

# e-Vision SIL2

Multi platform system  
Availability  
Reliability  
Safety  
Flexibility



Two redundant e-Vision SIL2 8"



e-Vision SIL2 10"

*CENTRALP and CLEARSY companies are joining efforts on a SIL2 DMI suitable for ERTMS or other safety related applications*

➤ *CENTRALP is specialised in the design and production of embedded electronics*

➤ *CLEARSY is specialised in the design and production of safety critical systems and software*

E-Vision SIL2 is a HMI platform in 8", 10" or 12", with or without redundancy, which provides SIL2 display, interaction and computation. It is available with an ETCS baseline 3 DMI application v3.4.0 or as a generic platform for your application.



**CENTRALP**



**CLEARSY**  
SYSTEMS ENGINEERING

### e-Vision platform characteristics

- ▶ Multiple screen : 8", 10.4", 12" size with the same architecture
- ▶ Display resolution: 640 x 480 with an intensity of 1500 cd/m<sup>2</sup>, 1024x768 with 800 cd/m<sup>2</sup>, or upon request 800 x 600
- ▶ CPU cortex A9 iMX6 800 MHz dual core (quad core upon request)
- ▶ Memory : 2 GB DDR3, eMMC 8 Gb
- ▶ Capacitive touch screen or soft keys
- ▶ Signalling LEDs
- ▶ Light sensor
- ▶ 1 Audio output 10W

### Interfaces

- ▶ 2x Ethernet 100 base T
- ▶ MVB or Pro fib us
- ▶ 1 x RS 232/422/485, isolated 1500 Vdc
- ▶ 2 x USB

### Dimensions for 10.4"

- ▶ Front panel dimensions : 214 x 300 x 8 mm
- ▶ Rear panel dimensions : 202 x 270 x 58 mm
- ▶ 3Kg

### Power Supply Characteristics

- ▶ Nominal supply voltage : 24 Vdc to 110 Vdc
- ▶ Nominal power: 25 Watts over Vbat
- ▶ Inrush current (25°C): < 10 A max

### Software technology

- ▶ OS : LINUX
- ▶ Programming Language : C and C++
- ▶ OpenGL graphic rendering

### Generic SIL2-DMI product

- ▶ Compliant with a SIL2 safety level on display and inputs (SUBSET091).
- ▶ Provides safety layer for a SIL2 environment
- ▶ Developed according to CENELEC 50126, 128, 129 Standards
- ▶ Developed with an open and modern architecture to ease further updates/upgrades
- ▶ SIL0 and SIL2 segregation to allow SIL0 COTS applications

### ETCS DMI application

- ▶ Compliant with baseline 3 version 3.4.0.
- ▶ Developed with output on single or dual screen to increase the availability

### High configurable software

- ▶ Speed dial range
- ▶ Languages
- ▶ Sounds
- ▶ Icons
- ▶ Texts



### Innovative SIL2 Linux based console

- Cost effective development on Linux environment
- Custom SIL2 safety layer over the Linux kernel
- Provides SIL2 guarantees against
  - ▶ corruption of the applicative programme
  - ▶ memory corruption
  - ▶ clock drift
  - ▶ corruption by a Linux kernel fault



### Generic SIL2 platform

- Flexible SIL2 display control
  - ▶ Define safety-critical display area
  - ▶ Change non-safety related area without re-doing certification
- Protected touch screen or softkey input
- Safe generic container for application data & state
- Protected against : RAM fault, SIL0 fault and OS fault



### Baseline 3 ETCS DMI

- Standard 10.4" display
  - ▶ Customisable to given EVC/DMI interface
  - ▶ Easy configurable
- Double 8" DMI
  - ▶ High-availability with fallback mode to keep train running in case of 1oo2 display failure
  - ▶ Compliant to ERA Baseline 3 in normal mode with 2x8" surface



### Multiplatform System

System development compatible with different screen sizes



### e-Vision SIL2 is compliant to

UIC 612 front panel  
EN50155 TX classification  
EN50121  
EN45545 HL3



### Reliability

MTBF 150 000h  
Life time 15 years