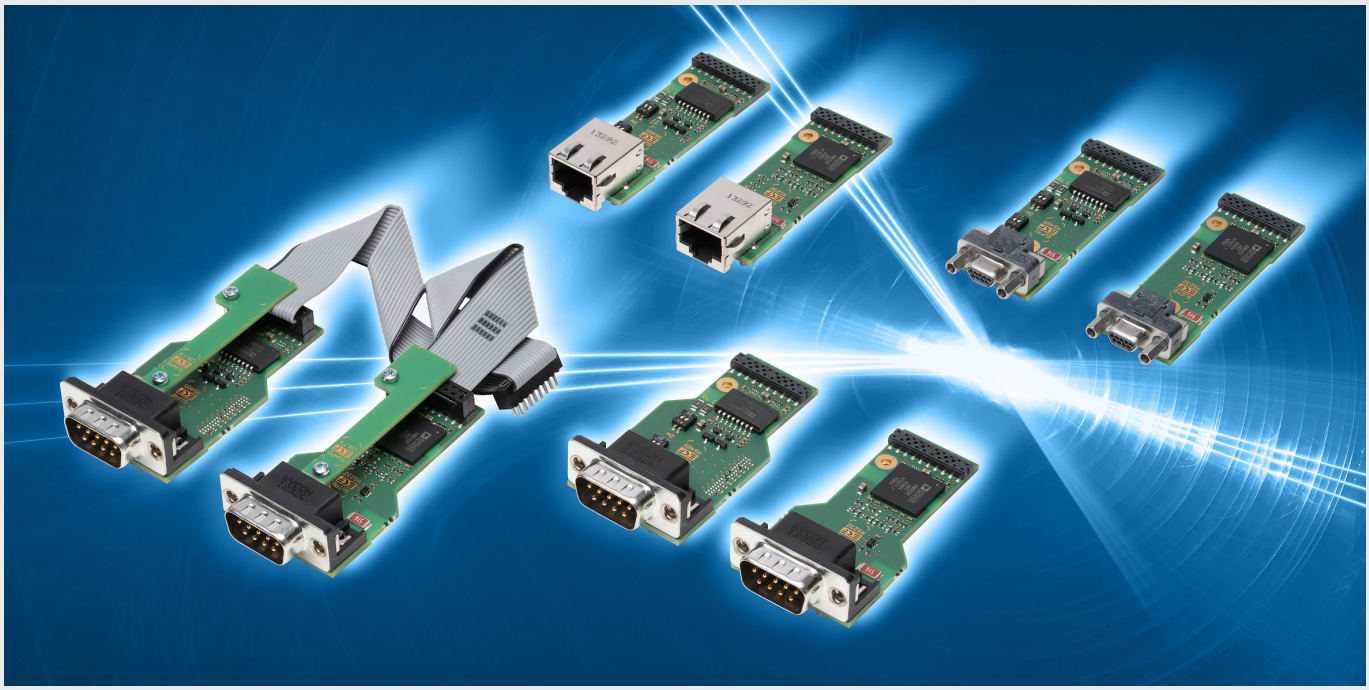
Product Information

SUE - SUF - SUG - SUH - SUI - SUJ • Isolated RS-232 & RS-485 Transceiver Modules

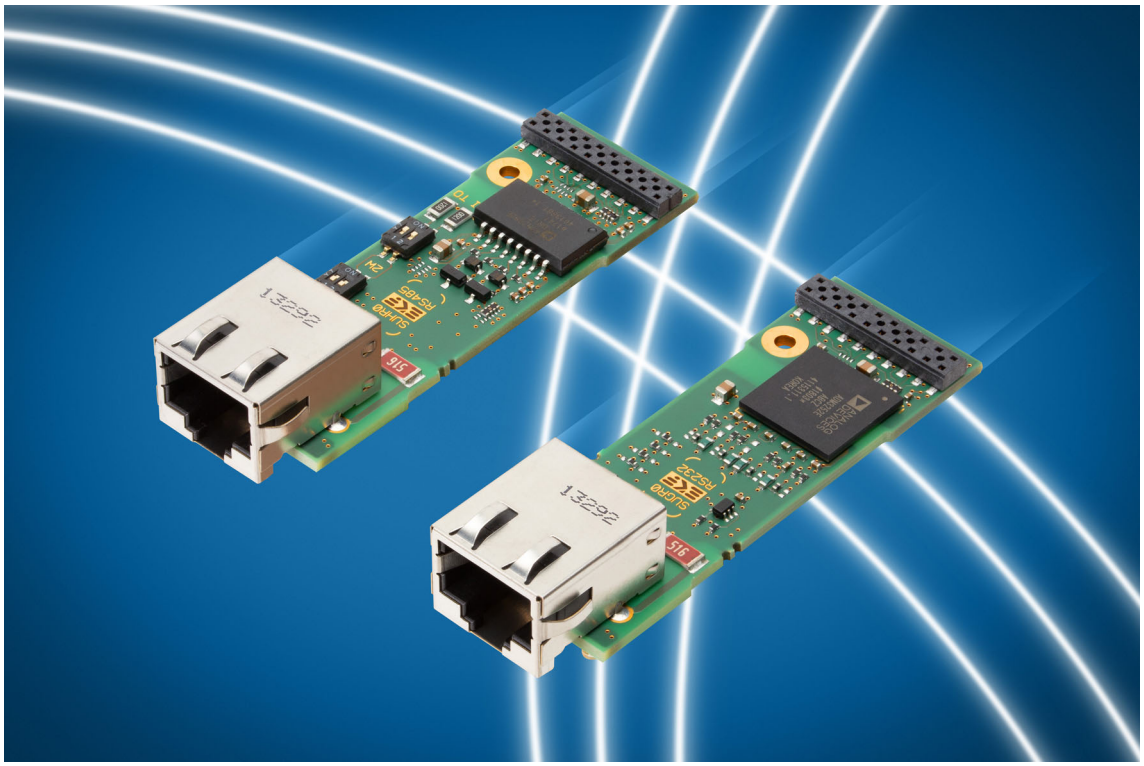
Front Connectors Micro-D - RJ45 - D-Sub



Short Description

*The **SUE - SUJ** series of isolated COM port transceiver modules are converters from an UART TTL-level interface to either RS-485 or RS-232 cable connection. The small modules are optionally available with Micro-D, RJ45, or D-Sub front connectors. All modules are equipped with a 2.0mm socket for either direct mounting to a suitable carrier card, or alternatively to be attached by means of a micro ribbon flat cable assembly.*

With their dimensions of 59mm (length) and 20mm (width), up to four SUE - SUH modules (Micro-D, RJ45) fit into a 3U/4HP front panel. The SUI - SUJ modules are provided with a classic D-Sub connector, which requires 31mm front space. All modules were designed for highest data rates and optimum isolation and ESD characteristics. The industrial temperature range makes them suitable for rugged applications (e.g. IoT, edge computing).



SUH-RS485 • SUG-RS232 • RJ45 Connector

Feature Summary

Feature Summary

General

- Choice of isolated EIA/TIA asynchronous data interfaces
- Transceiver modules available for RS-232 (SUE-RS232, SUG-RS232, SUI-RS232)
- Transceiver modules available for RS-485 (SUF-RS485, SUH-RS485, SUJ-RS485)
- Choice of front connectors
- Transceiver modules available with Micro-D (SUE-RS232, SUF-RS485)
- Transceiver modules available with RJ45 (SUG-RS232, SUH-RS485)
- Transceiver modules available with D-Sub (SUI-RS232, SUJ-RS485)
- 2.0mm pitch dual row TTL interface socket connector (RX, TX, CTS, RTS)
- Direct mounting on a carrier card (mating pin header or socket w. pin stacker)
- Alternate attachment via flat cable assembly
- Two modules can be stacked on top of each other (back to back) using the same pin header
- Two modules can be attached via single flat cable assembly
- Power requirements +3.3V, maximum consumption 0.3W (RS-232), 1.0W (RS-485)
- Dimensions 59mm x 20mm (SUE-SUH), 59mm x 31mm (SUI-SUJ)
- CompactPCI® Serial carrier card for up to eight modules available (SU3-ENSEMBLE)
- CompactPCI® Serial rear I/O carrier card for up to eight modules available (SUC-RIO)

RS-485 Transceiver Modules

- Choice of three front panel connector types
- SUF-RS485 - Micro-D (20mm width module)
- SUH-RS485 - RJ45 (20mm width module)
- SUJ-RS485 - D-Sub 9-pos. (31mm width module)
- 5kV rms isolation barrier RS-485/RS-422 transceivers (Analog Devices ADM2682)
- Configurable as half- or full-duplex
- ±15 kV ESD protection on RS-485 input/output pins
- Transceiver data rate 16Mbps max.
- Connect up to 256 nodes on one PartyLine bus (driver enable control via dedicated UART mode select outputs)
- Open- and short-circuit, fail-safe receiver inputs
- High common-mode transient immunity >25 kV/µs
- Thermal shutdown protection
- Suitable for industrial fieldbus applications

Feature Summary

RS-232 Transceiver Modules

- Choice of three front panel connector types
- SUE-RS232 - Micro-D (20mm width module)
- SUG-RS232 - RJ45 (20mm width module)
- SUI-RS232 - D-Sub 9-pos. (31mm width module)
- 2.5kV Isolation barrier RS-232 transceivers (Analog Devices *iso*Power)
- Transceivers meet EIA/TIA-232-E specifications
- High data rate > 460kbps (each board tested @921.6kbps)
- ±8 kV/±15 kV ESD protection on transceiver input/output pins
- High common-mode transient immunity >25 kV/μs
- Suitable for high noise data communications and diagnostic ports

