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700 RTU Users Manual

Code Version 1.2.4p and above

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Overview

The EDAC700 RTU has 20 physical I/O terminals. Each I/O terminal can be individually configured to do one of these six basic functions:-

Digital Input - Normally Open
Digital Input - Normally Closed

Analog Input 0-1v
Analog Input 0-10v
Analog Input 4-20mA

Digital Output

Using the configured I/O the EDAC700 RTU can monitor security sensors, high/low temperatures, high/low liquid levels, equipment power on/off detection and equipment failures.

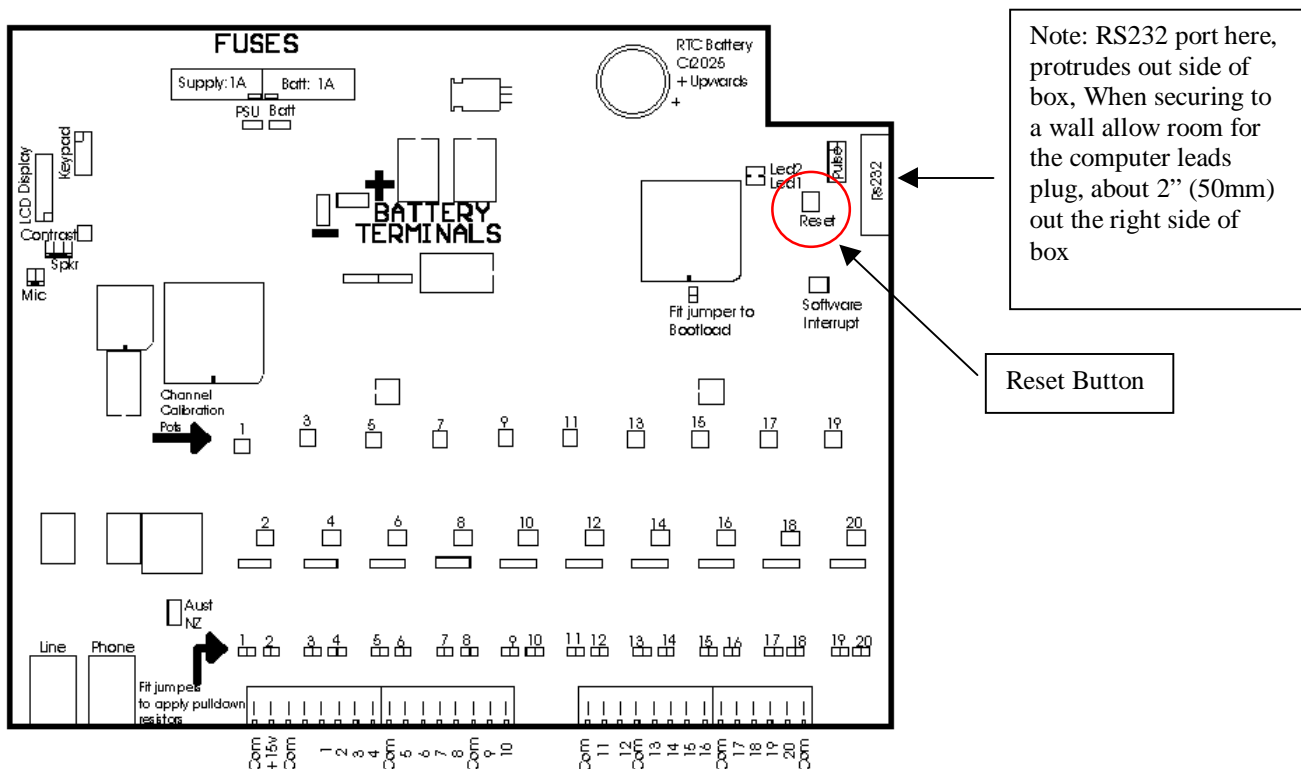
The dialler alerts whoever needs to know, when you need to know, and reports what you might need to know using a voice message. The EDAC700 RTU requires a telephone connection to the outside world in order to report this information.

The EDAC700 RTU can report to a land line phone number, cell phone, alpha numeric pager or use text messaging to a cell phone.

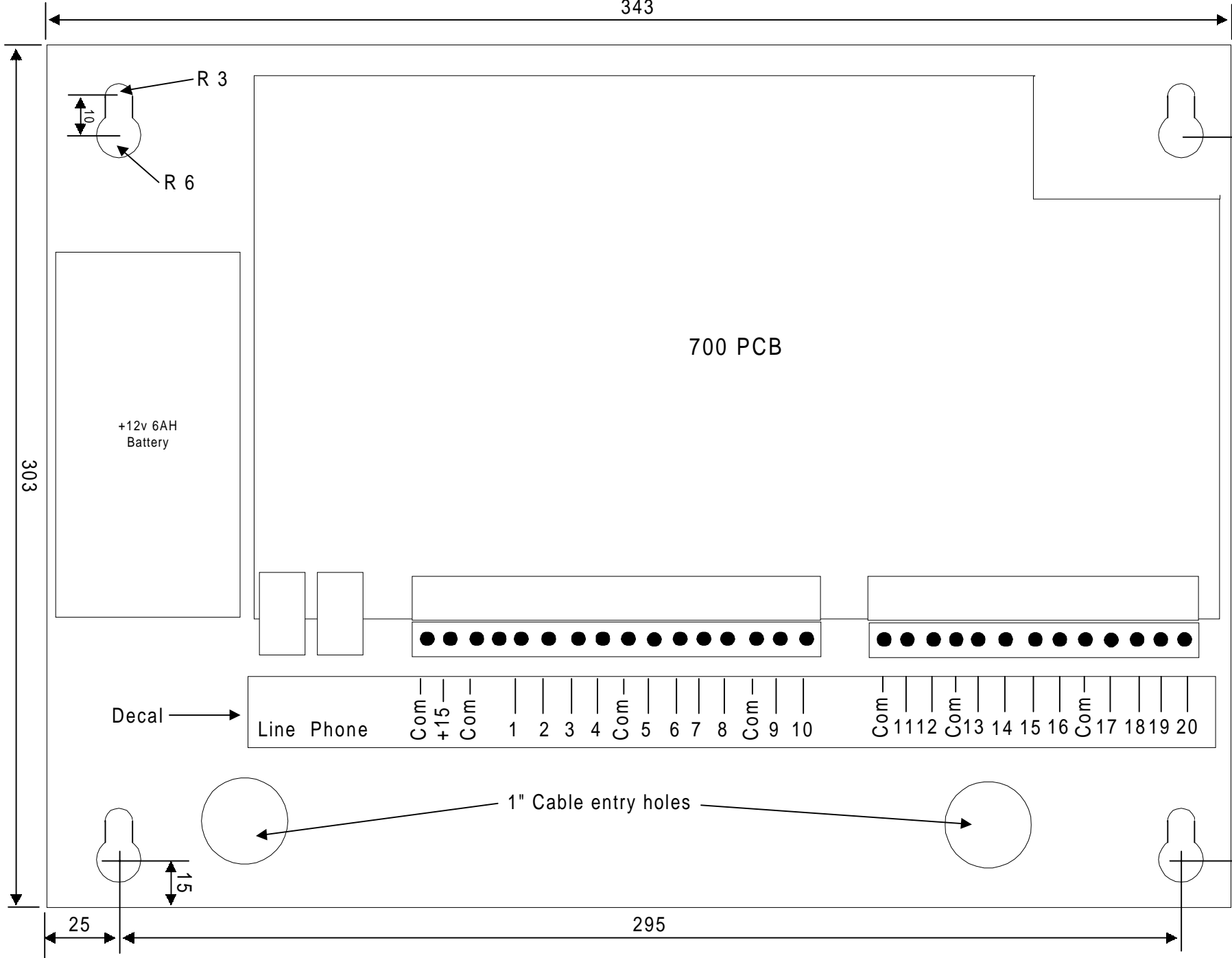
Analog sensors (4-20mA etc) can report a spoken value with engineering units. The analog reading can also be sent as part of an alpha-numeric paging message, or as part of a text message to a cell phone.

The EDAC700 RTU has the ability to be interrogated remotely using a touch-tone phone, for a status update of its "Inputs" or remote manual on/off control of equipment such as Pumps & Lights using its "Outputs".

The EDAC700 RTU can be configured using its in built, keypad, or via a PC and Hyperterm, or using remote modem dial in access. You can also communicate to external devices connected to the EDAC700 RTU RS232 port. For example, data loggers or PC's.



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Terminology

The following describes the terminology that will be used though out this manual

<Up>	Up arrow key on keypad
<Down>	Down arrow key on key pad
<Left>	Left arrow key on keypad
<Right>	Right arrow key on keypad
<OK>	OK on keypad or Enter on PC
<ESC>	

RTU: Remote Terminal Unit

Dialer: EDAC700 RTU

Input: Input signal for alarm testing or reporting. Can be configured in a number of different ways.

Output: Output control terminal

I/O: Input/Output, shortened form of above

Groups/Zones: Inputs are mapped to a Group or Zone. Groups can be ether one input or any number of inputs or I/O points. These Groups or Zones can be used to trigger an alarm. Multiple Groups/Zones can map and re-use I/O points. If an “Input” is triggered or out of range the group it is mapped to generates an alarm.
You cancel a Group/Zone rather than an input.

Zone: Same as Group, security industry terminology.

Armed – Dialer is looking at the incoming signals and testing for alarms

Triggered Input – Input is outside of normal high/low operating range

Alarm Notification call – Dialer makes an outgoing call, and uses its recorded voice messages to notify that there is one or more triggered inputs

Acknowledged/Cancelled – Input or Group that has a triggered input, Dialer has made an alarm notification call, and received a signal (PIN) back from an operator. Signal from operator indicates to the dialer that the alarm has been acknowledged, and it can cancel any further alarm notification calls.

Run-Mode – Normally armed state of EDAC700 RTU

Program Mode- Used to configure EDAC700 RTU

System Mode – Used to record factory voice messages

Terminology cont.

Master Phone list: List of all possible names & numbers that can be used to build call lists and rosters. Like a phone book.

Call Lists: Call Lists are made from the Master Phone list. They are connected to a “Group” that when triggered will use the “call list” to make alarm notification calls in the order listed in the Call List. There can be a number of call lists constructed to accommodate different requirements.

Rosters 1: Used by the user to switch in and out different call lists

Rosters 2: When used with timeframes a Roster contains two call lists. Eg. The first list is a list of names for daytime contact. The second is a list of names for after hour’s contact. There can be a number of rosters available to chose from.

Time Frame: Used to switch different “call lists” in and out on a time base. The start and end of day/night periods. Each Group or zone has its own Time Frame. The T/F determines which of the two “call lists” in an active roster to use.

Data Base: All the configuration information for dialer set up is stored in a Database. This includes Input configuration, groups, phone numbers, call lists, rosters, pin numbers etc

SCADA – Acronym for “Supervisory Control and Data Acquisition”.

Com/Gnd : Common or Ground electrical connection.

P/W: Pass-word, normally a “Personal Identification Number” (PIN).

O.S.: Operating System, the fundamental code that allows the EDAC700 RTU to operate.

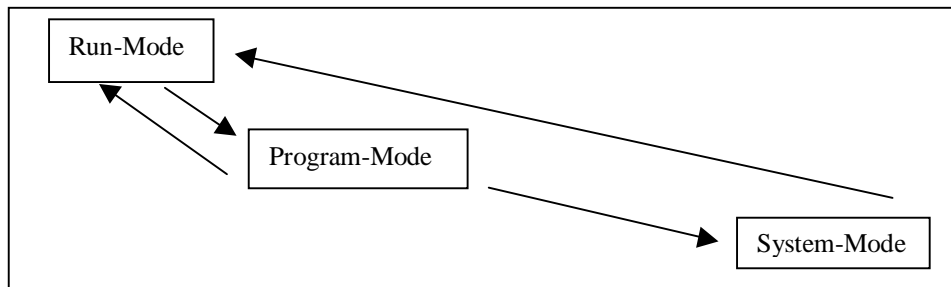
NO: Normally Open Input

NC: Normally Closed Input

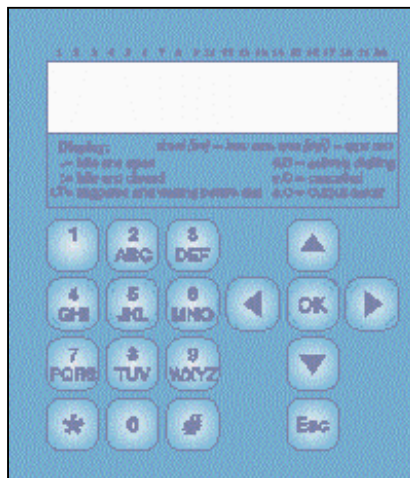
Operational Modes

The EDAC700 RTU has three modes of operation.

1. Run-Mode – Actively testing for alarms
2. Program-Mode - Configuration
3. System Mode – Factory configuration



The three modes of operation can be viewed using the 2 line 20 character LCD and keypad. At any one time only a small part of the available information is displayed. It is probably easiest to consider the LCD to be a sliding magnifying glass over a large piece of paper. You the user can control the up/down and left/right movement of this window.



Operational Modes cont.

Run-Mode.

This is the mode of operation that the EDAC700 RTU starts in when first powered up.

In Run-Mode the EDAC700 RTU will monitor its inputs, test for alarms, generate alarm notification calls, answer calls to speak input status, analog values and allow the user to set outputs on and off.

The LCD & Keypad can be used to display status information. See following page.

Run-Mode will also allow remote modem access to external equipment connected to the EDAC700 RTU.



The internal modem can also be used to allow connection from a remote PC to reprogram the dialer configuration and parameters, this is done by switching to Program-mode when a remote modem makes a connection. A PIN number must be entered to allow a remote modem call to take place.

Keypad in Run-Mode

- ◆ When in Run-Mode the LCD display can be moved by using the <up> and <down> arrows. This will provide a scrolling effect.
- ◆ When in the Input or Output display of Run-Mode, the <Left> and <Right> key will also work, to allow scrolling through inputs or outputs.
- ◆ When in an Output screen of Run-Mode, the <OK> key can be pressed to change the output on/off status.
- ◆ At any time in Run-Mode a PIN number can be entered to get to Program-Mode. The default PIN is 0000
- ◆ Also the <ESC> key can be pressed at any time to get back to the first Run-Mode display. If a key is not pressed after a short delay the display will automatically switch back to the first Run-Mode display

Battery / Power Indicator

In the dialers default state it will be displaying the Run-Mode screen. This screen shows Inputs 0 - 20 types and states. In the bottom left corner there should be a Power status character. This character shows how the device is currently being powered.

-  = Powered from the external Power Supply.
-  = Powered from the internal Battery

Operational Modes cont.

Default Run Mode Screen

↓ (Press <ESC> to get back to this screen at any time)

Input status indicator line →

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
c	x	x	D	.	.	.	x	x	x	x	x	x	x	x	x	x	x	o	x

Indicates if running on RTU Power or RTU Battery ☒

☐ No Alarms Present

This line Indicates dialer activity

x indicates nonassigned or Off
 . configured input in idle state
 T Triggered input
 D Activeily Dialing or Triggered
 W wait to retry dialing
 c indicates canceled alarm
 O indicates output

Date and Time Screen

↑
↓
Esc

Current Date →

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
c	x	x	D	.	.	.	x	x	x	x	x	x	x	x	x	x	x	x	x	x

01/08/01

11:36:46

Current Time, seconds tick over

Input Reading Display Screen

← ↑ →
↓
Esc

(Press Left or Right arrow for previous input)

Screw Terminal/Input Number

User Label

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
IN 1	Input 1																			

Open

Digital Input: Open/Closed

(Press Left or Right arrow for next input)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
RTU Power																				

14.4

Analog Input: Will not display units here, but does speak them

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
IN 30	Runtime Meter 1																			

123.1 Hrs R

Runtime Meter: 123.1 = Current value
R = indicates meter is active

Output Control Screen

← OK →
↓
Esc

(Press left arrow for previous Output)

Screw Terminal/Output Number

User Label

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
OUT 19	Heater Control																			

OFF (OK to Change)

(Press right arrow for next output)

Press OK to toggle Output On / Off

Pulse and RunTime Meter Status Screen

↑
↓
Esc

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
p	p	p	p	x	x	x	R	r	r	R	x	x	x	x						

Pulse / RunTime 21-36

Small "p" indicates pulse input configured.
 Small "r" indicates runtime Meter configured, but no active input present. Not counting
 Large "R" indicates Runtime Meter configured, and active input present. Is counting.

Program mode PIN Screen

↑
↓
Esc

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Program Mode																				

Enter pin number to get to "Program Mode". PIN can be entered at any time in other screens too.

Program-mode.

Typing a PIN into the EDAC700 RTU while in Run-Mode enters program-Mode. Program-Mode is used to set any parameters relating to the operation of the dialer, when in Run-Mode.

Program-Mode is used via the in built keypad & display, or a Laptop with RS232 connection, or remote modem dial in, using MS Windows Hyperterm or custom application software.

In Program-Mode the user can assign I/O screw terminals, record and play back spoken messages, program in phone numbers, make call lists & rosters, edit various other parameters that effect operation of the dialer.

If the EDAC700 RTU should stop responding while programming it, please momentarily press the reset button or power the EDAC700 RTU down and up.

Keypad in Program Mode

- ◆ Use <Up> <Down> arrows to move up and down through the menu structure
- ◆ Use <OK> to select an item
- ◆ Use <Left> arrow to go back up and through the menu structure
- ◆ Use <Right> arrow to move forward and down through the menu structure
- ◆ Use <ESC> to quite or go up a menu level. If configuring an input, EDAC700 RTU will ask if you want to “save changes? <OK>”. Press <ESC> again to abandon editing, or <OK> to save any changes you have made. This can be a quick way out when editing a configuration, (input, call list) that may already have been set up.
- ◆ When setting up a new input or editing an existing configuration the number keys can be used to enter numeric values, or alphabetical letters. This is done in the same way a cell does text messaging.
- ◆ Use <*> as a comma “,” when editing a phone number or text message/table
- ◆ Use <*> as a decimal point “.” when editing a set point or decimal number

See Diagrams on following pages for Program-Mode menu structure

System-Mode.

System-Mode is entered via Program-Mode, when a suitable PIN is entered.

System-Mode is used to record voice messages that are required for all applications. We also refer to these as “Factory voice messages”.

The factory voice messages are recorded in System-mode, before the EDAC700 RTU leaves the factory. The manufacturer or distributor can change the factory voice messages to different wording or a different language. (A quite place is recommended to eliminate background noise when recording).

Under normal operation the installer, operator or end user will not use System-Mode.

