

# Application note

DU15 decoupling unit combined with SW32-24D10A power supply and HSC30 multi purpose HV cable

Revision E

12.02.2020

## Working principle

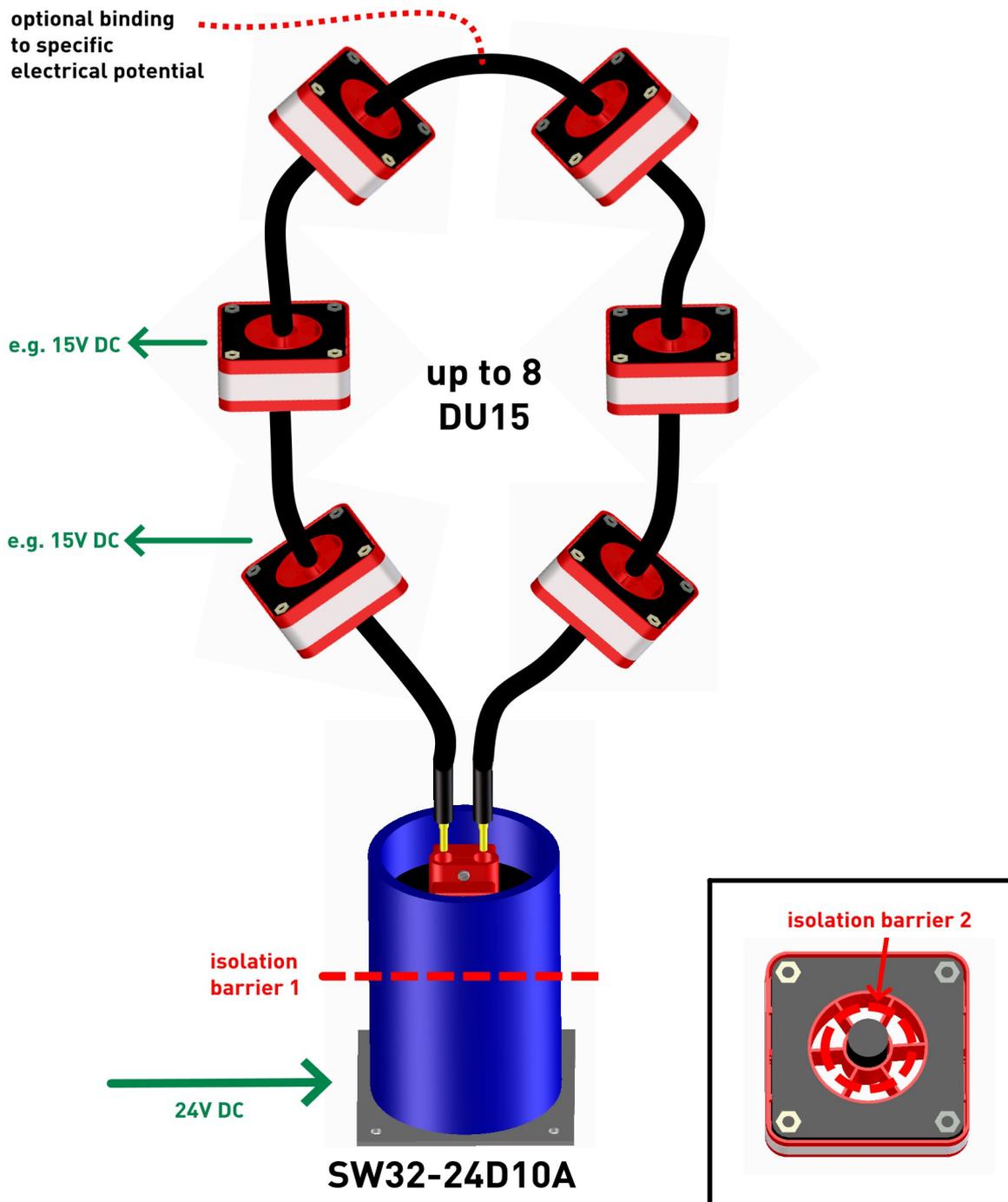


Illustration 1: working principle of complete setup

## Isolation voltages

### Isolation barrier 1 - SW32-24D10A:

In comparison the SW32 power supply provides the higher part of the isolation voltage of the combination. With it the application (inverter, sensors, etc.) should be isolated from the (mostly ground referred) 24V input power supply.

