# COE E-class

## Real time digital video codec system for the transmission of video, audio, data and contact closure signals over digital networks.

For applications such as security and transport infrastructure projects, COE E-class provides an interface between video, audio and data signals and digital trunk networks. This is achieved by using the M-JPEG compression standard for high frame rate, high resolution video transmission.

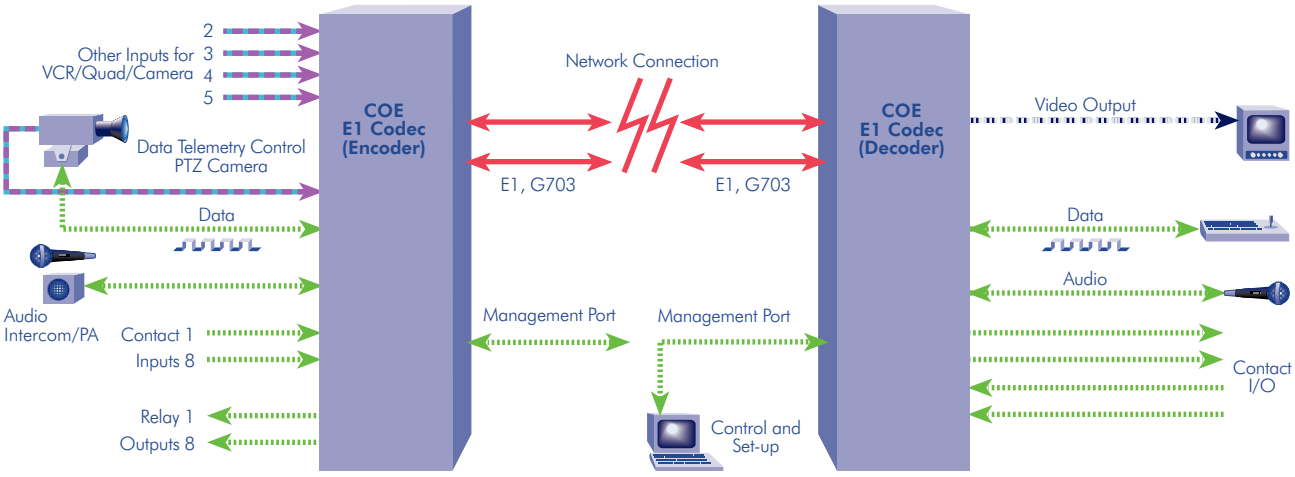
## Features and Benefits

- Video, data, audio & contact closure transmission over one E1 (2.048Mbs$^{-1}$) or T1 (1.544Mbs$^{-1}$) line – Utilises existing standard network data ports offered by telecom companies and network providers
- Simplex video path with configurable frame rate and resolution utilising the M-JPEG compression standard for up to 25 frames per second / real time video transmission – Provides the user with flexibility in the application - high resolution to real time video - ideal for long range video surveillance such as road and rail, CCTV site networking, etc.
- Duplex data path for camera telemetry or PC to PC links. User definable data formats such as RS232, RS422, RS485, etc. – Interfaces to all standard camera systems for remote camera or keyboard links
- Duplex audio path utilising the G722 compression standard – Wide range of uses - PA, intercom, public help points
- Up to 8 dry contact closure inputs and outputs. Software configurable for internal or external alarm modes – Provides the facility to transmit alarm signalling information, either from an external input or from an internal function such as loss of video
- Encoder & decoder are standard Eurocard format available in a stand alone box, 1U or 3U, 19" chassis – The product has been designed to dramatically reduce racking space requirements and power consumption with flexibility of housing type

## Digital M-JPEG Encoder and Decoder

The encoder card, in the extended Eurocard format, incorporates the digitisation, compression and network interfacing components making it one of the smallest products on the market. A separate diagnostics & control data channel allows one of five video inputs to be selected from either end of the link via a standard PC. This allows several video inputs to be connected directly to the encoder thus eliminating the need for either several encoders or a remote video matrix switch. A video test pattern generator is included for link testing and commissioning.

## Video




A single video channel, utilising the M-JPEG compression standard, provides the real time transmission path for analogue PAL or NTSC pictures. Internal software optimises picture quality frame by frame. Frame rate may be selected via the software management sub-system thus catering for a wide range of applications from transport to CCTV. Any one of up to five sources may be selected at the encoder for transmission thus reducing the video switch hardware requirements. Picture titling, date and time stamps and alarm messages may be superimposed on the picture for image integrity. This is especially important in security applications. In addition, the codec is designed to blank the monitor upon loss of video signal or network thus never presenting a 'frozen' image.

