

# Siemens Business Services



## Colledia Control BFE KSC Label Driver

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## Introduction

This Colledia Control driver has been written to send and retrieve UMD labels from the B.F.E KSC UMD hardware. This equipment was first installed in the TV Studios at Pacific Quay in Glasgow.

The driver makes use of an external infodriver and uses a serial interface to communicate with the hardware. The hardware can be configured to use either RS232 or RS422 with a range of speeds ( default is 38400 ).

The KSC UMDs have up to 16 characters in two blocks of 8, treated as left side and right side of the UMD by the driver. In the PQ TV Studios, the left side is used for a fixed name of the source, and the right side for dynamic parts of the label.

The protocol is a simple hex byte based one, with a small number of commands to send and retrieve data to and from the hardware.

## Ini File Settings

The driver on start-up will read in required entries from its appropriate device ini file. The number of this dev\_ini file must be passed to the driver as part of the start-up command, and is the number of an external infodriver, that as a process must already be running.

The entries from the dev\_XXX.ini file are read in from the section headed KscUeZLabel – and denote the comms parameters for the hardware.

```
[KscUeZLabel]
DebugMode=1
LogMode=0
Port=1          -- port number on the PC – will most likely need to be correctly set
Speed=38400     -- default speed etc for BFE hardware
DataBits=8
StopBits=1
Parity=N
```

The driver then reads in as many entries that exist in dev\_XXX.db2 and dev\_XXX.db3 files.

The dev\_ini DB2 file holds the mapping between the router destination number ( index number ) to the QV Address of the UMD,  
e.g. 0001=1234 -- destination 1 has a UMD of address 1234 linked to it. Valid QV Addresses are any positive number above 0 ( 1 or more ! ). An address of 0 will mean that UMD is ignored.

The dev\_ini DB3 file holds the settings of who has “control” over the labelling of the UMD.

Settings are :     1 = BNCS Controlled destination  
                  2 = BFE Controlled destination  
                  0 = no control – destination ignored – no data sent to / retrieved from UMD for this destination

e.g. 0001=1 -- destination is under Colledia control and the driver will send the label data to the BFE hardware.  
e.g 0002 =2 -- the driver will NOT send data to BFE hardware, but will request label data from the hardware.

The driver reads all this data in at start-up and displays its findings in the driver application window for verification.

## Infodriver Slot Usage

Slots 1 to 4000 are reserved and tied to destinations and hold the string data that will be displayed on UMDs, as per the ini file settings already described. The format of the string data is divided into the left and right data for each half of a UMD. A vertical pipe “|” delimits the two halves, eg “OS\_1 | Glasgow” will result in OS\_1 on the left side of the UMD and Glasgow on the right side of the UMD. Each half is limited to 8 characters. If no | character is given as part of the string, the driver will make best efforts to place the string on the two parts of the UMD.

Slot 4001 denotes comms OK (1) or comms FAIL (0) to the hardware. Comms failure could be a result of missing, incorrectly wired or disconnected cables, de-powered hardware, or comms port missing, comms port already in use, or comms port failure within the PC.

## Driver Application and error messages

**Colledia KscUeZLabel Application - Device 61**

File Debug Log Help Reset

Colledia Comms  
Rx: 00000000 Tx: 00000002 Status: Connected Driver  
Ver 1.0.1.3 Status: Init Polling KSC

Device  
Rx: 00000000 Tx: 00000002 Status: ERROR Comms fail Settings: COM1 38400,8,1,N  
Cmd Sent 1 02 02 79 00 87 Fifo Buffer entries 0  
Reply rec Bytes In RX Buffer 0

Labels

Dest	QV Address	Control	UMD Left	UMD Right
1	1	-BNCS-	Left	Right
2	2	-BNCS-	yyyyyyy	zzzzzzz
3	3	-BNCS-	Cam1	Paul
4	4	-BNCS-	OS1	Football
5	5	-BNCS-	0	
6	6	-BNCS-	0	
7	7	-BNCS-	0	
8	8	-BFE-	0	
9	9	-BNCS-	0	
10	10	-BNCS-	0	
11	11	-BNCS-	0	
12	12	-BNCS-	0	
13	13	-BNCS-	0	
14	14	-BNCS-	0	
15	15	-BNCS-	0	

Number Dests 256  
BNCS Controlled 238  
BFE Controlled 10  
No Control 8  
Number UMDs 248

