AX-CNDR-A32x and AX-CNDR-RMA-3x
Room Controllers (BACnet) and Relay modules

AXIO

Product overview

The AX-CNDR-A32x analogue room controllers feature a high-contrast blue backlit display with white text, and fit a standard single gang patress. The unit has selection for an internal or external temperature sensors and provides on/off heating and cooling control. The clear display indicates room temperature, fan speed, occupancy and window status. The unit has a keycard/occupancy input with adjustable set back and exit delay and a window contact input. The unit should be used with an AX-CNDR-RMA-3x remote relay module.

The AX-CNDR-RMA-3x are remote relay modules for use with the AX-CNDR-A32x thermostats. The modules have interlocked 3-Speed fan, and On/Off heating/cooling relays.

The AX-CNDR-A32B analogue room controllers also provides network connectivity with an isolated BACnet MSTP link, supporting COV.

Features

- On/off heating/cooling control
- 3 speed fan speed control with Auto mode
- Interlocked relays allow only one fan output on at a time
- Isolated BACnet MSTP / RTU, supports COV (A32B)
- Adjustable setpoint range

- Keycard / occupancy input, adjustable exit delay
- Window contact input
- Unused Keycard / Window contact inputs available as digital inputs
- Two part plug-in connectors for easy installation
- Built in terminating resistor (A32B)

Order codes

AX-CNDR-A32	Fan Coil Thermostat
AX-CNDR-A32B	Fan Coil Thermostat with BACnet
AX-CNDR-RMA-31	Relay Module 3 Speed Fan On/off Heating or cooling relay
AX-CNDR-RMA-32	Relay Module 3 Speed Fan On/off Heating and cooling relays

PROVISIONAL

Product specifications: AX-CNDR -A3B / -A3 controllers

Supply	From AX-CNDR-RMA-3x
Inputs	External temperature sensor, 10K3
	Keycard and Window inputs for volt free contacts
Outputs	Connected to AX-CNDR-RMA-3x
Network (A3B)	BACnet MSTP
Baud rates (A3B)	9K2, 19K2, 38K4, 57K6, 76K8 and 115K2
Terminals	Rising clamp for 0.5-1.5mm² cable
Dimensions & weight	86 x 86 x 35mm,TBC
Housing	Brushed Stainless steel to fit 35mm deep single back box
Ambient Temperature	0 to 50˚C
Country of Origin	United Kingdom

Product specifications: AX-CNDR-RMA -32 / -31 relay modules

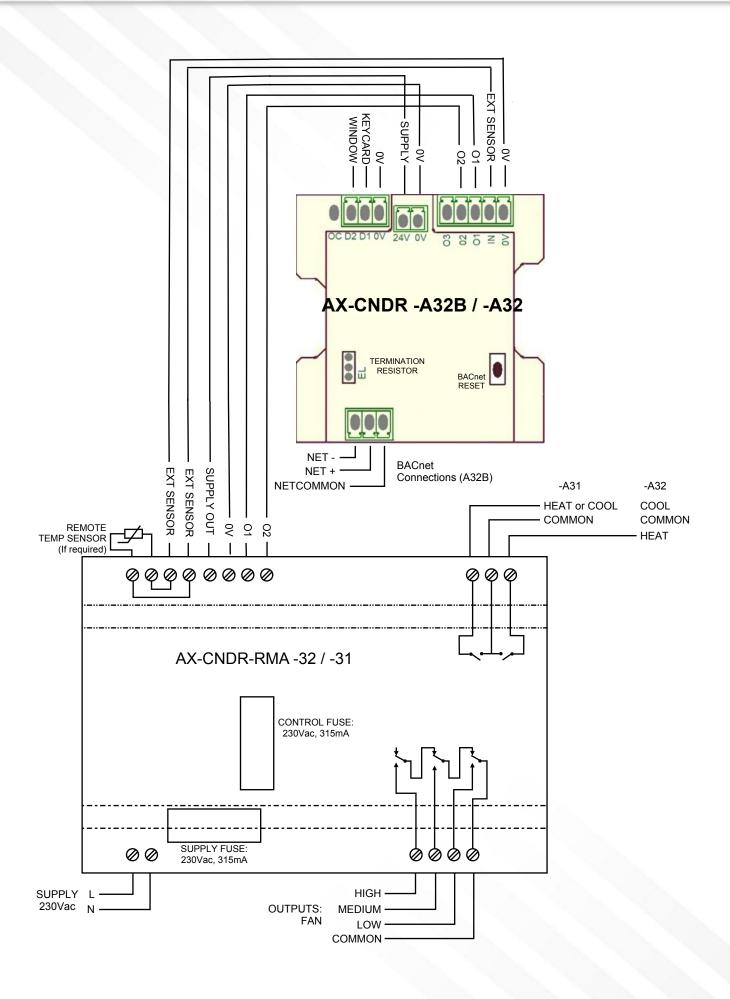|	
Supply	230Vac +/- 10% 50/60Hz
Fuse	315mA, 230V
Inputs	External temperature sensor feed through
Outputs:Fan	12A at 250Vac resistive (Inductive typically 5A)
Outputs:On/off	6A at 250Vac resistive.
Terminals	Rising clamp for 0.5-1.5mm² cable
Dimensions & weight	156 x 86 x 58mm, TBC
Housing	IP flame retardant ABS
Ambient Temperature	0 to 50˚C
Country of Origin	United Kingdom

