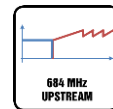
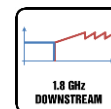




## Extended Datasheet

**1.8GHz Amplifier LHD 18xx R**

## LHD 1845 R



## Next generation compact 1.8GHz CATV wideband amplifier for ESD DOCSIS 4.0 network roll outs.

The LHD 1845 R is a compact wideband amplifier based on high performance GaN technology and supports operation in the 5MHz to 1.8GHz band with a high gain and high output level.

Thanks to its diplex filter bank switching technology, which are interchangeable plugins, it allows flexible operation in the Upstream up to 684MHz, as well as allowing operation in the Downstream band from 258MHz. Depending on the chosen inserts, three different frequency splits are available which can be switched by the operator (locally or via FOSTRA-F in a remote way).

All configuration alignments are done via electrical circuits, controlled with local push buttons, local wireless interface (FOSTRA-C) or remotely via FOSTRA-F. The amplifier's design supports a BY-PASS path at the input port and as well the possibility of an output SPLIT to two ports. Equipped with an efficient 28-90VAC remote power supply with integrated PFC, power supply needs in the network are minimized. In addition by feeding the power via the RF ports, the power can also be supplied through a separate connector at the side of the PSU. The housing supports mounting in street cabinet as well as strand mount.



Product Features

- Full 1.8 GHz forward path support
- Full US range up to 684 MHz
- High output level, low noise
- End to end performance, after 5 amplifiers 41,5 dB MER
  - Future proved to support 8k QAM modulation
- Switchable Diplex Filter up to three split range, remote controlled, **only supplier on market**
  - No truck roll to adapt the US/DS path because of remote setup
- Display with push buttons, local wireless interface and remote alignment option
- Proactive Network Management (FOSTRA), Bidirectional communication option
  - Amplifier configuration and monitoring with temperature and voltage measurement
- LED status indication
- Available AGC and/or ALSC option
- Possible Auto US adjustment
- Remote Ingress Control Switch
  - Fast fault localization and correction by switching off the right (faulty) segment
- Low power consumption, 25 Watt (full performance)
- Remote Power Supply with PFC (Power Factor Correction)
  - ~ 25% more active power
- Remote powering current up to 10A
- ECO mode option for DS and US, Power saving if not under full load or in 1.2 GHz networks
  - ~ 20% (~20W) power saving
- JXP port for cable simulator and slope correction
- Input bypass port option
- Output splitter option
- Street cabinet and strand mount
- Surge protection: 6KV
- Protection class IP 65

Amplifier versions

The LHD 1.8 GHz amplifier is available in different variants supporting requests for Line and Distribution applications in HFC Networks. For these application the configuration, gain and functionality are adapted and optimized for each individual application and use case.

LHD 1845 R	Line amplifier, 45 dB gain, for Diplex filter with 3 switchable split bands, AGC and ALSC option, ...
LHD 1848 R GV	Group amplifier, 48 dB gain, for standard 1 split Diplex filter
LHD 1850 R EV	End amplifier, 50 dB gain, for standard 1 split Diplex filter

Downstream

	min.	typ.	max.
Frequency range	258 MHz <sup>1</sup>		1794 MHz
Gain	44 dB up to 50 dB <sup>2</sup>		
Flatness		±0,5 dB	±0,75 dB
AGC level range (optional)		±3 dB	
ALSC slope range (optional)		±2 dB	
Input attenuator	0 dB		15 dB
Input equalizer	0 dB		20 dB
Interstage attenuation	0 dB		20 dB
Interstage-Preemphasis / Slope	0 dB		20 dB
Return loss input and output	≥18 dB – 1,5 / Oct. min typ. 14 dB		
Noise figure	max. 8.5 (DF with 3 split-bands)		
Max. operating level, 12 dB linear slope	max. 109,5 dBµV (DF with 3 split-bands) max. 111dBµV (DF with 1 split-bands)		

<sup>1</sup> On board selected by switchable / pluggable diplexer module.
<sup>2</sup> Depending on amplifier model and application.

