

Comfort Serial Command Interface

The Universal Communications Module (UCM)

The Universal Communications Module (UCM) is connected to the Comfort internal RS485 bus. It has a device ID 1X hexadecimal, where X = 1 to 8. Hence there may be 8 UCMs on the RS485 bus. There are several types of UCM Interface

1. The UCM/232 has an RS232 interface which may be connected to a PC Serial Port or an RS232 device.
2. The UCM/Ethernet connects to an Ethernet Network using TCP/IP.
3. The UCM/USB has a USB port to be connected to a PC USB port.

The UCM acts as an interpreter or gateway between the RS232 communications and the internal RS485 communication with Comfort. The Comfort RS485 messages are not accessible to 3rd party products.

Each UCM connects Comfort via serial interface to an external device or domain, which may include touchscreens, thermostats, PCs etc..

This document describes the serial communication protocol which communicates with Comfort.

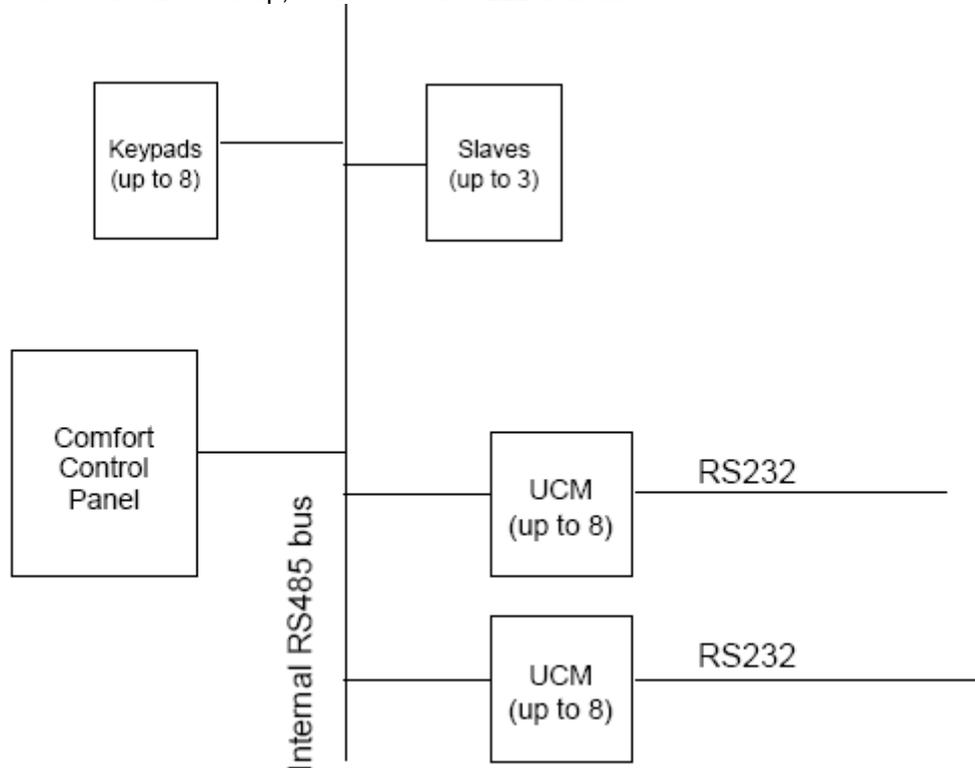
The UCM firmware can also be customized to communicate with other equipment like touch screens, thermostats and other controllers which have a serial interface with their own protocol which has to be adhered to.

The protocol described in this document also applies to the UCM/Ethernet interface or UCM/USB.

This does NOT apply to special UCMs for third party devices e.g. UCM/KNX, UCM/CBUS, UCM/HDL, UCM/GSM, UCM/Zwave, UCM/Smarthouse, UCM/Universal etc.

Many software applications and device interfaces including Wizcomfort, touchscreens, ComfortClient, Crestron, ProntoScript etc. have been developed using the UCM and its protocol

Refer to the UCM Manual for setup, connection and LED indications



Minimum Firmware Versions

In order for the command set to be fully applicable the following firmware versions are required;

Y0 UCM 7.048

Y1 Comfort 7.059

Lower firmware than the abovementioned may implement a limited set of the commands described in this document

Message Format

9600 bits per second, no parity, 1 stop bit, no flow control

Each message is preceded by a STX character which is defined as 03 hexadecimal and terminated by 0D hex (Carriage Return character)

The command consists of 2 characters followed by a variable number of characters

E.g. to switch on Output 21, the following command is used

```
<STX>O!1501<CR>
```

The UCM will reply

```
<STX>OP1501<CR>
```

Getting Started

Any RS232 terminal monitor program can be used to test the communications with the UCM, including Hyperterminal, which is included in Windows

To set up Hyperterminal, Run Hyperterminal, set the Properties to

Connect Using: Direct to COM port (whichever port the UCM is connected to)

Configure:

- Bits per second 9600
- Data Bits 8
- Parity None
- Stop Bits 1
- Flow Control None

Go to the Settings Tab

Set Emulation to "Auto detect"

Press ASCII SETUP

Check the boxes for

ASCII SENDING

Send Line Ends with Line Feeds

Echo Typed characters locally

Line Delay and Character delay = 0

ASCII RECEIVING

APPEND Line Feeds to incoming Line ends

Wrap Lines that exceed terminal width

In the Menu Bar, select View, Font

Select the Terminal Font, regular, font size 9 and press OK

Save the session with a file name e.g. ucm.ht

The STX character for the UCM is <CONTROL> C. (This is hexadecimal 03, which is not the standard character for STX). This appears as a Heart symbol ©

Type <CONTROL>C UP000004, all in capitals which appears as

```
©UP000004
```

Which means Upload 4 bytes from the COPY EEPROM starting from 0000 address.

If the COPY EEPROM is installed you will see a reply something like

```
©DP000004BBAA120184
```

DP means download from the COPY EEPROM, the next byte is 04, which is the no of bytes to follow.

The next 4 bytes are data from the EEPROM address and followed by a checksum byte

Note that in Windows 98, Hyperterminal does not echo the characters that you type, even though you specify echo typed characters

Guidance

The following functions are the important ones to be implemented by third party application software

Caution

Do NOT continually send query commands to the UCM as this will monopolize traffic on the Comfort Bus. Messages can be sent immediately after the previous one but do not keep sending continuous messages without any delay to the UCM. It is highly recommended to wait for a reply before sending the next command.

Logging in

Before the UCM can accept and commands or send status, it needs a valid login. This is done using the LI login command LIxxxxxx where xxxxxx is a 4 to 6 digit numerical code. If the code is valid, UCM reports LU_{nn} where nn is a user number 1 to 16 or 254 for Engineer. If invalid LU00 is seen. E.g. LU09 means Login by User 9.

Once the UCM is logged in commands are accepted and events are reported by the UCM

Keypad Emulation

The KD command sends keypad keys to Comfort just like a keypad. A keypad page which maps to the 16 keypad keys will allow the keypad to be emulated. This can be used to arm and disarm the system or enter the Voice menu or go to any keypad shortcut, or intercom with other keypads. Refer to the KD commands list.

Monitoring of Inputs

Input activity can be monitored by the IP reports. Comfort reports the change in state of inputs as they occur - it is not necessary to query the input states although this can also be done. A visual interface can show the state of doors, windows, PIRs etc. and the changes in real time. Inputs can be assigned to non-alarm devices like air-conditioner and lighting and electrical points using current sensors, or switches. The I? Command can be used to query the current input state and Z? Command to get the state of all inputs. In a visual display system, each element should be assignable to an input number. Not all inputs need to be monitored, so the displayed inputs should be selectable

The application should use the Z? Query to obtain the state of all inputs at the start. After that the IP report will show the changes in the zone states

Arming the Security System

Where remote access by Internet is possible, it is important to distinguish between arming the system Locally or Remotely for Arming to Away (or Vacation Mode) because of the different behaviors for local and remote arming.

The commands M!sscccc or m!sscccc can be used to arm the security system where ss is the new security mode and ccccc is the 4 to 6 digit user code. M! Is for Remote Arming whereas m! Is used for local arming. For local arming to Away Mode (m!) , the user is required to Exit (keypad announces "Please Exit") while for remote arming (M!), no exit is required for Away Mode arming. For Remote arming ("M!"), any open zones are NOT automatically bypassed i.e. force arming. The keypad # key can be pressed to auto-arm the system (using "KD0C" command) . The M! Remote arming (as opposed to auto-arming) function is implemented in Comfort firmware 5.226 onwards.

Another way of arming the system is to use the Keypad key commands KD for Arming to Away ("KD0D" , Night ("KD0E0 or Day ("KD0F") Modes. The KD commands will arm Locally.

Arming to Night Mode and Day Mode is the same for Remote and Local arming as no exit is required in either case.

The user codes ccccc can be 4 to 6 digits. The code must be a user code that has been programmed into Comfort.

For local arming, the Keypad keys KD or the m! Command can be used.

If the m! Command is used then the user code must be entered by the user using a code entry window. The initial log in code can also be stored by the application (but this may be less secure if using a mobile device)

If the KD arm buttons are used for local arming, the user code is not required. If the user code is required then the m! Command must be used and the user code obtained from the user as mentioned above.

Arming/Armed Status

When the system is being armed to any mode, the following messages apply.

The ER message shows if the system is ready to arm or if there are any zones open which must be closed before the system can be armed

UCM ERNN

NN = 00 means system can be armed, no open zones. This corresponds with the voice Message "Please Exit" if arming to Local Away Mode.

NN > 00 shows the zones which are active and must be closed in order to arm the system The Message ERNN is sent every second showing NN = open zone. Open zones are sequentially sent in the messages until all zones are closed

When the system is armed at the end of the exit delay, the MD report is received telling which mode the system is armed to and the user number who disarmed or armed
The query command M? returns the armed state M?00uu for Off, M?01uu for away, M?02uu for Night, M?03uu for Day, M?04uu for Vacation where uu is the user number in hex format.
To force arm the system when zones are open, use the # key on the keypad ("KD0C") This automatically bypasses all open zones so the system can be armed.

EX02ss means that the exit delay has been started (ss is the time given to leave the home or get out of the protected area). This can be used to show a countdown timer. Note that the EX02ss message is only given once and not repeated every second.

Entry Alert

When the system is armed and the Entry Door is opened, an ENTRY ALERT is started, indicated by the EX01ss message. The entry delay in seconds (ss) is given in the message 0 to 255 seconds. The EX01ss message may be used to start a countdown timer on the application. The Alarm state will be Alert (2) during the entry alert. If the delay expires without a user code being entered on the keypad or elsewhere in the system, an Intruder Alarm is generated. If a valid user code is entered, the system disarms to Security Off.

Monitoring of Alarms

Use the a? Command to query the Current alarm status when first connected. This establishes the initial state of the alarms.

When an alarm occurs, the AM and AL reports will be seen. The AM message reports the System Alarm number, and the alarm parameter which may be an input or user number or RS485 ID depending on the system alarm. The AM System Alarm, or nondetector alarm is a fixed alarm which in turn triggers the AL Alarm Type message.

The AR is the Restore System alarm message which is seen when a Trouble alarm is restored. The AR message is seen when a Trouble alarm is restored. Hence AM and AR should be used for reporting and restoring Trouble alarms.

Use the AM and AL alarm type message to decipher the alarm information.

When first logged in, the a? Query should give the current alarm conditions so it can be shown

```
PC      a?  
UCM    a?AASSXXYYBBzzRRTTGG
```

The a? Report will be sent by UCM whenever a trouble event is restored and the alarm has been acknowledged and when the system is disarmed

Eg

```
< AM0401           Phone trouble occurs Nondetector alarm report
```

```
< AL030101680301  Phone trouble alarm type report
```

```
Phone Trouble is restored
```

```
< AR0410           Phone trouble nondetector alarm restored
```

```
Sign in on keypad to acknowledge, and there are no active trouble alarms
```

```
< AL00000000
```

```
< a?0000000000000000100    alarms state update. This shows that there is no current alarm.
```

The AL report for Intruder alarm is

```
UCM: AL0103036501zz
```

Where zz is the zone number in hexadecimal

S?

The current alarm state can be found by sending the S? query

```
PC:    S?
```

```
UCM:   S?nn
```

```
nn     00 = Idle, 1 = Trouble, 2 = Alert, 3 = Alarm
```

The alarm state is also returned in the a? Command

Monitoring Zone/Input States

Use the Z? Command to request all zone status when initially connected to Comfort. After that the IP reports for each zone will update any changes to Comfort inputs/zones

The IP message shows the ON/Off state of the zone and the BP command shows the bypassed/unbypassed state.

The UCM reports zone state using the IP command

```
UCM    IPzzSS
```

Where zz is the zone number and SS is the state (0 = off, 1 = ON, 2 = short circuit, 3 = open circuit).

State 2 and 3 indicate Zone Trouble

The UCM reports zone bypassed using the BY command

UCM BYzzss

Where zz is the zone number and ss is the state (0 = off, 1 = ON)

Bypassed On state has priority over zone state. If bypass state is off then the zone state will be shown

The initial state of the zones should be obtained using the Z? Query

Reporting of Events

Comfort reports events as they occur through the UCM interface whether it is RS232, Ethernet or USB (this is NOT referring to the Event Log, but general events in Comfort). This includes changes in the state of inputs, outputs, counters, alarm states, security modes, IR codes, and X10 signals received etc.

Input changes are reported by the IP message which gives the Input number and the new state. The I? Query returns the current input status

Output changes are reported by the OP message. This gives the output number and its new state.

The O? Query returns the state of the output

Counter changes are reported by the CT report which gives the counter number and its value (1 byte).

EIB and CBUS status changes are related to Counters or Sensors. The EIB or CBUS Group addresses correspond to Counter numbers, and the absolute or dimming level corresponds to the 8 bit value in the counter with 0 being off and 255 being ON. Hence monitoring the counters gives the state of the monitored lights

Event Log

The E? Query causes the Event Log to be reported. The Event Log can be interpreted and displayed on screen and can be saved to file and recalled. An option can be to automatically upload the event log and save it at regular intervals, say every day or every week

Date and Time Synchronization

The DT command allows the Comfort date and time to be set. When Comfort, date and time are changed, the DT command is also sent by Comfort. This can be used to synchronise Comfort time with your external system time

Control Menu

The CM command can be used to activate the commands programmed on the Home Control menu.

PC: CMggccaa

UCM: OK

This is a command to activate the Home Control Menu.

Parameter gg is the Control Group 00 to 05 (for Ultra), cc is the Control Menu 0 to 09, aa is the control action key 00 to 09

The command CM activates the home control menu according to the group, control key and action key.

PC: CMggcc

UCM: cmggccss

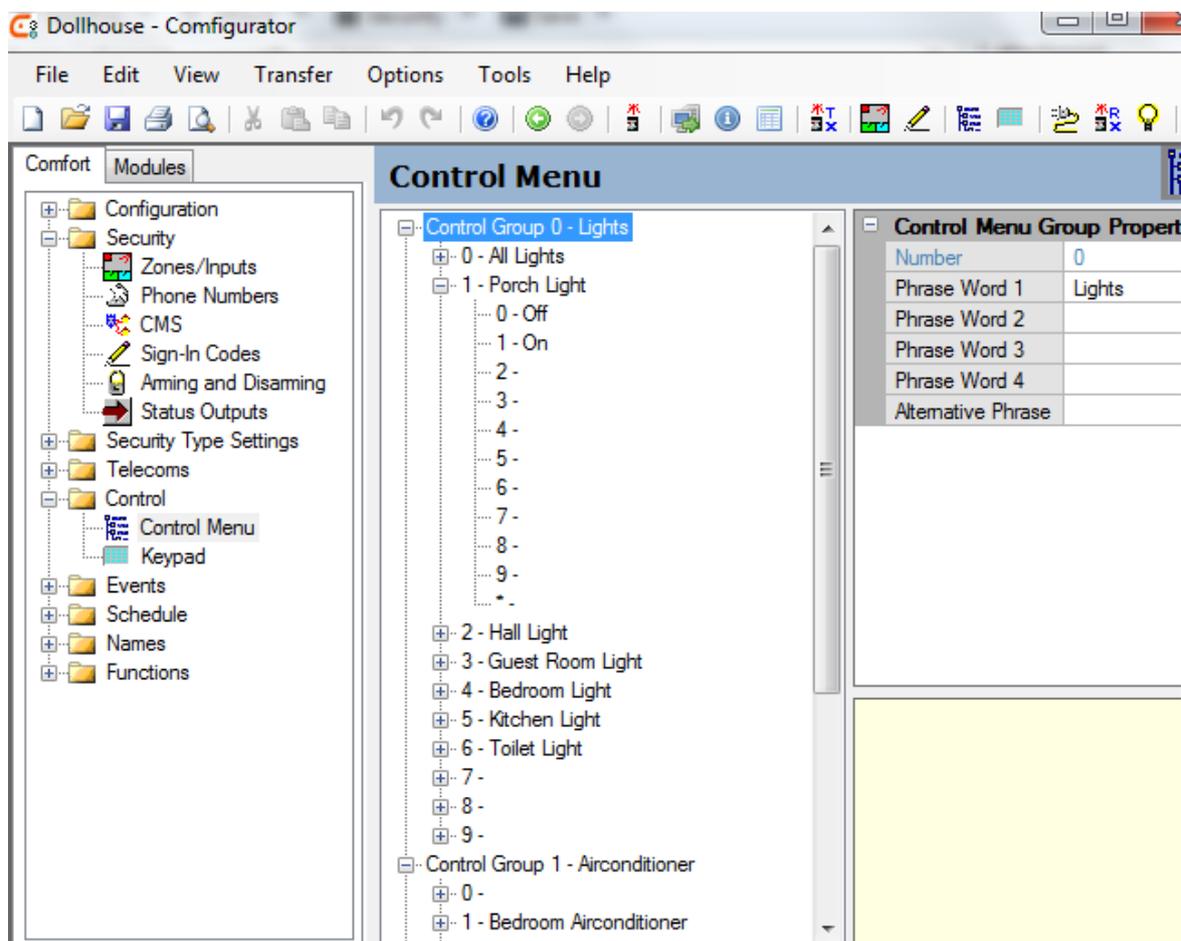
The command CMggcc without any parameters is a query for the status of the Control Key

The UCM replies with ss the status of the Control key which could be 00 to FF

Use this command to poll for the state of the control items. Only poll for the control status when it is needed to show this information, e.g. on the control page of a mobile app.

