FIRE AND SECURITY

AUTRO SAFE
Self Verify®

Interfacing BU-70 Display Units and BU-100/BU-101 Panels

AutroSafe BU-70 Interface BSL-337

Protecting life, environment and property...

AUTRONICA

CE

Table of Contents

1. Introduction

1.1 About the Handbook

This handbook provides all necessary information required to interface BU-70 display units and BU-100/BU-101 parallel operation panels in the BS-100 system to AutroSafe Fire-detection systems. The BU-70 display units and BU-100/BU-101 parallel operation panels are referred to as BU-panels in this handbook.

The purpose of the **AutroSafe BU-70 Interface BSL-337** (hereby called the BSL-337 interface) is to convert data transmitted from AutroSafe, via a RS-232 serial connection using the AutroCom protocol, into the proprietary communication protocol ASSP (Autronica Standard Short Protocol for BU-panel communication).

In this way, information from the AutroSafe system can be shown on displays on BU-panels, and RESET and SILENCE commands can be sent from BU-100/BU-101 panels to the AutroSafe panel.

1.2 The Reader

This handbook is designed for use by Autronica Fire and Security service personnel.

1.3 Reference Documentation

In addition to this handbook, Autronica Fire and Security offers the following documentation:

Documentation	Product	Part number
Datasheet	AutroSafe BU-70 Interface BSL-337	116-P-BSL337/CE
Datasheet (included in Appendix)	RS-232/Current Loop Interface BSL-12/2	116-P-BSL12/2/CE
Datasheet (included in Appendix)	Data Communication Line Splitter	116-P-KDL26B/CE
Installation, Commissioning and Operator's Handbook	Display Unit BU-70	116-P-BU70/IE
Installation, Commissioning and Operator's Handbook	Parallel Operation Panel BU-100 and BU-101	116-P-BU100/EE

2. Description

2.1 Functional description / application

2.1.1 Messages transmitted from AutroSafe to BU-70 display units and BU-100/BU-101 panels

The Autronica BSL-337 interface allows BU-panels (BU-70 display units and BU-100/BU-101parallel operation panels) to be connected to AutroSafe series fire-detection panels so that information from the AutroSafe system is shown on the BU-panels' displays, including:

- Alarms
- Prealarms
- More alarms
- LED On/Off
- Reset commands (resetting all BU-panel tables and panels)

Note that the same messages, including detection zone and point information, are displayed on all BU-panels.

2.1.2 Messages transmitted to/from BU-100/BU-101 panels to AutroSafe

RESET and SILENCE commands can be transmittet from the BU-100 panels (parallel operation panels) to the AutroSafe system by operating the RESET button and SILENCE SOUNDER button (silence alarm) on the BU-100 panel. Note that BU-101 only has a SILENCE BUZZER button.

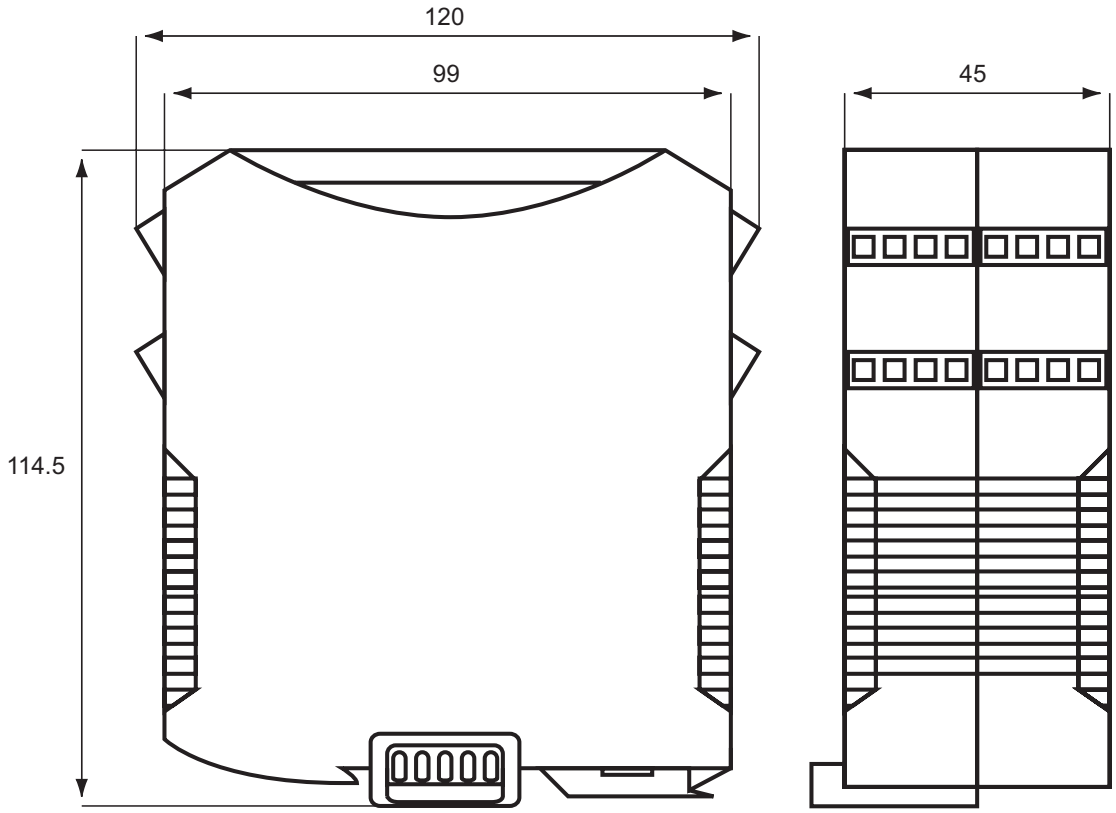
2.1.3 Messages related to different operation zones

If the AutroSafe system consists of a top level operation zone with several sub-operation zones, messages related to a specific AutroCom port, i.e. a specific operation zone, can be routed to a group of BU-panels which physically belongs to this AutroCom port/operation zone.

2.1.4 Printer support

Note that the printer function on the BU-100 Parallel Operation Panel is *not* supported by using the BSL-337 interface.

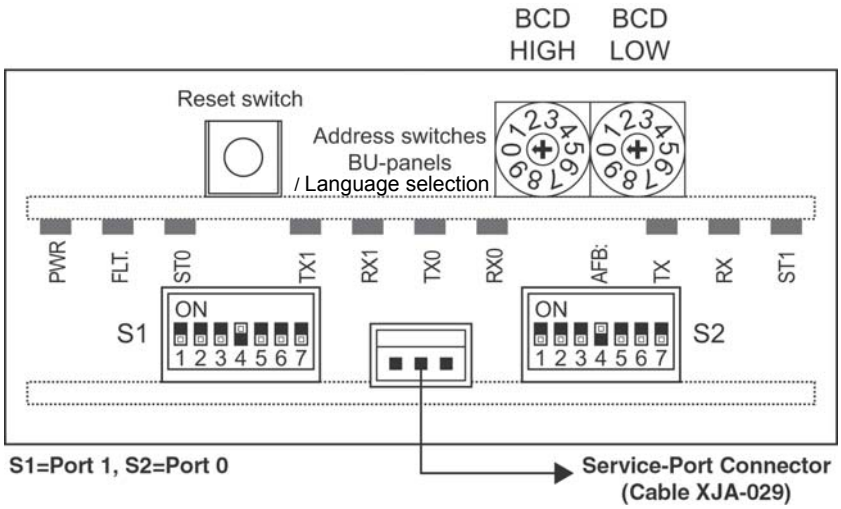
2.2 Dimensions



2.3 Specifications

Physical		
Dimensions (mm)	114,5 x 120 x 45 (HxDxW)	
Weight	250g	
Mounting	TS-35 DIN-rail (internally or externally to AutroSafe panels)	
Materials	PC/ABS	
Colour	Green	
Interface		
Ports	Two asynchronous ports + service port	
BU-70-communication	Port 0 1200 baud	RS-232
AutroSafe communication	Port 1 9600 baud, 8, N, 1	RS-232
Service PC	Service port 115200 baud, 8, N, 1	RS-232
Protocol Convertion	Port 0: Autronica Standard Short Protocol (ASSP) Port 1: AutroCom protocol	
Cable Terminals	Plug-in screw connection, maximum 2.5mm^2 cable	
Interface Options		
Port 0 (to BU-70)	RS-232 (maximum length 10m)	
Port 1 (to EAU-321)	RS-232 (maximum length 10m)	
Power		
Power Supply (from AutroSafe)	18–32V DC	
Current Consumption	Typically 150–200mA @ 24V DC	
Environmental		
Working temperature	–10–+60°C	
Storage temperature	–25–+70°C	
Relative humidity (operating and storage)	10–95%, RH (non-condensing)	
Level of Protection	IP-20	
EMC Compliance		
EMC Compliance	IEC 60945	
Emissions	EN 50081-2 (94)	
Immunity	EN 50082-2 (95)	