LoadiniData index 256 iAddress 256 control 1  
LoadAllInitialisationData completed  
highest number dests is 256  
LoadAllInfodriverData commencing  
LoadAllInfodriverData completed  
KSC Housekeeping Timer Started  
Check: sum is 121 ascii hex 79 || 2s complement is 135 ascii hex 87  
TX[r]-> 02 02 79 00 87 : length 5  
Check: sum is 1 ascii hex 01 || 2s complement is 255 ascii hex ff  
KSC - Reply Timer - no response from device  
Check: sum is 121 ascii hex 79 || 2s complement is 135 ascii hex 87  
TX[r]-> 02 02 79 00 87 : length 5  
Check: sum is 1 ascii hex 01 || 2s complement is 255 ascii hex ff  
KSC - Reply Timer - no response from device

**Annotations:**

- Status of the automatic, version number, and CSI Comms status
- Device Status - counters, comms status - error indicates no response from the hardware - last command and response received
- List box of all current data for each destination - its UMD address, control and strings that should be on the 2 halves of a UMD.
- Various counters calculated from reading in the ini file settings from DB2 and DB3.
- Debug and driver status window. Error and other information messages will be written here.

## Hardware Protocol

### Protocol between UeZ and BFE-KSC

State: 01.06.2006

2.0 21.08.2007 16-character-Labels added

## Content

1. Physical Layer
2. Logical Layer
3. Messages
4. Miscellaneous

## 1. Physical Layer

### KSC9000 as used at PQ

RS422 or RS232, Transferrate 38,4 kBaud maximum, 8,N,1

Transferrate can be modified according to project.

Connector at KSC9000: RJ45, 8-pol

RS422:

Pin Name Function

- 1 Gnd Ground
- 2 Gnd Ground
- 3 TC transwith-Ground
- 4 TA transwith (-)
- 5 TB transwith (+)
- 6 RC receive-ground
- 7 RA receive (-)
- 8 RB receive (+)

RS232:

Pin Name Function

- 1
- 2
- 3 Gnd Ground
- 4
- 5 TxD transwith data
- 6
- 7 RxD receive data
- 8

## 2. Logical Layer

1	2	3..n	m
STX Data Byte,	Count Data Bytes, max 252,	Check Sum	

with:  
STX = 02 hex  
Data Byte = Count Number of Databytes  
Data Bytes = Databytes (incl.. messageidentifier)  
Check Sum 2s Complement of Sum of all Databytes – sum of data bytes + checksum = 00.

Following Answers can occur:  
ACK = 06 hex positiv Acknowledge  
NAK = 15 hex negative Acknowledge

## 3. Command and Response Messages

Message 0x79 MC\_STARTED  
Direction From UeZ to KSC  
Coding 0x79 \* Status  
Description of Parameters  
Status 0x00..0xFF

Databytes 2  
Notes Is to send after each reboot of UeZ  
Answer ACK

Message 0x01 GET\_DEVICE\_STATUS  
Direction From UeZ to KSC  
Coding 0x01  
Description of Parameters  
Databytes 1  
Notes Ask for Device-Status. Can be used as a Polling  
Answer ACK  
DEVICE\_STATUS

Message 0x02 DEVICE\_STATUS  
Direction From KSC to UeZ  
Coding 0x02 \* Status  
Description of Parameters  
Status 0x00 Databytes 2  
Notes No reall Status-Info, Status-Byte is always 0x00  
Answer ACK

Message 0x7B SET\_SOURCE\_LABEL  
Direction From KSC to UeZ and From UeZ to KSC  
Coding 0x7B \* QV-No \* Label  
Description of Parameters  
QV-No Label  
0..9, Number of Crosslink, 4 Bytes  
Video-Label of Crosslink, 8 Bytes  
Databytes 13  
Notes Transmission of a Video-Sourcelabel  
Answer ACK

Message 0x77 GET\_SIGNAL\_LABEL  
Direction From UeZ to KSC  
Coding 0x77 \* Mode \* QV-No  
Description of Parameters  
Mode QV-No  
0x00 0..9, Number of Crosslink, 4 Bytes  
Databytes 6  
Notes Question for a Video-SourceLabel  
Answer ACK  
SET\_SIGNAL\_LABEL

Message 0x78 SET\_SIGNAL\_LABEL  
Direction From UeZ to KSC  
Coding 0x78 \* Mode \* QV-No \* <Label>  
Description of Parameters  
Mode QV-No Label  
0x00 0..9, Number of Crosslink, 4 Bytes Video-Label of Crosslink, 8 Bytes  
Databytes 14  
Notes 1. As a spontaneous Message after Labelchange 2. As Answer to GET\_SIGNAL\_LABEL  
Answer ACK

