# ISO AMP CARD
# ISO AMP MODULE

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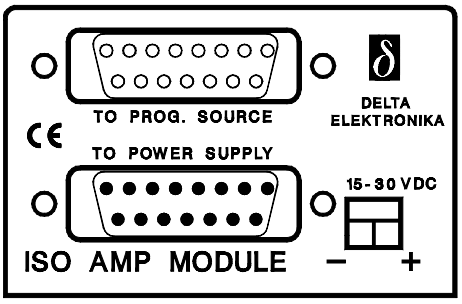
# Installation

**CAUTION** Electrostatic discharge (ESD) can damage components inside the power supply or ISO AMP CARD. Take the following precautions to prevent ESD:

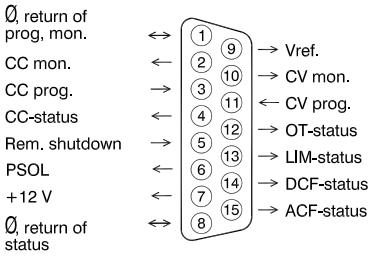
Remove all cables from the power supply, wear a grounded anti static wrist strap.
Keep the ISO AMP CARD in its original ESD safe bag as long as possible.

### Installing the ISO AMP MODULE

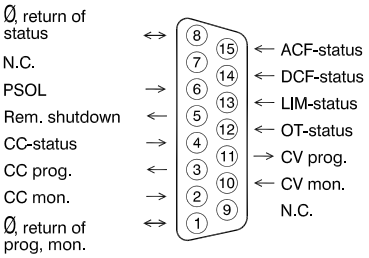
- Mount the ISO AMP MODULE using the wall or rail mounting adapter.
- Connect the power supply to the ISO AMP MODULE with the supplied 15 pole cable.
  Connect a 15-30 V DC supply voltage to the 2-pole connector. + and - are indicated on the module.
  Finally connect your programming source to the connector marked 'TO PROG. SOURCE'
- For use with other units than Delta Elektronika power supplies, make sure to connect pin 1 to pin 8 on the connector 'To Power Supply'.




*Front panel with connectors.*




*To prog. source*




*To supply*

# Operating

For remote programming and monitoring please refer to the power supplies' manual.
The warning that the Ø of the programming input (pin 1) is connected to the minus output is no longer valid when the ISO AMP is used.

# Configure and Calibrate

The ISO AMP can be configured for both 5V and 10 V signal levels. Selecting a signal level is done by closing or opening DIP-jumpers. See *fig. 1 - Lay-out for ISO AMP card PCB P510 on page 6* for the component layout of the ISO AMP.
A closed jumper means 5V, an opened jumper means 10 V. The signal level for each of the four analog channels can be selected individually.
See ESD precautions on this page.

| Signal | Jumper |
|---|---|
| $CV_{PROG}$ | J4, closed=5 V, open=10 V |
| $CC_{PROG}$ | J3, closed=5 V, open=10 V |
| $CV_{MON}$ | J2, closed=5 V, open=10 V |
| $CC_{MON}$ | J1, closed=5 V, open=10 V |

*Table 1*

| Signal | Trimmer (full scale) |
|---|---|
| $CV_{PROG}$ | R51 |
| $CC_{PROG}$ | R40 |
| $CV_{MON}$ | R29 |
| $CC_{MON}$ | R18 |

*Table 2*

The full scale of the analog channels of the ISO AMP is factory calibrated within 0.1% for a 5 V signal level. Configuring jumper J1...J4 for 10 V signal levels without re-calibrating can introduce an extra full scale error of 0.1%. *Table 2* shows the full scale calibration trimmers.

See *fig. 1 - Lay-out for ISO AMP card PCB P510 on page 6* for the component layout of the ISO AMP.

Warning: before proceeding with the calibration of the ISO AMP make sure that your measuring equipment has the correct voltage and current rating.

