

# DIGITAL FIBER DAS SYSTEM

## 136 - 869 MHz • Class A

DH Series

### Product Features

- Digital signal processing based technology not “RF over Fiber”
- Field expandable
- No need of “Front End BDA” or “POI”, reduced infrastructure cost
- Fiber runs up to 25 miles (40 km)
- No fiber noise being transported to RF thanks to digital signal processing
- Programmable uplink squelch (per channel and time slot) for reduced UL noise contribution
- Software programmable channel selective or band selective operation, suitable for highly congested RF environments
- Centralized operation, single point of access
- AGC per channel and time slot, no Far End communication Degradation
- Single Master supports up to 6 remotes (expandable up to 24)
- Same unit supports Over The Air (OTA) (embedded head end signal booster)
- NFPA Compliant



Digital Remote



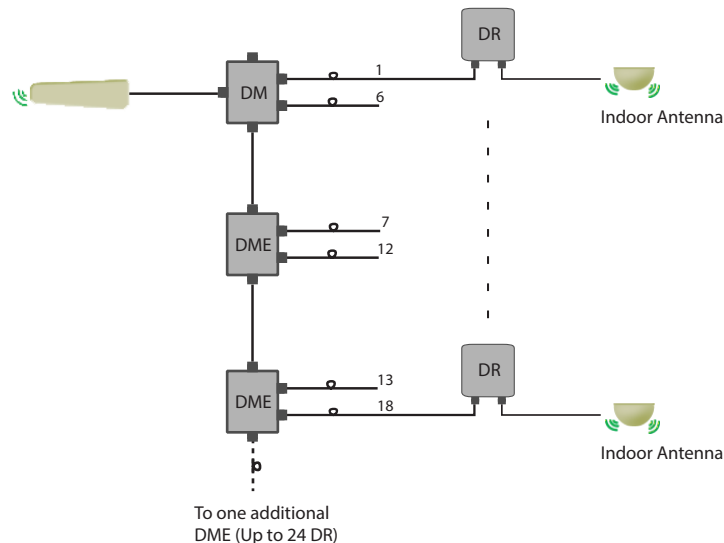
Digital Master



### Applications

- Indoor: tunnels, buildings, subways, airports, among others
- Outdoor: stadiums, canyons, dense urban areas, remote rural towns

### Typical application



Notes:  
 DM: Digital Master Unit  
 DME: Digital Master Expansion  
 DR: Digital Remote Unit

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Specifications	Value
Fiber Optic	Single mode
WDM	Yes, one fiber for digital master and digital remote connection
Optical wavelengths	1310 / 1550 nM
Operational bands	150 - 869 MHz
Maximum fiber distance	25 miles • 40 km Max
Maximum DM - DR relation	1 - 6
Number of channel filters	24 channels
Available channel filter BW	15KHz, 20KHz, 30KHz, 45KHz, 90KHz and Full Band
Group delay (excluding fiber delay)	55 $\mu$ S (15 KHz BW) +/- 3 $\mu$ S 45 $\mu$ S (20 KHz BW) +/- 3 $\mu$ S 32 $\mu$ S (30 KHz BW) +/- 2 $\mu$ S 24 $\mu$ S (45 KHz BW) +/- 2 $\mu$ S 14 $\mu$ S (90 KHz BW) +/- 2 $\mu$ S 4 $\mu$ S (Full Band)
DL RF Gain from Master to Remote	80dB
UL RF Gain from Remote to Master	80dB

Digital Master Unit Electrical and Mechanical Specifications	Value
Optical power	0dBm min
Optical return loss	>45dB
Number of optical ports	6, expandable up to 24 with "ME" units
RF ports return loss	>15dB
DL input power for maximum RHU output power	-20dBm max
DL manual attenuator	20dB in 1dB steps per optical port
Maximum UL output power	+24 dBm (+18dBm for DH300-M)
UL IM and spurious generation	< -13dBm (<-36dBm for DH300-M)
UL manual attenuator	20dB in 1dB steps per optical port
RF connectors	N(f)
Optical connectors	LC / APC
AC Supply	110/220 VAC 50/60Hz
Power consumption	65 W
DC Supply	Optional, see table
Housing	IP67 / NEMA4X
Environmental	EN 300 019
Temperature range	-4° to +131° F • -20° to +55°C
Humidity	<95% non condensing
Dimension	20.2 x 18.2 x 9 inches - 514 x 462 x 230 mm
Weight	55 lbs - 25 Kgs
MTBF	>50,000 hours
Standards	ITU T G 652 EN60825-1

