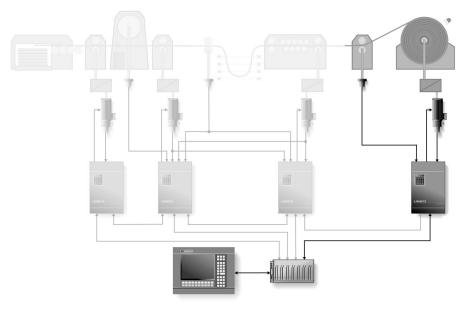


Embedded Unwind/Rewind Control





URC[™]

Embedded

Unwind/

Rewind

Control

Overview

The URC[™] software module is engineered specifically for controlling unwind and rewind (uncoiler/recoiler)applications. The program is embedded within the controller of a UNICO drive, eliminating the need for an external control rack. When used in conjunction with a programmable controller, the drive forms a powerful automation work cell that can either stand alone or be easily integrated with other UNICO automation cells to build a complete control system for a metal-processing line. Embedded control reduces system complexity while taking full advantage of the exceptional performance, flexibility, and ease of use of UNICO drives.

Features Coil Diameter Calculation

The unwind/rewind continuously updates its system calculations. The outside diameter, mass, and inertia of the coil are updated once every revolution. Dynamic inertia compensation is calculated to provide smoother acceleration and deceleration of the coil.

External Diameter Reference

The coil diameter may be tracked using an external device such as a sonic wired to one of the analog input channels. Three diameter outputs can be used to enable or disable certain events when the coil reaches user-defined diameters. These outputs are normally used as early warning signals.

Tension Set-Up

The unwind/rewind can be configured to provide either forward tension, for applications such as recoilers, or reverse tension, for applications such as uncoilers. Separate adjustments provide independent control over tension while threading material and while running.

Underpeel/Overpeel Control

Some operations load coils randomly without consideration as to whether the coil reels from the top or the bottom. An underpeel/overpeel feature allows coils to be wound or unwound without dictating how the coil must be loaded.

Linear Material Counter

The linear amount of material on the coil is continuously estimated as the coil builds up or down based upon the thickness of the material and the inner and outer coil diameters.

Coil Footage Counter

The software keeps track of the amount of material that has been uncoiled or recoiled on the line.

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Features

(continued)

Early Warning Output

An early-warning output can be turned on when the amount of material remaining on the coil reaches a user-defined length.

Velocity Difference Fault

The program can detect a broken material strip or clock-springing coil by monitoring the velocities of the motor and master follow signal. A fault is generated if excessive velocity difference is detected.

Torque Limit Control

A torque limit mode can be used when the drive follows a velocity signal but requires control over its overall torgue output. The torgue limit value can be regulated using the torgue limit selection or adjusted by an analog input.

Velocity Following

The drive can follow a reference velocity and rate-limit this velocity using the acceleration and deceleration setups. This configuration allows the unwinder or rewinder to act as a master line control with its input being a target velocity. The drive can also operate as a simple slave.

Velocity Cruise Control

A velocity cruise-control feature in master velocity mode allows the drive to be accelerated, decelerated, or resume its last speed when the appropriate input is set.

Transducerless Drive Control

Most UNICO drives can be configured for transducerless control. An internal velocity estimator is used to regulate speed with motors that have no feedback device and do not require position control.

Programmability

The control can be customized to a specific installation using UEdit[™], a powerful Windows-based programming tool that lets users add their own ladder logic and function-block programming.

A variety of input/output functions are provided for integrating the unwind/rewind control with external devices. The user can select the functions required by a given system and specify their corresponding hardware or serial I/O points.

Inputs/ Outputs

motor on

Inputs

- fault reset
- jog forward
- jog reverse
- fast stop
- motion enable
- auto
- auto run
- velocity slave
- velocity master
- torque limit
- tension on
- run tension

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UNICO

forward tension

UNICO – Worldwide

• velocity select 0 • coil select 2

- Outputs
- motor on
- no fault
- manual
- forward motion
- at zero velocity
- at maximum velocity
- tension on

- early warning at diameter 1
- at diameter 2
- at diameter 3
- motor rms warning · inverter thermal
- warning





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Specifications subject to change without notice.

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- manual acceleration 1 track reference
- speed adjust
- acceleratedecelerate

coil select 0

coil select 1

velocity select 1

velocity select 2

velocity select 3

- resume
- underpeel
- read diameter

- track preset
- no warning auto
- in motion

- torque limit
- reverse motion
 - at request velocity
- following