Front Panel I/O

- Up to 4 transceiver modules RJ45 and/or Micro-D within 3U/4HP front panel width
- Up to 8 transceiver modules RJ45 and/or Micro-D within 3U/8HP front panel width
- Up to 6 transceiver modules D-Sub within 3U/8HP front panel width (flat cable attachment)
- Up to 16 transceiver modules Micro-D within 3U/12HP front panel width
- Custom specific front panel design
- Suitable CompactPCI® Serial octal UART carrier card SU3-ENSEMBLE

Rear I/O

- Up to 4 transceiver modules RJ45 and/or Micro-D within 3U/4HP back panel width
- Up to 8 transceiver modules RJ45 and/or Micro-D within 3U/8HP back panel width
- Up to 6 transceiver modules D-Sub within 3U/8HP back panel width (flat cable attachment)
- Custom specific panel design
- Suitable CompactPCI® Serial rear I/O carrier SUC-RIO (to be used together with SU3-ENSEMBLE)

Feature Summary

Environment, Regulatory

- Designed & manufactured in Germany
- Certified quality management according to ISO 9001
- Long term availability
- Rugged solution (coating, sealing, underfilling on request)
- Custom specific modifications on request
- RoHS compliant
- Operation temperature -40°C to +85°C (industrial temperature range)
- Storage temperature -40°C to +85°C, max. gradient 5°C/min
- Humidity 5% ... 95% RH non condensing
- Altitude -300m ... +3000m
- Shock 15g 0.33ms, 6g 6ms
- Vibration 1g 5-2000Hz
- MTBF SUE-RS232 203.5 years
- MTBF SUF-RS485 210.1 years
- MTBF SUG-RS232 191.8 years
- MTBF SUH-RS485 197.7 years
- MTBF SUI-RS232 192.9 years
- MTBF SUJ-RS485 197.7 years
- EC Regulatory EN55035, EN55032, EN62368-1

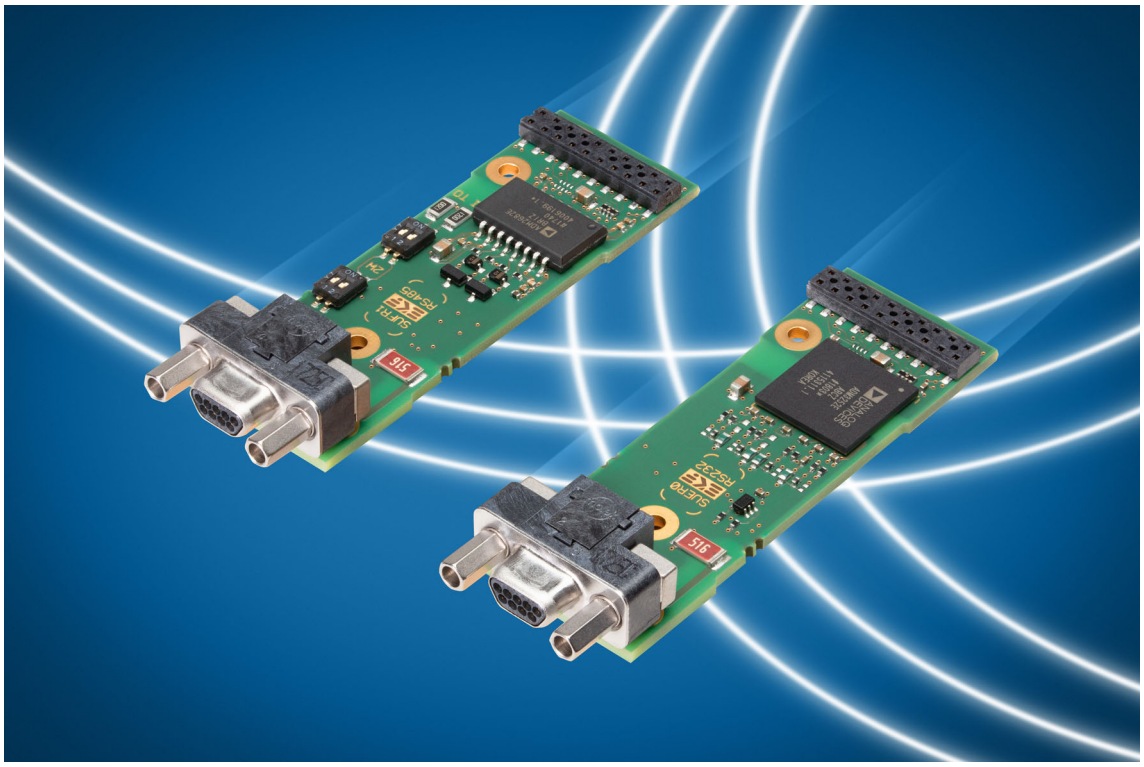
items are subject to changes w/o further notice

Please note: If an EKF product was labelled with this special sign according to ISO 7010 M002, please contact support@ekf.com for availability of additional documentation which may be important for proper usage.

Application Example • RJ45 Modules Stacked on SU3-ENSEMBLE Carrier Card

Module Overview

Transceiver Modules Available			
Front Connector	Isolated I/F	Module Width	Ordering No.
D-Sub 9-pos.	EIA-232	31mm	SUI-xxxx-RS232
D-Sub 9-pos.	EIA-485	31mm	SUJ-xxxx-RS485
Micro-D 9-pos.	EIA-232	20mm	SUE-xxxx-RS232
Micro-D 9-pos.	EIA-485	20mm	SUF-xxxx-RS485
RJ45 8-pos.	EIA-232	20mm	SUG-xxxx-RS232
RJ45 8-pos.	EIA-485	20mm	SUH-xxxx-RS485

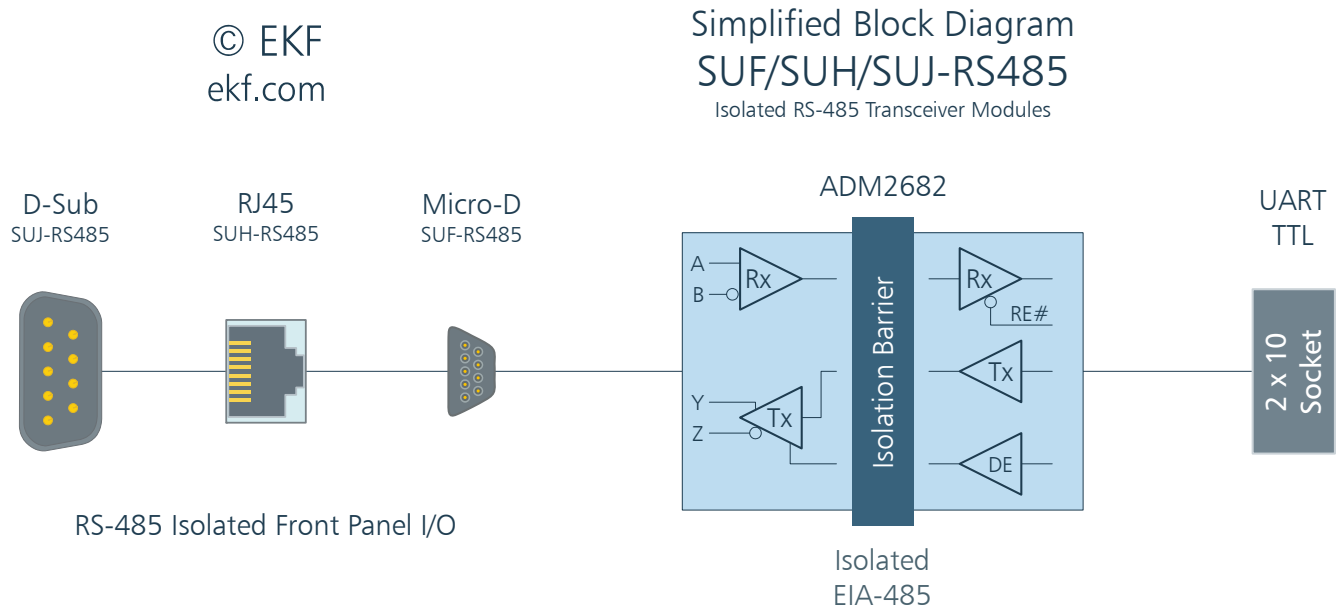


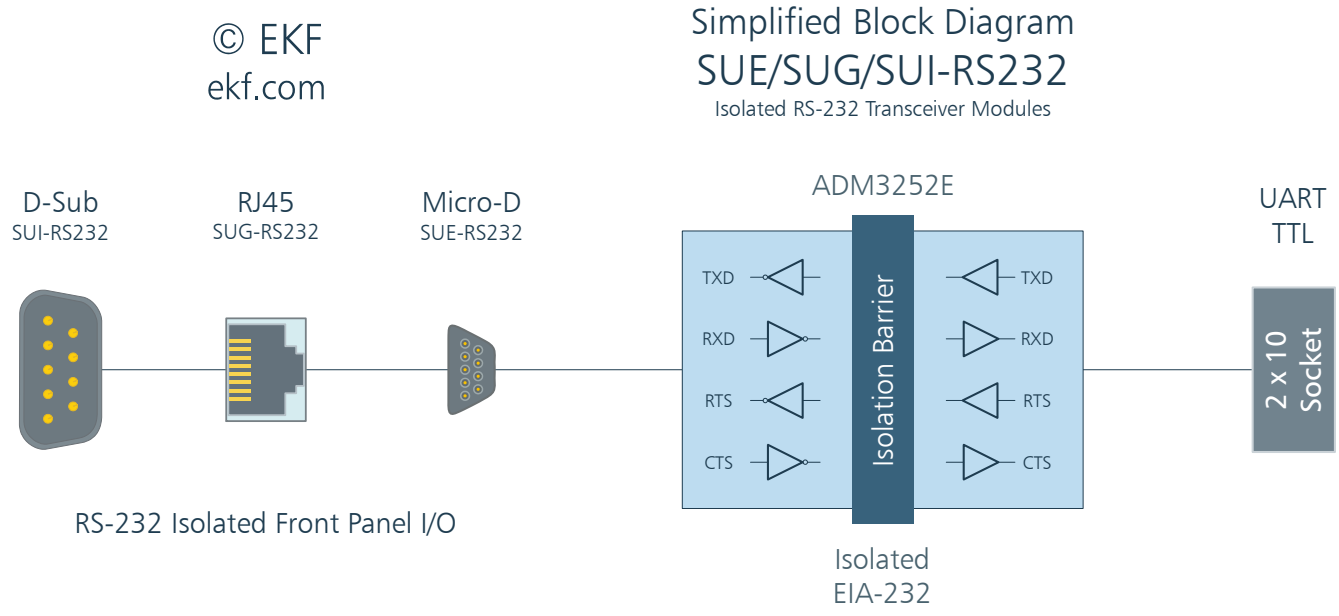
SUF-RS485 • SUE-RS232 • Micro-D Connector

