OPERATIONAL TESTING PROCEDURE

The test procedures described herein pre-suppose earlier comprehensive factory acceptance testing of the individual system components and these procedures, while proving basic operation, will essentially prove the correct integration of the main cooling installation components and interconnections.

The importance of these tests can not be over stressed since, unless these are completed successfully, there is no evidence that the individual components will operate as a system to meet the essential cooling requirements of the site as intended.

All electrical connections to the CCU are indicated on the respective Connection Diagram shipped with the unit.

VISUAL INSTALLATION CHECK POINTS

A.1 Confirm correct physical placement and alignment of the surface enclosures for the Cooling Control Unit (CCU) inside of the equipment shelter in accordance with the relevant equipment layout data pack particular to the type of installation.

A.2 Care should be taken when selecting the position of installation of the CCU to ensure that the temperature sensing probe on the side of the unit is exposed to true room temperature. If the room temperature sensor is not sensing air temperature representing the actual room temperature but say a hot spot behind a cabinet, temperature dependent operating functions may be affected unless a suitable temperature calibration offset is made on the unit.

A.3 Do a critical visual inspection of all the AC power wiring to the CCU from the AC DB to the mains-in terminals in the CCU according to the Live1, Live2, Neutral and Earth markings in terms of type, dimension and integrity of screw terminal connections. Confirm that the Live, Neutral, Earth and sensing loop connections in the five-pin connector plug/rotary disconnector to each air-conditioning unit are made correctly. Refer to the data on the connection diagram regarding recommended MCB and wiring dimensioning for the various categories of installations in the absence of user specific documentation covering these aspects.

A.4 Similarly, confirm the independent auxiliary DC power supply connections from the DC distribution facility to the CCU and the (optional) Extractor Fan (independently) and confirm that the correct polarity is observed throughout on the DC Processor Module and the 5-way Fan Control terminals.

A.5 Confirm the integrity of all earthing connections including hold-down screws on the AC Switching Block serving as such.

A.6 Verify that all the necessary documentation for CCU system is included in the shelter / site file records as called for.

OPERATIONAL TESTS

Since this in situ test will lead to intermittent on/off operation of the air-conditioning units and emergency ventilation fan it is recommended that both the air conditioning units be set to *fan operation only mode* from which it will be evident whether a particular machine is in operation (or not) without attempting to start the compressors every time that a unit is powered up during the course of this test procedure.

Keep in mind that part of the principle of normal operation of the CCU includes certain timing delay sequences that are indicated to the user by way of on/off flickering of the LCD annunciator. When these delays are encountered during testing, please be patient.

B.1 With both AC supplies connected to the CCU and the air-conditioning units plugged in, confirm ON indication of both the greed LED's on the AC Switching Block.

B.2 With the DC supply to the CCU connected (observe polarity), confirm the room temperature reading on the liquid crystal annunciator unit on the DC Processor Module. A realistic display value will serve as initial confirmation of correct operation of the CCU.

B.3 Should the optional Stand-by Power control Input to the CCU be used in this application of the CCU, activate this input and confirm that the CCU indicates recognition of this condition. (Correct response confirmed elsewhere.)

B.4 Establish communication with the (local or remote) network supervisory function to be able to confirm the connected alarm function status indication through to that end. In the absence of such a facility the alarm outputs from the CCU may be confirmed locally by means of simple continuity testing.

B.5 Switch off the two air-conditioning supply circuits in the AC DB *in turn* in order to prove forced operation of the remaining air-conditioning unit which should then be powered irrespective of any Control Unit command. Confirm cooling System (fault) Alarm indication from the CCU when any one or both the mains AC supplies are interrupted.

B.6 Similarly, with both air-conditioning supplies available from the AC DB, plug out/disconnect each air-conditioning unit *in turn* from the CCU to prove forced operation of the remaining air-conditioning unit that is still plugged in/connected. Again confirm A/C System Alarm indication from the CCU when any one or both the air-conditioning units are plugged out or disconnected. The System Alarm can also be stimulated by interrupting the auxiliary DC supply to the CCU.

B.7 Confirm emergency ventilation fan operation by switching off the two air-conditioning supply circuits in the AC DB and either by physically applying or simulating an elevated shelter temperature to exceed the emergency ventilation set point levels. It is for the purpose of this operational test only necessary to test any one of the conditional or un-conditional emergency ventilation operating modes to prove emergency ventilation fan operation.

For temperature stimulation see section below on Programming of the CCU.

B.8 Verify output of the remaining two CCU logic alarm functions (Dual A/C Operation and Room High Temp) and optional Second Room Temperature Alarm / Thermostat Output id configured, to the remote network supervisory function or a local instrument. Dual A/C Operation and the High Temp alarms are activated by manipulation of the room temperature.

B.9 Re-confirm that all connections are secure and that connector plugs disturbed during testing are inserted fully home.

B.10 Finally, perform a System Reset operation on the CCU DC Processor Module to clear all historical alarms from the unit ready for commercial operation.

Normal Operational acceptance testing will be complete at this stage.

B.11 After completion of all tests and adjustments, set the Air-conditioning Unit controls for normal duty as follows:

- Operating Mode Selector to cooling operation at maximum fan speed;
- Thermostat to the 13:00 position on the clock that should provide around 23 Deg C internal shelter temperature regulation.

PROGRAMMING OF THE CCU

The CCU is shipped pre-configured and programmed ready for operation at set points and configuration as per Tautech standard or as agreed to by the network operator in advance – refer to documentation in the packaging to confirm the detail of such. Should re-confirmation or adjustments to this pre-configured setup be required it is possible by accessing the push-button procedure on the CCU or by using the Sirius Configuration Tool.

Refer Manual Programming Procedure Diagram CCP-MAN6.3 for full description.

For use of the PC-based Sirius Configuration Tool, see separate Application Document 303.

For advanced testing and/or temperature stimulation, reference to the above is essential.

TEST EQUIPMENT

Operational testing of the CCU requires the following to be available:

C.1 AC power supply to shelter;

C.2 DC power installation complete or alternatively temporary 24 / 48V DC source as required of 3A capacity;

C.3 Multi-meter type continuity tester;

C.4 Full set of documentation;

C.5 Optional:
Test Terminal / Portable PC and Sirius Configuration Tool software.

End

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