Datasheet contents

Every effort has been taken in the production of this data sheet to ensure accuracy. Annicom do not accept responsibility for any damage, expense, injury, loss or consequential loss resulting from any errors or omissions. Annicom has a policy of continuous improvement and reserves the right to change this specification without notice.

Installation

The unit should be installed by a suitably qualified technician in conjunction with any guidelines for the equipment it is to be connected to and any local regulations. Field wiring should be installed to satisfy the requirements set out by the manufacturer of the equipment that the module is being connected to.

EXT SENSOR

WINDOW
KEYCARD
0V
SUPPLY
0V
O2
O1
EXT SENSOR
0V

OC D2 D1 0V   24V 0V   O3 O2 O1 NI 0V

AX-CNDR -A32B / -A32

TERMINATION RESISTOR

BACnet RESET

NET -
NET +
NETCOMMON

BACnet Connections (A32B)

-A31   -A32

HEAT or COOL   COOL
COMMON   COMMON
                HEAT

EXT SENSOR
EXT SENSOR
SUPPLY OUT
0V
O1
O2

REMOTE
TEMP SENSOR
(If required)

AX-CNDR-RMA -32 / -31

CONTROL FUSE:
230Vac, 315mA

SUPPLY FUSE:
230Vac, 315mA

SUPPLY   L
230Vac   N

HIGH

OUTPUTS: MEDIUM
FAN   LOW

COMMON

Fitting and removing frontplate

To fit front plate with the backplate fitted to the wall carefully bring frontplate towards backplate and locate switches in frontplate holes then move plate to one side and clip over one side of backplate then push frontplate in opposite direction and push front to clip onto backplate.

To remove frontplate carefully insert slotted screwdriver into slot on side of thermostat and lever

Fan Connections

Connections for a fan motor with multi-tapped windings: Connect the 'Output Common' terminal to the live supply, and then connect the fan tappings to the relevant Output Low, Medium and High terminals.

Connections for the transformer based speed control: Connect the transformer tappings to the relevant Output Low, Medium and High terminals and connect the 'Output Common' terminal to the fan live supply.

Menu

Follow the steps below to enter the menu, listed options not available on all units

1. Switch unit off

2. Press and hold ON switch

3. Keep ON switch pressed and press and hold setpoint increase at the same time

4. Keep both switches pressed for 10 seconds. The display will change to the setpoint high limit option.

5. Press ON button to scroll menu options described below. When required option is displayed press setpoint decrease or setpoint increase to adjust value or enable/disable option. When changes are complete do not press any buttons for 10 seconds and the unit will store new values and return to normal operation.

Menu options [Menu display mnemonic]

Setpoint high limit [SPHi]

This sets the highest value the user can adjust the setpoint to. Range 25 - 30 ºC.

Setpoint low limit [SPLo]

This sets the lowest value the user can adjust the setpoint to. Range 15 - 20 ºC.

Sensor selection [SEnS]

This selects between the internal and external temperature sensor. Selection Int / Ets.

Temperature offset [OFSt]

This offsets the temperature from the calculated value. Positive values increase the temperature and negative values decrease the temperature. Range -10 to +10 ºC.

Operating mode [OPEr]

This sets the unit operating mode. Available options heating / cooling / heating and cooling (A32).

Deadband [ddbn]

This sets the deadband range between the proportional heating and cooling outputs. Range 0.5 - 10 ºC.

Keycard / occupancy input [CArd]

This enables or disables the keycard / occupancy input. The Setback and Exit delay options are only available when the keycard / occupancy input is enabled.

Setback [SbAc]

This sets the amount the heating and cooling will be setback when the room is empty. The Setback option is only available when the keycard / occupancy input is enabled. Range 1 - 20 ºC.