SUJ-RS485 • SUI-RS232 • D-Sub Connector

Application Example • Carrier Card w. 6 x D-Sub Transceiver Modules

Block Diagram





www.ekf.com/s/sue-suj//img/sue-suj_blk.pdf

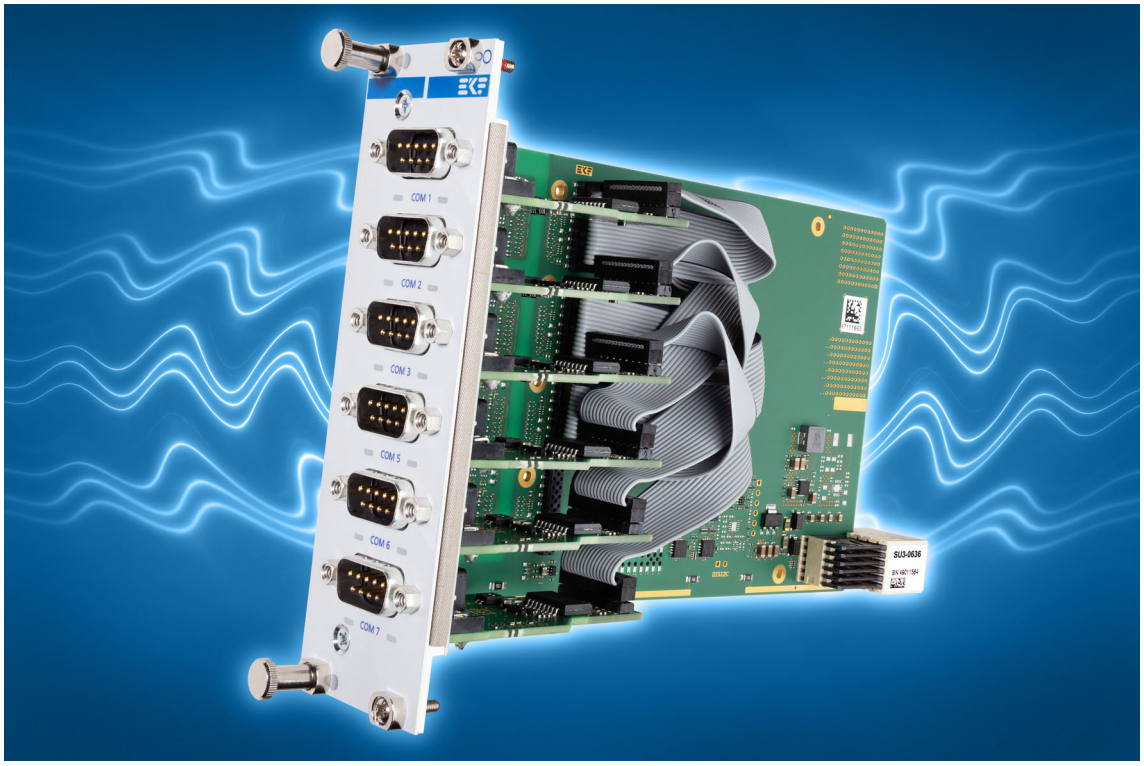
Theory of Operation

The SUE - SUJ isolated RS-232 and RS-485 transceiver modules can be used with most TTL-level UART ports. Minimum interface lines required are Rx (receive data) and Tx (transmit).
This would be sufficient for RS-232 (XON/XOFF in-band handshake). For RS-232 hardware handshake (out-of-band) and RS-485 PartyLine operation additional control signals are required (CTS/RTS protocol for RS-232, and driver/receiver enable for RS-485). Whereas most UARTs support RS-232 CTS/RTS hardware handshake, the RS-485 configuration for Half-Duplex (PartyLine) may differ.

The SUF/SUH/SUJ-RS485 transceiver modules are optimized for multi-point operation together with the Diodes PI7C9X795x PCI Express® UART bridges. PI7C9X795x WHQL and QNX drivers have been intensively tested with the SUx modules.

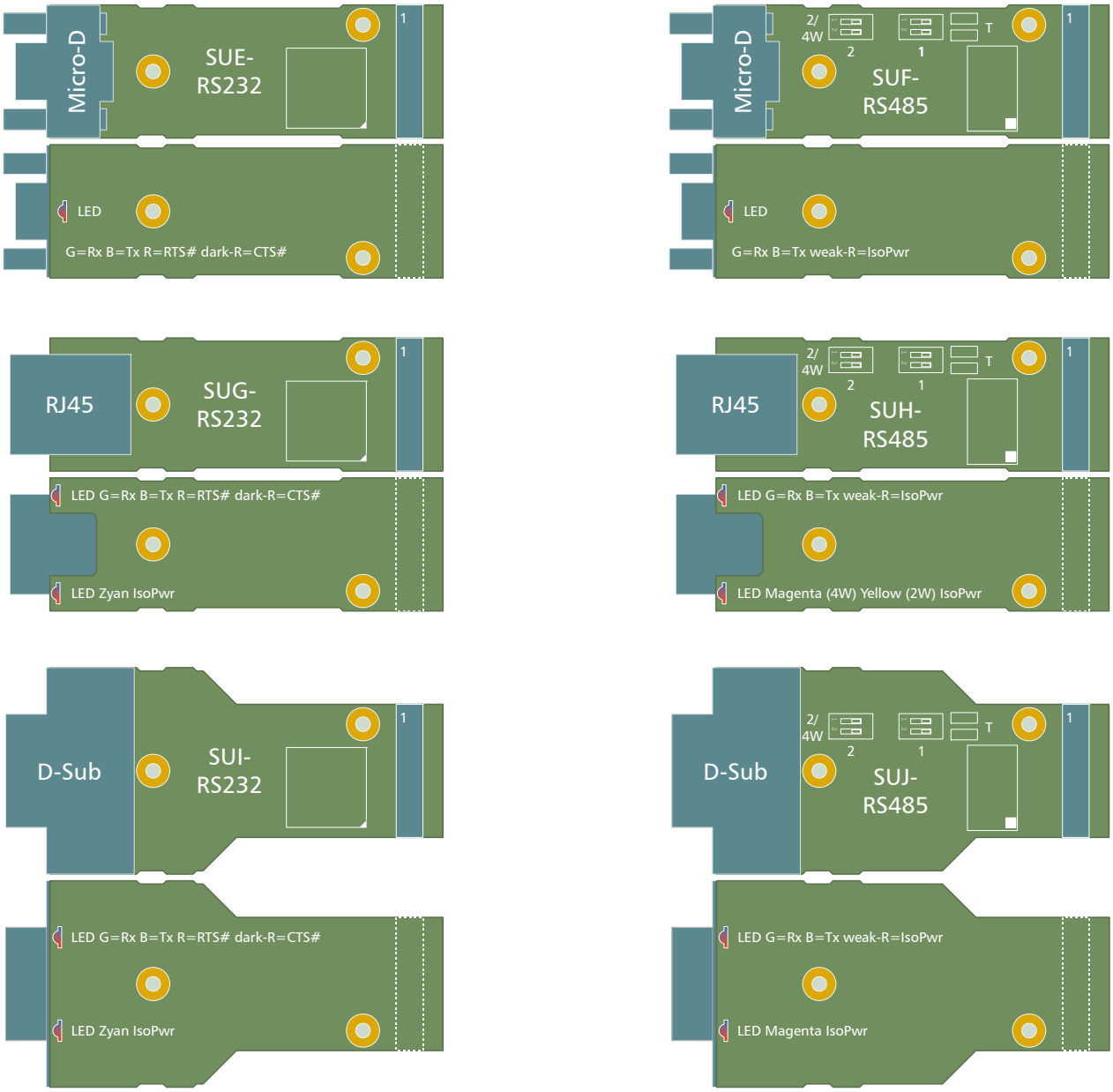
The SUx transceiver modules are available with three front panel connector types. The Micro-D is a small and professional solution, suitable for screw locked cable connectors. The RJ45 style connector is also small, and e.g. allows use of inexpensive Ethernet crossover patchcables for point-to-point RS-485 applications. In addition, the modules are also available with a classic D-Sub connector, which however requires considerably more space in a front panel.

The SUx isolated transceiver modules provide a 2x10 position host interface connector towards the UART, suitable for direct mounting to a carrier card, or micro ribbon flat cable attachment. The pin assignment of the sockets allows two modules stacked one upon the other (back to back orientation). Likewise two transceiver modules can be attached by means of a single flat cable.

