UT320&350



High-accuracy controllers with selectable input and output functions for heating and cooling control.

Digital Indicating Controllers

The UT320 and UT350 controllers are digital indicating controllers which feature universal input and output. The user can set or change freely the type of measured inputs, the measurement range, and the type of output. A three-point alarm is standard, and a heater disconnection alarm is optional. Autotuning and a super overshoot function are available as control functions, and a retransmission of variables or a loop power supply for a transmitter are also included as standard features.

A four-digit, large LED display makes readings clearly visible from considerable distances.

UT320/350 BENEFITS:

Multiple inputs—thermocouple (K, J, T, B, S, R, N, E, L, U, W, Platinel 2, PR20-40, W97Re3-W75Re25), RTD (JPt100, Pt100), or current/voltage

Alarm output function—three points standard with process value upper and lower limits and fail output; two-point heater disconnection alarm optional

Contact input—two points, S/P selection or A/M selection

Multiple outputs—4 to 20 mA current, relay, voltage pulse

Retransmission output—select from process variable, target setpoint and control output value

Easy-to-read display—seven-segment, four-digit LED with 14mm high characters

Power supply—100 to 240V AC (± 10%) 50/60Hz

Available in two sizes—UT320 (1/8 DIN) and UT350 (1/4 DIN)

Settings—four sets of SP/PID settings

Autotune and super functions—to prevent overshoot

Password protection—parameter change function can be locked

RS-485 communications—to monitor the system remotely from a PC

Select key function—A/M mode key selector

Heating and cooling control—heating/cooling with high accuracy of ±0.1%, 250ms control cycle time

UT320/350 SPECIFICATIONS

INPUT

Number of input points: 1
Thermocouple: J, K, T, B, S, R, N, E, L, U, W, Platinel 2, PR 20-40, W97Re3-W75Re25
RTD: Pt100, JPt100
DC voltage: 0 to 2V, 1 to 5V, 0 to 10V, -10 to 20mV, 0 to 100mV
Input resistance: 1MΩ or more for TC/mV
About 1MΩ for DC voltage input
Noise rejection ratio:
Normal mode: 40dB (50/60Hz) or more
Common mode: 120dB (50/60Hz) or more

CONTACT INPUT

Usage: Confirmation of limit output
Number of input points: 1
Input type: Voltage-free contact or transistor contact
Input contact rating: 12V DC, 10mA or more

OUTPUT

CONTROL OUTPUT

Relay contact output: 1 SPDT 250V AC 3A, or 30V DC 3A (resistance load)

CONTACT OUTPUT

Function: Alarm output and FAIL output
Number of relay contact output points: 2
Relay contact rating: 240V AC, 1A or 30V DC, 1A

RETRANSMISSION OUTPUT

Either PV, target setpoint, or amount of control output
Number of output points: 1
Output signal: 4 to 20mA DC
Load resistance: 600 (or less)
Output accuracy: ±0.3% of span

ALARM FUNCTION

Thirteen types of alarm functions are provided. The alarm status is indicated by the alarm lamp on the front panel. Also, three points among them can be output as relay contact outputs.
Alarm types: PV high limit, PV low limit, Deviation high limit, Deviation low limit. De-energized on deviation high limit, De-energized on low limit. Deviation high and low limits, High and low limits within deviation, De-energized on PV high limit, De-energized on low limit.
Alarm output: 3 points. For heating/cooling control, if cooling side output is a relay , up to two alarm outputs can be used.
Heater disconnection alarm (optional): This alarm can be used for on/off control or time-proportional PID control.
Heater current setting range: 0.0 to 50.0 A

COMMUNICATION INTERFACE (OPTIONAL)

Communication protocol: Computer link or ladder communication with PLC
Standard: EIA RS-485
Maximum number of connectable controllers: 31 controllers
Maximum communication distance: 1200m
Communication method: 2-wire half duplex or 4-wire half duplex, start-stop synchronization, non-procedural
Communication rate: 600, 1200, 2400, 4800, 9600 bps

DISPLAY

PV display: 4-digit, 7-segment red LED, 20mm character height
Setpoint display: 4-digit, 7-segment red LED, 9.3mm character height
Status Display: 3 alarm indicator lamps: AL1, AL2, AL3
3 setpoint-number indication lamps: SP2, SP3, SP4
MAN operation mode lamp: MAN (lit in MAN mode)

FUNCTION SPECIFICATIONS

Control Computation: Continuous PID, time-proportional PID, heat/cool, on/off, or manual reset (PD control)
Control Cycle Time: 250 ms
Number of sets of target setpoints and PID parameters: 4
Target setpoint PID selection: PID parameters are provided for every target setpoint and the set of PID parameters are selected at the same time that the setpoint number is selected.
Zone PID selection: PID parameters are selected depending on the value of PV. For selection, the reference point (PID parameter selection setpoint) or the reference deviation is used.
Reference point process: The measuring range is divided into a maximum of three zones with up to two reference points, and PID parameters are selected for every zone.
Reference deviation process: PID parameters are selected when the deviation exceeds the reference deviation. This process takes precedence over the reference point process.

LOOP POWER SUPPLY FOR SENSOR

The controller supplies power to a two-wire transmitter.
Voltage: 15 VDC
Current: 21 mA max. (with short-circuit protection)

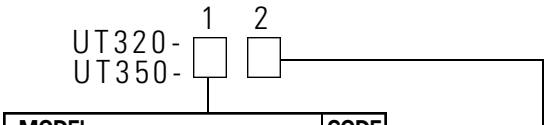
SAFETY AND EMCSTANDARDS

Safety: Conforms to IEC1010-1: 1990 and EN61010-1: 1992. Certified for CSA1010. Certified for UL508
EMC Standards: Conforms to EN55011: Class A Group 1 for EMI (emissions) and EN50082-2: 1995 for EMS (immunity)

POWER SUPPLY

Rating: 100 to 240 VAC (±10%)
Power Consumption: About 10 VA (6.0W maximum)

MODEL CONFIGURATION



MODEL	CODE
General purpose controller	0
Heating/cooling controller	2

OPTIONAL FUNCTIONS	CODE
None	0
With communication and heater disconnection alarm	1
With heater disconnection alarm	2