

Clearscan C105 & M105 Pressure & Temperature Recorders

Choice of Cases

This range of temperature and pressure recorders can be built into either of two types of tough steel case. Both have a lockable front-hinged door, permitting easy access to the chart and pens, and may be either wall or panel mounted. C105's can be supplied complete with a portable stand.

The Clearscan M105 has a rectangular steel case, an aluminium door and triplex glass. Electrical and pneumatic, controller versions are available.

The C105 temperature and pressure recorders have a tough circular steel case which, is suitable for installing under severe industrial conditions. The door has a strong polycarbonate window.

Pens

The recorders utilise sealed ink capsules with built-in fibre-tipped pens which are replaced simply and without mess. Single pen recorders and the first pen of two pen recorders trace in red ink; the second pen of two pen recorders traces in green ink.

Charts and chart drives

The standard chart durations are one revolution every 12 hours, 24 hours or 7 days, the chart drive being either an electrical or a mechanical (clockwork) motor. Alternatively a 24 hour or a 7 day electrical chart drive with its own built-in, recharging reserve power unit, can be selected. This version gives a continuing trace through a mains failure. When running "normally" in the fully charged condition the power unit accumulator holds enough capacity to drive continuously for five days.

Standard Pressure Ranges

Standard Range	Sensing Element	Material
0.2 to 1 bar 0 to 1 bar 0 to 1.6 bar	Single Capsule	Beryllium Copper or Stainless steel
0 to 4 bar 0 to 6 bar 0 to 10 bar 0 to 16 bar 0 to 25 bar 0 to 40 bar	Bourdon Tube	Phosphor Bronze or Stainless Steel
0 to 60 bar 0 to 80 bar 0 to 100 bar 0 to 160 bar 0 to 250 bar 0 to 300 bar 0 to 400 bar 0 to 600 bar 0 to 1000 bar 0 to 1200 bar 0 to 1600 bar	Bourdon Tube	Stainless Steel
-1 to +1.5 bar -1 to +3 bar -1 to +5 bar -1 to +9 bar	Capsule	Phosphor Bronze or Stainless Steel
-1 to 0 bar	Bellows	Beryllium Copper

Other pressure ranges are available on request



C105 Chart Recorder



M105 Chart Recorder

Standard Temperature Ranges

Range	Range
-40 to +40 Deg C	0 to 160 Deg C
-30 to +30 Deg C	0 to 200 Deg C
-30 to +50 Deg C	0 to 300 Deg C
-25 to +25 Deg C	0 to 400 Deg C
0 to 40 Deg C	20 to 120 Deg C
0 to 50 Deg C	50 to 150 Deg C
0 to 60 Deg C	50 to 250 Deg C
0 to 100 Deg C	100 to 400 Deg C
0 to 120 Deg C	100 to 500 Deg C

Calibration in other units of pressure and temperature as well as non-standard ranges are available on request

Bulb Types

Type 301

This bulb type is used when no compression fitting is required. This bulb may be held in place by a bracket or clip (not supplied by Rotherm) or may be inserted directly into the process.

Type 302

This bulb has a compression gland fitting that slides along the capillary and is tightened into the required position. This bulb type is only available with plain stainless steel capillary (type C1) - armoured capillaries are not available as it is not possible to move the fitting along the armoured capillary. Bulb length cannot be specified.

Type 303

Compression gland fittings tighten on the bulb to provide liquid and gas tight seal. Once fitted the position of the gland fitting can only be altered by cutting off the olive and replacing it with a new one.

If required this bulb type may be specified with a compression gland fitting - in this instance please confirm the required overall length of the bulb.

Specifications

Accuracy

±1% FSD

Chart Drive

Synchronous electric or mechanical spring wound. 12 hour, 24 hour or 7 day rotation - other rotations on request.

