

# Niobrara Research & Development Corporation

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## ASC

Advanced Seriplex<sup>®</sup> Clock

Effective: 25 April, 2002

### Introduction

The Advanced Seriplex<sup>®</sup> Clock provides a microprocessor based clock signal for a non-host controlled Seriplex network. The ASC is configured by DIP switches which set the clock rate, Multiplex Depth, CDR generation, and Host/Peer Mode.

The ASC operates at 24VDC (or 12VDC) and provides the 30mA current source for the Data line. A RUN enable input is provided for RUN/STOP control of the network and it may optionally be configured as Seriplex Input address 15. An AUX relay is included for a fault alarm.

LED indicators show the state of POWER, RUN, and the AUX output. The green POWER LED should be on if the ASC is properly powered by the Seriplex network. The green RUN light shows the state of the RUN input. The red AUX light will be on if the AUX relay is ON and indicates a fault condition.

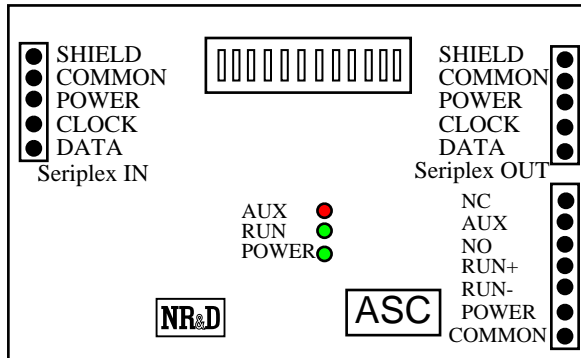


Figure 1 ASC Layout

### ASC Configuration

The ASC is configured through a 12 position DIP switch on its front. This switch is used to set the clock rate, network size, multiplex channels, CDR on/off, and Mode 1/2.

Switches 1, 2, and 3 control clock rate in between 10KHz and 200KHz. Switches 4, 5, 6, and 7 set the network size from 16 to 256 bits. Switch 8 is used to place the ASC in RUN mode with the RUN input appearing as Seriplex bit 15. Switches 9 and 10 set the number of multiplexed channels from 0 to 16. Switch 11 controls the CDR generation. Bit 12 sets the clock in Mode 1 (Peer Mode) or Mode 2 (Host Mode). Normally the ASC will be set for Peer Mode.

Table 1 Speed Switch Settings

Speed (KHz)	SW1	SW2	SW3
10	0	0	0
16	0	0	1
32	0	1	0
50	0	1	1
64	1	0	0
100	1	0	1
150	1	1	0
200	1	1	1

1 = ON (up), 0 = OFF (down)

Table 2 Size Switch Settings

# of Bits	SW4	SW5	SW6	SW7
16	0	0	0	0
32	0	0	0	1
48	0	0	1	0
64	0	0	1	1
80	0	1	0	0
96	0	1	0	1
112	0	1	1	0
128	0	1	1	1
144	1	0	0	0
160	1	0	0	1
176	1	0	1	0
192	1	0	1	1
208	1	1	0	0
224	1	1	0	1
240	1	1	1	0
256	1	1	1	1

Table 3 RUN Switch Settings

Operation	SW8
RUN Input determines RUN/STOP	0
Always RUN, RUN Input is Seriplex bit 15	1



**Table 4 MUX Switch Settings**

Mux Channels	SW9	SW10
0	0	0
4	0	1
8	1	0
16	1	1

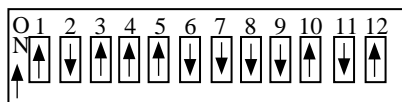
**Table 5 CDR Switch Settings**

Operation	SW11
Normal	1
CDR ON	0

**Table 6 MODE Switch Settings**

Operation	SW12
Mode 1 (PEER)	1
Mode 2 (HOST)	0

Figure 2 displays the DIP switch settings for an ASC set for 100KHz, 224 bits, 4 layers of MUX, CDR ON, and Mode 1. From 1 to 12, the settings are 101110000101.



**Figure 2 Example for 100KHz, 224 bits, 4Mux, Mode 1**

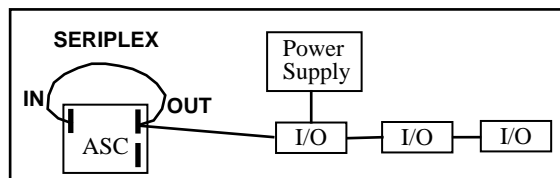
## Electrical Connection

The ASC provides two terminal connectors for the Seriplex network OUT and IN connections. It is recommended that the user follow the standard Seriplex color code for all Seriplex connections. Table 7 shows the standard color code.

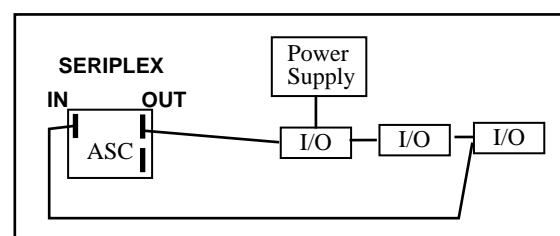
**Table 7 Seriplex Color Code**

Color	Description
Bare	SHIELD
Black	COMMON
Red	POWER
Green or Blue	CLOCK
White	DATA

The Seriplex OUT connector provides the Clock and Data outputs while the Seriplex IN connector provides the feedback inputs for the Clock and Data lines. The Seriplex IN connection must be made for the ASC to function. Typically the Seriplex IN connection is either jumpered to the Seriplex OUT for a linear network or looped around in a circular network. The advantage of looping the network is a break in the Data or Clock lines may be detected by the ASC.

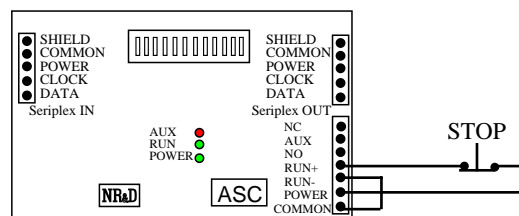


**Figure 3 Linear Network**



**Figure 4 Looped Network**

The RUN input is optically isolated from the Seriplex network and will accept a 12VDC or 24VDC input. Typical applications use the Seriplex POWER and COMMON connections and an external NC switch as a stop button.



**Figure 5 Run/Stop Button**

The AUX relay provides a NO and NC contact with the following ratings:

- 2A max. @ 30V resistive
- 0.5A max @ 125V resistive
- 10uA 10mVDC min. switching capacity

The AUX Relay will be energized when any of the following occurs:

- Clock or Data Shorted High or Low
- Clock and Data shorted together
- Excess Data Line Capacitance for a given clock rate

Note: When starting a new network, begin with a low clock rate and then speed it up if needed.