Upstream

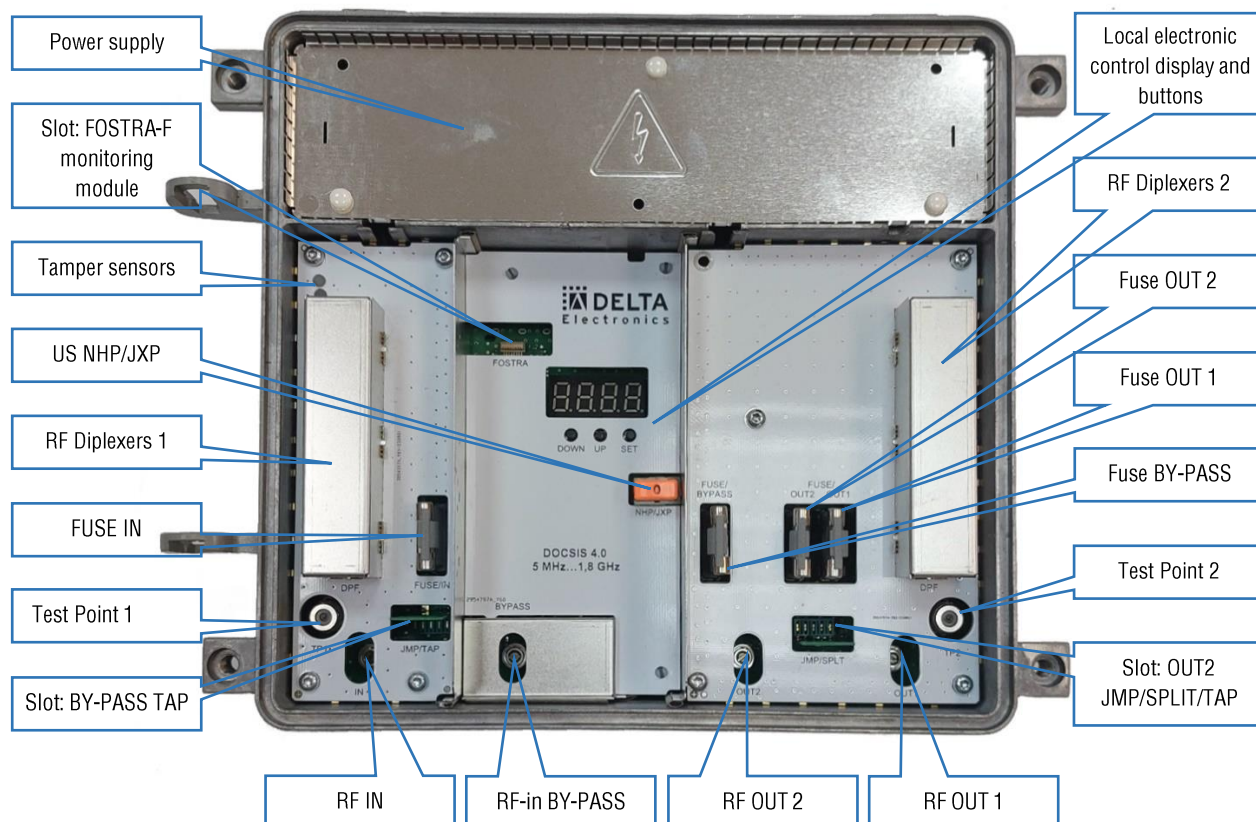
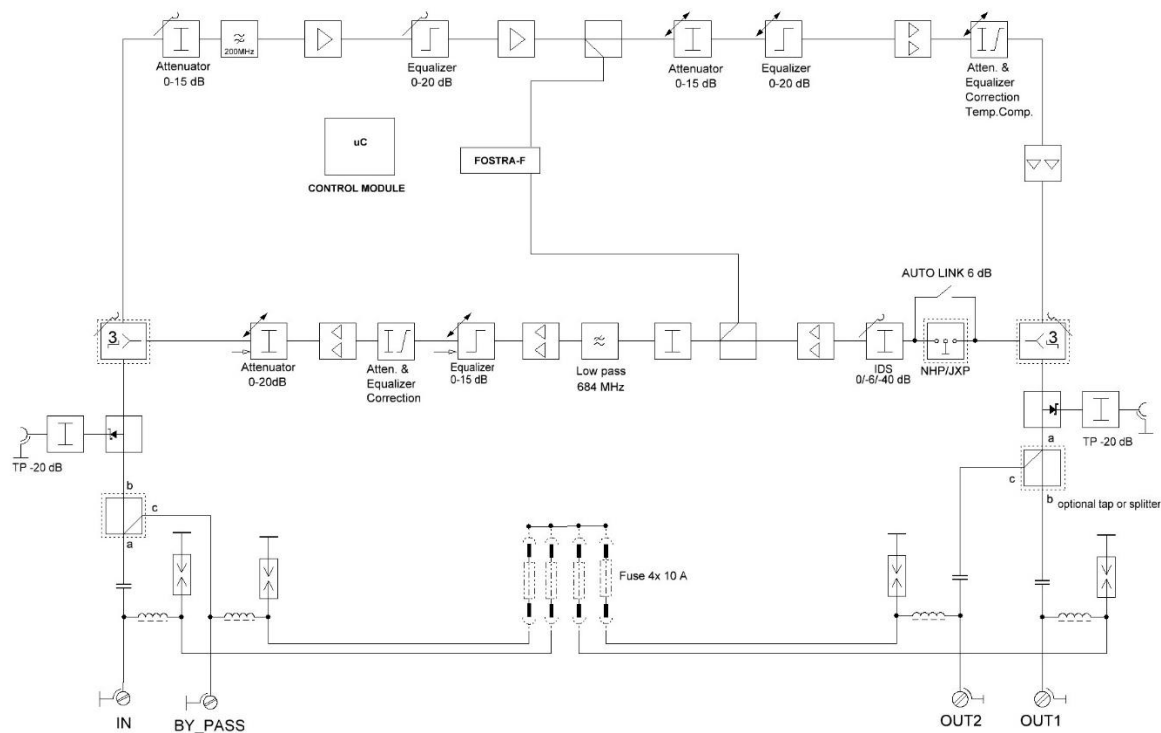
	min.	typ.	max.
Frequency range	5 MHz		684 MHz <sup>3</sup>
Gain			30 dB
Flatness		±0,5 dB	± 0,75 dB
Ingress detection switch	0 dB / 6 dB / 45 dB <sup>4</sup>		
Output attenuator	0 dB		15 dB
Interstage-Preemphasis / Slope	0 dB		15 dB
Return loss input and output	≥15 dB / 5...12 MHz ≥20 dB / 12...105 MHz ≥18 dB / 105...684 MHz		
Noise figure	Max. 6.0 dB (DF with 3 split-bands)		
Max. operating level, 12 dB slope	118 dBµV (DF with 3 split-bands) 119 (DF with 1 split-band)		

