ControlMaster CM15
Universal process indicator, 1/8 DIN

Technical specification

Operation
Display
Color, 1/4 VGA TFT, liquid crystal display (LCD) with built-in backlight
Language
English, German, French, Italian and Spanish
Operator keypad
4 tactile membrane keys

Security
Password protection
Basic / Advanced – user-assigned password protection (not set at factory)

Standard functions
Base templates:
— Single PV indication
— Single PV indication + totalizer
— Counter
— Single PV indication + level

Dual templates
— Dual PV indication
— Dual PV indication + totalizer
— Dual counter
— Dual PV indication + level

Process alarms
Number:
— 8

Types:
— High / Low process
— High / Low latch

Source
— Fully configurable
(for example – PV, Analog input, Math block inbuilt)

Hysteresis:
— Level and time

Alarm enable:
— Enable / Disable individual alarms via a digital signal

Acknowledgement
Via front panel keys or digital signals

Real-time alarms *
Number:
— 2

Programmable:
— Time
— Day
— Duration

* Indicator fitted with standard function key only

Math blocks *
Number:
— 8

Operators:
— +, –, x , /
— Average, Maximum, Minimum
— High / Low / Median select
— Square root
— Multiplexer

Delay timers *
Number:
— 2

Programmable:
— Delay
— Duration

Logic equations *
Number:
— 8

Elements:
— 15 per equation

Operators:
— OR, AND, NOR, NAND, NOT, EXOR

Custom linearizer *
Number:
— 2

Elements:
— 20 breakpoints

* Indicator fitted with standard function key only

Analog inputs
Universal process inputs
Number:
— 1 standard

Type:
— Voltage
— Current
— Resistance (ohms)
— 3-Wire RTD
— Thermocouple
— Digital volt-free
— Digital 24 V
— Frequency

Non-universal process inputs
Number:
— 1 standard

Type:
— Voltage
— Current
— Thermocouple *
— Digital volt-free
— Digital 24 V

Thermocouple types
B, E, J, K, L, N, R, S, T

Resistance thermometer
Pt100

Other linearizations
$\sqrt{x}$, $x^{3/2}$, $x^{5/2}$, custom linearization

Digital filter
Programmable 0 to 60 s

* Only if universal process input is configured as 'Thermocouple'

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Display range
–9999 to 99999

Update rate
125 ms

Common mode noise rejection
> 120 dB at 50 / 60 Hz with 300 Ω imbalance resistance

Normal (series) mode noise rejection
> 60 dB at 50 / 60 Hz

CJC rejection ratio
0.05 °C/°C change in ambient temperature

Temperature stability
0.02 %/°C or 2 µV/°C (1 µV/°F)

Long term (input) drift
< 0.1 % of reading or 10 µV annually

Input impedance
> 10 MΩ (mV input)
10 Ω (mA input)

Inputs

Thermocouple	Maximum range °C (°F)	Accuracy (% of reading)
B	–18 to 1800 (0 to 3270)	0.1 % or ±2 °C (3.6 °F) (above 200 °C [392 °F]) *
E	–100 to 900 (–140 to 1650)	0.1 % or ±0.5 °C (0.9 °F)
J	–100 to 900 (–140 to 1650)	0.1 % or ±0.5 °C (0.9 °F)
K	–100 to 1300 (–140 to 2350)	0.1 % or ±0.5 °C (0.9 °F)
L	–100 to 900 (–140 to 1650)	0.1 % or ±1.5 °C (2.7 °F)
N	–200 to 1300 (–325 to 2350)	0.1 % or ±0.5 °C (0.9 °F)
R	–18 to 1700 (0 to 3000)	0.1 % or ±1 °C (1.8 °F) (above 300 °C [540 °F]) *
S	–18 to 1700 (0 to 3000)	0.1 % or ±1 °C (1.8 °F) (above 200 °C [392 °F]) *
T	–250 to 300 (–400 to 550)	0.1 % or ±0.5 °C (0.9 °F) (above –150 °C [–238 °F]) *

* Accuracy is not guaranteed at temperatures below this value

RTD	Maximum range °C (°F)	Accuracy (% of reading)
Pt100	–200 to 600 (–325 to 1100)	0.1 % or ±0.5 °C (0.9 °F)

Linear inputs	Standard analog input	Accuracy (% of reading)
Millivolts	0 to 150 mV	0.1 % or ±20 µV
Milliamps	0 to 50 mA	0.2 % or ±4 µA
Volts	0 to 25 V	0.2 % or ±20 mV
Resistance (low)	0 to 550 Ω	0.2 % or ±0.1 Ω
Resistance (high)	0 to 10 kΩ	0.5 % or ±10 Ω
Sample Interval	125 ms per sample	

Digital inputs	
Type	Volt-free or 24 V
Minimum pulse duration	Single input configured – 250 ms Both inputs configured as analog or digital – 500 ms

Frequency input*	
Frequency range	0 to 6000 Hz
1-signal	15 to 30 V
0-signal	–3 to 5 V

*For use with devices with open collector outputs

Outputs

Retransmission outputs

Number:
— 2 (1 standard, 1 optional)

Isolation:
— Galvanically isolated from the rest of the circuitry, 500 V for 1 minute

Analog range:
— 0 to 20 mA programmable

Load:
— 750 Ω max.

Accuracy:
— 0.2 % of output or ±10 µVA

Relays

Number:
— 4 (1 standard, 3 optional)

Type:
— Standard with changeover contacts
— Optional contacts selectable as NO or NC (by jumper)

Relay 1 contact rating:
— 5 A, 240 V

Relay 2, 3 and 4 contact ratings at maximum ambient temperature of 40 °C (104 °F):
— 5 A, 240 V

Relay 2, 3 and 4 contact ratings at maximum ambient temperature of 55 °C (131 °F):
— 2 A, 240 V

Update rate:
— 125 ms

Digital I/O

Number:
— 2 (optional)

Type:
— User-programmable as input or output
— Minimum input pulse duration – 125 ms

Input:
— Volt-free or 24 V DC
— 1-signal 15 to 30 V
— 0-signal –3 to 5 V
— Conforms to IEC 61131-2

Output:
— Open collector output
— 30 V, 100 mA max. switched
— Conforms to IEC 61131-2

Update rate:
— 125 ms

2-Wire transmitter power supply

Number:
— 1 standard

Voltage:
— 24 V DC

Drive:
— 2 loops, 45 mA max.

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Communications
Note. Only one communications option can be fitted per indicator.

IrDA service port (standard)
Baud rate:
— Up to 115 kBaud

Distance:
— Up to 1 m (3 ft)

Functions:
— Firmware upgrade
— Configuration upload / download

Ethernet (optional)
Type:
— 10BaseT

Connector:
— RJ 45

Protocols:
— TCP/IP
— HTTP
— MODBUS TCP (Slave)

Web server:
— Built-in – enables remote monitoring using standard web browsers

Email:
— Can be configured to be sent on the occurrence of a specified event
— Up to 3 recipients
— Up to 4 trigger sources with configurable tag

MODBUS * RTU (optional)
Baud rate:
— Up to 115 kBaud

Isolation:
— Galvanically isolated from the rest of the circuitry, 500 V DC for 1 minute

* MODBUS is a registered trademark of the MODBUS-IDA organization