becker VARIS SMART UNDERGROUND COMMUNICATIONS

UHF LEAKY FEEDER SYSTEM

- Automatic and Manual Gain Modes
- Supply Voltage Range, 6Vdc to 24Vdc
- 2 Year Component & Workmanship Warranty
- Complete System Remote Diagnostics
- Better System-Wide Coverage

smartcom®

UHF LEAKY FEEDER OVERVIEW

All mines recognise the need for a reliable, robust and low maintenance communication system to enhance safety and production. The Becker Varis UHF leaky feeder system (smartcom®) is world renowned for its reliability, robust performance and maintainability.

Becker Varis recognise that one size doesn't fit all and that customer needs vary with the size of their mines and budgets.

Leveraging off the successful and original smartcom® system we now offer an option for all mines to access the world's premium UHF Leaky Feeder system that also provides an upgrade path should you wish to enhance the system at a later stage.

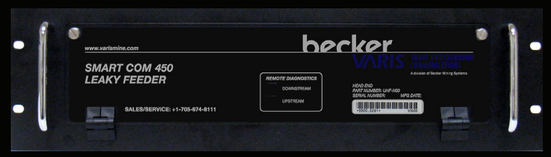
The UHF Leaky Feeder system provides up to 4X more coverage in underground mines than the VHF Leaky Feeder system. It is better suited for narrow-veined mines or low-back operations.

Common Platform

VOICE AND DATA

Smartcom® provides multiple simultaneous noise-free* voice and data radio channels, advantages of the UHF communication platform ensures future upgrade paths and expandability.

Narrowband radio modems can also be used to provide a 9600 bps fixed/mobile data connection over the entire coverage area of the Leaky Feeder network.



COMMUNICATION DETECTION SAFETY

smartcom®

LOCAL DIAGNOSTICS

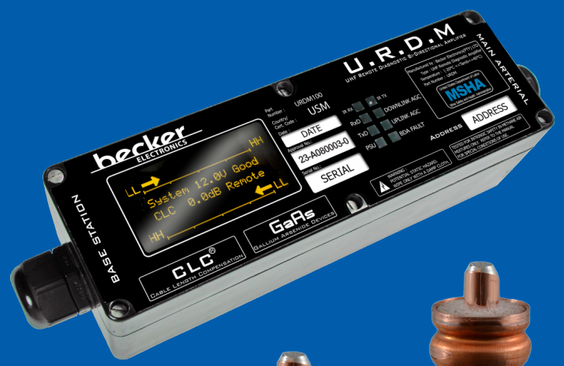
Local Diagnostics are standard on all Becker Varis Amplifiers, this facilitates fault-finding and system troubleshooting by quickly being able to identify the component saving time and money.

10MHZ BANDWIDTH

The 10 MHz bandwidth for voice channels (10 MHz downstream and 10 MHz upstream), with separate bands for data (Ethernet upstream 20-42 MHz, Downstream Ethernet 140-185 MHz). This allows operating standard cable modems to provide 20Mbps hotspots over the leaky feeder without the addition of extra components. Giving the UHF smartcom® system the greatest flexibility when used for VoIP, WLAN, IP Cameras or use with PCs.

MAINTAINABILITY

Complete system remote diagnostics provides analysis and history of downstream and upstream signal level, report times and voltage. Automatic Gain mode allows the amplifiers to intelligently alter gain levels independently as the system grows and changes. This mode reduces system maintenance considerably reducing your maintenance costs.



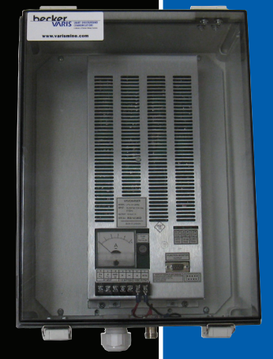
UHF LEAKY FEEDER OVERVIEW

smartcom® UHF AMPLIFIER

Varis' smartcom® UHF Line Amplifier compensates for Leaky Feeder cable and splitting losses. Line amplifiers provide up to 64 simultaneous noise-free voice radio channels (no third order intermodulation products) and a 20 Mbps downstream, 20 Mbps upstream Ethernet connection using standard cable modems (no frequency conversion required). Local/Remote Diagnostics, Ethernet, video and accurate Automatic Gain Control (AGC) without Return Pilot noise buildup are built-in to every amplifier. The smartcom® UHF line amplifiers have 350 m spacing as standard and 300M for Intrinsically Safe installations.

POWER SUPPLIES

Becker Varis caters for all your power supply needs with robust industry power supplies specifically built for the harsh conditions of underground mines; we have these units available in stock to support our customers. Power supplies can be spaced up to 4000 meters apart, system specifications depending.



NO RETURN PILOT

Smartcom® does not require a return pilot signal to operate which is a valuable advantage for its users. In automatic mode the amplifier makes use of a forward pilot system that is superior to systems that utilise return pilot.

In Automatic mode the product monitors the RF strength of the forward pilot from the base station at each amplifier and adjusts automatically to ensure the communications network is running at its optimum even as the system is reconfigured.

Return pilots are the weakest link in any leaky feeder system as it are installed to control the gain of all amplifiers in the network if a pilot fails or cable is damaged. System components will adjust to maximum gain and create significant system noise making voice communication difficult and frustrating.

Generally return pilot systems require dedicated communication technicians or maintenance contracts with the OEMs to regularly maintain and monitor the communications system costing mines thousands of dollars in maintenance and reduces the overall safety and production benefits of the communication system.

smartcom®

AUTOMATION

The smartcom® product supports telemetry and can be effectively used for controlling underground equipment such as ventilation fans, pumps, stench gas firers and can provide desired information back to mine control systems effectively.

