OMRON

CELCIUX°

Multi-loop temperature controller

» Program-less communication

» Control & connectivity

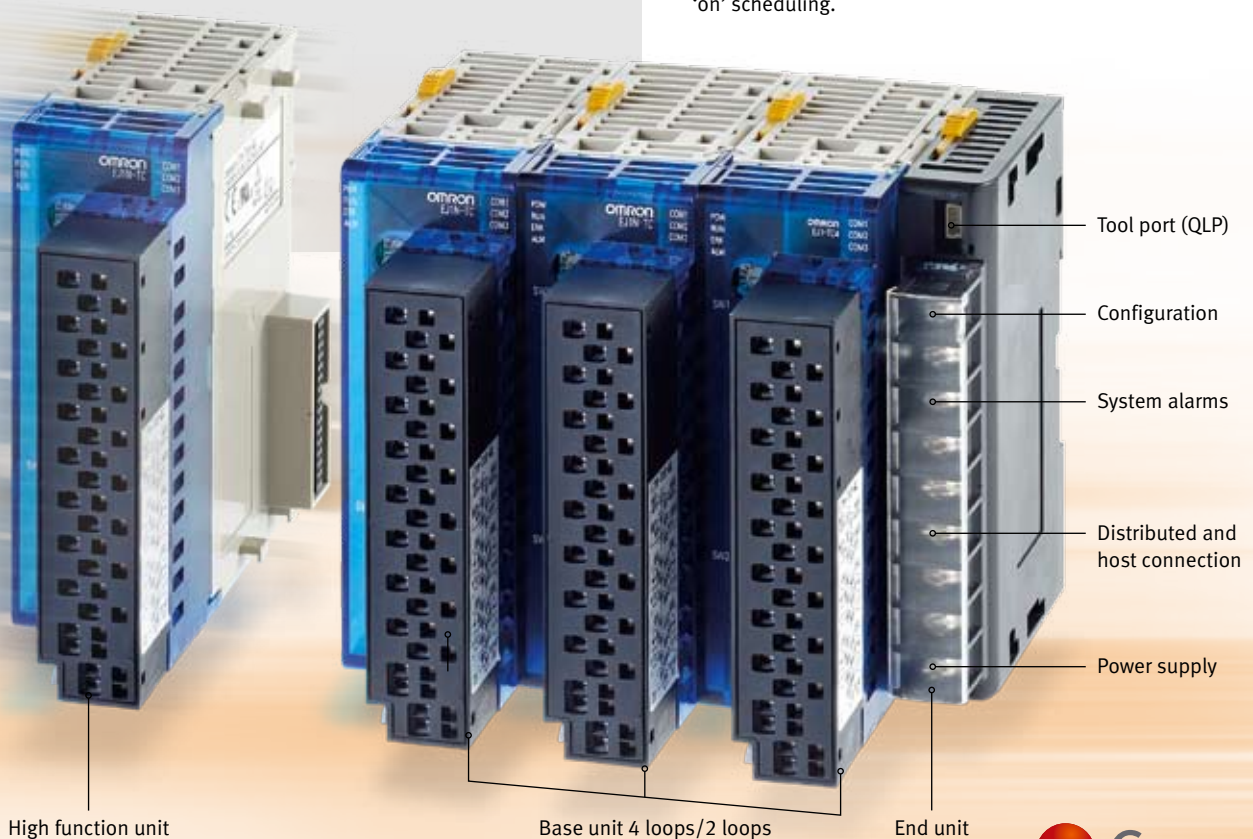» Maximum loop integrity

realizing

OMRON

Outstanding control & simple connectivity

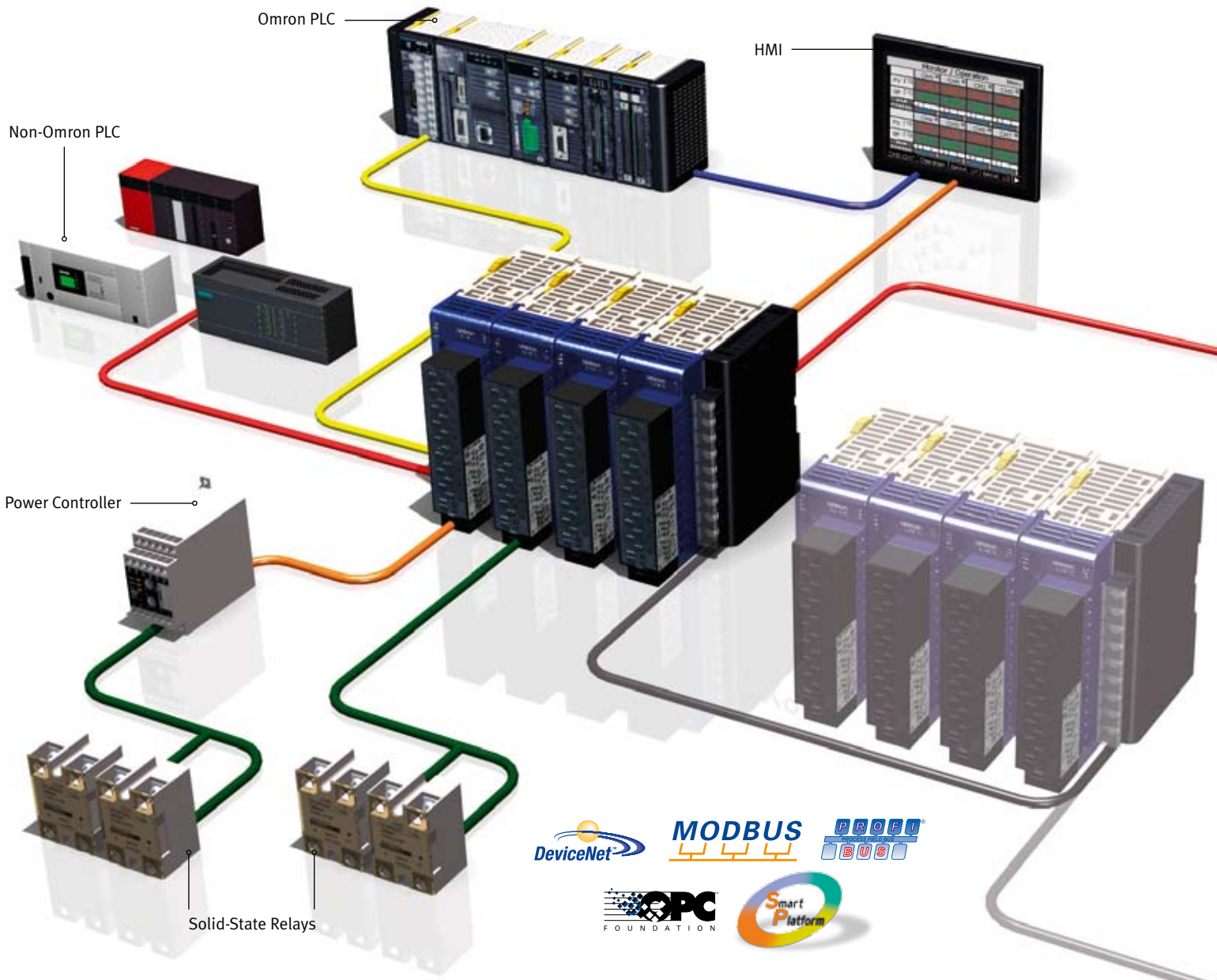*CelciuX° is a new, modular, multi-channel temperature controller that interfaces to a wide range of industrial networks. It has easy program-less communication with Omron and non-Omron PLCs and HMI. And it incorporates smart and easy-to-use temperature control technology, while Omron's unique Gradient Temperature Control (GTC) algorithm makes it capable of handling complex temperature profiles.*

Starting with one end-unit, up to 16 temperature control units can be added to create a system. With multiple end-units, expansion up to 250 loops is possible, even with distributed placement. A high function unit can be added for Gradient Temperature Control or for program-less or fieldbus communications. PC software makes it simple to set parameters and to copy the same parameters in multiple units or to duplicate systems.

