

2-Wire Installations

Although 2-wire systems only require the DL and DLX Series, the DLU series will function identically with its reset wires not connected if the correction format is set to CF:03 in the configuration settings (refer to the operating instructions bulletin C-493).

Wiring as **Figure 1**, the DL225/DLX225 and DL400/DLX400 digital clocks are powered by 24VAC or 24VDC.

Wiring as **Figure 2** will allow the DL225/DLX225 and DL400/DLX400 digital clocks to be powered with 120VAC. This requires the appropriate DxT-120/24-2W Transformer. Figure 2 shows the connections for a double face unit with the appropriate DxT-120/24-D2W transformer.

Reset Options: (Figure 1 and 2)

1. National Time & Signal MC-100 Master Clock programmed for 'NTS:D/DX/RDS': 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 and RDS clocks to the actual time.

12-Hour Reset: At 12:00 am the MC-100 will interrupt the power to the digital clocks for 1/4 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 for 0.25 - 2 seconds. This will reset all of the digital clocks to 12:00.

24VAC Power Supplies:

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

Operates (90)DL225,(75*)DLX225,(60)DL400 or (45*)DLX400 clocks.

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

Operates 2ckts of (90)DL225,(75*)DLX225,(60)DL400 or (45*)DLX400 clocks.

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

Operates 4ckts of (90)DL225,(75*)DLX225,(60)DL400 or (45*)DLX400 clocks.

24VAC Power Supplies (Historical):

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

Operates (50)DL225,(40*)DLX225,(30)DL400 or (24*)DLX400 clocks.

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

Operates (100)DL225,(80*)DLX225,(60)DL400 or (48*)DLX400 clocks.

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

Operates (250)DL225,(200*)DLX225,(150)DL400 or (120*)DLX400 clocks.

*Allows for an increased average brightness setting of '6'. If brightness setting is kept at factory setting (4), DL series numbers may be used for DLX series. All figures assume proper wire gauge, load distribution and branch run configuration to minimize voltage drop at end of line.

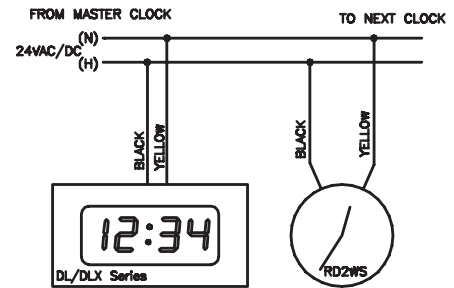


Fig. 1

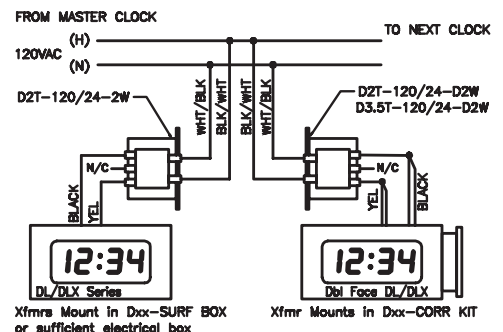


Fig. 2

Clock Number	Transformer
DL225	D2T-120/24
DLX/DLU225	D2T-120/24
DL400	D2T-120/24
Double DL225	D2T-120/24
Double DLX/DLU225	D3.5T-120/24
Double DL400	D2T-120/24
DLX/DLU400	D2T-120/24
Double DLX/DLU400	D3.5T-120/24

Transformer Requirements for 120VAC Installations Apply for 2,3, or 4-Wire applications

Simplified Wire Size/Distance Chart

Maximum Number of 225/400 Clocks per Branch Run

Clock Series	Wire Size					
	22ga.	20ga.	18ga.	16ga.	14ga.	12ga.
DL	15/12	20/16	24/20	30/24	38/30	47/38
DLX/DLU	14/11	18/14	22/17	27/21	34/26	43/33

This chart is for comparison purposes only and job specific voltages should be calculated prior to installation.

This chart shows the maximum number of digital 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. DLX & DLU 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 DLU225 and DLU400 digital clocks are wired the same as a low voltage synchronous analog system. This allows the DLU digital clock to be intermixed with analog clocks on the same circuit from the master clock. Wiring as Figure 4 will allow the DLU digital clock to be powered by 120VAC. This requires the appropriate DxT-120/24 Transformer. With the correction format (cf) set to 06, the clocks will keep time during power outages. The time is synchronized by the master clock every hour using the existing synchronous clock format. When cf is set to 00, the time will reset to 12:00 each power up. Reset Options: (Figure 3 and 4 with National EX Series 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 DLU225/DLU400 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. (Simplex, Lathem, Rauland etc.)