DIGITAL OR ANALOGUE RADIO SYSTEM

The smartcom® product supports both analogue and digital radio repeaters so customers have a choice of radio infrastructure they wish to install again providing the customer flexibility and choice.

CUSTOMER SATISFACTION

The smartcom® product operates in hundreds of mines around the globe and customer satisfaction is unparalleled. Customer satisfaction is attributed to the ease of installation and maintenance and low operating cost which are key objectives when designing our products.

PRODUCT DESIGN

Mines are inherently remote to major cities and towns making access to communication specialists and services difficult and costly for mining customers if systems are unreliable or require continuous maintenance. Reliable, Robust and Low Maintenance has been achieved with smartcom®.

SYSTEM COMPATIBILITY

The smartcom® amplifiers are compatible with other leaky feeder systems and can be easily installed in existing networks, when doing this the choice would be the new smartcom® UHF Amplifiers units as Ethernet and Remote diagnostics are only achieved when a complete network of Becker amplifiers are utilised.

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General	450-AMP	UBDA	URDM	UESM
System Impedance (ohms)	50 Ω	50 Ω	50 Ω	50 Ω
Amplifier Spacing	350m, 1148’	350m, 1148’	350m, 1148’	300m, 985’
Gain Control	Manual Gain Control (MGC), Automatic Gain Control (AGC)	Automatic Gain Control (AGC), Manual Cable Length Compensation (CLC)	Automatic Gain Control (AGC), Manual or Remote Cable Length Compensation (CLC)	Automatic Gain Control (AGC), Manual or Remote Cable Length Compensation (CLC)
MGA & AGC Adjustment	15dB Adjustment, 1dB steps	15dB Adjustment, 0.5dB steps	15dB Adjustment, 0.5dB steps	15dB Adjustment, 0.5dB steps
Upstream Voice Frequency Range	450 - 455 MHz	435 - 445 MHz (a) 445 - 455 MHz (b) 450 - 455 MHz (c)	435 - 445 MHz (a) 445 - 455 MHz (b) 450 - 455 MHz (c)	435 - 445 MHz (a) 445 - 455 MHz (b) 450 - 455 MHz (c)
Downstream Voice Frequency Range	475 - 480 MHz	460 - 470 MHz (a) 470 - 480 MHz (b) 475 - 480 MHz (c)	460 - 470 MHz (a) 470 - 480 MHz (b) 475 - 480 MHz (c)	460 - 470 MHz (a) 470 - 480 MHz (b) 475 - 480 MHz (c)
Upstream Ethernet Frequency Range	20 - 42 MHz	N/A	N/A	N/A
Downstream Ethernet Frequency Range	140 - 185 MHz	N/A	N/A	N/A
Maximum Downstream Ethernet Data Rate	20Mbps (DOCSIS 2.0 64 QAM)	N/A	N/A	N/A
Maximum Upstream Ethernet Data Rate	20Mbps (DOCSIS 2.0 16 QAM)	N/A	N/A	N/A
Guaranteed TOI Noise Free Voice Channels	8	64	64	64
Diagnostics	Local/Remote	Local	Local/Remote	Local/Remote
Local Diagnostics	DC Voltage, Downstream Level	DC Voltage, Downstream Level, Up Stream AGC, DC Current	DC Voltage, Downstream Level, Up Stream AGC, DC Current	DC Voltage, Downstream Level, Up Stream AGC, DC Current
Remote Diagnostics	DC Voltage, Downstream Level RSSI (Receiver Signal Strength Indication) Report Time	N/A	DC Voltage, Downstream Level RSSI (Receiver Signal Strength Indication) Report Time	N/A
Maximum Amplifier Gain Downstream	25dB	22dB	22dB	22dB
Maximum Amplifier Gain Upstream	25dB	22dB	22dB	22dB
Electrical Specifications				
Supply Voltage	6 - 16 Vdc	8 – 24 Vdc	8 – 17 Vdc	8 – 17 Vdc
Current Consumption	210mA @ min 6 Vdc 85mA @ 16Vdc	250mA @ 12 Vdc	250mA @ 12 Vdc	250mA @ 12 Vdc
Power Supply Spacing	Max 4000 Metres	Max 4000 Metres	Max 4000 Metres	Max 1200 Metres
Temperature Range	-20 to +60 °C (-4 to +140 °F)	-20 to +60 °C (-4 to +140 °F)	-20 to +60 °C (-4 to +140 °F)	-20 to +60 °C (-4 to +140 °F)
IP Rating	IP66	IP66	IP66	IP66
Dimensions (L x H x W)	257 x 91 x 120mm (10.1 x 3.6 x 4.7 in)	230 x 75 x 61mm (9.0 x 3.0 x 4.8 in)	230 x 75 x 61mm (9.0 x 3.0 x 4.8 in)	230 x 75 x 61mm (9.0 x 3.0 x 4.8 in)
Weight	1.36 Kg (3.0 lbs)	1.24Kg (2.8 lbs)	1.24Kg (2.8 lbs)	1.24Kg (2.8 lbs)
Connectors	Two N-type Jack Bulkheads	Brass Block	Brass Block	Brass Block

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Technical data are limit values.

If the product is integrated into systems or operated in combination with other devices, its permissible operating values can deviate from these limit values. Subject to technical modifications without prior notice.

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