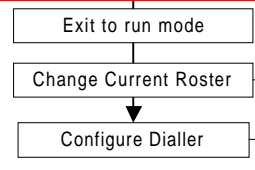
You should try **not** to use the RS232 connection while in System-Mode. The EDAC700 RTU may stop responding.

If the EDAC700 RTU should stop responding while programming it, please momentarily press the reset button or power the EDAC700 RTU down and up again. See EDAC700 RTU PCB diagram, on page 4, to locate the reset button.

Keypad in System-Mode

- ◆ Use <#> to make recording, RTU will display *----- if no recording is present
- ◆ Use <*> to play back recording
- ◆ Use <Right> arrow to move forward through messages
- ◆ Use <Left> arrow to go back through them
- ◆ Use <ESC> to quit and go back to Run-Mode

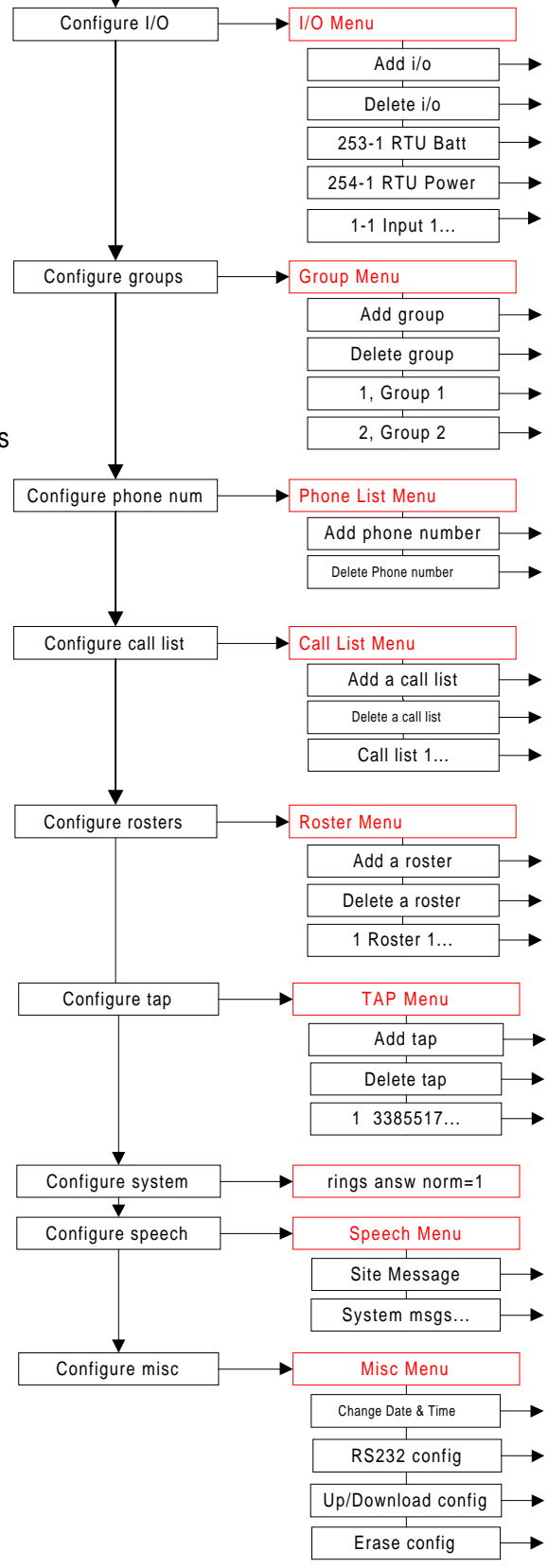
Main Menu



Use: Up/Down arrow keys & <ESC> to go back

Roster is
1 Roster 1

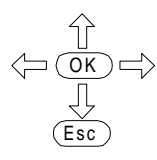
Dialler Menu



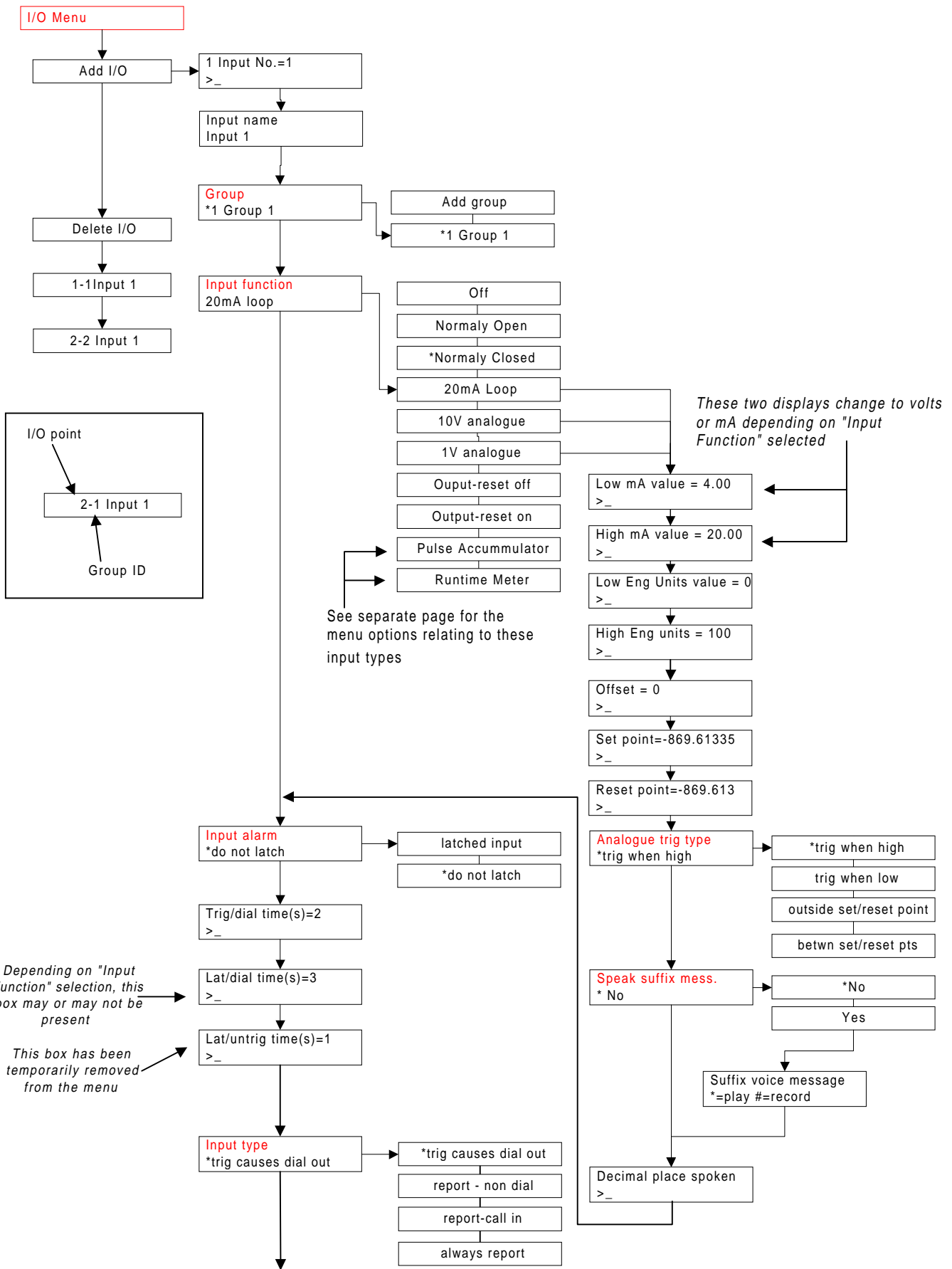
1st line on display is menu heading
2nd line is menu option

Red = Menu Heading

Use Up/Down arrows to move through menu choices



* = Current setting, also indicates you are in a pick list, use up/down arrows to move through choices. OK to select



*Add I/O

Continued from previous page

pager message
Input 2

on voice message
*=play #=record

off voice message
*=play #=record

Save changes?<ok>
_

Delete I/O

Delete
1-1 Input 1

1-1 Input 1

2-1 Input 2

1-1Input 1

1 Input No.=2
_

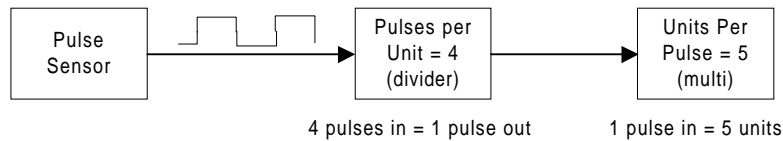
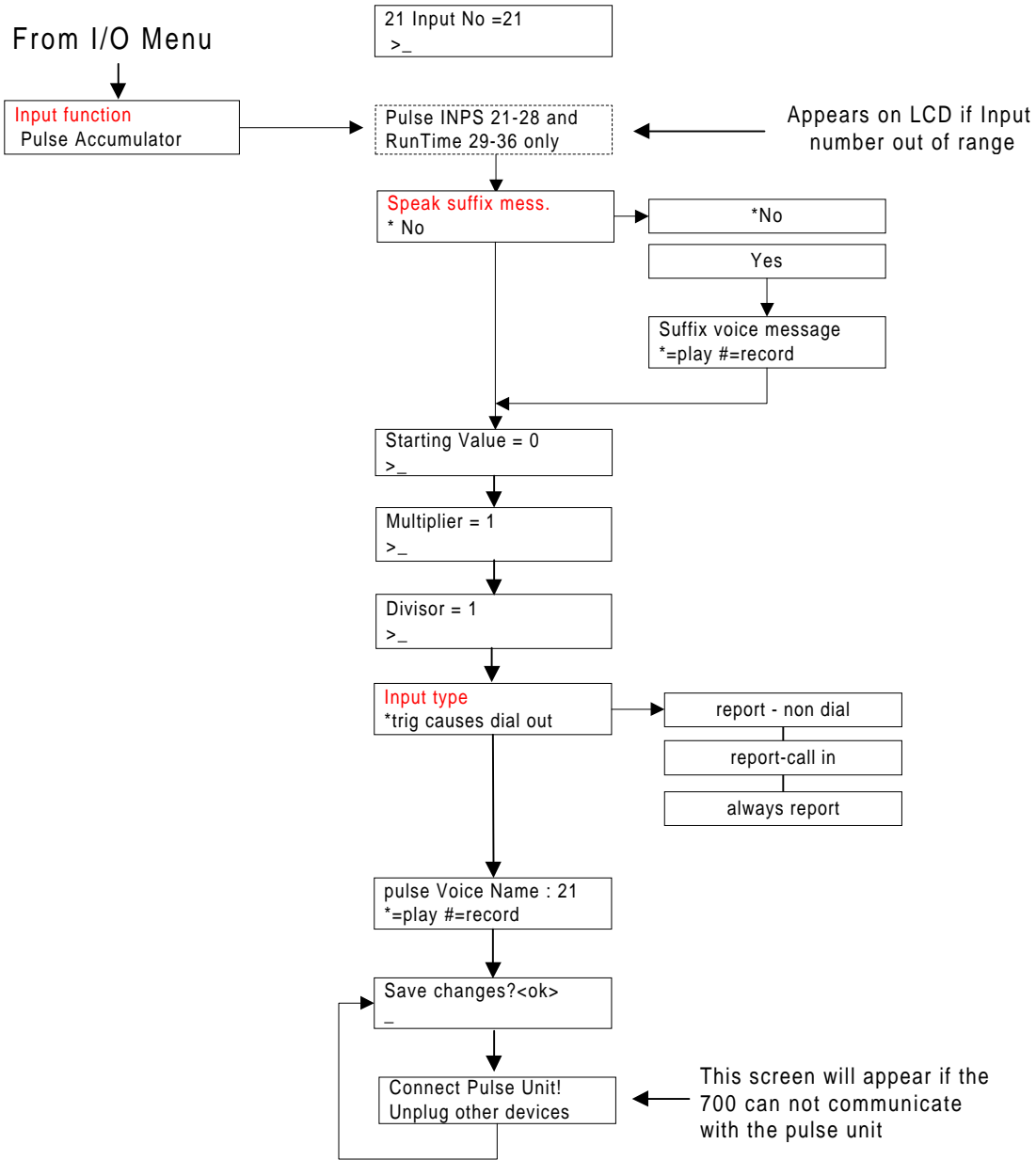
As per above Add I/O menu

2-1 Input 2...

