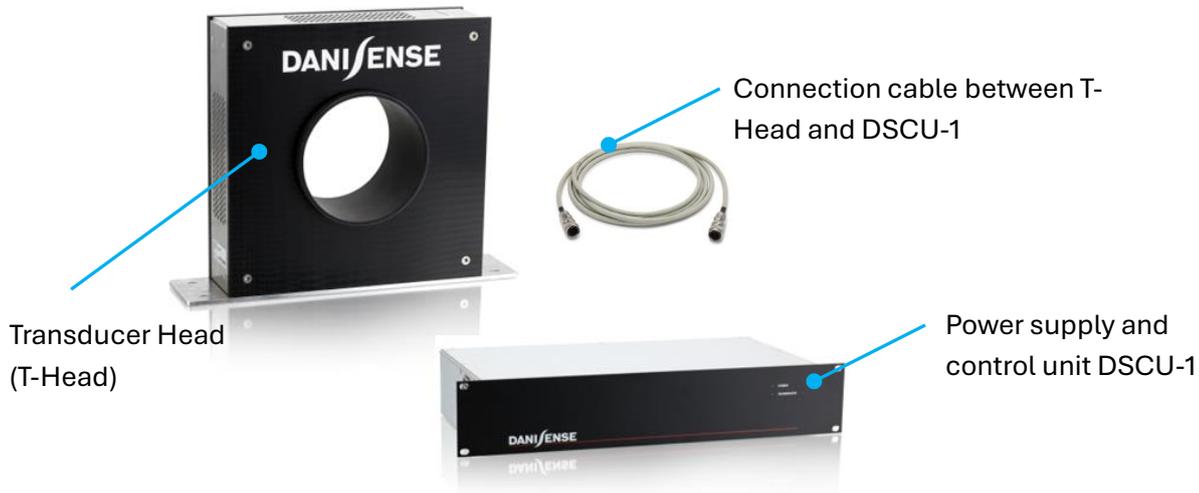


# DR series – How to calculate the total measuring resistance $R_M$



## Introduction

The DR series is suitable for current values greater than 3000 A. A major difference to the smaller Danisense current transducers is that all electronics are installed in the supply unit. The transducer head consists only of various iron cores, copper windings and a housing.

For the variants with current output, it is necessary to take into account the length of the connection cable between the transducer head and the supply unit when calculating the total measuring resistors.

The included standard cable is 5 m long. However, cable lengths in 5 m steps up to 30 m can also be ordered.

## Datasheet specification

In the datasheet the measuring resistance is often specified as a typical value.

### Electrical specifications at 23 °C, $V_S = \pm 15$ V supply voltage

Parameter		Symbol	Unit	Min	Typ.	Max	Comment
Nominal primary AC current	Continuous	$I_{PN AC}$	Arms			5000	See Fig. 3 for details
Nominal primary DC current	Continuous	$I_{PN DC}$	A	-8000		8000	For other values see Fig. 2
Measuring range		$I_{PM}$	A	-8000		8000	See Fig. 2 & Fig. 3 for details
Overload capacity		$I_{OL}$	kA			20	Non-measured 100ms
Nominal secondary current	Continuous	$I_{SN}$	mA	-3200		3200	At nominal primary DC current
Primary / secondary ratio				2500		2500	$I_{primary}/I_{secondary}$
Measuring resistance		$R_M$	$\Omega$	0	0.5		See Fig. 2 for details

Figure 1: Measuring resistance of the DR5000IM according to the datasheet

In the comment we can read that details are specified in figure 2. Figure 2 shows the maximum total measuring resistance  $R_M$  in relation to the current value as a DC or peak current in A.