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Digital Remote Unit Electrical and Mechanical Specifications	Value
Number of optical ports	1 for Digital Master connection (second FO input, option "2FO")
Optical power	0dBm min
Optical return loss	>45dB
Number of RF ports	1 for service antenna
RF port return loss	>20dB
UL maximum input power	0dBm per channel max
UL noise reduction	UL squelch, programmable
Manual attenuator	20dB in 1dB steps +/- 0.5 dB
AGC range, UL and DL	30dB min
RF connectors	N(f)
Optical connectors	LC/APC
Composite Output Power, DL	DH124-R = +24dBm                      DHS37-R = +37dBm DH437-R = +37dBm                      DH336-R = +36dBm DH737-R = +37dBm                      DH7S3434 = +34dBm per band
DL IMD and spurious generation	< -13dBm (>60dBc for DH336-R)
Noise figure	<9dB
AC Supply	110/220 VAC 50/60Hz
Power consumption	140W máx
DC Supply	Optional, see table
Housing	IP67 / NEMA4X
Environmental	EN 300 019 4.1
Temperature range	-22° to +131° F • -30° to +55° C
Humidity	<95% non condensing
Dimension	20.2 x 18.2 x 9 inches • 514 x 462 x 230 mm
Weight	55 lbs - 25 Kgs
MTBF	>50,000 hours

Control and Alarms	Value
Alarms report	Via Digital Master Local: USB (POWER STATUS, DM STATUS, RM STATUS) Remote: SNMP (Ethernet)
Digital Master Unit Configuration	Local: USB or Ethernet (Web browser) Remote: access via Ethernet and Wireless MODEM (SNMP)
Digital Remote Configuration	Via Digital Master Unit Local: USB Remote: via Digital Master Unit

Normative	Value
Standards	ITU T G 652 EN60825-1
FCC	FCC, CFR 47, Part 15, Subpart B, Class A digital devices FCC, CFR 47, Part 90, Subpart I
ETSI	EN301489-1; EN301489-18

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### VHF 136-174 MHz

MODEL	NFPA	RC-G	110-220VAC	+24VDC	-48VDC	INTERNAL DPX, 2MHz BW, 3MHz min BANDGUARD	4 PORTS	136 - 155	155 - 174
DH100-M-007	X	X	X			X		X	
DH100-M-020	X	X		X		X		X	
DH100-M-008	X	X			X	X		X	
DH100-M-015	X	X	X			X			X
DH100-M-024	X	X		X		X			X
DH100-M-016	X	X			X	X			X
DH100-M-034	X	X	X				X	X	
DH100-M-035	X	X		X			X	X	
DH100-M-036	X	X			X		X	X	
DH100-M-046	X	X	X				X		X
DH100-M-047	X	X		X			X		X
DH100-M-048	X	X			X		X		X
DH100-ME-034	X	X	X				X	X	
DH100-ME-035	X	X		X			X	X	
DH100-ME-036	X	X			X		X	X	
DH100-ME-046	X	X	X				X		X
DH100-ME-047	X	X		X			X		X
DH100-ME-048	X	X			X		X		X
DH124-R-001			X			X		X	
DH124-R-009				X		X		X	
DH124-R-002					X	X		X	
DH124-R-005			X			X			X
DH124-R-011				X		X			X
DH124-R-006					X	X			X
DH124-R-013			X				X	X	
DH124-R-014				X			X	X	
DH124-R-015					X		X	X	
DH124-R-019			X				X		X
DH124-R-020				X			X		X
DH124-R-021					X		X		X
DH140-R-001			X			X		X	
DH140-R-002					X	X		X	
DH140-R-005			X			X			X
DH140-R-006					X	X			X
DH140-R-009				X		X		X	
DH140-R-011				X		X			X
DH140-R-013			X				X	X	
DH140-R-014				X			X	X	
DH140-R-015					X		X	X	
DH140-R-019			X				X		X
DH140-R-020				X			X		X
DH140-R-021					X		X		X