## Auxiliary channels - Data, Audio and Contact Closure

E-class provides auxiliary data, audio and contact closure channels to enable complete solutions on one E1/T1 line with each service being two way in format. The data channel is asynchronous with baud rates from 75 to 19.2kbs$^{-1}$ supported. The interface format, RS232/RS422 etc., is set by the user enabling fast set-up with most types of telemetry and data links. The audio channel uses digital encoding to the international G722 standard supporting high quality P.A./Intercom links. The contact closure system is extremely versatile: 8 individual two way circuits are provided. Each provides the transmission of one contact input to one relay output, however, the inputs may be mapped to any relay in the link. In addition, any of the system alarms such as video loss, network loss etc. may also be mapped to any relay in the system. This enables comprehensive alarm monitoring for both external and system links.

## Network interface

The E-class codec is designed to work on an E1 or T1 network channel. It is configured internally to use the complete bandwidth of the channel and multiplexes all user signals into the available bandwidth. Two standard interfaces are provided: 120 Ohms balanced line or 75 Ohms unbalanced for E1 and 100 Ohms for termination for T1.

## Software Management sub-system

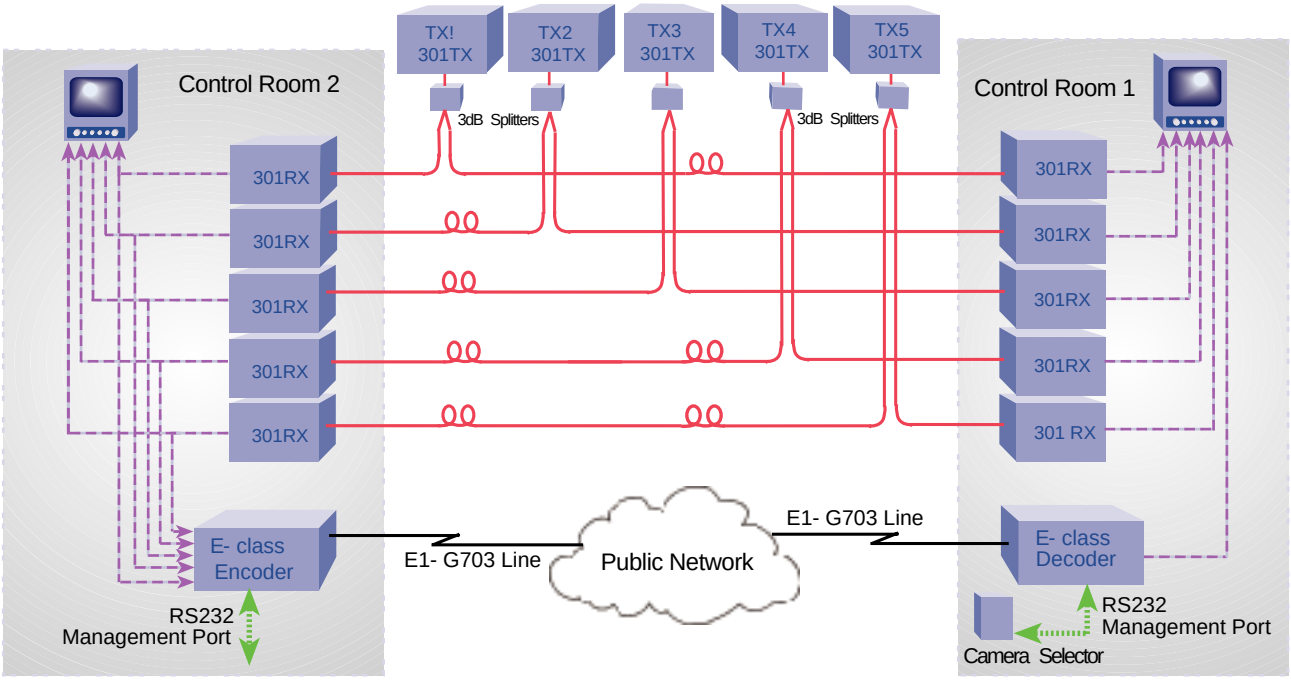
Supporting all of the above user interface options is a comprehensive software management system. All key functions of the E-class are monitored and reported by this system interface and are available to the user via a VT100 terminal port. No additional software is required to access this system thus allowing portable PCs or personal organisers easy access. Access may be gained from either end of the link so remote set-up may be done from the control centre. Key features include the configuration of:

- Video frame rate, resolution and input selection
- Data channel on/off and status monitor
- Audio channel on/off, I/O level set-up and status monitor
- Contact closure/relay mapping and status monitor
- Text message programming and screen positioning
- Alarm message programming and text positioning
- Network interface clock configuration
- Password-protected configuration to allow the User to protect settings
- Encoder - decoder matching. For high integrity cross connections where the end-to-end video path must be guaranteed
- Power down/power up settings - last default restored

## Typical Applications

### Example 1: Redundancy systems for high integrity video networks

TX1 - 5 represent individual sites with local cameras. The video signals are transmitted back to the control centre using traditional analogue fibre links - each being sent in two directions. If the transmission path is interrupted at any point the pictures can be redirected via the E-class codec link.