The CM command does not depend on the Response number in Configurator which may change due to Response programming. The control menu programming can be found in the cclx file which is in xml format. A sample control menu is shown below.

Group 0 is Lights, Group 1 is Airconditioner Command CM000101 means Lights > Porch Light > On



Time Programs

Time Programs can be changed by the user using the TP command. This command allows the Time program to be enabled or disabled, to change the Activation Time, to set days of week and to select Response. The more important functions for the user are to enable and disable, set days of week and change Time of day. Changing the Response may not be needed

Reminders

Similar to Time Programs, the Reminders can be changed using the RM command. The user can enable or disable a reminder, change Time, change Days of week. The reminder message is recorded on the keypad

Do Action and Do Response Command

The DA command sends action codes to Comfort. Action codes are commands used in Responses to perform customized behavior. DA allows actions to be executed by Comfort without being part of a Response. This can be used when there is no direct UCM command to perform a required function. Do Response R! Can be used to activate programmed Responses in Comfort This is useful when the Response number is known as a complex series of actions can be executed in this way. However the Response number may be changed by Configurator so it is best if the cclx file should be read before doing this to obtain the Response number.

- (0 The Responses that are controlled in this way should be "Fixed" using Configurator so that subsequent programming will not alter the Response number

Linkage to Configurator

Comfort is programmed using the Configurator 3 software. The configuration for a system is saved in a .cclx file which is in XML format. Application software can read a specified cclx file to make use of the programmed configuration to automatically configure Time Programs, Reminders, Responses, Zones, etc.. The cclx file format is described in the Configurator software.

Recommendations for Comfort User Interface

The Comfort iPhone app has been developed using this Comfort serial protocol. Refer to this application as an example of how a Comfort User interface on a mobile or tablet device can work

Communications

Allow user to select connection method; USB (serial number) , RS232 (COM port), Ethernet (IP address/Port)

Select Remote or Local connection

Login

Show keyboard to enter user code

Login button to initiate login using Licccccc command

Listen for LUnn where nn>0 or give wrong code if LU00 is received

After login send the a? Message to get the current alarm conditions. The a? Query can be sent periodically to update the alarm conditions

Keypad

Show Comfort Keypad 16 keys 0 to 9, Away, Night, day, F keys to simulate Comfort keypad

Pressing keys should send KD commands

This page can also show alarm conditions

Alarm state = 0 = idle, 1 = Trouble, 2 = Alert, 3 = Alert

The current alarm type should be shown

Trouble Alarms

It is recommended to show the Trouble alarms

This can be obtained from the AL message or the a? Query reply

Phone Trouble

Low Battery, ID

AC Failure, ID

Communications Failure, ID

Zone Trouble, Zone number

Zones Status

The state of all zones 1 to 64 (96) can be shown on different pages. Each zone shall have states Off, On, Trouble, or Bypassed and each state shall be shown as a distinctive icon. The IP message shows the ON/Off state of the zone and the BY message shows the bypassed/unbypassed state.

The UCM reports zone state using the IP command

UCM IPzzSS

Where zz is the zone number and SS is the state (0 = off, 1 = ON, 2 = short circuit, 3 = open circuit.

State 2 and 3 indicate Zone Trouble

The UCM reports zone bypassed using the BP command

UCM BYzzss

Where zz is the zone number and ss is the state (0 = off, 1 = ON)

Bypassed On state has priority over zone state. If bypass state is off then the zone state will be shown

The initial state of the zones should be obtained using the Z? Query. However, this shows the on/off status and not the Bypass state of any zone.

The zone names should be obtained from parsing of the CCLX file used to program the system.

Home Control

Use the CM command to allow control of the Home control menu and to display the status of the Control key.

The Control menu names should be obtained from parsing of the CCLX file used to program the system.

LEDS

1. D1 - OK (Green) - indicates UCM is operating.
2. D2 - BUSY1 (Red) - message from Interface to UCM
3. D3 - BUSY2 (Red) - message from UCM to Interface
4. D4 - ERROR (Red) - Error result from operation
5. D10 - RS485 RX (Green) - Comfort polls UCM
6. D9 - RS485 TX (Red) - UCM replies to Comfort

7. D11 - RS232 RX (Green) - Interface to Comfort
8. D12 - RS232 TX (Red) - Comfort to Interface

Command List

The Commands supported are:

From PC to UCM (Commands or Queries)

a? - Get Current Alarm Type, state and Trouble
A? - Get Analog Input Value
AC - Alarm Message for CMS
B? - Get zone bypass status for zone
b? - Get bypass status for all zones
cc - Special echo command
C! - Set Counter
C? - Read Counter
CI - Learn IR Mode
CM - Control Menu Command/Request
CS - RS485 Communications Status Report
DA - Do actions
DC - Send Command to DSP
DL - Download to Comfort
DP - Download to UCM EEPROM
DR - Reset DSP command
DT - Set Date and Time
E? - Event Log Request
EL - EOL Value
f? - Request All flags status
F! - Set Flag
F? - Request Flag
H! - HIO command
H? - HIO query
H# - HIO Report
I? - Input Status Request
ID - Set ID
IR - IR activation Command/Report
IL - IR Code download
! - Virtual Input Command
K? - Query Keypad LED status
KA - reserved
KB - reserved
KD - Keypad digit
KE - Erase KT03/UCM memory
KR - Read from KT03 memory command
KS - Query KT03 memory size
KW - Write to KT03 memory
LB - Low Battery/AC report
LI - Log In
LT - Log in Configurator
M! - Security Mode Change command - Autoarm
m! - Security Mode Change - Local Arm
M? - Security Mode status Request
MO - Monitor Mode
O! - Output Activation
O? - Output status request
OV - Virtual output command (NOT USED)
P! - Pulse Output
PR - Partition Set (UCM)
PS - Engineer Code Enable/disable
q! - Internal Memory Write (Test Mode)
q? - Internal Memory Read (Test Mode)
r? - sequential register query
RD - Read Data from Device

RM - Set Reminder Message
 RS - Reset Command
 R! - Do Response
 S? - get alarm state
 s! - Set Sensor Register
 s? - get sensor register
 SI - Siren Command
 SM - Speaker/Microphone command from Comfort
 SN - Serial Number
 SP - Speaker broadcast control
 SR - Status Reports ON/OFF
 ST - State Request
 TC - Test Comms Command
 TE - Test EEPROM
 TM - Terminal Mode
 tm - Test status Report
 tM - Test Mode
 TP - Set Time Program
 TV - Test Vocabulary
 u? - Get ID Type/version/revision
 U? - Get UCM type/version/revision
 UB - Upgrade Firmware
 UD - Download Firmware to UCM
 UL - Upload from Comfort
 UP - Upload from UCM COPY EEPROM
 V? - get version and FS
 v? - Get Vocabulary version
 VP - Download new Vocabulary
 VL - Download Vocabulary Line
 VS - Download Sentence Table
 WD - Write Data to ID
 w? - query ZL vocab checksums
 X! - X10 Command
 y? - Request all RIO Output states
 Y? - request all output states
 z? - request all RIO input states
 Z? - request all zones

From UCM to PC (reports or replies)

a? - Current Alarm Information Reply
 AL - Alarm Type Report
 AM - System (Non-detector) Alarm Report
 AR - System (Non-detector) Alarm Restored Report
 B? - Reply to Bypass zone query
 BP - Beep on Speaker Report
 BY - Bypass Zone Report
 cc - echo reply to cc command
 C? - Counter value Reply to C? Request
 CI - Learned IR code data Reply
 CT - Counter Changed Report
 cm - Control Menu reply and report
 DB - Doorbell pressed Report
 D* - Status reply from DSP to DC command
 DT - Date and time Report
 DI - Dial up Report (Not used)
 EV - Event Log report
 ER - Arm Ready/Not Ready Report
 EX - Entry/Exit Delay Started Report
 f? - reply to query all flags
 F? - Reply to Flag Request
 FL - Flag Change Report
 id - reply to ID command
 IP - Input Activation report

IR - IR Activation Report
 IX - IR Code received Report
 KL - Keypad LEDS status Report
 Kr- Read from KT03 memory Reply
 Kw - Write to KT03 acknowledge Reply
 LR - Login Report
 LU - User Logged in Report
 NA - Command Not Available (Invalid command or parameter) Reply
 OK - Command Acknowledged Reply
 OP - Output activation report
 OQ - Virtual Output status request (NOT USED)
 MD - Mode Change report
 PT - Pulse activation report
 RA - Return value from DA (Do Action)
 RP - Phone Ring Report
 SS - Status report from external UCM eg Zwave, velbus
 SN - Serial Number Reply
 sr – Sensor Register report
 TT - Monitor external bus communication for special UCMs eg KNX, CBUS, etc
 XF - X10 House/Function code Report
 XR - X10 Received Report (replaced by XF and XU)
 XT - X10 Transmitted report
 XU - X10 house/Unit code received Report
 WE – acknowledge reply from WD command
 w? - repl yo w? query
 Y? - Reply to Y? request all output status
 Z? - Reply to Report all zones
 ?? - Checksum error or error in message format

(1 Note: The commands listed have a variable number of parameters described in each command. In certain commands, additional parameters in be added in future to pass more information while still maintaining backward compatibility. Hence, third party applications working with the protocol should not allocate a fixed number of characters to the message. Additional parameters in the message received should be allowed and ignored.

Command Details

a? - Current Alarm Information Request/Reply

PC a?
 UCM a?AASS[XXYYBBzzRRTTGG]

AA is the current Alarm Type 01 to 1FH

SS is alarm state 0-3

XX is Trouble bits

Bit 0 = AC Failure

Bit 1 = Low Battery

Bit 2 = Zone Trouble

Bit 3 = RS485 Comms Fail

Bit 4 = Tamper

Bit 5 = Phone Trouble

Bit 6 = GSM trouble

Bit 7 = Unused

YY is for Spare Trouble Bits, 0 if unused

BB = Low Battery ID = 0 for Comfort or none

zz = Zone Trouble number, =0 if none

RR = RS485 Trouble ID, = 0 if none

TT = Tamper ID = 0 if none

GG = GSM ID =0 if no trouble

See AL for list of Default Alarm Types. Alarm Types can be re-assigned by programming, whereas System Alarms are fixed. Alarm type 0 (No Alarm) may be reported when the system is disarmed and there is no alarm.

The a? Report is sent automatically when a trouble condition is restored and the condition has been acknowledged by signing in and also when the system has been disarmed.

23/2/10 added parameters SS and AA

4/4/10 extended to Trouble Ids **The data within the [] brackets is given for UCM 5.209 and Comfort 5.190 firmware**

A? - Get analog Input Value

PC A?nn

UCM A?nnvv

nn is the input number 1 to 40H (only input nos 1-8, 17-24, 33-40, 49-56 are analog inputs, not inputs on the LEM)

vv is the value of the analog input 0-255 (8 bits)

AI - Virtual Analog Input Activation

(PC): IVnnvv

UCM: A?nnvv

This command sets virtual input analog values. This differs from the II Command in that II Sets states only, while IV sets analog values. Virtual inputs are not valid for zones on the control panel (i.e. zones 1 to 16). They exist only on slave addresses which are not physically connected, i.e. there should be no physical slave corresponding to the virtual input. e.g. for Virtual input 33, slave #1 (id 21H) should not exist.

If the new analog value causes a change in state (depending on the zone type), Comfort may report a zone state change IPnss

vv is the analog input value 00H to FFH. For security inputs, analog values 00 to 3FH = Short Circuit, 40H to 7FH = closed, 80H to BFH = open, C0H to FFH = Open circuit

AC - Alarm Codes for CMS

The UCM shall send a message starting with "AC" to the "" port which is received by ETH/CMS. This is Contact ID format

ACccccREEEGGZZZ

The data is 0 to 9 and A to F ie ASCII Hex code

cccc = 4 digit Customer code A to F is also acceptable

R = 1 Event, 3 = Restore

EEE= event code

GG = Partition

ZZZ = zone code

eg

AC123F113002101

123F = customer code

1 = Event

130 = Event code

02 = Partition

101 = Zone numbr

The AC command will be sent without log in

Defined 25/9/16

AL - Alarm Type Report

UCM: ALNNssSSDDTTPPEEFF

NN is the new Alarm type 01-1F

ss is the alarm state (00 = idle, 01 = Trouble, 02 = Alert, 03 = Alarm) of the priority alarm which is the higher of the existing alarm and the new alarm. If the new alarm has lower alarm state than the existing alarm, then the current alarm state remains at the previous higher value.

SS is the alarm state of the new alarm which may be lower alarm state (priority) than the existing alarm.

DD is the sentence number of the alarm type (for LCD display) and can be ignored otherwise.

TT is the type of alarm parameter to be reported. 0 = none, 1 = zone, 2 = user, 3 = id

PP is the alarm parameter for id, user no or zone depending on the alarm parameter type

Note AL is sent to RS232 even if not logged in because of email function

Not Implemented: EE is the Phone Index bits each bit applies to phone indexes 1 to 8 for this alarm type, bit 0 = phone 1, bit 7 = phone 8, FF is reserved for Phone indexes 9 to 16 for the future.

E.g. AL010303650105 means
NN (Alarm Type) = 1 Intruder Alarm
ss (Priority Alarm) State 3
SS Alarm state of new alarm =3 hence this becomes the new alarm state.
DD (alarm sentence) = 101 (65H) "Intruder Alarm"
TT (alarm parameter type) = 01, zone
PP (alarm parameter) = 05, i.e. zone 5 because alarm parameter type is 1 for zone

For ID alarms, the parameters are

01H = Controller
11H to 18H = ucm IDs
21H to 23H = Slave IDs
31H to 33H = Door station IDs
41H to 4FH = Keypad IDs
51H to 5FH = SCS/RIO Ids

The Alarm Types are only reported if they are actually assigned to System alarms in Configurator.

Note: System Alarms (AM message0 are fixed alarm events which can be activated in Comfort.

System Alarms can be assigned to Alarm Types which determine the behaviour and characteristics of the alarm, e.g. dial-out, alarm state, response etc..

The list of default alarm types are shown below. Please note that the Alarm Types may be reassigned by Configurator programming.

Default Alarm Types

00 = No Alarm
01 = Intruder Alarm
02 = Duress
03 = Phone Line Trouble
04 = Arm Fail
05 = Zone Trouble
06 = Zone Alert
07 = Low Battery
08 = Power Fail
09 = Panic
10 = Entry Alert
11 = Tamper
12 = Fire
13 = Gas
14 = Family Care (spare)
15 = Perimeter Alert
16 = Bypass Zone
17 - System Disarmed
18 = CMS Test
19 = System Armed
20 = Alarm Abort
21 = Entry Warning
22 = Siren Trouble
23 = Unused
24 = RS485 Comms Fail
25 = Doorbell (Away)
26 = Homesafe (Spare)
27 = Dial Test
28 = SMS Trouble
29 = New Message
30 = Engineer Sign in
31 = Sign-in Tamper

Prior to UCM 5.03 alarm state was not reported

Comfort 4.215 onwards, only the 1st 2 parameters nns are reported, and the alarm state reported is the alarm state of the prevailing priority alarm (ss) and not necessarily that of the new alarm (SS)

AM - System Alarm Report

UCM: AMnpp

nn is the System Alarm, pp is the alarm parameter, which could be zone, user or id depending on the nature of the System alarm. In the list of System alarms, below, the 2nd parameter listed shows pp which will be reported.

Note that the AM parameters are fixed assignments for the alarms shown while the AL alarm types are the alarm types which are activated by either AM alarms or by direct zone activation.. The AL alarm types are programmable by the user for different behaviour e.g. siren type, alarm state, dialouts, strobe etc.

~~Note that if an intruder, fire or other zone activated alarm is caused by a zone activation, the AM alarm will NOT be reported, as AM is for NON-DETECTOR alarms only (i.e. not activated by zones).~~

Note 12 July 2014 Comfort Firmware 7.049 sends AM01 and AR01 when Zone Trouble is activated or restored so all trouble alarms can be reported by AM/AR. Also Intruder, Panic, Fire and other zone-triggered alarms will be preceded by the AM report.

Nondetector alarms and relevant zone, user or ID

- 0 = Intruder, zone
- 1 = Zone Trouble, zone
- 2 = Low Battery, NA
- 3 = Power Fail, id
- 4 = Phone Trouble, NA
- 5 = Duress, user
- 6 = Arm Failure, user
- 7 = Not Used
- 8 = Security Off, user
- 9 = System Armed, user
- 10 = Tamper, id
- 11 = Not Used
- 12 = Entry Warning, zone
- 13 = Alarm Abort (disarmed in < 90 seconds), NA
- 14 = Siren Tamper, NA
- 15 = Bypass, zone
- 16 = Not Used
- 17 = Dial Test, user
- 18 = Not Used
- 19 = Entry Alert, zone
- 20 = Fire (Response-activated), NA
- 21 = Panic (Response-activated), NA
- 22 = GSM (SMS) Trouble, id
- 23 = New Message, user
- 24 = Doorbell pressed, id
- 25 = Communications Failure (RS485), id
- 26 = Signin Tamper, id

Zone-related alarms will report the zone number. User-related alarms will report the user number.

Note that the numbers reported shall be in hexadecimal notation,

RS485 ID alarms will report the id number. System alarms are always reported unlike Alarm Types.

Both System alarms and Alarm types are usually reported for an alarm activation. System alarms (or non detector alarms) are programmed to Alarm Types in CS-Xpress. For example, when phone line is cut, a System Alarm 4 is reported, this is programmed to Alarm Type 3 by default in Comfigurator, so the UCM will report

AM0401 (Phone Trouble System Alarm, parameter=1)

AL0301 (Alarm Type 3 activated, Alarm state 1)

Note: System Alarms are fixed alarm events which can be activated in Comfort. System Alarms can be assigned to Alarm Types which determine the behaviour and characteristics of the alarm, e.g. dial-out, alarm state, response etc..

AR - Alarm Restored

UCM: ARnnvv

nn is the System Alarm which is restored.

Parameter vv is the parameter for the system alarm, e.g. zone. The parameter reported may not be meaningful if there is none.

