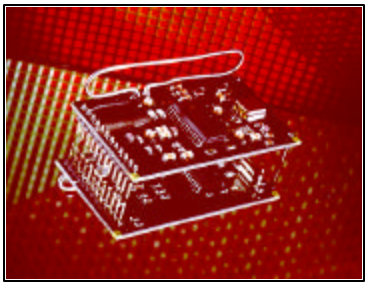
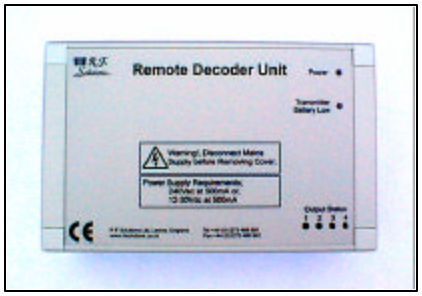
R.F. Solutions LTD GLOBEMASTER PAGER DECODER. G100UK

- RADIO RECEIVER & DECODER
- AVAILABLE AS PCB MODULE OR SYSTEM ENCLOSURE
- OPERATED FROM ANY STD TELEPHONE, PRODUCING DTMF TONES
- RECEPTION COVERAGE; 98% IN THE UK
- THREE LATCH ONE MOMENTRY OUTPUTS
- SUPPLIED READY TO OPERATE
- CMOS/TTL OUTPUTS, MOMENTARY OR LATCHING
- SINGLE SUPPLY EITHER 5V or 12-30Vdc
- LOW POWER CONSUMPTION
- REQUIRES NO RADIO LICENSE





APPLICATIONS

- REMOTE ACTIVATION SYSTEMS
- REMOTE IMMOBILISATION
- HOME AUTOMATION
- COMPUTER PAGING
- LONG RANGE REMOTE CONTROL
- ACCESS CONTROL

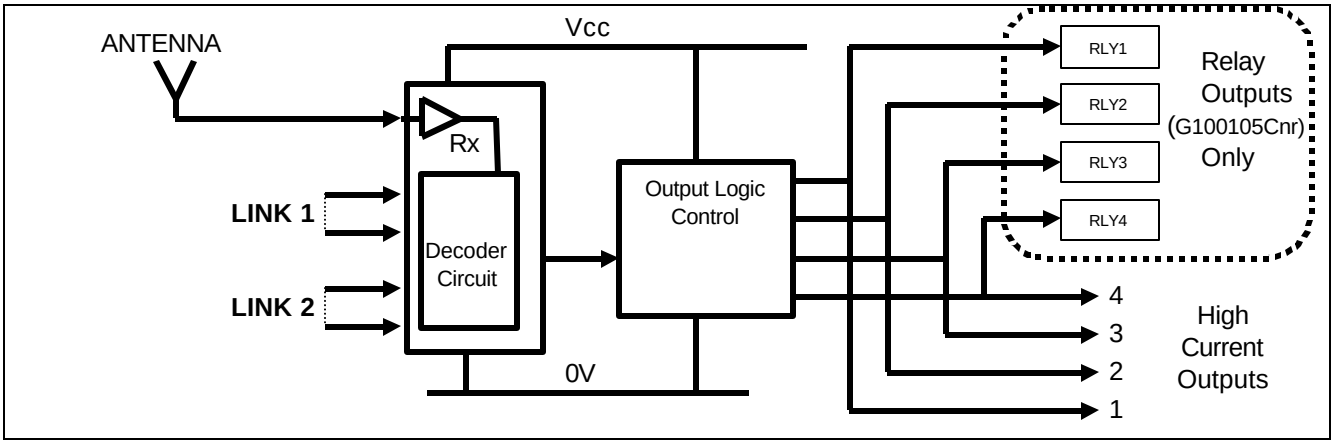
DESCRIPTION

A licence-exempt radio receiver and decoder module that allows users to operate and activate remote systems from any location in the world by simply using a standard DTMF telephone. Making use of existing pager networks, the new Globemaster Pager Decoder is available as either a miniature PCB module or complete system in an IP65 rated enclosure with 230Vac power supply.

The user operates the system by making a telephone call to the pager service provider and then enters a 10digit number. This message is then transmitted to Globemaster over the pager network and the outputs are activated accordingly.

Supplied ready-to operate for simple and rapid installation, Globemaster is ideal for a wide range of applications including remote activation or immobilisation systems, home automation, computer paging and access control.