2.4 Indicators and buttons



= Switch in ON position

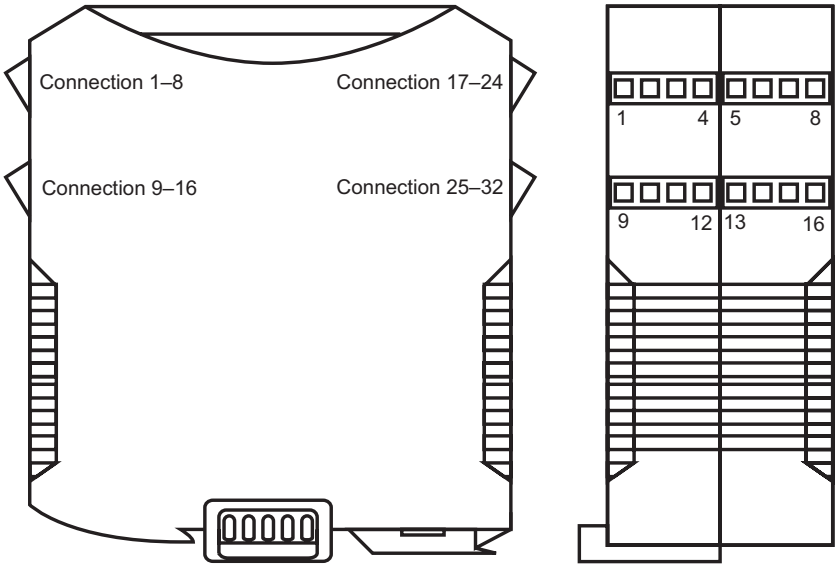
Name	Color	Description
PWR	Green	Steady ON: Power OK Note: The LED flickers slightly once every second. This is an indication that the software is running.
FLT	Red	Pulsating: Fault The reason for the fault will normally be presented on the AutroSafe display as a fault from BSD-337. The Fault LED will also flash if the AutroSafe communication is lost.
ST0	Yellow	Pulsating: Sending AutroSafe events to BU-panels (BU-70 and BU-100/BU-101). Application level indicator: The BSL-337 queues AutroSafe events , and this LED can be lit continuously in periods with high traffic.
TX1	Green	Pulsating: AutroCom data sent to AutroSafe
RX1	Red	Pulsating: AutroCom data received from AutroSafe. TX1/RX1: As a minimum, there will be communication every 3 seconds with a brief flash in both LEDs.
TX0	Green	Pulsating: data sent to BU-panels (BU-70 and BU-100/BU-101).
RX0	Red	Pulsating: data received from BU-panels (BU-70 and BU-100/BU-101).
AFB TX		Not in use
AFB RX		Not in use
AFB ST1		Not in use
S1		DIP-switches for port 1 (to AutroSafe) (S1.4 ON)
S2		DIP-switches for port 0 BU-panels (BU-70 and BU-100/BU-101), (S2.4 ON)
BCD High / BCD Low		The rotary switches are used to determine both the language (addresses 60-64) and the total number of BU-panels connected (addresses 01-16). Refer to chapter 6.3. BCD High Language selection: The switch determines the number of ten-digits (6). Total number of BU-panels (BU-70 and BU-100/BU-101): The switch determines the number of ten-digits (0 or 1) BCD Low Language selection: This switch determines the number of one-digits (1-4). Total number of BU-panels (BU-70 and BU-100/BU-101): The switch determines the number of one-digits (0-9)

2.5 Connectors

The plug-in screw terminals are numbered 1 – 32.

Terminal	Function	Terminal	Function
1	NC	17	NC
2	NC	18	NC
3	NC	19	NC
4	NC	20	NC
5	NC	21	Service port, Tx. RS-232
6	NC	22	Service port, Rx. RS-232
7	NC	23	Service port, Signal reference, RS-232
8	NC	24	NC
9	NC	25	TX, RS-232, Port 0
10	NC	26	RX, RS-232, Port 0
11	NC	27	Signal Reference, Port 0
12	NC	28	Instrument Earth, Port 0
13	TX, RS-232, Port 1	29	+24V DC Input
14	RX, RS-232, Port 1	30	0V DC Input
15	Signal Reference Port 1	31	Instrument Earth, common
16	Instrument Earth Port 1	32	Protective Earth, common

* Additional service port connection on 3-pin plug connector by use of service cable XJA-029



3. Installation

3.1 Hardware Requirements

In order to interface BU-panels to an AutroSafe system, the following hardware is required:

- AutroSafe Serial Communication Board EAU-321 — port 1 or 2 (See section 3.7 and 3.8).
- AutroSafe BU-70 Interface BSL-337
- Current Loop/RS-232 Converter, BSL-12/2
- Cables: XBA-055 or XGK-1/20-30 with terminal block

- If more than 16 BU-panels are to be connected, additional BSL-337 interfaces and Current Loop/RS-232 Converters BSL-12/2 must be installed (refer to chapter 3.4).

3.2 Software Requirements

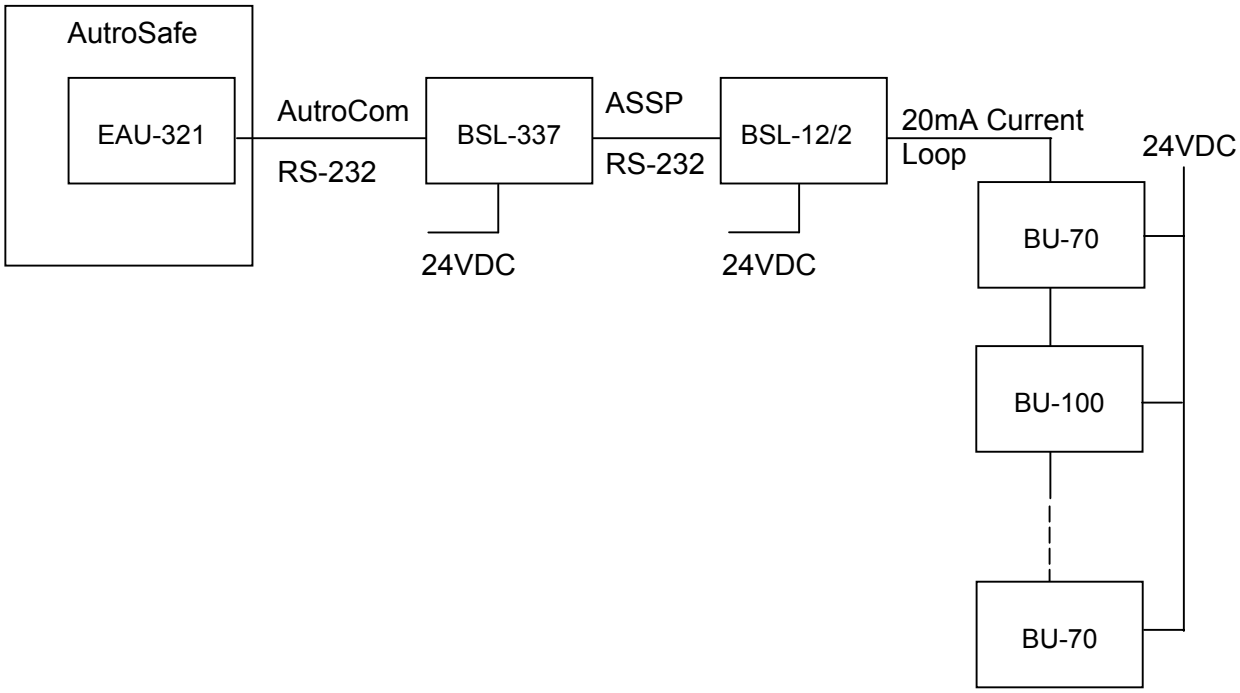
- AutroSafe system software version 3.2.0 or later
- AutroSafe AutroCom parameters:
  - baud rate 9600
  - 8 data bit
  - none parity
  - 1 stop bit

3.3 Installation Overview - up to 16 BU-panels

The following system blocks are referred to in this overview:

EAU-321	AutroSafe Serial Communication Board in AutroSafe panel
BSL-337	AutroSafe BU-70 Interface
BSL-12/2	Current Loop/RS-232 Converter
BU-70	Display Unit
BU-100/BU-101	Parallel Operation Panel

A maximum of 16 BU-panels can be connected to an AutroCom port. If the AutroSafe panel is to be connected to more than 16 display BU-panels, additional BSL-337 interfaces and Current Loop/RS-232 Converters BSL-12/2 must be connected to the other available AutroCom port (refer to chapter 3.4).