Proven control technology

The CelciuX° has the flexibility to support many applications. The 2-PID control methodology (read more about this on the right-hand side of this folder) has proven itself. Our fast and reliable autotuning algorithms reduce commissioning time. CelciuX° also offers special algorithms like GTC (read more on the right-hand side of this folder), can monitor your heater status for 1 or 3 phase, or reduce peak currents with output 'on' scheduling.

Tool port (QLP)

Configuration

System alarms

Distributed and host connection

Power supply

High function unit

Base unit 4 loops/2 loops

End unit

CELCIUX°

Omron PLC

HMI

Non-Omron PLC

Power Controller

Solid-State Relays

DeviceNet

MODBUS

PROFI BUS
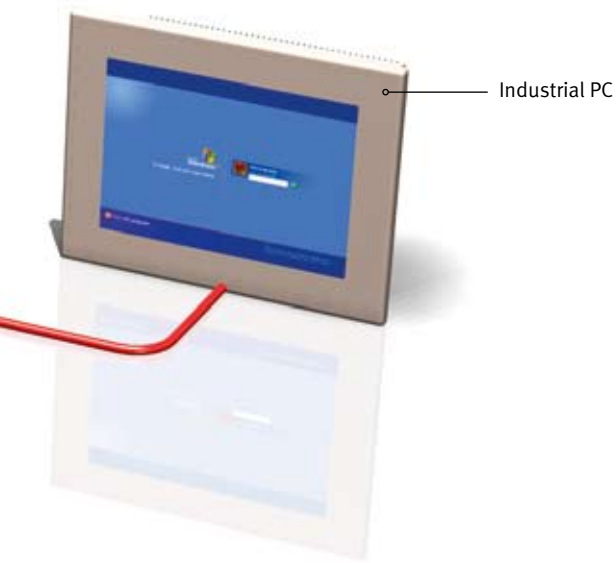
OPC FOUNDATION

Smart Platform

Simple connectivity and easy integration

You can easily integrate CelciuX° into your application because it interfaces with a wide range of industrial networks. And when using more Omron instrumentation there is an extra benefit because CelciuX° is the temperature-control building block for Omron's "Smart Platform". Smart Platform offers complete machine automation from one single connection and software. The Smart Active Parts Library provides functional graphical objects for OMRON's NS-series HMI and a library of smart function blocks for PLCs enables simple yet robust communications with CelciuX° systems. Moreover, the CX-server driver makes it possible to connect to CX-Supervisor Machine View and CX-Server OPC, bringing SCADA connectivity to the CelciuX°.

A wide range of industrial fieldbus connections is possible, from Modbus RTU, all the way up to Profibus. With the addition of the HFU, it is possible to connect the CelciuX° to Omron or non-Omron PLC without programming the communication protocol. The Celciux° acts as a master and transfers the data into the PLC memory area, ready for the PLC to use.

Multi-loop machine control with HMI

Control, overview and data-logging couldn't be easier with the CelciuX° in combination with a direct connection to Omron HMIs. The use of Omron's graphical library of Smart Active Parts reduces engineering time. Also connecting to non-Omron HMI over the Modbus serial interface is another of the many options of CelciuX°.

Industrial PC

## Precise control of 2D temperature profiles

Gradient Temperature Control (GTC), Omron's unique loop-interacting PID control technology, ensures that a 2-dimensional temperature profile remains constant over a defined area, eliminating the damaging effect of hot spots on sheets of materials such as metal, glass, plastic or silicon wafers. GTC makes it possible to control the exact shape of the temperature profile at any position. With GTC you can choose either to:
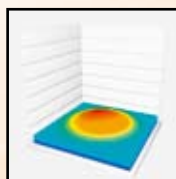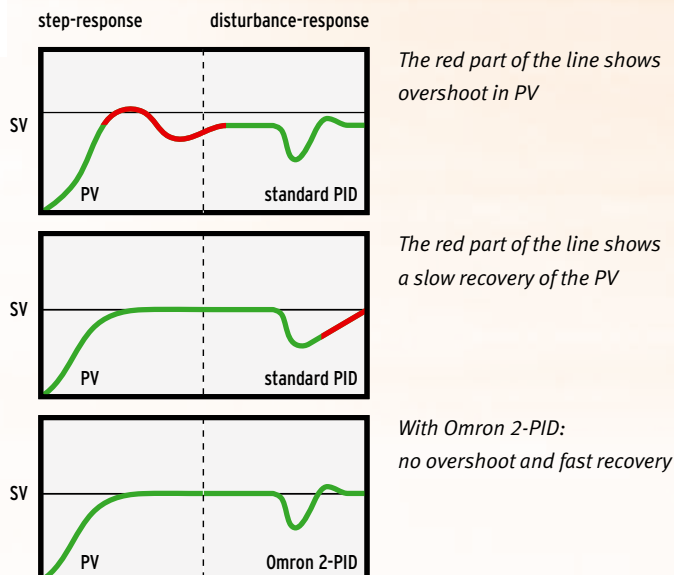
Force fast heating from the inside
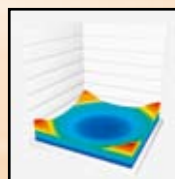
Force fast heating from the outside