AR is seen when a Trouble alarm is restored, eg Phone Trouble, Zone Trouble, power failure, tamper, low battery, RS485 Communications failure. Intruder and other alarms are not restored except by disarming the system

From UCM to PC

Not all alarms have restore reports (e.g. Intruder, Fire). In general, alarms with state 3 do not report an alarm restore as the system needs to be disarmed to cancel the alarm. Only alarms with alarm state 1 are restored when the trouble condition is cleared.

Note that the numbers reported shall be in hexadecimal notation,

BP - Beep on speaker

UCM: BPnn

This causes the keypad speaker to beep according to the parameter

nn is a parameter

00 = Beep Off

01 = Beep On

02 = Beep slow

03 = Beep fast

04 = Long Beep (error)

From UCM 5.10

BP04 is received if an invalid attempt was made to sign in from the keypad, or if a key digit was sent while some other keypad is active

B? - Zone Bypass Query

BY - Zone Bypass Report

PC: DA4Bzz - DO Action 75 command to bypass zone zz

Or

PC: DA4Czz - DO Action 76 command to unbyypass zone zz

UCM: BYzznn - Reports bypass of zone zz

UCM: AM0F01

UCM: AL100100C50101

UCM: RANN - RA is return value from DA (not important in this case)

The return byte nn is 00 for not bypassed and >00 for bypassed

When Zone is bypassed by other means, the UCM reports

UCM: BYzzss

The Bypass status can be queried;

PC: B?zz

UCM B?zzss

Where zz = zone no 1 to 40H

Where ss is the zone bypass status 00 for Off (Unbypassed), 01 for ON (Bypassed)

Note: Zone Bypass can be accomplished by DA4BZZ where 4B = Bypass action 75, ZZ = zone no in hex. Zone OMIT is accomplished by DA6CZZ where 6C = Omit action 108, ZZ = zone no. One Unbypass is DA4CZZ where ZZ is zone

10/6/09 corrected description of Bypass state 0 or 1, not zone flags

UCM 5.76, Comfort 4.229

b? - query all zones bypass state

PC:: b?00

UCM: b?00aabbccddeeffgghhiijkkll

Where aabbcc are zone states 8 zones in 1 byte

Eg

UCM: b?0001020400000000000000000000

Means zones 1, 10, 19 are bypassed

4/12/14 added b?00

cc - Echo command

PC: ccxxxxxxxxx..

UCM ccxxxxxxxxx..

Xxxxx.. Is any string of hexadecimal byte

UCM will echo the cc command from PC, subject to maximum of 64 bytes

C! - Set Counter

PC: C!CCVVVV or C!CCxx

UCM: CTCCVVVV

VVVV is 2 bytes signed value

OR xx is 1 byte unsigned value

Sets Counter number in CC to the signed 16 bit value or unsigned 8 bit value if 2 digits are sent. UCM replies with changed counter report

UCM: CTCCVVVV

Only 1 counter can be changed in each command

UCM replies with counter changed report

11/7/16 all counter values are 16 bits signed numbers

C? - Get Counter

PC: C?xx

UCM: C?xxvvvv

Get the value vvvv in counter xx where all values in hex

Eg

C?10 query Counter 16

C?105000 reply counter 16 value = 80 decimal

11/7/16 all counter values are 16 bits signed numbers

CI - Learn IR Mode

PC: CI mode#

UCM: OK

UCM: CI <3*period>, mark, space, mark, space, mark,...,mark, CR

For period, each unit is 813.8 microseconds, For mark and space, each unit is 13.02 microseconds. If the duration is longer than 1 byte, it will be denoted by '00' followed by 2 bytes.

Mode 01 is for Capture. Other modes are not defined.

To abort the operation, just send CI without a modes.

After capturing the IR successfully, UCM will return the data in the following format.

STX, 'C', 'I', 3 x period, mark, space, mark,, mark, CR

For period, each unit is 813.8 nanoseconds while 13.02 microseconds is for the mark and space. If the duration is longer than one byte, '00' will denote that the following data is 2 bytes information. The MSB will send first, followed by the LSB.

CM - Control Menu Command

PC: CMggccaa

UCM: OK

This is a command to activate the Home Control Menu or to query the status

Parameter gg is the Control Group 00 to 05, cc is the Control Menu 0 to 09, aa is the control action key 00 to 09

The command CM activates the home control menu according to the group, control key and action key.

PC: CMggcc

UCM: cmggccssSS

The command CMggcc without any parameters is a query for the status of the Control Key

The UCM replies with ss the status of the Control key which could be 00 to FF 00 means Off and FF means ON for status that has on and off states. 01 to FE is for levels between off and on

However if the control menu has no status ss is not sent

E.g.
PC: CM020400
Activate Control Group 02, control Key 04, 00 for Off

PC CM0204 queries the state of Control Group 02, control Key 04
UCM cm020400 replies that the status is off
If the control key has no status feedback defined then the reply is
UCM cm0204 without any status

Note that the query for CM should not be immediately sent after a CM command as it may depend on an external device to send its status e.g. Zone, counter. Only when the control menu status is internal can the status be immediate

19/8/17

The status reply for sensor has 2 bytes ssSS least significant followed by most significant byte in 2s complement format

eg

CM0501 query group 5, key 1

cm05018000 Sensor value = $0x0080 = 128$
cm500100010 Sensor value = $0x1000 = 4096$
cm5001F0FF Sensor value = $-0xFFF0 = -10$
cm5001FFFF Sensor value = -1

The sensor value in the range -65536 to +65535 should be displayed

Note that cm status report can be received without a query

This should be backward compatible with old Comfort/UCM firmware. If the most significant byte is not received, the app should assume the most significant byte to be 00. There should be no error

From UCM 7.XXX, the UCM will automatically send the cm status reports to its external port without the need to query Cmggcc provided the Cmggcc command is sent initially. This means that the application need not keep polling each control menu for status

14/11/10 defined
20/3/2011 implemented

CS - RS485 Communications Status

UCM CSnnss

Parameter nn = ID

Parameter ss = 00 for Communications Restored, 01 = No reply from ID, 02 = Possible Duplicate ID

This command is sent by the UCM when an ID has a communications problem due to no reply, duplicate ID or is restored

Defined 20 Dec 2012

Cs - RS485 Communications Status for this ID

UCM CsSS

Parameter SS = 00 for Communications good, 01 = Not Polled or Duplicate ID, 02 = No bus communications

This command is sent by the UCM when an ID has a communications problem due to no reply, duplicate ID or is restored

Defined 2 April 2017

CT - Counter Report

UCM: CTNNvvvv

NN is counter number 0 to 0FFH, vvvv is counter value 0 to 0FFFFH,

The UCM reports CT when it receives a counter change message from another device (e.g CBUS UCM). The report is ALSO given when the counter is changed by Responses
From UCM 5.12

11/7/16 all counter values are 16 bits signed numbers

DA - Do Actions

PC: DA action1 action2 ... action##

Action1 to action## are 2 ASCII character action codes 00 to FF in hexadecimal format. These actions will be executed by Comfort just like an internal Response. A maximum of 24 bytes of action codes can be sent. If less than ## bytes are sent, there is no need for a terminator like actions entered by keypad. The UCM will return a value from the actions executed using the RA command, e.g.

UCM: RA NN

NN is a hexadecimal byte returned by the last action.

Note: The returned value may not necessarily be meaningful depending on the action performed.

e.g.:

PC DA5123(5123 = action 81, 35- get counter 35 value)

UCM RA5F (return 5F value from the action, i.e. counter 35 value)

Refer to Programming with Action Codes for a complete list and description of Action Codes in Comfort.

Max number of actions was changed from 24 to 36 in Comfort 5.122 to support UCM/HDL. Increased to 48 for Comfort 5.173

10 Dec 2011 Comfort 6.009 increased no of action bytes from 48 to 64

DB - Doorbell

UCM DBxx

doorbell has been pressed where xx = id of the doorstation

E.g. DB31 means Doorbell button of Door station1 has been pressed

When ID = FF it means that doorbell has ended or was answered (Implemented UCM 5.183)

DC - Send Commands to DSP (UCM 5.78, CM 4.232) (Test Mode)

D* - Reply Status from DSP (Test Mode)

PC: DCXXXX

UCM: D*YYYY

XXXX is a 16 bit command for the DSP (high byte, low byte)

YYYY is a 16 bit status returned by the DSP (high byte, low byte)

the meaning of the DR word is

Bits 0-3 Reserved

Bit 4: CPT (Call Progress Tone Detected)

Bit 5: CAS Tone detected (Not used)

Bit 6: Voice Freq detected

Bit 7 END of Play OR Memory Full

Bit 8: Busy signal detected

Bit 9: Dial Tone detected

Bit 10: Silence ended Recording

Bit 11: DTMF(end of tone)

Bit 12 DTMF start Detected

BIT 13: Voice prompt ready

Bit 14 Voice answered call

This command works in Test Mode only. Complete status is returned in response to the DC command.

However, only the DTMF Ended status is available as a report in test mode when the event occurs

DI - Dial up for Internet Connection (Not in use)

UCM DInn

nn = 01 for dial up, 00 for Hang up

This command tells a PC acting as a gateway to the Internet to dial up to connect to an ISP using the PCs programmed Internet connection settings, or to hang up (disconnect).

If the PC is on Comfort's TEL OUT, Comfort is able to instruct the UCM to give the DI01 message when the line is free.

If the DI command is issued by the PC, it is echoed back to the Rs232 port

PC: DInn

UCM: DInn

If the UCM receives DI00 command from the PC, it will also logout the UCM and send LU00. And disabled status reporting (same as SR00)

DL - Download to Comfort

PC: DLaaaann (byte1) (byte2) (byte3) (bytenn),(checksum)

UCM: OK

aaaa is address in EEPROM in hexadecimal notation

nn is the number of bytes to be sent on this line, not including checksum and headers. **This is determined by the reply to V?**

(byte1) to (bytenn) are data bytes, in hexadecimal notation, number according to numbytes

(checksum) is a checksum consisting of the twos complement of the message from address byte until the last byte, so that the sum of the bytes received including the checksum is 0

If UCM does not receive the correct checksum, it will reply with a ?? Message. If the checksum is correct, it will reply with OK

The number of bytes which can be transmitted in each message, not including checksum is determined by the BB parameter in te V? Command reply

From 4.114, DL disables Status Reporting on RS232 for the UCM equivalent to SR00 (See section on Event Reporting)

From 4.166 DL disables Event Reporting on CM to prevent events from filling up the RS485 transmit buffer. SR01 cannot restore event reporting on CM, this requires an LI

DP - Download to UCM Copy - NOT IMPLEMENTED

PC: DPAAAAAnn (byte1) (byte2) (byte3) (bytenn),(checksum)

UCM: OK

Download to UCM COPY EEPROM

Format similar to DL, but the number of characters in the line is limited to 200

The number of bytes which can be transmitted in each message, not including checksum is determined by the BB parameter in te V? Command reply

8 Oct 2006 - changed command format - was 4 byte address and 32 bytes transfer

8 Jan 2008 – address limited to 4 characters (2 bytes)

DR - Reset DSP command

PC: DRnn

nn = 00 for Reset DSP, 01 for Initialise DSP

UCM: D*XXXX

XXXX is the status of the reply from the DSP after reset (Garbage collection)

For initialise DSP the status reply is not meaningful

DT - Set Date and Date

PC: DTYYYYMMDDHHMMSS

UCM DTYYYYMMDDHHMMSS[XX]

PC DTYYYYMMDDHHMMSSXX

E.g.

DT19990329102358

Sets the date to 1999 March 29, 10:23:58

UCM: OK

or

UCM: DT19990329102358 (UCM replies with current Date and time parameters)

YYYY is the year e.g. 1999

MM is the month 01-24

DD is the day 01-31

HH is the hour in 24 hour format 00-23

MM is the Minute 00-59

SS is the second 00-59

For Date and Time report from Comfort, XX is optional parameter for Daylight Saving Time, 0 for Off, 1 for ON

XX= 0 means the Time does not include DST, so Comfort must do the adjustment if needed. If XX is not present, that means there is no adjustment needed.

Comfort server Manager 2.06 will get time without DST adjustment from the SNTP server. This requires .NET Framework 3.5 SP1.

ETH03 firmware 2.13 will send the extra 00 byte to UCM and Comfort.

CSM 2.06 and ETH03 2.13 need to be installed together with ULT 7.065 If CSM 2.06 + ETH03 2.12 the DT will not have the extra 00 and the time will be -1 hour during DST. If CSM 2.06 +

ETH03 2.13 the DT will have extra 00 time and time will be +1 hour during DST except if ULT < 7.065 is used. Hence dont upgrade ULT 7.065 until last week October. Requires Comfort 7.065 which wil work with old and new DT command.

If the value of any of YYYY, MM, DD, HH, MM, SS is FF, that value will be ignored by Comfort, so this command can be used to change the time without the date by setting the date fields to FF. This applies only to Comfort version 4.175 and above.

Hence an application should be prepared to accept either OK or a DT string from the UCM depending on the Comfort firmware

In this command, the data sent should be in decimal

The data sent does not have to be complete, the most significant data may be sent, leaving out the less significant data, e.g. 19990803 sets the year, month, and day only

Comfort sets the correct day of week based on the new date. Comfort will not set invalid values of date and time, but may not give any indication that the value was not accepted, so the application program should check for validity of data.

A DT report is sent by the UCM when the date and time has been changed in Comfort (from UCM 5.43)

DT without any parameters will cause the UCM to send the current date and time in a DT report

PC: DT

UCM DTYYYYMMDDHHMMSS[XX]

Note: Dt is an alternate command to set date used by Eth03 only

E? - Event Log request

PC: E?00 or E?0000

UCM: EVnn (byte1) (byte2) (byte3) (byte4) (byte5) (byte6)

PC: E?

UCM: EVnn (byte1) (byte2) (byte3) (byte4) (byte5) (byte6)

PC: E?

...

PC: E?

UCM: EVFF (no more events)

12 June 2011 E? extensions

E?NNNN format is implemented where NNNN is an event index

NNNN = 0000 means 1st event. 00 is also accepted as 1st event for compatibility

NNNN = FFFF means last event

NNNN = FFFE means previous event

NNNN = FFFD means previous day last event

NNNN = FFFC means next day 1st event

NNNN is the event index . The event number is NOT a chronological number from first to last. It is the number of the event log slot in memory. When the event log is full and new events are added, the oldest event is overwritten by the new one. The position of the oldest event thus rotates through the event log memory

When the number of events exceeds 255, the number will roll over to 00, i.e. only the least significant byte is sent. This is to maintain compatibility with older software and hardware where only 255 max events are available. Comfort Ultra II has 600 events while OPT has 255 events
Hence the software application should not give any meaning to the event number in the message

The Event Log is a first-in first-out buffer.As new events are added, the oldest event gets lost.

The event log is sent 1 event at a time. The application starts by sending E?00 to request for the first event (only the first event is valid to start the event log). When UCM EV message is received, the application should send an E? Message which shall fetch the next event in the event log. If there are no more events, the UCM will reply with FF in the event number field

Byte 1 is the month MM 01 to 12 in decimal

Byte 2 is the day DD 01 to 31 (decimal)

Byte 3 is the hours HH in 24 hr format 00 to 23 (decimal)

Byte 4 is the minutes MM 00 to 59 (decimal)

Byte 5 is the event code according to the following list

Byte 6 is the event parameter according to the following list

Event Code (byte 5)		Event parameter (byte 6)
#	Description	
0	Zone Activation	Zone No (1-64)
1	Mode Change	Off = 0, Away=2, Night=2, Day=3, Vacation=4
2	Dial Out Index	Phone Index 1 to 8
3	Sign In	User 1-16, 254 = Engineer
4	Alarm	Alarm Type 1 to 31 (See Alarm Type definitions)
5	Alarm Restore	Alarm Type 1 to 31 (See Alarm Type definitions)
6	Force Arm	User Number 1-16
7	CMS Kissoff	Phone Index 1 - 8
8	Zone Restore	Zone No (1-96)
9	Reset	01 = Controller (** was NA)
10	Zone Trouble	Zone No 1-96 (see zone table)
11	Bypass Zone	Zone No 1-96 (see zone table)
12	Unbypass Zone	Zone No 1-96 (see zone table)
13	Remote Sign-in	User 1 to 16, 254 = Engineer, 240=KP, 242= System Response, 242 = Acknowledge, 244 = CMS Kissoff, 245 = SMS Acknowledge
14	Date Time Change	ID, 01 = Controller (** was NA)
15	RS485 Comms Fail	ID, 01 = Controller (** was NA)
16	Tamper	ID, 01 = Controller (** was NA)
17	RS485 Comms Restore	ID
18	RS485 Tamper Restore	ID
19	Engineer Reset	01 Controller (*was NA)
20	Low Battery	ID, 01 = Controller
21	Low Battery Restore	ID, 01 = Controller
22	Line Cut	01 = Controller (** was NA)
23	Line Cut Restore	01 = Controller (** was NA)
24	AC Fail	01 = Controller (** was NA)
25	AC Fail Restore	01 = Controller (** was NA)
26	DSP /Voice Failure	01 = Controller(** was NA)
27	Change User Code	User No 1-16, 254= engineer
28	Delete User Code	User No 1-16
29	GSM Network Trouble	UCM ID
30	GSM Network Restore	UCM ID
31	DSP /Voice Restored	NA
32	Message Deleted *	Greeting message = 00, Names = 11H to 18H, Incoming messages = 20H to 28H, Alarm Messages recorded = 30H.
33	SMS Dial Failure	UCM ID

There will be conflicts if the voice event log is being accessed at the same time as the E? Command

* Event 32 Messages Deleted reports messages deleted according to the message tag parameter.