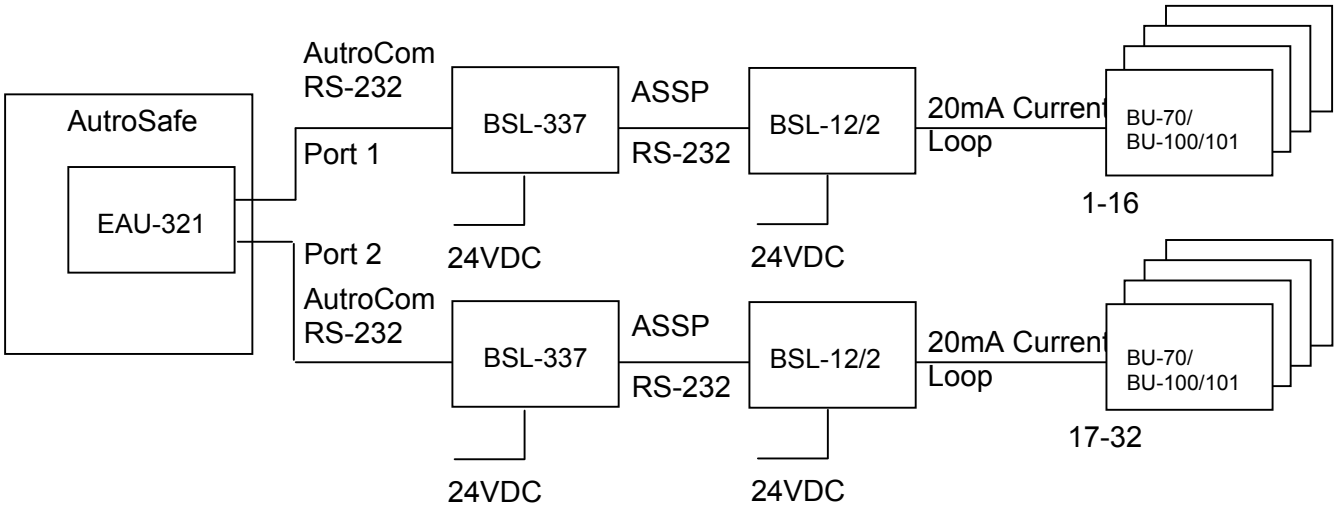


3.4 Installation Overview - more than 16 BU-panels

The following system blocks are referred to in this overview:

EAU-321	AutroSafe Serial Communication Board in AutroSafe panel.
BSL-337	AutroSafe BU-70 Interface
BSL-12/2	Current Loop/RS-232 Converter
BU-70	Display Unit
BU-100/BU-101	Parallel Operation Panel

If the AutroSafe panel is to be connected to more than 16 BU-panels, an additional BSL-337 interface and Current Loop/RS-232 Converter BSL-12/2 must connected to the other available AutroCom port. Up to 2 AutroCom ports can be used per AutroSafe panel, allowing a system setup consisting of a maximum of 32 BU-panels.



3.5 Installation Overview – star-connection using a communication line splitter

The following system blocks are referred to in this overview:

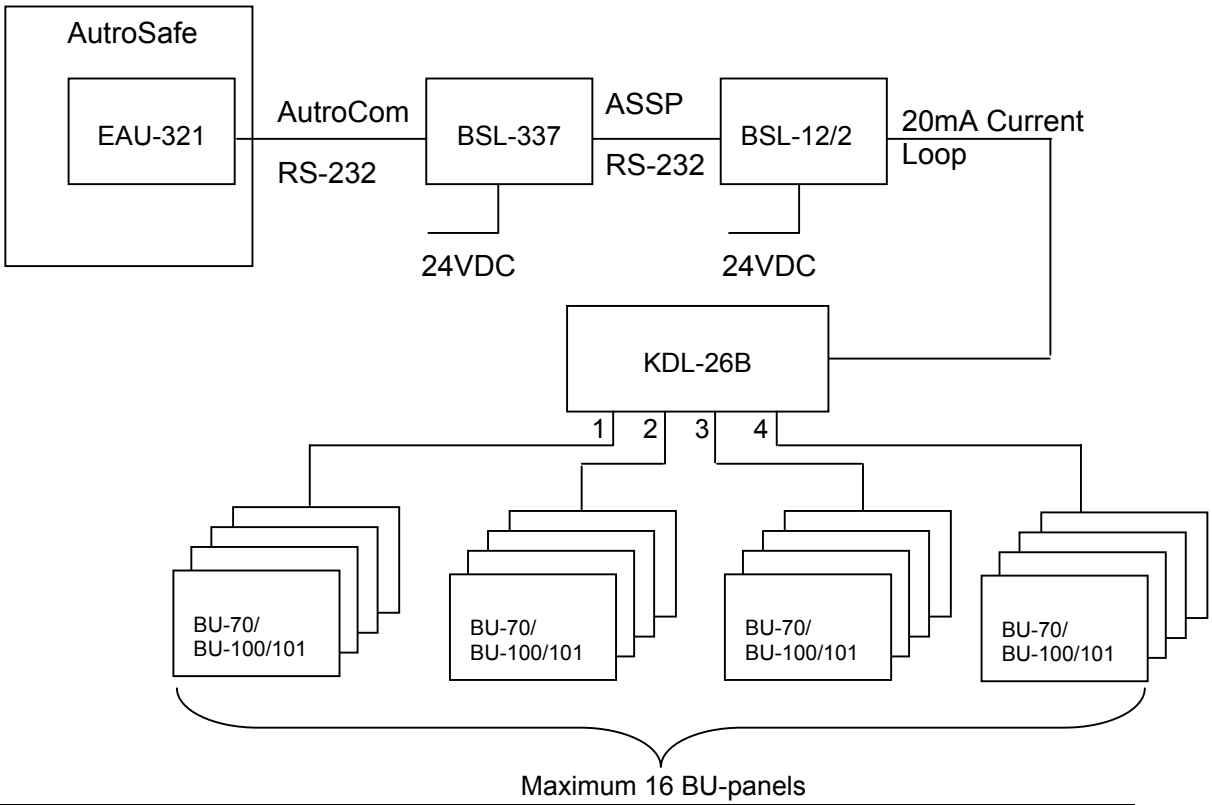
EAU-321	AutroSafe Serial Communication Board
BSL-337	AutroSafe BU-70 Interface
BSL-12/2	Current Loop/RS-232 Converter
KDL-26B	Communication Line Splitter
BU-70	Display Unit
BU-100/BU-101	Parallel Operation Panel

The Communication Line Splitter KDL-26B can be used to split the communication line from AutroSafe to BU-panels into 4 separate communication lines. This is especially useful in distributed systems where there are larger distances between system panels.

A system setup using the Communication Line Splitter KDL-26B provides a more secure communication line, as a fault on one communication line will not affect other communication lines. Furthermore, in larger distributed systems a star-connection will ease the installation.

Due to power consumption, a maximum of 10 BU-panels can be connected to one communication line (recommended limitation). The maximum number of BU-panels connected to each Communication Line Splitter is 16.

If the AutroSafe panel is to be connected to more than 16 BU-panels, an additional BSL-337 interface and Current Loop/RS-232 Converter BSL-12/2 must connected to the other available AutroCom port. Up to 2 AutroCom ports can be used per AutroSafe panel, allowing a system setup consisting of a maximum of 32 BU-panels.



