



# DUAL FIBER SELF HEALING SERIAL CONVERTER

## MODEL DDMCSF SERIES



## SYNOPSIS

- SERIAL COMMUNICATION HAS DISTANCE LIMITATIONS.
- BREAKAGES IN MULTI DROP CONNECTIONS LEAD TO LOSS IN DATA MAKING IT UNSUITABLE FOR CRITICAL COMMUNICATION.
- THE SC12FS SH I IS A SELF-HEALING RS232/RS485/422 TO DUAL - FULL DUPLEX FIBER PORT CONVERTER FORMING A REDUNDANT OPTICAL FIBER RING.
- INSTEAD OF MULTI DROPPING SERIAL DEVICES ON RS485, YOU CAN EFFECTIVELY MULTI DROP THEM ON FIBER, GIVING YOU THE ADVANTAGE OF REDUNDANCY, DISTANCES AS LARGE AS 100 KM INSTEAD OF 1.2KM, AS WELL OFFERING IMMUNITY TO VARIOUS TYPES OF NOISE AND INCREASE THE DEPENDABILITY OF DATA.
- A COMMUNICATION FAILURE IS SENSED, IF ANY OF THE SLAVE NODE FAILS OR THE POWER GOES OFF OR THERE IS A BREAK IN FIBER ETC.
- IF THE PRIMARY PATH BREAKS, THE COMMUNICATION CONTINUES UNHINDERED FROM THE REDUNDANT PATH.
- THE COMMUNICATIONS MODEL IS ONE MASTER AND MULTIPLE SLAVES. IT IS EASY TO STRUCTURE A NETWORK OF STAR, DAISY CHAIN OR LOOP TYPE. YOU NEED AT LEAST 3 CONVERTERS TO FORM A RING

## TECHNICAL SPECIFICATIONS

### PORTS

|                       |                                                                       |
|-----------------------|-----------------------------------------------------------------------|
| Serial x1             | RS232/RS485/RS422                                                     |
| Serial Port Connector | 7 pin Screw type connectors                                           |
| Baud Rate             | 300bps to 115.2Kbps                                                   |
| Fiber x2              | Full Duplex                                                           |
| Code error rate       | below 10 <sup>-9</sup>                                                |
| Wavelength            | SM :1310 (default) / 1550 nm, MM :1310 (default) / 850 nm             |
| Cable                 | SM : 09/125 µm, MM : 62.5/125 µm or 50/125 µm                         |
| Fiber Connectors      | ST, SC or FC. Select any one.                                         |
| Distance              | MM 2 to 5km. SM 20km. Longer distances are available as options in SM |
| Tx Power              | -8.5dBm                                                               |
| Sensitivity           | -35 dBm                                                               |
| Code                  | HDB3                                                                  |

## POWER

|                     |                                                                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power supply</b> | Options: DC 12, 24, 48 OR 110-370V DC OR 230V AC ( Range 85 to 265V )<br>Dual Redundant in DC 12, 24, 48V Option only<br>Reverse Polarity Protection for DC |
| <b>Power</b>        | <2W                                                                                                                                                         |
| <b>Alarm Relay</b>  | Relay: 24V DC 1 Amp. Normally Off for Power failure.                                                                                                        |

## MECHANICALS

|                                 |                     |
|---------------------------------|---------------------|
| <b>Dimensions</b>               | 110mm × 97mm × 33mm |
| <b>Weight</b>                   | 500 gm              |
| <b>Mounting</b>                 | DIN Rail            |
| <b>Enclosure Classification</b> | IP40                |

## OPERATING CONDITIONS

|                            |                      |
|----------------------------|----------------------|
| <b>Working temperature</b> | -20 to +75°C         |
| <b>Storage temperature</b> | -40 to +85°C         |
| <b>Relative humidity</b>   | 95% non-condensation |

## PROTECTION

|                             |                                                   |
|-----------------------------|---------------------------------------------------|
| <b>MTBF</b>                 | Better than 100,000 hours                         |
| <b>ESD Protection</b>       | 15 KV ESD Surge Protection for all signals        |
| <b>Isolation Protection</b> | 2.5KV Optical Isolation for Power and Serial Port |
| <b>Surge Protection</b>     | 600W on RS485 lines                               |

## LED INDICATORS

|                                                                                                        |                               |                                        |
|--------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------|
| <b>PWR 1, 2</b>                                                                                        | Power 1 & 2                   | Tx / Rx A : A Data Send/Receive, Green |
| <b>MASTER</b>                                                                                          | Master station, Red           | Tx / Rx B : B Data Send/Receive, Green |
| <b>SUB</b>                                                                                             | Slave station, Green          | TXD : Serial port Data Send, Green     |
| <b>LOOPA</b>                                                                                           | Fiber port A receiving, Green | RXD : Serial port Data Receive, Green  |
| <b>LOOPB</b>                                                                                           | Fiber port B receiving, Green |                                        |
| <b>(Loop A &amp; Loop B LED status can be used to derive the Optical connection / Loop back test.)</b> |                               |                                        |

## DIP SWITCHES

DIP switches are for the configuration of the Master and Slave units and to add a 120 Ohm termination resistor on RS-485 port.