Inking System

Disposable fibre tipped pen.
Single pen : Red
2 pen : Red and green

Charts

255 mm diameter, circular chart

Case

C105: Steel body with foam moulded door and glass window. Polycarbonate doors are fitted as standard to recorders with pressure ranges above 60 Bar

M105: Steel body with aluminium and Triplex toughened glass door (polycarbonate glazing available as an option)

Power Supply

200 to 250 volts, 50Hz (60Hz available)
100 to 120 volts, 50Hz (60Hz available)

Pneumatic Control (M105 only)

Air Supply Pressure

1.4 bar (20 Psi)

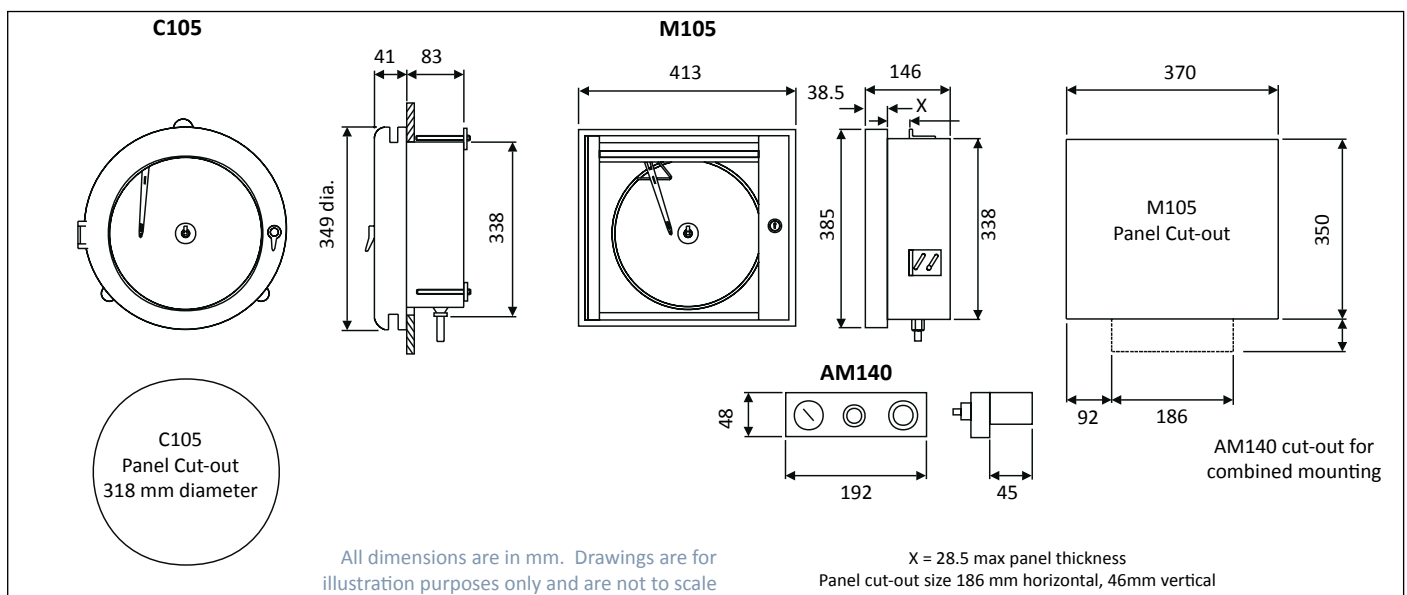
Air Supply Pressure effect

No greater than 1% output change at 0.6 bar (9 Psi) per 5% change in supply pressure at 1.4 bar (20 Psi) at 100% proportional band.

Pneumatic Control Options

Control Option	Proportional Band	Integral Timer	Derivative Time
On/Off	Approximately 1% fixed	-	-
Proportional	1-50% and 4-200%	-	-
Proportional + Integral	1-50% and 4-200%	0.05 to 5 mins.	-
Proportional + Derivative	1-50% and 4-200%	-	0.05 to 5 mins.
Proportional + Integral + Derivative	1-50% and 4-200%	0.05 to 5 mins.	0.05 to 5 mins.

Dimensions



Output Pressure

0.2 to 1.0 Bar (3 to 15 Psi)

Air Connection Size

For 6.35 mm (1/4") outside diameter tubing

Air Supply & Output Gauges

0 to 2 Bar (0 to 30 Psi)

Air Consumption

Less than 3 litres/min at 0.6 bar output

Air Output Capacity

60 litres/min

Control Actions

Direct or reverse by simple positioning of nozzle/flapper

Mounting

Suitable for wall or panel mounting.
Portable option available (C105 only)

Instrument must be mounted vertically for accurate results.