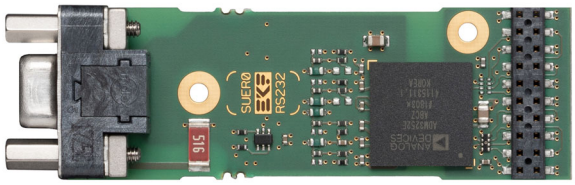


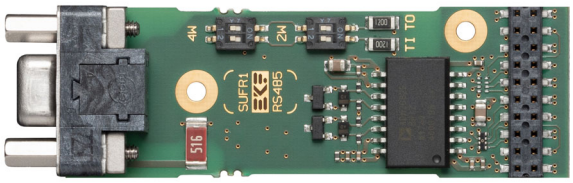
Any Two Adjacent Modules Sharing a Common Flat Cable Assy

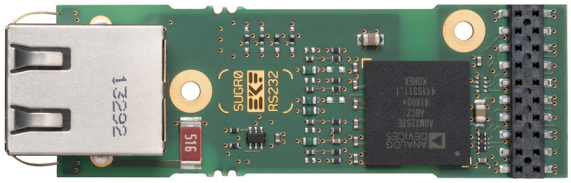
Component Orientation

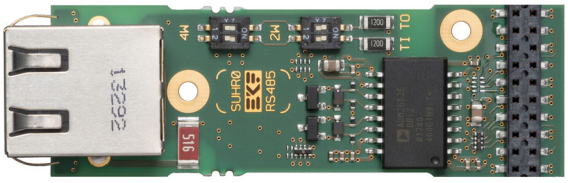


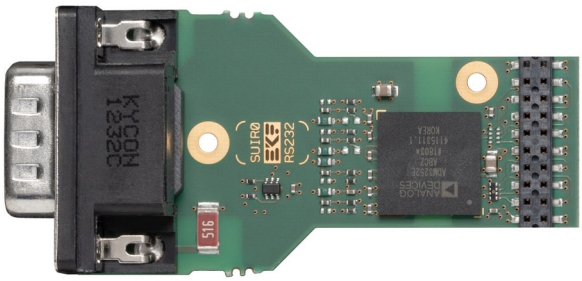
The SUE-SUJ transceiver modules are provided with one ore two tri-colour signal LEDs, located at the PCB bottom side. The LEDs will be visible through suitable front panel cutouts. Their meaning varies according to the illustration above. Please note that the front panel view depends also on the mounting orientation of a particular transceiver module - component side down or up.

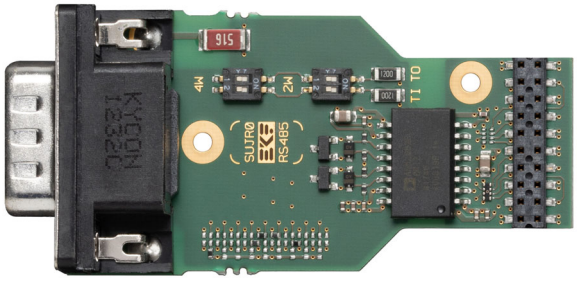

SUER0
RS232
516


4W
2W
TI TO
SUFR1
RS485
516


13292
SUCR0
RS232
516


13292
4W
2W
TI TO
SUHR0
RS485
516

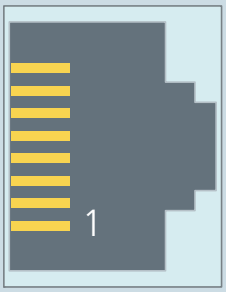

KYCON
12320
SUIR0
RS232
516


KYCON
12320
516
4W
2W
TI TO
SUJR0
RS485

Front Panel Connectors

SUH-RS485 • SUG-RS232
RJ45 Connectors

SUH-RS485 Half/Full-Duplex



CU4 Pin Assignment

Z (TX-)	8
A (RX+)	7
Y (TX+)	6
B (RX-)	5
IsoGND	4
	3
	2
	1

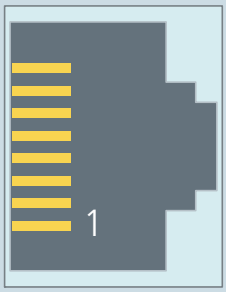
CUD Pin Assignment Suitable for Ethernet Crossover Patch Cable

CUD HDx/FDx Pin Assignment

B (D-)	8
A (D+)	7
	6
	5
IsoGND	4
	3
	2
	1

	8
	7
B (RX-)	6
	5
IsoGND	4
A (RX+)	3
Z (TX-)	2
Y (TX+)	1

SUG-RS232



CU4 Pin Assignment

RTS	8
CTS	7
TXD	6
RXD	5
IsoGND	4
	3
	2
	1

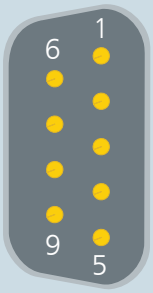
CUE Pin Assignment Suitable for Ethernet Crossover Patch Cable

CUE Pin Assignment

IsoGND	8
IsoGND	7
CTS	6
IsoGND	5
IsoGND	4
RXD	3
RTS	2
TXD	1

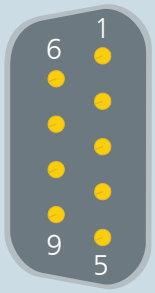
SUJ-RS485 • SUI-RS232
D-Sub Connector

SUJ-RS485



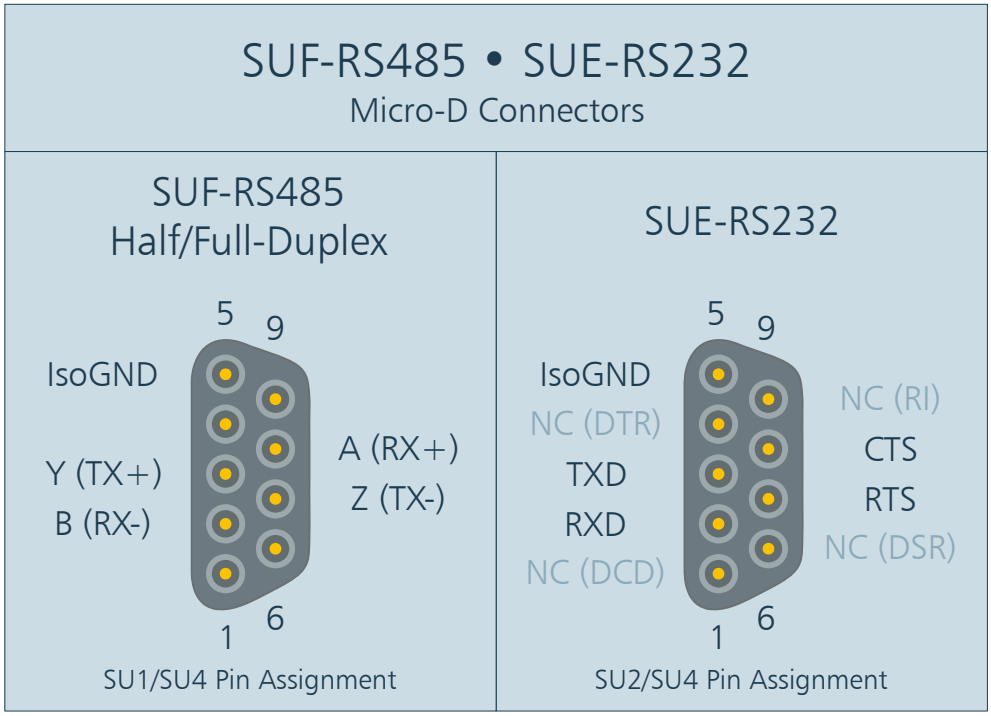
Z (TX-)	B (Rx-)
A (RX+)	Y (TX+)
	IsoGND

SUI-RS232



NC (DSR)	NC (DCD)
RTS	RX Data
CTS	TX Data
NC (RI)	NC (DTR)
	IsoGND

Please note: The SUJ-RS485 D-Sub pin assignment can be customized to any other required scheme for volume orders on request (same PCB - assembly alternate) - please contact sales@ekf.de.



IsoGND is the reference ground for all signals of a particular I/O connector, isolated from the board and system logic GND, and from Shield (panel/chassis), and also from other transceiver modules. Shield and IsoGND are loosely coupled via 51MOhm and 1nF components, 2kV each.

