Rapco

Equipment Handbook

RAPCO Type 1882M2 Mk2
Auto Changeover/Distribution Unit

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Designed and manufactured in the U.K.

EQUIPMENT HANDBOOK

For

RAPCO Type 1882M2 Mk2

Auto-Changeover/Distribution Unit

Configuration list for this variant:

Dual Reference Frequency inputs

Dual 1Hz Timing inputs

14 x 5MHz Frequency Outputs

2 x 1pps TTL Timing Outputs

50ohm buffers on all outputs

Auto-changeover on Master failure

Front-panel Source-select (manual override) switches

Duplex dc power inputs

Multiple alarm functions (user selectable)

Issue 2 August 2003

CONTENTS

The following additional information is appended at the end of this handbook

ITEMS LISTS

Main Assembly
Sub Assemblies relevant to above

DRAWINGS

3301-5774	-	General Assembly, 1882M2 Mk2 Auto-Changeover/Distribution Unit.
3300-5247 Sht. 1		. 1882M-1/2 ACDU -- Circuit Diagram
3300-5247 Sht. 2		. 1882M-1/2 ACDU 5MHz Section -- Circuit Diagram
3300-5247 Sht. 3		. 1882M-1 ACDU 1 pps Section -- Circuit Diagram
3300-5291 Sht. 1		. 1882M-1/2 d.c./Alarm Cable

SPECIFICATION

Auto Changeover Unit Type 1882M2 Mk2

d.c. Power Supply:

Input Voltage	:	20V - 40V d.c.
Power Loading	:	18W typical

5MHz Buffer Amplifiers

Input Level	:	2.5v peak to peak
Input Impedance	:	180 ohms
Gain	:	Unity
Output Impedance	:	50 ohm

1pps Buffer Amplifiers

Input Level	:	CMOS
Output Pulse Width		20uS $\pm$ 2uS
Output Level `0'		0V - 0.25V
Output Level `1'		2.5V - 5.25V
Output Rise Time		20nS max. (0.25V to 2.5V)
Output Fall Time		100nS max. (2.5V to 0.25V)
Output Impedance	:	50 ohm

Front Panel Controls

5MHz Override Switch	:	Master/Auto/Standby
1 pps Override Switch	:	Master/Auto/Standby

Front Panel Indicators

5MHz Source in Use	:	Master (green), Standby (amber)
1 pps Source in Use	:	Master (green), Standby (amber)
Power	:	Master (green), Standby (green)
Output Fault	:	5MHz (red), 1 pps (red)

Rear Panel Connectors

J1 7-way DIN socket	:	Master Power & Alarm Input
J2 7-way DIN socket	:	Standby Power & Alarm Input
J3 BNC	:	5MHz Master Input
J4 BNC	:	1 pps Master Input
J5 BNC	:	5MHz Standby Input
J6 BNC	:	1 pps Standby Input
J7 BNC	:	1 pps Output
J8 BNC	:	1 pps Output
J9 BNC to J22 BNC inclusive	:	5MHz Outputs (14 off)
J23 BNC	:	Alarm Output

Alarm Output

No Fault	:	Short circuit, volt free contacts.
Fault	:	Open circuit, volt free contacts N.B. Alarm contact configuration can be reversed using internal jumper.

Fault Conditions

	:	Loss of 5MHz Master Input signal
	:	Loss of 1 pps Master Input signal
	:	Loss of 5HMz Standby Input signal
	:	Loss of 1 pps Standby Input signal
	:	Loss of Master Power Input
	:	Loss of Standby Power Input
	:	Loss of any 5MHz Output signal
	:	Loss of any 1 pps Output signal

Fault Definitions

Loss of 5MHz	:	When the signal amplitude falls below 2V peak to peak
Loss of 1 pps	:	When the '0' logic-level rises above +0.25V, or, when the '1' logic-level falls below +2.5V.
Loss of power	:	When the supply voltage falls below 20V.

