DataAlarm

Data Detection for RS-232 or Parallel Communication Lines

Description

The DataAlarm is an inline data monitoring device on a RS-232 or Parallel communication line. It detects the present or absent of data from TD/RD/Strobe on the communication line. An alarm can be triggered when there is any detection.

Features

1. Monitors RS-232 TD signal pin 2, RS-232 RD signal pin 3, or Parallel strobe pin 1
2. Blinking green LED indicator during operation.
3. Alarm triggers on presence or absence of data
4. Alarm consists of an red LED indicator, Relay and Buzzer
5. Reset Button
6. Integrate easily with 12V or 24V voltage supply input.

Connection Interface

1. One DB25 male and female connector with 25 lines passing through. Can be oriented in either direction
2. Normally Open/Close relay output, accessible from the screw terminal blocks
3. External reset switch connection from the screw terminal blocks.
4. DC voltage input using 2.5mm power jack

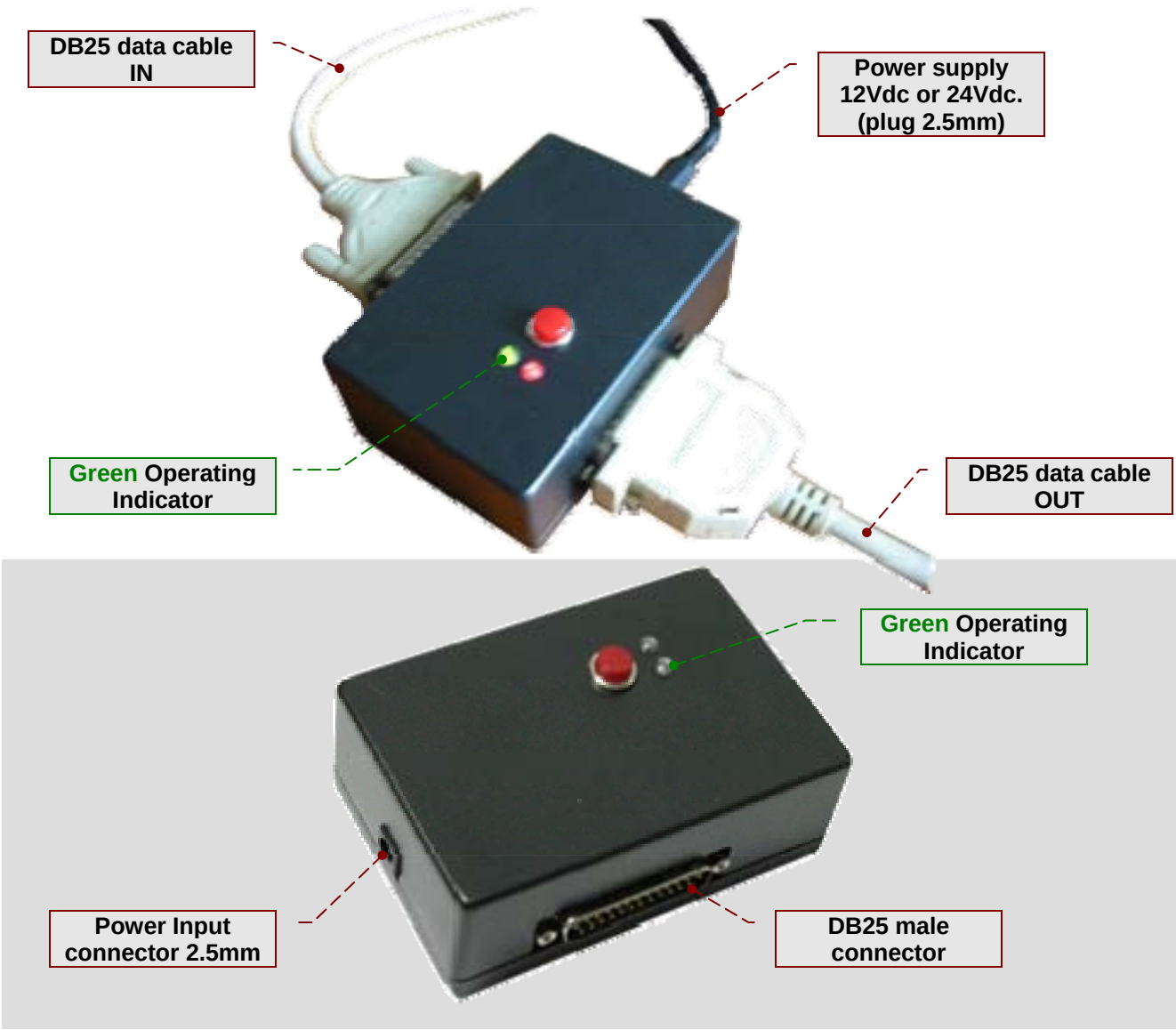


Fig: DataAlarm user interface

Setup for Operation

1. Refer to “User Settings” to configure the DataAlarm device.
2. Make sure that all the device power has been off safely.
3. Secure the communication line to the DataAlarm from both end of the communication system. Two sets of parallel port cables are required for the connection. Optional adaptor is required for RS232 line using DB9 connector.
4. Plug in the recommended power source with 2.5mm power jack. See “Specifications & Features, (Power Source)”.
