

# ControlMaster CM30 and CM50

## Universal process controllers, 1/4 and 1/2 DIN

### Custom configuration sheet

## 1 Application Template

### Base (✓ the box required)

Single Loop with Local Setpoint	
Single Loop with Remote Set point	

### Standard (✓ the box required)

Auto/Manual Station with Low signal selection	
Auto/Manual Station with Digital selection	
Analog Backup with Low signal selection	
Analog Backup with Digital selection	
Single Indicator	
Dual Indicator	

### Extended (✓ the box required)

Single Loop with Feedforward + Local Setpoint	
Single Loop with Feedforward + remote Setpoint	
Cascade with Local Setpoint	
Cascade with Remote Setpoint	
Cascade with Feedforward + local Setpoint	
Ratio Controller	
Ratio Controller with External Ratio	
Ratio Station	
Ratio Station with External Ratio	

### Dual Loop (✓ the box required)

Dual Loop with Local Setpoint	
Dual Loop with Local/Remote Setpoint	
Dual loop with remote setpoint	

### Output Type Loop 1 (✓ the box required)

Analog	
Time Proportional	
Split Output	
Motorized Valve with Feedback	
Motorized Valve without Feedback (Boundless)	

### Loop 2 (✓ the box required)

Analog	
Time proportional	
Split Output	
Motorized Valve with feedback	
Motorized Valve Feedback (boundless)	

### Split Output Loop 1 (If applicable) (✓ the box required)

Analog/Relay	
Analog/Digital	
Relay/relay	
Relay/Digital	
Digital/Relay	
Digital/Digital	
Analog/Analog	

**Loop 2** (✓ the box required)

Analog/Relay	
Analog/Digital	
Relay/relay	
Relay/Digital	
Digital/Relay	
Digital/Digital	
Analog/Analog	

Instrument Tag:	
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Loop 1 Tag:	
Loop 2 Tag:	

**Mains Rejection Frequency** (✓ the box required)

50 Hz	
60 Hz	

**2 Inputs/Outputs****Analog Input 1** (✓ the box required)

None	
Millivolts	
Milliamps	
Volts	
Ohms	
Thermocouple	
RTD	
Frequency Input	
Pulse Input	
Volt Free Digital Input	
24 V Digital Input	

**Electrical Range** (✓ the box required)

Low	
High	

**Linearizer** (✓ the box required)

Type B	
Type E	
Type J	
Type K	
Type L	
Type R	
Type S	
Type T	
PT100	
Square Root	
Root 3/2	
Root 5/2	

Engineering Units*	
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\*See page 15

**Decimal Places** (✓ the box required)

0	
1	
2	
3	
4	

**Engineering Range**

Low	
High	

**Broken Sensor Drive** (✓ the box required)

None	
Automatic	
Upscale	
Downscale	

Input Filter Time (0 to 60 seconds)	
-------------------------------------	--

Fault Detect Level (0 to 100%)	
--------------------------------	--

**Analog Input 2** (✓ the box required)

None	
Millivolts	
Milliamps	
Volts	
Thermocouple	
Volt Free Digital Input	
24 V Digital Input	

**Electrical Range**

Low	
High	

**Linearizer** (✓ the box required)

Type B	
Type E	
Type J	
Type K	
Type L	
Type R	
Type S	
Type T	
Square Root	
Root 3/2	
Root 5/2	

Engineering Units*	
--------------------	--

\*See page 15

**Decimal Places** (✓ the box required)

0	
1	
2	
3	
4	

**Engineering Range**

Low	
High	

**Broken Sensor Drive** (✓ the box required)

None	
Automatic	
Upscale	
Downscale	

Input Filter Time (0 to 60 seconds)	
-------------------------------------	--

Fault Detect Level (0 to 100%)	
--------------------------------	--

**Analog Input 3** (✓ the box required)

None	
Millivolts	
Milliamps	
Volts	
Ohms	
Thermocouple	
RTD	
Volt Free Digital Input	
24 V Digital Input	

**Electrical Range**

Low	
High	

**Linearizer** (✓ the box required)

Type B	
Type E	
Type J	
Type K	
Type L	
Type R	
Type S	
Type T	
PT100	
Square Root	
Root 3/2	
Root 5/2	

