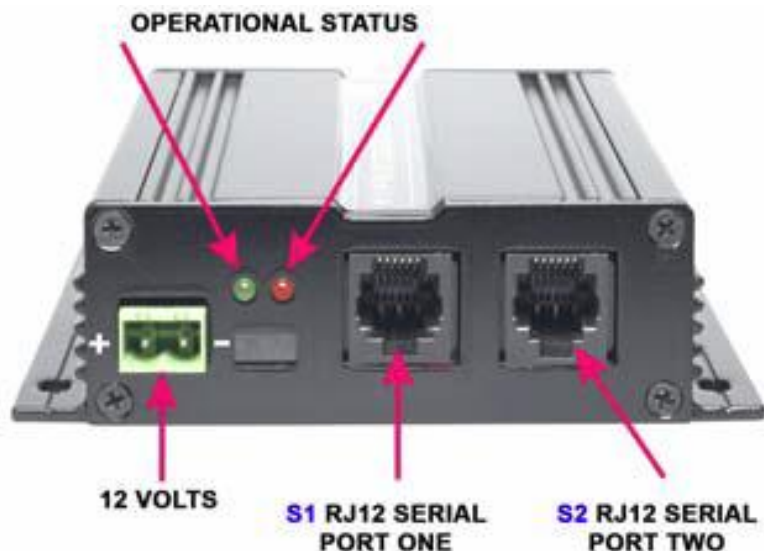


Figure 1. Pin numbering:  Looking into the sockets, pin 1 is on the left

| S1 – Serial Port One | |
|---|---|
| **Pin** | **Description** |
| 1 | Ground |
| 2 | Not Used |
| 3 | Not Used |
| 4 | Not Used |
| 5 | RS232 Rx |
| 6 | RS232 Tx |

| S2 - Serial Port Two | |
|---|---|
| **Pin** | **Description** |
| 1 | Ground |
| 2 | Not Used |
| 3 | Not Used |
| 4 | Not Used |
| 5 | RS232 Tx |
| 6 | RS232 Rx |

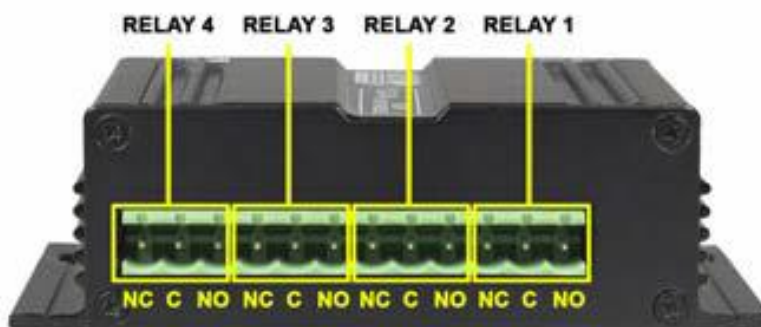

Figure 2. Pin outputs for relay connectors.
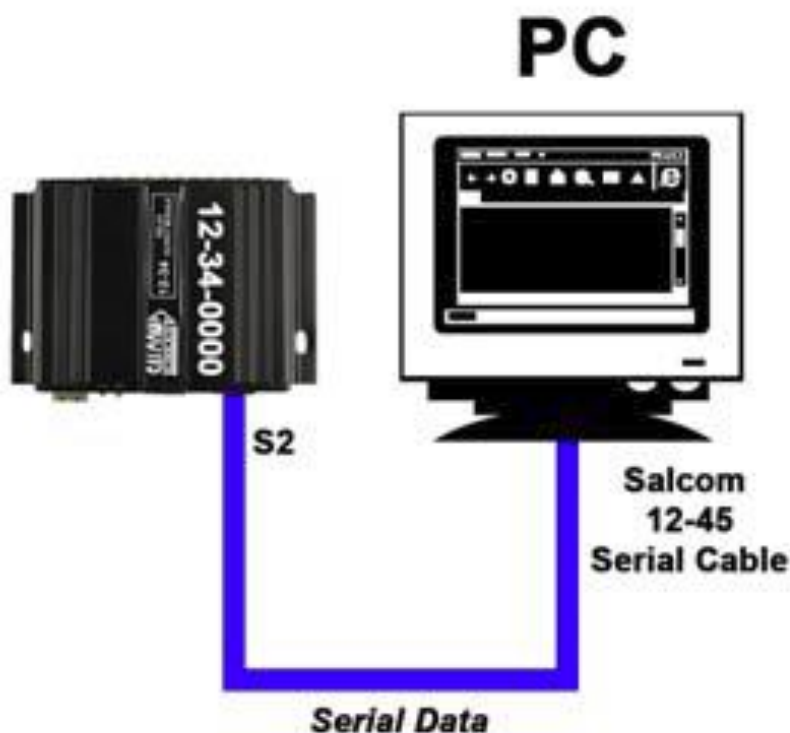
# Configuration



Figure 3. Connecting a 12-34 to a PC for configuration

The 12-34 does not require the use of configuration software, it can be set from a terminal (9600,N,8,1). Configurable items are:

