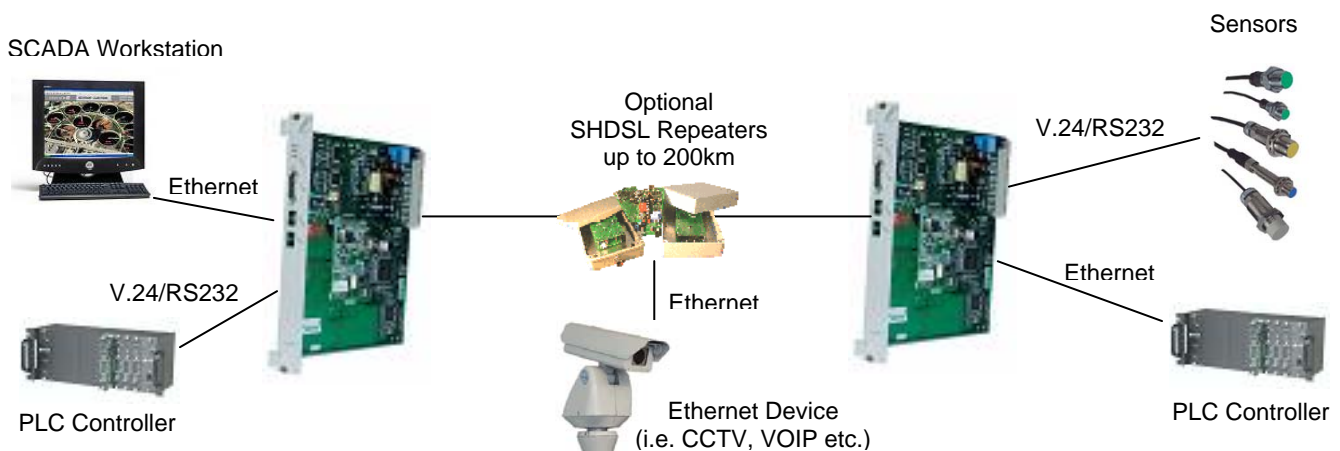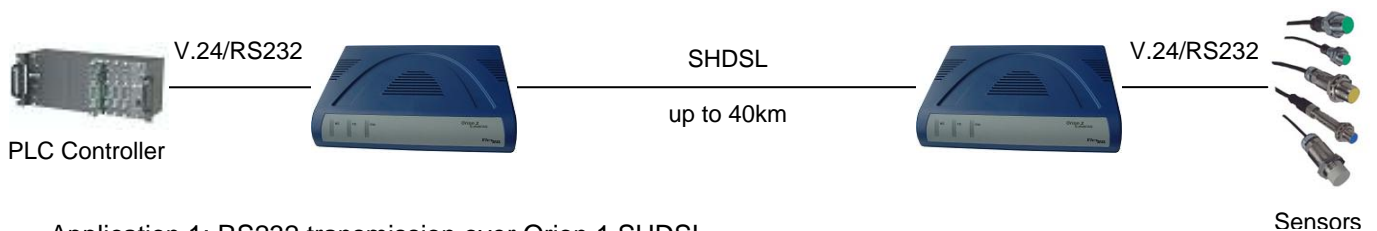# Orion V.24 / RS 232 Application Note (#20060811)

