
# *HCM2110S*

## *Preliminary Technical Data Sheet*

EXERTUS

# HCM2110S Power Module

- 52 configurable I/O
- Programmable via Guitu
- Designed for operation at both 12V DC and 24V DC
- H-bridge

HCM2110S is compact and versatile high power I/O controller equipped with also with H bridge. It has 52 configurable I/O lines.

Above normal 3A outputs it has 16 6A outputs, two 8A low side drivers and 6 H-bridge drivers.

It is aimed to supply and control air-conditioning, lights, central locking, lubrication, blowers and other devices where normal outputs are not powerful enough and where current controlled PWM is not needed.

The unit has a built in Real Time Clock, which can be used for logging events with a time stamp. In addition to flash there is also battery backed memory for storing fast changing information.

## Technical Information

- 9-32V DC operating voltage range
  (Protected against reverse polarity)
- Maximum simultaneous load 120A
- Separate supply pins on each 3 connectors
- Total of 52 configurable I/O
- The I/O interface is protected against short to GND and to supply voltage
- Two reference voltage outputs:
  1 configurable: 3.3 / 5 / 10 / 12V (max 250mA)
  1 fixed: 12V (max 250A)
- -40…+85°C operating temperature range
- ARM Cortex M4 168MHZ CPU
- 192 kB RAM, 1MB flash memory
- 80B battery backed memory
- IP67 aluminium housing
- Weight 0.7kg
- Main dimensions 172mm x 122mm x 35mm
- Three 26 pin AMP Super Seal connector
- 1x CAN Interface 2.0B, ISO 11898
- 1x RS232 interface
- Real time clock (RTC)

## I/O Interface

| Amount | Configurability | Details |
|---|---|---|
| 1 | Reference voltage | 3.3V / 5V / 10V / 12V 250mA |
| 1 | Reference voltage | 12V 250mA |
| 8 | Digital input<br>Analog input | Low<3V, High>3V max 100Hz<br>12-bit AD conversion,<br>0-18.6V, 57kΩ<br>0-22mA, 150Ω |
| 5 | Digital input [PNP] | Low<3V, High>3V max 100Hz |
| 1 | Digital input [NPN] | Low<3V, High>3V max 100Hz |
| 2 | Digital input [PNP]<br>RS232 | Low<3V, High>3V max 100Hz |
| 2 | Digital input [PNP]<br>Pulse input (also quadrature)<br>Digital Output (also pair) | Low<3V, High>3V max 100Hz<br>Low<3V, High>3V max 8kHz<br>High side driver, max 2A |
| 2 | Digital input [PNP]<br>Pulse input (also quadrature)<br>Digital / PWM output (also pair) | Low<3V, High>3V max 100Hz<br>Low<3V, High>3V max 8kHz<br>High side driver, max 3A |
| 2 | Digital input [PNP]<br>Pulse input (also quadrature)<br>Digital / PWM output (also pair) | Low<3V, High>3V max 100Hz<br>Low<3V, High>3V max 8kHz<br>High side driver, max 6A |
| 2 | Digital input<br>Digital output (also pair) | Low<3V, High>3V, max 100Hz<br>High side switch, max 2A |
| 6 | Digital inputs [PNP]<br>Digital outputs (also pair)<br>PWM outputs (also pair) | Low<3V, High>3V, max 100Hz<br>High side switch, max 3A<br>High side switch, max 3A |
| 14 | Digital input<br>Digital output<br>PWM output | Low<3V, High>3V, max 100Hz<br>High side driver, max 6A<br>High side driver, max 6A |
| 2 | Digital output<br>PWM output | Low side driver, max 8A<br>Low side driver, max 8A<br>10k-20kHz |
| 2 | Digital Inputs<br>Digital Output<br>PWM Outputs<br>H -Bridge | Low<3V, High>3V, max 100Hz<br>High/low side driver, max 2A/10A<br>High/low side driver, max 2A/-<br>Max 2A |
| 4 | Digital Inputs<br>Digital Output<br>PWM Outputs<br>H -Bridge | Low<3V, High>3V, max 100Hz<br>High/low side driver, max 3A/10A<br>High/low side driver, max 3A/-<br>Max 3A |