Hence the E-class provides a redundant path which is physically diverse from the main transmission route. The five video inputs are used to select which picture is transported back to the control centre with selection controlled from the VT100 terminal interface.

### Example 2: Passenger/Public Help points

On many large transport systems passenger help points are required at terminus points. These typically provide the passenger with an audio link for information. In addition, video, data and contact closure information is required to/from Control for full interactive communication. E-class is ideally suited to this environment where E1 or T1 lines are available within an existing network.

## Sales Codes and Ordering information

E-class is available as two options: Video only or fully featured. It is supplied as an extended 3U Eurocard and we provide three housing options: 3U, 19" frame holding up to four cards; 1U, 19" frame for one card; stand alone ruggedised wall box holding one card.

Cards and housing options should be ordered separately using the following order codes:

**EC - xx - xxx - xx - x**

- E-class
- Network I/F: Enter **E1** or **T1**
- Video Encoder or Decoder: Enter **ENC** or **DEC**
- 3U/1U card or box option: Leave blank or enter **B** for box option
- Card & Contact I/P option: Enter **FG** for Grounding type; Enter **FO** for Opto-isolated type; Enter **V** for video only card option

**Housing options:** All housing options are supplied fully tested and complete with one PSU. For 19" 3U frames all connections are at the rear of the units and a second PSU slot is provided for dual redundant operation.

## Sales Codes and Ordering information

### Racking Options

**EC-3URK-UAC**
3U, 19" frame for housing up to four cards of any mix. Supplied with one 90-264V AC mains PSU

**EC-1URK-UAC**
1U, 19" frame for housing one encoder or decoder card. Supplied with one 90-264V AC mains PSU

**EC-3URK-48DC**
3U, 19" frame for housing up to four cards of any mix. Supplied with one 48V DC PSU

**EC-1URK-48DC**
1U, 19" frame for housing one encoder or decoder card. Supplied with one 48V DC PSU

### Spare/Secondary PSUs

**EC-3UPSU-UAC**
3U, 19" frame 90-264V AC PSU for use as a spare or in dual redundant systems

**EC-BXPSU-UAC**
Spare E-class power supply for stand alone boxed cards. Power input 90-264V AC mains.

**EC-3UPSU-48DC**
3U, 19" frame 48V DC PSU for use as a spare or in dual redundant systems

## Performance overview:

**Video:** One simplex channel

| | |
|---|---|
| Compression Standard | M-JPEG |
| Video Standards | PAL & NTSC, B/W and Colour |
| No of inputs | 5 @ 75 Ohms/high impedance |
| Resolution (user defined) | 360 x 288 (CIF) to 720 x 288 (1/2 CCIR 601) |
| Frame Rate (user defined) | 6,8,12,25 for PAL<br>6,7.5,10,15 for NTSC |
| Diagnostics | LEDs/PC port |

**Data:** One, two way data channel

| | |
|---|---|
| Format | RS485 two wire, RS232, RS422, TTL (link selectable) |
| Jitter | 10% @ 19.2kbs$^{-1}$ |
| Rate | DC to 9.6kbs$^{-1}$ and 19.2kbs$^{-1}$ |
| Contact Closure | Dry contact two way circuits |
| No of inputs (both encoder and decoder) | 8 |
| Type | 8 grounding or 4 opto-isolated |
| Relay | N/C or N/O link selectable |

**Audio:** One, two way mono channel

| | |
|---|---|
| Coding standard | G722 |
| Bandwidth | 7kHz |
| S/N ratio | As G722 spec. |
| Input impedance | 600 Ohms balanced |

**Network:**

| | |
|---|---|
| Network connection | E1, T1 |
| Rate | 2.048Mbs$^{-1}$ or 1.544Mbs$^{-1}$ |
| Coding | E1 (HDB3) T1 (B8ZS) |
| Impedance | E1, 75 Ohms or 120 Ohms, T1, 100 Ohms |
| Clock | Internal or recovered |

**Environment and Power:**

| | |
|---|---|
| 3U & 1U Rack | 90-264V AC and 48V DC |
| Card (encoder or decoder) | 5V, 2A Max Current |
| Operating temperature | 0 to +50°C |
| Storage | -10 to +70°C |
| Damp heat | 5 - 95% Non Condensing |
| Vibration | 5g |

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