

Cm15a Protocol

This is the X10Acticehome Pro Protocol as it is understood, and subject to change. This specification was last updated December 4, 2008. This document is © 2008-2009 Eclipse Home Automation.

Endpoints:

0x81 (data from controller - read)
0x02 (data to controller - write)

see /proc/bus/usb/devices

Setting the Clock

Cm15a will send 0xa5's repeatedly if clock needs to be set

Respond with following buffer to set clock

```
size=0;
time(&t);
tm = localtime(&t);

sendbuff[size++] = 0x9b;           //function code
sendbuff[size++] = tm->tm_sec;     //seconds
sendbuff[size++] =                // 0 -199
    tm->tm_min + 60 * (tm->tm_hour & 1);
sendbuff[size++] = tm->tm_hour >> 1; //0-11 (hours/2)
sendbuff[size++] = tm->tm_yday;     //really 9 bits
sendbuff[size] = 1 << tm->tm_wday; //daymask (7 bits)
if(tm->tm_yday & 0x100)           //
{
    sendbuff[size] |= 0x80;
}
size++;
sendbuff[size++] = 0x60;           // house (0:timer purge,
// 1:monitor clear, 3:battery clear
sendbuff[size++] = 0x00;           // Filler
```

Device, House Code, and Function mapping

Device	House Code	Coded Value
1	A	6
2	B	E
3	C	2
4	D	A
5	E	1
6	F	9
7	G	5
8	H	D
9	I	7
10	J	F
11	K	3
12	L	B
13	M	0
14	N	8
15	O	4
16	P	C

Coded Value	Device	House Code
0	13	M
1	5	E
2	3	C
3	11	K
4	15	O
5	7	G
6	1	A
7	9	I
8	14	N
9	6	F
A	4	D
B	12	L
C	16	P
D	8	H
E	2	B
F	10	J

Code	Function
0	All Units Off (ALLUOFF)
1	All Lights On (ALLON)
2	ON
3	OFF
4	DIM
5	BRIGHT
6	All Lights off (ALLLOFF)
7	Extended Code (EXTENDCODE)
8	hail req (HAILREQ) ¹
9	hail ack (HAILACK) ¹
A	Preset Dim Low (PDIML)
B	Preset Dim High (PDIMH)
C	Extended Data (EXTENDDATA) ¹
D	status=on (STATON)
E	status=off (STATOFF)
F	status request (STATREQ)
¹ not seen/used by CM15A	

If the function is a PDIML or PDIMH, the normal “hf” format isn’t used. Instead of a hc, h is the dim level. It’s “bits are flipped. Add 16 to this value to get the level for PDIMH, using the following mapping.

```
int pdimper[32]=
{
    00,03,06,10,13,16,19,23,
    26,29,32,35,39,42,45,48,
    52,55,58,61,65,68,71,74,
    77,81,84,87,90,94,97,100
};
```

(fill in from code – mapping for dim/bri too..)

Controller to PC (PLC Status)

The General stuff all starts with a 5A. The format of these packets is:

5A sz tt xx

Where:

- sz is the number of remaining bytes in the packet
- tt is the packet type
- xx is one or more data bytes (sz-1 bytes)

5A type 00

Supplies list of module addresses

Format:

- 5A 02 00 hd (sz=4 or more)

Where:

- hd is house code and device

Examples:

- 5A 02 00 26 – select module C-1

5A type 01

Module function, or module function and module device.

Format:

- 5A 02 01 hf (size=4)
- 5A 03 01 hf hd (size=5)
- 5A 04 01 hf hd ?? (size=6)

Where:

- hd is house code and device
- hf is house code and function
- ?? might be hd

Examples:

- 5A 02 01 22 –specifies C-ON
- 5A 03 01 2A 92 – specifies PDIM 13% then F-3

Notes:

- The basic format seen most of the type is a type 00 packet, followed by a type 01. For example, a simple sequence to turn on C-1 would be 5A 02 00 26 followed by 5A 02 01 22.

5A type 02

Format:

- 5A 03 02 hd hf (size=5)

Where:

- hd is house code and device

- hf is house code and function

Examples:

- 5A 03 02 FF 93
- 5A 03 02 FB 3B

Notes:

- DIM/BRIGHTS do not contain hd – the device needs to be determined based on the last type 0 packet
- PDIMS don't make sense!