**Voltage calibration**

- Connect a suitable, high accuracy volt meter to the output terminals of the power supply and put the CV programming switch on the power supply in the position 'PROG'
- Apply 5.000 V or 10.000 V (depending on the jumper setting) to the $CV_{PROG}$ input.
- Calibrate the output voltage of the power supply with R51.
- Connect the volt meter to the $CV_{MON}$ connection and calibrate the $CV_{MON}$ signal with R29.

**Current calibration**

- Switch off the power supply, connect a suitable, high accuracy current meter across the output terminals of the power supply and put the CC programming switch on the power supply in the position 'PROG'
- Apply 5.000 V or 10.000 V (depending on the jumper setting) to the $CC_{PROG}$ input.
- Calibrate the output current of the power supply with R40.
- Connect a volt meter to the $CC_{MON}$ connection and calibrate the $CC_{MON}$ signal with R18.

## WEEE (Waste Electrical & Electronic Equipment)

Correct Disposal of this Product

Applicable in the European Union.

This marking shown on the product, its packing or its literature indicates that it should not be disposed with other wastes at the end of its working life, but should be collected separately to recycle it responsibly to promote the sustainable reuse of material resources.

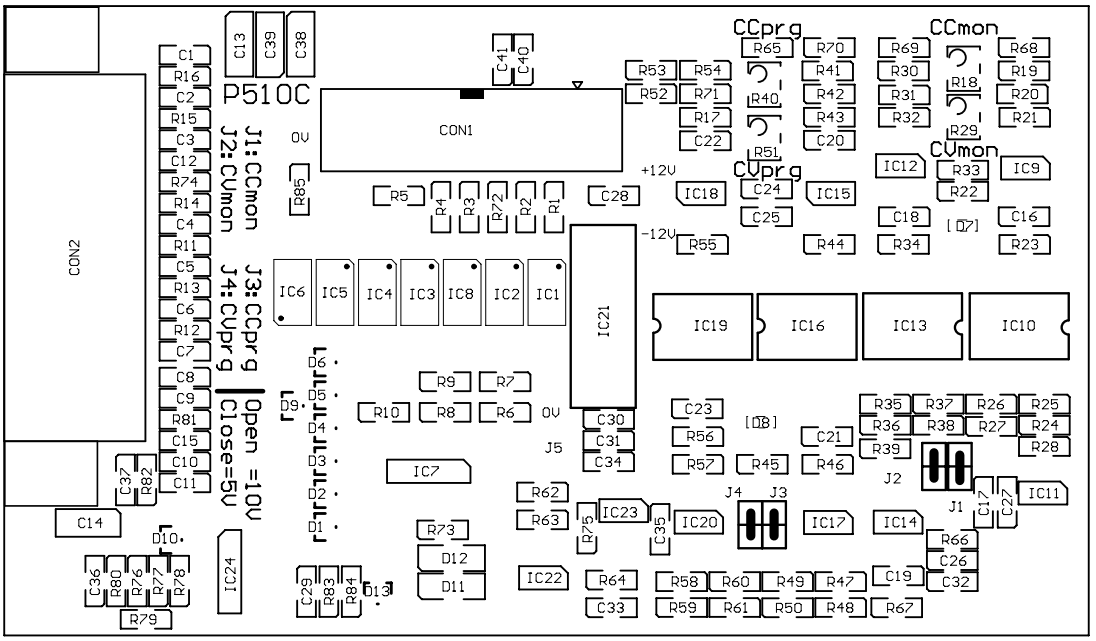



*fig. 1 - Lay-out for ISO AMP card PCB P510*

| | | | |
|---|---|---|---|
| C1 | 10NF 50V | PHILIPS | |
| C10 | 10NF 50V | PHILIPS | |
| C11 | 10NF 50V | PHILIPS | |
| C12 | 10NF 50V | PHILIPS | |
| C13 | 1000PF 1000V | CERAMIC | |
| C14 | 2200PF 250V | CERAMIC | |
| C15 | 10NF 50V | PHILIPS | |
| C16 | 47PF 100V | YAGEO | |
| C17 | 150PF 50V | PHILIPS | |
| C18 | 47PF 100V | YAGEO | |
| C19 | 150PF 50V | PHILIPS | |
| C2 | 10NF 50V | PHILIPS | |
| C20 | 47PF 100V | YAGEO | |
| C21 | 47PF 100V | YAGEO | |
| C22 | 47PF 100V | YAGEO | |
| C23 | 47PF 100V | YAGEO | |
| C24 | 1UF16V | PHILIPS | |
| C25 | 1UF16V | PHILIPS | |
| C26 | 1UF16V | PHILIPS | |
| C27 | 1UF16V | PHILIPS | |
| C28 | X7R 0.47UF25V | AVX | |
| C29 | 1UF16V | PHILIPS | |
| C3 | 10NF 50V | PHILIPS | |
| C30 | 1UF16V | PHILIPS | |
| C31 | 1UF16V | PHILIPS | |
| C32 | 1UF16V | PHILIPS | |
| C33 | 1UF16V | PHILIPS | |
