

2-Wire Installations

Although 2-wire systems only require the D and DX Series, the DU series will function identically with its reset wires not connected.

Wiring as **Figure 1**, the D225/DX225 and D400/DX400 digital clocks are powered by 24VAC.

Wiring as **Figure 2** will allow the D225/DX225 and D400/DX400 digital clocks to be powered with 120VAC. This requires the appropriate DxT-120/24 Transformer.

Reset Options: (Figure 1 and 2)

1. National Time & Signal MC-100 Master Clock programmed for 'NATSCODIG'.

Actual Time Reset: Upon any power interruption or upon manual reset, the MC-100 will transmit a 'time code' over the 24V or 120V power wires and reset all of the digital clocks to the actual time.

12-Hour Reset: At 12:00 am and pm the MC-100 will interrupt the power to the digital clocks for one second resetting all of the clocks to 12:00.

2. Master Clock by others.

12-Hour Reset: Interrupt the power to the digital clocks at 12:00 am and/ or pm for 2 seconds. This will reset all of the digital clocks to 12:00.

Note- For 24-hour format digital clocks, power is interrupted at 0:00 (12:00am).

24VAC Power Supplies:

PS-3: 75VA Transformer. 1 ckt w/Brkr @3.13A

Operates (45)D225,(35*)DX225,(25)D400 or (20*)DX400 clocks.

PS-6: Two 75VA Transformers. 2 ckts w/Brkr @3.13A

Operates 2ckts of (45)D225,(35*)DX225,(25)D400 or (20*)DX400 clocks.

PS-12: Four 75VA Transformers. 4 ckts w/Brkr @3.13A

Operates 4ckts of (45)D225,(35*)DX225,(25)D400 or (20*)DX400 clocks.

24VAC Power Supplies (Historical):

PS-10DIG-AC: 50VA Transformer fused @2A.

Operates (25)D225,(19*)DX225,(16)D400 or (12*)DX400 clocks.

PS-20DIG-AC: 100VA Transformer. 2 ckts fused @4A total.

Operates (50)D225,(38*)DX225,(32)D400 or (24*)DX400 clocks.

PS-50DIG-AC: 250VA Transformer. 4 ckts fused @10A total.

Operates (125)D225,(96*)DX225,(81)D400 or (62*)DX400 clocks.

*Allows for an increased average brightness setting of '6'. If brightness setting is kept at factory setting

(4), D series numbers may be used for DX series.

Clock Number	Transformer
D225	D2T-120/24
DX/DU225	D2T-120/24
D400	D2T-120/24
Double D225	D3T-120/24
Double DX/DU225	D3T-120/24
Double D400	D3T-120/24
DX/DU400	D3T-120/24
Double DX/DU400	D4T-120/24

