

VDV VHF RADIO EQUIPMENT

HEAD END (Estacion Base)

Manufacturer	Mine Site Technologies
Address:	25 – 27 Whiting Street, Artarmon, NSW, AUSTRALIA
Description	HEAD END
Model	VHF INFINITY SERIES

Specifications

CHANNEL CAPACITY		VOICE / DATA
	Combiner	8 Channel Increments
	Combiner Splitter	16 Channel
INSERTION LOSS		
	Tx Junction Level @ Tx. Port	38dB max.
	Leaky Feeder to Rx Junction	23dB max.
RF DRIVER LEVELS		
	RF Driver Level @Tx. Port	+40dBm
	RF Signal Level@ Leaky Feeder	+2dBm
CONNECTIONS		
	Rx. Junction Connection	TNC Female
	Tx. Junction Connection	TNC Female
	Leaky Feeder Connection	"N" Female
IMPEDANCES		
	Rx. Junction Connection	50 ohms
	Tx. Junction Connection	50 ohms
	Leaky Feeder Connection	75 ohms
ISOLATION		
	Between Rx. Ports	20dB min.
	Between Tx Ports	20dB min.

APPLICATION:

The HEAD END provides the following roles,

- 1) Provide connection to the underground distribution network
- 2) Connection to the surface antenna network
- 3) Modulation and demodulation of the VHF signals
- 4) Splitting and combining of multiple channels
- 5) Powering the overall Leaky Feeder network
- 6) Diagnostics via an Amp/Voltmeter
- 7) Correct impedance matching



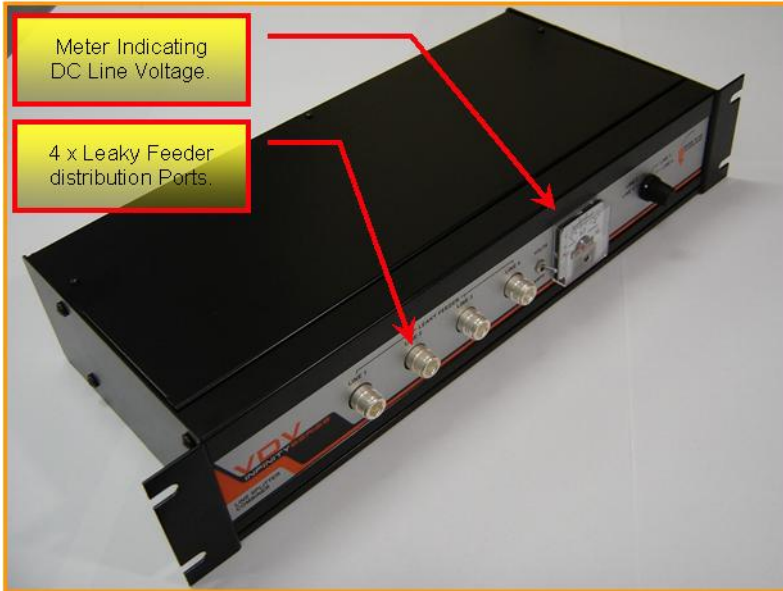
HEAD END INTERNAL COMPONENTS



Description	Radio Repeaters
Manufacturer	KENWOOD Pty Ltd
Model	VHF FM REPEATER
Part No.	TKR75185
MST Code	TKR75185
Application	Repeaters Transmit de Radio Signal The radio repeater are located inside the Head End and determine the frequency and channel that the system operates in REFER ATTACHED SPECIFICATION SHEET.



Description	Transmitter/Receiver Splitter Combiner
Manufacturer	Mine Site Technologies Pty Ltd
Model	INFINITY
Part No.	V-1003
MST Code	V-1003
Application	Transmitter Splitter Combiner combines the repeater exciter output. Receiver Splitter Combiner splits an incoming signal into eight separate outputs.



Description	Line Splitter Combiner
Manufacturer	Mine Site Technologies Pty Ltd
Model	INFINITY
Part No.	V-1002
MST Code	V-1002
Application	This 4 port Line Splitter / Combiner is designed to interface directly to four Leaky Feeder Cable Networks



Description	Diagnostic Control Unit
Manufacturer	Mine Site Technologies Pty Ltd
Series	INFINITY
Part No.	VC-2000-INF
MST Code	VC-2000-INF
Application	The Diagnostics Interface unit application provides seamless remote monitoring of Mine Site Technologies Infinity Diagnostic Amplifier system. Infinity Diagnostic Amplifier's transmit data packets on an RF channel from the field to the diagnostics receiver located in the base station. The Diagnostic Headend is basically an RF receiver, demodulator and decoder.