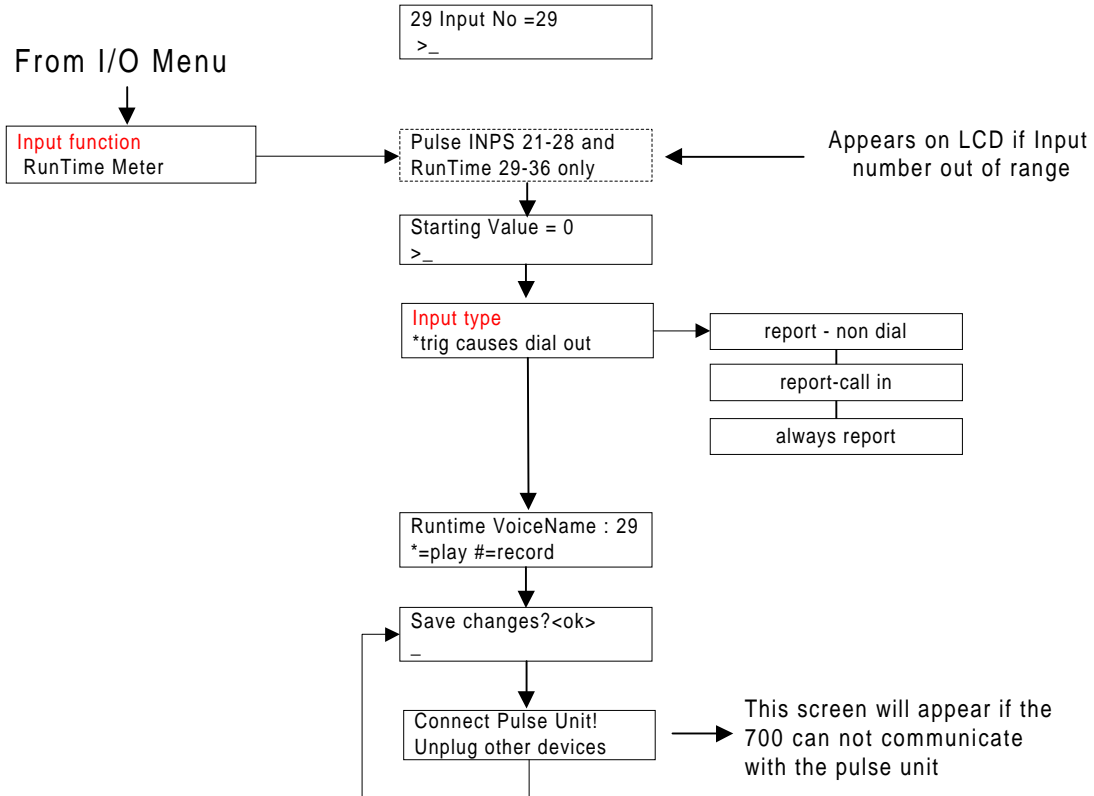
1 Input No.=2
_

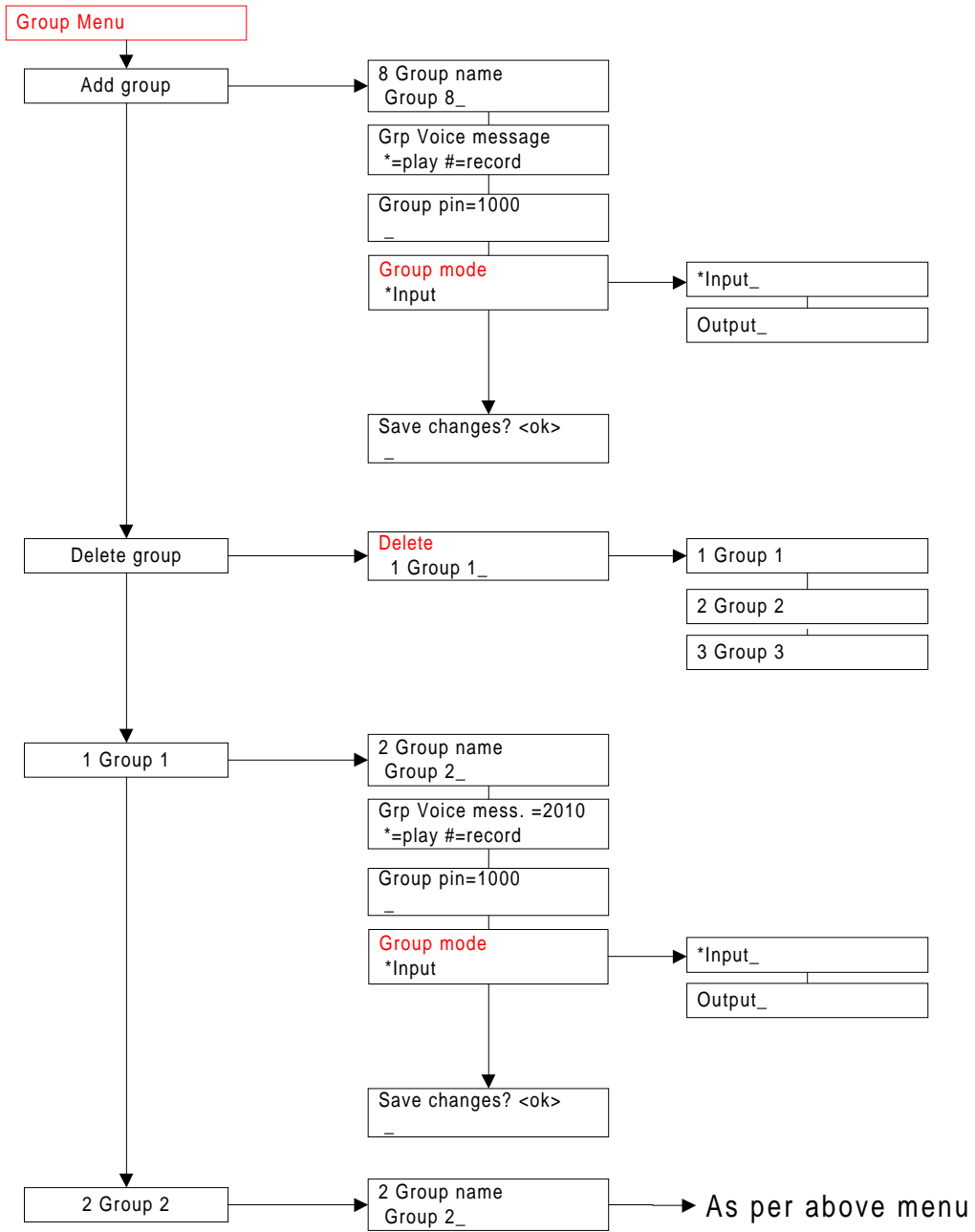
As per above Add I/O menu

Pulse

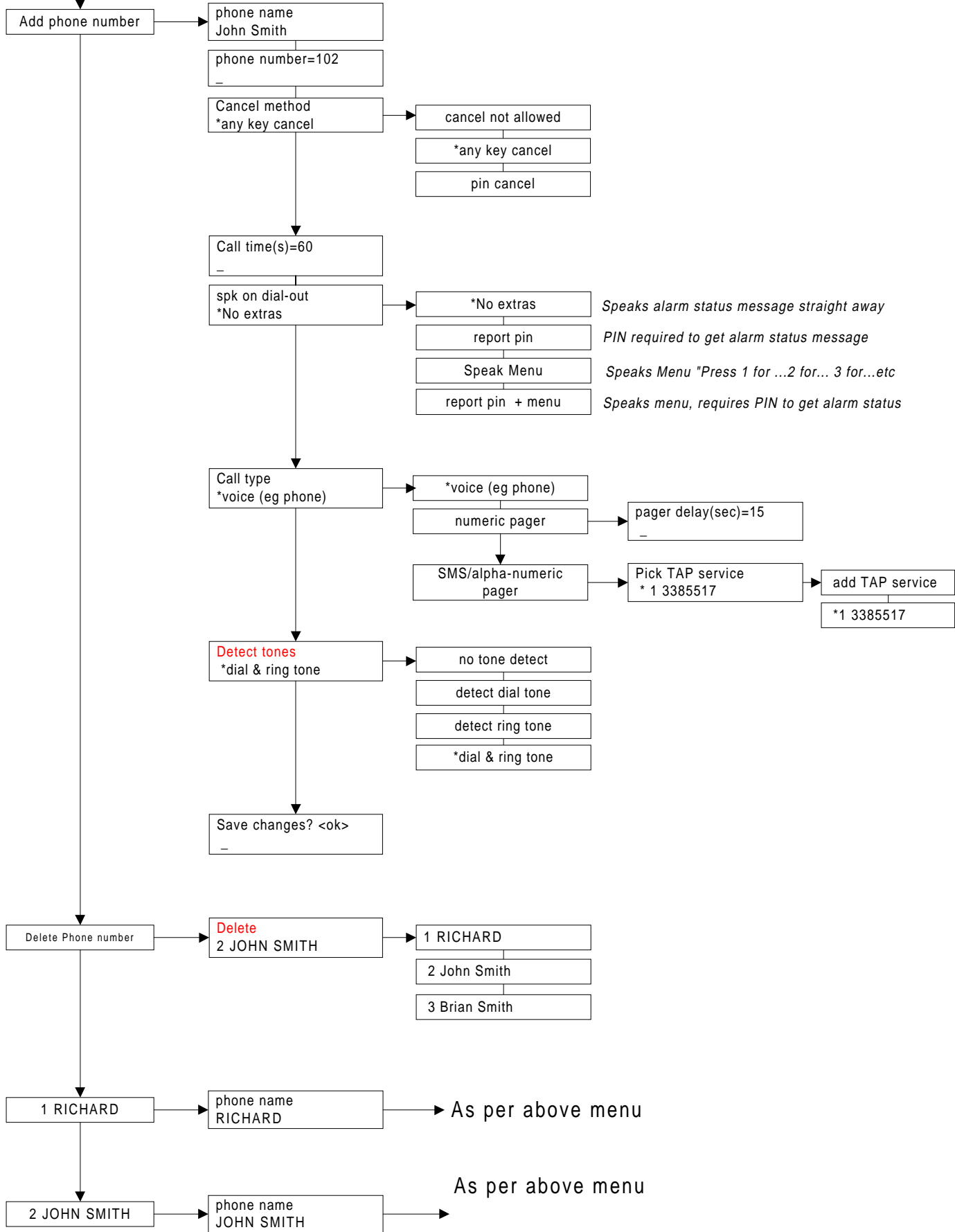


RunTime

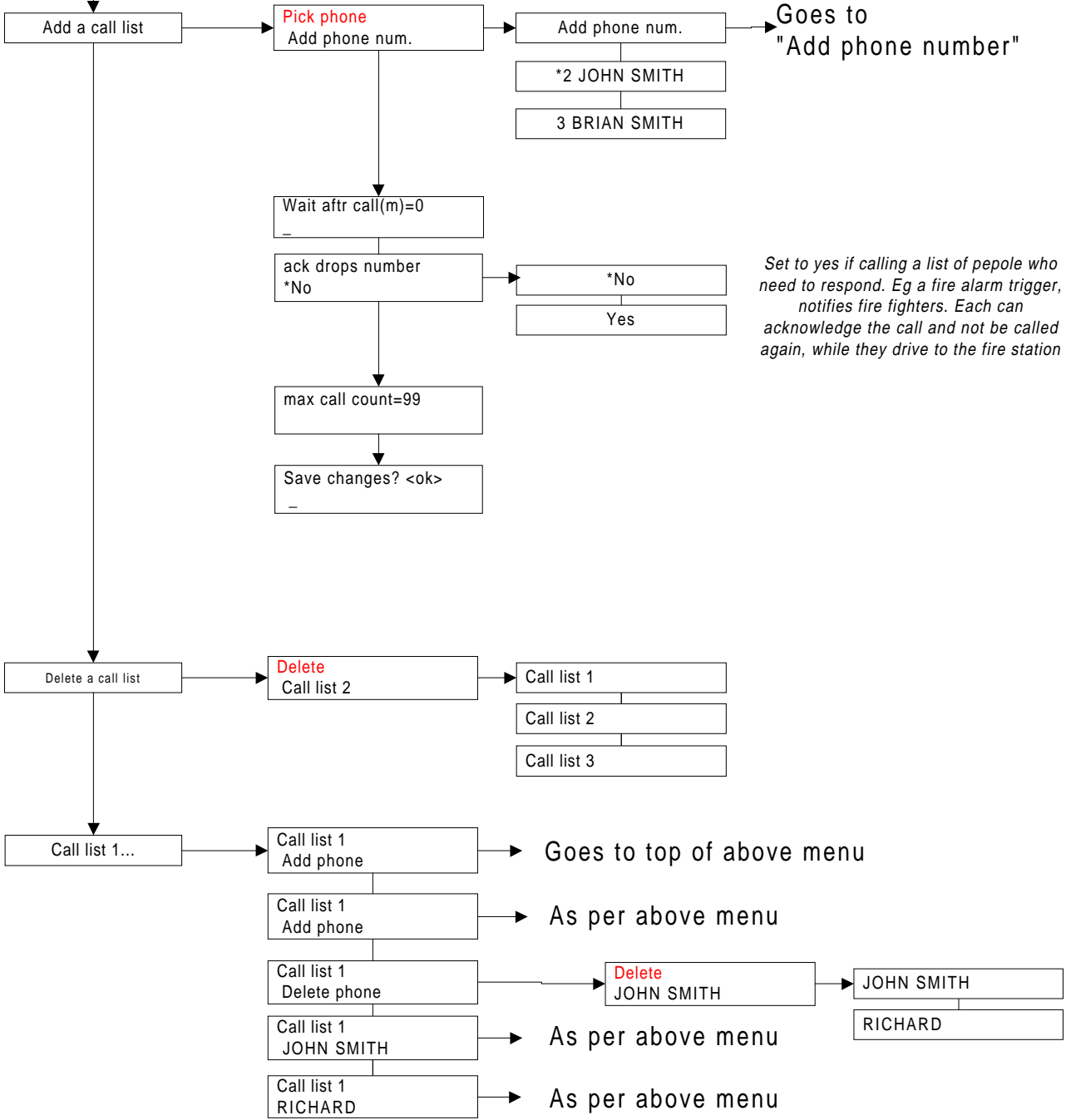




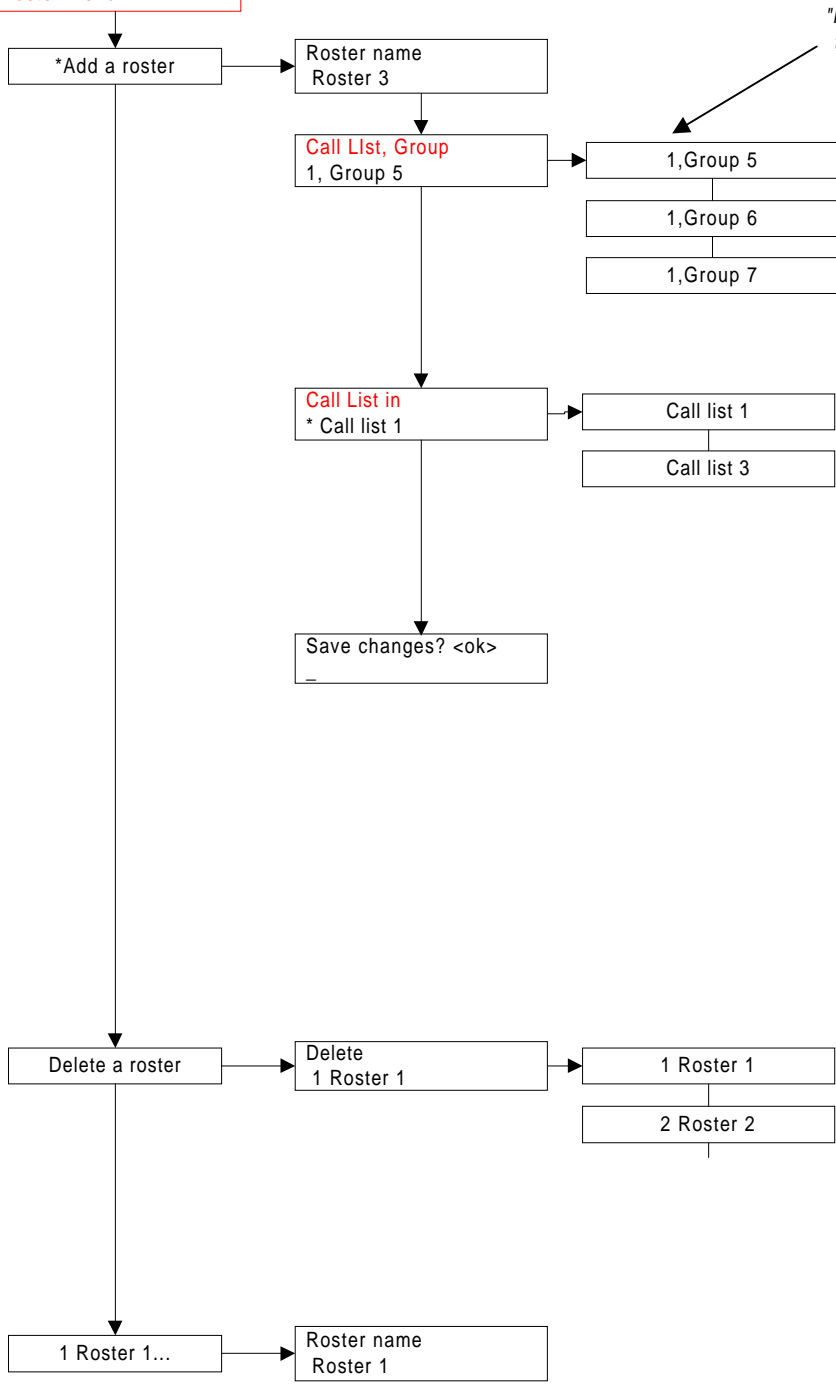
Phone List Menu



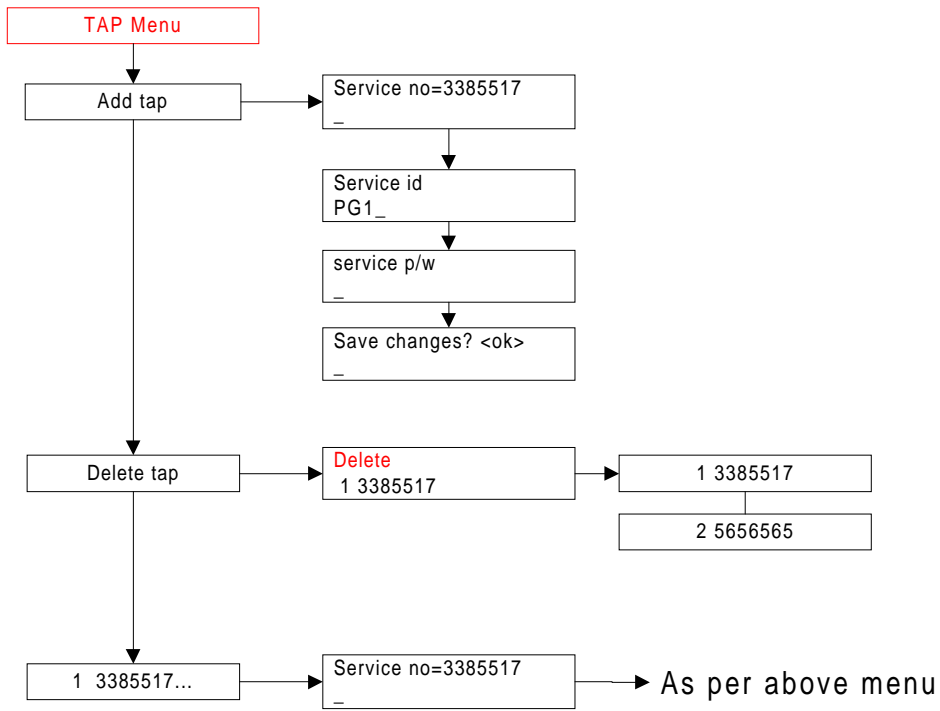
Call List Menu



Roster Menu



"In", call list associated with this group. If time frames are being used there is a second "Out" call list which is not displayed



System Menu

rings answ norm=1
_

rings answ wait=4
_

rings answ canc=5
_

cancel-call in
*any key

Not Allowed

*Any key

Group pin

program pin=0000
_

roster pin=0002
_

modem mode pin=0004
_

remote prg pin=0005
_

group priority
*No

*No

Calls each group as triggered

Yes

Calls groups in priority order 1 to ...

Pin report, call in
*report pin not req.

*report pin not req.

report pin

Save changes? <ok>
_

Speech Menu

Site Message

System msgs...

Distributor PIN required to change system voice messages. Used for Language change.

Misc Menu

Change Date & Time

dd/mm/yy hh:mm day
22/12/00 02:49 Tues

RS232 config

RS232 Speed
*19200

Up/Down load config

Flash access r/w OS code upgrade

Erase config

Set unit back to factory defaults, erase ph numbers, groups, call lists, rousters, & voice.

Getting Started

The following section will very quickly walk you through setting up the dialer to use a Normally open (NO) switch input, and then generate an alarm notification call.

You will need a phone line or extension that the EDAC700 RTU can use to make an alarm notification call. You will also require a telephone, or mobile phone that the EDAC700 RTU can call and you can answer or receive the call on. This might be a local extension, second phone line or cell phone.

To trigger the alarm you will need to connect Input 1, to Com/Gnd, via a short length of wire, this is your switch. This will trigger the alarm and let the dialer run through its paces.

Here we will cover:-

- ◆ Powering up the EDAC700 RTU for the first time
- ◆ RS232 Configuration
- ◆ Recording voice message for a pre-configured input and group
- ◆ Configure a phone number
- ◆ Configure a call list
- ◆ Generate alarm notification call
- ◆ And canceling it.

This will be covered quickly, in order to get you up and going, more detail on the individual steps can be found in the following subject specific sections.

EDAC700 RTU Initial Start Up

RTU Power supply

The EDAC700 RTU comes with its own 12V regulated DC Plug pack.

If an alternative supply is to be used it must have a DC regulated output of between 12 to 30VDC.

Battery connections

The internal battery must be connected to the main board after unpacking.

Connect red lead to the positive (+) terminal, and black lead to the negative(-) terminal.

If you get them around the wrong way the Battery fuse (1 amp 20x5) will blow.

After connecting the battery, the plug pack can be plugged into the main supply if it is not already. The plug pack comes wired to a green connector plug, if this plug is unplugged, plug it in to the far left hand side terminal block receptacle.

Power Up

During power up the EDAC700 RTU will beep continuously for a short time. During this time it will display "RUN_" on the LCD. The beeper will then stop and the display will show a code version number like 1.2.4p under the word RUN_ , for a short time. This version number is important and will be required if you need to make any technical support calls.

After this the EDAC700 RTU goes into Run-Mode and will display the Run-Mode Display. The EDAC700 RTU will do nothing else at this time. If it does anything different to this sequence and does not end up at the Run-Mode display, power it down completely, and start again, or press the Reset button located in the top right corner.

If the battery is not connected, the EDAC700 RTU may generate a low battery alarm, and will ask for a PIN, if this happens, connect the battery and check the supply voltage. Press the Reset button to start again.

RS232 Connection

At this point you can have an option, work from the EDAC700 RTU keypad or plug a laptop or PC in via the RS232 port. You can use any Terminal emulator program. Micro Soft provides Hyperterm free with all windows operating systems (Win95 98 2000). If this is not installed you can normally find it on the windows distribution disk.

Setup your terminal program for 19200 baud 8NE, direct connection, normally via com1.

When using a computer, the complete menu is displayed on the PC screen, it has a alphabetical letter for each option. Use this alphabetical letter to select the option indicated in the following instructions. The following instructions are meant for using with the EDAC700 RTU keypad. A combination of both can be used simultaneously until one is familiar with the menu system via a PC terminal program. It is best to operate voice recording via the EDAC700 RTU Keypad.

Record Input message (Configure I/O)

Program Mode -> Configure Dialler -> Configure I/O -> 1-1 Input 1

Go to Program-Mode by entering the default PIN 0000 using the EDAC700 RTU keypad. If this should not work or you forget your PIN you can momentarily press the reset button located in the top right corner of the main board, and hold down a key while the EDAC700 RTU re-boots. It will start in Program-Mode.

Once in Program-Mode, using the <Down> arrow, go to **“Configure Dialler”** and press <OK>

Press <OK> again on the **“Configure I/O”** Menu

You are now in the configure I/O menu. Use the<Down> and up <arrow> to move through the choices.

Press <Down> arrow 4 times to move down to **“1-1 Input 1”**. This is a pre-configured Normally Open input

Press <OK> to select it.

You are now in the configuration settings for input 1.

Continue to Press <OK> to move down though Input 1 configuration. Do not use any other key yet.

When the display shows **“on voice message:1”**, stop. If you go past it use the <Left> Arrow to get back up the menu.

Press <#> to start recording your “On” message for input one. EDAC700 RTU will beep when it is ready to start recording.

Press any key when finished.

EDAC700 RTU will play your recording back to you. Press <OK> to stop it.

Press <OK> to move on the **“off voice mess:1”**. Record your message in the same way.