3.6 Standard Communication Parameters

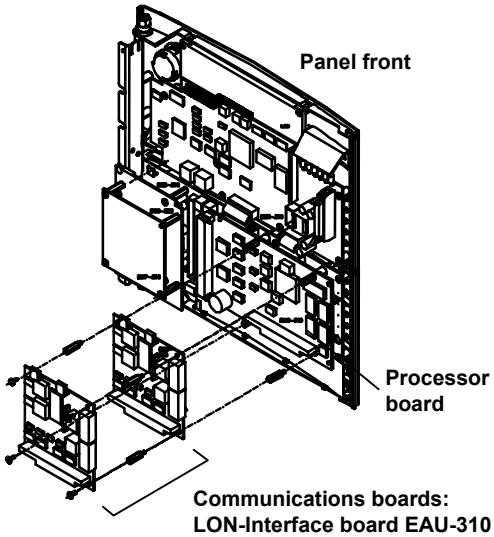
The BSL-337 is delivered from the factory containing the following communication parameters:

- Port 0, to BU-70: 1200 baud
- Port 1, to AutroSafe: 9600 baud, 8 databit, none parity, 1 stop bit

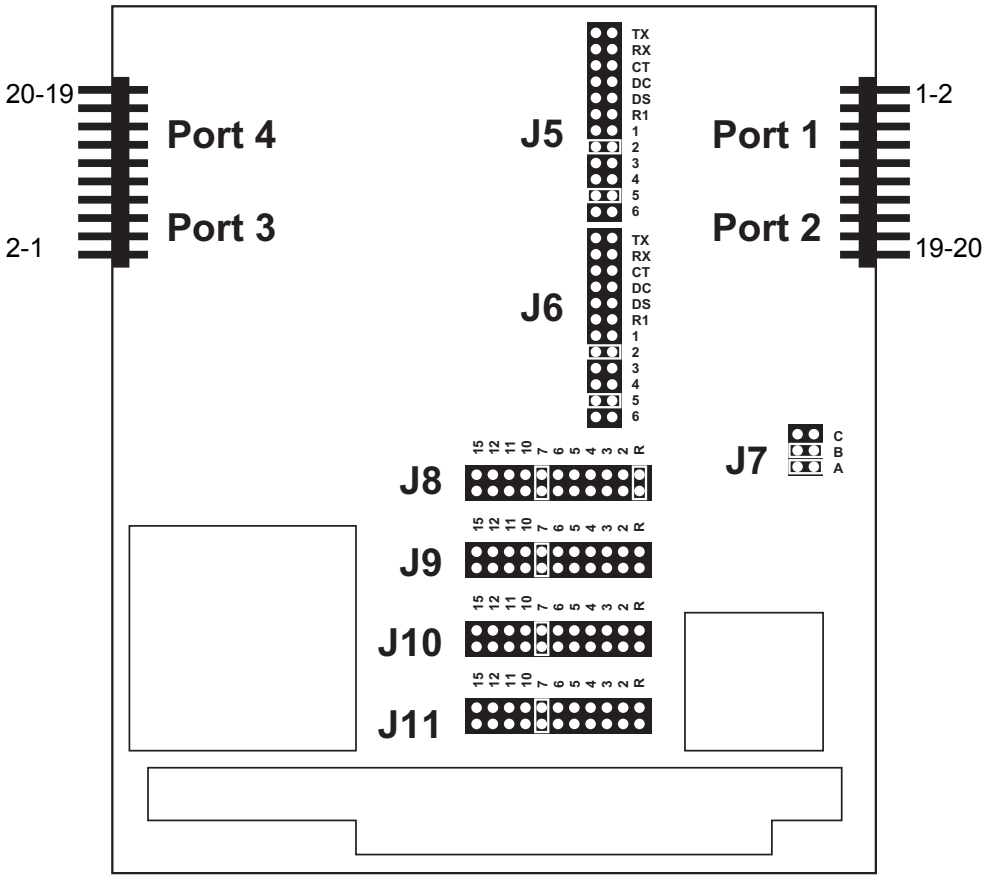
3.7 EAU-321 Serial-Port Communication Board

The BSL-337 requires that the EAU-321 Serial-Port Communication Board is installed in the relevant AutroSafe panel; this allows the AutroSafe panel to communicate with BSL-337 using RS-232 on port 1 or 2.

The EAU-321 Serial-Port Communication Board, when installed, is located as per figure:



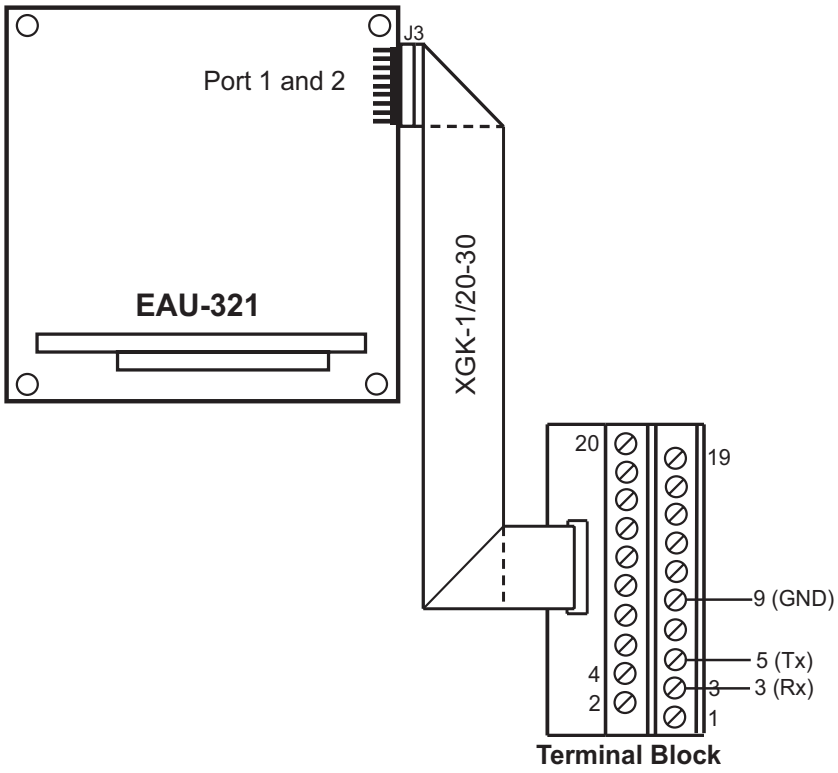
3.7.1 Jumper Settings — EAU-321



Note that J5 determines port 1, and J6 determines port 2; in an application where port 1 is in use by other equipment, then J6 should be set as shown in the diagram, to allow connection of the BSL-337 interface.

Important: It is important that the physical port used and the port you configure in the software corresponds to eachother.

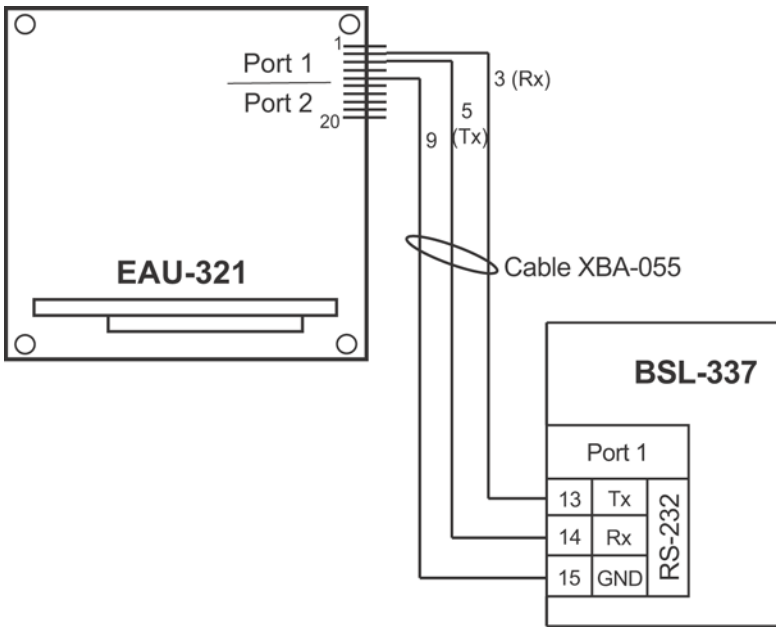
3.7.2 Termination by use of ribbon cable and standard screw terminal block



The drawing shows an EAU-321 Port 1-connection. EAU-321 Port 2 may be used with connection terminals 13, 15 and 19.

