RAD10 / RAD18

DIS COM

Resolver-Decoder for E-Motors

- ✓ Tap existing resolver signals for accurate RPM and angle acquisition
- ✓ Can be used for other data acquisition systems as well
- ✓ Isolation from original resolver signals
- ✓ Simple to use, robust design
- ✓ Up to 120,000 rpm speed

Resolver-Decoders RAD10 and RAD18

Resolvers offer an accurate method to measure revolutions and angles of rotating machinery, yet resolvers are expensive, and the signals require additional conditioning. Current generation electrical motors often come with built-in resolvers, connected to the motor controller, usually allowing access to the resolver signals.

The RAD10 and RAD18 interfaces tap the existing resolver signals and convert them to incremental encoder ABZ-signals (1024 pulses per rev., with zero pulse). These signals can be connected to a data acquisition front end like the TIS input of a Discom TAS frontend. To keep the load on the existing resolver signals low, a capacitively isolating amplifier is placed close to the resolver.

RAD10 offers highest accuracy up to **30,000 rpm** for a single resolver winding or **8000 rpm** for quadruple resolver windings. RAD18 gives up some accuracy to reach up to **120,000 rpm** with single resolver windings, or **30,000 rpm** with quad resolver windings.

Model Variants:

Variant	Use Case	rpm max.
RAD10	Medium rpm range	8,000 (quadruple winding)
	High positional accuracy	30,000 (single winding)
RAD18	High rpm range	30,000 (quadruple winding)
	No angular position required	120,000 (single winding)

Hardware and Installation

The RAD device consists of two components: the amplifier (A) and the decoder (D) unit. The isolating (capacitive) amplifier has to be placed *as close as possible to the resolver outputs* of the e-motor. From the amplifier, three BNC wires (up to 20m) are connected to the decoder unit. (See cabling diagram on next page; simply connect the three amplifier outputs R, C and S to the according decoder inputs.) The decoder unit is then connected to the data acquisition front end (e.g. TIS input of the TAS front end).

The Decoder unit needs external 12V DC power supply. An according power adapter unit is provided with the Decoder.

Cabling diagram
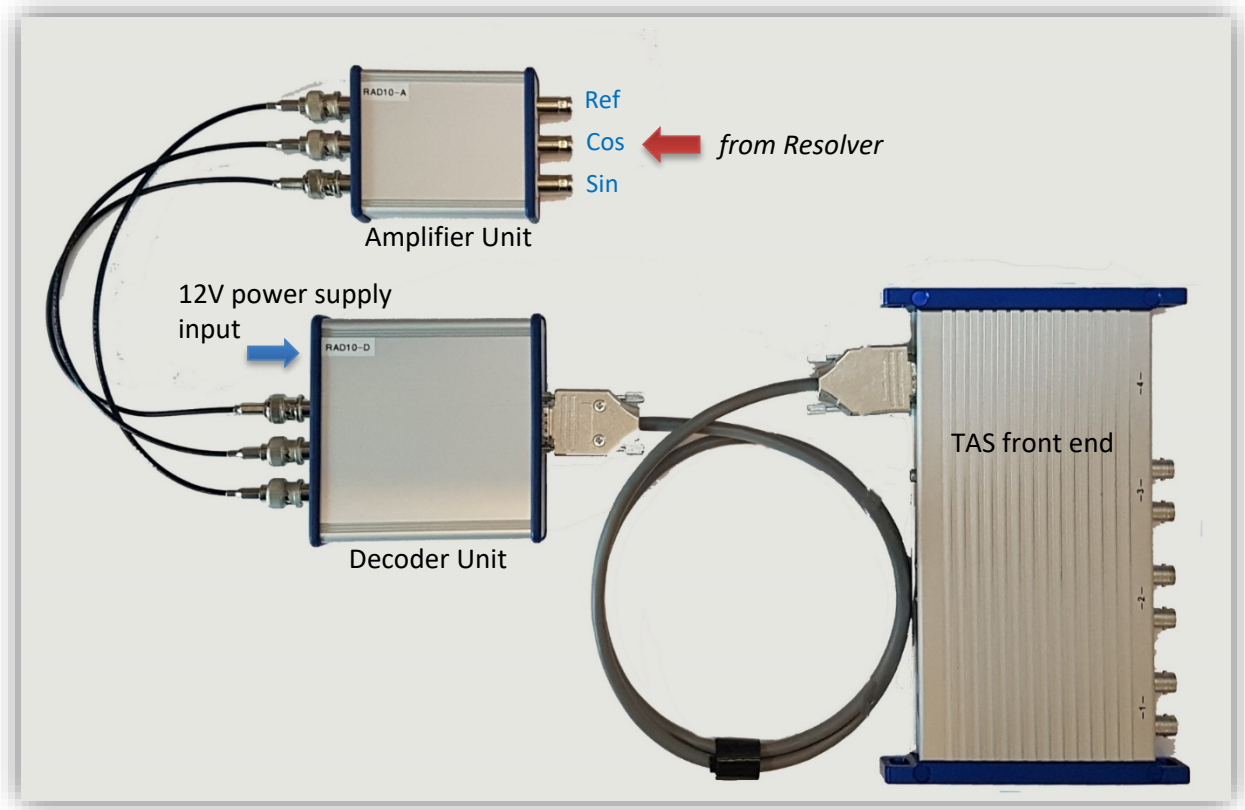
Amplifier and Decoder units have to be installed *electrically isolated* (same as the TAS front end).

Electrical Properties, Operation Conditions

Resolver (requirements)	3 kHz to 20 kHz reference frequency 5V pp *or* 15V pp (specify when ordering amplifier)
Amplifier unit	3-Channel insulating ICP amplifier High impedance (94 kΩ) Low capacitance (< 1 nF) Operating ambient temperature range: -20°C — +85°C
Decoder unit	Decoder for Resolver signals Needs 12V DC power supply (use TAS28 DC power adapter) 1024 pulses per revolution plus zero marker RS422 interface to TIS28 (TAS box module) Operating ambient temperature range: -20°C — +50°C