Press <OK> to stop voice play

Press <OK> to move on to **“Save changes? <OK>”**

Press <OK> to save

You will now be back at the start of the **“I/O Menu”**, press <ESC> to go up to **“Dialer Menu”**

Getting Started cont.

Record Group Message (Configure Groups)

Program Mode -> Configure Dialler -> Configure Groups

From the **“Dialer Menu”** you need to select **“Configure Groups”**, If you have continued from above, press the *<Down>* arrow once and press *<OK>* to select **“Configure Groups”**.

Press *<Down>* arrow twice to get to 1, Group 1. Press *<OK>* to select it

At “1 Group name” press *,<OK>*. Display will move to next field which allows you to record a group message.

At “Group voice mess:1” press *<#>* to record your group name, message. Eg “Group One”

EDAC700 RTU will beep when it is ready to start recording.

Press any key when finished.

EDAC700 RTU will play your recording back to you.

Press *<OK>* to stop voice play

Press *<OK>* to move on to the next field

Press *<OK> <OK>* twice to move though to the end or press *<ESC>*

Press *<OK>* to move on to **“Save changes? <OK>”**

You will now be back at the start of the **“Group Menu”**, press *<ESC>* to go up to **“Dialer Menu”**

Configure phone number

Program Mode -> Configure Dialler -> Configure Phone numbers

From the **“Dialer Menu”** you need to select **“Configure Phone Numbers”**, If you have continued from above, press the *<Down>* *<Down>* twice and press *<OK>* to select **“Configure Phone Numbers”**.

Press *<OK>* to select **“Add Phone Number”**

Enter a name for the phone number. The EDAC700 RTU keypad will now allow you to use alpha/numeric mode similar to editing a cell phone, phone book entry. If you are using a PC, type in a name using the PC keyboard.

Press *<OK>* when finished

You can now enter a phone number. Do not forget any prefix that may be required to get an outside line. Use a comma to put in a delay. On a EDAC700 RTU Keypad **=comma*

Press *<OK>* when finished

At this point you can continue to press *<OK>* to step though the choices and save at the end or press *<ESC>* to jump out and save.

Press *<OK>* to save changes at the **“Save changes? <OK>”** window.

Press *<ESC>* after saving to jump back up to **“Dialer Menu”**.

Configure Call List

Program Mode -> Configure Dialler -> Configure Call List

From the “**Dialer Menu**” you need to select “**Configure Call List**”, If you have continued from above, press the <Down> <Down> <Down> three times and press <OK> to select “**Configure Call List**”.

Press <OK> to select “**Add a call list**”

At “**Pick phone**” press <OK> to select the phone number you have just configured above, by pressing <OK>.

At this point you can continue to press <OK> to step through the choices and save at the end or press <ESC> to jump out and save.

Press <OK> to save changes at the “**Save changes? <OK>**” window.

Press <ESC> <ESC> twice, after saving to jump out of “call list 1” and back up to “**Dialer Menu**”.

Generate alarm notification call (Run – Mode)

At this point the EDAC700 RTU should be fully configured and ready to generate an alarm notification call.

Press <ESC> and <OK> to return to Run-Mode, EDAC700 RTU will Beep.

Plug a live phone lead/connection in to the “Line” socket on the EDAC700 RTU PCB.

Using a short length of wire, connect “Com” to “Input 1” on the terminal strip.

The EDAC700 RTU should indicate an active trigger is present in the Run-Mode display, and start to dial the phone number you entered above.

Canceling the alarm notification call

Answer the Alarm notification call, and listen to the voice messages.

On the telephone you have received the call on:-

Press ** to hang up. The EDAC700 RTU will call back almost straight away.

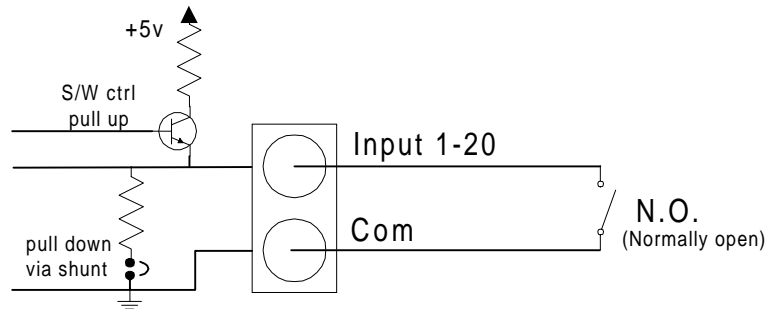
Press any key to cancel or acknowledge the alarm. This will stop the EDAC700 RTU from making more calls, from the “Call List” allocated to this “Group+Input”.

Physical sensor measurements and wiring

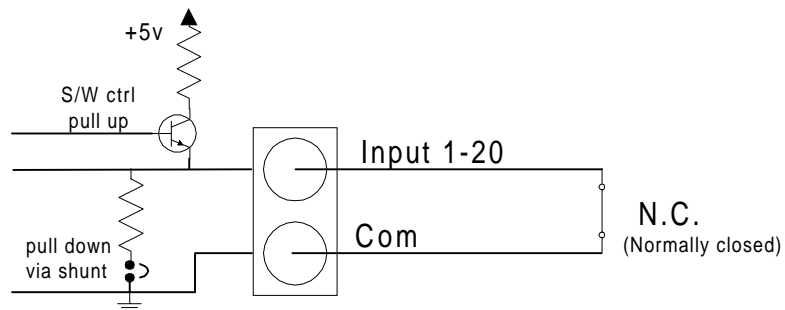
The EDAC700 RTU has 20 physical input terminals. Each input terminal can be individually configured to do one of these six basic functions:-

- Normally Open Digital Input
- Normally Closed Digital input
- Digital Output
- Analog Input 0-1v
- Analog Input 0-10v
- Analog Input 4-20mA

Digital Inputs: Normally open and Normally closed inputs are on 0-10V input range.

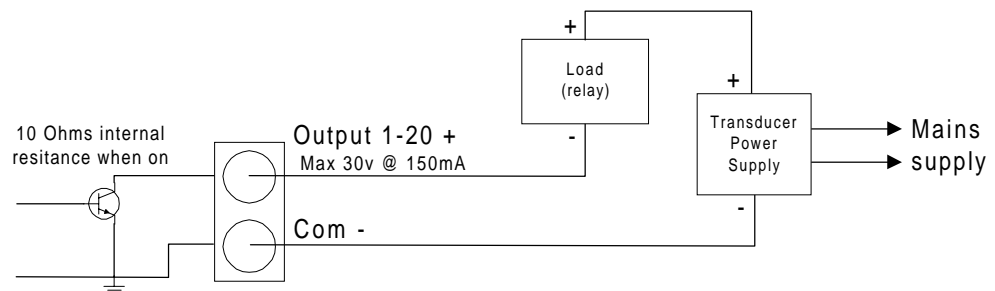


Normally Open, clean contact, to Com/Gnd. Triggers below ~1.5V or less



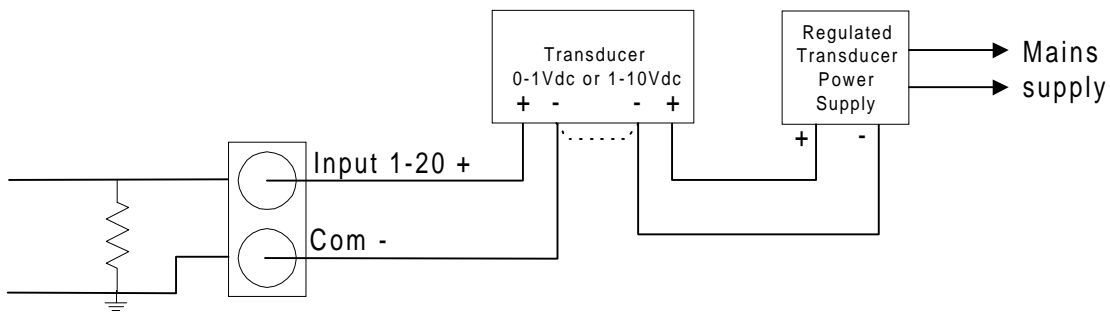
Normally Closed, clean contact input to, Com/Gnd Triggers above ~1.5V

Digital Outputs

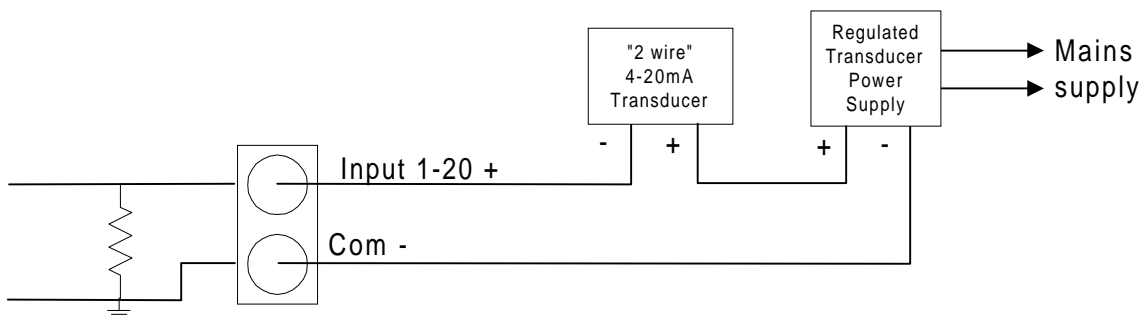


Open collector configuration

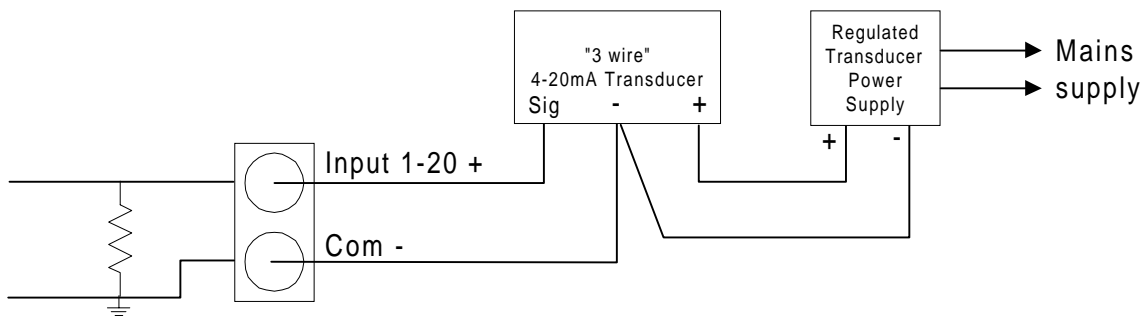
Analogue



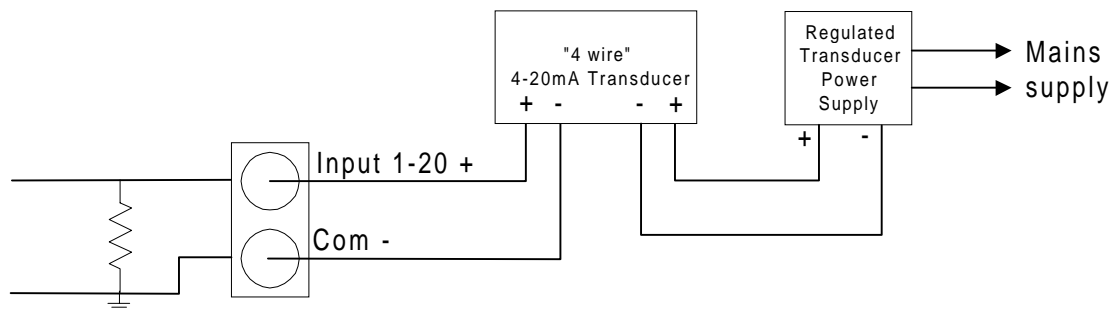
0-1Vdc, or 0-10Vdc transducer wiring



4-20mA Transducer, two wire, wiring

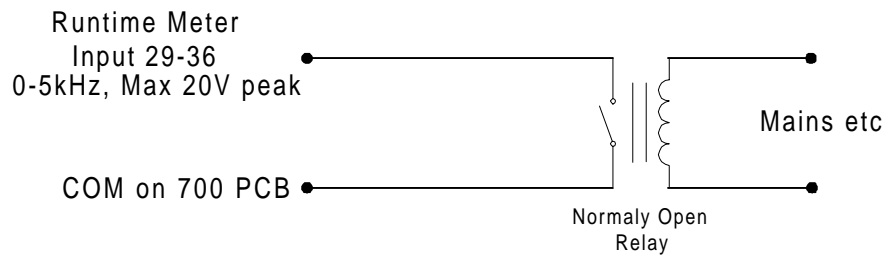
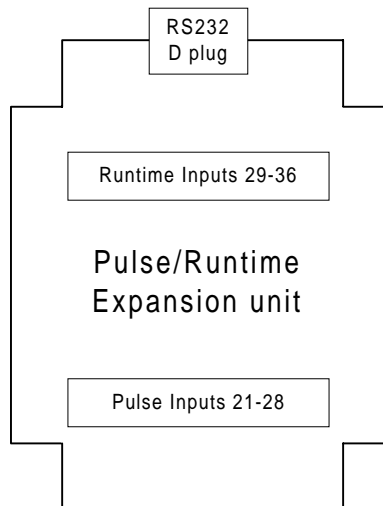


4-20mA Transducer, three wire, wiring



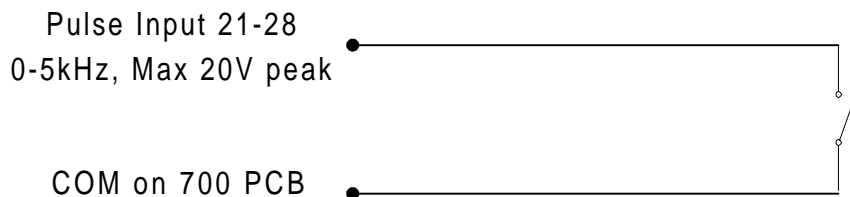
4-20mA Transducer, four wire, wiring

Pulse & Runtime Meter Expansion module

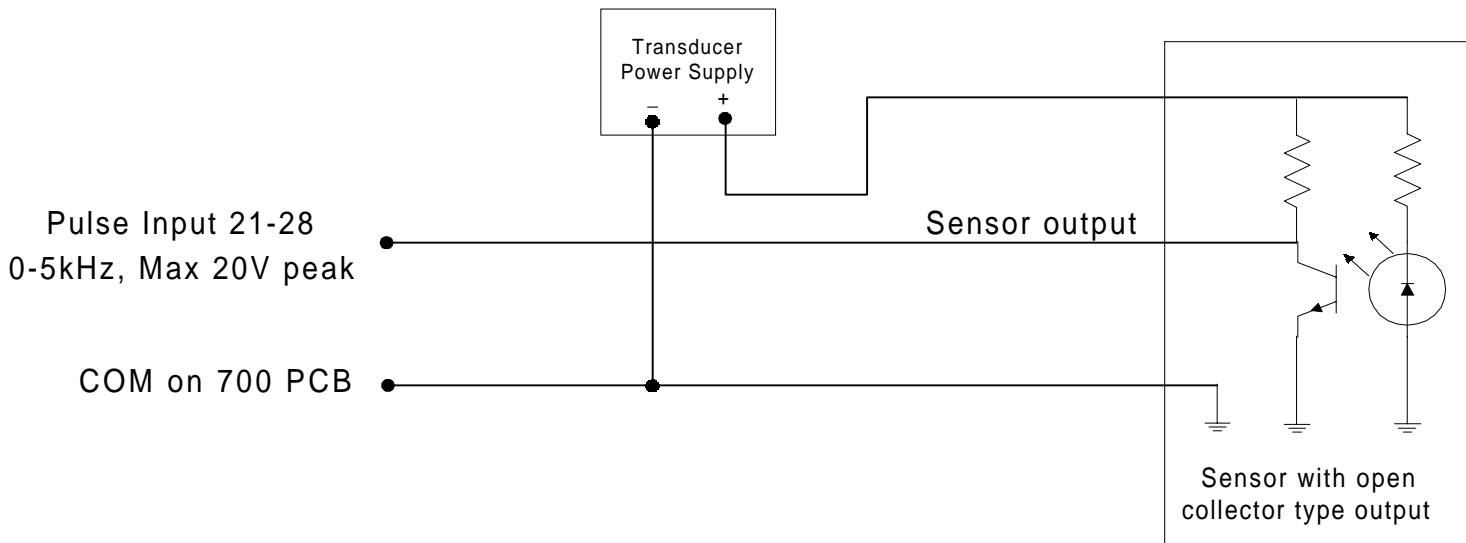


Connecting the Runtime Input (29-36) to EDAC
700 RTU COM/GND terminal starts Runtime Meter

Pulse Expansion EDAC700 RTU PCB. Shows Runtime Meter inputs and Pulse Inputs



Basic clean contact wiring for pulse input.



Pulse must go to within 1 volt of Common/Ground

Application Examples

- ◆ Simple Alarms 1 or 2 door sensors
- ◆ High/Low Water Level Float Switch
- ◆ Monitoring analogs, Talking Water Level sensor
- ◆ Control using outputs- remote controlled home heating

Voice Messages

The EDAC700 RTU has two types of voice messages, “application voice messages”, ones set up by the user relating to the Input sensor types/groups, and “system voice messages” which the dialer must have to operate correctly.

User application messages are recorded in Program-Mode.

System messages are recorded in System-Mode.

System messages are recorded at the factory or by the distributor. Please see the appendix for more information on how to do this procedure if required.

