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3. Fault tracing

A possible fault in an output or an input bridge can be traced without opening the module. In this section there are given pass criteria for following measurements conducted with a multimeter for frame sizes R0-R5:
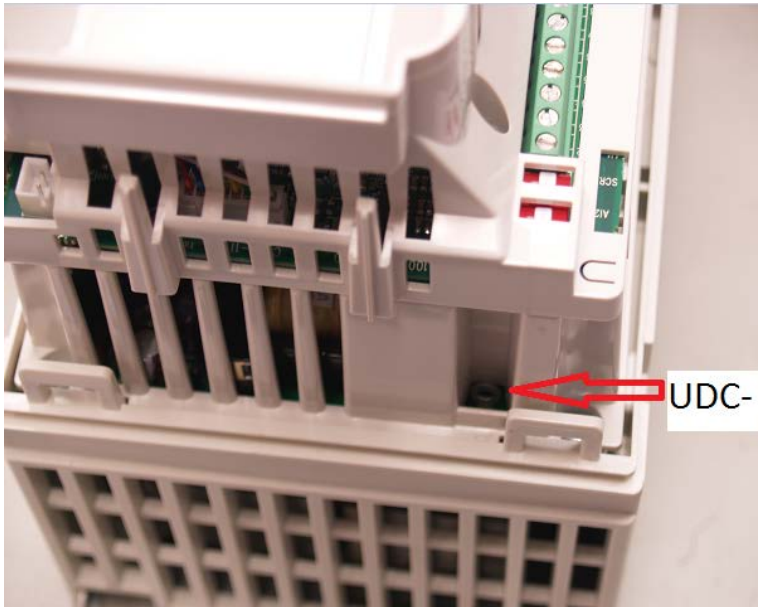
· Input bridge diode measurement from input connectors
· IGBT freewheeling diode measurement from output connectors

If a broken semiconductor module is detected, the whole drive must be replaced.

Note: Always make sure that there is no voltage connected to input terminals. In case a permanent magnet motor is used, the motor axel must not rotate as it would feed voltage to drive side.

STEP 1	Input bridge diode measurement
Performance	Use a multimeter to make sure that the measurements for the input bridge diodes are OK.
Pass criteria	By using the diode measurement setting for the multimeter, you should get following values: **Note: In case of a controlled charging circuit, the input bridge measurement is not possible for all phases.**

+ probe	- probe	R1-R3 display	R4 display	R5 display
L1	+DC	~0,5 Vdc	~0,45 Vdc	~1,1 Vdc
L2	+DC	~0,5 Vdc	~0,45 Vdc	OL
L3	+DC	~0,5 Vdc	~0,45 Vdc	OL
+DC	L1	OL	OL	OL
+DC	L2	OL	OL	OL
+DC	L3	OL	OL	OL

+ probe	- probe	R1-R3 display	R4-R5 display
L1	-DC	OL	OL
L2	-DC	OL	OL
L3	-DC	OL	OL
-DC	L1	~0,5 Vdc	~0,45 Vdc
-DC	L2	~0,5 Vdc	~0,45 Vdc
-DC	L3	~0,5 Vdc	~0,45 Vdc

Meaning of the test	To ensure that the input bridge diodes are OK.

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Picture   UDC- test point

STEP 2	**Freewheeling diode measurement**
Performance	Use a multimeter to make sure that the measurements for the output freewheeling diodes are OK.
Pass criteria	By using the diode measurement setting for the multimeter, you should get following values:

+ probe	- probe	R1-R5 display
U	+DC	~0,4 Vdc
V	+DC	~0,4 Vdc
W	+DC	~0,4 Vdc
+DC	U	OL
+DC	V	OL
+DC	W	OL

+ probe	- probe	R1-R5 display
U	-DC	OL
V	-DC	OL
W	-DC	OL
-DC	U	~0,4 Vdc
-DC	V	~0,4 Vdc
-DC	W	~0,4 Vdc

Meaning of this test	To ensure that the output freewheeling diodes are OK.