The least significant 4 bits is the user/mailbox number 1 to 8 or 0 for all users

** Engineer user number is changed from 18 to 254 in ULT 6.009

*** parameter NA changed to 01 Controller from 7.081

EL - EOL Shunts Value

The EL reply shows if Comfort, Slave, and each LEM has shunts (1) or is without shunts (0)

>EL

<ELAABBCCDDEEFF

Where AABBC.. etc are the values of the EOL setting for Comfort + LEM or slave and its LEM

AA = EOL Shunts for Comfort + LEM

BB = EOL Shunts for SEM #1 + LEM

CC = EOL Shunts for SEM #2 + LEM

DD = EOL Shunts for SEM #3 + LEM

EE = EOL Shunts for SEM #4 + LEM

FF = EOL Shunts for SEM #5 + LEM

Each byte of the EOL parameter consist of the EOL shunts status of the Controller + its LEM or Slave and its LEM

Least significant nibble is for Controller or Slave
Most significant Nibble is for LEM
Nibble value = 0 for "No EOL shunts" (Comfort 3), 1 for "with EOL shunts" (Comfort 2)

Eg
EL101100011001 means
Comfort: No shunts (0)
LEM: Has shunts (1)
SEM #1: Has shunts (1)
LEM: Has shunts (1)
SEM #2: No shunts (0)
LEM: No shunts (0)
SEM #3: Has shunts (1)
LEM: No shunts (0)
SEM #4: No shunts (0)
LEM: Has shunts (1)
SEM #5: Has shunts (1)
LEM: No shunts (0)

If SEM is not in the system the value for its shunts byte shall be FF

A reply NA means Comfort firmware does not recognise the command and all parameters should be 11 (with shunts)

Configurator sends the EL query after log in.

Defined 9/5/16

ER - Arm Ready / Not Ready

UCM ERNN

NN = 00 means system can be armed, no open zones

NN > 00 shows the zones which are active and must be closed in order to arm the system

The ER message is sent by the UCM when the system is being armed to any mode. The message is sent approximately every second. Corresponding to the announcements "please exit" or the zone announcements until the system has been armed.

EX message will follow ER00 when no zones are open preventing arming

UCM5.78, Comfort 4.232

EX - Entry/Exit Delay Started

UCM: EXNNss

NN = 01 for entry delay, 02 for exit delay

ss = delay in seconds.

The UCM sends this report when an entry or exit delay is started and there are no open zones

EX message is not sent when zones are open. ER is sent instead. Only after ER00 is sent, will EX message appear

Available UCM 5.59

f? - Query all flags

PC f?00

UCM f?00aabbccddeeffgghhijj.....AABBCCDDEEFF 32 bytes 254 flags

f?00 Requests for the state of 254 flags starting from Flag 1

The number 00 is arbitrary and is ignored

The reply gives the status of 254 flags on a bit by bit basis

aa = Flags 1 to 8 with bit 0 = Flag 1

bb = Flags 9 to 16 with bit 0 = Flag 9

cc = Flags 17 to 24 with bit 0 = Flag 17

dd = Flags 25 to 32 with bit 0 = Flag 25

ee = Flags 33 to 40 with bit 0 = Flag 33

ff = Flags 41 to 48 with bit 0 = Flag 41

ff = Flags 49 to 56 with bit 0 = Flag 49

gg = Flags 57 to 64 with bit 0 = Flag 57
hh = Flags 65 to 82 with bit 0 = Flag 65

...

FF = Flags 249 to 256 with bit 0 = Flag 249
Flags 255 and 256 are not valid

Defined 25 June 2010 Implemented UCM 5.216

28/11/13 UCM 7.035 report all flags 1 to 254 in one message. Was report 64 flags only

F? - Flag Status Request/Reply

PC F?NN

UCM F?NNSS

FF is Flag number 01 to 40H

SS is state 0,1

If the flag number is invalid the command will return a value of 0

E.g. F?FF reply will be F?FF00

Defined 2 April 2009 Implemented UCM 5.182

F! - Flag Set Command

PC FINNSS

UCM FLNNss

FF is Flag number 01 to 40H

SS is state 0,1, 2 = check, 3 = toggle in command

Small ss - 0 or 1 is the state of the flag in reply

Defined 2 April 2009 Implemented UCM 5.182

FL - Flag Status Report

UCM FLNNSS

FF is Flag number 01 to 40H

SS is state 0,1

UCM reports a change in Flag status

Defined 2 April 2009 - implemented UCM 5.192 and Comfort 5.177

H! - HIO Command

HIDDRCCVV

DD is HIO ID 81H to 8FH

RR = Room ID 01 to 0F or FF unassigned

CC = HIO command

VV = value 0 for off, 1 for on (or other values if required)

HIO command cc	query	report	control
00 = Occupancy status	yes	Yes	No
01 = ELV switch	No	No	No
02 = MUR	Yes	Yes	Yes
03 = DND	Yes	Yes	Yes
04 = Doorbell	No	No	No
5 = Keycard	yes	Yes	No
6 = Primary Relay	Yes	No	Yes
7 = Secondary Relay	Yes	No	Yes
8 = Master Scene	No	No	Yes
9 = Door sensor	Yes	No	No
10 = Room PIR Sensor	Yes	No	No
11 = Toilet PIR Sensor	Yes	No	No
12 = Scene 1	No	No	Yes
13 = Scene 2	No	No	Yes
14 = Scene 3	No	No	Yes
15 = Scene 4	No	No	Yes
16 = Blinds	No	No	No
17 = Dimmer 1	Yes	No	Yes
18 = Dimmer 2	Yes	No	Yes
19 = Connecting Door	Yes	No	No
20 = Window	Yes	No	No

HIO command cc	query	report	control

129 = Welcome Scene*	No	No	Yes
130 = Courtesy Scene	No	No	Yes
131 =			

* Welcome scene turn on means Occupancy Status is also turned on. Welcome Scene off means cancel occupancy and turn off relays and lighting just like removing keycards

For HIO that share the same Room ID, the MUR and DND will follow that of the other room. If there are 2 Keycards, then removing or inserting one keycard will switch on/ off the aircon/powerpoint and Lighting of both HIOs. The occupancy timer will work on both doors and PIR.

If a command with the same Room ID is received by the HIO then the commands for Keycard. Door sensor, MUR, DND, PIR sensors should be acted on as if it happened in this HIO. However, if there is a connecting door channel type in the room, then the HIO should check that the connecting door is Open before acting on the room id commands. If the connecting door input is closed, then the Room Id commands should be ignored.

H? - HIO Query/Reply

H?DDRRCC
H?DDRRCCVV

H# - HIO Report

H#DDRRCCVV

I? - Input Status Report/Request

PC: I?nn
UCM: I?nnss

nn is the input number 01 to 40H

ss is the status 00 = Off, 01 = ON, 02 = S/C, 03 = O/C

Note that the actual state of the Input is reported for Bypassed zones.

!I - Virtual Input activation command

PC !Innss
UCM IPnss

nn is the input number 11H to 40H

ss is the state 0 = Off, 1 = ON, 2 = S/C, 3 = O/C

Virtual inputs are inputs from external devices which are reported to the CM. This causes the Comfort input to act as if it had been triggered by an actual input. Virtual Inputs are triggered from external UCMs like KNX and Universal UCM when a device is assigned to Virtual Input. This causes Comfigurator to set the zone as a Virtual Input, which disables the physical input. Hence the !I Command is ignored unless Comfigurator sets a virtual zone

Note: If the input number is not programmed, i.e. it is Zone Type 0, the virtual input is ignored by Comfort.

Requires Comfort Firmware 5.195

ID / id - Set ID

PC IDxxyy
UCM idxxyy

Where xx = current ID, yy = new id.

If xx = FF it means the default id FF is being assigned to a new ID in ID setting mode

The ID is not changed until the ID is reset

Defined 4/8/12 for Version 7 Modules

IL - IR Code download (UCM5.76, O4.229)

The IL command transfers an IR code to CM in response to a IRNNRR command which tells CM to transmit an IR code to Output NN.

PC: IRNNFF where NN = output, FF means download code
UCM ILFF<irptr=0> ;UCM requests IR code from offset = 0
PC: ILFF<irptr=0><data1><data2>....<data12> ;PC sends IR code from offset=0

```

UCM  ILFF<irptr> ;UCM requests data from irptr = offset into IR code
PC:  ILFF<irptr><data1><data2>....<data12> ;PC sends IR code according to requested offset
..
UCM  ILFF<irptr> ;UCM requests data from irptr = offset into IR code
PC:  ILFFFF ;PC sends FF followed by FF to end the code

```

The PC must send data from the requested IRPTR offset at each message from the UCM
There is a timeout of 5 seconds for each line to be received, if expired, the command is aborted, and the IR queue is freed

When download of code completed, CM sends IR code to specified output and UCM reports
UCM IRNNFF
If code was unsuccessful or error occurs in the download the UCM reports
UCM IRNN00

E.g.. The following commands show a typical transaction. The IR data are just for illustration and are not valid IR codes

```

PC  IR12FF ;send IR code to Output 18 on Comfort
UCM ILFF00 ;UCM requests IR code starting from offset 00
PC  ILFF00112233445566778899AABBCC send example data 12 bytes from offset 00
UCM ILFF0C ;UCM requests IR code starting from offset 12
PC  ILFF0C112233445566778899AABBCC send example data 12 bytes from offset 12
UCM ILFF18 ;UCM requests IR code starting from offset 24
PC  ILFF18112233445566778899AABBCC send example data 12 bytes from offset 24
UCM ILFF24 ;UCM requests IR code starting from offset 36
PC  ILFF181122334455 send example data 5 bytes from offset 36, end of IR
UCM ILFF29 ;UCM requests IR code starting from offset 41
PC:  ILFFFF ;PC sends FF followed by FF to terminate the code
UCM  IR12FF ;IR Code has been sent to Output 18

```

UCM IR1200 ;means that the IR code was unsuccessful

Requires UCM 5.75 (Beta), Outside/Action 4.228 (beta)

IP - Input activation report

UCM: IPZZss
ZZ is the input number 01 to 60H (Zone 96)
ss is the state 0 = Off, 1 = ON, 2 = S/C, 3 = O/C
UCM sends the message when an input is activated or restored

IR - IR Activation Command/Report

PC: IRNNRR
UCM: OK
UCM: IRNNRR
NN is the output no 01 to 60H
RR is the IR number 01 to the maximum allowed 250 or FA
If NN is FF, this is a command to request the IR code using the IL command. When the IR command is downloaded completely, it is sent to the specified output. (NOT IMPLEMENTED)
If the UCM reports IR number 00, it means that the IR code is undefined or has an error.

le
UCM: IRNN00
UCM sends the IR report when an IR code is activated by master or slave. If the IR is not activated, there is no report

If the IR Code is FF, it means that the CM will ask for an IR code to be downloaded from the UCM, e.g.

```

PC:  IRNNFF
UCM:  OK
UCM:  ILFFNNaabbcc..

```

Where NN is the pointer to the IR code, aa,bb,cc are the bytes of the IR Code
See IL format

IX - IR Code Received

UCM: IXnn

IX reports an IR code received by Comfort through a keypad or IR receiver. NN is the code number 00 to 7F

K? - Keypad LEDS Status Query

PC: K?

UCM: KLAABBCCDD

AA is the RED Armed/Alarm LED

BB is the GREEN Home/Trouble LED

CC is the AC Power/Batt LED

DD is the Message LED

The possible values of AA, BB, CC, DD are

00 = Off

01 = ON

02 = Blinking

This message queries the state of the Keypad leds. The KL message gives the reply
Implemented 25/3/2005

KA, KB - Reserved

Do not use.

KD - Keypad Key Entry

PC: KDKKppxx

UCM OK

This enters a digit just like a keypad. The command allows the UCM to be a keypad to sign in and short cut function keys. The UCM can be used to sign in to Comfort, but note that there is a time limit of 5 seconds for each key when entering the code and # key.

Parameter KK key values: 00 to 6FH

Optional Parameters

Parameter pp = optional for the special function key or FF means ignore. This may be used to select a parameter depending on the function eg for reminder messages 40H to 4FH it selects 1 for record, 2 for play, 3 for erase message. If pp and xx are not used it can be left out. However if the ID parameter is included, then the pp parameter must be included as well with the value FF means ignore the parameter

Parameter xx = ID of keypad optional. The ID is optional if present it changes the ID so that the key is activated by the other ID

Eg

KD4101 means Reminder Message #2 Record on the currently used keypad which sent the command

KD430241 means Reminder Messge #4 Play on KP ID1

Note: the ENTER Key (1AH) should be used instead of the # key to terminate the user code entry. Code + # key will cause Comfort to go to Voice Menu but ENTER key will enter the code to arm or disarm the system without going into Voice menu

Value	Key	Value	Key
0 - 9	0 - 9	20 - 2F	F 0 to F15
0A	F	30	Record Greeting
0B	*	31	Erase Greeting
0C	# (Use ENTER instead)	32	Hear Greeting
0D	Away (soft)	33	Record User Name
0E	Night (soft)	34	Erase User Name
0F	Day (soft)	35	Hear User Name
10	Panic (hard)	36	Record Alarm Message
11	Fire (hard)	37	Erase alarm Message
12	Away (hard)	38	Hear Alarm Message
13	Night (hard)	39	Add User
14	Day (hard)	3A	Erase User
15	Vac (hard)	3B	Erase All Users
16	Unused	3C	Talk to door station

Value	Key	Value	Key
17	Unused	3D	Security check on keypads *
18	Unused	3EH	Dial Test on Keypad
19	Unused	40 to 4F	Reminder Message 1 to 16 *
1A	Enter	50 to 5F	Unused
1B	End	60	Play New Message
1C - 1F	Unused	61	Play Saved Message
		62	Erase Saved Messages

* Reminder Message - append parameters 1 for Record, 2 for Play, 3 for Erase (Comfort Firmware 7.047)

* 3D Security check on keypads, 3EH dial test on keypad Comfort firmware 7.047

*60H to 62H firmware 7.048

Values 0A to 2F Requires UCM5.08, Outside 4.130

Values 30H to 62H requires Comfort 5.196

Away hard key 12H /* Local AWAY Mode HARD key */
Night hard key 13H /* Night Mode HARD key */
Day hard key 14H /* Day Mode HARD key */
Vac hard key 15F /* Local Vac Mode HARD key */
Enterkey 1AH /* like # key but will not go into menu, disarm only */
Endkey 1BH /* END key to exit keypad menu */
Function Key 20H to 2FH /* Activate F keys 0 to 15 */

The following extended KD keys are implemented in Comfort firmware 5.196

Record Greeting 30h /* record greeting message */
Erase Greeting 31h /* erase greeting message */
Hear Greeting 32h /* hear greeting message */
Record User Name 33H /* record user name depend on user code */
Erase User Name 34h /* erase user name depend on user code */
Hear User Name 35H /* hear user name */
Record Alarm Message 36H /* record alarm message */
Erase alarm Message 37H /* erase alarm message */
Hear AlarmMessage 38H /* hear alarm message */
Add User 39H /* add user menu */
Erase User 3ah /* erase user menu */
Erase all users 3bH /* erase all mailboxes */
Talk to door station 3CH /* talk to door station */
Security Check on KPs 3DH /* KD3D */
Dial Test on KP id 3EH /* KD3EFF4x where 4x is KP ID */
Reminder Menu 4xh /* KD4xPPNN PP = 1 record, 2 hear 3 erase, NN = KPID */
Reminder Menu 1 40h /* reminder 1 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 2 41h /* reminder 2 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 3 42h /* reminder 3 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 4 43h /* reminder 4 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 5 44h /* reminder 5 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 6 45h /* reminder 6 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 7 46h /* reminder 7 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 8 47h /* reminder 8 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 9 48h /* reminder 9 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 10 49h /* reminder 10 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 11 4Ah /* reminder 11 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 12 4Bh /* reminder 12 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 13 4Ch /* reminder 13 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 14 4Dh /* reminder 14 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 15 4Eh /* reminder 15 menu 1 to record 2 to hear, 3 to erase */
Reminder Menu 16 4Fh /* reminder 16 menu 1 to record 2 to hear, 3 to erase */

Play New message 60H /* Play new messages for logged in user */
Play Saved message 61H /* Play saved messages for Logged in User */
Erase Saved message 62H /* erase saved messages for logged in User */

Example

PC: KD01
UCM OK
PC: KD02
UCM OK
PC KD03
UCM OK
PC KD04
UCM OK
PC KD1A
UCM OK

Signs in with 1234#.

KE - Erase Memory on KT03 or UCM

PC: KEnn This erases the KT03 or UCM at ID=nn
UCM/KT: KEnn01 (success) or KEdd00 if Flash/EEPROM fails to erase
nn is the ID of the KT03 or UCM. Erasing the KT03 or UCM fills the memory to FF except for locations which are used to save the ID and other special information
If nn matches the ID of the KT03 receiving the command, it means that the command is meant for this KT03, if not, it is for another KT03 connected to Comfort bus 21/7/12
This will not erase certain locations on the target which are used to save the ID and other information for firmware > 6.80
Defined 13/12/08
16/12/12 extended to UCMs

Ke - Erase Memory Sector on KT03 or UCM

PC: KennSS This erases the KT03 or UCM at ID=nn for Sector SS only
UCM/KT: KE01 (success) or KE00 if Flash/EEPROM fails to erase
UCM/KT replies NA if the command is not recognised
If nn matches the ID of the KT03 receiving the command, it means that the command is meant for this KT03, if not, it is for another KT03 connected to Comfort bus
nn is the ID of the KT03 or UCM.
ss is the sector number 00 to FF, sector size of KT03 is 64K but UCMs may have different sector size.
Eg
PC Ke420F erase sector 15 of KT03 flash at if 42H
UCM/KT KE4201 erase sector accepted 8/9/15 was Ke420F01
Defined 7/4/15

KL - Keypad LEDS status Report

UCM: KLAABBCCDD
This message controls the state of the keypad LEDS and is sent when there is any change in state or as a reply to the K? query
AA is the RED Armed/Alarm LED
BB is the GREEN Home/Trouble LED
CC is the AC Power/Batt LED
DD is the Message LED
The possible values of AA, BB, CC, DD are
00 = Off
01 = ON
02 = Blinking
The message may not have all its elements, e.g. only the first few LEDS status may be given in which case the remaining LEDS are unchanged
E.g. KL010002
Means Armed LED is ON, Home LED is OFF, AC LED is blinking and MSG led is unchanged
Implemented 25/3/2005

KM/Km - KT03 Write memory Repeated bytes

See KW command
Defined 13/12/08

KR/Kr Read Memory

PC KRddAAAAAAnn

KT KRddAAAAAAnn(byte1) (byte2).....(bytenn)(checksum)

NN is number of bytes, max 240 if by KT03 USB or 64 if by UCM

aabbccdd is reply of data read from device

CC is checksum of numeric bytes after KR. sum of bytes including checksum should be 0

This command is used to read data from the memory of KT03 and is used for KT03 only, not the UCM

30/7/12 - the KW/kw and KR/Kr command can be through the UCM as well as KT03 USB. If by UCM the max bytes shall be limited to 64

If KT03 has a sequence of repeated bytes the reply may be

KT KrddAAAAAAnnbb(checksum)

Bytes nn is no of bytes repeat, bb is the repeated byte

If this reply is received, the number of bytes may not equal the number requested. The software must work out the next address to request

If dd matches the ID of the KT03 receiving the command, it means that the command is meant for this KT03, if not, it is for another KT03 connected to Comfort bus. If the KT03 is connected by Comfort Bus, the max bytes in one line is limited to 64 21/7/12

Defined 13/12/08

KS - KT03 Query Memory size

PC: KSdd This queries the memory in KT03

KT KSddAABBCC

dd is the ID of the KT03. Although the KT03 is connected directly to the PC, this is for verification purposes and for possible future use of KT03 is not directly connected

AABBCC is the size of the KT03 flash memory in bytes

If dd matches the ID of the KT03 receiving the command, it means that the command is meant for this KT03, if not, it is for another KT03 connected to Comfort bus 21/7/12

Added 13/12/08

KW/Kw - KT03 Write memory

PC: KWddAAAAAAnn (byte1) (byte2) (byte3) (bytenn),(checksum)

KT: Kwdd01 (success) or Kwdd00 (if command is rejected)

PC: KWddAAAAAAnn (byte1) (byte2) (byte3) (bytenn),(checksum)

KT: Kwdd01 (success) or Kwdd00 (if command is rejected)

..