5. Switch on the power to the DataAlarm device. You should be able see a green indicator blinking. If the data cable is not secure properly to the socket, the indicator will light up but it will not blink.
6. The DataAlarm device setup is complete. Alarm will be activated when the alarm condition is detected.

User Settings and Interfaces

There are a total of 5 type of configuration you can set for the operation of the DataAlarm device.

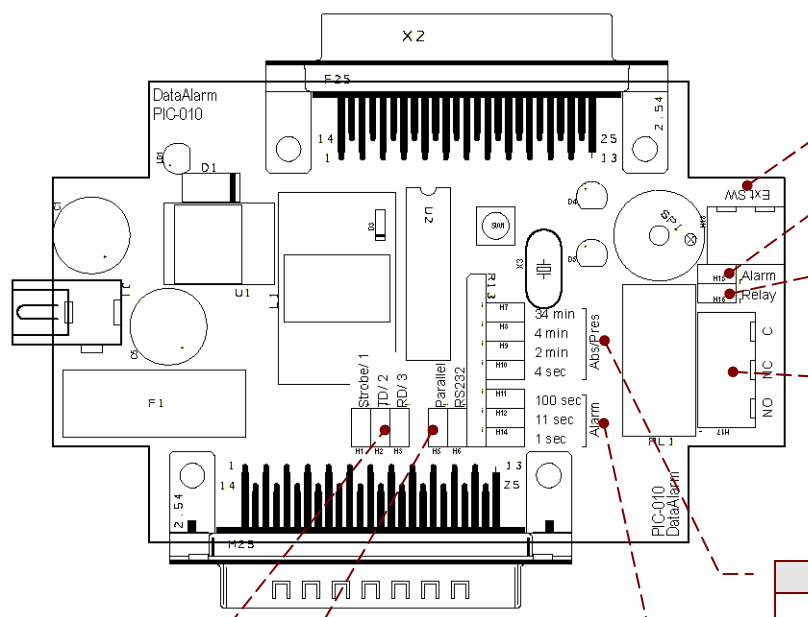
1. Settings for Parallel/Serial port monitoring, (JP1 JP2)
   - -To monitor parallel port data: set JP1=”Parallel”, JP2=”Strobe/1”
   - -To monitor serial port data on TD: set JP1=”RS232”, JP2=”TD/2”
   - -To monitor serial port data on RD: set JP1=”RS232”, JP2=”RD/3”

2. Settings for Detection mode, (JP3)
   - -To detect the presence of data: do not put any jumper on JP3
   - -To detect the absence of data for 4sec: set JP3=”4sec”
   - -To detect the absence of data for 2min: set JP3=”2min”
   - -To detect the absence of data for 4min: set JP3=”4min”
   - -To detect the absence of data for 34min: set JP3=”34min”

3. Settings for Alarm duration, (JP4)
   - -To sound the alarm indefinitely: do not put any jumper on JP4
   - -To sound the alarm for a minimum of 1sec: set JP4=”1sec”
   - -To sound the alarm for a minimum of 11sec: set JP4=”11sec”
   - -To sound the alarm for a minimum of 100sec: set JP4=”100sec”

4. Settings for Buzzer device, (JP5)
   - -To turn on sound: place a jumper on JP5
   - -To turn off sound: do not put any jumper on JP5

5. Settings for Relay device, (JP6)
   - -To turn on relay output: place a jumper on JP6
   - -To turn off relay output: do not put any jumper on JP6