## POWER SUPPLY CONNECTION

| PIN                | 1                   | 2   | 3           | 4   | 5                   | 6   |
|--------------------|---------------------|-----|-------------|-----|---------------------|-----|
| <b>Signal</b>      | V1+                 | V1- | RY+         | RY- | V2+                 | V2- |
| <b>Signal type</b> | DC12V, DC24V, DC48V |     | Alarm Relay |     | DC12V, DC24V, DC48V |     |
|                    | DC110-370V          |     |             |     |                     |     |
|                    | AC85-265V           |     |             |     |                     |     |

## RS-232/485/422 TERMINAL CONNECTION

| PIN                | 1             | 2       | 3      | 4   | 5      | 6   | 7   |
|--------------------|---------------|---------|--------|-----|--------|-----|-----|
| <b>Signal</b>      | TX+(A+)       | TX-(B-) | RX+    | RX- | GND    | TXD | RXD |
| <b>Signal Type</b> | RS-422/RS-485 |         | RS-422 |     | RS-232 |     |     |

## APPROVALS

IEC 60950-1 / EN 60950-1: Safety

EN55032: Conducted & Radiated Disturbances

IEC 61000-3-2 Harmonic Current Emission

IEC 61000-3-3 Voltage Fluctuations & Flicker

EN55024

IEC 61000-4-2

IEC 61000-4-6

IEC 61000-4-3

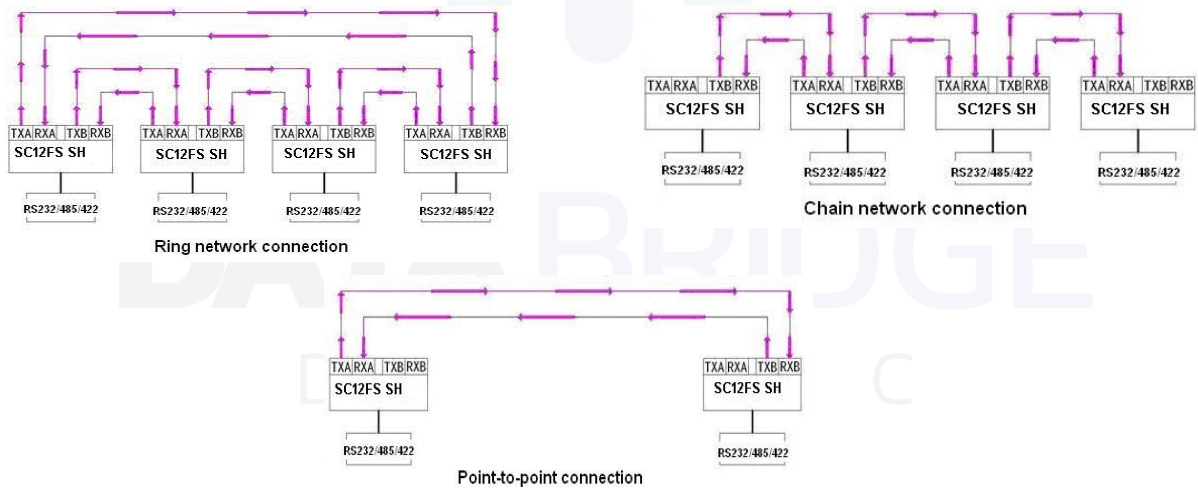
IEC 61000-4-8

IEC 61000-4-4

IEC 61000-4-11

IEC 61000-4-5

## CONNECTION ARCHITECTURES



## ORDERING CODE

DDMCSF SH I M/SXXX YY ZZZ TD

|                  |                                                                                                                         |                                                                 |
|------------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>DDMCSF SH</b> | Base Model for Self Healing Serial to Dual Fiber Converter                                                              |                                                                 |
| <b>I</b>         | Isolated Serial Ports                                                                                                   |                                                                 |
| <b>M/SXXX</b>    | M                                                                                                                       | Multimode                                                       |
|                  | S                                                                                                                       | Single Mode<br>XXX = 20, 40, 60, 80, 100 Kms<br>for Single Mode |
| <b>YY</b>        | SC                                                                                                                      | SC Connector                                                    |
|                  | ST                                                                                                                      | ST Connector                                                    |
|                  | FC                                                                                                                      | FC Connector                                                    |
| <b>ZZZ</b>       | A230 = 230V AC. Range 85 to 265V AC<br>D220 = 220V DC. Range 110 to 370V DC<br>D12 = 12V DC, D24 = 24V DC, D48 = 48V DC |                                                                 |
| <b>TD</b>        | Fixed                                                                                                                   |                                                                 |

DATA BRIDGE  
D Y N A M I C