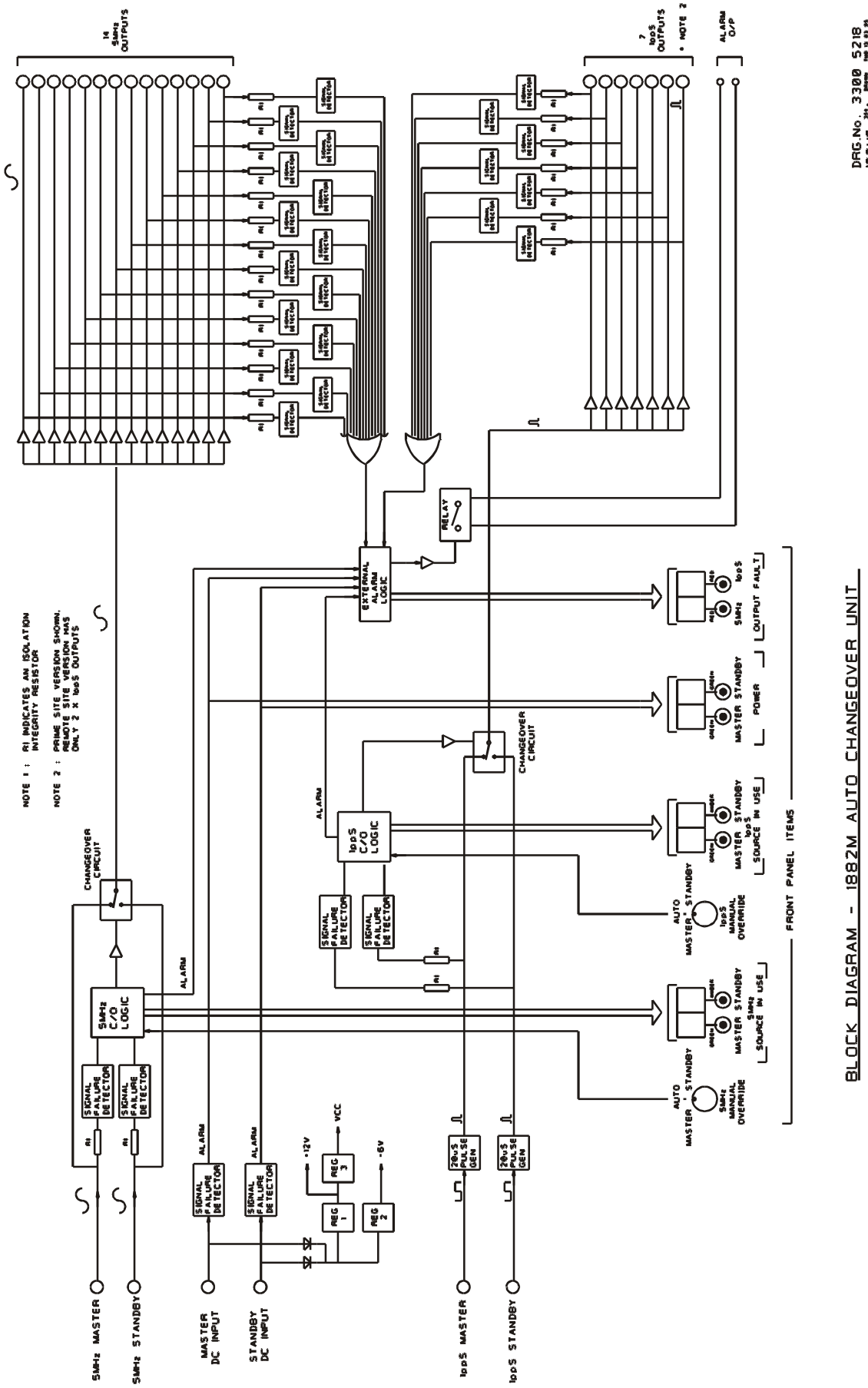
Temperature Range

Operating	:	0^{o}C to 50^{o}C RH 95% (non-condensing)
Storage	:	-40^{o}C to 70^{o}C RH30%

Mechanical

Width	:	483mm
Height	:	44mm
Depth	:	325mm (excluding rear panel components)
Weight	:	3kg
Fixing	:	Standard rack mounting holes.