AAAAAA is the address of the Flash memory to write. Address bytes from most significant to least

dd is the ID of the KT03 for verification purposes

nn is the number of bytes from 1 to 240 if write to KT03 USB or 64 if write by UCM

(checksum) is a checksum consisting of the twos complement of the message from dd byte until the last byte, so that the sum of the bytes received including the checksum is 0

This command is used for KT03 only, not the UCM.

30/7/12 - the KW/kw and KR/Kr command can be through the UCM as well as KT03 USB. If by UCM the max bytes shall be limited to 64

If KT03 does not receive the correct checksum, it will reply with a ?? Message. If the checksum is correct, it will reply with OK.

If there are repeated bytes to be written, the command can be used

PC KmddAAAAAAnnbb (checksum)

KT Kmdd01, or ?? (checksum failed) Or Kmdd00 (rejected)

Bytes nn is no of bytes repeat, bb is the repeated byte

(checksum) is a checksum consisting of the twos complement of the message from dd byte until the last byte, so that the sum of the bytes received including the checksum is 0

When the write operation has completed, the PC sends the rs reset command

PC rsdd This resets the ID at dd Requires UCM 5.175

KT OK

If dd matches the ID of the KT03 receiving the command, it means that the command is meant for this KT03, if not, it is for another KT03 connected to Comfort bus. If the KT03 is connected by Comfort Bus, the max bytes in one line is limited to 64 21/7/12

Defined 13/12/08

LB - Low Battery/AC Report

This message appears in Test Mode only (tM01)

PC: LBnn

Parameter nn = 00 for Battery OK, 01 for Low Battery, 02 for Flat Battery, 10 for AC OK, 11 for AC Failed.

Implemented 23/4/12

LI - Log In

LU - User Logged In

PC: Lcccccc

UCM: LUuu

cccccc is a 4 to 6 digit user code. This is not converted to hexadecimal notation, e.g. if the user code is 1234, LI1234 is the command to login with code 1234.

The UCM will not respond to any commands on the RS232 port until a "Log in" (LI) command with a valid user code 4 to 6 digits (16 user codes allowed) is received (with the exception of the LI command which is accepted without prior log in).

When the LI command is received, the UCM replies with LU followed by the user number 1 to 16 (10 in hex) or 254 (FE in Hex) for Engineer Code *, or 0 if invalid code. Once the LI command with a valid code is received, the UCM will allow commands.

To end the session, a Log Out command should be sent, i.e. LI command with no code ("LI" by itself)

A valid code contains 4 to 6 digits in decimal. E.g. LI1234 sends a login code of 1234. LI123456 sends a login code of 123456. If there is no login, the UCM replies NA to all commands except LI itself.

LUuu is seen only at the UCM which sent the login command LI and NOT on other UCMs as it is means the UCM is enabled to send commands. See LR report for login on any keypad of UCM or phone

If the eeprom File system on Comfort is incorrect, then any Login is accepted so that a new File system can be downloaded to Comfort

From 4.114, A login on the UCM enables Status reporting on RS232 for the UCM and also Comfort status reporting on RS485 (See section on Event Reporting)

User Number 1 to 16 is for users, Special codes are Keypad = 241, Response = 242, CMS = 244, SMS = 245

* 10 Dec 2011 ULT 6.009 changed engineer user number from 18 to 254

LT - Login Type

PC: LTnn

UCM OK

Code nn is the login type. This is defined as 01 for Configurator. Other values are not defined.

Configurator will send LT01 when it wants to have exclusive use of the UCM/ETH03. This causes ETH03 to disable the additional ports. Configurator sends LT01 when it does Firmware upgrading, Transfer Write to comfort or Voice Upgrade

Defined 2/4/14 implemented UCM 7.046

LT00 enables the 2nd port log in ETH03 2.14 UCM 7.060 28/9/14

LR - Login Report

UCM: LRUudd

uu is the user number 00 to 16 or 254 for engineer *

dd is the ID of the keypad or UCM that has been used to sign-in (including UCM/KNX, UCM/CBUS, UCM/ACCESS or Fingerprint reader), KT01, KT03

dd = 41 to 48H for keypads, 11H to 18H for UCMs, 01 for local phone, 02 for remote phone

This is a report from the UCM that a User has signed in on any keypad or UCM. This message is reported whenever a user signs in on a keypad for any reason e.g. to access the menu, disarm system, hear messages etc.. This command is different from LU which reports only for login on the same UCM. The MD command reports arm and disarm by a user.

Defined 21 June 2009. REMOVED - NOT IMPLEMENTED

* 10 Dec 2011 ULT 6.009 changed engineer user number from 18 to 254

M! - Security Mode Change (Remote)

PC: M!sscccc Command to arm to Security Mode or disarm remotely

UCM: OK

UCM: MDSSUU mode change report

ss is the security mode

00 = Security Off

01 = Away Mode

02 = Night Mode

03 = Day Mode

04 = Vacation Mode

cccc is the user code in decimal which could be 4 to 6 digits. Comfort checks for a valid and authorized user code before executing the command

Operation from Comfort firmware 5.225 . This command does a remote arm or disarm of the security system just like by telephone. It will not automatically bypass open zones. Any open zones will be announced on the keypad and can be bypassed using Force arm by pressing # on the keypad. There is no need to exit the premises by opening/closing the front door.

Obsolete operation - This command autoarms the security system, i.e. open zones are automatically bypassed if Force arm option is on.

E.g.

M!011234

Means set Away Mode, with user code 1234. This code is in decimal

UCM sends the MD message when the mode is changed

M! Is for Remote arming whereas m! Is used for local arming. For local arming to Away Mode, the user is required to Exit (keypad announces "Please Exit") while for remote arm, no exit is required for Away Mode arming. For remote arming ("M!"), any open zones are announced and can be bypassed by force arming via the # key, if Force Arming is allowed in Configurator > Modules and Options

m! - Security Mode Change - Keyarm local

PC: m!sscccc Command to change Security Mode by keyarm, i.e. local arm

UCM: OK

UCM: MDSSUU mode change report

ss is the security mode

00 = Security Off

01 = Away Mode

02 = Night Mode

03 = Day Mode

04 = Vacation Mode

cccc is the user code in decimal. Comfort checks for a valid and authorized user code before implementing the command

The security is armed to the current ucm partition set by PR E.g.

M!011234

Means set Away Mode, with user code 1234. This code is in decimal

UCM sends the MD message when the mode is changed

This is the same as M! except that this command arms the system locally, i.e. not auto-arming. If arming to away mode, the keypad says "please exit" or announces the zone names. If arming to Night or Day, open zones will be announced until the zones are closed.

M! Is for auto- arming whereas m! Is used for local arming. For local arming to Away Mode, the user is required to Exit (keypad announces "Please Exit") while for remote or auto-arm, no exit is required for Away Mode arming. Another difference is that for auto- arming ("M!"), any open zones are automatically bypassed i.e. force arming, if Force Arming is allowed in Configurator > Modules and Options

M? - Security Mode Request

PC: M?

UCM M?SSUU

00 = Security Off

01 = Away Mode

02 = Night Mode

03 = Day Mode

04 = Vacation Mode

UU = User number who caused the change

1-10H = user
0F0H (240) = keypad (user was 90)
0F1H (241) = Response (user was 91)
0F5H (245) = SMS (user was 95)
Implemented M? Reply in UCM5.12, instead of MD.

MD - Security Mode Report

UCM MDSSUU
SS is the security mode
00 = Security Off
01 = Away Mode
02 = Night Mode
03 = Day Mode
04 = Vacation Mode
UU = User number who caused the change
1-10H = user

11H to 18H = UCM ID 1 to 8
0F0H (240) = Keypad
0F1H (241) = Response
0F5H (245) = SMS (armed by SMS)

e.g.
MD0203
means Mode change to Night mode by User 3
MD0318
means Mode change to Day mode by UCM #8
MD01F0
means Mode change to Away mode by Keypad
MD04F1
means Mode change to Vacation mode by Response (probably Time Program)
[Note: Comfort firmware 6.011 onwards changed user numbers for Keypad \(was 90\), Response \(was 91\) and SMS \(was 95\) in order to allow for reporting of arm by UCM IDs](#)

MO - Monitor Mode

PC: MOnn
nn is 0 for off, 1 for ON
In Monitor Mode, all characters on RS485 port are echoed to the RS232 port
Note: MO01 does NOT work for UCM/Ethernet as the monitoring traffic is too high to be handled by the serial to Ethernet convertor

NA - Command Not Available

UCM: NA
Means that the command from PC is not recognised or not implemented or one of the parameters is invalid

OK - Message Acknowledged

UCM: OK
Command has been received correctly and is a valid command. It does not mean that Comfort has carried out the command. "OK" is sent by the UCM in response to a command (e.g. O!nss) as opposed to a request (O?nss)

O! - Output Activation Command

PC: O!nss
UCM: OK
nn is the output number 01- 60H for Comfort outputs, 81H to F8H for RIO Outputs
ss is the output status 00=off, 01=on, 02=change state, 03 = Pulse Output for 1 second, 04 - Flash Output at 1 sec On/Off rate
UCM sends the OP report when Comfort's outputs turn on or off
UCM: OPnss

OP - Output activation Report

UCM: OPnss

Sent by UCM when outputs change

O? - Output status request

PC - O?nn

UCM O?nnss

nn is the output number 01- 40H, 81H to F8H for IRX Outputs

ss is the output status 00=off, 01=on

OV - Virtual output command (Not Used)

UCM OVnnss

nn is the virtual output number 01 to FFH

ss is the state, which can range from 00 to FFH. The interpretation of the virtual output values is application-dependent.

Virtual outputs are different from Comfort's physical outputs. This command is used to activate external devices for binary on/off or set analog values in external devices like thermostats etc... Comfort does not remember the current state or value of virtual outputs. Comfort broadcasts the virtual output command to all UCMs (id 1 to 8) which are connected, so each RS232 interface device should keep track of which virtual outputs which they are connected to.

OQ - Virtual Output status (NOT USED)

UCM OQnn

PC OQnnss

nn is the virtual output number 01 to FFH

ss is the state, which can range from 00 to FFH, user-defined

Virtual outputs are different from Comfort's physical outputs. This command is used by Comfort to interrogate the state of external devices for binary on/off or set analog values in external devices like thermostats etc..

Note: Comfort does not send this command at present.

P! - Pulsed Output Command

PT - Pulsed Output report

PC: P!nnpp

UCM: OK

pp is the pulse width 0 to 0FFH in 50 ms units

nn is the output number 01-40H

If the output is in the Comfort main panel, not slave, the UCM sends the PT Report in the same format when the command is carried out

UCM: PTnnpp

If the output is on a slave, the UCM does not send the PT command, it sends Output reports when the output is turned on and off

THIS REPORT is NOT USED.

PR - Partition Set

PC: PRNN

UCM: PRNN

NN is the partition for the user to be used when arming (0-3) This sets the UCM into the specified partition so that m! And M! Commands can arm the required partition and S? And other security queries can return the value for the partition. If the partition is not defined before the arming commands, then partition 0 is selected, or if the user is authorised only for 1 partition, then that partition is selected If the user is not authorised to arm or disarm in the partition then the request is rejected in the same way as a wrong sign in code is entered

The partition set in this command is active until another partition is set.

PR without any parameters returns the current partition

E.g.

PC PR

UCM PRNN

If NN = FF it means that there is no partitions defined in this system

Defined 19/4/2009

PS - Engineer Code Enable/Disable Report

UCM: PS01 : Engineer Code has been enabled

UCM: PS00 : Engineer Code has been disabled

q! - Write Internal Memory

PC: q!ALALAMAMAHAHDD

UCM q?ALALAMAMAHAHDD

Write data DD to Internal Memory AAAAAA. The address is least significant byte followed by most significant bytes. This command is only applicable in Test mode. THIS IS FOR CYTECH TESTING PURPOSES ONLY. CAN CAUSE SYSTEM TO CRASH- 23 Dec /05

q? - Read Internal Memory

PC: q?CCBBAA

UCM q?CCBBAADD

Read Internal Memory AABBC hex. The address is least significant byte followed by most significant bytes. This command is only applicable in Test mode. 23 Dec 2005

r? - Sequential Register query

PC r?TTXXnn

UCM r?TTXXnnaaaabbbbccccddddeeeeffff....

Where TT is register Type 0 for counter, 1 for sensor

xx is starting register r no, nn is no of registers max 16, aaaabbbbccccdeed.. Are nn register values each 16 bits signed hexadecimal least significant byte before most significant byte

Eg

PC r?000003

Query Counter Type starting Counter 0, 3 counters

UCM r?000003000034127856

Counter 0 = 0, counter 1 = 1234H, counter 2 = 5678H etc

PC r?010002

Query Sensor Type starting sensor 0, 2 counters

UCM r?01000209128765

Sensor 0 = 1209H, sensor 1 = 6587H

Requires Comfort 7.062, UCM 7.056

R! - Do Response

PC: R!nn or R!LLHH

UCM: OK

nn is the response number 1 to FF

For 2 byte Responses LLHH is the Response number, least significant byte first followed by most significant byte. 1 byte can be sent if the response is less than 256. Any comfort system PRO or ULTRA from 4.216 will accept 2 byte responses. Any Comfort version can accept 1-byte responses. This command is useful when the Response number is known as a complex series of actions can be executed in this way. However the Response number may be changed by Configurator so it is best if the cclx file should be read before doing this to obtain the Response number

RA - Return value from DA command (Do Actions)

See DA command

RD – Read Data from ID

PC: RDXXAAAANN

UCM RDXXAAAANNaabbcdd...CC

XX is ID of target device

AAAA is address 16 bits of EEPROM

NN is number of bytes, max 64 (was 32). If more than 64 bytes is requested, only 64 is returned

aabbcdd is reply of data read from device. **This is fixed at 64 bytes not depending on V? reply**

CC is checksum of numeric bytes after RD from XX onwards. sum of bytes including checksum should be 0

This command is used to read data from the memory of a device, usually used to get data from the eeprom of an application specific UCM.

It can be addressed to the UCM connected to the PC to read from its own Master EEPROM. A reply of NA means the UCM version is too old to accept this command. Display Message "UCM minimum firmware 5.168, Comfort minimum firmware 5.151 required"

Added 22/9/08

13/7/13 - additional spec

If the device does not have EEPROM, then the reply from UCM will be

UCM RDxxFFFFFFCC (CC is checksum)

RM - Reminder Message (UCM 5.65, O4.209)

PC: RMRREE[DD][HH] [MM] [BB]

UCM: OK

Sets the Reminder message parameters

RR is the Reminder number

ee=0 for on/off value, 0 = off, 1 = on, FF for ignore enable setting

DD for Day of week combination Bit 0 = Monday, Bit 1 = Tuesday,... Bit 6 = Sunday, Bit 7 = Holiday

HH for Hours in BCD notation 00 to 59 e.g. 22 is 10 PM

MM for Minutes in BCD notation 00 to 59 e.g. 45 is 45 minutes

BB for Mailbox 1 to 8 (corresponding to 1 to 8)

Each RM message can set one or more parameters of the reminder message

Query (not implemented)

PC: RMRR

UCM: RMRREE[DD] [HH][MM] [BB]

The UCM will return the current parameters of the Reminder

The parameters in square Brackets [] are optional eg RM01FF is a valid command. If an optional field is present eg HH then the preceding fields are required

RM query is not implemented yet 16/4/13

16/4/09 Implemented in UCM5.182 Not implemented in Comfort yet

RP - Phone Ring

UCM: RP

Indicates phone ring event

RS - Reset Comfort

PC: RSDD

2/4/09 UCM 5.183 and Comfort 5.177 DD is the ID to reset. Resets ID. If DD=00 or missing, this resets Comfort

E.g. RS41 resets KP 1

UCM RS11 means UCM at ID 11 has been reset.