Engineering Units*	
--------------------	--

\*See page 15

**Decimal Places** (✓ the box required)

0	
1	
2	
3	
4	

**Engineering Range**

Low	
High	

**Broken Sensor Drive** (✓ the box required)

None	
Automatic	
Upscale	
Downscale	

Input Filter Time (0 to 60 seconds)	
-------------------------------------	--

Fault Detect Level (0 to 100%)	
--------------------------------	--

**Analog Input 4** (✓ the box required)

None	
Millivolts	
Milliamps	
Volts	
Thermocouple	
Volt Free Digital Input	
24 V Digital Input	

**Electrical Range**

Low	
High	

**Linearizer** (✓ the box required)

Type B	
Type E	
Type J	
Type K	
Type L	
Type R	
Type S	
Type T	
Square Root	
Root 3/2	
Root 5/2	

Engineering Units*	
--------------------	--

\*See page 15

**Decimal Places** (✓ the box required)

0	
1	
2	
3	
4	

**Engineering Range**

Low	
High	

**Broken Sensor Drive** (✓ the box required)

None	
Automatic	
Upscale	
Downscale	

Input Filter Time (0 to 60 seconds)	
-------------------------------------	--

Fault Detect Level (0 to 100%)	
--------------------------------	--

**Analog Output 1 Output Type** (✓ the box required)

Analog	
Digital	

Analog Source**	
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\*\*See page 14

**Auto Engineering Range** (✓ the box required)

On	
Off	

**Engineering Range**

Low	
High	

Digital Source***	
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\*\*\*See page 13

**Analog Output 2 Output Type** (✓ the box required)

Analog	
Digital	

Analog Source**	
-----------------	--

\*\*See page 14

**Auto Engineering Range** (✓ the box required)

On	
Off	

**Engineering Range**

Low	
High	

Digital Source***	
-------------------	--

\*\*\*See page 13

**Digital I/O 1** (✓ the box required)

Off	
Output	
Volt Free Input	
24 Volt Input	
TTL	

Output Source***	
------------------	--

\*\*\*See page 13

**Polarity** (✓ the box required)

Positive	
Negative	

**Digital I/O 2** (✓ the box required)

Off	
Output	
Volt Free Input	
24 Volt Input	
TTL	

Output Source***	
------------------	--

\*\*\*See page 13

**Polarity** (✓ the box required)

Positive	
Negative	

**Digital I/O 3** (✓ the box required)

Off	
Output	
Volt Free Input	
24 Volt Input	
TTL	

Output Source***	
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\*\*\*See page 13

**Polarity** (✓ the box required)

Positive	
Negative	

**Digital I/O 4** (✓ the box required)

Off	
Output	
Volt Free Input	
24 Volt Input	
TTL	

Output Source***	
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\*\*\*See page 13

**Polarity** (✓ the box required)

Positive	
Negative	

**Digital I/O 5** (✓ the box required)

Off	
Output	
Volt Free Input	
24 Volt Input	
TTL	

Output Source***	
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\*\*\*See page 13

**Polarity** (✓ the box required)

Positive	
Negative	

**Digital I/O 6** (✓ the box required)

Off	
Output	
Volt Free Input	
24 Volt Input	
TTL	

Output Source***	
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\*\*\*See page 13

**Polarity** (✓ the box required)

Positive	
Negative	

**Relay 1** (✓ the box required)

Source***	
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\*\*\*See page 13

**Polarity** (✓ the box required)

Positive	
Negative	

**Relay 2** (✓ the box required)

Source***	
-----------	--

\*\*\*See page 13

**Polarity** (✓ the box required)

Positive	
Negative	

**Relay 3** (✓ the box required)

Source***	
-----------	--

\*\*\*See page 13

**Polarity** (✓ the box required)

Positive	
Negative	

**Relay 4** (✓ the box required)

Source***	
-----------	--

\*\*\*See page 13

**Polarity** (✓ the box required)

Positive	
Negative	

### 3 Alarms

**Alarm 1** (✓ the box required)

Off	
High Process	
Low Process	
High Latch	
Low Latch	

Tag:	
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Alarm 1 Source**	
------------------	--

\*\*See page 14

Alarm 1 Trip	
--------------	--

Hysteresis (Eng Units)	
Time Hysteresis (seconds)	

**Alarm 2** (✓ the box required)

Off	
High Process	
Low Process	
High Latch	
Low Latch	

Tag:	
------	--

Alarm 2 Source**	
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\*\*See page 14

Alarm 2 Trip	
--------------	--

Hysteresis (Eng Units)	
Time Hysteresis (seconds)	