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DH Series

UHF 450-512 MHz

MODEL	NFPA	RC-G	110-220VAC	+24VDC	-48VDC	4 PORTS	INTERNAL DPX 0.7/3	INTERNAL DPX 2/5	INTERNAL DPX 5/10	[CLK 160] 405-430 450-475 485-512	[CLK 150] 380-410 470-485	DUAL FO INPUT (2FO)
DH400-M-210	X	X	X						X	X		
DH400-M-211	X	X		X					X	X		
DH400-M-221	X	X	X					X		X		
DH400-M-222	X	X		X				X		X		
DH400-M-232	X	X	X				X			X		
DH400-M-233	X	X		X			X			X		
DH400-M-243	X	X	X			X				X		
DH400-M-244	X	X		X		X				X		
DH400-M-254	X	X	X						X		X	
DH400-M-255	X	X		X					X		X	
DH400-M-265	X	X	X					X			X	
DH400-M-266	X	X		X				X			X	
DH400-M-276	X	X	X				X				X	
DH400-M-277	X	X		X			X				X	
DH400-M-287	X	X	X			X					X	
DH400-M-288	X	X		X		X					X	
DH400-M-289	X	X			X				X	X		
DH400-M-290	X	X			X			X		X		
DH400-M-291	X	X			X		X			X		
DH400-M-292	X	X			X	X				X		
DH400-M-293	X	X			X				X		X	
DH400-M-294	X	X			X			X			X	
DH400-M-295	X	X			X		X				X	
DH400-M-296	X	X			X	X					X	
DH400-M-297	X	X	X						X		X	
DH400-M-298	X	X		X					X		X	
DH400-M-299	X	X			X				X		X	

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**DH Series**

UHF 450-512 MHz

MODEL	NFPA	RC-G	110-220VAC	+24VDC	-48VDC	4 PORTS	INTERNAL DPX 0.7/3	INTERNAL DPX 2/5	INTERNAL DPX 5/10	[CLK 160] 405-430 450-475 485-512	[CLK 150] 380-410 470-485	DUAL FO INPUT (2FO)
DH400-ME-243	X	X	X			X				X		
DH400-ME-244	X	X		X		X				X		
DH400-ME-287	X	X	X			X					X	
DH400-ME-288	X	X		X		X					X	
DH437-R-201			X						X	X		
DH437-R-202				X					X	X		
DH437-R-203					X				X	X		
DH437-R-207			X					X		X		
DH437-R-208				X				X		X		
DH437-R-209					X			X		X		
DH437-R-213			X				X			X		
DH437-R-214				X			X			X		
DH437-R-215					X		X			X		
DH437-R-219			X			X				X		
DH437-R-220				X		X				X		
DH437-R-221					X	X				X		
DH437-R-225			X						X		X	
DH437-R-226				X					X		X	
DH437-R-227					X				X		X	
DH437-R-231			X					X			X	
DH437-R-232				X				X			X	

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### UHF 450-512 MHz

MODEL	NFPA	RC-G	110-220VAC	+24VDC	-48VDC	4 PORTS	INTERNAL DPX 0.7/3	INTERNAL DPX 2/5	INTERNAL DPX 5/10	[CLKK 160] 405-430 450-475 485-512	[CLKK 150] 380-410 470-485	DUAL FO INPUT (2FO)
DH437-R-233					X			X			X	
DH437-R-237			X				X				X	
DH437-R-238				X			X				X	
DH437-R-239					X		X				X	
DH437-R-243			X			X					X	
DH437-R-244				X		X					X	
DH437-R-245					X	X					X	
DH437-R-246	X		X						X		X	
DH437-R-247	X			X					X		X	
DH437-R-248	X				X				X		X	
DH437-R-2FO-201			X						X	X		X
DH437-R-2FO-202				X					X	X		X
DH437-R-2FO-203					X				X	X		X
DH437-R-2FO-207			X					X		X		X
DH437-R-2FO-208				X				X		X		X
DH437-R-2FO-209					X			X		X		X
DH437-R-2FO-213			X				X			X		X
DH437-R-2FO-214				X			X			X		X
DH437-R-2FO-215					X		X			X		X
DH437-R-2FO-219			X			X				X		X
DH437-R-2FO-220				X		X				X		X
DH437-R-2FO-221					X	X				X		X
DH437-R-2FO-225			X						X		X	X
DH437-R-2FO-226				X					X		X	X
DH437-R-2FO-227					X				X		X	X
DH437-R-2FO-231			X					X			X	X
DH437-R-2FO-232				X				X			X	X
DH437-R-2FO-233					X			X			X	X
DH437-R-2FO-237			X				X				X	X
DH437-R-2FO-238				X			X				X	X
DH437-R-2FO-239					X		X				X	X
DH437-R-2FO-243			X			X					X	X
DH437-R-2FO-244				X		X					X	X
DH437-R-2FO-245					X	X					X	X
DH400-2M-210	X	X	X					X	X			
DH400-2M-211	X	X		X				X	X			
DH400-2M-221	X	X	X				X		X			
DH400-2M-222	X	X		X			X		X			
DH400-2M-232	X	X	X			X			X			
DH400-2M-233	X	X		X		X			X			