Before 2/4/09 RS resets Comfort regardless of DD

s! - Set Sensor Register

PC s!NNVVVV

UCM srNNVVVV

NN = sensor register number 00 to 1FH

VV VV= value to set to sensor register

The sensor value has been extended to 2 bytes VVVV. The second byte is the most significant byte and is optional so VV 1 byte value is still supported. From UCM and Comfort 7.xxx

This sets the sensor register to the specified value

Extended Sensor Registers (8/4/2012)

PC s!NNVVVV

The UCM reports sr when the sensor is changed

See sr command for the meaning of the parameters

The s! Extended Command is compatible with the old command as a single value byte may be sent instead of the extended command

Extended s! Command implemented in UCM 6.020

Defined 20 Jan 2009 implemented 16 April 2009 UCM 5.182

s? - Get Sensor Register

PC: s?nn

UCM: s?nnvvvv

nn = sensor register number 00 to 1F

vvvv = value of requested sensor register

2 Jan 2007 (5.147)

Extended Sensor Register Report (8/4/2012)

UCM: s?NNVVVV

NN is sensor no 00 to 1FH

See sr command for the meaning of the parameters

Old UCM firmware < UCM 6.025 will reply in the non-extended format

sr - Sensor Register Report

UCM: srnnvvvv

nn = sensor register number 00 to 1FH

vv = value of sensor register

The UCM reports the sensor Register change as it occurs

2 Jan 2007 (5.147)

Extended Sensor Register Report (2 bytes) 8/4/12

UCM: srNNVVVV

NN is sensor no 1 to 20H

2 bytes VVVV are the 2 byte sensor value The bytes are in order from Least significant to Most Significant byte. Ie for sensor value 1234H the report is srNN3412

This maintains compatibility with the old format srNNvv where only 1 byte is seen, if only 1 byte, then the most significant byte is set to 0

2 byte sensor values are in 2s complement format, ie the most significant bit is a sign bit

Eg sr003412 means sensor 00 is 1223H

Eg sr100080 means sensor 16 is 8000H which is -32768

1 byte sensor values are always positive

S? - Get Alarm State

PC: S?

UCM: S?nn

nn 00 = Idle, 1 = Trouble, 2 = Alert, 3 = Alarm

The alarm state is also returned in the a? Command

SI - Siren Command (Test Mode)

UCM: SInn

nn: 00 = Siren Off

01 = Intruder Alarm on KP, DP, BELL, Hilevel

02 = Intruder Alarm on KP, DP, not hilevel, Not Bell

Command to control siren for test purposes

Valid for Test Mode only. Note: When File system error in EEPROM, siren will not time out

20 Feb 2007

SM - Speaker/Microphone command (from Comfort)

UCM: SMmmSSid

This tells the PC to switch on or off its speaker and mic

mm is the microphone command

SS is the speaker command

The mic and speaker commands are as follows:

0 = off, 1 = on, others = ignore

Id is the id of the recipient indicating if it is a broadcast or not (00 for broadcast)

Implemented UCM 5.6X

SN - Serial Number Command

PC: SNxx

UCM: SNxxDDCCBBAA

Where xx = ID of module, 01 = Comfort, 00 = direct connection UCM (this is useful if you dont know the ID of the UCM or KT which the PC is connected to)

AABBCCDD is 4 bytes serial number in hex

Direct connection UCM means the UCM which is directly connected to the PC regardless of ID. The direct connection UCM can also be addressed by its explicit ID

The serial number can be queried by SNxx or SNxxFFFFFFFF or SNxxFF000000

PC to UCM SN13

UCM to PC SN1378563412

The hex serial number in the above example is 12345678H

If the UCM firmware is too old < 7.019 the reply is NA

An empty or **Unassigned** serial number has the value FFFFFFFF

If a module does not support the serial number command due to firmware too old or there is no eeprom in the device the write and read serial number command will return serial number 00000000, eg SNxx00000000. This is reported as “Not Supported by Firmware”

The serial number returned by SN should be converted to decimal

This should result in a 7 digit number

Eg UCM SN1200A92F00

002FA900H is 3123456 in decimal

The digit in 7 position eg 3 should be converted to a letter A to Z, eg 1 = A, 2 = B, 3 = C, 4=D etc, 9 = I, 10 = J, 11 = K etc

Hence the above example becomes “C123456”

It is expected that letters A to Z will be sufficient to cover the serial numbers for the products. If a serial number is returned as outside the range A to Z, it is shown as **Invalid**.

Implemented UCM 7.019, Comfort 7.027 9 April 2013 - refer to serialno doc

SP - SPeaker Broadcast Control

PC: SPnn

UCM OK

nn: 00 for off, 01 for on

This command controls whether the UCM will respond to a broadcast command to turn on its speaker. SP01 will allow the UCM to respond to a broadcast speaker on command from the CM and SP00 will cause the UCM to ignore broadcast speaker on commands. However, the UCM always responds to an individual speaker on command even if SP00 is sent. Speaker off broadcast commands are always accepted. The CM broadcasts speaker on and off commands to the keypads during announcements. This command allows the UCM to ignore or accept these speaker on announcements

This command is for the UCM to mimic a keypad using the KD command. The UCM with speaker and microphone can be used as a keypad or a keypad intercom by sending KD commands. From UCM5.09

SR - Status Reports ON/OFF

PC: SRnn

UCM OK

Nn: 00 for off, 01 for on

SR determines whether the UCM will automatically report events from Comfort without being asked, e.g. Zones, Alarms. If SR is turned off, the UCM will not report these events. From UCM4.104 A login command LU will enable status reporting

SS - Status Report from Module

SSTTCCCC

This status report is from external UCMs eg Zwave, etc to report their status in the UCM configurator. TT is the UCM Type. 6 = cbus1, 9 = KNX, 0A = general, 0D = GSM, 0E = Zwave, 12H = KT03, 13H = Universal, 14H = Velbus, 16H = Cbus2, 17H = EHG, 18H = dupline, 19H = GSM4, 1AH = heatmiser, 1DH = PHC

Extended range of Module Types used for other modules types are numbered >= 80H

IRIO Type = 81H

TSM Type = 82H

CCCC is the status code which is dependent on the UCM.0000 means Normal/No error. Status codes are contained in idstatus.cfg file

ST - State Request

PC: ST

UCM: STppsskkrrdoo

This command returns the states of the tasks (state machines) in Comfort

pp: Phone task

ss Security Task

kk Keypad Task

rr RS485 Task

dd DSP Task

oo Output Task

This information is for debugging purposes only, to be used by Cytech. This may be useful when there is a stuck task which is waiting for input or event, without causing the watchdog to activate.

Applicable from UCM 5.69 and Comfort O4.215

TC – Test Comms Command (Not used)

PC TCxxxx..

This test command transmits the string to Comfort after appending the STX and ID of the UCM It allows the UCM to send any RS485 command to Comfort for testing purposes. This is for internal testing purposes only (14/6/07)

DELETED - NOT USED 28/3/13

TE - Test EEPROM (Test Mode only)

PC TE

UCM TEnn

Nn size in kilobytes/4. E.g. 02 = 24C64 , 08 = 24C256

TM - Terminal Mode

PC TMnn

RS232 characters are sent to RS485

RS485 characters are sent to RS232.

UCM is a 2 way converter between Rs232 and 485

TM01 turns on Terminal Mode

TM00 turns off Terminal Mode

UCM 5.75

tm - Test Status Report

PC tmNN

NN Values

00 = Low Battery Restored (Normal)

01 = Low Battery Detected

02 = Flat Battery Detected

03 = AC Voltage Restored

04 = AC Voltage Detected

05 = speakerphone mode active (17/6/15)

06 = speakerphone mode restored (17/6/15)

This is a report to UCM ID=1 only in test mode (9DH test status command)

tM - Test Mode

PC: tMnn

UCM: OK

This command switches Test Mode ON or OFF and activates Test Mode commands

00 Test Mode OFF

01 Test Mode OFF

DO NOT go into TEST mode without proper instructions as it may cause damage to the hardware if the wrong commands are used

TP - Time Program (UCM 5.65, O4.209)

PC: TPTTee[DD] [HH][MM] [RRRR]

UCM: OK

Sets the Time Program parameters

TT is the TimeProgram Number

ee=for on/off value, 0 = off, 1 = on, FF for ignore enable setting

[ee = 2 to activate the Time Program Response \(defined 20 Sept 2015\)](#)

DD for Day of week combination Bit 0 = Monday, Bit 1 = Tuesday,... Bit 6 = Sunday, Bit 7 = Holiday

HH for Hours in BCD notation 00 to 59 e.g. 22 is 10 PM

MM for Minutes in BCD notation 00 to 59 e.g. 45 is 45 minutes

RR for Response number - can be 1 byte or 2 byte response. If 2 byte responses, least significant byte followed by most significant byte. If response < 256, the most significant byte (0) can be omitted.

Ultra version 4.216 will accept TP with 2 byte responses

Each TP message can set one or more parameters of the Time Program

The parameters in square Brackets [] are optional eg TP01FF is a valid command. If a field is required eg HH, then the preceding fields must be present ie DD

Query

PC: TPTT

UCM OK

UCM: TPTTEE[DD] [HH][MM] [RR]

eg TP10011F13250401

Time program 16, enabled (01), days of week (1F) Monday to Friday on, Saturday, Sunday, Holidays Off, Response 260

Note that Response numbers in the reply will always be 2 bytes

The UCM will return the current parameters of the TP
Implemented TP 16/4/09 Comfort 5.173, UCM 5.182

PC TPTT02 Execute Time program TT

eg TP1202 Execute Ytime program 18 (20/9/15)

TT - Monitor Data

The format depends on the specific UCM Type and is not covered in the general protocol

TV - Test Vocabulary (Special UCM) - NOT IMPLEMENTED

PC: TV

UCM: Tvnn

Nn 00 for Fail, 01 for pass

Requires test mode 25/12/05

u? - Get RS485 ID Device Type/version

PC: u?xx

UCM: u?xxttvrrSS

xx ID of device to be queried.. xx=0 special case

tt: Device SubType depending on Product . (see list below)

vv: Version number

rr: Revision number

SS Polled/not Polled (17/2/13). = 00 if device is Polled, FF if device is not Polled

If UCM returns NA to a u? Query, it means the UCM firmware (<5.171) does not recognise the u? command. If the UCM does **not** reply to the u? Query, it means that UCM does recognise the command but the CM firmware does not recognise the command. ie Comfort firmware < 5.154

If the information returned is u?xx000000 it means that the device queried does not support the u?

Command e.g. ucm firmware < 5.168, SEM firmware < 5.156

If the reply is u?xxFFFFFF it means that the device is not present on the bus

Minimum supporting firmware ULT 5.154, UCM 5.171 SEM 5.156, KP04 1.010, external ucms 5.168

E.g. u?120A05AB means UCM ID 2 is Type 10, version 5.171

Comfort firmware 5.188 and above will discover ids that are not in Modules and Settings, while < 5.188 will only discover ids that are in modules and settings. 5.196 is released firmware

17/2/13 SS is additional byte Polled/Not Polled

Eg u?xxttvrrFF means Device is on the bus but not polled

And u?xxttvrr00 means device is on the bus and polled

Also u?xx00000000 means device does not recognise the u? Query but is polled, and u?xx000000FF

means device does not recognise the u? Query but is not polled

And u?xxFFFFFFF means device is not present

Polled means Number of Ids in Comfort includes the device ID. Not Polled means Number of Ids in Comfort does not include the device ID

PC u?00 causes the UCM to reply all ids automatically as well as the serial numbers -i

Implemented in firmware 7.090

UCM u?FFFFFFFFF this terminates the u? Replies

When each ID replies with u?, Comfort sends a query for its serial number. The SN reply will come later but not necessarily immediately after the u? Reply

Example of small system

```
> u?00
< u?110A074A00
< u?1219073D00
< SN11F707F500
< SN12002FA900
< u?3103010400
< u?4106060A00
< u?4205074A00
< u?4307070400
< u?FFFFFFFFFFFF
```

Example of large system

```
> u?00
< u?1209074900
< u?1316073D00
< u?140A074A00
< u?1519073500
< u?1611000000
< u?170A000000
< u?180E074800
< u?21BE067300
< u?22BE064400
< u?23BE064400
< u?24BE064400
< u?25BE064400
< u?3103010400
< u?4108070400
< u?4207070400
< u?4303010100
< u?4405074A00
< OK
< u?4505074A00
< u?5101020A00
< u?5201020A00
< SN12BFFC9B01
< SN1300010100
< SN14075B3100
< SN1580241100
< SN1800010100
< SN41FFFFFFFF
< SN42FFFFFFFF
< SN44FFFFFFFF
< SN45FFFFFFFF
< u?FFFFFFFFFFFF
```

If the Comfort firmware version < 7.090 does not implement the u?00 command, it will not reply at all so Configurator can send the individual u?xx queries. Configurator will check the Comfort Firmware. If it is less than 7.090 it will send individual u? And SN commands.

If the ID is not on the bus the UCM will not report u?xxFFFFFFFF so it saves time
This saves time so Configurator need not query
Implemented in 7.090

Subtypes list

ID = 00 means UCM will reply with all ids automatically

ID=01 means UCM connected direct to comfort via plug in (28/6/15)

ID = 11H to 18H: UCM
Subtypes

5 = CWM, 6 = CBUS, 7 = Smartfit, 9 = KNX, 10 = UCM (general), 13 = GSM, 14 = Zwave, 15 = knx2, 17 = Access, 19 = Universal, 20 = Velbus, 22 = cbus2, 23 = eHomeGreen, 24 = SmartHouse/Dupline, 25 = gsm4, 26 = Heatmiser, 27 = Modbus, 29 = Honeywell PHC, 30 = HDL, 31 = Enocean

ID = 21H to 25H: Slaves (5 Slaves are supported in Firmware 6.011)
Subtype = 190 (0 if not implemented)

ID = 31H to 33H Door stations
Subtype = 0 (not used), 1 = New DP

ID = 41H to 48H Keypads
Subtypes
0 = not implemented, 3 = KP03, 4 = KP04, 5 = KT03, 6 = KP06, 7 = KP04a/KP05a, 8 = KP06A, 9 = KT05

ID = 51H to 5FH RIO/SCS
Subtypes
0 = Not implemented, 1 = RIO01, 2 = SCS, 3 = iRIO

ID = 61H to 6FH SWX
Subtypes
0 = Not implemented, 1 = 3 button, 2 = 6 button, 3 = LCD + 3 button
SWX added Sept 2012

ID = 71H to 7FH Sensor Module
Subtypes
0 = Not implemented, 1 = TSM01, 2 = ASM01 (Arduino Sensor Module)
2 Dec 2103

ID = 81H to 8FH HIO
Subtypes
0 = Not implemented, 1 = HIO01
2 Aug 2015

Implemented Nov 2008 for ucms 5.168 to respond to u?

U? - Get UCM Type/version

PC: U?
UCM: U?ttvrrii
tt: Device Sub Type number. Refer to the u? Command for types
vv: Version number
rr: Revision number
ii: ID of device

EE 1 if ETH03, 0 if not ETH03 (USB, Rs232, ETH01/02) – defined 27/12/17

E.g. U?0A064B1201 means UCM Type 10, version 6.075 at ID 12H, ETH03

if the last EE byte is not returned by the UCM it means the firmware is not able to determine the value and ETH03 or otherwise is not known

The version and revision is for the UCM/KT and not the Comfort panel. V? Returns the Comfort version/revision. The Type field is used for different UCM firmware e.g. for communicating with specific equipment like thermostats etc. which may be released in future.

11 Jan 2008 – added UCM ID e.g. 11H for UCM ID 1 – required by HDL application

ID ii field: for UCM/Log, LGX, and CM9001 with ETH03, ID ii = 01 for Comfort

UB – Upgrade Firmware

UD – Transfer Firmware

PC UBzzPPTTVVRR[DD]

Index zz = 01 for Upgrade by programming cable

Index zz = 04 for Upgrade UCM/KT03 directly connected to PC

Index zz = 05 for Upgrade module on Comfort Bus UB05PPTTRRxx where xx is ID of DUT module

PP is Product Number, TT is product Type. RR is Revision No
DD is destination id for UB05 upgrade by Bus, not used for UB01 or UB04 commands

UCM: UB01bb means the UCM accepts the UB01 command and "bb" is the max no of bytes which can be downloaded in 1 line of UD. **bb will be 240 bytes for firmware upgrade by programming cable.**

e.g. UB01F0 means Accepted, F0 is the number of bytes per line

For UB04 upgrade UCM/KT directly connected to PC UB04bb reply means the UB04 command is accepted. **No of bytes bb will be 240 for upgrade by direct connection, and 64 for upgrade by bus.**

For UB05 upgrade module by Comfort Bus, UB05bb reply means the UB05 command is accepted.

The reply

UBFx means rejected

UBF0PPTT means Product Number or Type does not match, i.e. UBF0 means mismatch in product or type

UBF1 means DUT is not connected.

UBF2 means DUT operation error

UBF3 means Flash checksum error

UBF4 means DUT does not support Bus Firmware Upgrade

UBF5 means Engineer Signin is disabled, i.e. F0 on keypad has not been pressed

UBF6-AAAAA-DD means DUT Program/Erase Error in address AAAAA, data DD AAAAA-DD are optional and are not seen in older firmware

The firmware can be upgraded only if the product number and type matches. UCM returns UBF0 if it rejects the firmware upgrade because of wrong product, UBF1 if the DUT is not connected, UBF2 if there is an error with the program operation

If the UCM is connected to a DUT through the programming cable, it will program the DUT if the Product and Type matches the UB01 information

PC UB02 (tells the UCM to erase the Flash)

UCM UB02aaaaaabbbbb (confirms the flash is erased from aaaaaa to bbbbb)

PC UD00000NNBBBBBBBBBBBBBBB...CC

UCM OK

PC UD000100BBBBB.....CC

UCM OK

PC UB03

UCM UB03 (success) or UBF3 (failure)

NA is received if the UCM is an older version which does not support the UB command. Any incorrect reply will terminate the download and give an error message. Other NA error codes are

NA1 - buffer not free

NA2 - address or no of bytes not complete

NA3 - no of bytes not multiple of 8

NA4 - not enough bytes on UD line

NA5 - other upload/download in progress

The next command UB02 erases the Comfort flash i.e. sets all bytes to FF and gets Comfort ready for transfer of application program.

The UCM returns UB02 when Comfort has erased the flash and is ready to accept the transfer. UBF0, UBF1, UBF2 is returned if there is error

The next command UDAAAAANNBBBBBBBBBBBBBBB.. CC transfers the data line by line.

AAAAAA (6 bytes) is the starting address. NN is the number of bytes on the line which should be as large as possible but less than the parameter for max number of bytes on 1 line. NN should always be a multiple of 8 due to the requirements of the encryption algorithm. BBBB.. are the bytes transferred on this line, according to NN followed by a checksum CC of the data from AAAAAA onwards not including the <CR> . Each line start address should be a multiple of 8 as the encryption operates on blocks of 8 bytes

If the checksum of the received line is incorrect, the UCM replies ?? and the UD line must be retransmitted up to 3 times.