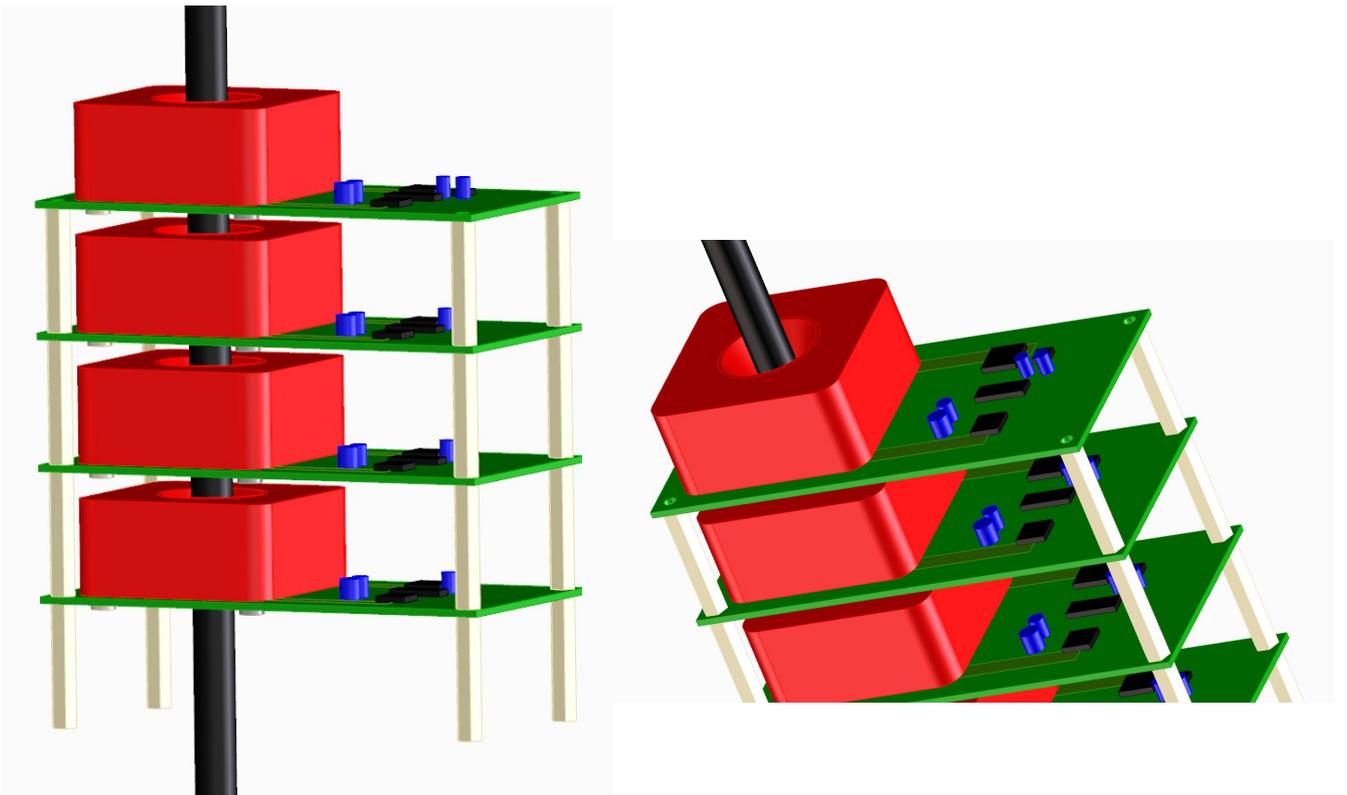
### Isolation barrier 2 - DU15:

On the output of the SW32 a current slope should be connected with one or more DU15 decoupling units slid on. For that we recommend our HSC30 cable, the outer diameter of which is matched to the inner diameter of the DU15. This allows for a nearly ideal field guidance.