<sup>3</sup> On board selected by switchable / pluggable diplexer module.
<sup>4</sup> Controlled by FOSTRA-F module – DELTANET Solution

General

	min.	typ.	max.
Connectors	PG 11 / 5/8"		
Test points	Ff internal 20 dB		
Impedance	75 Ohm		
Input power	28 V		90 V
Power supply type	Switch Mode power supply with Power Factor Corrector		
PFC		0.9	
Power consumption	21 W (ECO mode)		25 W
Remote current per port AC IN/RF			10 A
Operating temperature	-25 °C		+65 °C
Housing	Die-cast		
Class of enclosure	IP 67		
Dimensions (W x H x D)	225mm x 220mm x 105mm		
Weight	3 kg		
Safety	EN 60728-11		
EMV	EN 50083-2		
Surge	6 kV		
MTBF	> 200.000		
Warranty	2 years		

## Block Diagram



Product and plugin selection

Product	Item No.	Description
LHD 1845 R	5700537	Line amplifier for Diplex filter with 3 switchable split bands
LHD 1848 R GV	5700xxxx	Group amplifier basic unit
LHD 1850 R EV	5700xxxx	End amplifier basic unit
DFP-T-20-39-49	57004748	Diplex filter with 3 split bands 204/300/396
DFP-S-20	5700xxxx	Diplex filter with 1 split band (S) 204/258
DFP-S-39	5700xxxx	Diplex filter with 1 split band (S) 394/492
DFP-S-49	5700xxxx	Diplex filter with 1 split band (S) 494/606
VM 4.0-2	57004745	2-way splitter 4,5 dB
AM 4.0-10A	57004746	Tap 10 dB, tap out; 5 - 1800 MHz
AM 301-10B	57004747	Tap 10 dB, line out; 5 - 1800 MHz
FOSTRA F V2.5	57004321	FSK Receiver tunable 861.7-862.3 MHz / 868.0-868.6 MHz / 869.7-870.3 MHz for vertical mount
FOSTRA-C VER	57002143	WiFi Config Modul für FOSTRA-F Connect
PG11m-3,5/12f	16000362	
PG11m-5/8"		



## Available products, plugins and functions

	LHD 1845 R	LHD 1848 R GV	LHD 1850 R EV
Max. DS gain	45 dB	48 dB	50 dB
Remote power supply 28-60/90VAC	X		
<b>DIPLEXFILTER three splits</b>			
DFP-T20-39-49	X		
<b>DIPLEXFILTER dual splits</b>			
Dual splits compilations on request	X		
<b>DIPLEXFILTER single split</b>			
DFP-S-20		X	X
DFP-S-39		X	X
DFP-S-49		X	X
Other split bands on request			
<b>IN-OUT Modules</b>			
Output splitter	X	X	X
Input TAP	X	X	X
<b>DELTANET</b>			
FOSTRA F2.5	X	X	X
FOSTRA C	X	X	X
<b>FUNKTIONS</b>			
AGC	X		
ALSC	option		
JXP port for cable simulator and slope correction	X	X	X
ECO mode - Power saving	X	X	X
Remote Ingress Switching	X	X	X
Auto US adjustment (option)	X	X	X
Remote power IN	X	X	X
Remote power OUT	X	X	

DCT DELTA AG  
Bodanrückstraße 1  
D-78351 Bodman  
Tel. +49 7773 9393 0  
[info@dct-delta.de](mailto:info@dct-delta.de)  
[www.dct-delta.de](http://www.dct-delta.de)

Switzerland  
DELTA Swiss AG  
Industriezone Schächenwald  
CH+6460 Altdorf  
Tel. +41 4161 91400