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### UHF 450-512 MHz

MODEL	NFPA	RC-G	110-220VAC	+24VDC	-48VDC	4 PORTS	INTERNAL DPX 0.7/3	INTERNAL DPX 2/5	INTERNAL DPX 5/10	[CLCK 160] 405-430 450-475 485-512	[CLCK 150] 380-410 470-485	DUAL FO INPUT (2FO)
DH400-2M-243	X	X	X		X				X			
DH400-2M-244	X	X		X	X				X			
DH400-2M-254	X	X	X					X		X		
DH400-2M-255	X	X		X				X		X		
DH400-2M-265	X	X	X				X			X		
DH400-2M-266	X	X		X			X			X		
DH400-2M-276	X	X	X			X				X		
DH400-2M-277	X	X		X		X				X		
DH400-2M-287	X	X	X		X					X		
DH400-2M-288	X	X		X	X					X		

### 700-800 MHz

MODEL	NFPA	RC-G	110-220VAC	+24VDC	-48VDC	DUAL FO INPUT(2FO)
DH700-M-010	X	X	X			
DH700-M-011	X	X		X		
DH700-M-012	X	X			X	
DH737-R-001			X			
DH737-R-002				X		
DH737-R-003					X	
DHS00-M-010	X	X	X			
DHS00-M-011	X	X		X		
DHS00-M-012	X	X			X	
DHS37-R-001			X			
DHS37-R-002				X		
DHS37-R-003					X	
DH700-ME-010	X	X	X			
DH700-ME-011	X	X		X		
DH700-ME-012	X	X			X	
DH737-R-2FO-001			X			X
DH737-R-2FO-002				X		X
DH737-R-2FO-003					X	X
DHS00-ME-010	X	X	X			
DHS00-ME-011	X	X		X		
DHS00-ME-012	X	X			X	
DHS37-R-2FO-001			X			X
DHS37-R-2FO-002				X		X
DHS37-R-2FO-003					X	X



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### 700-800 MHz

MODEL	NFPA	RC-G	110-220VAC	+24VDC	-48VDC
DH7500-M-010	X	X	X		
DH7500-M-011	X	X		X	
DH7500-M-012	X	X			X
DH753434-R-001			X		
DH753434-R-002				X	
DH753434-R-003					X
DH7500-ME-010	X	X	X		
DH7500-ME-011	X	X		X	
DH7500-ME-012	X	X			X
DH753434-R-2FO-001			X		
DH753434-R-2FO-002				X	
DH753434-R-2FO-003					X

### EMEA

MODEL	NFPA	RC-G	AC	24VDC	-48VDC	[CLKK 160] 405-430 450-470 485-512	[CLKK 150] 380-410 465-485	UHF BW5- SPL10	DUPX Ceramics UL=385-390/ DL=395-400	DUPX Ceramics UL=380-385/ DL=390-395	DUPX Ceramics UL=410-415/ DL=420-425	DUAL FO INPUT (2FO)
DH300-M-025		X	X			X					X	
DH300-M-026		X		X		X					X	
DH300-M-027		X			X	X					X	
DH300-M-028	X	X	X			X					X	
DH300-M-029	X	X		X		X					X	
DH300-M-030	X	X			X	X					X	
DH300-M-031		X	X				X			X		
DH300-M-032		X		X			X			X		
DH300-M-033		X			X		X			X		
DH300-M-034	X	X	X				X			X		
DH300-M-035	X	X		X			X			X		
DH300-M-036	X	X			X		X			X		
DH300-M-037		X	X			X		X				
DH300-M-038		X		X		X		X				
DH300-M-039		X			X	X		X				
DH300-M-040	X	X	X			X		X				
DH300-M-041	X	X		X		X		X				
DH300-M-042	X	X			X	X		X				
DH300-M-043		X	X				X		X			
DH300-M-044		X		X			X		X			
DH300-M-045		X			X		X		X			