3.7.3 Termination by use of cable XBA-055

Ribbon cable XBA-055 can be connected directly to the screw terminal on BSL-337.

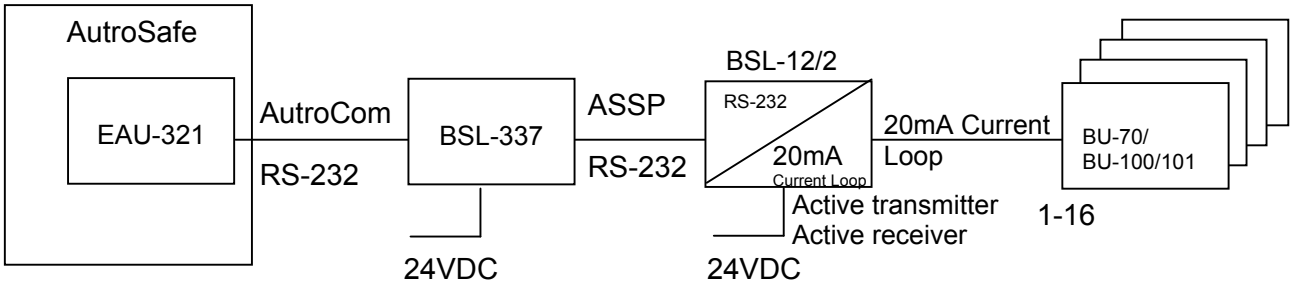


3.8 RS-232 / Current Loop Communication

3.8.1 Overview

The following system blocks are referred to in this overview:

EAU-321	AutroSafe Serial Communication Board
BSL-337	AutroSafe BU-70 Interface
BU-100/BU-101	Parallel Operation Panel
BU-70	Display Unit
BSL-12/2	Current Loop/RS-232 Converter



3.8.2 The Autronica Standard Short Protocol (ASSP)

The BU-panels in the BS-100 system are prepared for 20mA current loop communication with passive transmitter and passive receiver. Autronicas internal protocol Autronica Standard Short Protocol (ASSP) is used as the communication protocol for BU-panels.

3.8.3 Current Loop / RS-232 Converter BSL-12/2

Port 0 on the BSL-337 interface uses the ASSP communication protocol. To enable communication between AutroSafe and BU-panels, a current loop/RS-232 converter must be used. The converter's current loop must be configured and connected as an active transmitter and active receiver.

For this purpose, the Current Loop/RS-232 Converter BSL-12/2 is used. The converter is supplied with 24VDC power from the AutroSafe system panel. The 24VDC power supplied from the AutroSafe panel has battery backup.

3.8.4 Maximum length of communication lines

The recommended maximum length of the communication lines are as follows:

RS-232 < 10 metres
20mA current loop < 1200 metres

3.8.5 Cable connections between BU-panels in the BS-100 system

For information regarding cable connections between BU-panels (BU-70 display units and BU-100/BU-101 panels), refer to separate documentation (116-P-BU70/IE and 116-P-BU100/IE).

4. BSL- 337 Installation

The BSL-337 interface and RS-232/Current Loop Converter BSL-12/2 may be installed in one of two ways: internally or externally to the panel to which it is connected.

4.1 Two Types of Installation

4.1.1 Panel-Internal Installation

Connect BSL-337 to the relevant port on the installed EAU-321 board; install the unit directly onto the panel-internal DIN-rail. The module is powered by the internal 24VDC power supply.

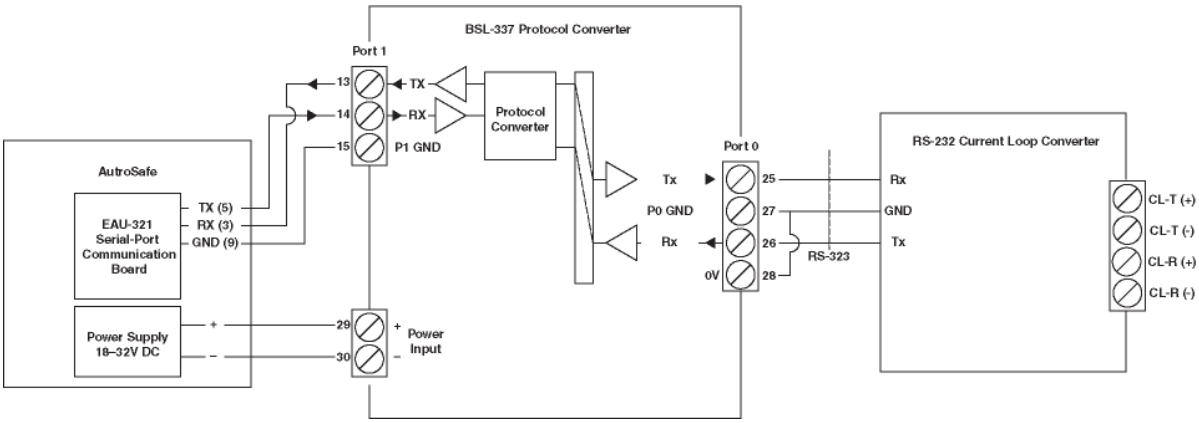
4.1.2 Panel-External Installation

The modules can also be placed on an external DIN-rail (outside of the AutroSafe cabinet) and powered from AutroSafe or with an external 24VDC power supply. Connect the unit to the relevant port on the installed EAU-321 board. RS-232 distance limitations apply — i.e. maximum 10 metres. If longer distances are required, a modem and shielded cable are recommended (port 1 is insulated).

4.2 Mounting and Connections

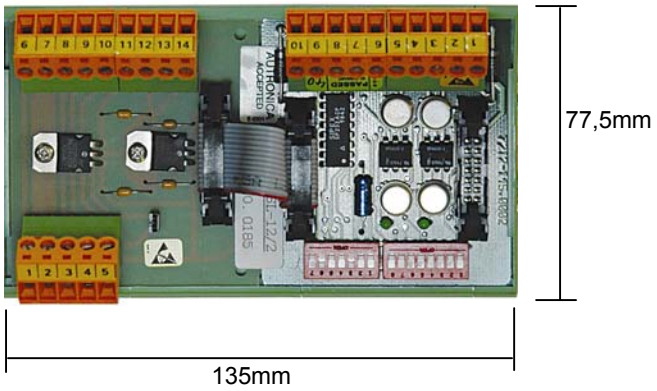
Warning:
If you connect the power supply to the wrong terminals, the unit may be damaged. Make sure that the BSL-337 and EAU-321 are connected to the AutroSafe power supply as described in this chapter.

4.2.1 General Connection



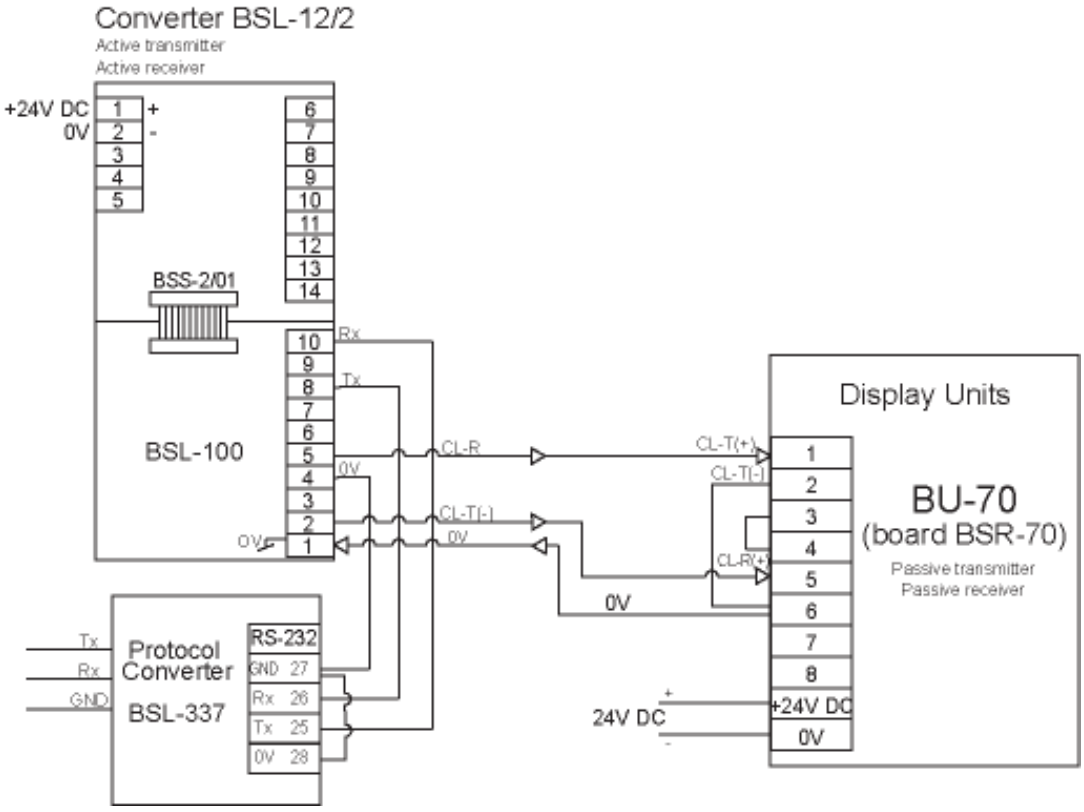
4.2.2 Mounting the Current Loop/RS-232 Converter BSL-12/2