- **Monoshot time for each relay**

- **Unit ID**

  On startup the 12-34 will respond with

  "SALCOM 12-34-0000 Unit ID:XX"

  "Relay 1 Monoshot time: 0 (Latched)"

  "Relay 2 Monoshot time: 0 (Latched)"

  "Relay 3 Monoshot time: 0 (Latched)"

  "Relay 4 Monoshot time: 0 (Latched)"

  "Enter ### to configure"


  When in configuration Mode the 12-34 will respond with:

  "SALCOM 12-34-0000 Configuration"

  "(1) To set Relay 1 monoshot time"

"(2) To set Relay 2 monoshot time"

"(3) To set Relay 3 monoshot time"

"(4) To set Relay 4 monoshot time"

"(5) To set unit ID"

When setting relay times the 12-34 will respond with:

"Relay 1: Enter time in mS (0 = Latched, Max 1800000)"

When setting unit ID the 12-34 will respond with:

"Unit ID: Enter unit ID (0-99)"

# Operation

After startup the unit parameters are displayed, and unit is able to be configured. Configuration mode can only be entered within 20 seconds of startup, or within 20 seconds of the last configuration item change. This is to prevent accidental configuration changes.

Reception of a relay control packet within the startup period will result in the 12-34 immediately exiting config mode.

The green LED shows unit operational status – flashes when ready and idle. The red LED flashes upon error, or is held steady on for at least one second upon reception of any command valid for that unit.

The green LED is also held steady on for at least one second when there is a valid command for ANY unit, allowing a daisy-chained arrangement to be easily inspected.

| Green LED | Red LED | Description |
|---|---|---|
| Slow Flashing | OFF | Unit Operational and Idle |
| ON (at least one second) | OFF | Valid command received, but wrong ID |
| ON (at least one second) | ON (at least one second) | Valid command received for this unit |
| Slow Flashing | Fast Flashing | Error Condition |

### Relay Operation

Relays are controlled using Salcom relay control protocol – see (Relay Control Protocol below).

The 12-34 will tolerate 12-84 protocol, looking for the relay control protocol payload embedded in the string. The 12-34 will tolerate the relay control protocol being embedded anywhere within a string, so will cope with messages like "Main Door Open 01109" or "02112378987 01109".

In the case of complex numeric messages the 12-34 will act on the first instance where a valid relay control protocol is matched for that unit ID. Commands are not buffered within the 12-34, simply inspecting the contents of the serial string, and passing the message immediately on again to be processed again by the next 12-34 in the system.

### Relay Control Protocol

Relay commands take the form IIC0X9 where:

II is the 2 character unit ID, C is a variable number of relays to close (up to 4). 0 marks the end of relays to open, X is a variable length list of relays to close (up to 4). Commands are always terminated by a 9. A red LED will display on the PCB showing which relay is closed.

e.g.

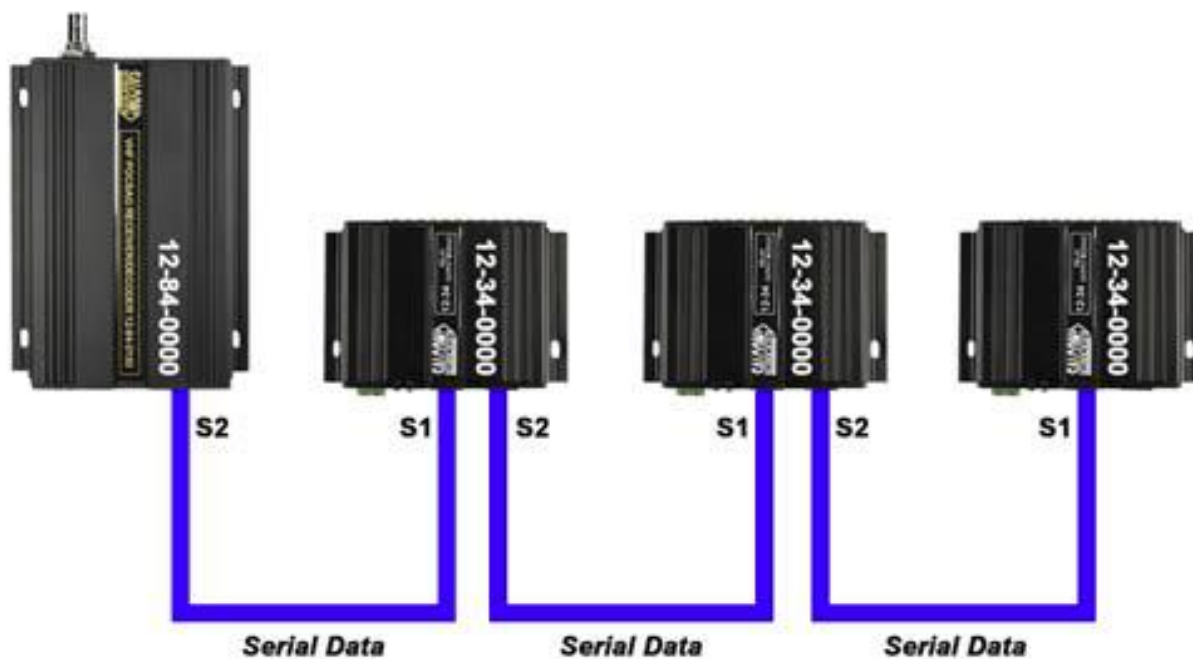| | |
|---|---|
| 23109 | Will only address a unit with matching ID 23. |
| | Relay 1 will be closed. No other action taken. |
| 231209 | Will close relay 1 and 2 on a unit with the ID of 23. |
| 230129 | Will open relay 1 and 2 on a unit with the ID of 23. |
| 23012349 | Will open relay 1,2,3 & 4 on a unit with the ID of 23 |

