

# REFUGE CALL

(RS16 LOOP WIRED)



- Remote units – Hands free or telephone handset options available
- Master to remote and remote to master calling
- Fully monitored for open and short circuit cable failures.
- Remotes connected via : 4 core (+ screen) addressable loop (maximum of 30 on each loop).
- DESIGNED TO MEET THE APPROPRIATE REQUIREMENTS OF BS5839 Pt.9 2002

# **Disabled Refuge Call**

## **Loop Wired RS16**

### **Installation manual**

#### **Contents**

- 1) **Installation procedure**
- 2) **Commissioning procedure**
- 3) **System test**
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**Note:** In all cases please use Drawing C51058/C (at the back of this manual) for reference to the above sections.

## **RS16 Loop 16 Central Enclosure**

### **1) Installation procedure (refer to Dwg. C51058/C)**

- Install central enclosure, with cable entry gland at top, at a height of approx 1.5 metres above floor height. Ensure fixings can support a load of 25Kg.

#### **Connect Field Cabling:**

**A** - Connect 5A (lighting rated) A.C. Mains supply (220 -240V) to appropriate (L)ive, (N)eutral and (E)arth terminals. (Max system load is 40 Watts).

N.B. Earth terminal must be connected to building earth.

**B** – Connect 4 core + screen (drain) 1.5 mm fire rated cable to 'Loop Out' terminals. Observe harmonised colour code idents on terminals.

(If non-harmonised cable colours are supplied, ensure 'Lin' and 'Dat' are opposite pairs, to minimise data crosstalk).

**C** – Connect cable 'Loop Return' to these terminals. Observe identical colour coding to **B**. Confirm cable continuity and polarity before applying any power source to system.

**N.B. At each remote location, the loop cabling will be connected to the appropriate 'LOOP IN' and LOOP OUT' terminations fitted to the back box PCB assembly type CS807.**

**Connect all these terminations and check the entire loop cabling for continuity and polarity before connecting the 10 way ribbon cable (flat band cable) at any of the remote locations. Pay particular attention to cable polarity at each remote location – if a crossed connection is reversed at a second location, it is extremely difficult to locate. Continuity checks will reveal no fault.**

**In addition to continuity checks, it should also be confirmed that there are no cable shorts between cable cores. 'COM' and 'SCN' will be short circuit – this is normal. Resistive measurements between 'COM' and 'PWR', 'LIN' and 'DATA' should all read higher than 100K Ohms.**

**It is important to complete these checks before power is applied to the system, and before the remote location PCB type CS802 is connected via its ribbon cable.**

**The following connections are optional, and are fitted only when the system specification requires these functions:**

**D** – Volt free 'Fault Out' changeover contacts, for remote fault reporting. (Fault relay is normally energised).

**E** – Short these terminals with a volt free closing contact (rated 50mA or higher) to enable the system 'Anti Tamper' feature.

(The 'Anti Tamper' feature enables the system to automatically disable incoming calls, whilst retaining system monitoring of the remote cabling and outstations. The system is returned to full operation with this contact opened.)

**F** – Volt free changeover contact – changes state with any call on the system. Use if remote call indication is required.

## RS16 Loop 16 Central Enclosure

### 2) Commissioning procedure (refer to Dwg C51058/C)

#### Before applying any power to system:

**G** – Set SW1 to match number of remote units connected to loop. Switch should be set for:

Number of units on loop	SW1 Setting
1	1 (Fit L10 in position A)
2	2 “
3	3 “
4	4 “
5	5 “
6	6 “
7	7 “
8	8 “
9	9 “
10	A “
11	B “
12	C “
13	D “
14	E “
15	F “
16	0 (Fit L10 in position B)

**H** – Set L11 to position ‘8’ with 1 - 8 remote units fitted  
Set L11 to position ‘16’ with 9 -16 remote units fitted

**I** - Each line card (CS825) controls 4 remote units. Numbering on this drawing (not on the actual PCB) identifies which location applies.

Fit the pair of jumper links adjacent to each LED only for those remote locations in use. Where remote units are not fitted DO NOT FIT THE ADJACENT JUMPER LINKS. Confirm that L9 is fitted to the last (furthest right) line card.

**J** - Fit battery loom as indicated on this drawing. CHECK RED LEAD IS CONNECTED TO THE RED (+) BATTERY TERMINAL.

Plug the two way cable loom terminal to the ‘Batt. +/-’ terminals of PSU control pcb type CS779/3.