Force temperature uniformity

## Faster start-up with better quality

Omron's, 2-PID control is an important advance on standard PID (Proportional, Integral, Derivative) control. It uses a powerful algorithm that enables the instrument to be tuned for optimum disturbance response without any compromise on the speed of reaction to changes in the set point. Special action is unnecessary since the built-in 2-PID control does all the work. Our 2-PID control is factory preset with a default setting suitable to give fast responses with minimal overshoot for most analogue control applications. This means faster start-up production times and much more stable control during production, leading to better quality products.

CelciuX° **Benefits**

- Interfaces to a **wide range of industrial networks**
- **Reduces engineering time** due to Program-less Communications, Smart Active Parts and Function Block Libraries
- Choice of screw clamps and **time-saving screw-less clamps**
- Handles **large multi-zone applications** in one system - up to 250 loops, optional with distributed placement
- **Minimises spares** inventory, one unit handling various types of input, such as Pt, thermocouple, mA, and V input
- **Improves product quality** and yield with Gradient Temperature Control

step-response   disturbance-response

SV

PV   standard PID

The red part of the line shows overshoot in PV

SV

PV   standard PID

The red part of the line shows a slow recovery of the PV

SV

PV   Omron 2-PID

*With Omron 2-PID: no overshoot and fast recovery*

PET bottle manufacturing

In blow-moulding applications, fast temperature-drop recovery is very important. CelciuX° is equipped with 2-PID and other proven [easy to use] algorithms to ensure stable temperatures. Moreover, its excellent connectivity makes integration with the rest of the line/machine a simple matter.
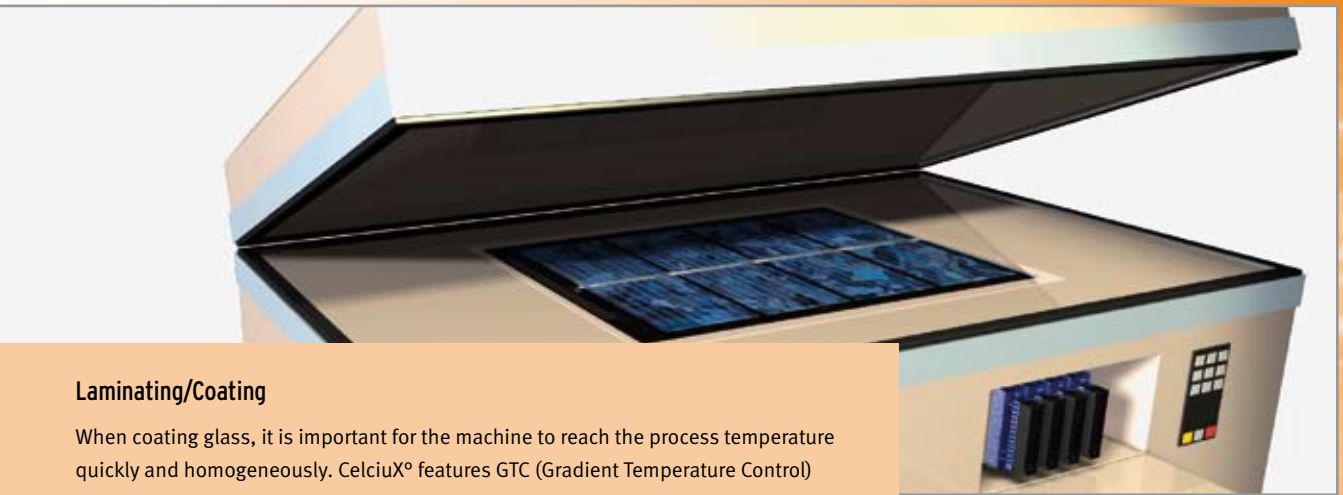
Laminating/Coating