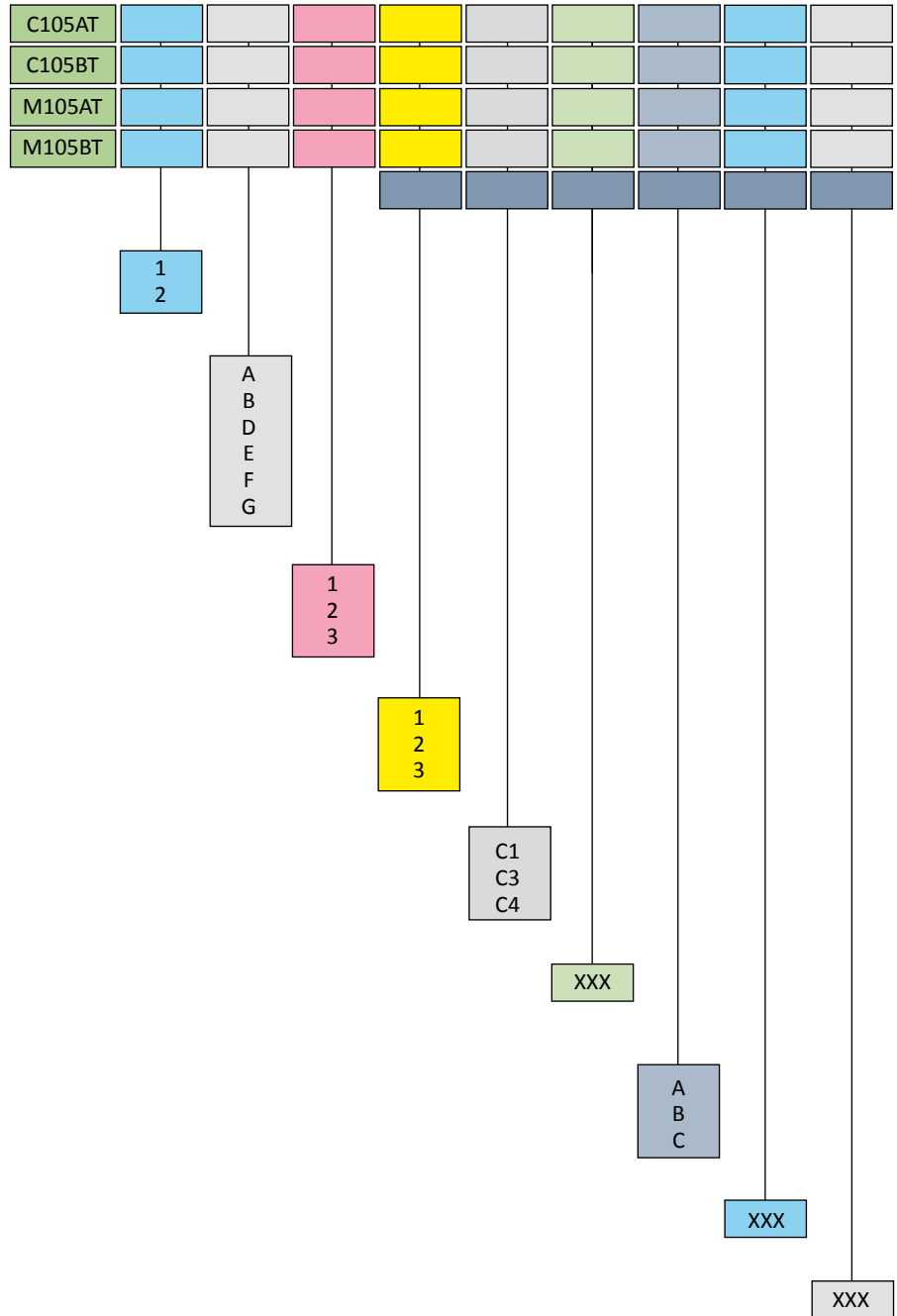
Weight (approx.)

C105: 8.5 kg
M105: 14.0 kg

Approximate weight for recorder with 3 metres of capillary.