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EMEA

MODEL	NFPA	RC-G	AC	24VDC	-48VDC	[CLKK 160] 405-430 450-470 485-512	[CLKK 150] 380-410 465-485	UHF BW5- SPL10	DUPX Ceramics UL=385-390/ DL=395-400	DUPX Ceramics UL=380-385/ DL=390-395	DUPX Ceramics UL=410-415/ DL=420-425	DUAL FO INPUT (2FO)
DH300-M-046	X	X	X				X		X			
DH300-M-047	X	X		X			X		X			
DH300-M-048	X	X			X		X		X			
DH300-M-049		X	X				X	X				
DH300-M-050		X		X			X	X				
DH300-M-051		X			X		X	X				
DH300-M-052	X	X	X				X	X				
DH300-M-053	X	X		X			X	X				
DH300-M-054	X	X			X		X	X				
DH300-2M-025		X	X			X					X	
DH300-2M-026		X		X		X					X	
DH300-2M-027		X			X	X					X	
DH300-2M-028	X	X	X			X					X	
DH300-2M-029	X	X		X		X					X	
DH300-2M-030	X	X			X	X					X	
DH300-2M-031		X	X				X			X		
DH300-2M-032		X		X			X			X		
DH300-2M-033		X			X		X			X		
DH300-2M-034	X	X	X				X			X		
DH300-2M-035	X	X		X			X			X		
DH300-2M-036	X	X			X		X			X		
DH300-2M-037		X	X			X		X				
DH300-2M-038		X		X		X		X				
DH300-2M-039		X			X	X		X				
DH300-2M-040	X	X	X			X		X				
DH300-2M-041	X	X		X		X		X				
DH300-2M-042	X	X			X	X		X				
DH300-2M-043		X	X				X		X			
DH300-2M-044		X		X			X		X			
DH300-2M-045		X			X		X		X			
DH300-2M-046	X	X	X				X		X			
DH300-2M-047	X	X		X			X		X			
DH300-2M-048	X	X			X		X		X			
DH300-2M-049		X	X				X	X				
DH300-2M-050		X		X			X	X				
DH300-2M-051		X			X		X	X				
DH300-2M-052	X	X	X				X	X				

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### EMEA

MODEL	NFPA	RC-G	AC	24VDC	-48VDC	[CLKK 160] 405-430 450-470 485-512	[CLKK 150] 380-410 465-485	UHF BW5- SPL10	DUPX Ceramics UL=385-390/ DL=395-400	DUPX Ceramics UL=380-385/ DL=390-395	DUPX Ceramics UL=410-415/ DL=420-425	DUAL FO INPUT (2FO)
DH300-2M-053	X	X		X			X	X				
DH300-2M-054	X	X			X		X	X				
DH336-R-001			X			X					X	
DH336-R-002				X		X					X	
DH336-R-003					X	X					X	
DH336-R-007			X				X			X		
DH336-R-008				X			X			X		
DH336-R-009					X		X			X		
DH336-R-013			X			X		X				
DH336-R-014				X		X		X				
DH336-R-015					X	X		X				
DH336-R-019			X				X		X			
DH336-R-020				X			X		X			
DH336-R-021					X		X		X			
DH336-R-025			X				X	X				
DH336-R-026				X			X	X				
DH336-R-027					X		X	X				
DH336-R-2FO-001			X			X					X	X
DH336-R-2FO-002				X		X					X	X
DH336-R-2FO-003					X	X					X	X
DH336-R-2FO-007			X				X			X		X
DH336-R-2FO-008				X			X			X		X
DH336-R-2FO-009					X		X			X		X
DH336-R-2FO-013			X			X		X				X
DH336-R-2FO-014				X		X		X				X
DH336-R-2FO-015					X	X		X				X
DH336-R-2FO-019			X				X		X			X
DH336-R-2FO-020				X			X		X			X
DH336-R-2FO-021					X		X		X			X
DH336-R-2FO-025			X				X	X				X
DH336-R-2FO-026				X			X	X				X
DH336-R-2FO-027					X		X	X				X

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