Front LEDs

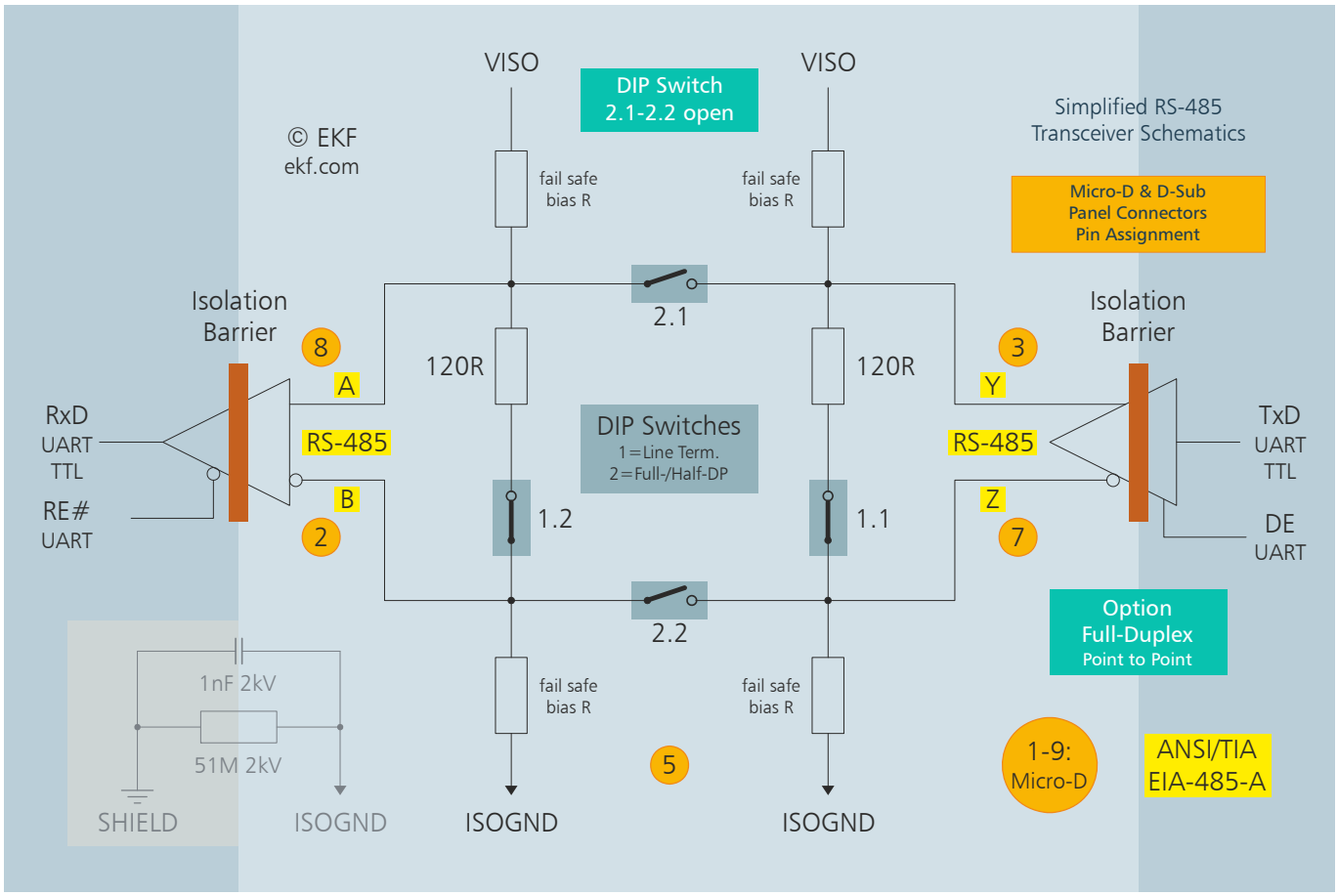
The modules are provided with a front LED for status indication; a secondary Mode LED is available with SUG - SUJ only.

Transceiver Modules LED			
Front Connector	Status LED	Mode LED	Ordering No.
Micro-D 9-pos. RS-232	Green (Receive Data) Blue (Transmit Data) Red (RTS#) Dark Red (CTS#)	-	SUE-Pxxxx-RS232
Micro-D 9-pos. RS-485	Week Red (ISOPWR ok) Green (Receive Data) Blue (Transmit Data)	-	SUF-Pxxxx-RS485
RJ45 8-pos. RS-232	Green (Receive Data) Blue (Transmit Data) Red (RTS#) Dark Red (CTS#)	Cyan	SUG-Pxxxx-RS232
RJ45 8-pos. RS-485	Week Red (ISOPWR ok) Green (Receive Data) Blue (Transmit Data	Magenta (CU4) Yellow (2W) Magenta (4W)	SUH-P5157-RS485 SUH-P5177-RS485 SUH-P5187-RS485
D-Sub 9-pos. RS-232	Green (Receive Data) Blue (Transmit Data) Red (RTS#) Dark Red (CTS#)	Cyan	SUI-Pxxxx-RS232
D-Sub 9-pos. RS-485	Week Red (ISOPWR ok) Green (Receive Data) Blue (Transmit Data	Magenta	SUJ-Pxxxx-RS485

The Mode LED (if present) has a dual function. The main purpose is to verify ISOPWR (generated by the transceiver). The LED colour in addition indicates the type of I/O and connector pin assignment. This can be useful to differ modules e.g. SUG-RS232 and SUH-RS485 from each other when they are visible only from a front panel which is not printed.

RS-485 Transceiver Schematics

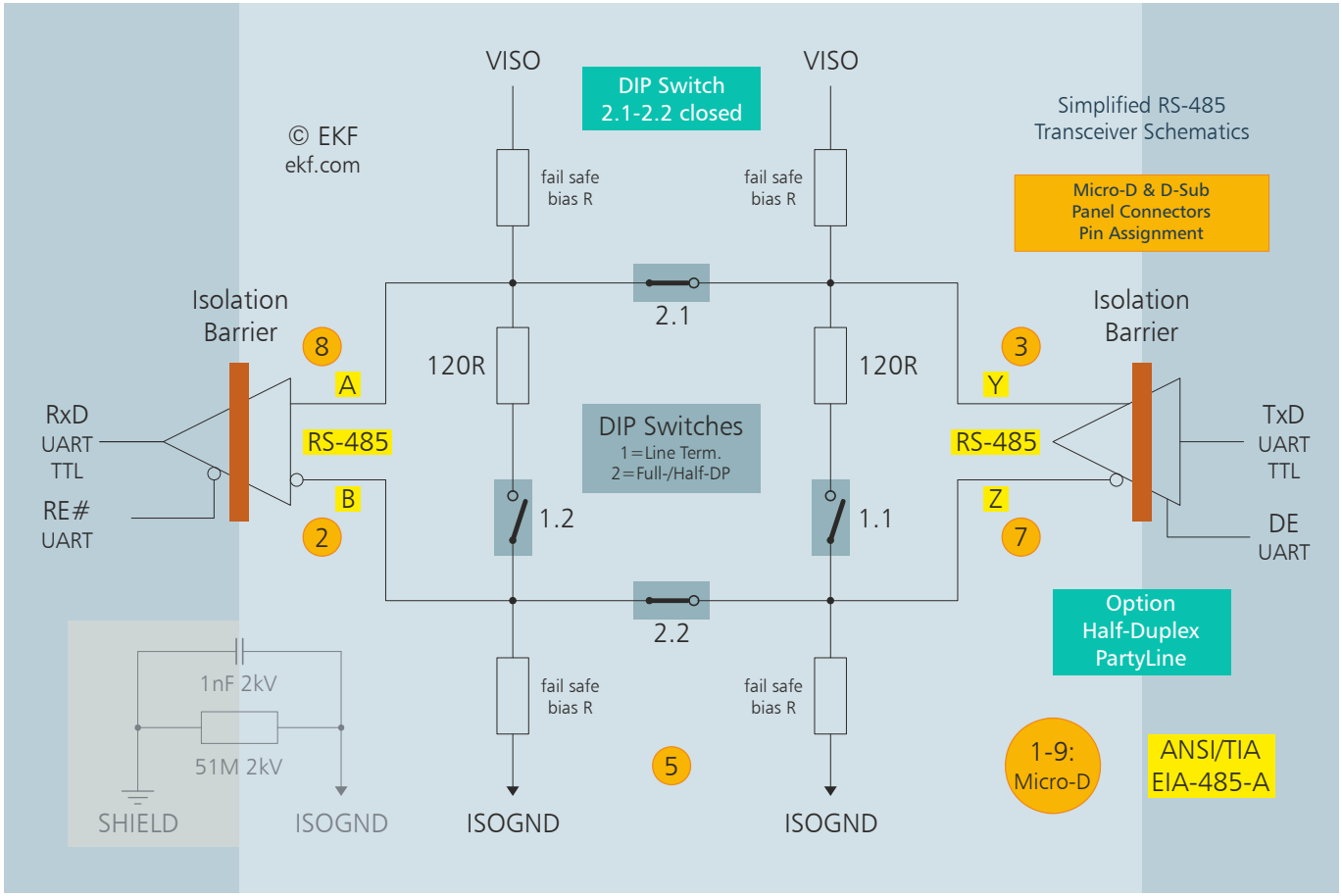
Illustrated below is the default transceiver circuitry. The light blue zone is the isolated area (front panel connectors). Please refer to the DIP-Switch configurations table for operation mode and line termination settings.



TVS at all signals A-B & Y-Z

Illustrated above is a point-to-point 4-wire configuration (in addition to reference ground wire). Switches 2.1 and 2.2 are open. Setting of line termination switches 1.1 and 1.2 depends on data transfer bit rate and cable length. Normally set both switches on (off if external termination is applied).

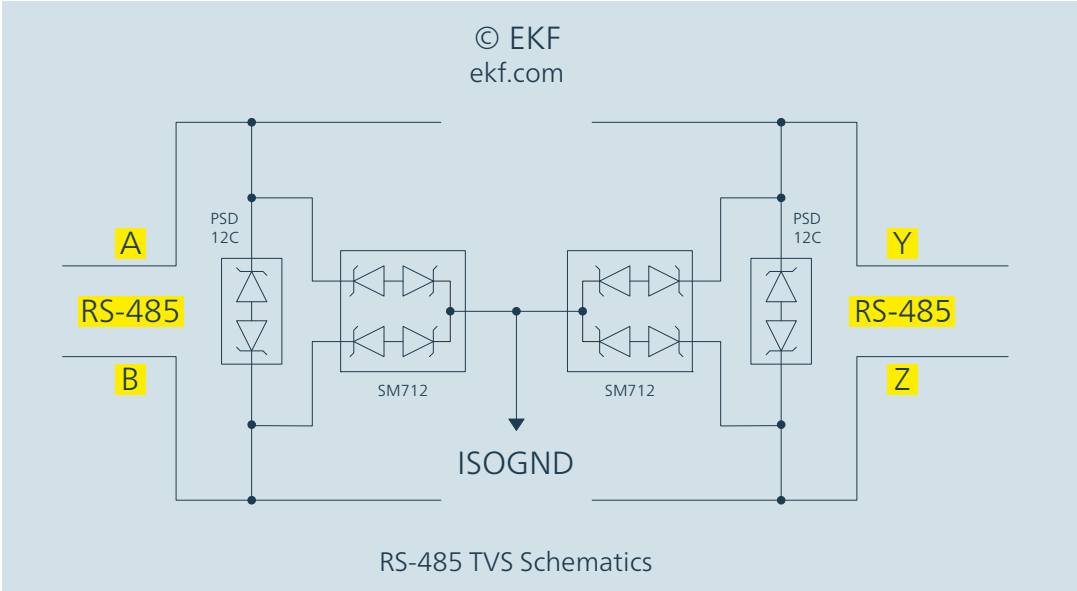
Illustrated below is a multi-point (aka PartyLine) 2-wire configuration (in addition to reference ground wire). Switches 2.1 and 2.2 are closed (A=Y, B=Z). Setting of line termination switches 1.1 and 1.2 depends mainly on the position of a particular RS-485 node on the common data bus. Normally set both switches off. If a port is positioned on either cable ending however, set termination switches 1.2 on, 1.1 off (both off if external termination is applied).