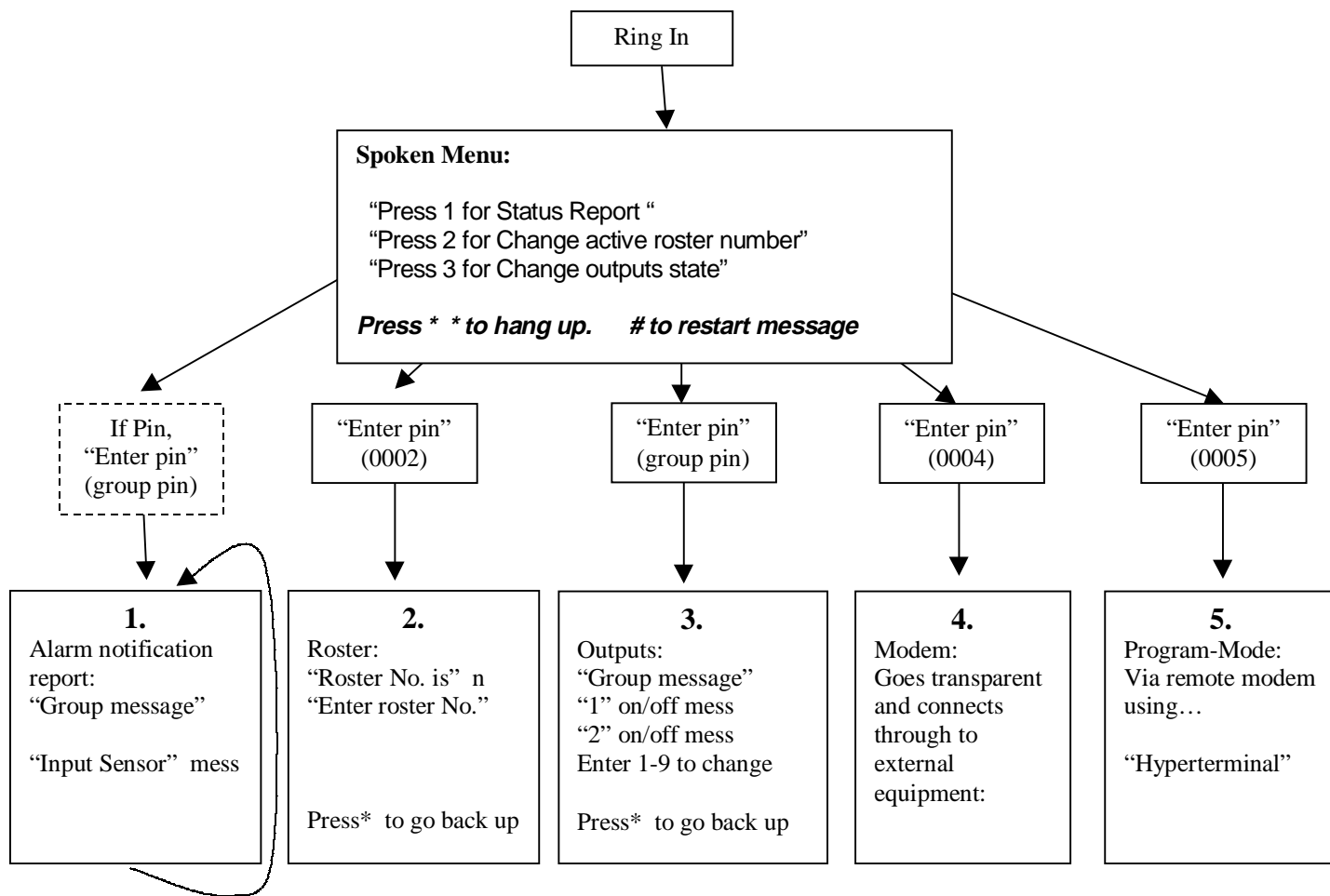
Recording Input sensor messages and group messages

When configuring the EDAC700 RTU using the LCD & Keypad or via Hyperterminal window, an optionEDAC700 RTUy to record “Input” sensor type voice messages and “Group” voice messages is provided. This is done in the “Configure Input” or “Configure Groups” menus, off “Configure dialer”, menu.

Voice messages can be re-recorded at any time. They are stored in Flash RAM and will be stored indefinitely even if the power is completely re-moved.

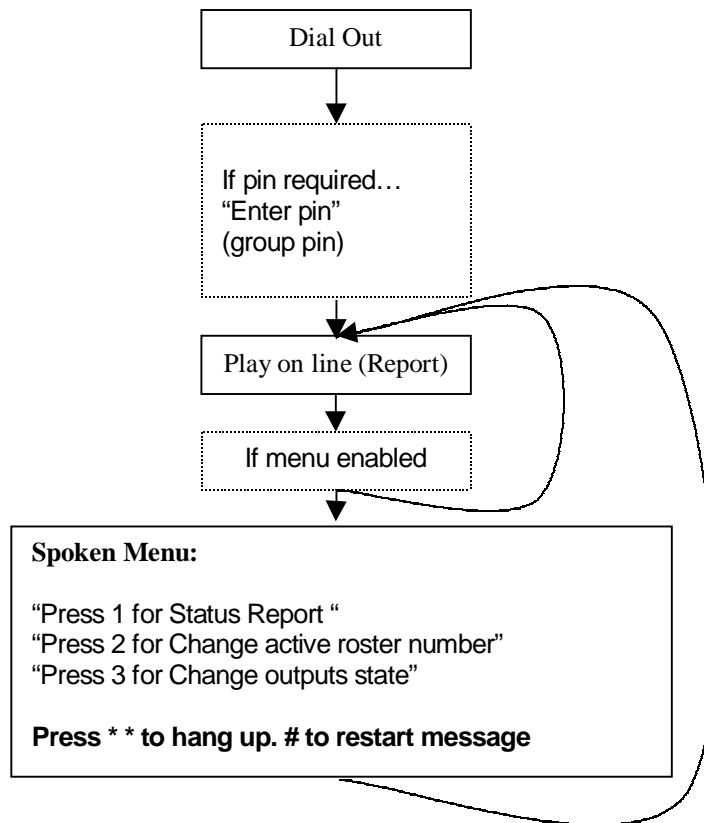
EDAC700 RTU ring in voice menu

The EDAC700 RTU uses the system messages combined with Input sensor and Group voice messages to create a talking menu system similar to a telephone banking system. This menu can be heard when you dial in to the EDAC700 RTU, or when the EDAC700 RTU dials out with an alarm notification call. Different parts of the menu may or may not be present depending on the dialer's configuration set up in, Program-Mode.



EDAC700 RTU alarm notification call voice menu

Out going alarm notification calls use the same menu structure as the ring in menu. The full menu can be turned off and on along with the requirement for PIN numbers.



Canceling alarm notification calls

Alarms can be cancel/acknowledged by “any key” or by a PIN. This can be done using a touch tone phone when you receive an alarm notification call or when you ring into the EDAC700 RTU.

A valid Group PIN’s should be entered during the “Group Message” or “Input status message”. The EDAC700 RTU will Beep twice to indicate a valid pin has been accepted.

When the EDAC700 RTU is configured with multi Groups and PINS plus one call list, it can be difficult to get a PIN accepted. You must enter your correct Group PIN while appropriate Group message, and associated Input is playing.

NOTE: The alarm can also be canceled/acknowledged via the EDAC700 RTU keypad. At any time a valid Group PIN can be entered via the keypad.

EDAC700 RTU system configuration and Alarm Structure

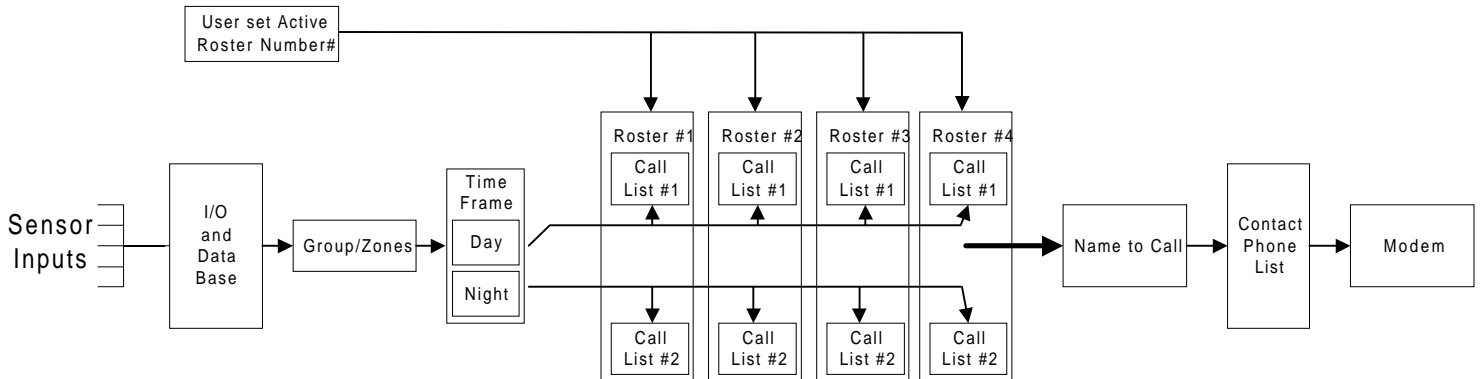
SET UP STEPS

The following basic procedure or steps are required to configure a EDAC700 RTU to produce alarms, monitor sensors, or set outputs to turn loads on and off

- ◆ Initial Set Up Configuration
 1. Setup Inputs and record messages
 2. Define groups and record messages
 3. Enter phone lists
 4. Build call list from phone list
 5. Build rosters
 6. Test dialing out and in
 7. Change any system settings to improve performance
 8. Setup Time frames if required and test

In order to configure the dialer correctly the installer/integrator must understand the internal structure that the dialer uses. See Diagram below.

Alarm structure Block Diagram



Each sensor has an “Input” terminal number. This would normally be 1-20 for a standard EDAC700 RTU.

Each “Input” must be mapped to a Group. In the security industry this is also referred to as a Zone. When an Input is triggered, or goes into an alarm state, the Group it is in generates an alarm.

The Group then goes via the TimeFrame test. If no TimeFrames have been configured, the alarm goes straight through to the Roster block. You could consider it to have one continues TimeFrame 00:00am to 23:59pm, when no Time Frames have been set up.

The Group must have a call list and roster associated with it. The active Roster number, set by the user will decide which call list is used. The call list identifies the name to call for alarm notification.

The call list will use the master phone list to get the phone number and initiate an alarm notification call.

Database

The Database is the physical RAM space used when you configure Inputs, Groups Phone numbers etc. Each time a configuration is saved in Program – Mode, it is call a ”configuration record” and is saved to the Database space. When you save a configuration, the EDAC700 RTU will report the percentage of database space used.

When configuring your EDAC700 RTU you must work within the following space constraints

Phone number up to 40 Characters, per entry		
Names and Labels up to 40 Characters per entry		
Number of Rosters	–	Unlimited
Number of Call Lists	–	Unlimited
Number of Phone Numbers	–	Unlimited
Number of Groups	–	Unlimited

If complex applications are to be considered some thought should be considered to use database space efficiently.

- ◆ Long names and labels will use up space that could be used for more Inputs or Phone Numbers
- ◆ If you require large amounts of Inputs, you may end up with a limited space for Phone Numbers or Call Lists
- ◆ If you require large “Call lists” and “Phone Numbers”, you need to consider how many “Inputs” are required.

If the used size exceeds 95% a warning message is displayed. The user should be resourceful and try not to fill the database completely. No damage will occur but it will not be possible to add any more entries.

NOTE: Deleting Voice files will NOT create more room in the database and visa versa. The database and the voice file area are totally independent!

Database % Used

Program Mode -> Configure Dialler -> Any Menu -> Save Changes

When the user saves any configuration record, this is anything configured or edited in Program-Mode, into the database a report screen will be generated. This will display the database usage (Example shown below).

```
Database 14% Full
E[ |||||.....]F
```

The above screen is accessible without modifying inputs via “*Program Mode -> Configure Dialler -> Configure Misc. -> Check Memory -> Database Usage*”.

You can also check “Voice File Usage” from the same menu

Configure I/O - "I/O Menu"

The EDAC700 RTU has 20 physical input/output (I/O) terminals. Each input/output(I/O) terminal can be individually configured to do one of these six basic functions:-

Normally Open Digital Input
Normally Closed Digital input

Digital Output

Analog Input 0-1v
Analog Input 0-10v
Analog Input 4-20mA

Pulse and Runtime Meters are provided on an expansion board.

All settings, calibration and voice messages relating to the sensor-input configuration are done in this menu, including Pulse and Runtime Meters

Points to note about sensor I/O configuration

- ◆ When configuring a sensor "Input" terminal the first thing that you must do is selecting a physical input terminal number. In most cases this would be 1-20. If expansion is being used it will be a number above 20. You do not have to use consecutive numbers, although it is recommend.
You will then need to give the "Input or "Output" a representative label. The LCD accommodates 20 characters across the screen, labels can be up to 40 characters long. You should consider what your label would look like on the LCD when in Run-Mode, also longer labels will use up data base space..
- ◆ Each I/O configuration must be associated with a "Group". When an "Input" goes out of range it is the "Group" associated with the input that generates an alarm notification call. You can not cancel a "Input", you must cancel a "Group/Zone". The connection or association of an "input" with a "Group" is done when configuring the "input". This can be edited later if required.
- ◆ You must select the type of I/O you are going to use, this is done in the "Input Function" sub menu. The menu labels and questions change to suit the type of I/O function you have selected. See latter for comments on Analog configuration.
- ◆ Inputs can be "latched Input" or "do not latch". By default the setting is "do not latch" , with this setting when an input is triggered it will remain triggered while the input is present and out of range. If the input trigger comes back into range the trigger will be removed from the "Group" it is associated with. This is also call "self cancelling".
If the input is configured as a "latched input", then when the trigger is removed or goes back into normal operating range the dialer will ignore it, and the trigger will still be presented to the "Group". The EDAC700 RTU will continue to make alarm notification calls until it receives an acknowledge/cancel from a user.

Configure I/O cont.

- ◆ There are a couple of parameters that can be used to make delays in seconds, before a input is considered to be a valid trigger. These would be used where a sensor can trigger but must remain triggered for n seconds before it is considered an alarm. These types of sensors might be a PIR, or mains drop out relay, which would both need to be on for a continuous amount of time before being accepted as a valid alarm trigger.
- ◆ Each “Input” can be configured as a “trigger that causes dial out”, (default) or as a reporting only.
Reporting only inputs, do not make alarm notification calls. They can be configured using three options:-
 - Option 1: “report - non dial” Will report a status voice message whenever an alarm notification call is made. For example a 4-20mA Water Level (WL) sensor on a reservoir configured with float switches for high and low water level alarms. You would get alarm notification calls from the high or low water level alarms, but it might be good to also report the actual water level with the same alarm notification call. This sensor would then be configured as a “report – non dial”.
 - Option 2: “report – call in” Will report a status voice message whenever the user initiates a call in to the EDAC700 RTU.
 - Option 3: “always report” Will report a status voice message whenever the EDAC700 RTU makes an alarm notification call, or when the user initiates a call in to the EDAC700 RTU.
- ◆ Each I/O sensor configuration record has a pager message associated with it. This message can be up to 40 characters long. If you do not intend to use a pager simply jump over this step.
- ◆ If you are using an analog sensor and pager, the analog reading will be added to the end of the pager message when the EDAC700 RTU generates a pager notification call. Your pager message will need to reflect this, e.g. “Water Level is high, reading is:”.
- ◆ Each I/O sensor configuration record potentially has 3 voice messages:-

On Message

Off Message

Suffix Message = Analogue input only.

These voice messages can be re-recorded at any time, while in Program-Mode, and you are physically at the EDAC700 RTU.

To re-record an I/O message you must select the “Configure I/O”. Then select the appropriate sensor I/O configuration, from the menu. Step through the setting until the record window appears.

Configure I/O menu

Program Mode -> Configure Dialler -> Configure I/O

The "I/O Menu" includes three pre configured inputs

253-1 RTU Batt	Battery back up reading
254-1 RTU Power	RTU Power supply voltage
1-1 Input 1	Example input configuration

Program Mode -> Configure Dialler -> Configure I/O -> Add I/O

"1 Input No.=1"

Enter screw terminal number you want to configure.

"Input name"

Enter a descriptive name that might suit the sensor type. Up to 40 characters. Note: long names use up data base space (RAM).

"Group"

- Add Group
- *Group 1

Select a Group to assign the input sensor too. You can also add a new group from this option

"Input function"

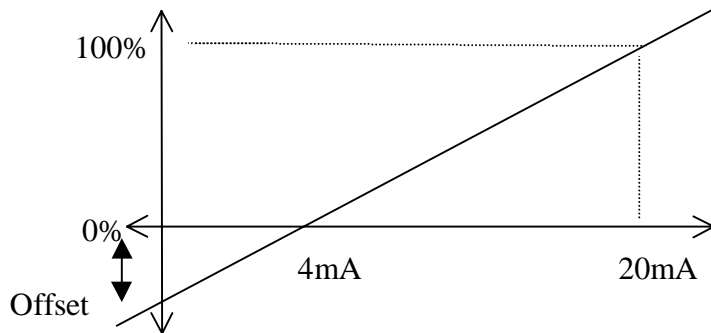
Off	Can turn sensor off for repairs etc
Normally Open	Clean contact normally open digital relay input.
Normally Closed	Clean contact normally closed digital input
20mA Loop	4-20mA input
10V Analog	0-10vdc input
1V analog	0-1vdc input
Output reset off	Digital Output, if reset will re-start in off state
Output reset on	Digital Output, if reset will re-start in on state
Pulse accumulator	Expansion pulse input 21-28
Runtime meter	Expansion Runtime meter, inputs 29-36

Select the type of Sensor you want to make this input.

Configure I/O cont.

Analog Calibration

Sensors are calibrated by providing two points on a graph, from these points the slope of the graph can be calculated, this is called a multiplier.



Sensor reading in mA or volts * multi = reading in Engineering units

By using fine adjustments of the set points and using an external calibration reference, we get better calibration.

Program Mode -> Configure Dialler -> Configure I/O -> Add/Edit Input -> Input function -> Analog/4-20

"Low mA value = 4.00"

Enter sensor low output value in mA. Will say **"Low V value"**, if 0-1 or 0-10.

"High mA value = 20.00"

Enter sensor high output value in mA, Will say **"High V value"**, if 0-1 or 0-10.

"Low Eng Units value = 0"

Enter sensor low value in engineering units, that **"Low mA value"** represented

"High Eng units = 100"

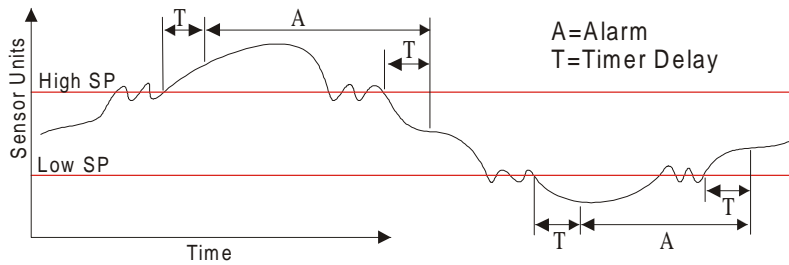
Enter sensor high value in engineer units, that **"High mA value"** represented

"Offset = 0"

Enter an offset in engineering units to make calibrated reading line up with external reference.

Analog alarm set point configuration and delays

When configuring an analog input, you need to set Alarm High “**Set Point**”, Alarm Low “**Reset point**”, and select the “**Analog trig type**”. This setting will decide how the analog signal is tested against the “Set” and “Reset points” for Signal out of normal operating range and an alarm trigger is then generated.



Shows relationship between Set Point and Reset point, and analog signal.
(High SP = **Set Point**, Low SP = **Reset Point**).

Configure I/O cont.