Drg. No. 3300-5218 Block Diagram 1882



DESCRIPTION

The 1882M2 Auto Changeover Unit provides a switching facility between two 5MHz frequency sources.
The switching can be controlled manually, or the unit can be left to decide for itself when to switch from a faulty source to a good one.

The 1882M2 also provides a switching facility between two 1 pps signal sources. Again, the switch over can be manual or auto, but it is totally independent of the 5MHz signal selection.

If the unit is set to AUTO and is showing 5MHz SOURCE IN USE as MASTER, the unit will automatically switch to STANDBY 5MHz if either the MASTER 5MHz input drops in level to 2V peak to peak or less, or a MASTER alarm signal is received from the MASTER 1804. Once the unit has switched to STANDBY it will remain in that condition even if the MASTER 5MHz were to recover. The MASTER condition would be re-selected if the STANDBY signal were to fail or the OVERRIDE switch was manually set to MASTER. Should the condition exist where both the MASTER and STANDBY signal levels were low, then the 1882 will select MASTER.
The same sequence of events applies to the 1 pps signals except that the alarm levels are different for the digital signals. It should be noted that a 5MHz failure will not cause the 1 pps to switch or vice-versa, but an 1804 alarm will cause both the 5MHz and 1 pps channels to switch over.

The 1882M2 also provides a buffered, isolated, signal distribution function with multiple output connectors (14 x 5MHz and 2 x 1pps signals).

All of the output signals from the 1882M2 are separately buffered by linear amplifiers with an output impedance of 50 ohms, and should therefore, for correct operation, drive 50 ohm loads. The output signals from all outputs are monitored and should any fail, an alarm is generated and a front panel OUTPUT FAULT led will illuminate.

A volt-free contact set also flags a fault via the ALARM CONTACT (J23) connector.
An internal jumper LK1 is normally in position A and provides a short circuit to indicate a no fault condition. Should the user require an alarm to be shown as a short circuit, then the jumper should be placed in position B of LK1. Alarms are generated by the unit for any input signal failure, any output signal failure, or any power input failure.

Operation

Other than the OVERRIDE switches, there are no operator controls on the 1882M. Once the input signal sources have stabilised, the OVERRIDE switches should be set to AUTO and the system can be left to look after itself.

PRECAUTIONARY NOTE:
When connecting the input cable pairs (MASTER and STANDBY) for 5MHz, 1Hz/1pps and d.c. power, double-check that none of these have been accidentally swapped over (i.e. MASTER and STANDBY crossed)
If this error is made, the system *will appear to work normally*, and the problem will only show up at a later time when, if a source fault occurs, there may be a loss of output signals.

Statement of Compliance (LVD) for 1882

CE

Rapco
ELECTRONICS LIMITED

DECLARATION OF CONFORMITY

We declare that the product(s) listed below meet the safety requirements of the European Commission Directive 73/23/EEC as amended by 93/68/EEC, referred to below as 'The Directive'.

Product(s)	ACU Type 1882, 1883 and 1884, all versions.

The products identified above meet or exceed the protection requirements of :

EN 61010 -1 Safety requirements for electrical equipment for measurement, control and laboratory use.

The products are defined as Class 1 (earthed) equipment when installed and used in accordance with the instructions in the operators manual.

This equipment is not suitable for use in explosive atmospheres or as a component in a life support system.

..... Date : .....

P.L.Baker

Technical Director

for and on behalf of

Rapco Electronics Ltd.