TVS at all signals A-B & Y-Z

On a PartyLine bus, no more than a single node is allowed to send data at a particular time; all other nodes must disable their drivers in order to avoid data collision at the same time. A suitable software protocol must be established which controls the driver enable (DE) pin of the transceiver. The SUx-RS485 were designed for the Pericom/Diodes PCIe® to UART bridge, which requires proprietary driver software for DE control.

ESD Protection RS-485

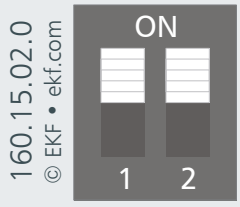


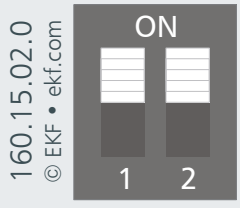
RS-485 TVS Schematics

RS-485 Half-Duplex vs. Full-Duplex

For a full-duplex RS-485 point-to-point application, the receiver data lines A/B and the driver signals Y/Z require a twisted-pair wire each, plus reference ground, resulting in a total of 2x2+1 wires. By specification, RS-485 requires a common ground - this is referred to as signal C in the ANSI EIA-485 document. In many cases the additional ground wire can be omitted, if all RS-485 nodes are properly grounded. Sometimes the RS-485 cable shield is used as common ground.

For a half-duplex RS-485 point-to-point or multipoint application, the receiver data lines A/B and the driver signals Y/Z must be tied together (A=Y, B=Z). This solution requires a single twisted-pair wire, resulting in a 2+1 wire cable. The strapping between A/Y and B/Z will be often done externally, e.g. within the shell of a cable connector. As an alternate, the SUx-RS485 provides an on-board DIP-switch, which allow to join A/Y and B/Z internally (1=ON 2=ON).

Termination DIP Switch 1 (TO/TI) EKF Part No. 160.15.02.0		
	1=ON	Y/Z Termination 120R Active (Full-Duplex Only)
	2=ON	AB Termination 120R Active

Half-/Full-Duplex Configuration DIP Switch 2 (2W/4W) EKF Part No. 160.15.02.0		
	1=OFF 2=OFF	Full-Duplex RS-485 (Point-to-Point)
	1=ON 2=ON	Half-Duplex RS-485 (PartyLine)

SUH-RS485 Half/Full-Duplex

Dependent on the SUH-RS485 PCB revision, the switch 2.1/2.2 may be either removed from the board (Full-Duplex 4-wire) or replaced by 0R (Half-Duplex 2-wire). That means the module must be ordered for either FDx or HDx fixed configuration:

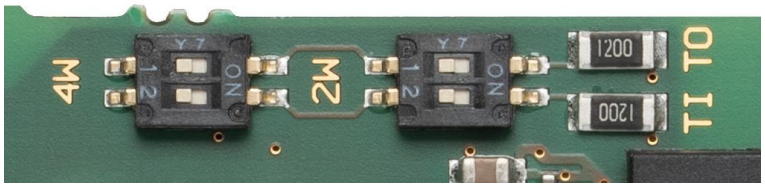
Ordering No. SUH (RS-485 w. RJ45 Front I/O)			
SKU #	RJ45 Pin Assignment	Dip Switch 2	Mode LED
SUH-P5157-RS485	CU4 Replacement	Populated	Magenta
SUH-P5177-RS485	HDx 2W CAT5 Crossover	0R (closed)	Yellow
SUH-P5187-RS485	FDx 4W CAT5 Crossover	Removed (open)	Magenta

The Mode LED colour indicates the type of I/O and connector pin assignment. This can be useful to differ modules e.g. SUG-RS232 (cyan) and different SUH-RS485 from each other when they are visible only from a front panel which is not printed.

RS-485 Line Termination

For signal integrity, both extreme ends of a RS-485 bus must be terminated, typically 120 Ohm between A/B and also Y/Z (full-duplex only), ideally matching the twisted pair cable impedance. A popular approach is to use external termination, having the resistors located within the shell of the Micro-D or D-SUB cable connectors. As an alternate, the SUx-RS485 provides an on-board DIP-switch, which can individually activate internal termination resistors on A/B and Y/Z.

By default, the internal termination is achieved by 120 Ohm (DC termination), for maximum signal integrity with long cables and high data transfer rates. If no termination is required, set both termination switches 1.1/1.2 to off. In addition, each RS-485 port is provided with fail-safe bias resistors, 549R to ISOGND at the inverting inputs/outputs (B/Z), and 549R to VISO at the non-inverting inputs/outputs (A/Y). Each line is overvoltage protected by TVS components (PSD12C combined with SM712).



RS-485 Isolation Voltage

The ADM2682E on-board transceivers withstand 5kVrms, which is far more than can achieved for the SUx-RS485 assembly. The maximum safe isolation voltage depends mainly on the voltage rating specified for the Micro-D, RJ45 or D-Sub connectors in use (signal pins to frame/chassis ground).

For personal safety, EKF recommends strongly to limit a superimposed external voltage to less then 60V, measured against protective earth.

In most cases, the reason for a superimposed voltage would be a ground loop, electromagnetic interference and/or electrostatic charging due to a long RS-485 cable. Whenever suitable, tie together externally (e.g. within the mating cable connector) isolated ground and shield.

The SUx-RS485 transceiver modules are populated with a 51MOhm high voltage resistor and 1nF capacitor between shield and isolated GND, suitable to withstand 2kV.

Is RS-485 a Two-Wire Connection?

Is RS-485 a two-wire ore a three-wire system? It is most definitely a three wire system (four plus one wire with respect to full-duplex operation). The TIA standard (ANSI/TIA/EIA-485-A, page 15, A.4.1) requires the presence of a common return path between all circuit grounds along the balanced line for proper operation.

The TIA standard defines a maximum common mode voltage range from -7V to +12V on the signal lines A and B, measured against C (common ground). A TIA/EIA-485 system however with only two wires A and B (C generator and C' receiver commons not connected) can result in an unpredictable common mode voltage superimposed on the interface lines A and B, caused either by electrostatic charging or electromagnetic interference.

A 2-wire system often may work though due to idle-line fail-safe resistors at the receiver inputs, which can be considered as a loosely coupled common ground. Nevertheless this operation mode cannot be recommended - what is working flawless in the laboratory may not work reliable under real conditions in an industrial environment.

Where do we get the third wire? Many times inner and/or outer cable shields are used as the third (fifth) wire. When using a twisted pair Ethernet cable as RS-485 transmission line, two or more wires are available for common ground.

ANSI/TIA/EIA-485-A
Interconnect Application

G = Generator • R = Receiver • RT = Termination Resistor
A/A' = Generator/Receiver Interface Point
B/B' = Generator/Receiver Interface Point
C/C' = Generator/Receiver Common

www.ekf.com/s/su1/img/rs485_common_ground.pdf

Useful External Documents	
Wikipedia	RS-485 Three-wire connection https://en.wikipedia.org/wiki/RS-485#Three-wire_connection
Article/ Blog	RS485 Cables – Why you need 3 wires for 2 (two) wire RS485 • www.chipkin.com/articles/rs485-cables-why-you-need-3-wires-for-2-two-wire-rs485/
Application Note	AN960 • RS-485/RS-422 Circuit Implementation Guide • www.analog.com/static/imported-files/application_notes/AN-960.pdf

Standards - Specifications		
Term	Document	Origin
RS-232	TIA/EIA-232-F Standard	www.tiaonline.org
RS-485	ANSI/TIA/EIA-485-A Standard Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems	www.tiaonline.org

Host Connector

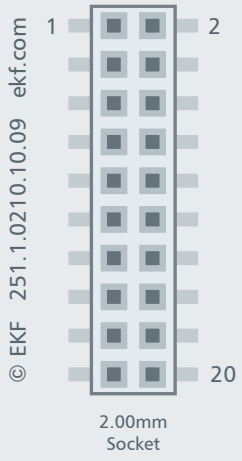
The SUE - SUJ isolated transceiver modules are equipped with a pass-through host connector socket (Samtec: CLT-110-02-G-D-A-K). EKF recommends the carrier card to be populated with the same socket type. For direct mounting of a SUx transceiver module to a carrier card, a 2.00mm pitch 2x10 board stacker (e.g. Samtec TW-10-05-G-D-190-175) must be used in addition.

Since a 2x10 position host connector is suitable for wiring two independent UART ports, two SUx transceiver modules can be attached this way to one socket on the carrier card, e.g. by mounting one module upon the other, with the help of a board stacker with longer pins. The transceiver module 1 must be mounted with its component side down, facing towards the carrier card. The transceiver modules 2 would be mounted on top of the modules 1, but with its component side up (both transceiver modules back to back).