Exit delay [EdEL]

This sets the time delay before the heating and cooling is setback and the fan is set to low speed when the room is empty. The Exit delay option is only available when the keycard / occupancy input is enabled. Range 0 - 90 minutes, in 5 minute steps.

Window input [UUin]

This enables or disables the window contact input.

Setpoint switch actions [SPAc]

This enables or disables the setpoint buttons.

Fanspeed switch actions [FSAc]

This enables or disables the fanspeed buttons.

On Off switch actions [OnAc]

This enables or disables the on off button. (Menu entry will not be disabled)

MSTP address [Addr]

This sets the unit BACnet MSTP address. This must be set to be a unique number on the local MSTP network or communication conflicts will occur. Range 0 to 127.

Maximum MSTP address [UPAd]

This sets the maximum MSTP address that the unit will poll when looking for other units. If this is set lower than the address of the next unit polling will loop back to address 0 and the next unit will not be found. Range 0 to 127.

Baud rate [bAud]

This sets the unit MSTP baud rate. This should be set to the same value as current units on the network. Available options 9K6, 19K2, 38K4, 57K6, 76K8 and 115K2.

BACnet device instance [din1] to din7

This sets the BACnet device instance seen on the network. This should eventually be set to a network wide unique value in the range 0 to 4194302.

Press SP- to scroll through the digits from left to right. The display will show din1 when the first digit (left digit) is selected increasing to din7 when the last digit (right digit) is selected. Press SP+ to modify the selected digit. All digits should be set including leading zeroes. For example a value of 0 would be set as 0000000 and a value of 898 would be set as 0000898.

BACnet reset [bnrS]

This sets all BACnet MSTP object instances to default values. Select 123 on the display and wait for menu to time out. The thermostat operating values are not modified.

Pressing the BACNET RESET button for 10 seconds will also reset these values.

Operation

The AX-CNDR-A32x / 3x controls room heating and cooling. The unit provides On/off heating and / or cooling output relative to the setpoint / setback / deadband. The fan speed can be set in 3 steps in manual or when auto is set the fan speed is automatically controlled in 3 steps relative to the heating and cooling output.

Key card contact / occupancy input

This accepts a volt free output from a keycard or occupancy sensor (or similar device). When the input is closed the room will be considered occupied (the Person symbol is displayed in the House symbol). If this input is enabled in the menu the heating and cooling will be set back by the setback value and the fan set to low speed when the room has been un-occupied for the exit delay time. A count down of the exit delay is displayed. If this input is connected to a PIR (for example) and the exit delay is set the PIR's internal delay should be set to zero. If the key card actions are not required they can be disabled and the input used as a digital input.

Window contact input

This accepts a volt free contact from a window switch. The switch should be closed when the window is closed. If the window input is enabled in the menu and the window is open the heating and cooling output is set to zero and the fan is set to speed low (UUin is displayed). If the window contact actions are not required they can be disabled and the input used as a digital input.

User controls

On / Off

The user can switch the unit on or off. When the unit is off the cooling output will be zero and the fan is off. On / Off switch actions can be disabled via the operating menu.

Setpoint

The user can adjust the setpoint between the Setpoint high and Setpoint low limits set in the menu. Setpoint switch actions can be disabled via the operating menu.

Fan speed

The user can set the fan speed to low/med/high or auto. When auto is selected the fan speed will be set relative to the heating or cooling output. The fan speed is displayed in three steps on the bottom display bar. Fan speed switch actions can be disabled via the operating menu.

BACnet objects

PROTOCOL IMPLEMENTATION CONFORMANCE

Vendor Name: Annicom Ltd.

Vendor ID: 898

Product Name: AX-CNDR-A32B

Product Description

The AX-CNDR-A32B / 3x BACnet digital room controller communicating thermostat has been specifically designed for heating / cooling applications to be monitored on a BACnet MS-TP ® RTU network.

Supported BACnet Services

Data Sharing – Read Property

Data Sharing – Read Property Multiple

Data Sharing – Write Property

Data Sharing – Subscribe cov

Data Sharing – Subscribe cov property (PV only)

Supported BACnet Objects

Device

Analogue input

Analogue output

Analogue values

Binary input

Binary values

Multi state values

Note The controller does not support segmentation requests or responses

Change of value

This unit supports COV subscriptions on all object present value properties, this includes status flag monitoring. Only analogue objects have COV increment properties. Binary and multistate objects monitor for any change in present value.