| C34 | 1UF16V | PHILIPS | |
| C35 | 1UF16V | PHILIPS | |
| C36 | 1UF16V | PHILIPS | |
| C37 | 10NF 50V | PHILIPS | |
| C38 | 1000PF 1000V | CERAMIC | |
| C39 | 1000PF 1000V | CERAMIC | |
| C4 | 10NF 50V | PHILIPS | |
| C5 | 10NF 50V | PHILIPS | |
| C6 | 10NF 50V | PHILIPS | |
| C7 | 10NF 50V | PHILIPS | |
| C8 | 10NF 50V | PHILIPS | |
| C9 | 10NF 50V | PHILIPS | |
| D1 | BZX84 C8V2 | PHILIPS | |
| D10 | BZX84 C8V2 | PHILIPS | |
| D11 | BZG03-C15 | PHILIPS | |
| D12 | BZG03-C15 | PHILIPS | |
| D13 | BZX84C12V | PHILIPS | |
| D2 | BZX84 C8V2 | PHILIPS | |
| D3 | BZX84 C8V2 | PHILIPS | |
| D4 | BZX84 C8V2 | PHILIPS | |
| D5 | BZX84 C8V2 | PHILIPS | |
| D6 | BZX84 C8V2 | PHILIPS | |
| D7 | BAS28 | PHILIPS | |
| D8 | BAS28 | PHILIPS | |
| D9 | BZX84 C8V2 | PHILIPS | |

| | | |
|---|---|---|
| IC1 | TCLT1002 | VISHAY |
| IC10 | HCNR201 | HP |
| IC11 | OP97FS | AD |
| IC12 | OP97FS | AD |
| IC13 | HCNR201 | HP |
| IC14 | OP97FS | AD |
| IC15 | OP97FS | AD |
| IC16 | HCNR201 | HP |
| IC17 | OP97FS | AD |
| IC18 | OP97FS | AD |
| IC19 | HCNR201 | HP |
| IC2 | TCLT1002 | VISHAY |
| IC20 | OP97FS | AD |
| IC21 | CONV TMA 2415 D | TRACO |
| IC22 | LM317LM | NAT. SEMICON |
| IC23 | LT1236ACS8-5 | LT |
| IC24 | TL064 | TI |
| IC3 | TCLT1002 | VISHAY |
| IC4 | TCLT1002 | VISHAY |
| IC5 | TCLT1002 | VISHAY |
| IC6 | TCLT1002 | VISHAY |
| IC7 | 74HCU04 | PHILIPS |
| IC8 | TCLT1002 | VISHAY |
| IC9 | OP97FS | AD |
| R1 | 2.2K | MF/.125/200 |
| R10 | 10K | MF/.125/200 |
| R11 | 1.8K | MF/.125/200 |
| R12 | 10 | MF/.125/200 |
| R13 | 10 | MF/.125/200 |
| R14 | 10 | MF/.125/200 |
| R15 | 10 | MF/.125/200 |
| R16 | 10 | MF/.125/200 |
| R17 | 100 | MF/.125/200 |
| R19 | 100K/0.1%/0.25W | ROE |
| R2 | 2.2K | MF/.125/200 |
| R20 | 100K/0.1%/0.25W | ROE |
| R21 | 3.3M | MF/.125/200 |
| R22 | 220K | MF/.125/200 |
| R23 | 680 | MF/.125/200 |
| R24 | 100K/0.1%/0.25W | ROE |
| R25 | 100K/0.1%/0.25W | ROE |
| R26 | 100K/0.1%/0.25W | ROE |
| R27 | 100K/0.1%/0.25W | ROE |
| R28 | 220K | MF/.125/200 |
| R3 | 2.2K | MF/.125/200 |
| R30 | 100K/0.1%/0.25W | ROE |
| R31 | 100K/0.1%/0.25W | ROE |
| R32 | 3.3M | MF/.125/200 |
| R33 | 220K | MF/.125/200 |
| R34 | 680 | MF/.125/200 |
| R35 | 100K/0.1%/0.25W | ROE |
| R36 | 100K/0.1%/0.25W | ROE |