Program Mode -> Configure Dialler -> Configure I/O -> Add/Edit Input -> Input function -> Analog/4-20

"Set Point = 40"

Signal level in Engineering units, that alarm high level is detected on. High alarm set point

"Re-set point = 23"

Signal level in Engineering units that alarm will reset or un-trigger on. Low alarm set point.

"Analog trig Type ="

***trig when high (default)**

When analog signal is above **"Set point"** will trigger

When analog signal is below **"Reset point"** will remove trigger

Trig when low

When analog signal is below **"Set point"** will trigger

When analog signal is above **"Reset point"** will remove trigger.

Note: The **"Set point"** value must be smaller than **"Reset point"**

Outside set/reset point

Outside: When analog signal is above **"Set point"** or below **"Reset point"** will trigger

Inside: When analog signal is between **"Set point"** and **"Reset point"** will remove trigger

Betwn set/reset pts

Between: When analog signal is below **"Set point"** and above **"Reset point"** will trigger

Outside: When analog signal is above **"Set point"** or below **"Reset point"** will remove trigger.

"Speak Suffix mess"

Yes

Will ask for suffix to add to voice message after speaking the analog sensor value.
This would normally be the units

***No (default)**

Will speak analog value with no suffix
This option will only show up for analog input configuration

"Decimal Place=1"

Type the number of decimal places to be displayed and spoken for this analog sensor

"Input alarm"

Latched input

Alarm Trigger will be latched on. If sensor goes back into range alarm trigger will remain present until acknowledged by a user.

***do not latch (default)**

Alarm trigger will be removed if sensor goes back into range. Self cancelling.

"Trig/dial time(s)=2"

Type in a delay in seconds for how long, trigger must be continuously present before accepted as a valid alarm trigger

"Lat/Dial time(s)=3"

Type in a delay in seconds for how long after a valid alarm trigger is present, before alarm notification calls are started.

"Lat/Untrig time(s)=1"

Type in a delay in seconds for how long a analog signal must stay continuously in the normal operating range before is accepted as back in range.

"Input type"

Choose when you want the value to be reported. Eg, Dial in, Dial out or Always (Both).

"Pager message"

Enter a suitable pager message. If it is an analog sensor, the analog reading is added to the end of the pager message at the time of transmission.

Configure I/O cont.

"on voice message:xx"

Record voice message for the input when on or alarmed

"off voice message:xx"

Record voice message for the input when off on in the normal state

"Save changes? <OK>"

Outputs

Program Mode -> Configure Dialler -> Configure I/O -> Add/Edit Input -> Input function -> Output reset on/Output reset off

Outputs are configured when you select your "Input function".

Select either "Output-reset off" or "Output-reset on". These labels mean exactly what they say, if the EDAC700 RTU is powered down and up or, reset, the outputs will be either Off or On, after restart, depending on your selection.

Outputs must be associated with their own "Output group". There can not be more than nine outputs per "Output group".

Outputs are turned Off and On by the user initiating a call into the EDAC700 RTU, select 3 from the menu, for "outputs". Enter the output group PIN. You can then toggle the outputs on and off, using the number keys on your phone.

Pulse & Runtime Meters

A hardware expansion module is required to enable Pulse and Runtime Meters. For a full expansion on how this feature works please refer to Appendix 2.

Configuration

Setup of the pulse module is done via the standard EDAC700 RTU program menu structure.

At the “input function” you can select either a “Pulse Accumulator” or “Runtime Meter”.

Pulse channels can be set up with an initial startup count, and multiplier-scaling factor. Each pulse channel has its own voice message, which is used to indicate the measurement/sensor type. Each channel also has a units message, which can be turned off or on.

Run Time Meters, can individually be configured with an initial start up value, and a voice message to indicate what the runtime meter is measuring. All Runtime meters have the units of hours.

Nether, Pulse measurements or Runtime meters can generate alarm notification calls. Pulse inputs and Runtime Meters are reporting only inputs.

Possible RS232 Conflicts with the Pulse unit

Program Mode -> Configure Dialler -> Configure I/O -> Add/Edit Input 21-36 -> Save Changes

When the user edits a Pulse or Runtime input configuration and saves it, the EDAC 700 RTU will send the necessary configuration to the pulse unit. If any communication problems occur between the Pulse unit and the EDAC 700, an error will be displayed. The likely cause of this can be 1 of three things.

- ◆ Make sure the Pulse unit is powered from the EDAC700 RTU
- ◆ Check the 8 pin Ribbon cable is connected to the correct sockets at both ends. This should be the RS232 pin header (located beside the Reset button) and the 9 Pin plug on the Pulse unit.
- ◆ Unplug any devices connected to the external RS232 plug.

Once all three items have been check, press <OK> twice to try again.

NOTE: You can not remotely dial in using a modem and communicate with an external device like a data logger connected to the EDAC700 RTU if a Pulse Expansion unit is to be used or is plugged in to the EDAC700 RTU main PCB.

Configure I/O cont.

Pulse Accumulator Input Setup

Program Mode -> Configure Dialler -> Configure I/O -> Add I/O 21-28

"x Input No.=x"

Select a input number (For pulse inputs only 21 - 28 can be used). This number is the reference to the screw terminal on the pulse expansion unit.

"Input Name"

Enter a name, describing the pulse input type.

"Group"

Scroll <UP> and <DOWN> to select the group the input should be associated with.

"Input Function"

Choose "Pulse Accumulator".

"Speak Suffix Mess."

Select "Yes" if a suffix voice message is required to be played after the pulse count.

If "Yes" to, previous option the below menu will be available.

"Suffix voice mes:xx"

Record the suffix message.

"Starting Value"

Type in the offset number for the value at which the device should start counting from. (Default 0, Max 4294967295). This is the unscaled result.

"Multiplier=1"

Type in the amount each pulse should be multiplied by. EG. A Multiplier of 5 will add 5 to the value on each pulse.

"Divisor=1"

Type in the amount each pulse should be divided by. If fractions are required (EG 4/3) enter 4 as a Multiplier and 3 as the Divisor.

"Input type"

Choose when you want the value to be reported. Eg, Dial in, Dial out or Always (Both).

"Pulse Voice Name:xx"

Record the voice name of the current pulse input.

"Save changes? <OK>"

Press <OK> to save the input. The Dialer will then attempt to communicate with the pulse unit, if any problems occur see "**Possible RS232 Conflicts with the Pulse unit**".

Configure I/O cont.

Runtime Input Setup

Program Mode -> Configure Dialler -> Configure I/O -> Add I/O 29-36

“x Input No.=x”

Select a input number (For runtimers inputs 29 - 36 can only be used). This number is the reference to the screw terminal on the pulse expansion unit.

“Input Name”

Enter a name, describing the Runtime meter input.

“Group”

Scroll <UP> and <DOWN> to select the group the input should be associated with.

“Input Function”

Choose “Runtime Meter”.

“Starting Value”

Type in the calibration value (in hours) of the device attached to the runtime input (Default 0, Max 429496729.5, Resolution 0.1)

“Input type”

Choose when you want the value to be reported Eg, Dial in, Dial out or Always (Both).

“Runtime VoiceName:xx”

Record the voice name of the runtime meter.

“Save changes? <OK>”

Press <OK> to save the input. The Dialer will then attempt to communicate with the pulse unit, if any problems occur see **“Possible RS232 Conflicts with the Pulse unit”**.

Configure Groups - “Group menu”

Program Mode -> Configure Dialler -> Configure Groups

Each configured Input/Output(I/O) must be associated or mapped to a “Group/Zone”. It is the “Group” that generates the alarm notification call.

Each group has an individual name, and group voice message. Both of these can be changed at any time after initial installation.

When working with different Input sensor types, it is logical to, group the sensor types together e.g. Intruder sensor Group, “Smoke detector Group”, etc. Then these groups can be associated with a call list that would call the most appropriately qualified people to respond. For example there is no point in calling a fire officer for an intruder sensor alarm.

Each “Group” has a 4 digit PIN number associated with it. On an alarm notification call, the number is entered using a touch-tone phone to acknowledge and cancel the alarm. For convenience you can either set up individual “Group” PIN’s or use the same PIN for all your “Groups”.

You can not put “Inputs” and “Outputs” in the same “Group”. You can have an “Input” group or an “Output” group. In order to turn “Outputs” on and off they must be associated with an “Output” Group.

If you are setting up an “Output” Group, you can only have up to 9 outputs in the one group. This is because a normal touch-tone phone has keys 1-9. Which are used to toggle the outputs on and off, when in the outputs menu, during a phone call with the EDAC700 RTU.

If reporting only inputs are configured to be in the same group as alarm notification Inputs, large delays can be experienced while on an alarm notification call. This is due to the EDAC700 RTU having to play the voice messages for the reporting only inputs after the triggered input.

It is recommended that reporting only inputs are put in there own group, if practical.

Configure phone numbers – “Phone list menu”

The EDAC700 RTU requires a phone book in order to build “Call lists” from. The EDAC700 RTU must have a “Call list” defined to make alarm notification calls from. The “Call list” and phone book only require one entry each, in order to make successful alarm notification calls.

The phone book contains a descriptive name, the phone number and some other settings relating to the individual phone numbers.

Program Mode -> Configure Dialler -> Configure Groups

“Cancel method”

```
cancel not allowed
*any key cancel (default)
pin cancel
```

Each entry can have its own alarm cancellation method. Pick the one that suits.

cancel not allowed

The EDAC700 RTU will play the appropriate voice messages, for the time allowed (set in this menu), then hang up.

Any key cancel

The EDAC700 RTU will stop making any further alarm notification calls if a key on a touch-tone phone is pressed.

PIN cancel

A valid PIN number for the triggered “Group” must be entered. The PIN required is configured in the “Group Menu”. This option would normally be used when other people might answer the phone that the EDAC700 RTU calls, e.g. a baby sitter.

“Call Time(s)=60”

Is used to set the time the EDAC700 RTU is allowed on this alarm notification call. If it takes awhile for the exchange to connect or there is a long delay before the phone is answered, then this number needs to be increased. Time is measured in seconds.

Configure phone numbers cont.

"Spk on dial-out"

*no extras
report pin
Speak Menu
Report pin + menu

When the EDAC700 RTU makes an alarm notification call you can set one of four options, which decide what voice message, the EDAC700 RTU will start with:-

No extras

Will start speaking alarm status message straight away, user then presses a key or enters a PIN to acknowledge and cancel the alarm.

Report pin

Will ask for a PIN before it starts speaking the alarm status message. Any valid "group" pin will work.

Speak Menu

Will start by speaking the main menu "Press 1 for....2 for...3 for...etc. Will not require a PIN after pressing 1 to get the alarm status message.

Report PIN + Menu

Will start speaking the main menu, as per above, but will ask for a PIN after pressing 1 to get the alarm status message, any valid "Group" PIN will work.

"Call Type"

Select what type of service you want this phone number to connect to

Voice – A person is expected to answer

Numeric pager – sends message to a numeric pager

SMS/alpha-numeric pager – sends message to either a alpha-numeric pager or text message to a cell phone.

"Detect Tones"

The EDAC700 RTU is capable of detecting dial tone and ring tone from the telephone exchange, using its inbuilt modem.

If the EDAC700 RTU will not dial, due to being unable to detect dial tone, you can set it to "no tone detect", this is also called "Blind dialing". This will allow it to initiate a call regardless of the dial tone frequency.

Configure Call List – “Call List Menu”

The EDAC700 RTU must have a “Call list” defined to make alarm notification calls from.

The “Call list” and phone book only require one entry each, in order to make successful alarm notification calls.

When building a call list, you must first select a phone number to call, if none are defined the EDAC700 RTU will let you define them as required from within the “Call List Menu”.

Program Mode -> Configure Dialler -> Configure Call List

“Pick phone”

Select a phone number or add one

“Wait aftr call(m) = 0”

This setting is a delay in minutes, that the EDAC700 RTU will wait between calls from the call list. This is used to allow a user to phone in and cancel the alarm if required. It also allows the EDAC700 RTU time to self-cancel if the alarm trigger has been removed or gone back into its normal operating range.

This setting must be set if a pager is being called or text messaging to a cell phone is being used.

“ack drops number”

*No (default = no)

Yes

If this setting is set to yes, when the EDAC700 RTU dials a number from the call list. It looks for an acknowledge signal from the user/operator, as per normal. However after receiving the acknowledge signal from the user/operator the EDAC700 RTU will drop the name/phone number its currently on off the list.

This configuration is most likely to be used when you want to notify a list of people of an incident. For example the EDAC700 RTU could be at a fire station and be triggered to dial the current roster of fire fighter crew. As each Fire Fighter crew, receives the call they can acknowledge it and not be called again.

“max call count=99”

You can set the maximum number of calls for each number on the call list. For example if one or two of the numbers on the call list are cell phone numbers, and the owner has there phone switched off or is not answering, you would not want a default of 99 calls going to the message service. So you can set this number to 2 or 3.

Configure Rosters – “Roster Menu”

If no Rosters are defined the EDAC700 RTU will use “Call List 1” to make all notification calls from.

A Roster has at least one “Call List”, or a number of “Call Lists” associated with it. Once one or more Rosters have been configured, the user/operator, can ether dial in to the EDAC700 RTU and select a different Roster number via the menu options using a touch-tone phone, or use the EDAC700 RTU key pad to select a different Roster number.

Simple Application (Example 1)

A set of Rosters is required if you want to use different “Call lists” on different days of the week or as shift staff come on and off duty, and the duty officer changes.

For this example we have configured digital Inputs 1 to 5, which have been associated with Group 1. For simplicity we will only have the one Group.

We have 5 Duty officers, on a 5 day rotation. On this bases the duty officer of the day will be first on the “Call list”, if this duty officer does not respond the next officer on the list will be called.

The following table illustrates the five “Call Lists” that need to be configured before we start building the required Rosters.

Call List 1	Call List 2	Call List 3	Call List 4	Call List 5
Ben	Richard	Mark	Roger	Paul
Richard	Mark	Roger	Paul	Ben
Mark	Roger	Paul	Ben	Richard
Roger	Paul	Ben	Richard	Mark
Paul	Ben	Richard	Mark	Roger

You now need to build 5 rosters.

	Roster 1	Roster 2	Roster 3	Roster 4	Roster 5
Group 1	Call List 1	Call List 2	Call List 3	Call List 4	Call List 5

Configure Rosters cont.

Program Mode -> Configure Dialler -> Rosters -> add a roster

From the **“Roster Menu”** select **“add a roster”**.

You can give the roster a name, or leave the default name **“Roster 1”**

You will then be presented with the next screen

Call List, Group 1, Group 1

This is indicating that Call List 1 is connected to Group 1, or if Group 1 is triggered it will use “Call List 1” to make alarm notification calls from

Press <ESC> and you will find you have defined “Roster 1”.

From the **“Roster Menu”** select **“add a roster”**, type in a Roster name or press <OK> to accept the default name of **“Roster 2”**.

You will then be presented with the same screen

Call List, Group 1, Group 1

This is indicating that Call List 1 is connected to Group1

Because we are now configuring **“Roster 2”** and require that this use **“Call List 2”**, press <OK> to be presented with a pick list. If you are using the EDAC700 RTU keypad, use the arrow keys to move up and down through the list.

Call List Call List 2

When **“Call List 2”** is displayed, press <OK> to select or else select the alphabetical number in the terminal window.

Save the changes.

You will then be presented with **“Roster 2’s”** list. It will look like this:-

Call List, Group 2, Group 1

This is indicating that Call List 2, is connected to Group 1.

Press <ESC> and you will find you have two Rosters defined.

Continue in this fashion to complete Rosters 3,4, & 5.

Using and changing the current Roster number

By default Roster 1 will be selected. By changing the Roster number you can use different Call lists associated with the group.

To change the current Roster number, two methods are available.

1. Changing the current Roster number when on site

To change the current Roster number, starting from Run-Mode.
Enter Program Mode PIN <0000>

Main Menu Exit to Run Mode	Press Down arrow once
Main Menu Change cur. Roster	Press <OK>
Roster is *1 Roster 1	Use up and Down arrow to move though the configured rosters
Roster is *1 Roster 1	Press <OK> to select the desired Roster Press <ESC> to get back, then <OK> to return to Run-Mode

2. Changing the Roster number by phone

Initiating a phone call to the EDAC700 RTU would be the normal way, that this would be done. It can also be done on an alarm notification call, if the spoken menu option is turned on.

Phone the EDAC700 RTU

Select option 2 **“2 to change Roster”** from the spoken menu

Enter the correct PIN (Default = <0002>)

The EDAC700 RTU will report **“The current roster number is 1”**

It will then say **“Please enter Roster Number”**

Press an appropriate Roster number key.

If there is no Roster defined for the number you selected, the EDAC700 RTU will say **“Invalid Roster number”**

If you select a valid roster number, the EDAC700 RTU will report **“The current Roster Number is”** with the number you have just selected.

Press ** terminate the call and hang up.

Configure Rosters cont.

Advanced application- Rosters (Example 2)

If you want to use multiple Groups, with different “Call lists” you need to set up at least one Roster.

A Roster can contain a number of “Call lists”. Each “Call list” is associated or connected to a “Group”, which in turn is associated with 1 or more “Inputs”.

The connection between a “Call list” and a “Group” is done in the Roster configuration menu.

This is where a “call list” associated with Electricians or a “call list” associated with Plumbers can be connected to the appropriate “Group” which will have sensors of an appropriate type. E.g. a Plumbers “Group/Call list” might have water leakage detectors and flow sensors in it. An Electricians “Group/Call list” might have phase failure sensors, or motor fault sensors.

The following table illustrates a possible configuration using 2 rosters, 3 Groups and 6 call lists:-

	Roster 1	Roster 2
Group 1 (<i>Flow Sensors</i>)	Call List 1 (<i>Plumber 1</i>)	Call List 4 (<i>Plumber 2</i>)
Group 2 (<i>Power sensors</i>)	Call List 3 (<i>Electrician 1</i>)	Call List 6 (<i>Electrician 2</i>)
Group 3 (<i>Fire sensors</i>)	Call List 2 (<i>Fire officer 1</i>)	Call List 5 (<i>Fire Officer 2</i>)

Points to note from the above table

- ◆ The above Call Lists might only have one or two phone number entries in them, this being the professional(s) on call, and perhaps the owner or duty officer. On the other hand the Call Lists could have a few entries in them.
- ◆ It is not required that the “Call List” number lines up with a “Group” number. Groups can be given sensor specific labels.
- ◆ The Roster lets you create the connection between a “Group” and a “Call List”
- ◆ If required one “Group” can use the same “Call List” in all Rosters
- ◆ With out careful planing, it can get very confusing quite quickly. It is suggested that you draw up tables of Call Lists and then a Table similar to that above before configuring your Rosters.