**!** To ensure the accuracy it is recommended to use only reference voltage with these DI/AI channels.

**!** OUT/DI/PI_3 can also be used as Pulse input. Max 8kHz

**!** OUT/DI/PI_34 can also be used as Pulse input. Max 8kHz.

## Wiring Diagram 1/2

**Analog or Digital [PNP] inputs**
**or**
**only AI_7:**
as default NodeID selection

**Digital input [NPN]**

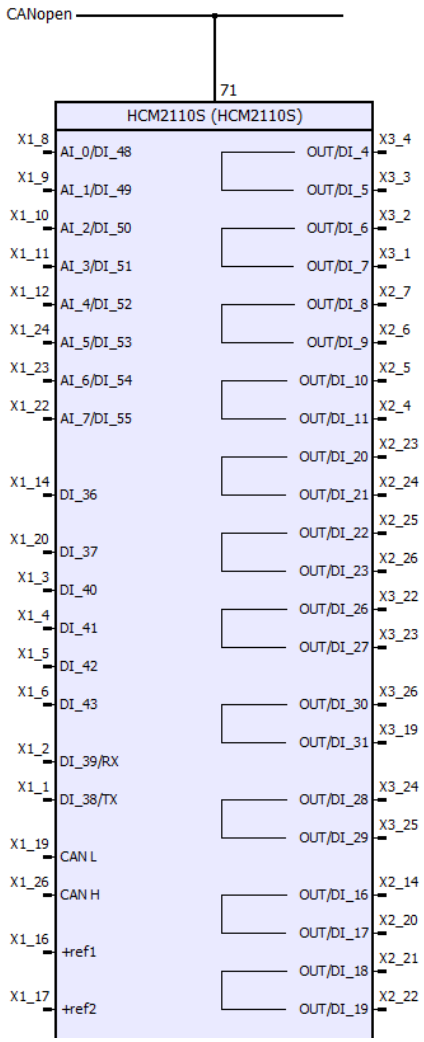
**Digital inputs [PNP]**

**Digital inputs [PNP] or RS232**

**ISO high speed CAN**

**Ref. voltage out,** 3.3/5/10/12V 250mA

**Ref. voltage out,** 12V 250mA




**PWM / Digital outputs**
High side driver, Max 6A
**or Digital inputs [PNP]**

**PWM / Digital outputs**
Low side driver, Max 8A
**or Digital inputs [PNP)]**

**PWM / H-Bridge / Digital outputs *)**
High/Low side driver, Max 2/10A
**or Digital inputs [PNP]**

**PWM / H-Bridge / Digital outputs *)**
High/Low side driver, Max 3A/10
**or Digital inputs [PNP]**

***) Note!**
The low side drivers are not PWM capable except the OUT/DI_30 and OUT/DI_31

**See table at page 4 for further details**

## Wiring Diagram 2/2

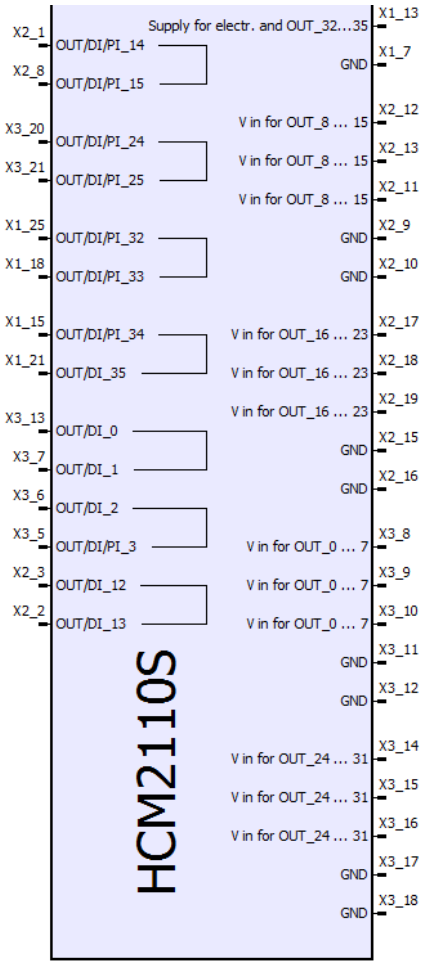
**PWM / Digital outputs**
High side driver, Max 3A
**or Digital / Pulse inputs [PNP]**

**PWM / Digital outputs**
High side driver, Max 6A
**or Digital / Pulse inputs [PNP]**

**Digital outputs**
High side driver, Max 2A
**or Digital / Pulse inputs [PNP]**

**Digital outputs**
High side driver, Max 2A
**or Digital inputs [PNP] *)**

**PWM / Digital outputs**
High side driver, Max 3A
**or Digital inputs [PNP] *)**




**Supply CPU + Out32…35**
**9-32V DC, 10A fuse recommended**

**Supply for Out8…15**
**9-32V DC**
**Max 30A fuse recommended**

**Supply for Out16…23**
**9-32V DC**
**Max 30A fuse recommended**

**Supply for Out0…7**
**9-32V DC**
**Max 30A fuse recommended**

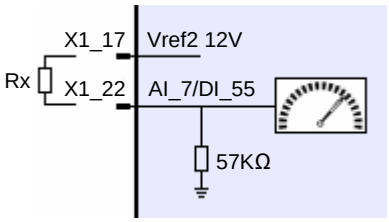
**Supply for Out24…31**
**9-32V DC**
**Max 30A fuse recommended**

***) Note!**
OUT/DI/PI_3 and OUT/DI/PI_34 can be used as pulse inputs

**See table at page 4 for further details**

## Node ID

| Voltage at AI_7 | Node ID offset | Rx / Ω (with 12V Vref) |
|---|---|---|
| 0V | 1 | Open |
| 1.7V | 3 | 360k |
| 3.4V | 5 | 150k |
| 5.2V | 7 | 75k |
| 6.9V | 9 | 43k |
| 8.6V | 11 | 22k |
| 10.3V | 13 | 12V ref. |




As default the unit Node address is set by voltage level at AI_7.