Blocks of 8 data bytes which are all FFs should NOT be transferred to save downloading and programming time.

When the transfer is completed, the PC sends UB03.
UCM replies UB03 if the Flash was programmed successfully and UBF2 if it failed to program or UBF3 if the checksum on the DUT is wrong. A diagnostic message is to be displayed to the user showing the error code and meaning

Upgrade Vocabulary Sector (24 Sept 2015)

These commands erase and program the vocabulary sector of CPU Flash only for DSPTYPE=2

PC UB06xx Start Vocab Upgrade sectors, xx is identifier fixed at 01
UCM UB06NN Accepted, NN = no of bytes to send in 1 line
PC UB07 Erase Vocabulary sectors
UCM UB07aaaaabbbbb Sectors erased, aaaaaa, bbbbb are start and end addresses of the sectors erased
UCM reply NA means command not recognised. Error message "Operation Error"

PC UDaaaaaNBBBBBBBBBBBBBBB...CC
UCM OK
PC UD000100BBBBB.....CC
UCM OK

The UD command sends data to be written into flash. NN is the no of bytes in the line, which is determined by the reply to UB06

..
PC UDaaaaaNBBBBBBBBBBBBBBB...CC
UCM OK

PC UB03 UB03 indicates the end of the upgrade data.
UCM UB03 (success) or UBF3 (failure)
NA is received if the UCM is an older version which does not support the UB command. Any incorrect reply will terminate the download and give an error message. Other NA error codes are
NA1 - buffer not free
NA2 - address or no of bytes not complete
NA3 - no of bytes not multiple of 8
NA4 - not enough bytes on UD line
NA5 - other upload/download in progress
The UCM returns UB02 when Comfort has erased the flash and is ready to accept the transfer. UBF0, UBF1 means DUT is not connected.
UBF2 means DUT operation error
UBF3 means Flash checksum error
UBF4 means DUT does not support Bus Firmware Upgrade
UBF5 means Engineer Signin is disabled, i.e. F0 on keypad has not been pressed
UBF6-AAAAA-DD means DUT Program/Erase Error in address AAAAA, data DD.

UL - Upload (Read) from Comfort on RS232

PC: ULaaaann
UCM: DLaaaann (byte1) (byte2) (byte3) ... (byteNN) (checksum)
aaaa is address in EEPROM in hexadecimal notation
nn bytes 1 to 20 in hexadecimal notation
(byte1) to (bytenn) are data bytes, in hexadecimal notation
(checksum) is a checksum consisting of the two's complement of the message from the address byte until the last byte before the checksum. The checksum is calculated from the actual hexadecimal data not the ASCII data. The sum of all data from the address to the checksum should have least significant byte = 00
If the PC does not receive the correct checksum, it should resend the last UL command, but the number of resends should be limited to 3, after which the process should terminate
From 4.114, UL disables Status Reporting on RS232 for the UCM equivalent to SR00 (See section on Event Reporting)

UP - Upload from UCM Copy - Not Implemented

PC: UPaaaann
UCM: DPaaaann (byte1) (byte2) (byte3) ... (byteNN) (checksum)
aaaa is address in EEPROM in hexadecimal notation
nn bytes 1 to 20H (32) in hexadecimal notation
(byte1) to (bytenn) are data bytes, in hexadecimal notation

(checksum) is a checksum consisting of the twos complement of the message from address byte until the last byte.

Same as UL except that the data comes from the UCM Copy EEPROM

Format is the same as UL, but the number of bytes transferred, not including the checksum can be up to 32

From 4.166 UL disables Event Reporting on CM to prevent events from filling up the RS485 transmit buffer. SR01 cannot restore event reporting on CM, this requires an LI

V? - Get System Information

PC: V?

UCM: V?wwnnrrffBBDDPP

ww: Firmware Type. The number ww is the word in the wordlist

nn: Version number in hexadecimal

rr: Revision number in hexadecimal

ff: File system of U4

BB No of bytes per upload/download line for DL, VL commands. If BB is not present, the value is 12 bytes default. BB is the minimum no of bytes supported by Comfort and UCM if different. **This BB value does not determine the number of bytes for the UD firmware upgrade command or WD/RD write/read from UCM EEPROM or the no of bytes for VL message**

DD DSP Type 0 = T267, 1 = D36K, 2 = ZL If DD is not present, DSPTYPE=0 (18 June 2005)

PP Product No = 00 for Flash CPU, FF for nonflash (Version 5.094)

E.g. V?280472122001 means Word 40 "Outside", version 4.114, File system 18, 32 bytes per upload/download line, DSPTYPE=1

V?F905281B2001 is Word 249 "Greeting", 5.040, File System 27, 32 bytes per up/download line, Dsp Type 1

v? - Get Vocabulary Information for DspType>=1

PC: v?

UCM: v?aabbccddeeffgghh

aa: Primary Vocabulary Number 00 to FF. Eg 5 = English Residential

bb: Custom Vocabulary Number (applicable if Primary Vocab is FE)

cc: System Vocabulary Version eg 39 for Myma 39

dd: User Vocabulary version

ee: LCD Text version

FF: KP min version

gg

hh

gg, etc. additional info is optional, 2 additional bytes FFFF may be appended

E.g. v?01000302

Means Primary Vocabulary 1, custom vocabulary 0, system vocab 3, user vocab 2

Only valid if DspType=1 from V? Query

Eg v?05FF17010103FFFF

Means primary vocab 05, Custom Vocab 255 (None), System Vocab version 23, user vocab 01, LCD text version 01

v!05FF1A020103 means Primary vocab 5, custom vocab 255, system vocab 26, user vocab 02, LCD text version 1, min KP version 03

Reply v?00000000.. Means the vocabulary is bad

If the system vocabulary (Wordlist in Modules and Settings eg English Residential, 5) does not match that in Comfort EEPROM Location 0, configurator will show an error message "Vocab does not match"

If vocab is bad, or there is no vocab eg Logic engine or UCM/Log the reply is v?FFF..... I.e.

FFF is the 1st 2 bytes

V? Implemented UCM 5.92

v! - Write Vocabulary Information for DspType=1

PC: vlaabbccddeeff

UCM: OK

aa: Primary Vocabulary Number 00 to FF.

bb: Custom Vocabulary Number (applicable if Primary Vocab is FE)

cc: System Vocabulary Number

dd: User Vocabulary Number

EE: LCD Text Version

Ff LCD Min version

E.g. v!01000302

Means Primary Vocabulary 1, custom vocabulary 0, system vocab 3, user vocab 2

Only valid if DspType=1 from v? Query

Primary Vocab number assignments:

00=Comfort 1 English Residential

01=Comfort II Chinese Residential

02=Comfort II UK Residential

03=Italian Residential

04=Comfort I Pagewatch

05=Comfort II English Residential

06=Comfort I Australian Residential

07=Thai Residential

08=Spanish Residential

09=Comfort II English Industrial

10=Comfort II Chinese Residential

11=Comfort II Portuguese Residential

If the IVS info has already been written, it cannot be changed without initialising the IVS

The v! Command is not applicable to DSPTYPE=2

VP/VL - Download Vocabulary

For DSP Type 1 ie DSPG

For the first sector

PC: VPNNNN This erases the flash and initiates programming
(long delay 39 seconds before reply)

UCM: OK (if Flash fails to erase, VP00 is returned)

PC: VLaaaann (byte1) (byte2) (byte3) (bytenn),(checksum)

UCM: OK

PC: VLaaaann (byte1) (byte2) (byte3) (bytenn),(checksum)UCM: OK

.. VL commands

PC VP (voice data for 1 sector completed transmission)

UCM OK

UCM VP01 (success, verified 1 sector)

Or

UCM VP00 (error in verifying sector)

VP00 status from UCM at any time indicates program failure

The 2nd sector is downloaded next

PC: VPNNNN This initiates programming of the next sector
(10 s delay before reply)

UCM: OK

PC: VLaaaann (byte1) (byte2) (byte3) (bytenn),(checksum)

UCM: OK

PC: VLaaaann (byte1) (byte2) (byte3) (bytenn),(checksum)

..

PC VP (voice data for 1 sector completed transmission)

UCM OK

UCM VP01 (success, verified 1 sector)

Or

UCM VP00 (error in verifying sector)

VP00 status from UCM at any time indicates program failure

The 3rd sector is downloaded next

PC: VPNNNN This initiates programming of the next sector
(10s delay before reply)
UCM: OK
PC: VLaaaann (byte1) (byte2) (byte3) (bytenn),(checksum)
UCM: OK
PC: VLaaaann (byte1) (byte2) (byte3) (bytenn),(checksum)

..
PC VP (voice data for 1 sector completed transmission)
UCM OK
(about 10 secs delay)
UCM VP01 (success, verified 1 sector)
Or
UCM VP00 (error in verifying sector)
VP00 status from UCM at any time indicates program failure

The 4th sector is downloaded next
PC: VPNNNN This initiates programming of the next sector
(long delay before reply)
UCM: OK
PC: VLaaaann (byte1) (byte2) (byte3) (bytenn),(checksum)
UCM: OK
PC: VLaaaann (byte1) (byte2) (byte3) (bytenn),(checksum)..
PC VP (voice data for 1 sector completed transmission)
UCM OK
(about 70 secs delay)
UCM VP01 (success, verified 1 sector)
Or
UCM VP00 (error in verifying sector)
VP00 status from UCM at any time indicates program failure

NNNN is the number of bytes in hexadecimal of the vocabulary sector to be transferred, range from 00001 to FFFF is acceptable (max 64K Bytes)
aaaa is the address least significant address of the vocabulary of the start of the line 00 to FF which allows the UCM to keep track of the communications. The UCM will expect aaaa to follow in sequence from the last byte of the previous line, otherwise it will send a VP00 (failure) reply

nn is the number of bytes sent in the message line, which should be FIXED at 20 hex (32) bytes and checksum unless it is the last line of the sector which may have less than 32 bytes

(byte1) to (bytenn) are data bytes, in hexadecimal notation, number according to number of bytes nn

(checksum) is a checksum consisting of the twos complement of the message from address byte until the last byte, so that the sum of the bytes received including the checksum is 0

If UCM does not receive the correct checksum, it will reply with a ?? Message. If the checksum is correct, it will reply with OK.

The UCM will send OK when it is ready to receive the next line of 32 bytes.

When the PC has finished sending the vocabulary data for a sector, it sends VP to signify an end to the transmission.. The UCM will send VP01 if the sector is verified and VP00 if the

verification failed. There may be a significant delay in verification, > 60 seconds for the last sector. The PC should not retransmit the VP message
If Comfort encounters a programming error, the UCM sends a message
UCM VP00 (failure)

After the last sector is successfully acknowledged the VP operation is over. The VS sentence tables should be transferred next.

DSPType = 0 (T267

PC: VPNNNNNNNN This erases the flash and initiates programming

UCM: OK (if Flash fails to erase, VP00 is returned)

NNNNNNNN is the total number of bytes in hexadecimal of the vocabulary size to be transferred, range from 00000001 to 1FFFFFFF is acceptable

Eg VP00020000 means erase 20000H bytes

PC: VLaaaann (byte1) (byte2) (byte3) (bytenn),(checksum)

UCM: OK

PC: VLaaaann (byte1) (byte2) (byte3) (bytenn),(checksum)

..

PC VP (voice data completed transmission)

UCM OK

UCM VP01 (success)

Or

UCM VP00 (error)

VP00 status from UCM at any time indicates program failure

aaaa is the least significant address of the vocabulary of the start of the line 00 to FF which allows the UCM to keep track of the communications. The UCM will expect aaaa to follow in sequence from the last byte of the previous line, otherwise it will send a VP00 (failure) reply to the RS232 port.

nn is the number of bytes sent in the message line.

For DSPType=1 this is FIXED at 32 bytes max (20H) and NOT determined by the reply to V?. DSPType is obtained from the reply to V? command

(Comfigurator 3.5.3 fixed No of bytes for VL at 32 bytes instead of using the no of bytes for DL/UL in the reply to V? Query)

For DSPType=2, the number of bytes in a line is fixed at 6128 Bytes

(byte1) to (bytenn) are data bytes, in hexadecimal notation, number according to number of bytes nn (checksum) is a checksum consisting of the twos complement of the message from address byte until the last byte, so that the sum of the bytes received including the checksum is 0

If UCM does not receive the correct checksum, it will reply with a ?? Message. If the checksum is correct, it will reply with OK.

When the PC has finished sending the vocabulary data, it sends VP to end the transmission.

If Comfort encounters a programming error, the UCM sends a message

UCM VP00 (failure)

If the new vocabulary was successfully programmed without error in Comfort, the UCM will reply VP01. If there was a programming or verification error, VP00 will be returned.

DSP Type =2 Non-ascii hex mode October 2016

Due to the very large file needed to transfer to Comfort, a non-ascii hex format is used, This is as follows

04H is the STX byte to indicate non-ascii hex format

This is followed by the number of hex data bytes in the message, low byte, then high byte of a 16 bit number (in nonascii hex), then VL in ASCII and the rest of the line is in hexadecimal bytes. The 16 bit count after 04H is the count of bytes after the VL command until the end of the message. There is NO 0DH terminator

PC: VP by itself while not in voice programming will test the vocab and return VP01 or VP00 16/7/05

ULT 5.195 - added Error codes reply VP00nn

List of Error codes (nn) in VP00nn

00 - verify fail
01 - VP already in progress
02 - DL buffer is not empty
03 = too large for Flash
04 = sector incorrect sequence
05 = vocab size error
06 = failed to erase error
07 = failed to init flash error
08 = failed to init sector
09 = VL address error
0A = wrong address
0B = too many words on VL error
0C = C2 error No of words command
0D = write IVS info failed
0E = sentence garbage collection error
0F = write LCD sector error
10 = > max sectors error
11 = init GPS error
12 = VS data error
13 = sentbuf_flag=1, fail
14 = test vocab failed
15 = dtad command not set
16 = programmed word no compare to programmed word
17 = IVS garbage collection error
18 = LCD page too high error
19 = LCD C1 cmd error
1A = LCD C1 bad sector error
1B = LCD C2 error in command
1C = LCD C3 error in command
1D = error dsp in idle mode
1E = program line error, buffer full during VL

Note numbers are in Hex

VS - Download Sentence Tables (for DSPTType=1)

PC VSNXX (byte1) (byte2) (byte3) (bytenn)

UCM OK

NN is the Sentence Sector Number from 00 to 0F (not all may be used) in hex

VS with no params terminates the sentence table programming

See the document comfigdspg for a full description of the command sequence

The VS command is not applicable for DSPTType=2

WD/ WE – Write Data to ID

PC: WDXXAAAANNaabbccdd.....CC

UCM: WEXXnn

XX is ID to write data

AAAA is address of memory to write to

NN is number of bytes limited to 64 **This is a fixed number 64 not depending on V? reply**

aabbcc.. etc. are NN bytes of data

CC is checksum of numeric bytes after WD. Sum of all bytes including checksum should be 0. If checksum is wrong, UCM will reply ??

nn: 01 means successful, 00, means failed

This command is mainly used by an application program on the PC to write data to the memory of a device, usually the EEPROM of an application-specific UCM depending on the UCM addressed. The target may be any ID not just a UCM so it can be used by other devices in the future for data transfer

The UCM will notify that the transmission was successful using WExx01 and failed using WExx00.

Where xx is the ID

The RD command is used to Read data from a device

If the ID is the UCM06 connected to the PC, this will write data into the Master EEPROM

This command can be used to write into KT03 memory by Bus (instead of direct to KT03 USB but the memory address is limited to 4 bytes FFFF (8 megabits) only - 22/9/12

Defined 22/9/09

13/7/13 - additional spec

If the device does not have EEPROM, then the reply from UCM will be

UCM WExx00

w? - read ZL vocab checksums

PC w?

UCM w?aabbcc

Reply checksums of the DSPTyp2 vocabulary.

Parameter aa = checksum of sentences table (0x0 to 0x3FFF) in Comfort Flash, bb = value at 0x1FFF, cc = checksum for voice in 2nd memory area (0x4000 to EOF)

Eg

UCM w?6F7979

0x6F is checksum of sentences table at 0x3fff

0x79 is checksum of the voice data from 0x4000 to end of file at the last byte of the file. The checksums in the 1st and 2nd area should be the same (79H in this example)

22/3/16 defined

X! - Transmit X10

PC: X!HUUFF[RR]

UCM: OK

UCM: XTHUUFF[RR]

H : House code A to P in ASCII

U: Unit Code = 01 to 10H (16)

F : Function Code: 05= On, 07= Off, 01=All OFF, 03=All Lights ON, 09=Dim, 11=Bright, 13 = All Lights off, 15 = Extended Code 1 (Data/Control), 21 = Extended Code 3 (Security), 25 = Extended Code 2 (Meter Read)

(RR: Repeat cycles 01-08 - Applicable to Dim and Bright commands - Not implemented DA6D Do action 109 can be used to set the repeat count)

The UCM reports the transmission of the X10 code via the XT message

If UU is 0, the Unit code is not transmitted, the Housecode/Function code X10 signal is transmitted.

If FF is 0, the Housecode is not transmitted - the Housecode/Unitcode X10 signal is transmitted.

E.g.

X!P1005 X10 P16 On

X!B0507 X10 B5 Off

The Bright and Dim codes will brighten and dim according to the number of cycles in Action 109. Use DA to do action 109 if necessary.

E.g.

DA6D12 Action 109, 18. No of dim/bright cycles = 18. (max 31 cycles)

X!C090B Brighten by cycles defined by action 109, i.e. 18.

The Extended Code 1 for Data and Control is used for the new Preset Dim. Action 140 sets the extended data and control values to be used for Extended code 1. Use the DA command to activate action 140 if necessary

E.g.

DA8C2031

Do Action 140, 32, 49

This is Action 140, 32, 49 which means sets data to 32 and command to 49 (Dimming command). This setting will cause the module to dim to level 32 (out of a maximum of 63).