### **Apply A.C. power to the system.**

Line card Light Emitting Diodes (LED's) should respond sequentially to remote units fitted. Confirm the total number and location of expected units responding as correct.

(N.B. Remote units do not have to be wired sequentially. Setting the remote unit address will confirm the number to be indicated on the central enclosure front panel.

Ensure SW1 is set to equal the total number of remote units **fitted**, and that line card links are **not** fitted adjacent to 'missing' locations.

### **K – Calibrate 'Sleep' Threshold (CS841)**

- Use a small bladed screwdriver to turn RV1 'Cal' control fully clockwise.
- Press (and hold) the momentary 'Calibrate' switch (located beneath the 'Loop Return' terminals).
- If the 'CAL OFF' LED (located at the left hand end of CS841) is not illuminated, leave RV1 rotated fully clockwise.
- If the 'CAL OFF' LED is illuminated, turn RV1 anticlockwise until LED just goes out. **DO NOT ROTATE FURTHER.** Release 'Calibrate' switch.

### **L – Calibrate Master Handset (CS830)**

- N.B. This adjustment is only required where a second master handset is fitted to the system.
- Use a small bladed screwdriver to turn the RV1 anti clockwise until the 'M/HST' Led is illuminated.
- Turn RV1 clockwise until the Led goes out – turn a further quarter turn.

The system should now be fault free, and ready for system testing. If any fault LED's remain illuminated, refer to the 'fault location' document in this manual.

### 3) System Test (refer to Dwg. C51058/C)

Once the installation and commissioning procedures are complete, test for correct system operation, and fault reporting functions:

- Test all locations for correct call in / call out functions by following the operational instructions listed on the Central control panel.

N.B. When picking up an incoming call at the central control, there can be a short delay (less than 3 seconds), whilst the control equipment routes the call. During this time, a standard call re-assurance tone may be heard in the master handset.

- Remove primary power, to check correct operation of battery support supply. Central control will report a fault condition.

The fault sounder will be activated on the main control panel, and the fault LED's will be illuminated with a slow flash pattern.

The fault out relay will be de-energised.

Press the 'silence fault / lamp test' switch on the control panel momentarily, to silence the fault sounder to an intermittent state.

Open the main enclosure to confirm display of the 'mains fail' and 'charge fail' fault LED's on the power supply control PCB (ref. CS779/3).

Note that with failure of the primary, the system will automatically activate a 'sleep' condition, to minimise power drain and conserve battery power. This will allow the supported system to function in this quiescent mode for 24 hours. During this 'sleep' condition the remote locations are no longer polled sequentially.

Activating any call function (incoming or outgoing) will restore the system immediately to a fully operational state.

Note that whilst the system is in a 'sleep' mode, the loss of primary power continues to report as a fault condition, but further remote loop faults are not additionally indicated.

Restoration of primary power will remove the fault status and return the system to a fault free state.

- Where utilised, check the function of the anti-tamper feature by applying a volt free closed contact across the Anti-tamper terminals on CS830.

Under this condition, any call made from a remote hands free outstation will be automatically cancelled by the central controller. Note that the remote outstation may respond locally with the call re-assurance tone, until such time as the unit is automatically reset by central command. The whole sequence will take less than five seconds.

An open circuit at the anti-tamper terminals will allow normal system operation.

Note that making a call out from the master is not affected by the anti-tamper status.

#### **4) Fault Indications** (refer to Dwg. C51058/C)

The numerical references on Dwg. C51058/C identify the function of all fault indications within the central enclosure. Note that any fault condition will cause the front panel fault Light Emitting Diodes (LED's) to indicate with a slow flashing pattern, and will activate the audible fault sounder as a continuous tone.

Pressing the 'Lamp Test / Silence Fault' switch will change the sounder function to intermittent. (A short 'reminder' bleep approx every 90 seconds). Generation of a second fault condition will reactivate the fault sounder to a continuous tone.