Description	VDV Power Supply
Manufacturer	Mine Site Technologies Pty Ltd
Series	INFINITY
Part No.	VC-1001D
MST Code	
Application	The VDV Power Supply produces 30.5 Volts at 5 amps which is used to power the leaky feeder distribution underground. It provides DC Voltage which is then fed through the DC-DC Converter



Description	DC-DC Converter
Manufacturer	Mine Site Technologies Pty Ltd
Series	INFINITY
Part No.	VC-1001C
MST Code	
Application	The DC-DC Converter provides a steady 30VDC at its output. The DC-DC Converter Output Voltage utilised then provides the power for the Leaky Feeder Distribution. Protects the VDV Power Supply



Description	12V 20A Power Supply
Manufacturer	IMARK Communications Pty Ltd
Model	5000 Series
Part No.	5020RM
MST Code	V-5020RM
Application	The IMARK 5020RM Regulated Power Supply operates from a 240 Volt AC power source and provides a 13.8 Volt DC output to operate 12 Volt (nominal) equipment. REFER ATTACHED SPECIFICATION SHEET.



Description	Audio Bridge
Manufacturer	Omnitronics Pty Ltd
Series	619
Part No.	619EI
MST Code	V-619EI
Application	The primary function of the Audio Bridge is the combining and linking of repeaters, links and other audio sources at remote sites. The 619EI have 6 ports REFER ATTACHED SPECIFICATION SHEET.



Description	Radio/Telephone Interface
Manufacturer	DESIGN2000
Series	4800
Part No.	TA-4800
MST Code	V-TA4800
Application	<p>TACT, the Telephone Access Control Terminal, interconnects a two-way radio system to a telephone line or PABX extension. It allows you to make and receive telephone calls on your two-way radio mobiles and hand-helds. Other features include paging, alarm and telemetry facilities.</p> <p>REFER ATTACHED SPECIFICATION SHEET.</p>



Description	Ethernet Interface
Manufacturer	ADVANTECH
Series	4571
Part No.	ADAM-4571-L-A
MST Code	V-ADAM-4571
Application	<p>ADAM-4571 is cost effective data gateways between serial and Ethernet interfaces. The units also bring the advantages of remote management and data accessibility to RS-232/422/485 devices. The units not only protect your current hardware investment but also ensure future network expandability. Meet</p> <p>REFER ATTACHED SPECIFICATION SHEET.</p>

DISTRIBUTION COMPONENTS

Amplificador de Linea



Description	Line Amplifier Kit includes 2 line connectors
Manufacturer	Mine Site Technologies Pty Ltd
Series	INFINITY SERIES 2
Part No.	VC-1004-INF2
Manufacturer Address	25-27 Whiting Street Artarmon NSW AUSTRALIA
Application	Line Amplifiers are necessary to amplify the RF Signal which travels down the Leaky Feeder Cable.

Specifications

Frequency Band	VHF Spectrum
Frequency Split	9.5 MHz
Pre-set Pass Band (return path)	168.00 to 220.00 MHz (Video uses 40 - 115 MHz)
Pre-set Pass Band (forward direction)	146.00 to 158.50 MHz
Amplifier Gain	22dB nom (forwd. & retrn)
Amplifier Type	Linear, Class A
Construction	Surface Mount Tech.
Gain Adjustment	Auto (ALC)
AGC Range	20dB
In/Out Impedance	50/75 ohm
Amplifier Separation (suggested)	350 metres
Third Order Intercept	Forward 16dBm, Return 20dBm
Operating Voltage	32-5 volt DC
Maximum Line Current	5 amperes
Power Consumption	1.2 watts
Nominal RF Input Level	Forward -15dBm, Return -16 dBm
Amplifier Module (VCC=5 VDC)	100 mA typ.
Base Port O/P Level	Return 0dBm max. Forward +1dBm max.
Construction	Submersible Cast CATV
Size	130 x 90 x 60 mm (6 x 3.5 x 2.5 inch)
Termination	CATV through-pin connector

Line Branch Unit - 2 Way



Description	Line Branch - 2 Way
Manufacturer	Mine Site Technologies Pty Ltd
Series	INFINITY
Part No.	VC-1005-INF2
Manufacturer Address	25-27 Whiting Street Artarmon NSW AUSTRALIA
Application	Split the RF signal into 2 way