The Current Loop/RS-232 Converter BSL-12/2 has configurable inputs and outputs. The converter is delivered as a separate circuit board on a bracket prepared for mounting on a standard TS-35 rail.



4.2.3 Connections between the Current Loop/RS-232 Converter BSL-12/2 and BU-panels

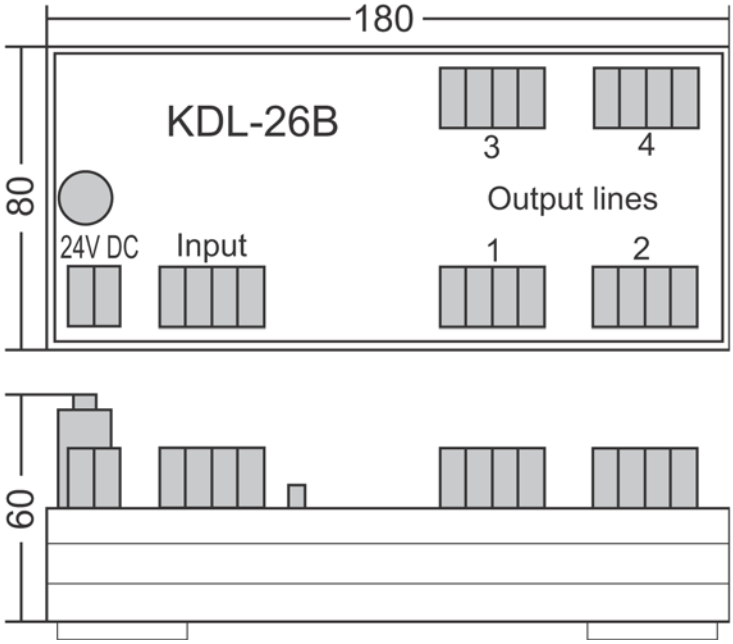
All cables are connected to screwterminals.



If a system consists of more than one BU-panel, the BU-panels are interconnected. For this information, refer to cable connections for BU-70, BU-100/BU-101 described in the BS-100 documentation.

4.2.4 Mounting the Communication Line Splitter KDL-26B

The Communication Line Splitter KDL-26B is delivered as a separate circuit board on a bracket prepared for mounting on a standard TS-35 rail.

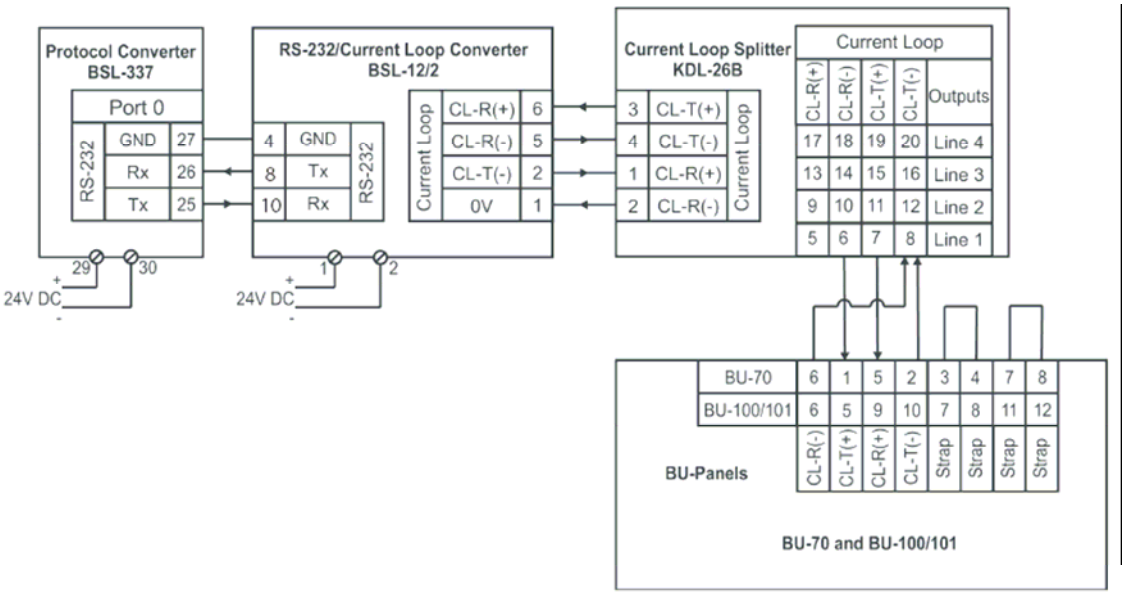


4.2.5 Connections between the Current Loop/RS-232 Converter and the Communication Line Splitter KDL-26B

The Communication Line Splitter KDL-26B is used to split the communication line from AutroSafe to BU-panels into 4 separate communication lines.

A maximum of 10 BU-panels can be connected to one communication line (recommended limitation). The maximum number of BU-panels connected to each Communication Line Splitter is 16.

The communication output lines must be configured as active transmitter and active receiver. The communication lines in the drawing below applies terminal outputs5-8, 9-12, 13-16 and 17-20.



Configuration of current loop

BSL-12/2
Current loop:
- Active transmitter
- Passive receiver

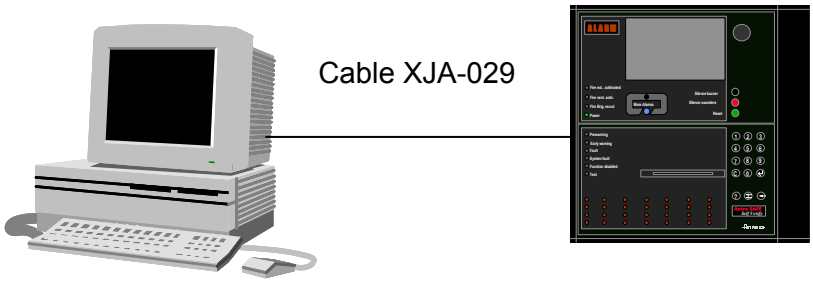
KDL-26B
Input:
- Active transmitter
- Passive receiver

Outputs:
- Active transmitter
- Active receiver

BU-70, BU-100, BU-101
Current loop:
- Passive transmitter
- Passive receiver

5. Configuring the AutroSafe System

5.1 Introduction



The procedure deals with the configuration of the AutroSafe Interactive Fire Alarm System. The AutroSafe Configuration Tool is used for this purpose.