External Reset Switch

JP5	Function
Enable	Buzzer On
Disable	Buzzer Off

JP6	Function
Enable	Relay On
Disable	Relay Off

Relay Output	
C	Common
NC	Normally Close
NO	Normally Open

JP3	Function: Detection mode
NIL	Alarm is triggered on the presence of data
4sec	Alarm is triggered after the data has been absent 4sec
2min	Alarm is triggered after the data has been absent 2min
4min	Alarm is triggered after the data has been absent 4min
34min	Alarm is triggered after the data has been absent 34min

JP2	JP1	Function: Port select
Strobe/1	Parallel	Monitor data on the parallel communication line
TD/2	RS232	Monitor TD data on the RS232 communication line
RD/3	RS232	Monitor RD data on the RS232 communication line

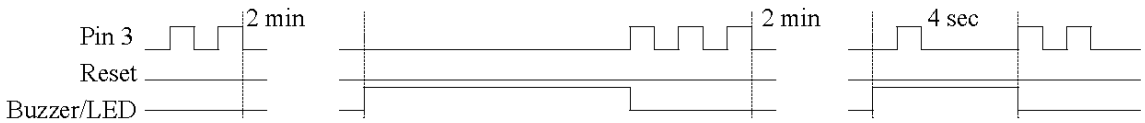
JP4	Function: Alarm duration
NIL	Alarm is triggered indefinitely
1sec	Alarm is triggered for a minimum of 1sec
11sec	Alarm is triggered for a minimum of 11sec
100sec	Alarm is triggered for a minimum of 100sec

Fig: DataAlarm configuration interface

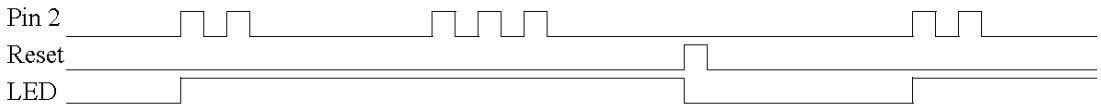
Technical Operational Description

Examples

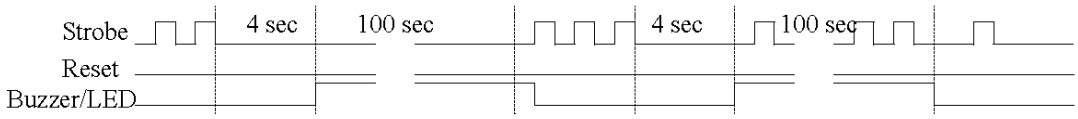
1. **Scenario:** The buzzer sounds when data is lost on pin 3 of an RS-232 port for 2 minutes and shuts off as soon as data is received again. The minimum time the alarm sounds is 1 sec. The relay output is connected to activate an external device.
   Settings: JP1=”RS232”, JP2=”RD/3”, JP3=”2min”, JP4=”1sec”, JP5=”On”, JP6=”On”



2. **Scenario:** A silent alarm goes off every time data is seen on pin 2 of an RS-232 port and stays on until the reset button is pressed.
   Settings: JP1=”RS232”, JP2=”RD/2”, JP3=”---”, JP4=”---”, JP5=”---”, JP6=”---”