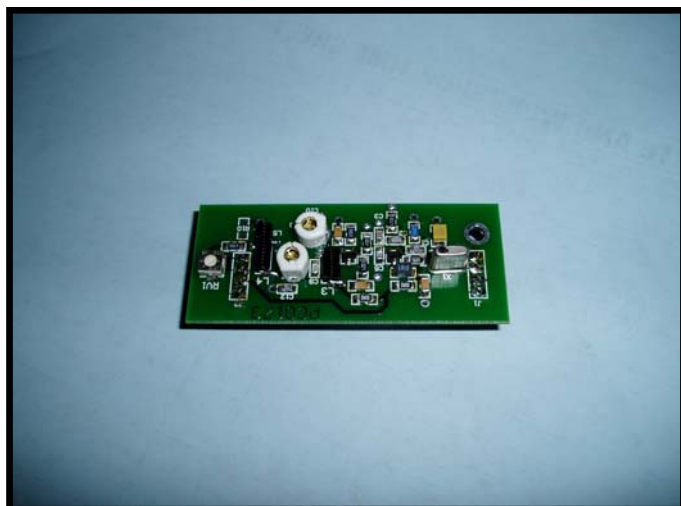
Description	Line Branch – 3 Way
Manufacturer	Mine Site Technologies Pty Ltd
Series	INFINITY
Part No.	VC-1007-INF2
Manufacturer Address	25-27 Whiting Street Artarmon NSW AUSTRALIA
Application	Split the RF signal into 3 way

Specifications

Transmit Path Band	146 to 158 MHz
Receive Path Band	170 to 195 MHz
Construction	Surface Mount PCB in sealed metal case
Input / Output Impedance	75 Ohms
Main Line Loss	3.5dB (nom)
Branch Line Loss	3.5 dB (nom)
Options	3 Way via Links
Dimensions	130mm x 90mm x 60mm



Description	Power Inserter
Manufacturer	Mine Site Technologies Pty Ltd
Series	INFINITY SERIES
Part No.	VC-1006
MST Code	VC-1006
Manufacture Address	25-27 Whiting Street Artarmon NSW AUSTRALIA
Applications	Power Inserter's function is to insert power in the underground distribution system as the distribution system expands underground.



Description	Pilot Tone Generator 174.5Mhz
Manufacturer	Mine Site Technologies Pty Ltd
Series	INFINITY
Part No.	V-1007
MST Code	V-1007
Manufacture Address	25-27 Whiting Street Artarmon NSW AUSTRALIA
Application	Pilot Tone Generator is used in the INFINITY Series 2 Amplifiers to ensure the gain of each amplifier adjust to compensate for feeder loss only. The pilot tone is at a preset strength, this allows all amplifiers AGC circuits to automatically set the correct amplification level. Operating Frequency: Programable Current Drain: 20mA@9VDC Carrier Level RX Port

CONNECTORS



Description	Line Termination
Manufacturer	Mine Site Technologies Pty Ltd
Series	INFINITY
Part No.	VC-1011
MST Code	VC-1011
Manufacture Address	25-27 Whiting Street Artarmon NSW AUSTRALIA
Application	The VDV Line Termination is designed to terminate Leaky Feeder cable with the correct line termination or Impedence



Description	Line Connector
Manufacturer	Mine Site Technologies Pty Ltd
Series	INFINITY
Part No.	V-1004-1
MST Code	V-1004-1
Manufacture Address	25-27 Whiting Street Artarmon NSW AUSTRALIA
Application	The VDV Line Connector is a two part connector utilised to interface Leaky Feeder cable with VDV distribution equipment (Amplifiers/ Branches, Power Inserters)

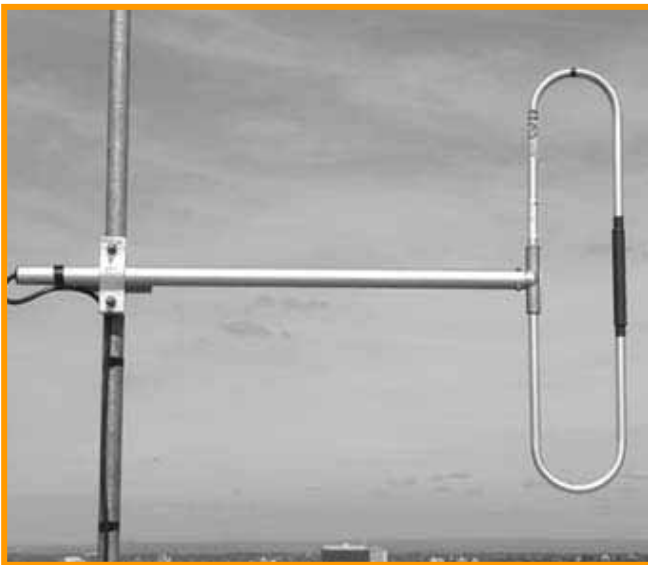


Description	KS Splice Coupler
Manufacturer	Mine Site Technologies Pty Ltd
Series	VDV
Part No.	V-KSKSC
MST Code	V-KSKSC
Manufacture Address	25-27 Whiting Street Artarmon NSW AUSTRALIA
Application	The VDV Line Splice Coupler provides a method of joining damaged leaky feeder cable whilst maintaining waterproof integrity

