

C105 & M105 Clearscan Pressure Recorders & Recorder Controllers

C/M105P-2003



C105 Clearscan Recorder



M105 Clearscan Recorder

Pressure monitoring and control is one of the most important applications found in industry. This comprehensive range of recorders has many versions and alternative specifications to offer. Two pen instruments can be produced with a different pressure recording system on each pen.

Choice of Cases

The Rotothem 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 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 pressure recorder has a tough circular steel case which, as with all other C105 mechanical recorders, is suitable for installing under severe industrial conditions. The door has a strong polycarbonate window. Versions incorporating electronic control are available.

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. The 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.

Ranges

The minimum pressure reading is normally located at the centre of the recorder chart. For best recording select a range in which the normal working pressures are between 50 and 80 percent of the instrument span. The pressure range table lists the ranges and sensor materials available. Lower range sensors being diaphragm or capsule stacks and the higher range sensors being C-Spring, coiled and spiral Bourdon tubes.

Control Options

Single and two pen recorders, with the exception of -1 to 0 bar (vacuum) span, can be supplied with a variety of alarm/control options.

Electrical Control/Alarm

Rotothem Clearscan M105 and C105 recorders can be supplied with up to four independently adjustable single on/off alarm/control channels, each provided with a setting pointer adjustable over the full chart range to indicate the set value against the chart. The pointers are fitted with a lockable device to prevent accidental disturbance.

Switching Capacities and Relays

The control contacts themselves have a switching capacity of 20mA inductive or 30mA non-inductive load, and can be used to switch directly low loads such as alarm lamps. For longer contact life, and where higher loads are to be switched relays with spark suppression and delayed action circuits are fitted, thereby avoiding arcing and switch point oscillation whilst up-rating the switching capacity to 5A, 240V a.c. non-inductive. Higher rated relays are available on request.

Optional Features

Clearscan M105 recorder/controllers with contacts and relays can have indicator lights visible through the door. There is a version offering both visual and audible alarms including a muting switch for more critical operations.

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.

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). Advice on the best control option for a particular application will be given by our application engineering staff.

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..

Specifications

Accuracy

±1% FSD

Measuring Element

Bourdon tube or pressure capsule as applicable

Chart Drive

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

Charts

255 mm diameter

Inking System

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

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)
Instruments without electrical control require no power supply provided that a mechanical spring wound chart drive is fitted.

Electrical Alarm & Control

Contacts

20mA at 30V ac 50Hz (inductive load):
30mA at 30V ac 50Hz (non-inductive load) without arc suppression or delay fitted

Pneumatic Control

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.

Output Pressure

0.2 to 1.0 Bar (3 to 15 Psi)

Air Connection Size

For 6.4 mm (1/4") outside diameter tubing

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

Connection

Standard

3/8" BSP male with nut and tail pipe. For ranges above 60 Bar 1/2" BSP is standard