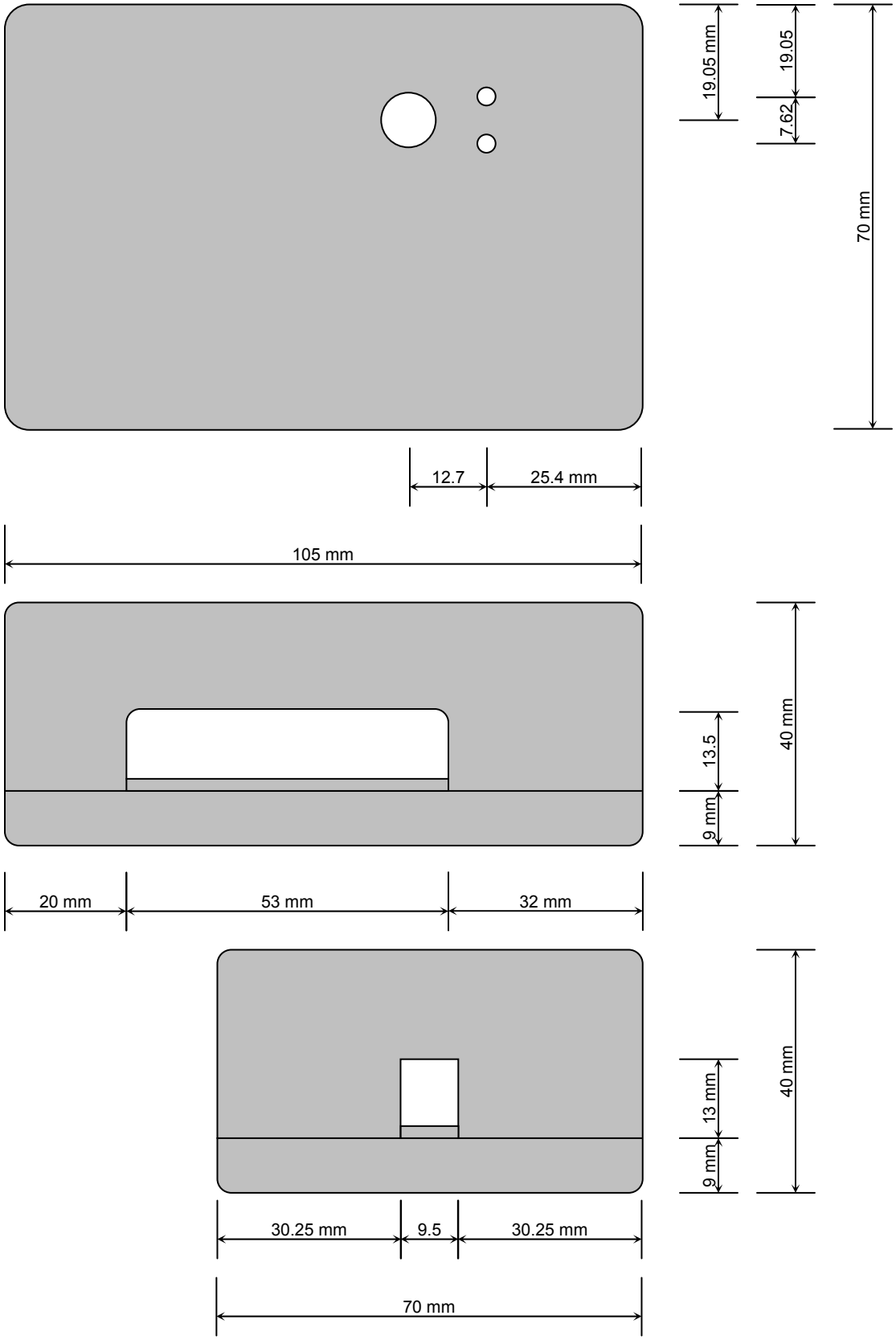
3. **Scenario:** The buzzer sounds when the parallel port stops sending data for more than 4 seconds and turns off as soon as it sends data again. The minimum time the alarm sounds is 100 seconds. Relay output is not required.
   Settings: JP1=”Parallel”, JP2=”Strobe/1”, JP3=”4sec”, JP4=”100sec”, JP5=”On”, JP6=”---”