11 Joule Road, Basingstoke, Hants U.K. RG21 6XF

Note : The attention of the specifier, purchaser, installer, or user is drawn to special measures and limitations to use which may apply when the product is taken into service, to maintain compliance with the Directive. The equipment must be installed and used in

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Statement of Compliance (EMC) for 1882

CE

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ELECTRONICS LIMITED

DECLARATION OF CONFORMITY

We declare that the product(s) listed below meet the electromagnetic compatibility requirements of the European Commission Directive 89/336/EEC as amended by 93/31/EEC and 93/68/EEC, referred to below as 'The Directive'.

Product(s)	ACU Type 1882, 1883, 1884 & 1885 (All versions)

The products identified above comply with the requirements of the Directive by meeting the following standards :

EN 50081 - 1 E.M.C. Generic Emission Standard Part 1 Residential, Commercial and Light Industry.

EN 50082 - 1 E.M.C. Generic Immunity Standard Part 1 Residential, Commercial and Light Industry.

The technical documentation required to demonstrate that the product meets the requirements of the Directive has been compiled by the signatory below and is available for inspection by the relevant enforcement authorities.

The C E mark was first applied in : **1997**

Date : **12th FEB' 97**

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P.L.Baker

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Note : The attention of the specifier, purchaser, installer, or user is drawn to special measures and limitations to use which may apply when the product is taken into service, to maintain compliance with the Directive. Details of any such special measures and limitations to use, are, if applicable, contained in the product handbook.

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ELECTROMAGNETIC COMPATIBILITY NOTES

The following special measures and limitations to use, should be observed when the equipment is taken into service, in order to maintain compliance with the EMC Directive 89/336/EEC.

Power Cables

a.c. Power

The a.c. power cables supplied with the unit(s) are the only approved type.

Always ensure that the green/yellow conductor is connected to a safety earth at the supply source.

Always ensure that the retainer clip is used to prevent accidental or partial disconnection of the power cable.

If the separate earth stud on the rear panel of the unit is connected to a local earth bus (eg in an equipment rack), ensure that this is a clean earth which is free from electrical noise.

d.c. Power

The d.c. power input and output ports on RAPCO equipment are intended only for direct connection to other RAPCO units, normally mounted in adjacent, or near adjacent, positions. The only approved cables for these purposes are those supplied by RAPCO.

Signal, Data, or Aerial Cables

Where interconnecting cables are required between RAPCO units, these are normally supplied with the equipment. Such cables should not be modified or extended; EMI absorbers (ferrites) or in-line filters supplied with cables should not be removed. Cables which interconnect with the users equipment and not supplied by RAPCO, should be of correct specification and of adequate quality. EMC considerations involving such cables are the users responsibility. Consult RAPCO if informal advice is required regarding choice of cables.

Unused input or output connectors

If any connector is unused in a particular installation, or if it is used only occasionally (eg. maintenance or test) then suitable protection should be used to ensure that the EMC profile of the unit is maintained as regards both immunity and emissions.

(i) Co-axial connectors should be fitted with screening (metallic) protective caps, or fitted with termination loads as required. Note that outputs designated TTL should **not** be terminated with 50 ohm loads.

(ii) Data connectors. To provide ESD protection and screening for unused multi-pin data connectors, it is recommended that an unwired mating part, complete with metallic hood and fixing screws or clips is fitted at the unused port. Suitable connector parts may be ordered from RAPCO.

(iii) Aerial connectors. In normal applications these will be permanently connected to RAPCO supplied aerial assemblies via RAPCO cables. In the unlikely event that a unit is to be installed without the aerial cables connected, protection in the form discussed above for data cables is recommended. Note that where equipment is configured for use with an active aerial, the connector may have a d.c. voltage across its pins, and should **not** be fitted with a 50 ohm terminator as this could overload the power source; use a screened blanking cap or 'dummy' unwired connector instead.