| | | |
|---|---|---|
| R37 | 100K/0.1%/0.25W | ROE |
| R38 | 100K/0.1%/0.25W | ROE |
| R39 | 220K | MF/.125/200 |
| R4 | 2.2K | MF/.125/200 |
| R41 | 100K/0.1%/0.25W | ROE |
| R42 | 100K/0.1%/0.25W | ROE |
| R43 | 3.3M | MF/.125/200 |
| R44 | 220K | MF/.125/200 |
| R45 | 680 | MF/.125/200 |
| R46 | 220K | MF/.125/200 |
| R47 | 100K/0.1%/0.25W | ROE |
| R48 | 100K/0.1%/0.25W | ROE |
| R49 | 100K/0.1%/0.25W | ROE |
| R5 | 2.2K | MF/.125/200 |
| R50 | 100K/0.1%/0.25W | ROE |
| R52 | 100K/0.1%/0.25W | ROE |
| R53 | 100K/0.1%/0.25W | ROE |
| R54 | 3.3M | MF/.125/200 |
| R55 | 220K | MF/.125/200 |
| R56 | 680 | MF/.125/200 |
| R57 | 220K | MF/.125/200 |
| R58 | 100K/0.1%/0.25W | ROE |
| R59 | 100K/0.1%/0.25W | ROE |
| R6 | 10K | MF/.125/200 |
| R60 | 100K/0.1%/0.25W | ROE |
| R61 | 100K/0.1%/0.25W | ROE |
| R62 | 220 | MF/.125/200 |
| R63 | 680 | MF/.125/200 |
| R64 | 8.2 | MF/.125/200 |
| R65 | 100 | MF/.125/200 |
| R66 | 100 | MF/.125/200 |
| R67 | 100 | MF/.125/200 |
| R68 | 27K | MF/.125/200 |
| R69 | 27K | MF/.125/200 |
| R7 | 10K | MF/.125/200 |
| R70 | 27K | MF/.125/200 |
| R71 | 27K | MF/.125/200 |
| R72 | 2.2K | MF/.125/200 |
| R73 | 10K | MF/.125/200 |
| R74 | 10 | MF/.125/200 |
| R75 | 1 | MF/.125/200 |
| R76 | 100K/0.1%/0.25W | ROE |
| R77 | 2.74K/0,1%/0.25W | ROE |
| R78 | 14.7K/0.1%/0.25W | ROE |
| R79 | 10 | MF/.125/200 |
| R8 | 10K | MF/.125/200 |
| R80 | 5.6 | MF/.125/200 |
| R81 | 10 | MF/.125/200 |
| R82 | 10 | MF/.125/200 |
| R83 | 1K | MF/.125/200 |
| R84 | 1K | MF/.125/200 |
| R85 | 1K | MF/.125/200 |
| R9 | 10K | MF/.125/200 |