**Alarm 3** (✓ the box required)

Off	
High Process	
Low Process	
High Latch	
Low Latch	

Tag:	
------	--

Alarm 3 Source**	
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\*\*See page 14

Alarm 3 Trip	
--------------	--

Hysteresis (Eng Units)	
Time Hysteresis (seconds)	

**Alarm 4** (✓ the box required)

Off	
High Process	
Low Process	
High Latch	
Low Latch	

Tag:	
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Alarm 4 Source**	
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\*\*See page 14

Alarm 4 Trip	
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Hysteresis (Eng Units)	
Time Hysteresis (seconds)	



**Alarm 5** (✓ the box required)

Off	
High Process	
Low Process	
High Latch	
Low Latch	

Tag:	
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Alarm 5 Source**	
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\*\*See page 14

Alarm 5 Trip	
--------------	--

Hysteresis (Eng Units)	
Time Hysteresis (seconds)	

**Alarm 6** (✓ the box required)

Off	
High Process	
Low Process	
High Latch	
Low Latch	

Tag:	
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Alarm 6 Source**	
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\*\*See page 14

Alarm 6 Trip	
--------------	--

Hysteresis (Eng Units)	
Time Hysteresis (seconds)	

**Alarm 7** (✓ the box required)

Off	
High Process	
Low Process	
High Latch	
Low Latch	

Tag:	
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Alarm 7 Source**	
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\*\*See page 14

Alarm 7 Trip	
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Hysteresis (Eng Units)	
Time Hysteresis (seconds)	

**Alarm 8** (✓ the box required)

Off	
High Process	
Low Process	
High Latch	
Low Latch	

Tag:	
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Alarm 8 Source**	
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\*\*See page 14

Alarm 8 Trip	
--------------	--

Hysteresis (Eng Units)	
Time Hysteresis (seconds)	

## 4 Totalizer Configuration

### Totalizer 1 (✓ the box required)

Off	
Analog	
Digital	
Frequency	
Pulse	

Source**	
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\*\*See page 14

### Count Direction (✓ the box required)

Up	
Down	

Units*	
--------	--

\*See page 15

Count Rate (if known)	
Cut off	
Stop/Go Source***	
Decimal Places (0, 1, 2, 3 or 4)	
Preset Count	
Predetermined Count	
Intermediate Count	
Wrap (On or Off)	
Reset Source***	

\*\*\*See page 13

### Totalizer 2 (✓ the box required)

Off	
Analog	
Digital	
Frequency	
Pulse	

Source**	
----------	--

\*\*See page 14

### Count Direction (✓ the box required)

Up	
Down	

Units*	
--------	--

\*See page 15

Count Rate (if known)	
Cut off	
Stop/Go Source***	
Decimal Places (0, 1, 2, 3 or 4)	
Preset Count	
Predetermined Count	
Intermediate Count	
Wrap (On or Off)	
Reset Source***	

\*\*\*See page 13

## 5 Set Point Configuration

Low Limit	
High Limit	
No of Local Setpoints (1, 2, 3 or 4)	
Local Setpoint 1 select source***	
Local Setpoint 2 select source***	
Local setpoint 3 select source***	
Local Setpoint 4 select source***	
Remote setpoint select source***	

\*\*\*See page 13

**Setpoint tracking** (✓ the box required)

Off	
Local	
Remote	
Local & Remote	

## 6 Non-standard Customization Details

## 7 Digital Sources

Source Name	Description [Comment]
Alarm 1 (8) Ack. State	Acknowledged alarm = 0 Unacknowledged alarm = 1
Alarm 1 (8) State	Alarm state
Anlg IP 1 (4) Fail	Analog Input Failure (active when the signal detected at the analog input is outside the fault detect level specified during configuration).
AO1 (2) Loop Break	Analog output
Delay Timer 1 (2)	Delay timer state
IP 1 (4) Digital State	Input 1 (4) digital state
Linearizer 1 (2) Fail	Custom linearizer failure
Logic Equation 1 (8)	Logic equation result
Loop 1 SP Mode	Setpoint mode selected 0 = Local, 1 = Remote
Loop 1 Auto Mode	Automatic control mode
Loop 1 Close Relay	Motorized valve close relay state
Loop 1 LSP 1 (4) State	Local setpoint state 1 = setpoint selected
Loop 1 Manual Mode	Manual control mode 1 = Manual