# Multiple Unit Set-Up



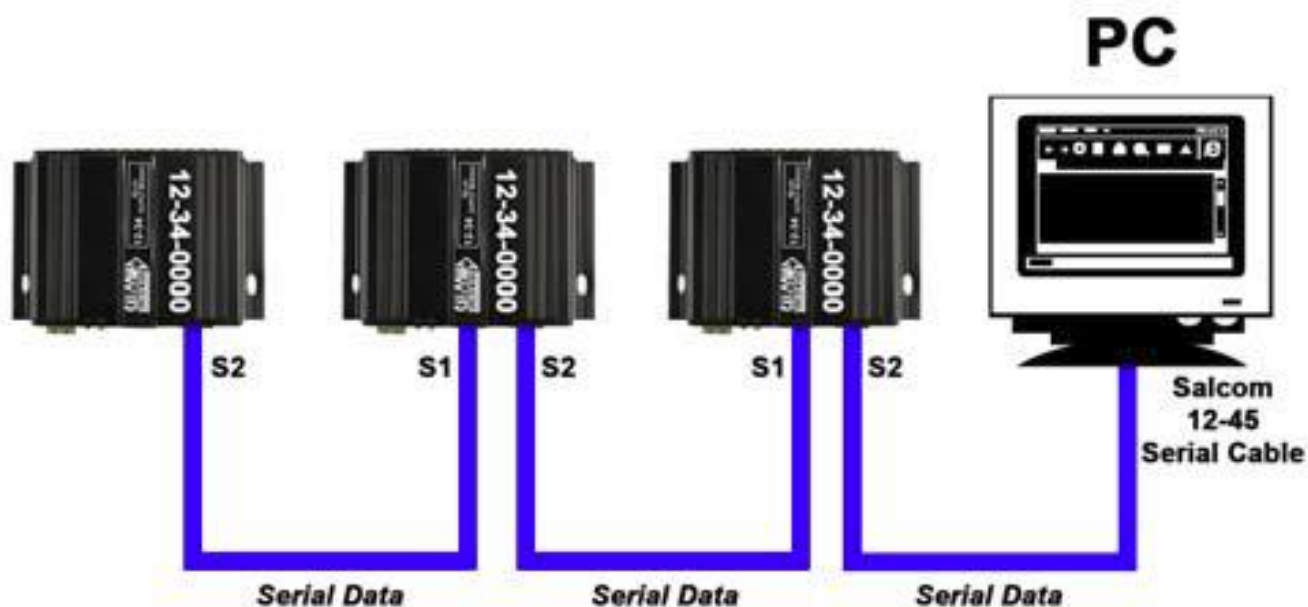Figure. 4. Multiple units controlled by a 12-84 receiver



Figure. 5. Multiple units controlled by a PC

# Technical Specification

| Technical Specification 12-34-0000 - Relay Output Expansion Module | |
|---|---|
| Power Supply | +13.8V typical (11 to 15 VDC range) |
| Power Consumption | Normal Operation: 37mA<br>Relays: 20mA per energized relay |
| Configuration Application | Terminal |
| Programming Cable | 12-45-0000 (RJ12 - DB9)<br>Can be used with a USB to RS232 DB9 Serial Adapter Cable |
| Serial Port | 9600 , N, 8, 1; RS232 |
| Discrete Outputs | 4 Relay Contacts (1A @ 24VDc)<br>Note: Not suitable for 240VAC Connections |
| Connectors | Serial Port 1 (RS232) = RJ12 (6P6C)<br>Serial Port 2 (RS232) = RJ12 (6P6C)<br>Relay Outputs (4 off) = 12-way plug & socket, screw connections (supplied) |
| Power Connector | 2-way plug & socket, screw connections (supplied) |
| Environmental Protection | Not suitable for outdoor use and should be protected from adverse environmental conditions |
| Operating Temperature | -10ºC to +50ºC (+14ºF to +122ºF) |
| Indicators | Power LED (Green)<br>   - Slow Flashing = Normal Operation<br>   - Solid (>1s) = Valid Command Received<br>Status LED (Red)<br>   - On = Valid Command for This Unit<br>   - Fast Flashing = Error Condition |
| Weight | 160g |
| Enclosure Dimensions | 70mm x 100mm x 30mm (WxDxH) |
| Enclosure Material | Extruded aluminium |
| Colour | Matt black |

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