When coating glass, it is important for the machine to reach the process temperature quickly and homogeneously. CelciuX° features GTC (Gradient Temperature Control) technology, which has proven to fulfill both of these requirements. It can be easily connected to any HMI or (via OPC) to a plant SCADA.
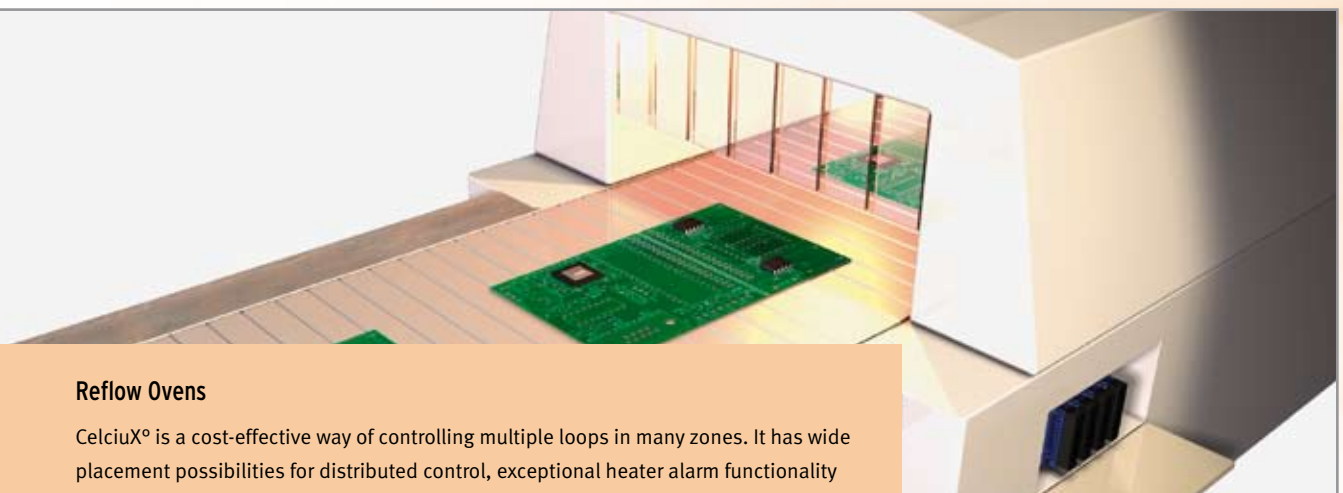
Reflow Ovens

CelciuX° is a cost-effective way of controlling multiple loops in many zones. It has wide placement possibilities for distributed control, exceptional heater alarm functionality and the ability to prevent all outputs being on simultaneously. When combining CelciuX° with the G3ZA power controllers, you can measure temperature at one place and offset outputs at other places where less or more power is required.

OMRON

CELCIUX°

Authorised Distributor:

Control Systems
• Programmable logic controllers • Human-machine interfaces • Remote I/O

Motion & Drives
• Motion controllers • Servo systems • Inverters

Control Components
• Temperature controllers • Power supplies • Timers • Counters • Programmable relays
• Digital panel indicators • Electromechanical relays • Monitoring products • Solid-state relays
• Limit switches • Pushbutton switches • Low voltage switch gear

Sensing & Safety
• Photoelectric sensors • Inductive sensors • Capacitive & pressure sensors • Cable connectors
• Displacement & width-measuring sensors • Vision systems • Safety networks • Safety sensors
• Safety units/relay units • Safety door/guard lock switches