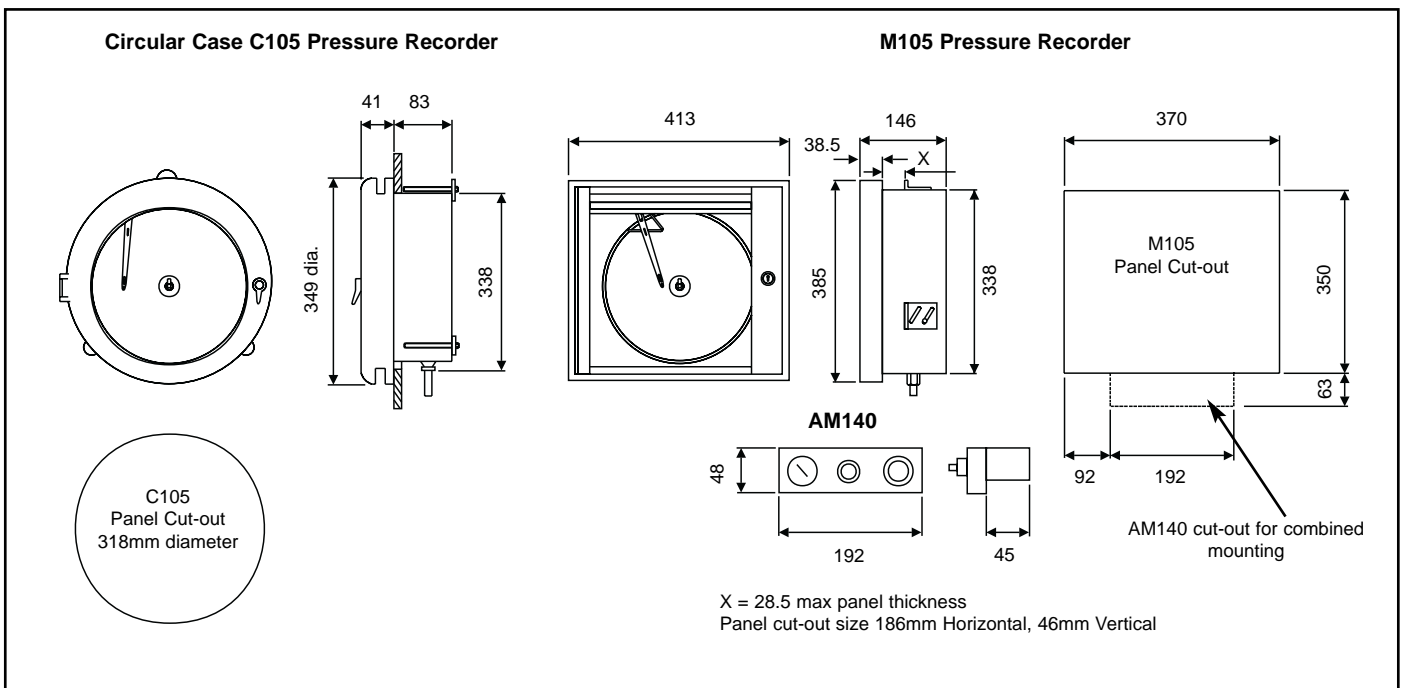
Mounting

Suitable for wall or panel mounting. Portable option available (C105 only) Instrument must be mounted vertically for accurate results.

Weight (approx.)

C105: 10.4 kg **M105:** 12.6 kg

Dimensions & Fixings



All dimensions are in mm. Drawings are for illustration purposes only.

Pneumatic Control Options

Control Option	Proportional Band	Integral Timer	Derivative Time
On/Off	Approx. 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.

Standard Pressure Ranges

Standard Range	Sensing Element Type	Material
0.2 to 1 Bar 0 to 1 Bar 0 to 1.6 Bar	Single Capsule	316 Stainless Steel or Beryllium Copper
0 to 0.25 Bar	Capsule	Phosphor Bronze
0 to 4 Bar 0 to 6 Bar 0 to 8 Bar 0 to 10 Bar 0 to 12 Bar 0 to 16 Bar 0 to 20 Bar 0 to 25 Bar 0 to 30 Bar 0 to 40 Bar	Bourdon Tube	Phosphor Bronze or 316 Stainless Steel
0 to 60 Bar 0 to 80 Bar 0 to 100 Bar 0 to 120 Bar 0 to 160 Bar 0 to 250 Bar 0 to 400 Bar 0 to 600 Bar 0 to 800 Bar 0 to 1000 Bar 0 to 1200 Bar	Bourdon Tube	316 Stainless Steel
Compound -1 to 1.5 Bar -1 to +3 Bar -1 to +5 Bar -1 to +9 Bar	Capsule	Phosphor Bronze or 316 Stainless Steel
Vacuum 1 to 0 Bar	Bellows	Beryllium Copper

World-Wide Reliability & Quality

Rototherm's high quality and performance is guaranteed by an uncompromising approach to quality. British Rotherm's policy has always been to maintain a consistently high level of quality and reliability throughout its product range and service to customers. The company has worked energetically towards establishing comprehensive quality controls and has earned a world-wide reputation for product quality.



ISO 9001

Other Recorders & Controllers Available include:

- **Temperature & Pressure Combined**
- **Temperature & Humidity**
- **Pressure & Differential Pressure**
- **Flow**
- **Level**
- **Electric Input Recorders - including programmable recorders**
- **Pneumatic Recorder Controllers**

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