X!A010F

X10 A1 Extended Code 1

XF - X10 house/function code Received

The UCM will send the XF report when Comfort receives an X10 housecode/functioncode signal from the 2 way X10 interface

UCM: XFHff

H : House code A to P in ASCII

ff is 1 to 16 representing the function code (address),

Function Code ff: 05= On, 07= Off, 01=All On, 03=All Lights ON, 09=Dim, 11=Bright

Normally, an X10 command will have the housecode and unit code in one transmission, followed by the housecode and function code in the next transmission

E.g. X10 code of "A1 ON" may be received in two messages as

UCM: XUA01

UCM: XFA05

The Bright and DIM commands which have no gaps in between repeated transmissions, may not be received correctly

XR - X10 Received Report (replaced by XU and XF from UCM4.97)

The UCM will reply with the X10 activation report when Comfort receives an X10 code from the 2 way X10 interface

UCM: XRHKK

H : House code A to P in ASCII

KK is either 1 to 16 if it is a Unit code (address), or a Function code according to the meaning below:

Function Code: 05= On, 07= Off, 01=All On, 03=All Lights ON, 09=Dim, 11=Bright

Normally, an X10 command will have the housecode and unit code in one transmission, followed by the housecode and function code in the next transmission

E.g. X10 code of "A1 ON" may be received in two messages as

UCM: XRA01

UCM: XRA05

The Bright and DIM commands which have no gaps in between repeated transmissions, may not be received correctly

XR will not be sent from the UCM from UCM4.97 onwards. It is replaced by XF and XU

XT - X10 Transmitted report

UCM: XTHUUFFRR[00]

HH : House code A to P in ASCII

UU: Unit Code = 01 to 10H (16)

FF : Function Code: 05= On, 07= Off, 01=All On, 03=All Lights ON, 09=Dim, 11=Bright

00 : Indicates that the TW523 interface is not present in Comfort, command not sent to X10 26/11/05

If 00 is not appended, the X10 command was sent to the power line through the TW523

(RR: Repeat cycles 01-08 - Applicable to Dim and Bright commands, with no gap between the repeat transmissions. - NOT Implemented)

The UCM reports the transmission of X10 commands by Comfort

XU - X10 House/unit code Received

The UCM will send the XU report when Comfort receives an X10 housecode/unitcode signal from the 2 way X10 interface

UCM: XUHuu

H : House code A to P in ASCII

uu is 1 to 16 representing the Unit code (address),

Normally, an X10 command will have the housecode and unit code in one transmission, followed by the housecode and function code in the next transmission

E.g. X10 code of "A1 ON" may be received in two messages as

UCM: XUA01

UCM: XFA05

The Bright and DIM commands which have no gaps in between repeated transmissions, may not be received correctly

Y? Request/Report all Outputs

PC: Y?

UCM: Y?<B1><B2><B3><B4><B5><B6><B7><B8><B9> <B10> <B11> <B12>

Where <Bn> is the bit values of each output

B1 = Outputs 1 to 8
B2 = Outputs 9 to 16
B3 = Outputs 17 to 24
B4 = Outputs 25 to 32
B5 = Outputs 33 to 40
B6 = Outputs 41 to 48
B7 = Outputs 49 to 56
B8 = Outputs 57 to 64
B9 = Outputs 65 to 72
B10 = Outputs 73 to 80
B11 = Outputs 81 to 88
B12 = Outputs 89 to 96

For each Byte Bn, the LSB is the lower numbered output, e.g. for B1, Bit 0 = Output 1, ..., bit 7 = Output 8. This command may report only the number of outputs which are implemented. The PC which receives the message must cater for a variable number of bytes received. When more than 64 outputs are implemented, this command will send the additional information

The command will only report the number of outputs as supported by the number of Slaves

Eg

UCM Y?8001 means output 8 and 9 are on and the other outputs 1 to 7, 10 to 16 are off
UCM 5.15, O4.48

y? Request/Report all RIO Outputs

PC: y?

UCM: y?<B1><B2><B3><B4><B5><B6>....

Where <Bn> is the bit values of each RIO output

B1 = Outputs 1 to 8
B2 = Outputs 9 to 16
B3 = Outputs 17 to 24

...

For each Byte Bn, the LSB is the lower numbered output, e.g. for B1, Bit 0 = Output 1, ..., bit 7 = Output 8. This command may report only the number of outputs which are implemented. The PC which receives the message must cater for a variable number of bytes received. When more than 64 outputs are implemented, this command will send the additional information

UCM 5.15, O4.48

Z? Request/report all zones

PC: Z?

UCM: Z?<B1><B2><B3><B4><B5><B6><B7><B8><B9> <B10> <B11> <B12>

Where <Bn> is the bit values of each Input where 1 is ON and 0 is OFF. Bypassed zones will show the actual state, not 0

B1 = Inputs 1 to 8
B2 = Inputs 9 to 16
B3 = Inputs 17 to 24
B4 = Inputs 25 to 32
B5 = Inputs 33 to 40
B6 = Inputs 41 to 48
B7 = Inputs 49 to 56
B8 = Inputs 57 to 64
B9 = Inputs 65 to 72
B10 = Inputs 73 to 80
B11 = Inputs 81 to 88
B12 = Inputs 89 to 96

For each Byte Bn, the LSB is the lower numbered output, e.g. for B1, Bit 0 = Input 1, ..., bit 7 = Input 8.

The PC which receives the message must cater for a variable number of bytes received.

The command will report all zones in slaves even if they are not present

Eg

Z?F0 means Inputs 1 to 4 are off and inputs 5 to 8 are on

Z?0FF0 means Inputs 1 to 4 are ON, inputs 5 to 8 are Off, inputs 9 to 12 are off, inputs 13 to 16 are On

**24 August 2012 - Z? Reports all zones regardless of slaves, ie 96 zones for Ultra so that zone status can include Virtual Inputs not on a slave
Firmware 7.100 - Z? Reports zones up to the maximum zone number. Hence Virtual zones that are above the last slave will be reported.**

Z? Is not able to report SCS/RIO inputs. The message z? (uncapitalised) Is used for this purpose.
UCM 5.15, O4.48

z? Request/report all SCS/RIO Inputs

PC: z?

UCM: z?<B1><B2><B3><B4><B5><B6><B7><B8><B9> <B10> <B11> <B12>...

Where <Bn> is the bit values of each Input

B1 = Inputs 129 to 136

B2 = Inputs 137 to 144

RIO/SCS Inputs start with 129

e.g.

Z?F0 means inputs 129 to 133 are off and inputs 134 to 137 are on

Z?0FF0 means inputs 129 to 133 are ON, inputs 134 to 137 are Off, inputs 137 to 140 are off, inputs 141 to 144 are On

This command may report only the number of SCS/RIO inputs which are implemented. The PC which receives the message must cater for a variable number of bytes received.

UCM 5.15, O4.48

Event Reporting (Version 4.114)

SR00 and SR01 disables and enables reporting of events by the specific UCM on the RS232. Comfort also can be set to report events on RS485 to UCMs. .

Correct login will also enable the UCM to report events on RS232 (equivalent to SR01 command). A logout on the UCM will leave the status reporting SR enabled on the UCM.

When a UCM receives a UL (upload) or DL (download) command, status reporting is disabled (equivalent to SR00) to prevent messages on RS232 from interfering with the upload or download. SR will be disabled on the UCM until a LI login is received.

From 4.114, The UCM has its status reporting disabled at reset until LI (login) or SR01 is received.

Change History

10/12/99

Added A!, I!, OV, OQ commands for Virtual inputs and outputs

Added C?, C!, A?, RP, DB. XR command for X10 report of received X10 commands from Comfort.

10/1/00

Added DA (Do Actions), RA (return value) commands. Removed C!, C? Commands

21/2/00

Added AM (System Alarm). AR reports System Alarm Restore, not Alarm type Restore

6/5/00

Added LI, LU Log in command

8/5/00

Added IT command

22/5/00

Added SR Status Report command. AR alarm restored added alarm parameter

26/5/00

Changed E? Format. E? Will ask for the next event until FF terminates. Added events 22 to 26

13/6/00

Replaced XR by XF and XU

27/7/00

Added KD keypad digit

20/9/00

O!nss - added ss=02 for change output state

8/12/00

AM codes for 07, 08 interchanged to correct document error

AM08 disarm user code has most significant bit set if it is disarmed by user 1 to 16

20/12/00

C! Set counter command

C? Get counter

30/12/00

IX - IR code received

11/1/01

RM - Reminder Message added

DI - Dial Up command added

19/2/01

V? Get Version added

6/3/01

Added Event Reporting section (V4.114)

LI without any code will reply LU00. Before logout but no reply

Correct login enables reporting by CM of events. By default reporting will be disabled

18/3/01

Added U? Command

20/4/01

Added S? Alarm State command. Added alarm state to AL alarm type report

07/05/01

C! Command supports up to 8 counters in one line (UCM5.06)

11/07/01

Added description of keys for KD command

22/7/01

Added SP command

02/08/01

Added BP command

24/10/-01

Added F?, F!, FO, FX commands for Switch/IR module

19/11/01

M? Query gives M? Reply instead of MD which is reported when the mode changes

CT Counter Changed report added

Removed F?, F!, FX commands for IR Switch, replaced by Input and Output commands for #129 onwards

01/01/02

Z?, Y?, z?, y? Commands for Request/report zones and outputs as bit values

11/01/02

Documented "OK" reply for commands to UCM. No OK for queries to UCM, the reply will have the status requested

Added a? Query/reply for current alarm type

Removed IT command (never implemented)

8/04/02

UL command, if PC receives wrong checksum from UL for DL message, it should request for resend of last UL command

21/04/02

Added VP command for Vocabulary transfer

10/05/02

Added CI Learn IR Mode command

14/7/02

Added comment in DL and UL from 4.166 event reporting is disabled on CM

2/8/02

R!NNNN added 2 byte responses

13/9/02

DT Command if value of any field is FF, the field is ignored by Comfort

Added m! Command for keyarm (Not Implemented). Clarified that M! Command autoarms

24/9/02

Added IL command for IR download

7/1/03

Added List of Default Alarm Types to AL

17/2/03

a? Is current alarm type, not alarm state

Clarified meaning of Z? and z?

20/3/03

PS command added

8/4/03

Added a? 00 no alarm comments

15/5/03

Added MO Monitor Mode

26/6/03

Added MS mic/speaker control

18/7/03

Added EX Entry/exit delay started

Added SM speaker/microphone command

7/10/03

Changed format of RM command and added TP command

30/12/03

removed MS command, not used

21/1/04

corrected DA action example should be in hex, not decimal

27/3/04

Added to X! X10 Extended code commands and examples

7/4/04

Updated description of IL and IR formats to correct version

12/5/4

Updated AL alarm type message with additional parameters. Added ST command

13/5/4

R! and TP commands format for responses changed from LS byte followed by MS byte for better compatibility

9 July 2004

Added B? Bypass commands

24 September 2004

Updated description of IL, IR commands

14 October 2004

B?, BY zone reports 00 /01 instead of zone flag byte

Updated implemented commands status

14 November 2004

Added DC, D*, DR commands
Added ER Arm Ready/Not Ready command
Added introduction describing messages and basic/commonly used commands

25 March 2005

Added KL/K? Keypad LEDS command
VP/VL added format for D36K for 4 sectors
Added VS command for downloading sentence tables

2 April 2005

Added v?, v! Vocab information command

19 June 2005

V? Added BB = no of bytes per download/upload line, DD = DSPTYPE

24 July 2005

Added Recommendations for implementing a User Interface

26 Nov 2005

XT added 00 at end of string to indicate TW523 not present

23 Dec 2005

Added tM for test mode, q!, q? Write and read memory commands

26 March 2006

E? Event log added spec for 2 byte event number

6 May 2006

Corrected minor mistakes

8 October 2006

Changed DP format for larger files and transfer lines

16 October 2006

EV event log format changed again event NN is kept at single byte for compatibility

27 Dec 2006

UB and UD commands

3 Jan 2007

s? get sensor register
sr report Sensor Register

20 Feb 2007

SI Siren command

30 March 2007

Bold print on STX=03H. Added comment when not logged in UCM will reply with NA

10 May 2007

Added hard key definitions to KD

21 May 2007

Corrected error in TE command. Added TV.
V? added parameter PP
CT is also reported when Counter changed by Response (documentation update)

8 June 2007

Added details of D* command

14 June 2007

added TC Test Comms command

11 Jan 2008

DP Address limited to 4 characters 2 bytes. .
Added warning not to constantly query for status

U? Added UCM ID

12 June 2008

Removed section saying Event reporting is disabled at midnight
Comment for DT command may return OK and DT from Comfort depending on the version

22 Sept 2008

Defined WD Write Data, WE, RD Read Data, u? commands

22 Dec 2008

Added rs command to reset ID, KE, KS, KW/Kw, KR/Kr, KM/Km for KT write and read. Event Log command description improved. Minor changes

3 January 2008

Added u? Subtypes list

8 January 2008

Added Guidance section in front

20 January 2009

Defined s! not implemented

14 February 2009

Changed/clarify definition of BY and B? Zone bypass status

2 April 2009

RSDD resets ID = DD
Added F!, FL, F? F! commands

19 April 2009

Added PP partition 0-3 parameter to command to MD, EX. ER reports and to M? request
Added PR Partition command **17 March 2010 - Removed**

2 May 2009

DB FF means doorstation ended

10 June 2009

Corrected description of BY and B? Report of bypass state should be 0 for off and 1 for on

21 June 2009

Added LR Login Report. General corrections Revised introductions

4 April 2010

a?added parameters SS and XX
a? Added parameters YY BB zz RR TT BB trouble ids

12 June 2010

Added Error codes in VP00nn. Added Extended KD keys

25 June 2010

Added f? Query and reply for all Flags

8 Sept 2010

DA no of actions from 48 to 64

03 Dec 2010

CM activate Control menu. Updated EV events to 32

16 Jan 2011

DT report from Comfort added DST field

20 March 2011

Amended text, changed title from rs232 to ComfortProtocol. Added differences between AM and AL

15 May 2011

Added UBF4 DUT does not support Bus Firmware Upgrade
EV added event 32 and 33 details

23 June 2011

E?NNNN extensions defined
Corrected text Zone Bypass report should be BY not BP
RD and WD number of bytes limited to 64

3 July 2011

M! Changed function from auto-arm to remote arm

24 July 2011

UB added UBF5-AAAAAA-DD Erase Error UBF3-AAAAAA-DD, , updated UB04, UB05 commands

9 Sept 2011

Added command on f? And F? Invalid parameters

20 Sept 2011

Updated Guidance section

13 October 2011

Extended commands s? And sr for sensor registers

10 December 2011

Updated Guidance and recommendations for Comfort User Interface

1 January 2012

User numbers for MD changed for Keypad (90 to 240), Response (91 to 241), SMS (95 to 245).
Disarm/arm by UCM uses user number according to ID 17 to 24
LUuu report User code for Engineer is changed from 18 to 254
!! Virtual Input updated

10 April 2012

Extended sensors format in s?, s!, sr commands
Expanded explanation of TP and RM

23 April 2012

Added tm message

21 June 2012

KW, KD, KE, KS added able to address KT03 that is not direct connected to PC. No of bytes for KW and KR limited to 64 bytes if connected via Comfort Bus

26 July 2012

Command u? Added subtypes of SWX and iRIO

30 July 2012

the KW/kw and KR/Kr command can be through the UCM as well as KT03 USB. If by UCM the max bytes shall be limited to 64

4 August 2012

Added ID/id commands

24 August 2012

Z? Reports all zones regardless of slaves, ie 96 zones for Ultra so that zone status can include Virtual Inputs not on a slave
The s? and sr sensor reports 2 bytes values and not the PP TT extra parameters

22 Sept 2012

Updated U? Command

18 Dec 2012

KE command extended to UCMs erase eeprom Sensor commands Removed extended parameters
PPTT
Added CS comms status report

4 Jan 2013

CM added automatic cmggccss reporting by UCM 7.xxx

22 February 2013

Added SS command. Extension to u? Command for polled/not polled

12 March 2013

Added optional parameter and ID to KD commands

9 April 2013

Added SN command

13 July 2013

Added specs for RD and WD reply if eeprom is not installed

7 Sept 2013

Extended AL command to Phone index bits

Added Note about adding parameters to commands for 3rd party applications should ignore unknown parameters and not assume the number of parameters are fixed

28 Sept 2013

Added configurator screenshot for CM commands. Removed AUD01 heading

12 Dec 2013

Change in KD parameters

25 Feb 2014

The f? Command reports all 254 flags instead of 64

Added Li and Lu (Not used)

AL is sent from UCM even without log in to allow ETH03 to work

2 April 2014

Added LT

5 April 2014

Change to a? Message BB = Low Battery ID = 1 for Comfort or 0 if no low battery. If comfort battery low, battery bit will be set

22 May 2014

Added cc command

26 June 2014

Added comment on a? report

12 July 2014

AM /AR reports for Zone trouble alarm will appear before the AL message. AM alarm reports will be seen before the AL alarm report

12 Aug 2014

Defined r? Sequential register query

Defined u?00 for auto query all ids

27 Sept 2014

DT message changed meaning of XX DST parameter

LT00 unblocks the 2nd port access

DT command modified so CM9000 will adjust for DST

4 Dec 2014

Added b?00 means query for all zones bypass state

7 May 2015

Defined Ke erase sector command

5 June 2015

SS command added extended UCM types

17 June 2015

Added tm test status report 05, 06

28 July 2015

U? Added Type 7 for TSM

4 Sept 2015

Updated E? Event log parameters from NA to 01 = Controller from 7.081

20 Sept 2015

SS added types for TSM
TP added ee=2 for execute time program
V? Added DSP type for ZL
Added UB06 and Ud commands

30 Nov 2015

KennSS reply KEnn01 or KEnn00

10 Jan 2016

Added H!, H?, H# HIO messages

30 Jan 2016

Added EL EOL value

22 March 2016

Added w? define

19 July 2016

C?, C!, CT all counter values are in 16 bits

Z? Reports up to last zone used including virtual zone. Will not report all 96 zones

25 Sept 2016

Defned AC

1 October 2016

Added nonascii hex format for VL

2 April 2017

Added Cs message

19 Aug 2017

Cm extended to 2s complement 2 bytes for sensor

27 DEC 2017

Extended U? To add last byte 01 = ETH03, 0 = not ETH03. Comment ii = 01 for comfort