Analogue input objects / [default instance]

Current temperature (PV read only) [0]

Analogue output objects / [default instance]

Cooling output (PV read only) [20]

Heating output (PV read only) [21]

Analogue value objects / [default instance]

Temperature offset [32]

Setpoint [35]

Minimum setpoint [36]

Maximum setpoint [37]

Setback [38]

Exit delay [39]

Current fan speed (PV read only) [40]

Deadband [41]

Manual fan speed [42]

Address [101]

Maximum address [102]

Device instance [103]

Binary input objects / [default instance]

Card input (PV read only) [104]

Window input (PV read only) [105]

Binary value objects / [default instance]

Card contact actions [144]

Window contact actions [145]

Select sensor [146]

Setpoint switch actions [147]

Fan speed switch actions [148]

On / Off switch actions [149]

Unit On / Off [150]

Multistate value objects / [default instance]

Operating mode [185]

Baud rate [197]

Object properties

Only properties marked (W) can be written. Present value (PV) properties marked (RO) are read only.

Device object properties

Device instance 898 (Default)(W)

Vendor name: Annicom Ltd.

Vendor Identifier: 898

Object list: As this list

Model Name: AX-CNDR-RMD-5BN / -7BN

Max ADPU length accepted: 480

Max masters: 25 (Default), 1 to 127. (W)

Segmentation supported: No segmentation

Description: BACnet thermostat.

Object Name: BACnet thermostat. (Default)(W)

Object Type: Device

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Analogue Input object properties

Analogue Input instance 0 (Default)(W)

Description: Current temperature

Name: Temperature.

Object Type: Analogue input

Present value: From sensor (RO)

COV increment: 1.0 (W)

Units: Degrees centigrade

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Analogue Output object properties

Analogue Output instance 20 (Default)(W)

Description: Cooling percentage output

Name: Cooling output.

Object Type: Analogue output

Present value: Set by control actions (RO)

Units: Percentage

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Analogue Output instance 21 (Default)(W)

Description: Heating percentage output

Name: Heating output.

Object Type: Analogue output

Present value: Set by control actions (RO)

Units: Percentage

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Analogue Value object properties

Analogue Value instance 32 (Default)(W)

Description: Temperature offset

Name: Offset.

Object Type: Analogue value

Present value: As set, -10.0 to +10.0. (W)

Units: Degrees centigrade

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Analogue Value instance 35 (Default)(W)

Description: Setpoint

Name: Setpoint.

Object Type: Analogue value

Present value: As set, see min max user setpoint. (W)

COV increment: 1.0 (W)

Units: Degrees centigrade

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Analogue Value instance 36 (Default)(W)

Description: Minimum user setpoint

Name: Minimum setpoint.

Object Type: Analogue value

Present value: As set, 5 to 15. (W)

Units: Degrees centigrade

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Analogue Value instance 37 (Default)(W)

Description: Maximum user setpoint

Name: Maximum setpoint.

Object Type: Analogue value

Present value: As set, 25 to 35. (W)

Units: Degrees centigrade

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Analogue Value instance 38 (Default)(W)

Description: Setback

Name: Setback.

Object Type: Analogue value

Present value: As set, 0 to 20. (W)

Units: Degrees centigrade

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Analogue Value instance 39 (Default)(W)

Description: Exit delay

Name: Room exit delay.

Object Type: Analogue value

Present value: As set, 0 to 90. (W)

Units: Minutes

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Analogue Value instance 40 (Default)(W)

Description: Current fan speed

This is a read out of the actual fan speed. To set the fan speed use Manual fan speed.

Name. Actual fan speed.

Object Type: Analogue value

Present value: As set, 1 to 10. (RO)

Units: None

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Analogue Value instance 41 (Default)(W)

    Description: Deadband

    Name: Deadband.

    Object Type: Analogue value

    Present value: As set, 0.5 to 10. (W)

    Units: Degrees centigrade

    Status flags: In Alarm / Fault / Overridden / Out of Service

    Event State: On Normal / Off Normal

    Out of Service: False / True

Analogue Value instance 42 (Default)(W)

    Description: Manual fan speed

    This sets the manual fan speed. The actual fan speed may differ depending on the thermostat actions, read actual fan speed to see current speed.

    Name. Manual fan speed

    Object Type: Analogue value

    Present value: As set, 0 to 10. (W)

    0 = Auto fan speed

    Units: None

    Status flags: In Alarm / Fault / Overridden / Out of Service

    Event State: On Normal / Off Normal

    Out of Service: False / True

Analogue Value instance 101 (Default)(W)

    Description: Address

    Name. MSTP address.