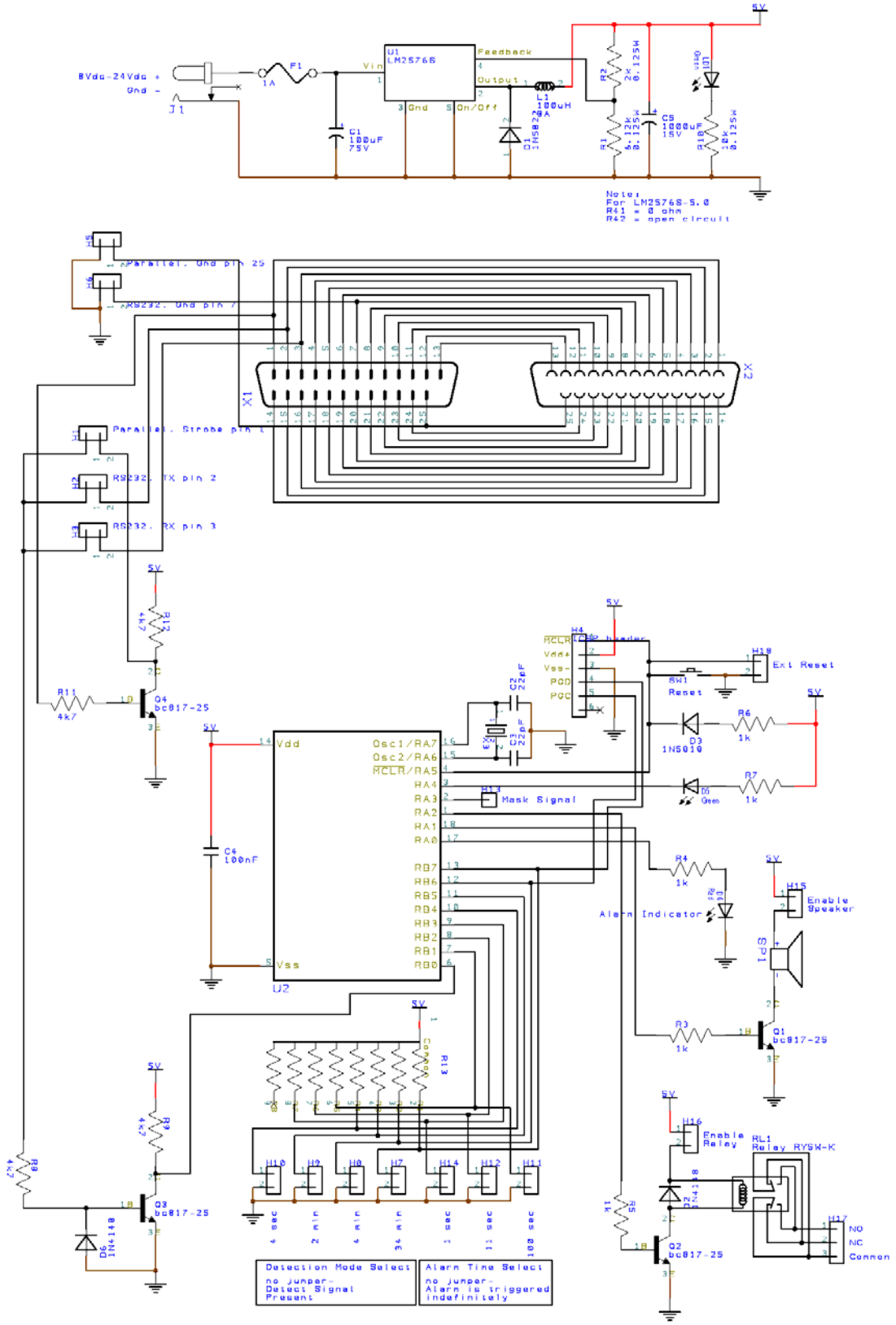
Troubleshooting

SN	Symptom	Problem and Diagnosis
1.	**No green indicator.**	There is no power supplied to the DataAlarm. • Check proper cable connection from DataAlarm to the power adaptor. • Check proper cable connection from power adaptor to the AC power socket. • Make sure the AC power socket is switched on • If there is still no green indicator, make sure the AC socket is working by testing it with other equipment. Advance troubleshooting using multi-meter is required to further diagnose.
2.	**Green indicator not blinking.**	• No data cable connected to DataAlarm. • Data line is not plug properly connected to DataAlarm.
3.	**No red alarm indicator.**	• Check the jumper setting for JP1 JP2 JP3 JP4, to ensure it is in the correct operation. • If the relay or buzzer is working fine, the LED may be faulty.
4.	**Alarm indicator activated but no buzzer sound off.**	• Check if the jumper JP5 is enable for buzzer.
5.	**Alarm indicator activated but relay don't trigger.**	• Check if the jumper JP6 is enable for relay.