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

2 Second 12-Hour Reset.

See Compatibility List C-427 For Specifics.

24VAC Power Supplies:

PS-6: Operates up to (20) Analog or (75*) DLU225 or (45*) DLU400 clocks.

PS-12: 2 Circuits. Up to (20) Analog or (75*) DLU225 or (45*) DLU400 each.

PS-6 or PS-12 operate as Remote Booster with (2) PS-RELAY-24V modules.

24VAC Power Supplies (Historical):

PS-4: Operates up to (12) Analog or (30) DLU225 or (20) DLU400

PS-10: Operates up to (24) Analog or (60) DLU225 or (40) DLU400

PS-20: Operates (62) Analog or (120) DLU225 or (80) DLU400

PS-40: Operates (124) Analog or (240) DLU225 or (160) DLU400

Class Change Timer Applications (DLU Series Only)

The RESET input can be connected to an auxiliary circuit (19-32VDC or 19-120VAC) that is programmed to the class change schedule. When activated, the clocks can display a count-down or count-up timer display. The clock will function as a 2-wire clock. Set the Timer Type (tt) to 1 (down) or 2 (up) and Correction Format (cf) to 03. Refer to C-493 Operating Instructions for additional timer information.

4-Wire Installations

For applications where DLU225/DLU400 clocks need to replace an existing National D62 clock, wiring as Figure 5, DLU225/DLU400 digital clocks are powered by 24VAC and the reset circuit is powered by 19-32VDC.

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) DLU225 or (12) DLU400.

PS-20DIG-AC/DC: 24VAC/26VDC, 150VA Transformer. Operates (18) D62-24 or (38) DLU225 or (24) DLU400 clocks.

PS-50DIG-AC/DC: 24VAC/DC, 300VA Transformer. Operates (40) D62-24 or (96) DLU225 or (62) DLU400 clocks.

PS-100DIG-AC/DC: 24VAC/26VDC, 550VA Transformer. Operates (80) D62 or (192) DLU225 or (124) DLU400 clocks.

Note - D64 Clocks were not available for 24VAC applications. Wiring the 'RUN' power as Fig 2 will allow a DLU400 to replace a D64. Likewise for the 120VAC version D62.

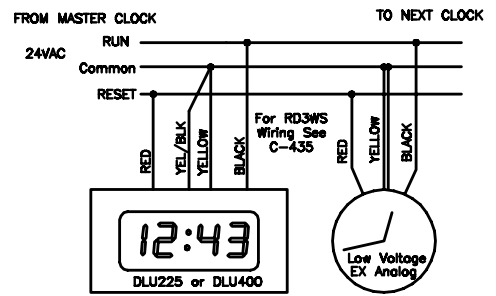


Fig. 3

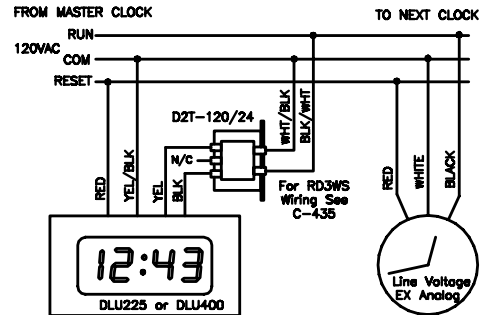


Fig. 4a

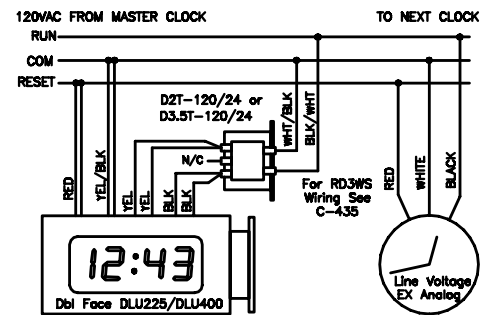


Fig. 4b

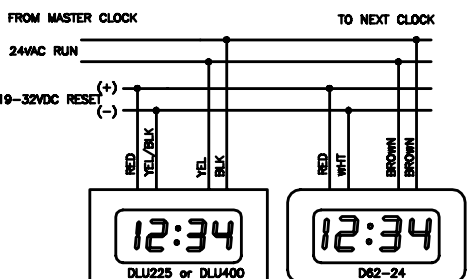


Fig. 5