Ordering Codes - C105 & M105 Temperature Recorders

C105 Temperature Recorder, Single Pen
 C105 Temperature Recorder, Two Pen
 M105 Temperature Recorder, Single Pen
 M105 Temperature Recorder, Two Pen
 Code for 2nd pen (if required)



Mounting

Wall / Panel
 Portable (C105 only)

Chart Drive

Electric 240V 50Hz
 Electric 110V 50Hz
 Mechanical Spring Wound
 Battery Operated
 Electric 240V 50Hz with Battery Backup
 Other*

Chart Rotation

24 hour
 7 day
 Other*

Bulb Options

Type 301
 Type 302
 Type 303

Capillary Type

Stainless steel
 Flexible stainless armour
 Flexible stainless armour over stainless

Capillary Length

3 metres
 Other (enter length in metres)

Fitting / Gland (type 302 or 303 bulbs only)

No fitting required
 1/2" BSP male
 Other

Bulb Immersion Length (Type 303 bulbs only)

Enter length in mm

Temperature Range

Enter range in °C or °F

*Notes:

- When other is specified please add note to order code stating exact requirement.
- When specifying different ranges for 2 pen recorders, care should be taken to use compatible chart ranges. Details are available on request.
- For electrical control and alarms - please state exact requirement

Example Order Code

C105BT	1	A	1	3	C1	03	B	250	0-100	
					3	C1	06	B	250	0-200

Two pen temperature recorder, C105 case, wall mounted, electrical 240V 50Hz chart drive, 24 hour rotation.

Pen 1: 3 metres of C1 stainless steel capillary, type 303 bulb with a 1/2" BSP fitting, 250 mm immersion length, temperature range 0 to 100°C

Pen 2: 6 metres of C1 stainless steel capillary, type 303 bulb with a 1/2" BSP fitting, 250 mm immersion length, temperature range 0 to 200°C

Ordering Codes - C105 & M105 Pressure Recorders

C105 Pressure Recorder, Single Pen
 C105 Pressure Recorder, Two Pen
 M105 Pressure Recorder, Single Pen
 M105 Pressure Recorder, Two Pen
 Code for 2nd pen (if required)

Mounting

Wall / Panel
 Portable (C105 only)

Chart Drive

Electric 240V 50Hz
 Electric 110V 50Hz
 Mechanical Spring Wound
 Battery Operated
 Electric 240V 50Hz with Battery Backup
 Other*

