

# Moore 36C Circular Chart Recorder

## FEATURES & BENEFITS

- ▶ Multi-tip fiber pen dotting system delivers six clear traces
- ▶ Allows up to six universal inputs for input flexibility
- ▶ Vivid vacuum fluorescent display (VFD) display permits quick and accurate assessment of channel values
- ▶ PCMCIA memory card drive allows easy data archiving
- ▶ Printing channel ranges eliminates the need for expensive special charts and reduces chart inventory
- ▶ Optional NEMA 4X enclosure ensures operation in harsh industrial environments
- ▶ Easy front panel configuration simplifies set-up
- ▶ Download capabilities to other recorders saves configuration time

## DESCRIPTION

The Moore 36C Circular Chart Recorder offers excellent flexibility through the use of up to six universal inputs. Information is vividly displayed on a VFD, and cleanly recorded with a multi-tip fiber pen dotting system. Easy front panel set-up and a variety of output options make the 36C adaptable to a variety of applications.

Channel information is displayed with measured value, channel number, engineering units, tag names, and alarm information status. Information is printed on the chart using a four-color, fiber tip print cartridge and can be recorded as any combination of trends, messages, alpha-numeric logs, and channel ranges. Printing channel ranges on the chart eliminate the need for special charts, which reduces inventory.

Input options include V, mV, mA, TC, RTD, and contact, which can be used as contact inputs to trigger internal recording events. Up to four channels can be retransmitted as a linearized current or voltage signal to other instruments; up to 12 relay outputs can be employed for direct transmission.



The 36C recorder is fully configurable from the front panel via local push-buttons and text prompts, allowing easy program modifications and access to password-protected configurations.

Data stored on a Type I PCMCIA data card may be formulated for analysis, presentation, storage, and archiving using standard spreadsheet packages. Stored data can include the recorder's configuration, which can be saved to a data card for archiving or to transfer it to another recorder.

The 36C has math, timer, totalizer, and counter options, offering extensive integrating and counting capabilities. These options make it possible to handle even the most complex application-specific functions, such as gas flow compensation and environmental parameter monitoring.

The Moore 36C Circular Chart Recorder supports MODBUS® communications for integration with other devices.

## SPECIFICATIONS

### ELECTRICAL

#### Power Requirements

Line Power: 45 to 65 Hz; 90 to 264 Vac  
 DC Power: 20/53 Vdc  
 Consumption (max): 100 VA (ac), 60 $\Omega$  (dc)  
 Fuse Type: None  
 Interrupt Protection: 40 msec @ 75% instrument load

### ENVIRONMENTAL

#### Temperature Limits

Operating: 0 to 50°C  
 Storage: -20 to +70°C

#### Humidity Limits

Operation: 10% to 90% RH (non-condensing)  
 Storage: 10% to 90% RH (non-condensing)

#### Protection

Door and Bezel:  
 Standard: IP54 (similar to NEMA 3)  
 Optional: IP65 (similar to NEMA 4 & 4X)

#### EMC

Electromagnetic Emissions: EN50081-2  
 Electromagnetic Susceptibility: EN50082-2  
 Safety: To EN61010; Installation II; Pollution Category 2

### PROPERTIES

#### Printing System

Cartridge: Color: > 1 million dots  
 Black: >1.5 million dots  
 Pen Resolution: 0.2 mm  
 Annotation: 39 characters maximum  
 Update Rate: 2 Hz for all information  
 Trace Update: 5 seconds minimum  
 Response Time: 1 pass every 4 seconds

#### Paper Transport

Type: Stepper motor driving sprocket tube  
 Chart Speeds: 1 to 960 hrs/rev  
 Chart Type: 12 hr, 24 hr, 7 day & not timed

#### Accuracy

Chart Speed: 0.25% single turn  
 Input to Paper: 0.3% of span  
 Display: 0.03% of dc range in use

#### Data Storage Format

PCMCIA data card (Type I)

#### Memory Configuration

EEPROM

#### Alarms

Per Channel: 4 including derived values  
 Types: High, low, deviation, rate of change