Mechanical Dimension



Schematic


8Vdc-24Vdc +
Gnd -
J1
F1
1A
U1
LM2576S
Vin
Feedback
Output
Gnd
On/Off
L1
100uH
D1
1N5822
C1
100uF
75V
R1
6.12k
0.125W
R2
2k
0.125W
C5
1000uF
25V
R10
10k
0.125W
Note:
For LM2576S-5.0
R41 = 0 ohm
R42 = open circuit
Parallel, Gnd pin 25
RS232, Gnd pin 7
Parallel, Strobe pin 1
RS232, TX pin 2
RS232, RX pin 3
X1
X2
U2
Vdd
Vss
Osc1/RA7
Osc2/RA6
MCLR/RA5
RA4
RA3
RA2
RA1
RA0
RB7
RB6
RB5
RB4
RB3
RB2
RB1
RB0
C4
100nF
C2
22pF
C3
22pF
XTAL
4MHz
MCLR
Vdd
Vss
PGD
PGC
SW1
Reset
Ext Reset
D3
1N5819
R6
1k
R7
1k
Green
Mask Signal
R4
1k
Alarm Indicator
Enable Speaker
Q1
bc817-25
R3
1k
Enable Relay
RL1
Relay RYSW-K
Q2
bc817-25
R5
1k
NO
NC
Common
Q3
bc817-25
Q4
bc817-25
R11
4k7
R12
4k7
R8
4k7
D6
1N4148
R13
Detection Mode Select
no jumper -
Detect Signal
Present
Alarm Time Select
no jumper -
Alarm is triggered
indefinitely
4 sec
2 min
4 min
34 min
1 sec
11 sec
100 sec

Bill of Materials

Schematic Part#	Part Description	Qty
SW1	Push button switch (PCB mount), Red	1
J1	2.5mm power jack (PCB mount)	1
X1	DB 25 pin connector (male)	1
X2	DB 25 pin connector (female)	1
	2.5mm power jack pcb mount socket	1
Q1,Q2, Q3, Q4	transistor bc817	4
R8, R9, R11, R12	4.7kΩ resistor 1/4W	4
H1, H2, H3, H5, H6, H7, H8, H9, H10, H11, H12, H14, H15, H16	jumper header, jumper switch	3
R13	resistor array 10kΩ, 9 ways	1
U2	Microcontroller, PIC16F84A	1
U2	18 pin DIP IC holder	1
X3	Crystal (low profile) 20Mhz	1
C2, C3	22pf ceramic capacitor	1
D3	diode 1N5819	2
R3, R4, R5, R6, R7	1kΩ resistor 1/8W	1
H17	3 way Connector	5
H18	2 way Connector	1
RL1	Relay, 5Vdc trigger, 1A@24Vdc, 0.5A 120Vac	1
SP1	Piezo Buzzer, 3-12Vdc buzzer HXD	1
D4	Ultra bright LED 3mm, Red	1
C4	Capacitor 100nF	1
D5	Ultra bright LED 3mm, Green	1
	Chassis mount LED holder	1
F1	Fuse 1A + Holder	2
U1	LM2576T-5	1
C5	capacitor 1000uF 16V	1
C1	capacitor 100uF 75V	1
L1	inductor 100uH	1
D1	diode 1N5822	1
LD1	Ultra bright LED 3mm, Green	1
R2	2kΩ resistor 1/8W	1
R1	6.12kΩ resistor 1/8W	1
R10	10kΩ resistor 1/8W	1
Misc	SIL pins	1
Misc	M3 x 6mm round head self tapping screw	1
Misc	Black plastic box	4
Misc	Printed circuit board	1

Specifications & Features

Data Communication	
Type	RS232 or Parallel data communication
Interface	
Relay Output	SPDT Electromechanical Relay. Configuration: Normally Open, Normally Close, Common. Contact rating: 1A 24Vdc , 0.5A 120Vac or 24W
External Reset Switch	Connection to an external push button switch. (normally open switch SPST).
Connector	One DB25 Female, One DB25 Male
Buzzer	
Power Source	
Typical power source	Able to connect directly to - 12V or 24V Lead Acid Battery - 9V battery
Input Voltage	7 - 40Vdc.
Input Current	Maximum 0.1A
Power	0.5 Watt
Connector	2.5mm power jack 
Environment	
Operating Temperature	-40°C to 125°C
Storage Temperature	-55°C to 130°C
Size	104 x 70 x 39mm, L x W x H
Weight	Approximate 200g
Accessories	
Power Adaptor	Input: 100-240Vac 50-60Hz, 1.0A. Output: 12Vdc, 1.0A (with Power Cable), Approximate 500g
In Vehicle Power Adaptor	Tap power from vehicle using a vehicle's cigarette lighter plug to 2.5mm power jack converter.
Parallel Cable	DB25 Female, DB25 Male on each end
Data Com Adaptor	DB25 to DB9 converter Adaptor

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