5A type 03

Format:

- 5A 03 03 hf hd (size=5)

Where:

- hd is house code and device
- hf is house code and function
-

5A type 04

Format:

- 5A 04 04 ?? hd hf (size=6)

Where:

- hd is house code and device
- hf is house code and function
- ??

5A type 05

Format:

- 5A 04 05 hf hd HF (size=6)
- 5A 05 05 hf hd HF ?? (size=7)

Where:

- hd is house code and device
- hf is house code and function
- HF is second hose code and function
- ?? format wise appears to be a hd

Examples

- 5A 05 05 8B 36 3D 36 – K1 PDIM and K1 STATON

Notes:

- If function is PDIMH or PDIML, the HF byte seems to always be STATON
- ?? format wise appears to be a hd

5A type 06

Format:

- 5A 04 06 hd hf ?? (size=6)

Where:

- hd is house code and device
- hf is house code and function
- ??

5A type 07 – Not Seen!

5A type 08 – Extended Commands

Format:

- 5a 05 08 ff vv 0h d7 (size=7)

Where:

- ff is the function as defined in <ftp://ftp.x10.com/pub/manuals/xtc798.doc> (Extended X10 code format document on the x10.com site)
- vv is also defined in the same document
- h = hc as defined above
- d = device as defined above. The “7” is the function code for “extended commands”

Examples:

- 5A 05 08 38 80 0d 97 - translates to device F-8 off and a load is connected
- 5A 05 08 38 C0 0B B7 – L-12 XOFF (L-12 is a switch with load)
- 5A 05 08 38 FF 0B B7 – L-12 XOFF (L-12 is a switch with load)

Notes:

- Most of the time, function 38's will be rec'd
- You will see a 5a 05 08 37 10 xx yy (function 37) when a module is first connected, as it's requesting it's setting.

5A type 9

???

5A 05 09 92 F9 F3 F2 (size=7)

5A type A

Format:

- 5A 06 0A xx hf hd HF HD ??
- 5A 05 0A F9 8B 36 3D

Where:

- xx seems to be a hc device that isn't involved!
- hf is house code and function
- hd is house code and device
- HF is second house code and function
- HD is second house code and device

- ?? seems to always be a 55

Examples:

- 5A 06 0A FB 8B 36 3D 36 55 – PDIM K-1 55%, STATON
- 5A 05 0A F9 8B 36 3D

5A type D

Format:

- 5A 05 0D hf hd HF ?? (size=7)

Where:

- hd is house code and device
- hf is house code and function
- HF is second house code and function
- ?? format wise appears to be a hd

Examples:

- 5A 05 0D 9B 96 9D F2 – F-1 PDIMH 81% and STATON

Notes:

- Seem to be like type 5 PDIM
- If function is PDIMH or PDIML, the HF byte seems to always be STATON

Sending Commands to Controller

Standard commands

Basic Format:

04 hd
(delay)
06 hf

Where:

- h=mapped hc
- d=mapped device
- f=mapped function

Examples:

- 04 66 -A1
06 62 - A On
- controller responds with 55

Notes:

- need 750ms delay between commands -less might work too but 300 didn't
- for "all" commands, only the "06" is needed
- if dim/bright, the 06 is three bytes with third byte=percentage*2+bit0 (bit0 uses TBD)
- for pdim, hc is replaced by level as used in the rec'd predims

Extended commands

Format:

- 07 h7 0d vv ff

Where:

- h is the hc as defined above
- d is the device as defined above
- ff and vv are as defined in the manual referenced above

Examples:

- 07 97 03 03 3b - enable device F11 for std and extended status
- 07 97 0d 00 37 - request status from f8
- 07 97 0d 21 31 - dim f8 to 52%

RF (have figured these out but not documented yet!)

Examples:

- 5D 20 F0 0F 08 F7
- 5D 20 F0 0F 28 D7

Macro/Timers

Format:

5B xx yy (TBD)

Where:

- xx yy are ram address in cm15a

Notes:

- C:\Documents and Settings\All Users\Application Data\Active Home Professional has memmap which might provide a clue to these