As an alternate, one or two transceiver modules can be attached by a single flat cable assembly to the carrier card host connector.

M15 - M48 • TTL-Level Serial I/O

2.00mm Socket Strip 2 x 10 (251.1.0210.10.09)



+5V	*1*	*2*	*GND*
RTS# (1)	3	4	RXD (1)
TXD (1)	5	6	+3.3V
DE (1)	7	8	CTS# (1)
RE# (1)	9	10	GND
RE# (2)	11	12	GND
DE (2)	13	14	CTS# (2)
TXD# (2)	15	16	+3.3V
RTS# (2)	17	18	RXD (2)
+5V	*19*	*20*	*GND*

Driver enable (DE) and receiver enable (RE#) are required for RS-485 mezzanines configured for half-duplex (PartyLine) operation. The driver enable signal is generated e.g. by the Diodes PI7C9X795x UART in conjunction with the Diodes driver software.

Host Connector Flat Cables

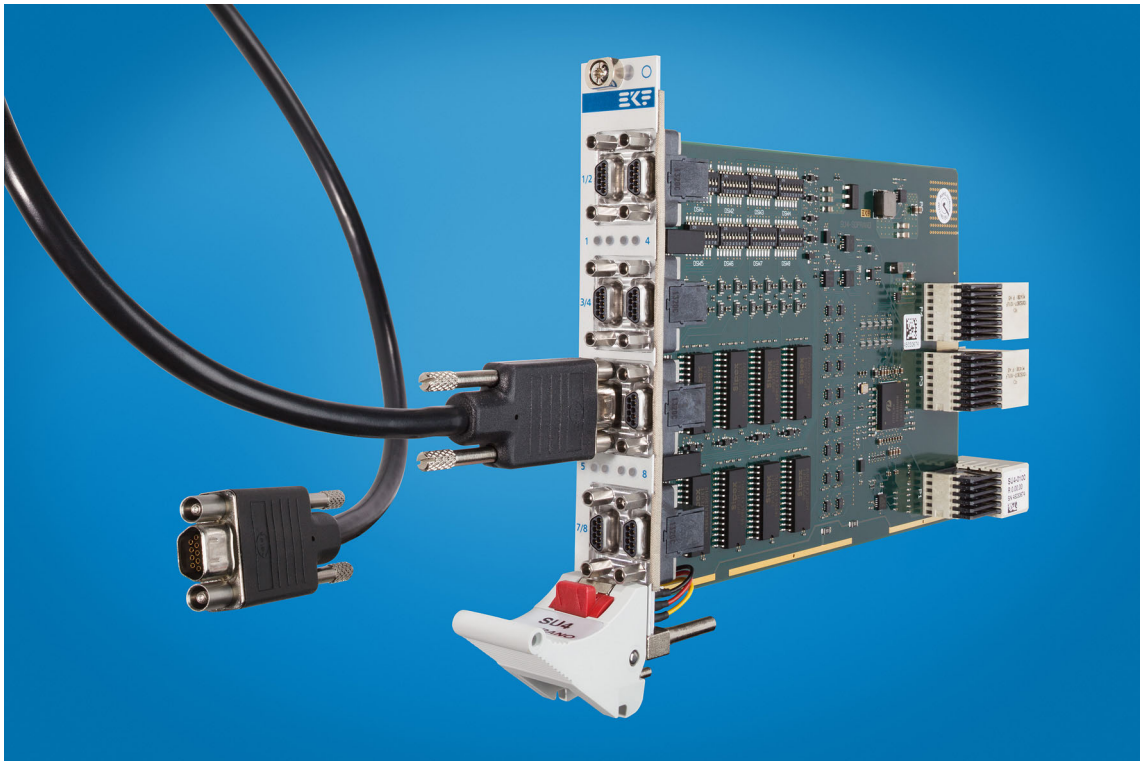
If the SUE-SUJ transceiver modules cannot be mounted directly on a carrier card, they may be attached to the host connector socket alternatively by means of a 16-lead 1.00mm pitch micro wire flat cable assembly. One ore two modules can be connected in parallel. The cable connector (16 pins) *must* be aligned centric with respect to the transceiver module socket (20 pins). If two transceiver modules shall be connected via a single cable, one transceiver side cable connector *must* be attached 180° rotated vs. the other connector (please refer to the picture below).

EKF Part Numbers Flat Cable Assemblies	
251.9.0208.24.09	16-lead cable & male connectors assembly, two connectors dual row 2.00mm pitch, ~10cm length
251.9.0208.29.09	16-lead cable & male connectors assembly, three connectors dual row 2.00mm pitch (end - middle - end), ~20cm length

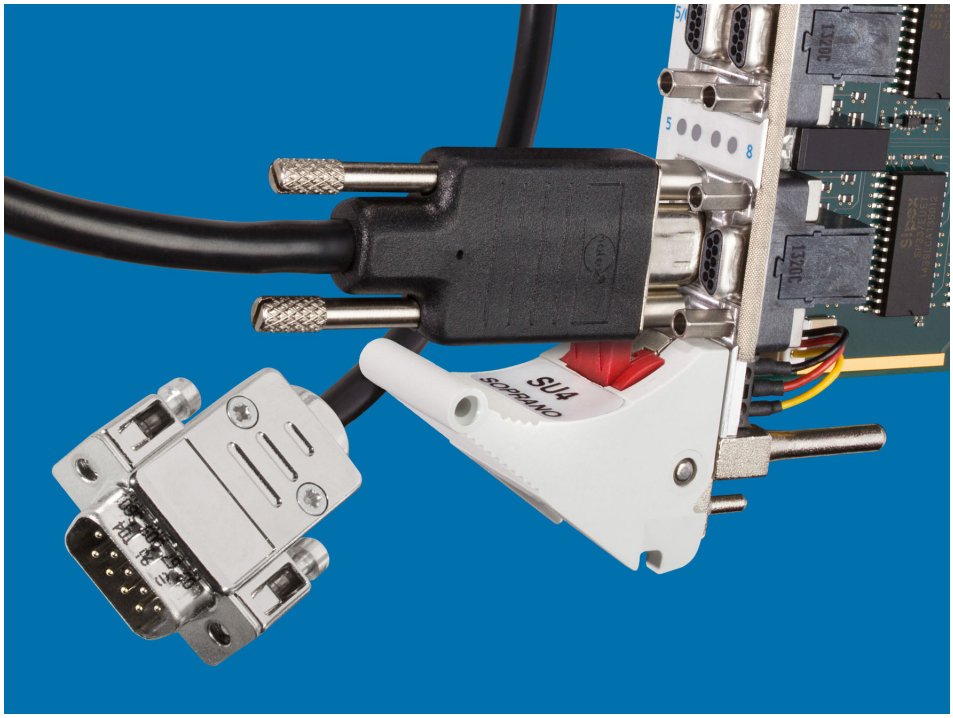
Micro-D I/O Cables

Some ready to use adapter cable assemblies are available from stock, e.g. Micro-D to D-Sub (female or male), designed for RS-232 operation, wired straight pin to pin. No TXD/RXD cross-over is included by default, as would be required for DCE to DCE communication (e.g. two SUE-RS232 transceiver modules connected). In addition, custom specific cable assemblies are available on request.

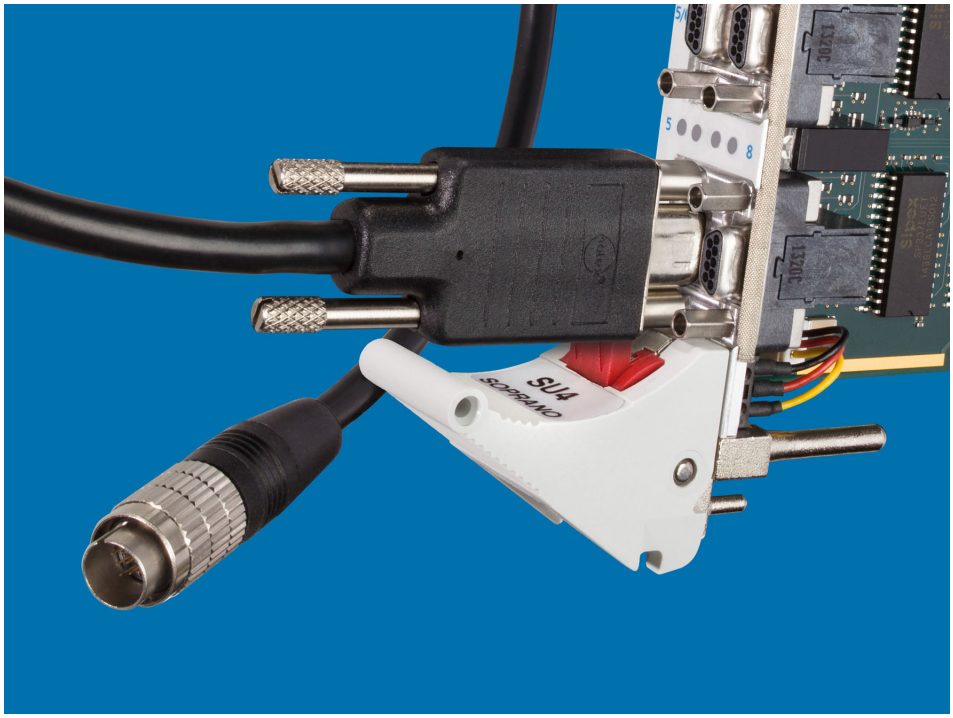
EKF Part Numbers Micro-D Cable Assemblies RS-232	
259.901.0009.18	Micro-D to Micro-D cable assembly, 9 circuits, 1.8m, female to female cable connectors
259.921.0009.18	Micro-D to D-SUB cable assembly, 9 circuits, 1.8m, Micro-D female connector to male D-Sub
259.931.0009.18	Micro-D to D-SUB cable assembly, 9 circuits, 1.8m, Micro-D female connector to female D-Sub
259.951.0009.18	Micro-D single ended cable assembly, 9 circuits, 1.8m, Micro-D female connector to pigtail