Chart Rotation

24 hour
 7 day
 Other*

Process Connection

Standard (3/8" BSP male)
 1/2" BSP male
 Other

Element / Connection Material

Non ferrous - Beryllium Copper, Phosphor Bronze
 Stainless steel
 Other

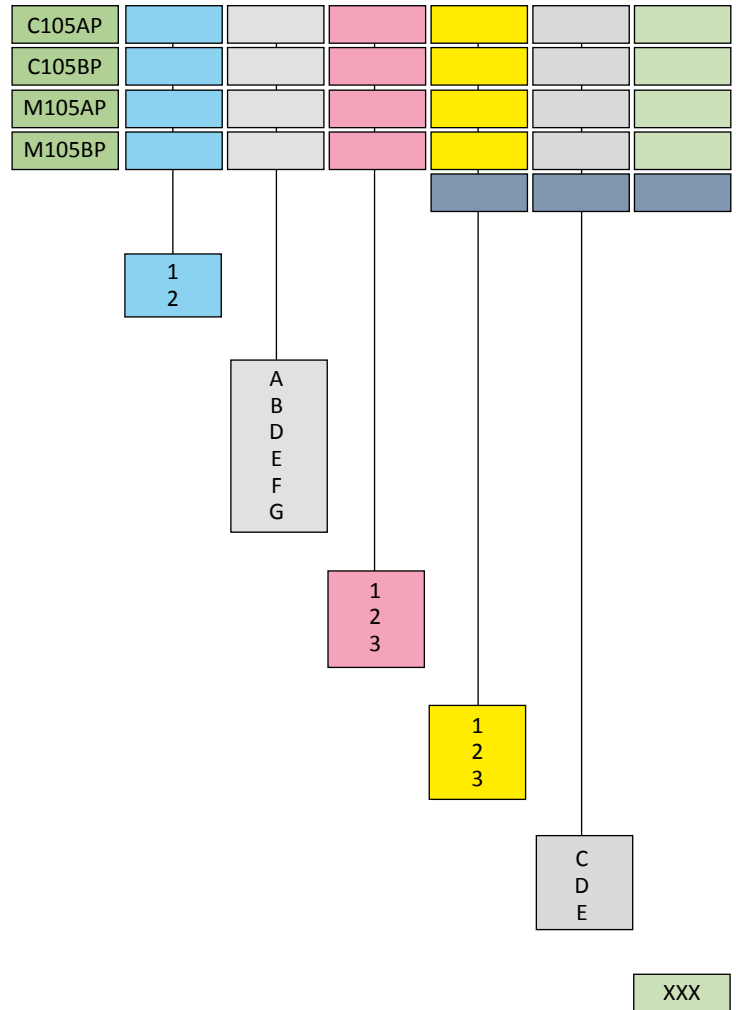
Pressure Range

Enter range and unit of measurement

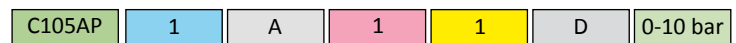
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Notes:

- a) When other is specified please add note to order code stating exact requirement.
 b) When specifying different ranges for 2 pen recorders, care should be taken to use compatible chart ranges.



Example Order Code



Single Pen Pressure Recorder, C105 case, wall mounted, electrical 240 volt 50hz chart drive, 24 hour rotation, standard stainless steel 3/8" BSP connection, stainless steel element, range 0 to 10 Bar.

Pneumatic Control

Pneumatic control can be fitted to most recorders in the Clearscan M105 case. Providing a 0.2 to 1 bar (3 to 15 Psi) output signal for direct connection to control valves or other pneumatically driven regulators.

The pneumatic system operates on the motion balance principle, i.e. motion from the pneumatic feedback unit balances the motion from the pressure system. Control action occurs at or about the value set by the setting pointer. The pointer is adjustable over the full chart range and is fitted with a locking device to prevent accidental disturbance. Gauges displaying the supply and output pressures, and the control setting pointers, are clearly visible through the door of the recorder.

For more details, please contact Rototherm sales.

Pneumatic Control Options

The following options are available - Proportional only (P), Proportional + Integral (P + I), Proportional and Derivative (P + D) and Proportional + Integral + Derivative (P + I + D).

The instrument can be set to give either a reverse or direct acting output; reverse and direct action versions respectively provide a decreasing or increasing controller output pressure with a process pressure rise. Only one channel of pneumatic control would normally be fitted to single pen recorders and to the first pen of two pen recorders.

Chart Recorders & Recorder Controllers Overview

- Temperature, Pressure, Flow & Humidity
- Rugged design & construction
- Accurate & reliable measuring systems
- Up to 3 recording pens
- Simple installation & maintenance required

An extensive range of chart recorders and controllers which includes programmable microprocessor electric-input recorder controllers and a wide range of mechanical recorders for temperature, pressure, humidity and flow with options for electrical or pneumatic control.

Rototherm chart recorders can be used to record and control:

- Temperature
- Pressure
- Humidity
- Flow

Each recorder is supplied with a packet of 100 charts and 1 spare packet of pens for each pen specified. Consumable items and spare parts are readily available from British Rototherm

Clearscan Chart Recorders

The Clearscan range of recorders is suitable for most industrial applications and can be fitted with up to 3 pens for recording temperature, pressure and flow.

Sentinel Micro-processor based chart recorders

The Sentinel range of micro-processor based circular chart recorders is available in 1, 2 and 3 channel versions. Sentinel combines the simplicity and clarity of pen drawn traces together with the versatility of microprocessor control.

RTO Series Temperature Chart Recorders

The filled system range of temperature circular chart recorders uses the well proven and reliable Rototherm stainless steel thermal system.

Up to three pens can be fitted with three temperature systems or a combination of temperature, pressure or flow sensing systems.

- Fully mechanical versions available
- Choice of mounting options - wall / panel / portable / pipe
- Electrical control options
- Pneumatic control options
- Spares and consumables widely available



Sentinel Recorders



Clearscan Recorders



C105 Recorders



M105 Recorders



RPO / RTO Recorders



RTH Recorders

RPO Series Pressure Chart Recorders

The RPO series of pressure circular chart recorders uses the well proven and reliable Rototherm non ferrous or stainless steel pressure system. Up to three pens can be fitted with three pressure systems or combination of temperature, pressure or flow sensing systems.

Clearscan C105/M105 Pressure & Temperature Chart Recorders

Developed from the ex Kent Industrial Measurement and Cambridge range of circular chart recorders, the round case C105 and rectangular cased M105, continue to be available and still offer the same reliability and versatility that has been manufactured for the past 30 years.



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