Message 0x8B SET\_SRC\_LABEL5  
Direction From KSC to UeZ and From UeZ to KSC  
Coding 0x8B \* QV-No \* <Label1><Label2><Label3><Label4><Label5>  
Description of Parameters  
Qv-No Label1 Label2 Label3 Label4 Label5  
0..9, Number of Crosslink, 4 Bytes Video-Label of Crosslink, 8 Bytes  
Audio1-Label of Crosslink, 8 Bytes  
Audio2-Label of Crosslink, 8 Bytes  
Audio3-Label of Crosslink, 8 Bytes  
Audio4-Label of Crosslink, 8 Bytes  
Databytes 45  
Notes Transmission of a Video-SourceLabel and 4 Audio-SourceLabels  
Answer ACK

Message 0x87 GET\_SIGNAL\_LABEL5  
Direction From UeZ to KSC  
Coding 0x87 \* Mode \* QV-No  
Description of Parameters  
Mode  
QV-No  
0x00  
0..9, Number of Crosslink, 4 Bytes  
Databytes 6  
Notes Question for the 5 Labels of Video and Audio  
Answer ACK  
SIGNAL\_LABEL5

## Message 0x88 SIGNAL\_LABEL5

Direction From KSC to UeZ and From UeZ to KSC

Coding 0x88 \* Mode \* QV-No \* &lt;Label1&gt;&lt;Label2&gt;&lt;Label3&gt;&lt;Label4&gt;&lt;Label5&gt;

Description of Parameters

Mode	QV-No	Label1	Label2	Label3
Label4	Label5			

0x00 0..9, Number of Crosslink, 4 Bytes

Video-Label of Crosslink, 8 Bytes

Audio1-Label of Crosslink, 8 Bytes

Audio2-Label of Crosslink, 8 Bytes

Audio3-Label of Crosslink, 8 Bytes

Audio4-Label of Crosslink, 8 Bytes

Databytes 46

Notes Transmission of a Video-Sourcelabel and 4 Audio-SourceLabels with Mode-Byte

Answer ACK

## Message 0x9B SET\_SOURCE\_LABEL16

Direction From KSC to UeZ and From UeZ to KSC

Coding 0x9B \* QV-No \* Label

Description of Parameters

QV-No Label

0..9, Number of Crosslink, 4 Bytes

Video-Label of Crosslink, 16 Bytes

Databytes 21

Notes Transmission of a Video-Sourcelabel with 16 characters

Answer ACK

## Message 0x97 GET\_SIGNAL\_LABEL16

Direction From UeZ to KSC

Coding 0x97 \* Mode \* QV-No

Description of Parameters

Mode QV-No

0x0 0..9, Number of Crosslink, 4 Bytes

Databytes 6

Notes Question for a Video-Sourcelabel with 16 characters

Answer ACK

## SET\_SIGNAL\_LABEL16

Message 0x98 SET\_SIGNAL\_LABEL16

Direction From UeZ to KSC

Coding 0x98 \* Mode \* QV-No \* &lt;Label&gt;

Description of Parameters

Mode QV-No Label

0x00 0..9, Number of Crosslink, 4 Bytes

Video-Label of Crosslink, 16 Bytes

Databytes 22

Notes 1. As a spontaneous Message after Labelchange

2. As Answer to GET\_SIGNAL\_LABEL16

Answer ACK

## 4. Miscellaneous

The Idea of this Interfacing is to have some crosslinks from KSC to UeZ and some crosslinks from UeZ to KSC. The name UeZ comes from the german word „Uebertragungs-Zentrum“ which means a Central-Router-System. Between KSC and UEZ the KSC is Slave, UEZ is Master. As long as KSC-Interface doesn't receive anything from UEZ, it doesn't send anything on his part.

UeZ starts Communication with der Message MC\_STARTED. Afterwards it asks for Crosslink-Labels from KSC to UeZ (if there are any) (GET\_SIGNAL\_LABEL5), and sends his Sourcelabels according to the crosslink from UeZ to KSC (SET\_SIGNAL\_LABEL5).

Afterwards all Changes in Labels are sent spontaneously from both sides.

UeZ has to send any message within all 20 seconds, otherwise KSC-Interface would recognize as TIMEOUT.

For this purpose one can send DEVICE\_STATUS all 10 Seconds DEVICE\_STATUS, which will be answered with ACK by the KSC.

The KSC-Interface uses exclusivly command SET\_SRC\_LABEL5 (that is all 5 Labels, without Mode-Byte) to send Labels spontaneously.