Node ID = Base Node ID (70) + Node ID offset. See CANopen profile for further details.

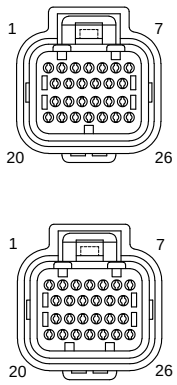
Reference voltage 1 ( +ref1 / X1_16 ) provides 5V during boot and reference voltage 2 ( +ref2 / X1_17 ) provides 12V.

## Connectors

AMP Superseal Connectors

| Part description: | Product Code: |
|---|---|
| X1: Super Seal Connector Plug Housing | Ø1.6-2.2mm - AMP 3-1437290-7 |
| X2: Super Seal Connector Plug Housing | Ø1.6-2.2mm - AMP 3-1437290-8 |
| X3: Super Seal Connector Plug Housing | Ø1.6-2.2mm - AMP 1473416-1 |
| Receptacle Contact (0.75 – 1.25mm$^2$) | AMP 3-1447221-3 |
| Filler Plug *) | AMP 4-1437284-3<br>Deutsch 0413-204-2005 |

*) Filler plugs must be used to reach waterproofness



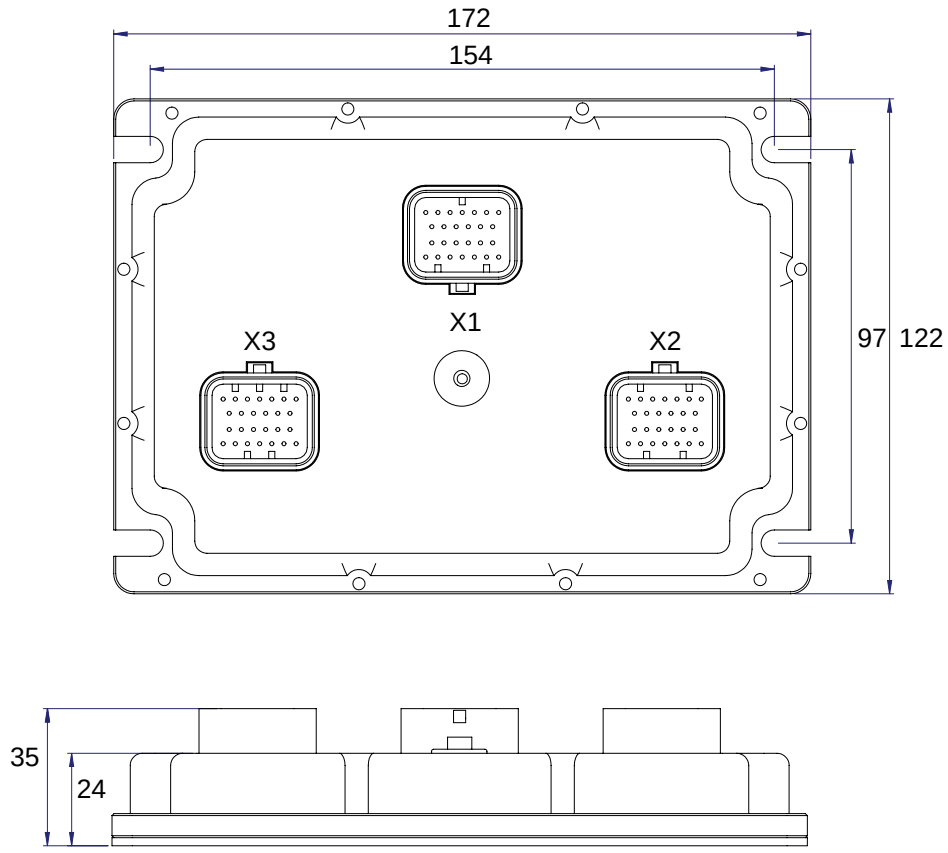

As seen from cable entry side

## Tests & CE compliance – test still pending

| | |
|---|---|
| EMC | EN 61000-4-2, Testing and measurement techniques – Electrostatic discharge immunity test E/ECE Regulation No. 10, Revision 4 (2012), Emission and immunity tests<br>IEC 60255-22-1, Electrical disturbance tests for measuring relays and protection equipment – 1 MHz burst immunity test |
| Environmental | EN 60068-2-1, Cooling test<br>IEC 60068-2-2, Dry heat test<br>IEC 60068-2-30, Damp heat test<br>EN 60068-2-6, Stationary vibration<br>EN 60068-2-27, Mechanical shock test<br>IEC 60529, IP6X dust test<br>IEC 60529, IPX7 temporary immersion test to 1m<br>ISO 9227, Salt spray test |

## Housing Dimensions and Mounting

HCM2110S is fixed to flat surface with four M5 screws. The recommended mounting position is AMP connector facing down or to the side. In latter case it is recommended to leave some loose cable hanging in downward arc to prevent any moisture from accessing the module through the connector.




Exertus reserves the right to change product details without prior notice.