The chapter includes the following:

- Configuring the AutroSafe System
- Connecting the cable for downloading
- Downloading the AutroSafe Configuration

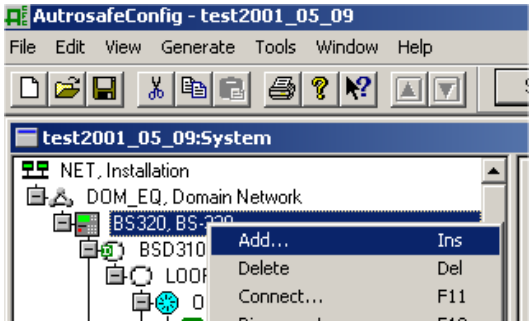
5.2 Configuring the AutroSafe System

The necessary configuration of the AutroSafe includes the following:

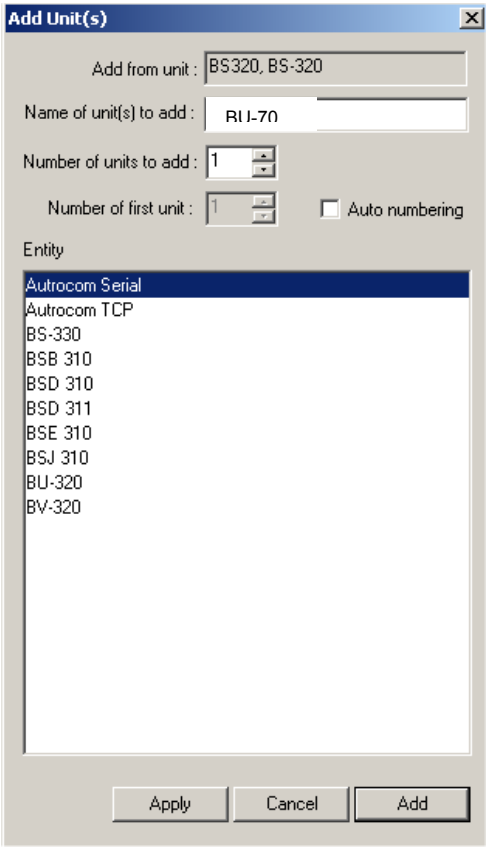
- From the Main Menu in AutroSafe Configuration Tool, click on *View* and select *System* (*System View*).
- In the Tree View on the left side of the screen, click on the Panel (BS-310/-320) where the AutroCom Serial is to be added.

  Note: Make sure that the selected panel is actually the one where the Serial Port Communication Board EAU-321 is mounted.

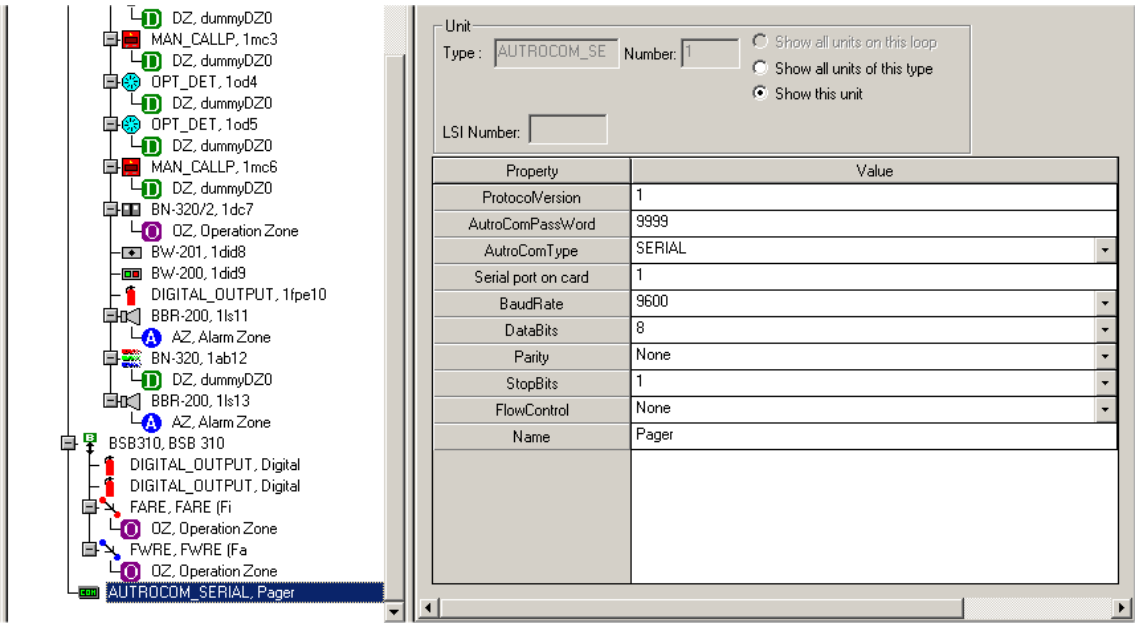
- Right-click the mouse and select *Add*.



- In the popup menu that appears, write the name of unit to be added, and state the number of units to be added (if necessary).

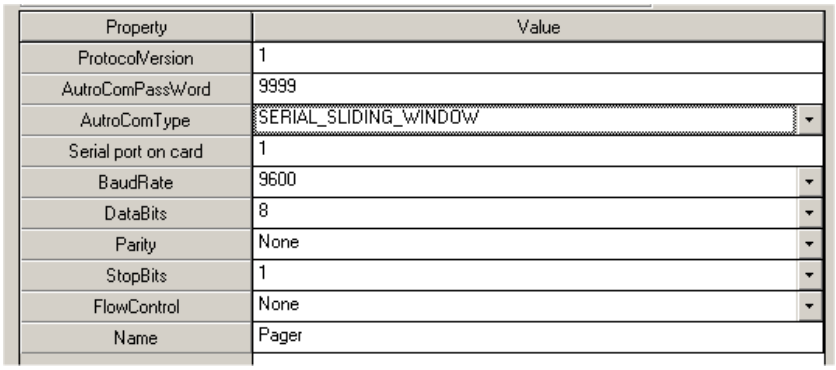


- Click on *AutroCom Serial* in the Entity window, then click on the *Add* button.
- In the Tree View, click on the AutroCom Serial (in this example named AUTROCOM_SERIAL_Pager).



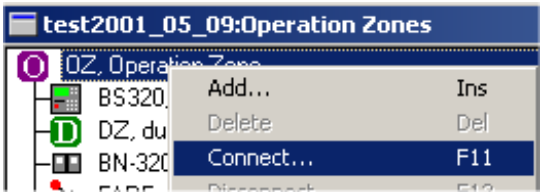
- Select port number, 1 or 2.
- Verify the parameter settings (baud rate to 9 600 baud, 8 bits, none parity, 1 stopbit).

- Set the AutroCom Type to SERIAL_SLIDING_WINDOW in the drop-down box to the right.

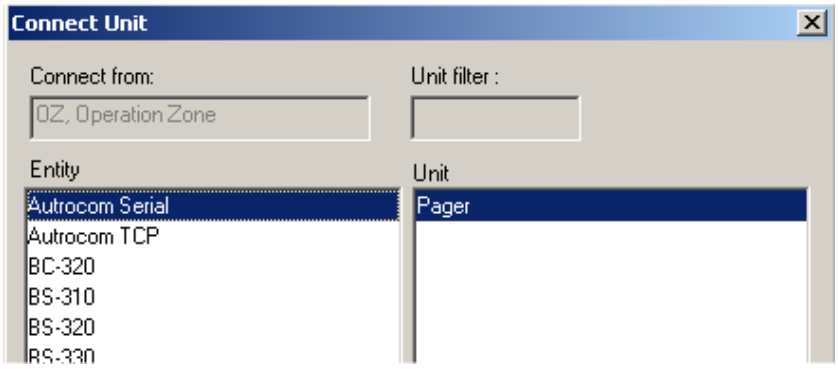


- From the Main Menu, click on *View* and select *Operation View*.
- In the Tree View on the left side of the screen, click on the top level OZ (Operation Zone) – that is, if there are several Operation Zones in the AutroSafe system.

- Right-click the mouse and select *Connect*.



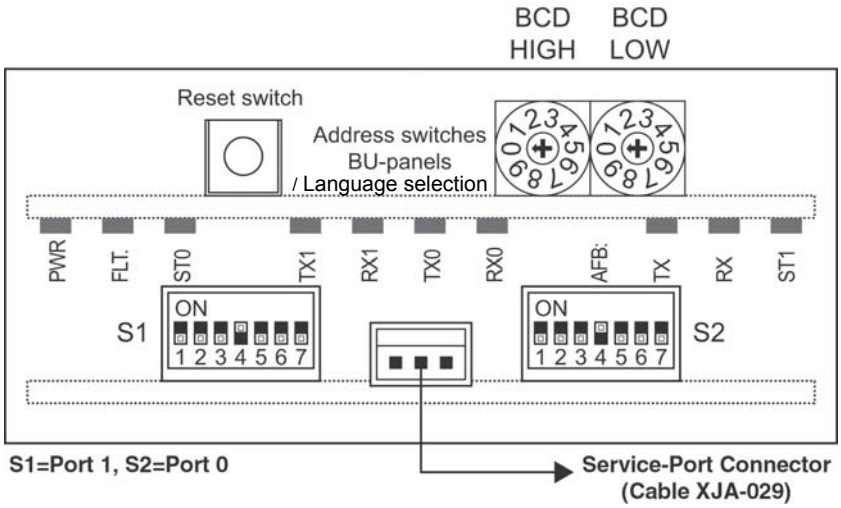
- In the popup menu that appears, select the *Pager* (in this example we have given the Unit this name), then click on the *Connect* button.