BLOCK DIAGRAM



Functional Description

Globemaster consists of a VHF POCSAG pager receiver, a primary microcontroller to perform signal decoding and verification and a secondary microcontroller to perform specific output command functions.

Each Globemaster contains a unique RIC (Receiver Identification Code) code, which is used to validate the PIN code entered when placing the telephone call. The pager network service provider automatically provides the telephone number. A unique telephone number is available on request, as are other specific features that may be required e.g. specific digital output functions.

Pager network facility & User operating costs

Globemaster is compatible with several of the pager network facilities available in the UK. By using the 'pay as you play' service, the user pays only for the actual telephone call placed when accessing Globemaster.

Globemaster is configured during the manufacturing process to recognise a particular telephone number and unique PIN number.

There may be up to one hundred Globemasters operating on the same telephone number however each Globemaster has a unique 5-digit PIN number.

Please note that unique telephone numbers are available. Please contact our sales department for this service.

Operation

The following sequences of events are required to operate Globemaster.

1. The user dials the specific e.g. 0839 123456 pager telephone number
2. After the introductory message and tone the user enters the **complete** 10 digit code. This consists of the following;
    a) 5-digit PIN number
    b) 2-digit command code to instruct Globemaster of the required action
    c) 2-digit checksum
    d) 1-digit positive hold off override command

Note: To ensure reliable operation when entering the digits enter the DTMF tones without any pauses and within 5seconds.

Command Code to Digital Output Decode table

Command code transmitted by User	Globemaster Outputs			
	4	3	2	1
00	0	0	0	0
01	0	0	0	1
02	0	0	1	0
03	0	0	1	1
04	0	1	0	0
05	0	1	0	1
06	0	1	1	0
07	0	1	1	1
08	1	0	0	0
09	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

Positive 'Hold Off' Connection (G100UK Module Only)

The positive hold off connection may be used as a local output disable to prevent the operation of the digital outputs.

This feature is enabled by default.

The outputs are enabled by either or both the following;

- Connecting the Pin 4 of the module to 5V (+Vcc)
- Sending an override command by telephone to instruct theG100UK module to ignore the status of Pin 4.

Pin 4 Connection	Positive Hold off Connection
Disconnected (floating)	Internally pulled down to 0V enabling Positive Hold off
Connected to 5V	Positive Hold off command is ignored

The positive hold off may also be overridden by the telephone command instruction according to the following table.

Command code transmitted by User	Hardware Pin 4 status ;
0	is ignored
9	is used

Checksum

The checksum digits are used as a data validation to prevent operation of any outputs from Globemaster if there has been any error in the transmitted code.

Globemaster calculates in real time a value for the checksum and executes the command instruction **only** if the checksum calculated matches the checksum received by the user.

If the checksum does not match, the command instruction is ignored.

The checksum is calculated as follows:

Sum of 5 digits of the PIN No. + 2-digits of the command code
+ 1-digit of the positive hold off command
= ab

Example of transmit code word.

Example A Transmit the command to turn off all outputs (00) and override the positive hold off connection.

5 digit PIN number = 12345
Command Code = 00
Hold off command = 0
The Checksum is calculated as =1+2+3+4+5+0+0+0 = 15

