

# **Installation Instructions**

**Procon**

**A25T**

# Connection and Operating Instructions

# Procon A25T

## Procon A25T Overview

The Procon A25T provides an interface between up to 25 Mitsubishi 'A' control air conditioners and a Trend BMS system.

The A25T package comprises a Mitsubishi A25M 'A' control interface and a Trend XNC220 which is pre-programmed with the necessary software to connect directly to the A25M.

Global registers within the XNC220 control the operation of the system and the A25M will not work properly unless these values are correct. - See Appendix A for details.

An interconnection lead for the two units is supplied with the system.

## System Concept

The Procon A25T system maps the process data from the 'A' control units into pre-defined registers within the XNC220 . These provide an image of the air conditioning system and if altered will update the Mitsubishi equipment with the new values.

The values monitored are:

- Setpoint
- Return Air Temperature
- On/Off State
- Fan Speed (Hi/Lo)
- Mode
- Error

All values are Read/Write with the exception of Return Air Temperature and Error.

The XNC220 is supplied with a special TCL program installed and running. This program feeds the variable registers with values from the Mitsubishi equipment simulating analogue and digital inputs. For the read/write variables the user can update the register and this will be output to the Mitsubishi equipment

## Connections

**All electrical work should be carried out by a competent person and wiring must be in accordance with the current national electrical installation regulations.**

**THIS EQUIPMENT MUST BE EARTHED**

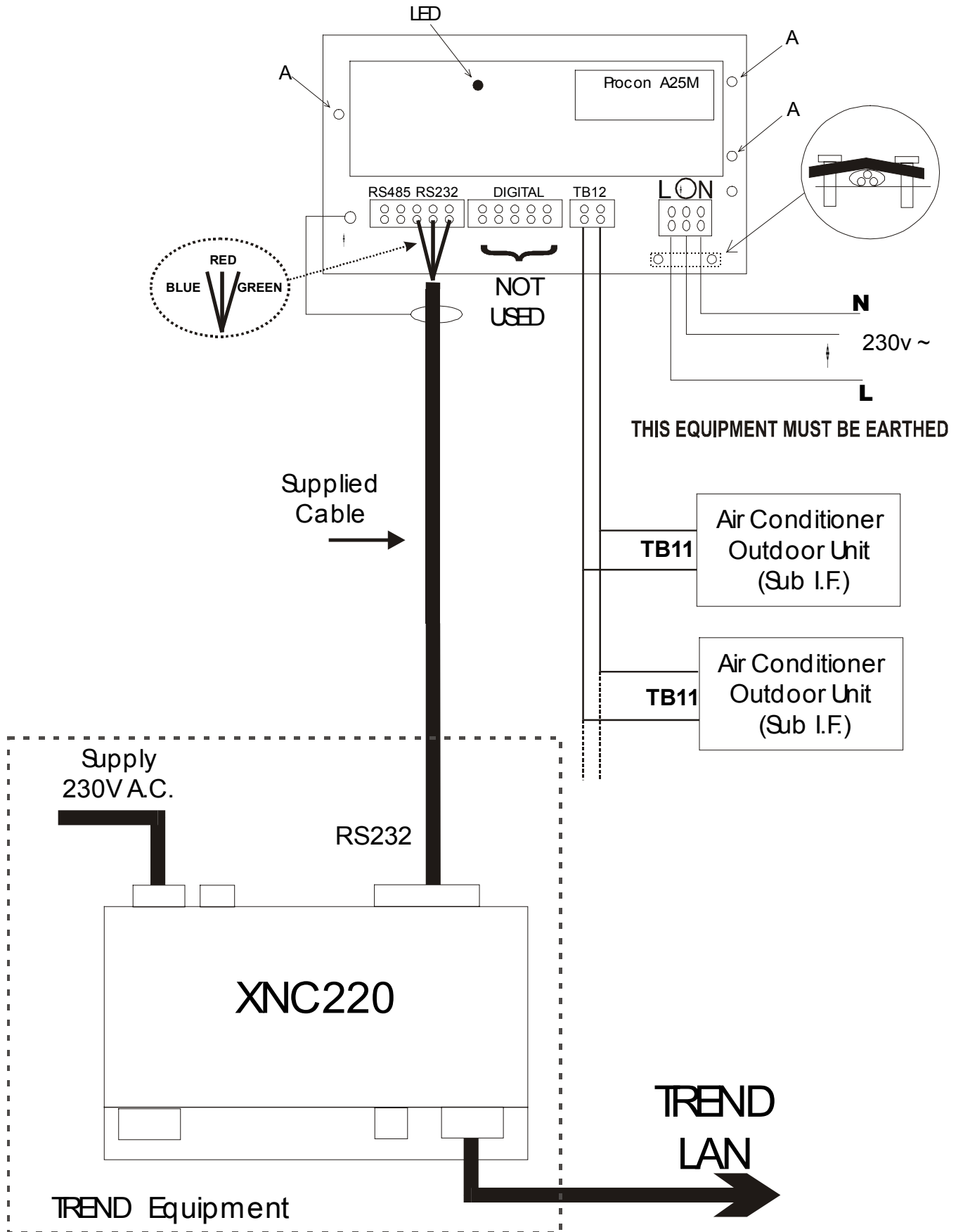
The Trend XNC220 is provided with Trend installation instructions.

The A25M requires a 230v A.C. supply. Wiring information is shown in Figure 1.

The trend interconnection cable should be connected to the RS232 terminals on the A25M  
Tx = Blue, Rx = Red, Com = Green.



