The Application Note is pertinent to the Focus Family

**Isolated Master Reference Board**

The Isolated Master Reference unit allows an operator to control up to six drives per unit simultaneously from a single Speed Potentiometer or 0 to +10vdc speed command. Multiple units may be “daisy chained” in order to provide control of more than six drives. The unit provides a +10vdc power supply for the remote speed potentiometer, a linear acceleration / deceleration circuit with separately adjustable rates and a Master Start / Stop logic circuit for coordinated starting and stopping of all drives. The start circuit operates on and externally supplied 120vac supply (which also provides voltage to the low voltage supplies) allowing standard industrially rated remote operator devices to be used.

![Diagram of Isolated Master Reference Board](image)

**Focus Isolated Master Reference Board**

P/N 2450-4004

---

**External 120 VAC Supply**

- Master Start / Stop (Remote)
- +10 vdc
- Acceleration / Deceleration
- Min Speed
- Focus Isolated Master Reference Board
- Focus 3
- Commander SE
- Focus 1
2450-4004 Board

Specifications

Input Power
--- 120 vac @ 15va max

Acceleration Time
--- 2-30 seconds

Deceleration Time
--- 2-30 seconds

Speed Potentiometer Power Supply
--- 10vdc @ 5milliamps max.

Outputs (qty 6)

Analog output
--- 10vdc @ 5 milliamps max
--- Isolated

Relay Contacts
--- 115 vac max. @ 1ampere
--- Isolated
Schematic Diagram

Focus Isolated Master Reference Board
P/N 2450-4004

Low Voltage Power Supply

Isolation Circuit

Isolation Circuit

Four additional Circuits not shown
B1-B4, C1-C4, D1-D4, D1-D4

Denotes connections to TB1

Denotes connections to TB2

Denotes connections to TB3

Fused 120 vac 50/60 Hz

Master Start

Master Stop

Speed Command

Accel

Decel

+10 vdc

Min Spd

Low Voltage Power Supply

+24vdc

+15vdc

-15vdc

-24vdc

+10 vdc

CW

FW

Min Spd

Denotes connections to TB3

Denotes connections to TB1

Denotes connections to TB2

Fused 120 vac 50/60 Hz

Fused 120 vac 50/60 Hz

Fused 120 vac 50/60 Hz

Fused 120 vac 50/60 Hz
Mounting Dimensions

- TB2:
  - Width: 5.12 in
  - Height: 4.62 in
  - Diameter: Ø0.17 in

- TB1:
  - Width: 4.37 in
  - Height: 12.00 in
  - Diameter: Ø0.17 in

- TB3:
  - Width: 6.5 in
  - Height: 5.50 in
  - Diameter: Ø0.17 in

- TB2 and TB3 are vertically aligned with TB1.
Connecting Multiple Units

When more than 6 drives are required, multiple units may be “daisy chained”. Below is a drawing showing how this may be achieved.

UNIT #1
P/N 2450-4004

UNIT #2
P/N 2450-4004

Isolated Master Reference Control

Low Voltage Power Supply

Fused 120 vac 50/60 Hz

+24vdc
+15vdc
-15vdc
-24vdc

Isolation Circuit

R
F1
R
F3
F4

Accel
Decel

+10 vdc
Min Spd

Four additional Circuits not shown
B1-B4, C1-C4
D1-D4, D1-D4

Gain

Shielded Cable

Remove

Isolated Master Reference Control

Low Voltage Power Supply

Fused 120 vac 50/60 Hz

+24vdc
+15vdc
-15vdc
-24vdc

Isolation Circuit

R
F1
R
F3
F4

Accel
Decel

+10 vdc
Min Spd

Four additional Circuits not shown
B1-B4, C1-C4
D1-D4, D1-D4

Gain

JP1
Additional Equipment

The following components are also available for use with the master reference unit.

**Shielded cable for wiring to drives – 3CONcbl-XXX (XXX in feet)**

- **Remote Operator Station** -- 2950-9066
- **Speed Potentiometer** -- SpdPot

**Control Power Transformer** --- 240/480 vac primary, 120vac secondary, 100va
--- P/N Trans100va-panel

These components are available from: **Control Techniques Service Center**
1-800-367-8067

Questions: Ask the author ??  Steve Zaleski  Email: mailto:steve.zaleski@emersonct.com