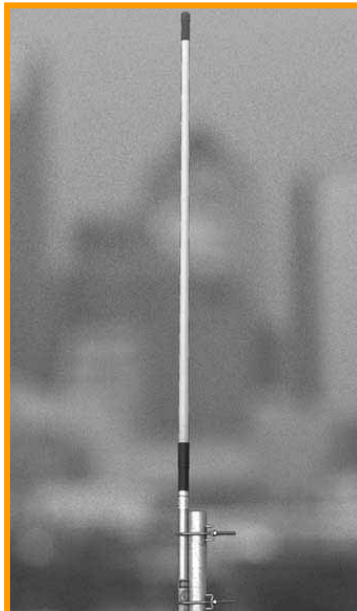


Description	KS-KS Rotational Adaptor
Manufacturer	Mine Site Technologies Pty Ltd
Series	VDV
Part No.	V-KSKSR
MST Code	V-KSKSR
Manufacture Address	25-27 Whiting Street Artarmon NSW AUSTRALIA
Application	The VDV Rotational Connector provides a method for joining VDV distribution components (Amplifiers with Branches)

SURFACE ANTENNA SYSTEM



Description	Side Mount Dipole
Manufacturer	RF Industries Pty Ltd
Series	SMD2
Part No.	SMD2-152
MST Code	V-SMD2-152
Application	<p>SMD2 Series side mounted dipoles are broadband antenna used for specific coverage requirements and suitable for extreme weather conditions</p> <p>Frequency: 152 MHz</p>



Description	Coaxial Dipole
Manufacturer	RF Industries Pty Ltd
Series	COD2
Part No.	COD-2-172
MST Code	V-COD-2-172
Application	<p>The COD2 series antenna are fibreglass enclosed vertical dipoles, featuring extremely broad vertical beamwidths and omnidirectional patterns for localised coverage.</p> <p>Frequency: 172Mhz</p>

UNDERGROUND ANTENNA Yellow Leaky Feeder



Description	Double Sheath – Leaky Feeder Radiating Cable
Manufacturer under License	Mine Site Technologies Pty Ltd
Part No.	V-CA75-DS
Application	<p>The Leaky Feeder cable is part of the underground distribution networks which has the following functions:</p> <ol style="list-style-type: none"> 1. Signal transmission and reception via the Leaky Feeder cable. 2. Amplification of signals in the cable to maintain signal strength. 3. Supply of Pilot Tones to control Automatic Gain Control circuits. 4. Splitting of network to achieve coverage in stopes and levels. 5. Maintaining correct system impedances.

Specifications

Diameter of inner conductor (copper or copper clad steel) mm	2.31
+ Physical foam PE insulation mm	9.53
+ Outer Parallel bar Conductor mm	11
+ Black PE inner sheath	13.5mm
+ Yellow PE outer sheath	15.5mm
Min. bend radius	100mm
Weight	0.23Kg/M
Operation Temperature	-40 - +70
relative humidity	98% at 40
Min. Temperature for laying	-15
Insulation Max. Voltage	No breakdown in 1 minute at 2.5 KV
DC Resistance Ω/km	Inner conductor ≤ 4.5 Outer conductor ≤ 4.10
Attenuation	$\leq 1.8\text{dB}/100\text{m}$ @ 30 MHz
	$\leq 3.1\text{dB}/100\text{m}$ @ 85 MHz
Voltage stationary wave (VSWR)	$\leq 4.15\text{dB}/100\text{m}$ @ 150MHz
	$\leq 4.3\text{dB}/100\text{m}$ @ 160 MHz
Coincidence Loss	~ 300 MHz, VWSR ≤ 1.2
	55 + 5dB @ 85MHz
Insulation resistance	65 + 5dB @ 150MHz
Impedance	$\geq 1000 \text{M}\Omega\text{-Km}$
Vertical burning	75 Ω +3
Packing	Min un-scorched distance > 100
Drums Size	350 m per wooden drum
Pallets Size	Gross weight 96kgs Net Weight: 82 kgs