# Figure 1. Procon A25T Wiring Detail



## Addressing

For compatibility with the Procon A25 system each 'A' control outdoor unit must be fitted with the Mitsubishi Sub I/F board.

This board carries a DIP switch (SW1) which is used to set the address of the outdoor controller. Addresses are set on the switch by using binary notation where SW1-1 represents a '1', SW1-2 represents a '2', SW1-3 represents a '4', SW1-4 represents an '8', SW1-5 represents a '16' and SW1-6 represents a '32'. The address is set by switching on the required number of switches to add up to the address. (e.g. for address 6, switch on SW1-2 and SW1-3)  
The addresses of the outdoor units should be set to be sequential starting at address '1'.

The A25M unit also has a DIP switch SW3 which is accessible after removing the cover which is secured by the three screws 'A'. **Disconnect the power before removing the cover.**  
Switch SW3 also uses binary notation and should be set to the number of outdoor units.

## Operation

In operation the A25 scans the connected outdoor units and makes them accessible via the RS232 link. The Trend XNC220 transfers this information into Trend registers for incorporation into the Trend BMS

A red LED on the A25M indicates when data is being received from the air conditioners.

## Grouping

Grouping on A-control units is achieved by hard wiring as detailed in the Mitsubishi system wiring details.

## User Strategy

The unit is supplied with a simple strategy which is installed for test purposes.

On/Off is controlled from a time clock which will enable all zones from 07:20 to 18:00 provided W2(Time Zone), W3( Local) & W4(Override) are all set to 0. If any zone is switched on outside these hours then it will run for four hours and then automatically switch off.  
Setpoints, Modes and Fan Speeds are all directly from discrete registers.  
Sensors 1 to 20 are connected to plots.

When writing strategy It is important that the mode of operation is fully considered as this will affect the way in which the system operates.

With the exception of Return Air Temperature and Error the registers are read / write and have the facility to be modified either from the Trend system or from the Mitsubishi Controllers.

To take advantage of this feature any strategy should only update the variables on change of value.

A list of variable locations is given in Appendix B.

## **Additional Features:**

### **a) Setpoint Range Lock**

As well as providing feedback of setpoint and allowing the Trend system to adjust the setpoint the Procon A25T allows global maximum and minimum setpoint values to be defined. The system will hold the setpoint value within the maximum and minimum limits whether they are modified from the Trend system or externally.

The values are stored in the XNC 'Global registers':- See Appendix A

### **b) Remote Controller Inhibit**

It is possible to lock the remote controllers and thus prevent user adjustment. The global locations include two inhibit words which allow individual inhibit for each unit.

### **c) Hi Fan Speed Definition**

The Procon A25T has the facility to set and display fan speed as two states, 'High' or 'Low'

'A' series air conditioners have 4 fan speeds designated 1,2,3 and 4  
Low is always 1.  
Any fan speed read as other than Low will be shown as 'High'.

It is possible to select the required 'High' within the XNC220.  
This is set in A60 (See Appendix A) and should have a value of 2,3 or 4 – **or** - 12,13 or 14.

If 2,3 or 4 is entered then a change to 'High' initiated from the Trend system will result in a change of fan speed to the A60 value. The unit will, however, allow the user to select a 'High' fan speed other than the A60 value by using the wall controller. This speed will be accepted and read back as 'High'.

If 12,13, or 14 is used then the 'High' speed is regarded as 2,3 or 4 respectively. A change to 'High' initiated from the Trend system will result in a change of fan speed to the 'High' speed. The unit will not allow the user to select a fan speed from the wall controller other than 'Low' or the 'High' speed. If this is attempted then the speed will be forced to the 'High' value.

## Appendix A: XNC Global registers

A55	-	Number of Scanned Outdoor Units on this XNC
A56	-	Maximum Setpoint Value
A57	-	Minimum Setpoint Value
A58	-	Software Number – (Read Only)
A59	-	Version Number – (Read Only)
A60	-	Hi Fan Speed Definition (The value which will be sent for Hi)
		2 = Low Medium                      12 = Low Medium (Locked)
		3 = High Medium                     13 = High Medium (Locked)
		4 = High                                14 = High (Locked)
A96	-	Inhibit 1
A97	-	Inhibit 2
A98	-	A25 S/W Number
A99	-	A25 S/W Version

**'Inhibit 1'** and **'Inhibit 2'** each have 1 bit to represent each outdoor unit.

Inhibit 1 bit 0 represents unit 1 and bit 15 represents unit 16.

Inhibit 2 bit 0 represents unit 17 and bit 8 represents unit 25.

(bits 9-15 not used)

If any bit is set to a 1 then the A25 will allow modification of that unit's functions to be made from the remote controller. If the bit is set to 0 then modification will not be allowed and the remote controller will display 'Centrally Controlled'. The inhibit function is activated or cleared when a parameter is sent from the A25 to the outdoor unit.

(To allow remote controller operation on all units set Inhibit 1 and Inhibit 2 to 'FFFF' Hex. (65535). To prevent remote controller operation on all units set Inhibit 1 and Inhibit 2 to 0.)

## Appendix B : XNC Variable Storage

S1 to S25	-	Return Air 1 to Return Air 25 OR – Error (1-25) if Unit in error (errors are 1000 – 7999)
K1 to K25	-	Setpoint 1 to Setpoint 25
A101 to A125	-	Mode Code 1 to 25
		1 = Heat
		2 = Cool
		3 = Auto
		4 = Fan
		5 = Dry
B32,0 to B35,0	-	On/Off 1 to On/Off 25 0 = Off, 1 = On
B21,0 to B24,0	-	Fan Speed 1 to Fan Speed 25 0 = Low 1 = High (see A60 in Appendix A)