Micro-D to Micro-D Cable Assembly (Picture Similar)



Micro-D to D-SUB Cable Assembly (Picture Similar)



Micro-D to Custom Specific Connector Cable Assembly (Picture Similar)

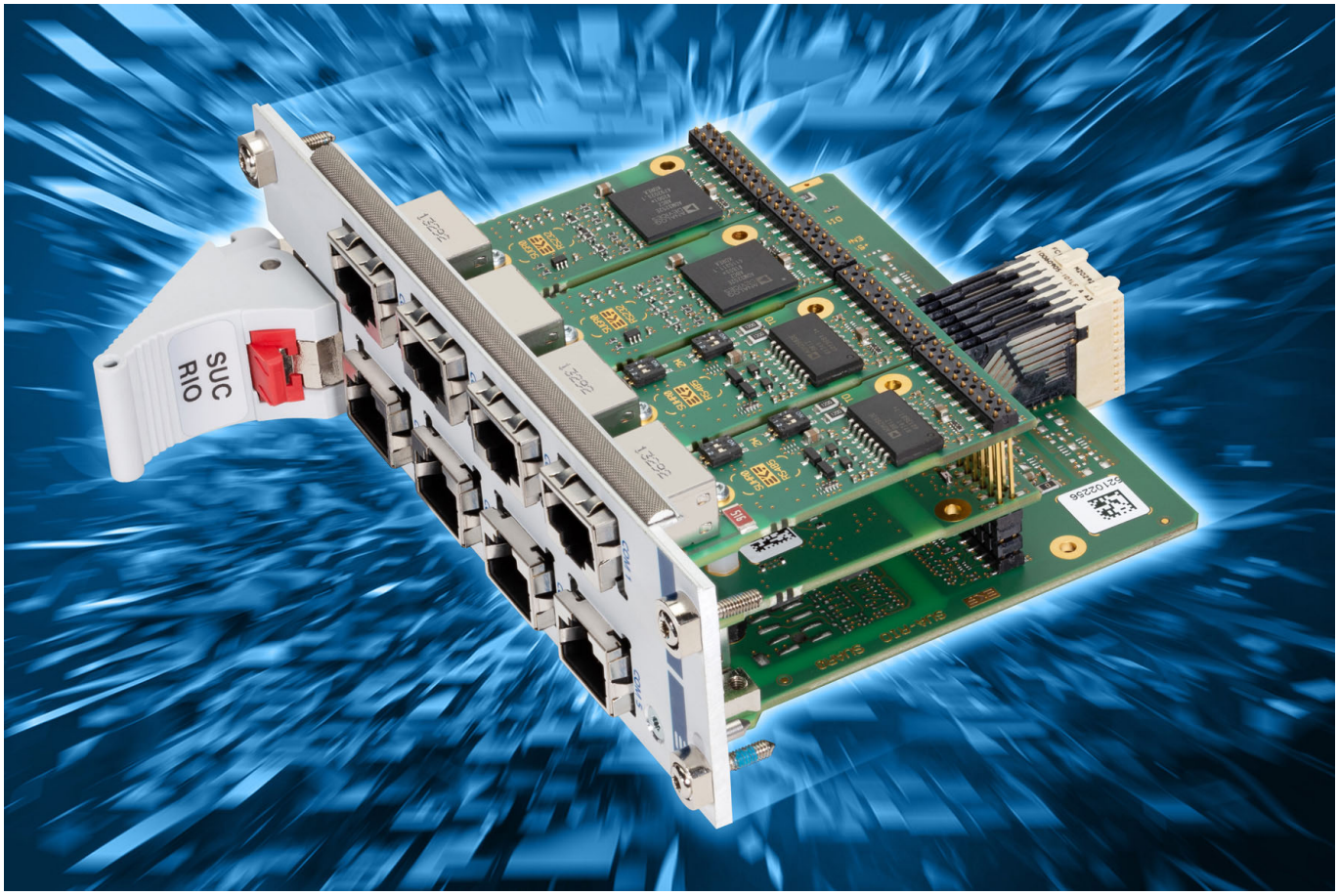
Sample Carrier Cards

Carrier Cards SU2-BALLAD w. SUA-RIO

Carrier Card SU3-ENSEMBLE w. SUG-RS232 Modules

SUC-RIO 4HP (Individually Configurable Ports)

SUC-RIO 8HP (Individually Configurable RS-232/485 Ports)



SUC-RIO 8HP (8 Ports Individually Mixed RS-232 RS-485)

Ordering Information

Ordering Information
For popular SUE-SUJ SKUs please refer to www.ekf.com/liste/liste_21.html#SUE

Related Links	
SU1-TWIST (Isolated RS-485)	https://www.ekf.com/s/su1/su1.html
SU2-BALLAD (Isolated RS-232)	https://www.ekf.com/s/su2/su2.html
SU3-ENSEMBLE (Modular Isolated RS-232 RS-485)	https://www.ekf.com/s/su3/su3.html
SU4-SOPRANO (RS-232/232 Selectable)	https://www.ekf.com/s/su4/su4.html
SUA-RIO (Rear I/O Isolated RS-232)	https://www.ekf.com/s/sua/sua.html
SUB-RIO (Rear I/O Isolated RS-485)	https://www.ekf.com/s/sub/sub.html
SUC-RIO (Rear I/O Modular Isolated RS-232 RS-485) 4-Port 8-Port (4HP/8HP)	https://www.ekf.com/s/su3/su3.html
SUE-SUJ Isolated Transceiver Modules RS-232 & RS-485	https://www.ekf.com/s/sue-suj/sue-suj.html
CompactPCI® Serial UART Solutions	https://www.ekf.com/s/serial.html#SU
CompactPCI® Classic UART Solutions	https://www.ekf.com/c/ccom/ccom.html
XMC Module UART Solutions	https://www.ekf.com/d/dcom.html

Related Products		
Board	I/F	Use Case
SU1-TWIST	4 x isolated RS-485 Micro-D front 8 x isolated RS-485 Micro-D front 8 x isolated RS-485 Micro-D front & rear 4+4 6 x isolated RS-485 D-Sub front 8 x isolated RS-485 D-Sub front	4HP F/P, basic version 8HP F/P, w. SUB-RIO as mezzanine module 4HP F/P R/P, w. rear I/O module SUB-RIO 8HP F/P, w. IDC cable assemblies 12HP F/P, w. IDC cable assemblies
SU2-BALLAD	4 x isolated RS-232 Micro-D front 8 x isolated RS-232 Micro-D front 8 x isolated RS-232 Micro-D front & rear 4+4 2 x isolated RS-232 D-Sub front 3 x isolated RS-232 D-Sub front 4 x isolated RS-232 D-Sub front	4HP F/P, basic version 8HP F/P, w. SUA-RIO as mezzanine module 4HP F/P R/P, w. rear I/O module SUA-RIO 4HP F/P, w. IDC cable assemblies 4HP F/P, w. IDC cable assemblies 8HP F/P, w. IDC cable assemblies
SU3-ENSEMBLE	8/16 x configurable isolated RS-232 RS-485 ports, carrier card for up to 8 modules, connector styles RJ45/Micro-D/D-Sub, rear I/O capable 4+4, to be combined with single port modules SUE - SUJ	4HP/8HP/12HP F/P, for rear I/O to be combined with SUC-RIO as rear I/O carrier card for single port modules SUE - SUJ, 16 ports as dual SU3-ENSEMBLE with a common front panel 12HP
SU4-SOPRANO	8 x RS-232/485 selectable, non isolated, Micro-D	4HP F/P, each port user configurable, rear I/O capable
SU5-ENSEMBLE	same as SU3 but 58.9824MHz UART clock option for highest RS-485 data rates available	same as SU3, except baud rates (refer to table on previous page)
SUA-RIO	4 x isolated RS-232, Micro-D	4HP R/P rear I/O card for SU1/SU2 8HP F/P when used as SU1/SU2 mezzanine
SUB-RIO	4 x isolated RS-485, Micro-D	4HP R/P rear I/O card for SU1/SU2 8HP F/P when used as SU1/SU2 mezzanine
SUC-RIO	4 x configurable isolated RS-232 RS-485 ports, carrier for up to 4 transceiver modules SUE - SUJ, connector styles RJ45/Micro-D/D-Sub	4HP R/P rear I/O card for SU3 8HP F/P when used as SU3 mezzanine to be combined with single port modules SUE - SUJ
SUE-RS232	1 x RS-232 isolated transceiver module Micro-D	for SU3, SU5, SUC
SUF-RS485	1 x RS-485 isolated transceiver module Micro-D	for SU3, SU5, SUC
SUG-RS232	1 x RS-232 isolated transceiver module RJ45	for SU3, SU5, SUC
SUH-RS485	1 x RS-485 isolated transceiver module RJ45	for SU3, SU5, SUC
SUI-RS232	1 x RS-232 isolated transceiver module D-Sub	for SU3, SU5, SUC
SUJ-RS485	1 x RS-485 isolated transceiver module D-Sub	for SU3, SU5, SUC

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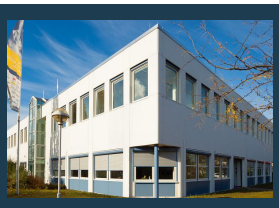

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