### GENERAL PARAMETERS

#### Inputs

Maximum Number: Up to 6 inputs  
 Types  
 Thermocouple: B, C, D, E, G2, J, K, L, N, R, S, T, U, Ni/NiMo, Platinel II  
 RTD: 2/3-wire resistance temperature detector (not channel 1 if any other channel is a thermocouple input); Pt100, Pt1000, Ni100, Cu10, Ni120, JPt100, Pt100A  
 Vdc:  $\pm 38$ mV;  $\pm 150$ mV;  $\pm 1$ V;  $\pm 10$ V dc milliamps (mA): External shunt required  
 Ohms ( $\Omega$ ): 0 to 150 $\Omega$ , 0 to 600 $\Omega$ , 0 to 6K $\Omega$   
 Contact Closure: Not channel 1  
 Minimum: 500 msec  
 Type Mix: Freely configurable, no contact on channel 1

#### Noise Rejection

Common mode: >130dB (48 to 62 Hz ch to ch and ch to gr)  
 Series mode: >60dB

#### Maximum Comm. Mode

250V continuous

#### Maximum Series Mode

45mV @ lowest range; 12V peak @ highest range

#### Isolation

300V RMS (dc to 65Hz; EN61010 or dc ch to ch and ch to gr)

#### Dielectric Strength

1350 Vac for 1 min (ch to gr) 2300 Vac for 1 min (ch to ch)

#### Insulation Resistance

>10M $\Omega$  @ 500Vdc

#### Input Impedance

38mV, 150mV & 1V range: >10M $\Omega$   
 10V range:  $\pm 68.8$ K $\Omega$

#### Overvoltage Protection

50V peak

#### Open Circuit Detection

$\pm 57$  nA maximum  
 Recognition Time: 500 msec  
 Minimum Break Resistance: 10M $\Omega$

#### Physical

Panel (Bezel) Size: 15.0" x 14.2" (380 mm x 360 mm)  
 Panel Cutout: 13.6" x 13.4" (345 mm x 340 mm)  
 Depth Behind Panel: 5.8"/148 mm with terminal cover  
 Panel Mounting: Vertical +5°, -30°  
 Weight: 15 lbs. (7 kg)

**OPTIONS**

**Communications**

RS422/RS485 Gould Modicon MODBUS® RTU

**Math Pack**

Number of Derived Channels: 16 configurable  
 Basic Functions: Off, const., add, subtract, multiply, divide, modulus  
 Advanced Functions: (Includes Basic) Sq rt, ch avg, DV group avg, rolling avg, e<sup>x</sup>, 10<sup>x</sup>, in, log<sub>10</sub>, rate-of-change, sample and hold, ch min, DV group latch min, DV group cont min, ch max, DV group latch max, DV group cont max, 3rd order polynomial, F<sub>o</sub>, relative humidity, mass flow: linear; mass flow: sq rt; ZrO<sub>2</sub> probe, high select, low select, switch, stopwatch, timestamp, O<sub>2</sub> correction, percentile

**Outputs**

Relay Outputs Up to 12  
 Ratings for Resistive Loads (derate for inductive loads)  
 Switching Voltage: 250Vac, 30Vdc  
 Switching Power: 500VA, 60Ω  
 Break Current: 2A within referenced voltage & power limits  
 Retransmission Outputs  
 Configurable Output Ranges: 0 - 20mA; 4 - 20mA; 1-5 V; 0-10V

**Transmitter Power Supply**

Outputs: 6 isolated 24Vdc  
 Current: 20mA each output  
 Permissible Load: 600Ω maximum

**Totalizers**

Up to 6 nine-digit totalizers

**Totalizer Counter Output**

Up to 6

**Timers**

Up to 6 configurable timers

**Counters**

Up to 6 eight-digit counters

**Custom Messages**

20 configurable messages, each up to 20 characters long with embedded sequences

**Case**

Wall mounting; IP65 (similar NEMA 4 & 4X)