    Object Type: Analogue value

    Present value: 1 (Default), 0 to 127. (W)

    Status flags: In Alarm / Fault / Overridden / Out of Service

    Event State: On Normal / Off Normal

    Out of Service: False / True

Analogue Value instance 102 (Default)(W)

    Description: Maximum address

    Name. Maximum address.

    Object Type: Analogue value

    Present value: 16 (Default), 1 to 127. (W)

    Status flags: In Alarm / Fault / Overridden / Out of Service

    Event State: On Normal / Off Normal

    Out of Service: False / True

Analogue Value instance 103 (Default)(W)

    Description: Device instance

    Name. Device instance.

    Object Type: Analogue value

    Present value: 898 (Default), 0 to 4194302. (W)

    Status flags: In Alarm / Fault / Overridden / Out of Service

    Event State: On Normal / Off Normal

    Out of Service: False / True

Binary Input object properties

Binary input instance 104 (Default)(W)

    Description: Card input

    Name: Card input.

    Object Type: Binary input

    Present value: As set, 0 / 1.

    Inactive text: Not occupied

    Active text: Occupied

    Status flags: In Alarm / Fault / Overridden / Out of Service

    Event State: On Normal / Off Normal

    Out of Service: False / True

Binary input instance 105 (Default)(W)

    Description: Window input

    Name: Window input.

    Object Type: Binary input

    Present value: As set, 0 / 1.

    Inactive text: Window open

    Active text: Window closed

    Status flags: In Alarm / Fault / Overridden / Out of Service

    Event State: On Normal / Off Normal

    Out of Service: False / True

Binary Value object properties

Binary value instance 144 (Default)(W)

    Description: Enable / disable card input

    Name: Card contact actions.

    Object Type: Binary value

    Present value: As set, 0 or 1. (W)

    Inactive text: Card input disabled

    Active text: Card input enabled

    Status flags: In Alarm / Fault / Overridden / Out of Service

    Event State: On Normal / Off Normal

    Out of Service: False / True

Binary value instance 145 (Default)(W)

    Description: Enable / disable window input

    Name: Window contact actions.

    Object Type: Binary value

    Present value: As set, 0 or 1. (W)

    Inactive text: Window input disabled

    Active text: Window input enabled

    Status flags: In Alarm / Fault / Overridden / Out of Service

    Event State: On Normal / Off Normal

    Out of Service: False / True

Binary value instance 146 (Default)(W)

    Description: Select sensor

    Name: Select sensor.

    Object Type: Binary value

    Present value: As set, 0 or 1. (W)

    Inactive text: Internal sensor

    Active text: External sensor

    Status flags: In Alarm / Fault / Overridden / Out of Service

    Event State: On Normal / Off Normal

    Out of Service: False / True

Binary value instance 147 (Default)(W)

    Description: Enable/ disable setpoint switches

    Name: Setpoint switch action.

    Object Type: Binary value

    Present value: As set, 0 or 1. (W)

    Inactive text: Enabled

    Active text: Disabled

    Status flags: In Alarm / Fault / Overridden / Out of Service

    Event State: On Normal / Off Normal

    Out of Service: False / True

Binary value instance 148 (Default)(W)

    Description: Enable/ disable fanspeed switches

    Name: Fanspeed switch action.

    Object Type: Binary value

    Present value: As set, 0 or 1. (W)

    Inactive text: Enabled

    Active text: Disabled

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Binary value instance 149 (Default)(W)

Description: Enable/ disable on off switch

Name: On off switch action.

Object Type: Binary value

Present value: As set, 0 or 1. (W)

Inactive text: Enabled

Active text: Disabled

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Binary value instance 150 (Default)(W)

Description: Unit on / off

Name: Unit on / off.

Object Type: Binary value

Present value: As set, 0 or 1. (W)

Inactive text: Unit off

Active text: Unit on

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Multistate Value object properties

Multi state value instance 185 (Default)(W)

Description: Operating mode

Name: Operating mode.

Object Type: Multi state value

Number of states: 3

Present value: As set, 1 to 3. (W)

State 1 text: Cool only

State 2 text: Heat only

State 3 text: Heating and cooling

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True

Multi state value instance 197 (Default)(W)

Description: Baud rate

Name: Baud rate.

Object Type: Multi state value

Number of states: 5

Present value: As set, 1 to 5. (W)

State 1 text: 19200

State 2 text: 38400

State 3 text: 57600

State 4 text: 76800

State 5 text: 115200

Status flags: In Alarm / Fault / Overridden / Out of Service

Event State: On Normal / Off Normal

Out of Service: False / True