Section	Pin No.	Cmd Code	Chksm	Hold off
Transmitted digits	12345	00	15	0

Therefore the transmitted code word is 1 2 3 4 5 0 0 1 5 0

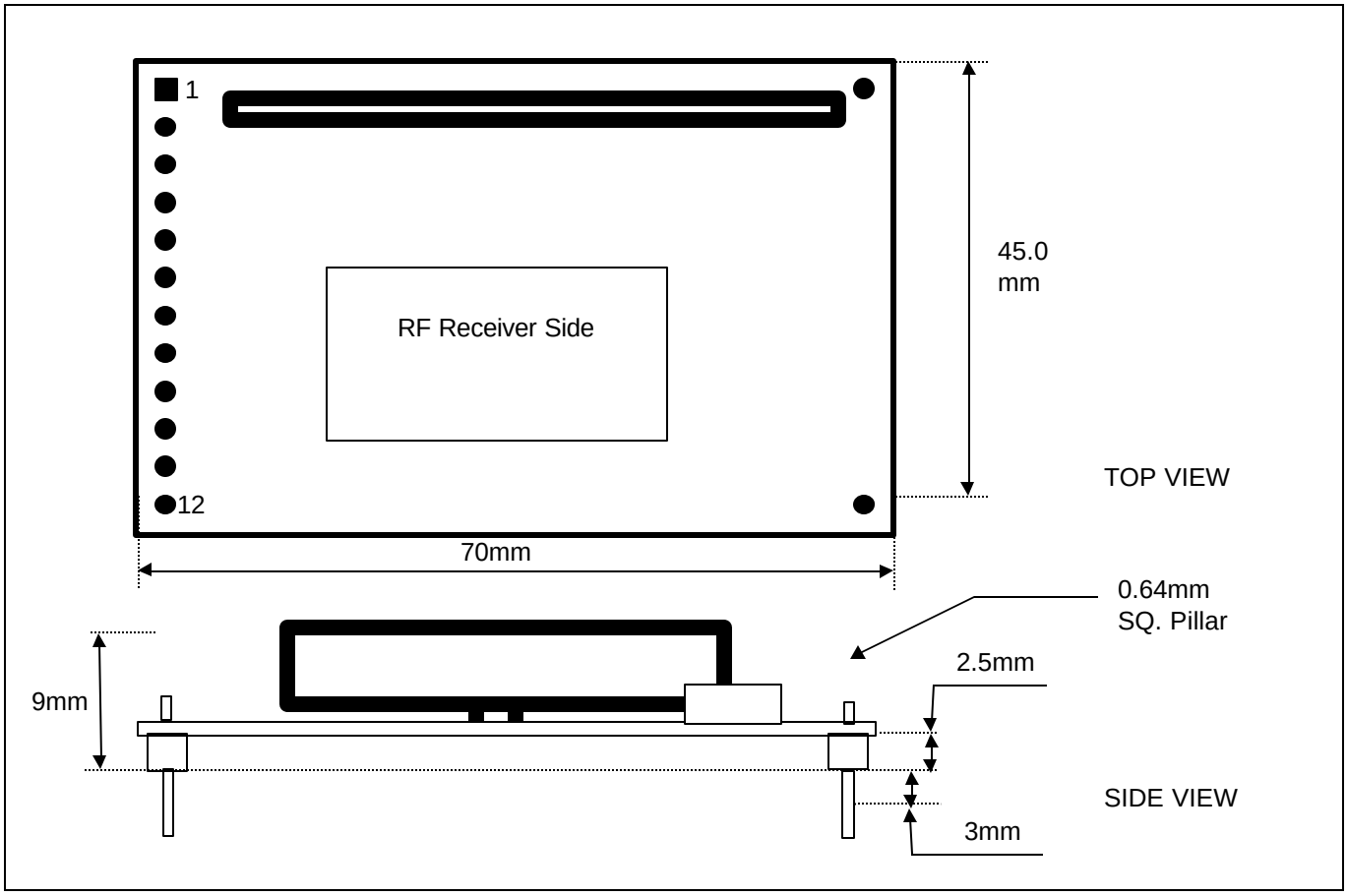
Example B Transmit the command to turn on outputs '1' and '3' and '4' only, and not override the positive hold off connection.

5-digit PIN number = 12345
Command Code = 13
Hold off command = 9
The Checksum is calculated as = 1+2+3+4+5+1+3+9 = 28

Section	Pin No.	Cmd Code	Chksm	Hold off
Transmitted digits	12345	13	28	9

Therefore the transmitted code is 1 2 3 4 5 1 3 2 8 9

G100UK Module Mechanical Details



Module Pin Connections

Pin No.	*Name*	Direction	Description	Notes
1	***+12V***	Input	+12V Supply Voltage.	1
2	***0 VOLT***	Input	Ground for +12V Supply.	1
4	***+ve Hold***	Input	Positive Hold Off input.	2
5	***Reset***	Input	Connects directly to the PIC MCLR inputs.	3
6	***+5V***	Input	+5V Supply Voltage. See Note*	1
7	***O/P4***	Output	channel 4. CMOS/TTL Compatible.	Momentary Output
8	***O/P3***	Output	channel 3. CMOS/TTL Compatible.	Latching Output
9	***O/P2***	Output	channel 2. CMOS/TTL Compatible.	Latching Output
10	***O/P1***	Output	channel 1. CMOS/TTL Compatible.	Latching Output
11	**-**		Not Used	
12	**-**		Not Used	

Notes

1. This module is designed to operate on either 12V or 5 V **NOT BOTH**
2. This pin has an internal pull-down to 0V and can be left unconnected.
3. This pin has an internal pull-up to 5V and can be left unconnected.