The procedure to configure the EDAC700 RTU for the above application is a combination of all the steps, explained so far:-

1. Configure Inputs
2. Configure Groups
3. Configure Phone numbers
4. Configure Call Lists
5. Configure Rosters

Configure System

This Menu is where the user can setup default values for security and operational options of the dialer.

Program Mode -> Configure Dialler -> Configure System

Rings answ norm = (Default = 1)

The number of telephone rings the Dialer will normally wait until answering an incoming call.

Rings answ wait = (Default = 4)

The number of telephone rings the Dialer will leave before answering an incoming call in the “wait” state.

Rings answ canc = (Default = 5)

The number of telephone rings the Dialer will leave before answering an incoming call when canceled alarms exist.

Cancel-call in

Not allowed

*Any key (default)

Group Pin

The local key-sequence required to stop the dialer answering an incoming call.

Program pin = (Default = 0000)

The Security (PIN) number used to access Program mode from the main startup screen (Run mode).

Roster pin = (Default = 0002)

The PIN number required to access the “Roster Menu” across a phone call. ie; Menu option ‘2’ on the “Spoken Menu”.

Modem mode pin = (Default = 0004)

The PIN number required to establish a remote modem connection. This function is used to talk to an external device attached to the RS232 of the Dialer.

Remote command Example; “ATDT <PHNUMBER>, , , , , , , 4, , 0004”

Each modem waits a different time on a ‘,’ the user may have to try a different amount.

Remote Prg Pin = (Default = 0005)

The PIN number required to establish a remote modem connection in program mode. This allows the user to remotely setup the dialer as if it was connected directly to the local RS232.

Remote command Example; "ATDT <PHNUMBER>, , , , , , 5, , 0005"

Group Priority

*No (default)
Yes

No (Default)

When set to "No" the dialer will make alarm notification calls, alternatively from each triggered group and the call list associated with that group.

Yes

When set to "Yes" the dialer will consider the lowest number group (Group 1) to have the highest priority. Will always dial the lowest group number. Dials the same group until canceled/cleared, then dials next lowest group.

Be careful of the "Wait Time" setting,, dialer will not make any calls while in the wait state between calls, for the current group, with Priority = Yes

Pin report, call in

report pin not req.
*report pin

This option is used in the spoken menu. When a user dials the EDAC700 RTU and "report pin" is set, menu option '1' will require a PIN. If "report pin not req" the user will not have to enter a PIN. Menu option '1' is to hear the status of reporting inputs.

Configure Speech

This Menu lets the user configure the default speech records for the Dialer.

Program Mode -> Configure Dialler -> Configure Speech

Site message

*=play #=record

The user can listen to the site message (if it exists) or record the site message. The site message usually contains the company name and/or the site location.

System msgs...

Covered in Appendix 1 – Recording/Editing System Voice messages

Configure Misc

This Menu is where the user can setup miscellaneous options of the dialer.

Program Mode -> Configure Dialler -> Configure Misc.

Change date & time

dd/mm/yy hh:mm day

<Current Time>

This option lets the user change the date and time. The default time is displayed on the second line until it is changed. The days are represented by numbers as shown below;

0:Sun 1:Mon 2:Tue 3:Wed 4:Thu 5:Fri 6:Sat 7:Sun

RS232 config

* 19200

9600

4800

2400

1200

300

Up/Download config

DO NOT USE - Currently under development

Erase config

WARNING: This option will delete ALL database records and voice files (not including system messages).

Check Memory

Check the status of user variable memory. Sub Menus;

Database Usage

This option will display the % used of the database and draw a simple bar graph representation of the % used. If the size exceeds 95% a warning message is displayed.

Voice File Usage

Same as the Database usage except for the Voice messages.

NOTE: Deleting Voice files will NOT create more room in the database and visa versa. The database and the voice file area are totally independent!

Advanced Configuration

Alpha Paging/SMS

In order to use Alpha paging or SMS you must arrange access to a TAP server/host. The EDAC700 RTU uses standard TAP protocol, it does not use ETAP or Pacnet.

If you are going to use SMS messaging to a cell phone, you may also need to subscribe to an additional service, in New Zealand for Telecom or 025 cell phones, this is called "Mobile Note". This service enables the individual cell phone to receive SMS text messages from the TAP host.

If you are in New Zealand and have a GSM or 021 cell phone you need to talk to the manufacture for up to date information on where to go to arrange access to a TAP host.

To configure the dialer for Paging or SMS, you must configure the TAP access numbers and, the Pager number or cell phone number.

The Tap service is configured via the **“Configure TAP”** menu. The table below gives the information required for use in New Zealand.

Service Type	Service No	Service ID	Service PW	Service Speed
Alpha Paging	026,4001283	PG1		14400
Mobile Note (025)	026,199999	PG1	zmnote	14400
Vode Phone (021)				

The next step after configuring the TAP access is to configure your phone numbers for notification on the Alpha/ numeric pager or cell phone.

This is done via the **“Configure phone numbers”** menu.

If using a pager you will need its RIC code. This is normally located on the back. Your service provider would have provided this number when you signed up. It is the number you dial via a normal phone to activate the pager.

In the **“Configure phone numbers”** menu, you should enter a suitable name, and the RIC code. In New Zealand this will start 026...

If you want to use SMS, you will enter your cell phone number here. The following table provides the information required for use in New Zealand with Telecom 025 cell phones.

Cell phones starting with	Enter as..., Do not enter the 025
027....	Enter as is, including 027
025...Plus 7 digit number	5301.....drop off 1 st digit of 7 digit number
025...Plus 6 digit number	5300...rest of 6 digit number

Alpha Paging/SMS cont.

After entering the phone number work your way down the menu and select the “SMS/alpha-numeric pager” option. If you have not previously set up your TAP host you will be given an opportunity to do so here. If you have, you can select the TAP service you have previously set up.

The pager message comes from the Input configuration. See “**I/O Menu**” and select the Input sensor that you want to generate paging messages. If the input selected is configured for analog, the analog reading will be added to the end of the text message entered above.

When configuring a pager notification or SMS text message a delay must be set between each call. This is to allow the user to call into the EDAC700 RTU to cancel/Acknowledge the alarm. It also allows the EDAC700 RTU to check if the input trigger has been removed or gone away, and then self cancel. This delay can be configured via the “**Configure Call list**” menu, option “*Wait aftr call(m)=0*”.

When receiving an Alpha paging message, some pagers will not display a second notification if they receive the same message string more than once. This will give the impression that paging is not working reliably. In order to get around this, you should delete the pager message from the pager shortly after receiving it. This will allow it to display a second notification from the same group or trigger.

Time Frames, Rosters, & Groups

Time frames are configured via Microsoft Access. This feature is currently unavailable, if you wish to use this feature please contact the manufacture.

Time frames allows you to set up Rosters that use different call lists depending on the time and day of week, month or year. Or in simpler terms a nighttime and daytime “Call list” that is associated with shift work. The “Call lists” are automatic switched in and out depending on the time of day. The time frame is applied to a group. If you use multi groups and multi rosters it gets quite complex and turns into a 3 dimensional model.

Call Lists:

Two Call Lists, per “Group” are made from the Master Phone list.

List 1 represents alarm responders that might be available during work hours, this is called the “In list”

List 2 represents after hours alarm responders. This is called the “Out List”

There can be a number of call lists constructed to accommodate different requirements.

Time frames:

A time frame is set up that includes the day of week and start and stop times for the “In list”.

The “Out list” takes over as soon as the Stop time is reached. The “Out list finishes when the “In list” starts.

0 Sun 1 Mon 2 Tue 3 Wed 4 Thu 5 Fri 6 Sat 7 Sun

Frequently Asked Questions (FAQ)

EDAC700 RTU beeps intermittently and asks for a PIN number

Normally this means an alarm trigger is present and the dialer is not fully configured.

A valid phone number, and “Call List”, must be present before the EDAC700 RTU can generate an alarm notification call successfully.

It may be trying to generate a battery or power fail alarm. Ensure the battery is connected and the power supply is connected and working. You will need to enter a PIN to cancel the alarm, or go to Program-Mode and back.

PIN not working

If the PIN should not work or you forget your PIN you can momentarily press the reset button located in the top right corner of the main board, continuously hold down a key on the EDAC700 RTU keypad, while the EDAC700 RTU reboots. It will start in Program-Mode. You can then go to the “Configure System” menu to check or change PIN numbers if required.

Idiosyncrasies

The following is a list of small things that may appear to be problems, they are included here so you, the user, can understand what is happening.

We do not consider them to be “show-stopper” bugs, but they will be improved/fixed, and an O.S. upgrade will be available in the near future.

◆ **“**” hang up, not always working**

When speaking can not all ways hang up using “**”, works best when specking “site message”. Will definitely not work if speaking reporting only inputs or acknowledged inputs. Wait for “site message” to start speaking again, then enter “**”, or else hang up your self. The EDAC700 RTU will hang up the phone at its end by its self, after a preset time out period.

◆ **“#” re-start speech, not always working**

In alarm notification call, “**” will make hang up, “#” should make speech restart from “site message”. This does not work all the time. Works fine for call-in, when in “spoken menu” part.

◆ **Pin number accepted, “beep, beep”.**

In some places this positive feed back may not happen, will give one beep for correct PIN or no beep. Is 99% OK. This is a cosmetic thing, the pin number is being accepted, and the user will no this as the voice message that follows from a correct pin will reflect that the pin has been accepted.

◆ **Message “Invalid Option”**

This message is normally played if you select a key press that is not going to do any thing or is a wrong key. It also can be heard if you select “2” for Rosters or “3” for Outputs, if no rosters or “Outputs have been defined. This will happen after entering the PIN. Because there are no rosters defined or Outputs configured, the EDAC700 RTU will report the pin as an “invalid Option” this is because it does not have configuration associated with the option you have selected.

◆ ***Problems with entering PIN Numbers.***

This problem is with “Cancel by PIN number”, not “Cancel by any key”. “Cancel by any key” will work fine if the rules outlined below are observed.

With one Group configured, can enter PIN at any time, like after the active input message. There is no problem with this set up.

When we have multi groups, triggered at the same time, and one call list, it can be difficult to get a PIN accepted if it is not entered at the correct time. This is due to each group potentially having different PIN numbers, and the correct PIN must be entered while the EDAC700 RTU is speaking the appropriate Group message or active input message.

With multi groups you can only enter your PIN number while the appropriate group message, or the active input message for that group is being spoken.

It is logical to want to enter a PIN after hearing the group and active input message. This can not be done, as the window for the correct pin has closed. The EDAC700 RTU will now be speaking the next group message and active input messages.

This could be problem-atic, with some users. The user needs to wait until the message replays from the start and enter the PIN during the group message. The first digit of the pin should be held down slightly longer, this allows the EDAC700 to hear the key press and pause the speech while the user enters the rest of their PIN number.

This problem will only show up under quite specific conditions when two or more groups get triggers and are connected to one call list and PIN numbers are being used rather than “cancel by any key”.

This PIN problem could possibly make for problems with training end users/operators. We do not think it is acceptable to try and train operators to enter PIN numbers at exactly the correct time. You should be able to enter any group PIN at any time and have it applied to the correct group.

This problem will be fixed as a high priority in an upgrade that will be available in the near future.

◆ ***Australian Dial & Ring Tone detect.***

The detection of Australian Dial tone and ring tone, is not working. This is a modem firmware problem. It will be fixed shortly.

In the mean time please use “blind dial”, this is configured in “Configure Phone numbers” menu. Option “Detect tones” set to “no tone detect”.

◆ ***Programming via remote modem connection (5 on spoken menu, not actually spoken).***

Land line to land line using Hyperterm to EDAC700 RTU at 19200 baud. Works fine, Hyperterm and modem reports “Connect 14400 V42bis”.

Using Analog Cell Phone on PC, to EDAC700 RTU on landline. Laptop thinks it is plugged into landline.

Can get carrier detect and lock. But either gets hash on screen or EDAC700 RTU hangs up. Seems to be detecting incorrect baud rate. Hyperterm reports “Connect 12000 NoEc”.

On changing the EDAC700 RTU baud rate and Hyperterm to 4800, or 9600, have not been able to get readable characters.

Have confirmed, that can connect and communicate to external equipment (4 on spoken menu) using this cell phone to landline set up. Modem will lock at “Connect 12000 NoEc”, EDAC700 RTU and Hyperterm at 19200 baud rate. Characters get though fine.

Would conclude that we need to confirm what baud rate to use at the EDAC700 RTU, Hyperterm, and modem baud rate for cellular connection. We may need to make modem init string adjustments for use with a cell phone. This would be normal or else the code may need adjusting for slower speed modem to cellular connection.

◆ ***Alpha Paging/SMS***

When doing paging/sms, if wait time is zero (default) the EDAC700 RTU will not update input status between calls, while in the “W” wait state, which happens between alarm notification calls. If the Input trigger clears its self, it will take some calls before the EDAC700 RTU stops making alarm notification calls. You need to set the wait time between calls to 1 minute. The wait time is in “Call List” configuration. If it is not set to 1 minute or more the user/operator can not ring into the EDAC700 RTU to cancel the alarm.

◆ ***Analogs and Paging/SMS***

When an analog input is configured, and reports to a pager/cell phone, the analog value is sent with pager message for SMS and Alpha paging. Pager message, which is entered in the Configure Input” menu needs to reflect this. Eg “High WL Alarm, the reading is:” The EDAC700 RTU will add the analog reading to the end of this message when it makes an alarm notification call.

◆ ***Timeframes***

When the Timeframes feature is configured, it gets applied to all groups. If one group requires one number or a set of numbers to be used all the time, regardless of time frame, then use the same call list name for both “In” and “Out” call lists when configuring.

◆ ***Data Base Repair “ERROR: db repair”***

Due to the EDAC700 RTU being a computer based EDAC700 RTU, it is possible for it to occasionally get its memory scrambled. If this should happen it will report that the database has been repaired while re-booting. You should use the “Erase Config” option from the “Config misc” menu if this should happen. You should also use “Erase Config” after an O.S. upgrade. This is to ensure all parameters line up correctly. This is not always necessary.

◆ ***Group Priority.***

Priority = No (default), means EDAC700 RTU will make alternate calls from each triggered groups call list.

Priority = Yes, If higher number Group triggered (Grp3) then lower number Group (Grp1), will make notification call from 1st triggered, higher number Group (Grp3). Then start and stay on Group1 until acknowledged, then goes back to Group 3.

EDAC700 RTU is meant to be set up such that Group 1 will have the highest priority alarms wired into it, then Group 2, Group 3 etc.

◆ ***Analog Calibration***

You may have trouble doing fine adjustment of slope, by adjusting the High or Low, calibration points. Will feel like it has quite course control over calibration values.

The EDAC700 RTU may give you the impression that it does not seem to use a decimal component of the value entered. This is the numbers to the right of the decimal point.

The EDAC700 RTU will use 5 digits after the last digit entered in the calibration values. Therefore 3.12 will use 3.1200000 or 3.1234 will use 3.123400000

The formula for calibration of slope is:

$\text{mA} \times \text{steps} \times \text{multi} = \text{display value (assume offset =0)}$ & $\text{V} \times \text{steps} \times \text{multi} = \text{display value}$

where steps 1V = 4095, mA = 4095/20

eg at 1:1 becomes: $20\text{mA} \times 4095/20 \times 0.004884 = 20$

To cal. multiplier:

1. set up reading as desired with low/high mA and Eng units
2. Read display. (D1) eg 19.5
3. Note Expected display (D2) eg 20.0
4. Calculate correction factor D2/D1 (20.0/19.5 = 1.025)
5. Adjust mA high value by correction factor HmA x D2/D1 (20 x 1.025 = 20.51)
6. Display should now read as expected.

◆ ***Analogs: Set & Re-set points.***

Must enter decimal place after the number and four decimal digits after this eg “3.0000” or “3.2345”. or else you will get a wrong number or zero in the set point.

◆ ***Digital's/Analogs: Un-trig time.***

Un-trig Time has been removed. It is used to provide a delay, in seconds, after a sensor comes back in to its normal operating range. The sensor must stay in range for the full period of the delay before the sensor/trigger is considered to be back in its normal operating range, and the dialer removes the trigger from the group. It would probably affect installations using analog sensors or Digital Inputs that are connected to a float switch. For Digital Inputs the “trig time” value should take care of it.

Un-trig Time will be re-instated in an upgrade that will be available in the near future.

Appendix 1 Technical Specifications

Internal power up procedure

1. LCD bright "Run_" booting from Eeprom
2. LCD Dim "Run_" loading flash into ram

"Run V0.0.1" application code running

Code Version description

V.a.b.c

- a. = Major re-write, Major user interface change or operational change
- b. = Feature release or minor revision
- c. = Even Numbers. Bug fix or minor feature inharntsmnt
= Odd Numbers. In house development/Pre release.

-
- LCD light comes on at a key press
 - LCD light off while dialing
 - LCD light on when incoming phone call

-
- PSU Off 9.3v
 - PSU On 11.5v
 - Battery Off 10.8v
 - Battery On 13.1

-
- Current consumption
 - Standby No Battery connected 170mA
 - LCD on, with Battery connected 270mA
 - LCD on, with No Battery connected 210mA
 - Battery charge current 50mA

◆ Physical dimensions

Depth 120
Length 343
Height 303

Operating System Upgrade

Summary

This procedure will put three operating modes into the EDAC700 RTU, via “Bootload.exe” these being:-

Run Mode	<F2>	wf 1	Where the system is armed and actions alarm functions
Prog Mode	<F3>	wf 2	Where user parameters and phone numbers are set up
System Mode	<F4>	wf 3	Where System Voice messages are recorded

Existing voice recording in “System Mode”, along with voice messages recorded in program mode, and any existing database configuration will be retained.

Bootloader

Before doing an upgrade Bootloader must be configured correctly.