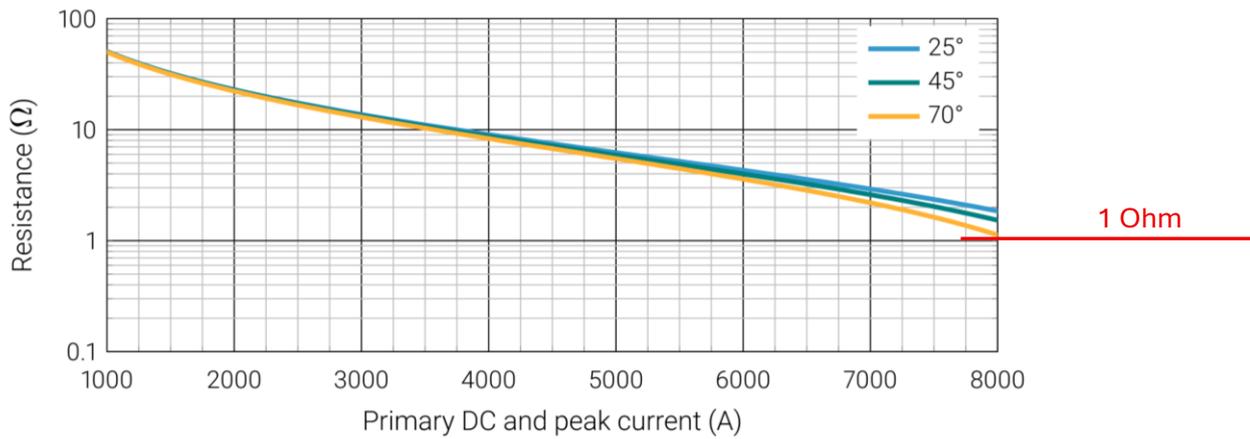


Figure 2: Maximum measurement resistor  $R_M$  vs. ambient temperatures

Figure 2: Maximum total measuring resistor  $R_M$  vs. ambient temperature of the DR5000IM

It is obvious that larger measuring resistors can also be used if only small currents are to be measured. For example, if a DC current of up to 8000 A is to be measured and the ambient temperature can reach up to 70°C, the total measuring resistor must not exceed 1 ohm.

It should be noted that the resistance of the connection cable between the transducer head and the power supply and control unit (DSCU-1) must also be taken into account.

The following figure specifies all partial resistance values and defines the final calculation formula.



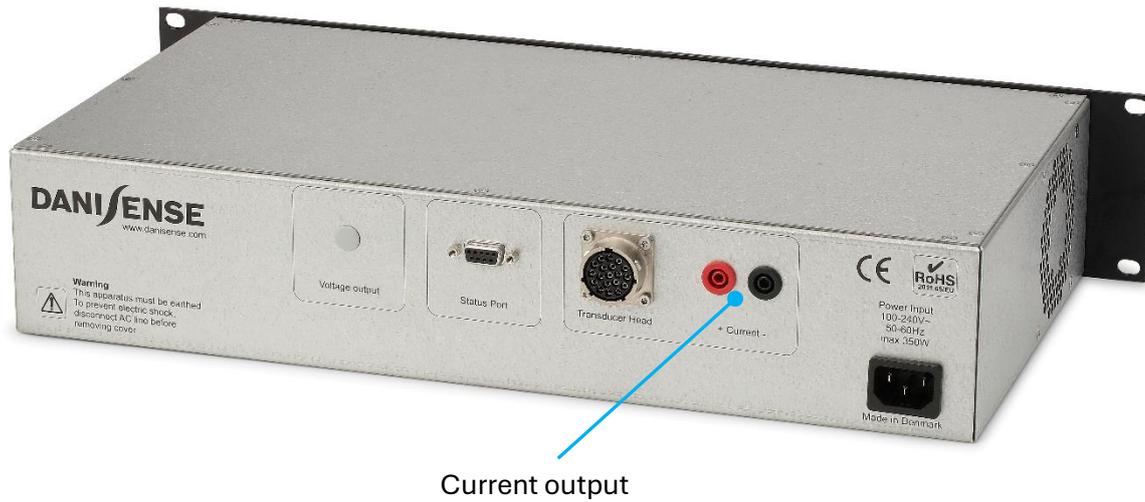


Figure 4: Rear panel of the DSCU-1 with current output

For EMC reasons, the laboratory cables should be twisted.