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## 1 Description

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The Digistart D3 has a standard braking feature whose operation consists of two distinct braking cycles. The initial-stage braking cycle is used to bring the motor speed down to approximately 60% of the running speed. The final-stage braking cycle provides maximum torque to bring the motor to a standstill. During this final-stage, brake torque developed is set as a "% of motor FLT" using Pr **2M** Brake Torque.

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## 2 Commissioning

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To commission your Digistart D3 for Brake operation, you will need to set the following parameters:

- Pr **2I** Stop Time
- Pr **2M** Brake Torque
- Pr **2N** Brake Time

This is the recommended procedure to commission your Digistart D3 Brake function:

- Set *Brake Torque* (Pr **2M**) to the desired level.
- Set *Stop Time* (Pr **2I**) to a maximum of 240 seconds and *Brake Time* (Pr **2N**) to 5 seconds.
- Start the motor, allow it to reach full running speed, stop the motor.
- Record the time it takes for the motor to brake to 60 % speed. Call this time "T1".
- Once this 60 % speed is reached, quick-stop the motor (apply stop and reset commands simultaneously).
- Set *Stop Time* (Pr **2I**) to recorded time T1 plus 5 seconds. Leave the *Brake Time* (Pr **2N**) at 5 seconds.
- Start the motor, allow it to reach full running speed, stop the motor. Allow the full braking cycle to complete.
- If the motor does not brake to a complete standstill by the end of the full braking cycle (ie after Pr **2I**, *Stop Time* has elapsed), increase the *Brake Time* (Pr **2N**) and the *Stop Time* (Pr **2I**) by the same amount.

Repeat the testing process (start the motor, allow it to reach full running speed, stop the motor) until the motor comes to a complete standstill at exactly the same time as the total braking cycle has completed.



### NOTE

If the motor speed does not fall below approximately 60% after a maximum *Stop Time* (Pr **2I**) setting of 4:00 minutes, the motor will run on and the Digistart D3 braking will be ineffective. In this case you will have to use soft braking. Refer to the User Manual for full details.

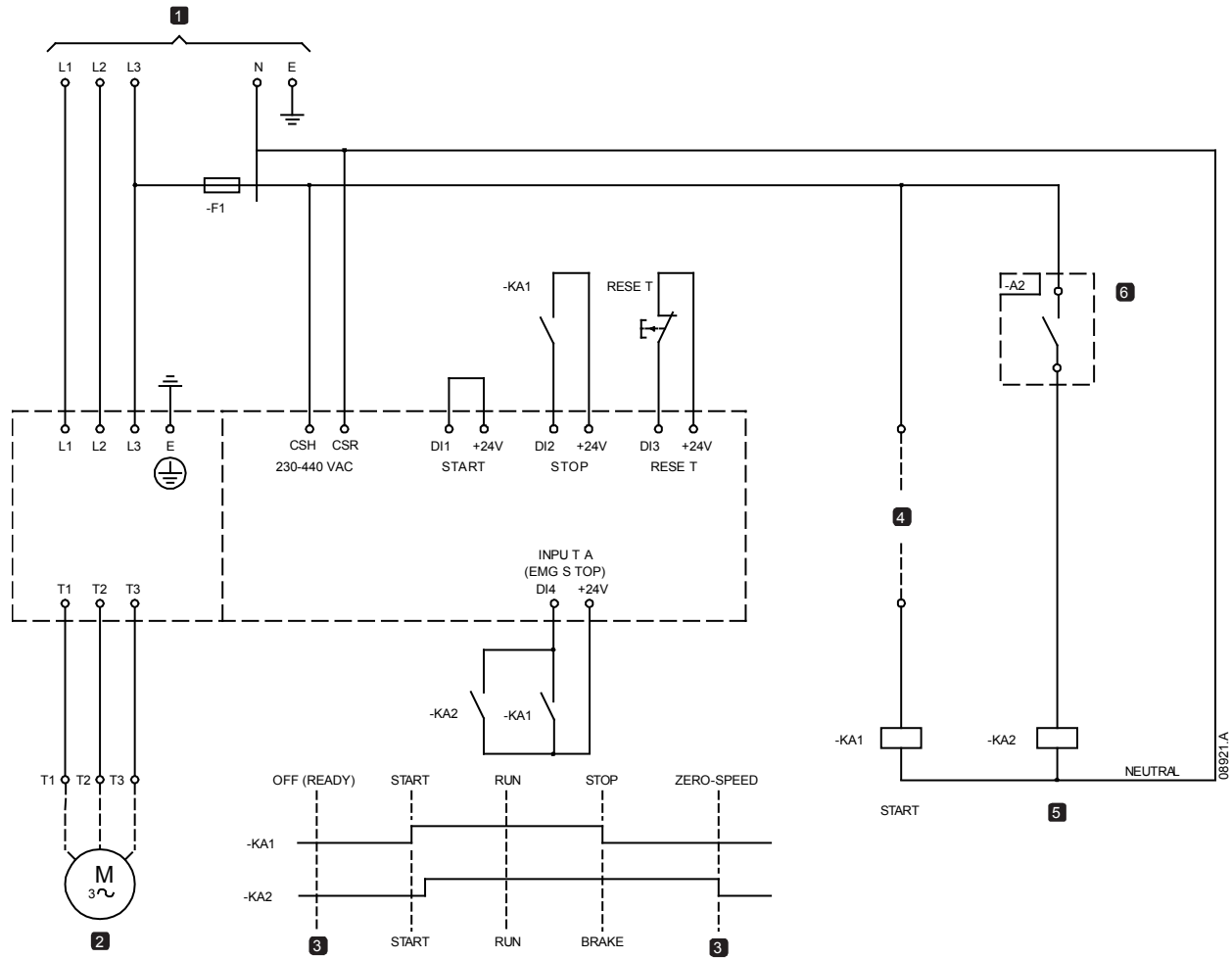
# APPLICATION NOTE

## 3 Using an external zero-speed sensor

If the load is always constant when required to brake, an Digistart D3 brake profile can be set up so that the end of the braking cycle will always coincide with the motor reaching a standstill. For loads which may vary between braking cycles, there are benefits in using an external zero-speed sensor to interface with the Digistart D3 for brake shut-off. This control method ensures that the Digistart D3 braking will always shut off when the motor has reached a standstill, thus avoiding unnecessary motor heating.

The following schematic diagram shows how you can use a zero-speed sensor with the Digistart D3 to turn the brake function off at motor standstill. The zero-speed sensor (-A2) is often referred to as an under-speed detector. Its internal contact is open at zero-speed and closed at any speed above zero-speed. Once the motor has reached a standstill, the Digistart D3 will go into Emergency Stop mode and remain in this state until the next start command is given (ie next application of -KA1).

The Digistart D3 must be operated in Remote mode and Pr **3A Input A Function** must be set to emergency stop.



<b>1</b>	Mains supply
<b>2</b>	Motor
<b>3</b>	Emergency stop mode (shown on starter display)

<b>4</b>	Start signal (2, 3, or 4 wire)
<b>5</b>	Zero speed detect
<b>6</b>	Zero speed sensor