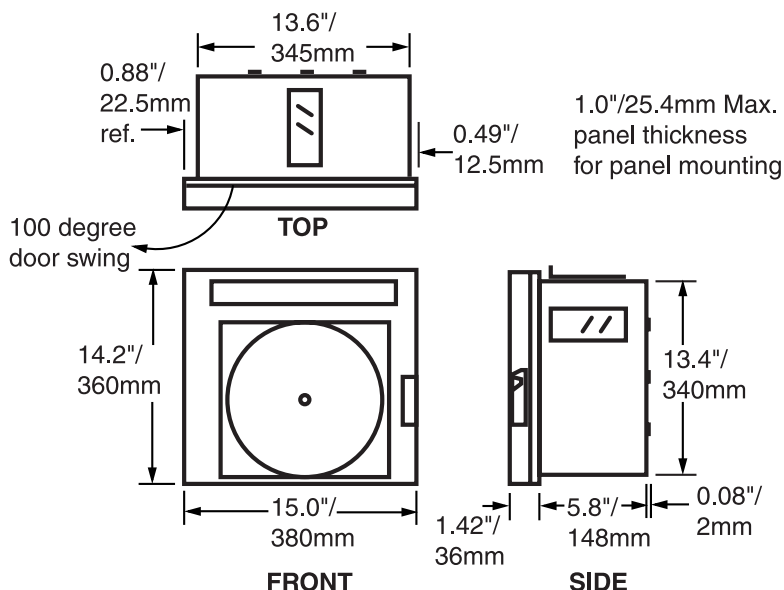
**Transmitter Power Supply**

Up to 6 channels

**ACCESSORIES**

Part number	Description
LA250280	36C Print cartridge, 4 color
GDTW0394U050	50 Div,24Hr chart, box of 100
GDTW0394U060	60 Div,24Hr chart, box of 100
GDTW0394U070	70 Div,24Hr chart, box of 100
GDTW0394U080	80 Div,24Hr chart, box of 100
GDTW0394U100	100 Div,24Hr chart, box of 100
GDSV0394U050	50 Div,7 day chart, box of 100
GDSV0394U100	100 Div,7 day chart, box of 100
UM36-5	36C Options Manual
LA207029U003	(3)-250 ohm for 36C w/o xmtr supply
LA207029U006	(6)-250 ohm for 36C w/o xmtr supply

**INSTALLATION DRAWINGS**



## MODEL NUMBER

### 36C Circular Chart Recorder

#### Power

- 1 90-264 Vac (Set for 120 Vac)
- 2 24/28 Vdc
- 3 90-264 Vac (Set for 220/240 Vac)

#### Pens

- 1 1 Isolated Universal Input Channel
- 2 2 Isolated Universal Input Channels
- 3 3 Isolated Universal Input Channels
- 4 4 Isolated Universal Input Channels
- 5 6 Isolated Universal Input Channels

#### PCMCIA Drive

- N No drive
- 1 Configuration / Packed Data Storage Drive

#### Option Slot #1

- N None
- 1 2 Relays
- 2 4 Relays
- 3 6 Relays
- 4 Retransmission-2 Outputs<sup>1</sup>
- 5 Retransmission-4 Outputs<sup>1</sup>

#### Option Slot #2

- N None
- 1 2 Relays
- 2 4 Relays
- 3 6 Relays

#### Communication and Transmitter Supply (Transmitter supply not available with 24 Vdc Power Option)

- N No RS485 Modbus and No Supply
- 1 No RS485 Modbus and 3 Channel Supply
- 2 No RS485 Modbus and 6 Channel Supply
- 3 RS485 Modbus and No Supply
- 4 RS485 Modbus and 3 Channel Supply
- 5 RS485 Modbus and 6 Channel Supply

#### Derived Math Channel

- 1 Basic Math
- 2 Advanced
- 3 Advanced + 32pt Characterizer
- 4 Advanced + 20 Messages
- 5 Advanced + 32pt Characterizer + 20 Messages

#### Advanced Functions

- N None
- 1 2 Totalizers
- 2 4 Totalizers
- 3 6 Totalizers
- 4 6 each Timers, Counters
- 5 6 each Timers, Counters, Totalizers

#### Totalizer Outputs

- N None
- 1 2 Totalizer Outputs (includes 2 relay option)
- 2 4 Totalizer Outputs (includes 4 relay option)
- 3 6 Totalizer Outputs (includes 6 relay option)

#### Case and Mounting

- N NEMA 3 and Panel
- 1 NEMA 3 and 2" Pipe
- 2 NEMA 4 and Panel
- 3 NEMA 4 and 2" Pipe
- 4 NEMA 4X and Panel
- 5 NEMA 4X and 2" Pipe

#### Reserved for Factory Use

N

#### Certifications

- N None
- 1 CSA<sup>2</sup>
- 2 CSA Class I, Div. 2, Group A, B, C, D<sup>2</sup>
- 3 CE Approval
- 4 CE and CSA Class I, Div. 2, Group A, B, C, D<sup>2</sup>

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#### NOTES:

- (1) Consult Moore for availability of retransmission outputs.
- (2) CSA approval pending - consult Moore.