Maximum isolation voltage between HSC30 cable and DU15 output contacts is 15kV.

Different potentials inside the application should be isolated from each other with this.

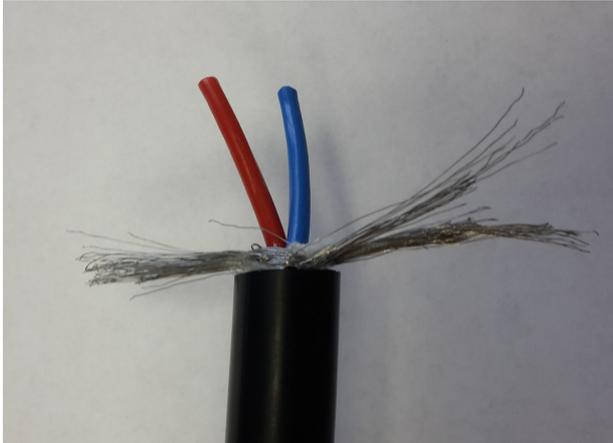
Please make sure that positioning, construction and cable routing allow for the required isolation.



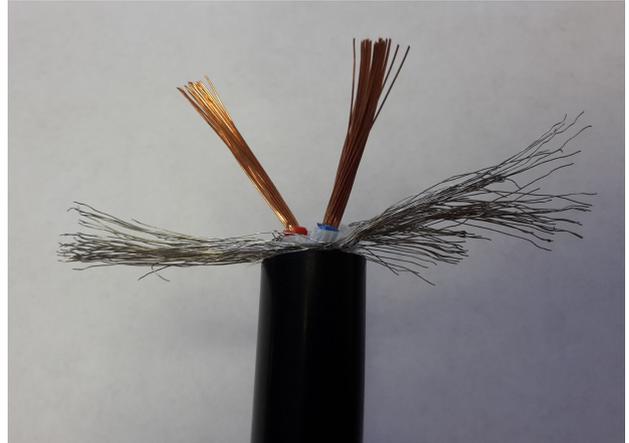
*Illustration 2: Application example - stack of multiple DU15 with HSC30*

## Assembly of HSC30 for current slope use

For use of HSC30 in current slope applications it is best to use the following guideline. You can also order a cable already tailored to your length.



*Illustration 3: Dismantle the cable*



*Illustration 4: remove insulation of the wires*



*Illustration 5: twist wires and shield together*



*Illustration 6: soak it with solder and cut it down to 5mm dismantled length*



*Illustration 7: put presoldered part into banana-plug; solder them together (holding tool recommended)*



*Illustration 8: if using a piece of shrink-tube (not necessarily required), make sure that it is not thicker than HSC30 cable to allow it to pass through DU15*

## Restrictions of cable length and output load

Devices from factory are adjusted to a output cable slope length from 1 to 10 metres. Otherwise it may happen that the output power of the connected DU15 decreases or the overall power loss increases significantly.

If a shorter or longer cable slope is needed for your application please contact us.

## Recommendations for cable routing

Cable routing should be as straight as possible and unnecessary loops should be avoided. Insulation breakdown inside the HSC30 may occur if the cable is exposed to partial discharges repeatedly. To avoid this the cable has to be routed away from grounded parts. As a rule of thumb use a distance of 1 mm/kV under normal environmental conditions.

## Optional binding of current slope to specific electrical potential

If the required isolation voltage from the 'highest' to the 'lowest' DU15 is higher than 15kV there is also the possibility to use DU15. Because the current slope is isolated regarding to ground it could be bound to a specific electrical potential by cutting the cable in half and reassembling with ring cable lugs for example.

Connecting the lugs to the middle potential of an e.g. multilevel inverter DC-link results in a defined isolation voltage in both directions.

You are welcome to contact us if you have a specific application where this an option.

## IMPORTANT NOTICE

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