An upgrade consists of 3 files

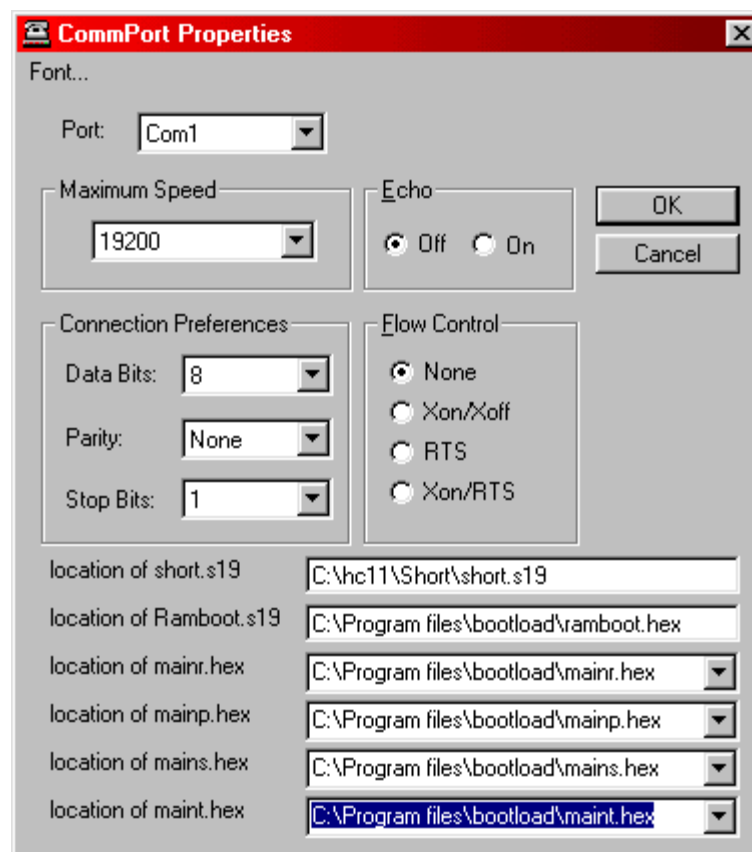
Mainr.hex
Mainp.hex
Mains.hex

You will also need RAMBOOT.Hex.

The above files must be available in the same directory that bootloader has been installed into.

Setup

Start bootloader, and select the “properties” menu, then “properties” from this menu. You should get the following screen



Please check that the paths are correct, to enable bootloader to find the four files indicated above. Short.s19 and maint.hex are not required.

Operating System upgrade cont.

Procedure

1. If a Pulse/Runtime expansion unit is present. Ensure that the RS232 connection is disconnected.
2. Move "BOOTLOAD" jumper to connect both pins (On Position). Press "RESET" switch, unit will sound continuously, from Bootloader press, <F2> to load Run mode. Wait... "Bootloader" screen will display data file contents being down loaded to EDAC700 unit.
3. When Bootloader screen stops scrolling data, re-move "BOOTLOAD" jumper, press "RESET" switch.
4. When "Welcome..." message comes up in Bootloader, press SWI switch. A debug line will be displayed in the "Bootloader" program window.

If the unit being imaged has an existing data base present which includes, Pule or Runtime input records, the EDAC700 RTU will restart with a coms speed of 9600bps. You will need to change the baud rate via the properties menu. Press the green go button, to make it change to red. Then press again to go back to red. This will make the baud rate change.

5. At > prompt type "wf 1", don't need to press enter. This will write Run mode to flash 1
6. Unit will restart into run mode, automatically
7. Move "BOOTLOAD" jumper to "on position", press RESET switch, from Bootloader press, <F3> to load Program mode. Wait..
8. When Bootloader screen stops scrolling data, re-move "BOOTLOAD" jumper and press "RESET" switch
9. When Bootloader displays the Program mode menu, press "SWI" switch. A debug line will be displayed in the "Bootloader" program window.
10. At > prompt type "wf 2", don't need to press enter. This will write Program mode to flash 2
11. Unit will restart into run mode , automatically
12. Move "BOOTLOAD" jumper to "on position", press RESET switch, from Bootloader press, <F4> to load Program mode. Wait..
13. When Bootloader screen stops scrolling data, re-move "BOOTLOAD" jumper and press "RESET" switch
14. No message will be displayed in "Bootloader", The LCD will display "Edit System Msg". Press "SWI" switch. A debug line will be displayed in the "Bootloader" program window.
15. At > prompt type "wf 3", don't need to press enter. This will write System mode to flash 3
16. Unit will restart into run mode, automatically
17. If system messages had not previously been recorded they should now be recorded.

Recording/Editing System Voice messages

The EDAC700 RTU has two types of voice message, one set up by the user relating to the end application or installation, and the other is, system or factory type messages.

User application or installation specific voice messages are recorded in program mode by the installer or end user.

System messages are recorded in “System mode”. System messages would normally be recorded at the factory or by the distributor. This allows for country specific language compatibility.

Recording of system messages is done using the EDAC700 RTU LCD display, keypad, and microphone.

Procedure

1. Go to program mode from run mode by typing in the PIN number (0000).
2. Move through the menu by pressing the down arrow, select “Configure dialer” by pressing <OK>. Unit will display “Dialer Menu”. Alternatively you can press <3> at the start of the “Main menu”, it will go to “Dialer Menu”.
3. Using arrow key to move down select “Configure speech” from the “Dialer Menu”. Alternatively you can press <8> at the start of the “Main menu”, it will go to “Speech Menu”.
4. Press down arrow once and select “System msgs” from “Speech Menu”. Alternatively press <2>.
5. Enter PIN 0006. Unit will beep, and display “GOING TO SYSTEM MODE”. This process is slow, be patient.

The EDAC700 RTU will then display prompts for recording voice messages on LCD display. Follow the messages on the EDAC700 RTU Display. Use <left> and <right> arrows on keypad to move through the system messages.

6. Press ESC on the EDAC700 RTU keypad to exit voice recording mode at any time, or wait till all messages have been edited, then press <ESC>. On pressing <ESC> unit will go back to “Run Mode”.

System Voice Messages (in order):

LCD MESSAGE	VOICE MESSAGE TO RECORD
Zero	Zero
One	One
Two	Two
Three	Three
Four	Four
Five	Five
Six	Six
Seven	Seven
Eight	Eight
Nine	Nine
Point	Point
Negative	Negative
Site Message	This is the dialer at ... *also recordable in program mode*
Normal Mode	There are no active inputs
Current Roster	The current roster number is
Enter Roster	Please enter roster number
Invalid Roster	Invalid Roster Number
Enter PIN	Please Enter PIN
Invalid PIN	Invalid PIN
Bye-Bye	Good Bye
Invalid Option	Invalid Option
Spoken Menu	Press 1 to hear input status, 2 to change roster, 3 to change outputs
Following Inps Ackd	The following inputs have been acknowledged
Following Inps Always Rep	The following inputs always report
Battery Low	Battery Low, the reading is
Power Fail	Power Fail
Volts	Volts
Hours	Hours
Pulse Comms Lost	Pulse Comms Lost
Recalibrate RunTime Meters	Recalibrate Runtime Meters
Runtime Active	Run Time Meter Active

Appendix 2 Pulse & Runtime Meter

Expansion unit

EDAC700 RTU Pulse & Runtime Meter Expansion Specification

User Requirement

- Reporting of accumulated pulse count with a maximum scaled count of 4,294,967,294.
- Reporting of accumulated closed contact (“run”) time from 0 to 99,999.9 hours
- Ability to set run timer initial startup value to the value indicated by existing electromechanical Run Time Meter.
- Ability to set scaling multiplier for incoming pulses.
- 8 run time meters and 8 pulse counters per unit/installation.

Technical Specification

Pulse Totalizer - to count the accumulated number of pulses (momentary contact closures) occurring at the input so programmed.

A maximum of 8 input channels will be available for a Totalizer Function.

Maximum Input pulse rate is 5KHz, with a 50% Duty Cycle, (50%on 50%off = 1 pulse). If the pulse rate is under 50/sec the duty cycle is unimportant.

Accuracy of the pulse count is to be 100%

The spoken scaled value will not “roll-over” to zero until a value of 4,294,967,294. has been exceeded.

Run Time Meter - to accumulate and report the number of hours a particular input circuit has been closed. Any channel so configured will never cause an alarm call, rather, on inquiry will recite it’s message according to the status of the input and then report the closed circuit time to the tenth of an hour.

The input will accumulate and report in tenths of hours up to a total accumulated running time of 99,999.9 hours.

The initial value of the Run Time Meter shall be programmable in order to agree with existing electromechanical Run Time Meters.

Up to a total of 8 Run Time Meters may be programmed.

Solution

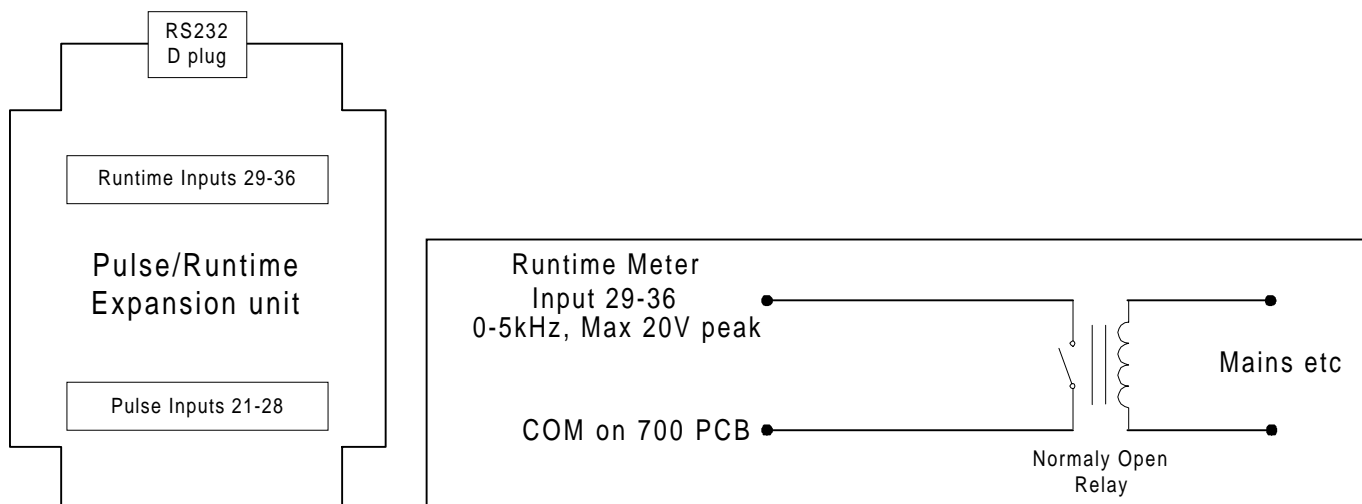
Hardware - The Pulse/Runtime expansion is accomplished using a separate dedicated hardware module, which is mounted inside the EDAC700 RTU enclosure above the EDAC700 RTU main board. This module provides the physical connections required for pulse counting and switch closure, and it also provides the mathematical functions to calculate accumulated pulse and run time hours.

This module communicates with the EDAC700 RTU via RS232. The RS232 physical connection between the boards is accomplished via a box header on the main EDAC700 RTU board. Power for the pulse module is provided by a +12v connection to the EDAC700 RTU backup battery.

Two rows of 8 screw terminals are provided. The front row is for the 8 pulse counting channels, being mapped to input locations 21-28. The second row is for the 8 runtime meters, being mapped to input locations 29-36.

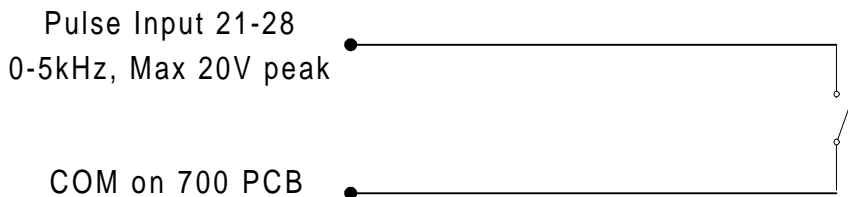
Pulse inputs are triggered by a connection to Gnd/Com. This can be accomplished via a clean contact relay or open collector configuration.

Pulse & Runtime Meter Expansion module

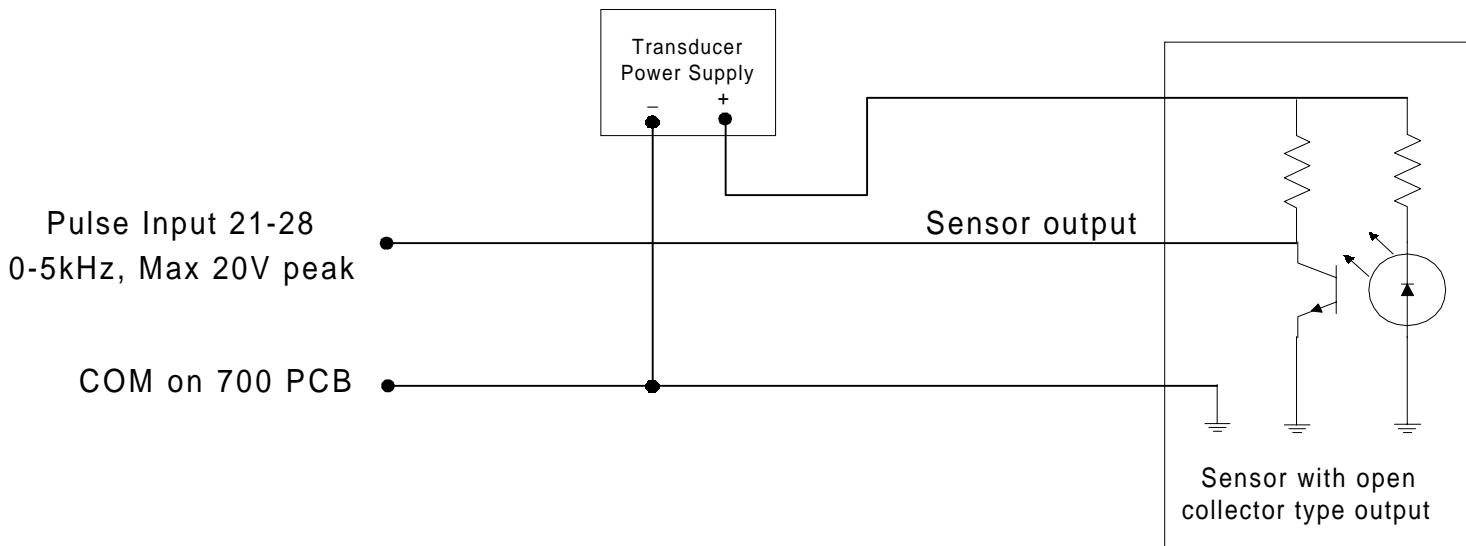


Connecting the Runtime Input (29-36) to EDAC700 RTU COM/GND terminal starts Runtime Meter

Pulse Expansion unit PCB. Shows Runtime Meter inputs and Pulse Inputs



Basic clean contact wiring for pulse input.



Pulse must go to within 1 volt of Common/Ground

Maximum input voltage of 20v per pulse input channel.

Configuration

Setup of the pulse module is done via the standard EDAC700 RTU program menu structure.

At the “input function” you can select either a “Pulse Accumulator” or “Runtime Meter”.

Pulse channels can be set up with an initial startup count, and multiplier-scaling factor. Each pulse channel has its own voice message, which is used to indicate the measurement/sensor type. Each channel also has a units message, which can be turned off or on.

Run Time Meters, can individually be configured with an initial start up value, and a voice message to indicate what the runtime meter is measuring. All Runtime meters have the units of hours.

Nether, Pulse measurements or Runtime meters can generate alarm notification calls. Pulse inputs and Runtime Meters are reporting only inputs.

Possible RS232 Conflicts with the Pulse unit

Program Mode -> Configure Dialler -> Configure I/O -> Add/Edit Input 21-36 -> Save Changes

When the user has edited a Pulse or Runtime input and saves it, the EDAC700 RTU will send the necessary configuration to the pulse unit. If any communication problems occur between the Pulse unit and the EDAC700 RTU, an error will be displayed. The likely cause of this can be 1 of three things.

- ◆ Make sure the Pulse unit is powered from the EDAC700 RTU
- ◆ Check the 8 pin Ribbon cable is connected to the correct sockets at both ends.
This should be the RS232 pin header (located beside the Reset button) and the 9 Pin plug on the Pulse unit.
- ◆ Unplug any devices connected to the external RS232 plug.

Once all three items have been checked, press <OK> twice to try again.

NOTE: You can not remotely dial in using a modem and communicate with an external device like a data logger connected to the EDAC700 RTU if a Pulse Expansion unit is to be used or is plugged in to the EDAC700 RTU main PCB.

Pulse Input Setup

Program Mode -> Configure Dialler -> Configure I/O -> Add I/O 21-28

“x Input No.=x”

Select a input number (For pulse inputs only 21 - 28 can be used). This number is the reference to the screw terminal on the pulse expansion unit.

“Input Name”

Enter a name, describing the input type.

“Group”

Scroll <UP> and <DOWN> to select the group the input should be associated with.

“Input Function”

Choose “Pulse Accumulator”.

“Speak Suffix Mess.”

Select “Yes” if a suffix voice message is required to be played after the pulse count.

If “Yes” to last option the below menu will be available.

“Suffix voice mes:xx”

Record the suffix message.

“Starting Value”

Type in the offset number for the value at which the device should start counting from. (Default 0, Max 4294967295). This is the unscaled result.

“Multiplier=1”

Type in the amount each pulse should be multiplied by. EG. A Multiplier of 5 will added 5 to the value on each pulse.

“Divisor=1”

Type in the amount each pulse should be divided by. If fractions are required (EG 4/3) enter 4 as a Multiplier and 3 as the Divisor.

“Input type”

Choose when you want the value to be reported. Eg, Dial in, Dial out or Always (Both).

“Pulse Voice Name:xx”

Record the voice name of the current pulse input.

“Save changes? <OK>”

Press <OK> to save the input. The Dialer will then attempt to communicate with the pulse unit, if any problems occur see **“Possible RS232 Conflicts with the Pulse unit”**.

Runtime Input Setup

Program Mode -> Configure Dialler -> Configure I/O -> Add I/O 29-36

“x Input No.=x”

Select a input number (For runtimers inputs 29 - 36 can only be used). This number is the reference to the screw terminal on the pulse expansion unit.

“Input Name”

Enter a name, describing the input.

“Group”

Scroll <UP> and <DOWN> to select the group the input should be associated with.

“Input Function”

Choose “Runtime Meter”.

“Starting Value”

Type in the calibration value (in hours) of the device attached to the runtime input (Default 0, Max 429496729.5, Resolution 0.1)

“Input type”

Choose when you want the value to be reported. Eg, Dial in, Dial out or Always (Both).

“Runtime VoiceName:xx”

Record the voice name of the runtime meter.

“Save changes? <OK>”

Press <OK> to save the input. The Dialer will then attempt to communicate with the pulse unit, if any problems occur see **“Possible RS232 Conflicts with the Pulse unit”**.

Future Improvements

- ◆ Make Run-Mode displays of Digital's and analogs, to be consistent with top line of first two Run-Mode displays.
- ◆ Set Output on, when input triggered, Output off when acknowledged
- ◆ Set Output on, when alarm acknowledge signal received (opposite to above)
- ◆ RS485 Protocol and expansion port for I/O modules

- ◆ Log File

- ◆ RS232 triggering

- ◆ Up load voice

- ◆ Data logging

- ◆ SDI-12 sensor compatible

- ◆ Campbell Scientific Instruments compatible

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