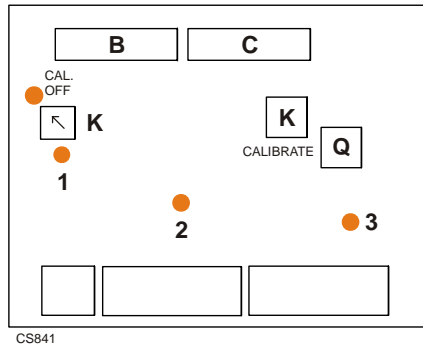
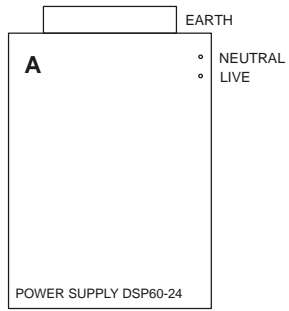
In the event of failure of a remote location call unit, the appropriate front panel remote location switch flash with the same slow on/off pattern as the front panel fault LED's.

With any other type of system fault, only the front panel fault LED's will flash, and further fault identification can be deduced by investigation of the internal central enclosure PCB mounted fault LED's.

The following table lists the various fault LED's, and describes the action to be taken to help identify the fault location.

## 5) Fault indication table (refer to Dwg. C51058/C)

Fault Indication	Nature of Fault	Action required to assist fault location	Action required to clear fault state, after correction
1 – 'Com Fail'	Loop common cable open circuit	Press and hold 'Loop Reset' switch <b>Q</b> , to force loop out only – note last loop response led on line card. Break is between that unit and next remote node location	Press <b>Q</b> momentarily, to clear fault latch.
2 – 'Power Fail'	Loop Power cable open circuit		
3 – 'Lin Fail'	Loop Lin(e) cable open circuit	D.C. volts measured between com and lin will be 0 volts up to line break, and +5 volts between break and lin return. Measurements need to be made at remote locations. Start in centre of loop, and proceed logically to find last location measuring 0Volts, and first location measuring +5 volts.	After correction, press <b>Q</b> momentarily to clear fault latch. Confirm D.C. voltage as 2.5V between Lin and com at both out and return loop terminations, with loop connected.
4 – 'Lin Con'	Power supply (PSU) fault or CS841 connector removed	Check CS779 for PSU faults –if none, check CS841 for correct connections. If PSU fault follow procedures <b>14,15,16</b> below	-
5 – 'PCB Out'	Indicates line card disconnection, or 16 way ribbon cable connection fault	Check all line cards for correct seating. Confirm ribbon cable is correctly latched. Confirm L9 is fitted to the last (furthest right) line card.	-
6 – 'M/HST'	Master Handset short circuit or disconnected	Check master handset connections. Check Cat5e lead connection between CS830 and CS795.	-
7 – 'Unit Count Fail'	Failure of one (or more) remote units to respond	Check for missing response LEDs on line cards.	-
8 – 'SW Code 1 Fail'	Failure of connection to CS575 switch matrix PCB	Check connectors and cables between CS575 (on front door) and CS832 motherboard	-
9 – 'SW Code 2 Fail'	Failure of connection to CS575 switch matrix PCB to second master (where fitted)	Check connections as <b>8</b> above, and additional field cabling to second master	-
10 – 'Data Loop Fail'	Data loop cable open circuit	Press and hold 'Data loop reset' switch <b>R</b> on CS832 to force loop out only – note last loop response led on line card. Break is between that unit and next remote node location.	Press data loop reset <b>R</b> on CS832 momentarily to clear latched fault state.
11 – 'LED code 1 fail'	Failure of connection to CS767 LED driver - or failure of 16 way ribbon connector to Matrix PCB (CS818) (mounted on front door)	Check connections between CS832, CS767 and CS818	-
12 – 'LED code 2 fail'	Failure of LED code connection to second master control (where fitted)	Check connections as <b>11</b> above, and additional field cabling to second master	-
13 – 'Load'	Indication of periodic battery load test	No Fault	-
14 – 'Mains Fail'	Failure of primary supply	Check for primary power to enclosure – check for + 28V DC out from DSP60-24 Din Rail PSU	Replace faulty DSP60-24 power supply if necessary.
15 – 'Batt Fail'	Failure of support battery(s) under load condition	Move L3 on CS779 to position 'B' to reduce load interval to approx 1 minute. Momentarily press reset switch <b>S</b> to start new test sequence, and allow 2 minutes for repeat test. If 'Batt Fail' indicator illuminates again, replace batteries	Press Reset switch <b>S</b> after replacement batteries are fitted. Return L3 on CS779 to position A
16 – 'Charge fail'	Failure of battery connection, or failure of primary supply	Check battery connection loom, including the inline protection fuse Replace if necessary (5A anti surge)	-



**ERS LOOP 16 LINE  
CENTRAL ENCLOSURE**  
(see overleaf for Fault Indication table)

