

ABB MEASUREMENT & ANALYTICS | DATA SHEET

# ControlMaster CM15

Universal process indicator, 1/8 DIN



## Specification

### Operation

#### Display

Color, ¼ 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

### 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

### Bank control\*

#### Number of outputs

6

#### Wear levelling

Rotate or FIFO

### Totalizer

#### Number \*\*

Up to 2

#### Type

Analog, digital, frequency or pulse

#### Statistical calculations

Average, maximum, minimum (for analog signals)

#### Update rate

125 ms

## ...Specification

### Analog inputs

Universal process inputs

Number

1 standard

Type

Voltage

Current

Resistance ( $\Omega$ )

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

### Display range

-9999 to 99999

### Update rate

125 ms

### Common mode noise rejection

> 120 dB at 50 / 60 Hz with 300  $\Omega$  imbalance resistance

### Normal (series) mode noise rejection

> 60 dB at 50 / 60 Hz

### CJC rejection ratio

Stability

0.05  $^{\circ}\text{C}/^{\circ}\text{C}$  change in ambient temperature

### Temperature stability

0.02  $\%/^{\circ}\text{C}$  or 2  $\mu\text{V}/^{\circ}\text{C}$  (1  $\mu\text{V}/^{\circ}\text{F}$ )

### Long term (input) drift

< 0.1 % of reading or 10  $\mu\text{V}$  annually

### Input impedance

> 10  $\text{M}\Omega$  (mV input)

10  $\Omega$  (mA input)

### Inputs

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

\* Accuracy is not guaranteed at temperatures below this value

RTD	Maximum range $^{\circ}\text{C}$ ( $^{\circ}\text{F}$ )	Accuracy (% of reading)
Pt100	-200 to 600 (-325 to 1100)	0.1 % or $\pm 0.5$ $^{\circ}\text{C}$ (0.9 $^{\circ}\text{F}$ )

Linear inputs	Standard analog input	Accuracy (% of reading)
Millivolts	0 to 150 mV	0.1 % or $\pm 20$ $\mu\text{V}$
Milliamperes	0 to 45 mA	0.2 % or $\pm 4$ $\mu\text{A}$
Volts	0 to 25 V	0.2 % or $\pm 20$ mV
Resistance (low)	0 to 550 $\Omega$	0.2 % or $\pm 0.1$ $\Omega$
Resistance (high)	0 to 10 k $\Omega$	0.5 % or $\pm 10$ $\Omega$
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  $\Omega$  max.

#### Accuracy

0.25 % of output or  $\pm 10$   $\mu$ A

## 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.

## Communications

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

### IrDA configuration 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

## EMC

### Emissions & immunity

Meets requirements of IEC 61326 for an industrial environment

## ...Specification

### Environmental

Operating temperature range

0 to 55 °C (32 to 131 °F) \*

Operating humidity range

5 to 95 % RH (non-condensing)

Storage temperature range

-20 to 70 °C (-4 to 158 °F)

Enclosure sealing

Front face

IP 66 & NEMA 4X

Rest of enclosure

IP 20

Vibration

Conforms to EN60068-2-6

### Safety

Approvals and certifications

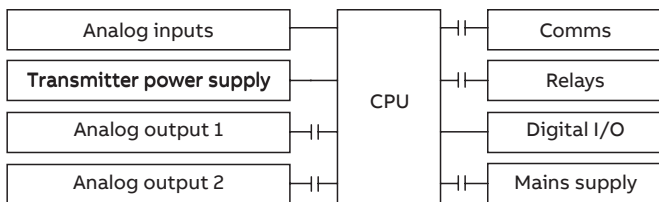
EN 61010-1

cULus

General safety

- Overvoltage Class III on mains, Class II on inputs and outputs
- Pollution category 2
- Insulation category 2

Isolation



Key

—|— = Isolation

### Electrical

Supply ranges

- 100 to 240 V AC  $\pm 10\%$  (90 V min. to 264 V max.)  
50 / 60 Hz
- 10 to 36 V DC (optional)

Power consumption

10 W max.

Power interruption protection

No effect for interrupts of up to 60 ms

### Physical

Size

50 x 97 x 141 mm (2.0 x 3.8 x 5.5 in.)

Weight

0.38 kg (0.84 lb) approx. (unpacked)

Panel cutout

45 x 92 (1.8 x 3.6 in.), 121 mm (4.8 in.) behind panel

Case material

Glass-filled polycarbonate

Clean Rooms | Pharma | Hospital | HVAC | BulkDrugs | Chemicals | Heavy Machinery | Hydraulics | Vacuum Industry  
Green House | Server Room | Confined Space | Cold Storage

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