RS232 transmission has been broadly implemented during past years especially in SCADA applications used in railway, pipeline, utility, and military applications. However, due to technological evolution these RS232 transmission systems, such as Baseband modems etc., have disappeared during the last few years, while demand still remains, mainly in order to maintain existing infrastructure.
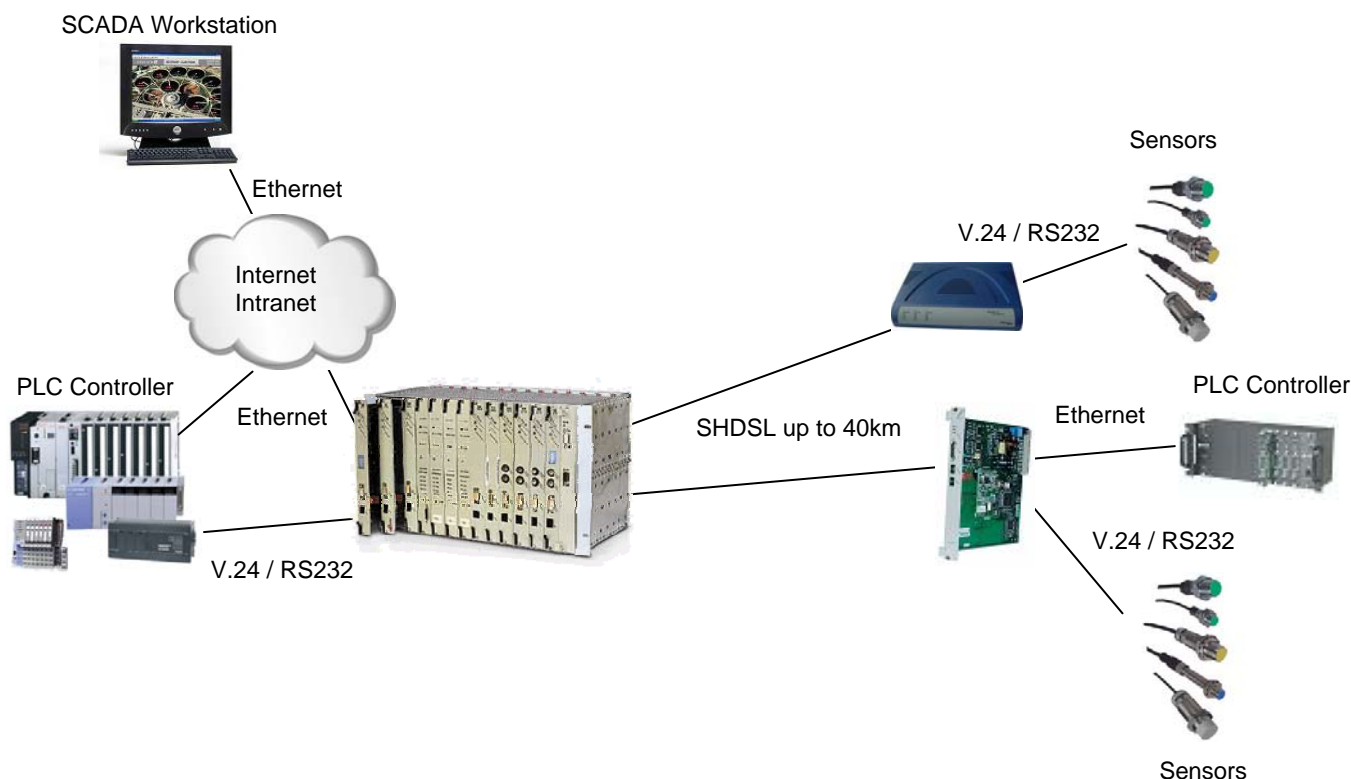
With the introduction of new regulations such as RoHS by July 1st 2006, also the last available products are discontinued by their manufacturers, while other manufacturers, specialized in these kind of systems charge a large amount just in order to provide low tech products that do not even provide a migration path to new state-of-the-art technologies such as Ethernet.

FlexDSL Telecommunications AG can offer FlexDSL Orion 1; a comprehensive and cost effective solution for such SCADA applications, based on latest SHDSL technology, by providing, also a migration path to Ethernet based SCADA products.

FlexDSL Orion 1 has an extended temperature range from -25°C to + 70°C and fits seamlessly into FlexDSL's comprehensive FlexGain Platform with various power and interface options.

Orion 1 SCADA Applications:

Application 1: RS232 transmission over Orion 1 SHDSL

Application 2: Combined RS232 and Ethernet Transmission over DSL by utilizing Repeaters

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Application 3: Integrated SCADA Application with Legacy RS232 and Ethernet Transmission

V.24/RS232 Interface Modes:

Mode	Bandwidth
Synchronous	64 kbps and 128 kbps
Asynchronous	110, 300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 kbps (110 – 38400 kbps occupy 1xTS, 57600 kbps occupy 2xTS, and 115200 kbps occupy 3xTS)

Expected Distances*:

Copper Size (1 Pair)	Distance (192kbps)	Distance (512kbps)	Distance (2.0Mbps)
1.2mm	up to 38.9km	up to 26.6km	up to 15.2km
0.9mm:	up to 21.8km	up to 15km	up to 8.6km
0.65mm	up to 14.4km	up to 9.9km	up to 5.7km
0.5mm	up to 10km	up to 6.9km	up to 3.9km

* Values include noise model

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Supporting Desktop Products (V24/RS232):