Transformer Requirements for 120VAC Installations

Apply for 2,3, or 4-Wire applications

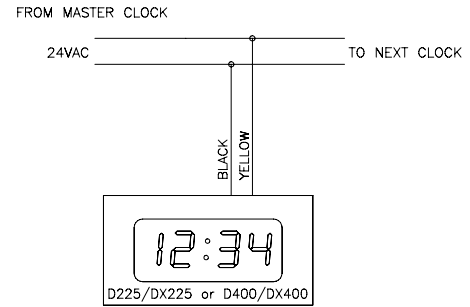


Fig. 1

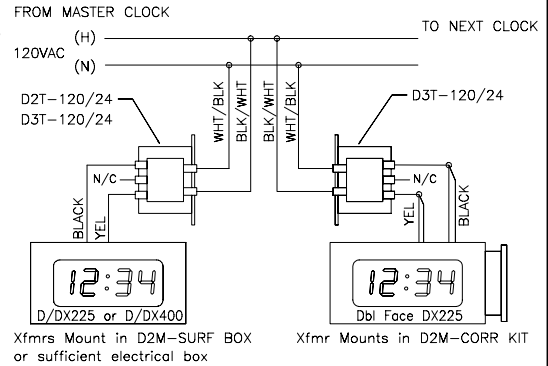


Fig. 2a

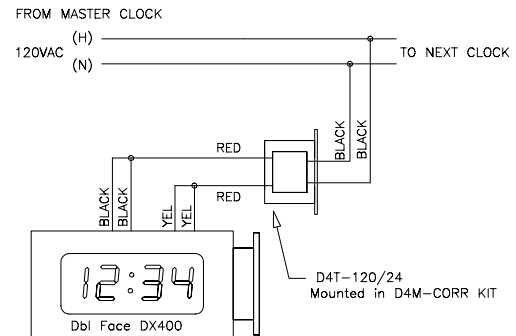


Fig. 2b

N/C Denotes 'No Connection'

Simplified Wire Size/Distance Chart

Maximum Number of 225/400 Clocks per Branch Run

Clock Series	Wire Size			
	18ga.	16ga.	14ga.	12ga.
D	17 ₍₂₂₅₎ 13 ₍₄₀₀₎	22 ₍₂₂₅₎ 17 ₍₄₀₀₎	30 ₍₂₂₅₎ 20 ₍₄₀₀₎	35 ₍₂₂₅₎ 25 ₍₄₀₀₎
DX & DU	15 ₍₂₂₅₎ 12 ₍₄₀₀₎	20 ₍₂₂₅₎ 15 ₍₄₀₀₎	25 ₍₂₂₅₎ 20 ₍₄₀₀₎	30 ₍₂₂₅₎ 20 ₍₄₀₀₎

This chart is for comparison purposes only and job specific voltages should be calculated prior to installation. Refer to Bulletin C-428 for more detailed wire calculations.

This chart shows the maximum number of D225/D400 clocks per branch run. This assumes an average of 50' between clocks that are evenly distributed along the entire distance. Double Face clocks count as two and assumes 100' spacing. DX & DU Series assume average brightness setting of 6. Multiple branch runs may be connected at the power supply, not to exceed supply current rating.

3-Wire Installations

Wiring as **Figure 3**, the DU225 and DU400 digital clocks are wired the same as a low voltage synchronous analog system. This allows the DU225/DU400 digital clock to be intermixed with analog clocks on the same circuit from the master clock. Wiring as **Figure 4** will allow the DU225/DU400 digital clock to be powered by 120VAC. This requires the appropriate DxT-120/24 Transformer.

Reset Options: (Figure 3 and 4 with National Synchronous Clocks)

1. National Time MC-100 Master Clock programmed for 'NATSCO DIG' Hour Reset: A 25 second pulse from the Master Clock will reset all of the clocks to the next hour.

12-Hour Reset: A 25 minute pulse from the Master Clock will reset all of the clocks to 6:00.

This setting combines Synchronous clock and Digital clock corrections and will provide 'On-Demand' correction capability for the DU225/DU400 clocks. This setting will correctly operate synchronous clocks which may be on the same circuit.

2. Synchronous Clock Resets (Fig. 3 and 4 with Synchronous Clocks by others)
 8 Second Hour Reset / 14 second 12-Hour Reset.

55 Second Hour Reset / 95 second 12-Hour Reset (10 times).

2 Second 12-Hour Reset.

See Compatibility List C-427 For Specifics.

24VAC Power Supplies:

PS-6: Operates up to (20)Analog or (35*)DU225 or (20*)DU400 clocks.

PS-12: 2 Circuits. Up to (20)Analog or (35*)DU225 or (20*)DU400 each.

PS-6 or PS-12 operate as Remote Booster with (2) RPS-RELAY modules.

24VAC Power Supplies (Historical):

PS-4: Operates up to (12)Analog or (19)DU225 or (12)DU400

PS-10: Operates up to (24)Analog or (38)DU225 or (24)DU400

PS-20: Operates (62)Analog or (96)DU225 or (62)DU400

PS-40: Operates (124)Analog or (192)DU225 or (124)DU400

24VAC Remote (Booster) Power Supplies (Historical):

PS-4R: Same as PS-4, requires 120VAC and clock circuit input.