Source Name	Description [Comment]
Loop 1 Open Relay	Motorized valve open relay state
Loop 1 TP OP1	Time proportioning output
Loop 1 Valve State	Motorized valve state
Loop 1 Valve Stuck	Motorized valve stuck state
Loop 1 Ctrl Track	Control track state
Math Block 1 (8) Fail	Maths failure
RTA 1 (2) State	Real time alarm state
Softkey Toggle	Front panel soft key toggles the source's state
Softkey Edge	Front panel soft key sets the source active on key press
T1 (2) Int Pulse	Totalizer intermediate pulse – active for 1 second when the intermediate count is reached
T1 (2) Run State	Totalizer run state 1 = Totalizer running
T1 (2) Wrap Pulse	Totalizer wrap pulse If <i>Wrap Enable</i> is <i>On</i> – active for 1 second when the predetermined count is reached <i>Off</i> – active when the predetermined count has been reached and remains active until the totalizer is reset

## 8 Analog Sources

Source Name	Description
Anlg IP 1 (4)	Analog input
Constant 1 (8)	Math block constant
Linearizer 1 (2)	Custom linearizer
Loop 1 Actual Ratio	Loop 1 (2) actual ratio. Applies to ratio application templates only
Loop 1 Control OP	Control output value
Loop 1 Deviation	Loop 1 (2) deviation
Loop 1 Feedforward	Loop 1 (2) output of feedforward block
Loop 1 LSP	Local setpoint loop
Loop 1 PV	Loop 1 (2) process variable
Loop 1 Ration	Loop 1 (2) desired ratio Loop
Loop 1 SP	Loop control setpoint
Loop 1 Split OP1	Loop 1 split output
Loop 1 Valve Pos	Motorized valve position
Loop Bias 1	Loop 1 desired bias
Math Block 1 (8)	Math block
PV1 (2) Average	Process variable average
PV1 (2) Max	Maximum value of process variable 1 (2)
PV1 (2) Min	Minimum value of process variable 1 (2)
T1 (2) Batch Total	Totalizer batch total
T1 (2) Secure Total	Totalizer secure total
User Value 1 (2)	(Profile only)
Volume 1 (2)	(Indicator only)

## 9 – Analog Input Engineering Units

Unit	Description
%	%
% sat	% saturation
%dO2	% dissolved oxygen
%HCl	% hydrochloric acid
%N2	% nitrogen
%O2	% oxygen
%OBS	% obscuration
%RH	% relative humidity
A	amps
bar	bar
CUMEC	cubic metre per second
deg C / F	degrees Celsius / Fahrenheit
Feet	imperial feet
ft <sup>3</sup> /d, ft <sup>3</sup> /h, ft <sup>3</sup> /m, ft <sup>3</sup> /s	cubic feet per day, hour, minute, second.
FTU	formazine turbidity units
g/d, g/h, g/l	grams per day, hour, liter
gal/d (UK)	imperial gallons per day
gal/d (US)	US gallons per day
gal/h (UK) / (US)	imperial / US gallons per hour
gal/m, s (UK) / (US)	imperial / US gallons per minute, second.
Hz	hertz
Inches	imperial inches
Kelvin	degrees Kelvin
kg/d, kg/h, kg/m	kilograms per day, hr., min.
kg/s	kilograms per sec.
kHz	kilohertz
l/d, l/h, l/m, l/s	liters per day, hour, min., sec.

Unit	Description
lb/d, lb/h, lb/m, lb/s	pounds per day, hour, minute, second.
m WG	meters water gauge
m <sup>3</sup> /d, m <sup>3</sup> /h, m <sup>3</sup> /m, m <sup>3</sup> /s	cubic meters per day, hour, minute, second..
mbar	millibar
mg/kg	milligrams per kilogram
Mgal/d (UK)	imperial mega gallons per day
Mgal/d (US)	US mega gallons per day
mho	conductance
MI/d, MI/h	megaliters per day, hour.
ml/h, ml/m	millilitres per hour, minute.
MI/s	megaliters per second
mS/cm, mS/m	milliSiemens per centimeter, meter
mV	millivolts
MV	megavolts
NTU	nephelometric turbidity units
pb	parts per billion
pH	potential Hydrogen
pm	parts per million
psi	pounds per square inch
S	Siemens
SCFM	standard cubic feet per minute
T/d, T/h, T/m	metric tonnes per day, hour, minute.
T/s	metric tonnes per second
ton/d, ton/h, ton/m, ton/s	imperial tons per day, hour, minute, second.
ug/kg	micrograms per kilogram
uS/cm, uS/m	microSiemens per centimeter / meter
uV	microvolts

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