	FG-PAM-SAN-N64, V33 FlexDSL standalone modem (NTU), 1x SHDSL (TC-PAM16, 2.3Mbps), Master/Slave, 1x Nx64 (V.35/V.36/X.21/V.24), accepts Local or Remote Power. (Power Adapter not included: use FG-PAM-PA48-x).
	FG-PAM-SAN-E1B/N64, V32 FlexDSL standalone modem (NTU), 1x SHDSL (TC-PAM16, 2.3Mbps), Master/Slave, Multi-Service: 1x E1 (PRA) 120Ohm (75Ohm BNC possible) and 1x Nx64 (V.35/V.36/X.21/V.24), accepts Local or Remote Power. (Power Adapter not included: use FG-PAM-PA48-x).
	FG-PAM-SAN-E1B/N64-MP, V34 FlexDSL standalone modem (NTU), 2x SHDSL (TC-PAM16, 2.3Mbps), Master/Slave, Multi-Point, Multi-Service: 1x E1 (PRA) 120Ohm (75Ohm BNC possible) and 1x Nx64 (V.35/V.36/X.21/V.24), accepts Local or Remote Power. (Power Adapter not included: use FG-PAM-PA48-x).

Supporting Line Card Products (V.24/RS232 and Ethernet):

	FG-PAM-SRL-E1B/N64/Eth/FXx, V39 FlexDSL sub rack module (LTU), 1x SHDSL (TC-PAM16, 2.3Mbps), Master/Slave, Multi-Service: 1x E1 (PRA) 120Ohm (75Ohm BNC possible) and 1x Nx64 (V.35/V.36/X.21/V.24) and 1x Ethernet (10/100BT Bridge) and up to 2x 4 FXS/FXO.
	FG-PAM-SRL-E1B/N64/Eth/FXO-RP, V39RP FlexDSL sub rack module (LTU), 1x SHDSL (TC-PAM16, 2.3Mbps), Master/Slave, Multi-Service: 1x E1 (PRA) 120Ohm (75Ohm BNC possible) and 1x Nx64 (V.35/V.36/X.21/V.24) and 1x Ethernet (10/100BT Bridge) and up to 2x 4 FXO only. Remote Power Source.
	FG-PAM-SR2L-E1B/N64/Eth/FXx-MP, V42 FlexDSL sub rack module (LTU), 2x SHDSL (TC-PAM16, 2x 2.3Mbps), Master/Slave, Multi-Point, Multi-Service: 1x E1 (PRA) 120Ohm (75Ohm BNC possible) and 1x Nx64 (V.35/V.36/X.21/V.24) and 1x Ethernet (10/100BT Bridge) and up to 2x 4 FXS/FXO.

Supporting Repeater Products (supporting Ethernet Add/Drop):

	FG-PAM-RGN-Eth-IP, V56 FlexDSL 1x Pair SHDSL Repeater in Protected IP-67 Aluminum Housing, 1x SHDSL (TC-PAM16/32, 1x 5.7Mbps), 1x Ethernet drop off (10/100BT, Bridge), 3 External Alarm Inputs. Configurable as Power End-Point or Pass-Through.
	FG-PAM-RG2N-Eth-IP, V58 FlexDSL 2x Pair SHDSL Repeater in Protected IP-67 Aluminum Housing, 2x SHDSL (TC-PAM16/32, 1x 11.4Mbps), 1x Ethernet drop off (10/100BT, Bridge), 3 External Alarm Inputs. Configurable as Power End-Point or Pass-Through.
	FG-PAM-RGN-Eth-PL, V56 FlexDSL 1x Pair SHDSL Repeater in Plastic Housing, 1x SHDSL (TC-PAM16/32, 1x 5.7Mbps), 1x Ethernet drop off (10/100BT, Bridge), 3 External Alarm Inputs. Configurable as Power End-Point or Pass-Through.
	FG-PAM-RG2N-Eth-PL, V58 FlexDSL 2x Pair SHDSL Repeater in Plastic Housing, 2x SHDSL (TC-PAM16/32, 1x 11.4Mbps), 1x Ethernet drop off (10/100BT, Bridge), 3 External Alarm Inputs. Configurable as Power End-Point or Pass-Through.

For details about housings and optional accessories such as adapter cable, power supplies, and lightning protection please refer to your FlexDSL representative, or call FlexDSL on +41 44 741 5290, or send an e-mail to info@flexdsl.ch.

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