- In the Tree View, verify that the AutroCom Serial (in this example, *Pager*) is connected to the correct OZ (Operation Zone).

6. Configuring BSL- 337

6.1 Settings on the Panel Front



= Switch in ON position

The DIP-switches and rotary switches should be set as shown in the figure:
S1.4 ON (RS-232 on port 1)
S2.4 ON (RS-232 on port 0)

Rotary switches:
The switches are used to determine both the language (addresses 60-64) and the the total number of BU-panels connected (addresses 01-16).

Refer to the procedure; “Defining language and the total number of display units/panels”, described in chapter 6.3.

6.2 Service-Computer-Based Configuration

The BSL-337 has very few configurable settings; language and port parameter settings. Port parameter settings are modified by use of a service computer connected to BSL-337’s service port, using a standard AutroSafe Config Download cable (XJA-029), and then run HyperTerminal.

Communication parameters for the service port is 115200 baud, 8 databit, no parity, 1 stop bit.

6.3 Defining language and the total number of display units/panels

Perform the procedure in the following sequence (first define the language, then the total number of BU-panels):

Step 1: Defining language
When defining the language, the rotary switches function as follows:
BCD high: This switch determines the number of ten-digits (6).
BCD low: This switch determines the number of one-digits (1-4).

- Set the switches according to the selected language:

Language	Address	BCD high ten-digits (6)	BCD low one-digits (1-4)
English	61	6	1
Norwegian	62	6	2
Swedish	63	6	3
Danish	64	6	4

Step 2: Defining the total number of BU-panels
- When the switches for the selected language are set, press the reset button on the BSL-337 interface (the LEDs will start flashing).

When defining the total number of BU-panels, the rotary switches function as follows:
BCD high: This switch determines the number of ten-digits (0-1).
BCD low: This switch determines the number of one-digits (0-9).

- Define the total number of BU-panels.

Address	BCD high ten-digits (0-1)	BCD low one-digits (0-9)
01	0	1
02	0	2
03	0	3
04	0	4
05	0	5
06	0	6
07	0	7
08	0	8
09	0	9
10	1	0
11	1	1
12	1	2
13	1	3
14	1	4
15	1	5
16	1	6

- When the switches are set, press the reset button once more (the LED will change to a steady light).

Example:
The language to be selected is English, and the total number of BU-panels are 16.

- Set the switches according to English language (61):
  BCD high: 6, BCD low: 1
- Press the reset button on the BSL-337 interface (the LED will start flashing).
- Set the switches according to a total of 16 BU-panels:
  BCD high: 1, BCD low: 3
- When the switches are set, press the reset button once more (the LED will change to a steady light).

6.4 Standard text strings

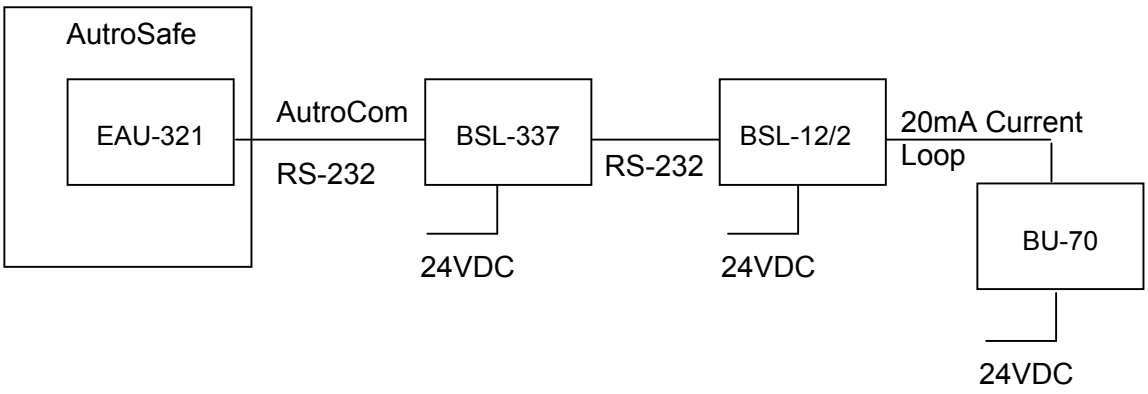
Alarm texts are defined by means of the AutroSafe configuration tool. These texts include detection zone information (detector names) and consist of a maximum of 34 characters.

Alarms and operation are indicated by short language-dependent texts on the BU-panels' displays. Text is shown only in the event of an alarm or prealarm. Faults are shown by the activation of a LED indicator.

Note that in the event of an alarm or a prealarm, the same text is shown in *all* BU-panels (BU-70 display units and BU-100/BU-101 panels) connected to the same AutroSafe panel (i.e. connected to the same AutroCom port and belonging to the same operation zone).

7. Testing BSL- 337

In order to verify that alarms, prealarms and faults are transmitted from the BSL-337 interface, complete a simple system setup as shown below.



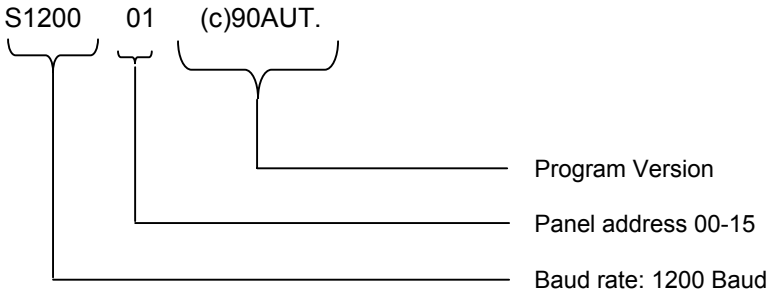
Perform the following procedure:

- Activate an alarm, prealarm and a fault on the AutroSafe system.
- Observe the following:
  - Fire alarms and prealarms are presented in all BU-panel displays with text, pulsating LEDs and buzzers.
  - Faults are presented only with pulsating Fault LEDs and buzzers.
  - The buzzers can be silenced by pressing the SILENCE BUZZER button on the BU-70 and BU-101 panel, or by pressing the SILENCE SOUNDER button on the AutroSafe panel or BU-100 panel.
  - Pulsating LEDs will change to steady LEDs after pressing the SILENCE SOUNDER button on the AutroSafe panel or BU-panel.
  - The LEDs will go off when pressing the RESET button on the AutroSafe panel or BU-100 panel.

8. Testing the Final Installation

When the installation is completed, verify that all BU-panels show alarms, prealarms and faults.

When the power is turned ON, the following startup message will appear in the BU-70 display:



When communication is established, the light in the display will go off and remain dark.

Fault messages shown in BU panel's display during startup:
If the communication between BSL-337 and the BU panels is missing, the following text is shown:
S1200 01 (c)90AUT.e83.
The fault message (e83) means that there is no communication. The buzzer will be activated if the communication is missing during normal operation. The FAULT LED-indicator will also be lit.

Fault messages shown in the AutroSafe panel's display during startup:
If the communication between AutroSafe and the BSL-337 is missing, the following text is shown::
"Loss of communication."

If the communication between BSL-337 and BU panels is missing, the following fault message is shown::
”Protocol converter fault.”

Note that it is important to define a name for each AutroCom port (EAU-321/BSL-337) that is used (maximum 2 per AutroSafe panel); for example,

“Comm. BU-panels 1-6”.

In this way, it will be easier to locate the fault.

9. Appendix

9.1 Datasheet RS-232/Current Loop Interface BSL-12/2

9.2 Datasheet Communication Line Splitter KDL-26B

10. Reader's Comments

Please help us to improve the quality of our documentation by returning your comments on this manual:

Title: *Interfacing BU-70 Display Units and BU-100/BU-101 Panels, AutroSafe Interactive Fire-Alarm System*

Ref. No.: *116-P-BSL337/EE, Rev. D, 2007-01-25*

Your information on any inaccuracies or omissions (with page reference):

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