Jumper Link Settings (Underside of G100UK Module)

There are three jumper links on the underside of the Globemaster. The configuration of these jumper links controls the operation of the digital outputs as below

Link 1	Link 2	Link 3	Output 1	Output 2	Output 3	Output 4
Not Used	O/C	Not Used	Latching	Latching	Latching	Momentary
Not Used	S/C	Not Used	Latching	Latching	Latching	Latching

Globemaster as a Complete System (G100-105C4A)

The unit is a stand-alone controller supplied in an ABS enclosure with IP65 rating, complete and ready to operate.

Connections to the power supply and relay outputs are provided through screw terminals (these are the only connections required). There are two versions of product, one with a 12-30Vdc input power supply and the other with 230Vac input power supply.

The output relays are rated 2.5A @ 240VAC operating as either momentary of latched operation.

Relay Outputs

The system is supplied with relay(s) type OMRON GL5114P. an alternative relay may be fitted type BT47W/6.

Notes:

1. Only one relay per output channel must be fitted.
2. The user must ensure that the load connected does not overload the relay!
3. The low battery relay is not mains rated

	Output Channel				
Relay Type	**1**	**2**	**3**	**4**	**Low Battery**
OMRON G5L114P	RLY 1	RLY 2	RLY 3	RLY 4	-
BT47W/6	RLY 5	RLY 6	RLY 7	RLY 8	RLY9

Technical Specification

Enclosure Dimensions 190 x 120 x 60mm
Storage Temperature; -10 to +70° Celsius.
Operating Temperature; 0 to +55° Celsius.

ELECTRICAL CHARACTERISTICS	MIN	TYPICAL	MAX	DIMENSION
Supply Voltage ac		230Vac		Vac
Supply Voltage dc	11.0	16.0	30.0	Vdc
Supply Current :				
Quiescent		25		mA
All Relays operating		400		mA
Relay Rating (240Vac) RLY1-4		2.5	5	A
Relay Rating RLY5-9			2	A @12Vdc
Relay Rating RLY1-4			50	Vdc @0.5A

Notes for reliable operation.

1. Be ready to enter the number on the telephone. Use the tables below to calculate all the codes for each output state you require

2. When entering the user number sequences be sure to enter them within a 5 second period without pauses

Telephone number
07661 276264

Pin No.					Command Code		Hold Off	Checksum
					0	0	0	
					0	1	0	
					0	2	0	
					0	3	0	
					0	4	0	
					0	5	0	
					0	6	0	
					0	7	0	
					0	8	0	
					0	9	0	
					1	0	0	
					1	1	0	
					1	2	0	
					1	3	0	
					1	4	0	
					1	5	0	
					1	6	0	

Pin No.					Command Code		Hold Off	Checksum
					0	0	9	
					0	1	9	
					0	2	9	
					0	3	9	
					0	4	9	
					0	5	9	
					0	6	9	
					0	7	9	
					0	8	9	
					0	9	9	
					1	0	9	
					1	1	9	
					1	2	9	
					1	3	9	
					1	4	9	
					1	5	9	
					1	6	9	

3. Use the following table to record each of the user number sequences required

Pin No.					Command Code		Checksum	Hold Off
					0	0		
					0	1		
					0	2		
					0	3		
					0	4		
					0	5		
					0	6		
					0	7		
					0	8		
					0	9		
					1	0		
					1	1		
					1	2		
					1	3		
					1	4		
					1	5		
					1	6		

Absolute Maximums

Supply Voltage (+12Vcc to GND).....-0.3 to +17 Volts.
Supply Voltage (+5Vcc to GND).....-0.3 to + 6 Volts.
Storage Temperature.....-20 to +85o Celsius.
Operating Temperature..... 0 to +55o Celsius.

Technical Characteristics

Ambient temperature = 25° Celsius.

ELECTRICAL CHARACTERISTICS	MIN	TYPICAL	MAX	DIMENSION	NOTE
Supply Voltage for Module	9		30	V	
Supply Current		13		mA	
Operating Frequency		137		MHz	
Data output: (digital version)			20	mA	Continuous
Digital Input		12	50	Vdc	
Relay Rating for Low Voltage Relay			2	A	@ 12 Vdc
Relay Rating for High Voltage Relay			340	Vac	
Relay Rating for High Voltage Relay			5	A	@ 240 Vac

Part Numbering

Supplied as a Complete system (See Datasheet DS105Cnd)

Part no	Description
G100UK	Globemaster Module

Supplied as a Complete system (See Datasheet DS105Cnd)

Part no	Description
G100105C4A	Enclosure, 4 relays, 230Vac PSU

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RF Solutions is a member of the Low Power Radio Association