PS-10R: Same as PS-10, requires 120VAC and existing clock circuit input.

PS-20R: Same as PS-20, requires 120VAC and existing clock circuit input.

PS-40R: Same as PS-40, requires 120VAC and existing clock circuit input.

Refer to Bulletin C-428 for wiring information and distances.

*Allows for an increased average brightness setting of '6'. If brightness setting is kept at factory setting, up to (45)DU225 or (25)DU400 per circuit.

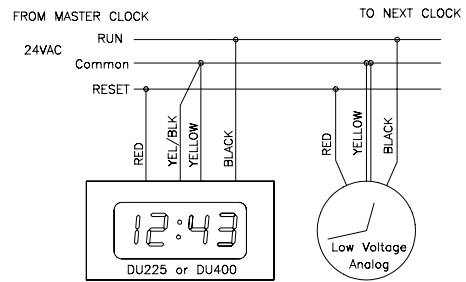


Fig. 3

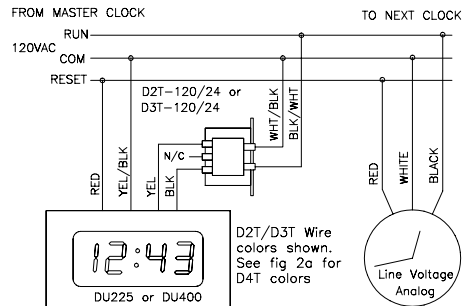


Fig. 4a

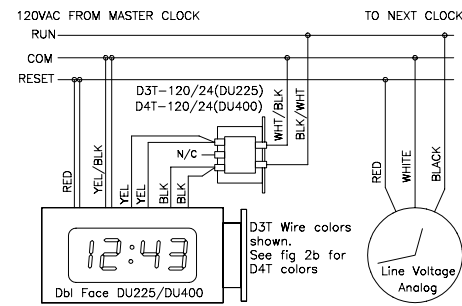


Fig. 4b

4-Wire Installations

For applications where DU225/DU400 clocks need to replace an existing National D62 clock, wiring as **Figure 5**, DU225/DU400 digital clocks are powered by 24VAC and the reset circuit is powered by 24-26VDC.

Reset Option: (Figure 5)

National Time MC-100 programmed for 'NATSCO D62/4'

12-Hour Reset: A 2 second pulse on the Reset Circuit from the Master Clock will reset all of the clocks to 12:00.

24VAC/26VDC Power Supplies:

PS-10DIG-AC/DC: 24VAC/26VDC, 100VA Transformer. Operates (9)D62-24 clocks or (19)DU225 or (12)DU400.

PS-20DIG-AC/DC: 24VAC/26VDC, 150VA Transformer. Operates (18)D62-24 or (38)DU225 or (24)DU400 clocks.

PS-50DIG-AC/DC: 24VAC/DC, 300VA Transformer. Operates (40)D62-24 or (96)DU225 or (62)DU400 clocks.

PS-100DIG-AC/DC: 24VAC/26VDC, 550VA Transformer. Operates (80)D62 or (192)DU225 or (124)DU400 clocks.

Note - D64 Clocks were not available for 24VAC applications. Wiring the 'RUN' power through the D3T-120/24 transformer like Fig. 4 will allow a D400 to replace a D64. Likewise for the 120VAC version D62.

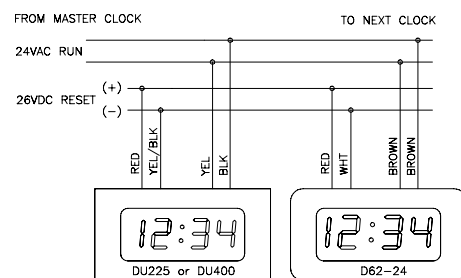


Fig. 5