

# Datamodel: manga\_dr15\_alfalfa

## General Description

ALFALFA data for MaNGA galaxies (from DR15). Any MaNGA galaxy within 2 arcminutes (the beam radius of the final ALFALFA datacubes) and 200 km/s of an ALFALFA HI source is assigned as a match to that source. For this reason, a single ALFALFA detection can have multiple optical counterparts. Objects in the ALFALFA footprint that lack detections have their HI upper limits estimated using the noise level extracted from their location in the ALFALFA data cubes. For convenience, we use the same column names as the mangaHall.fits file where possible. We also provide additional information about the crossmatched sources for the user.

## Naming Convention

manga\_dr15\_alfalfa.fits.

## Approximate Size

100 KB

## File Type

FITS

## Read by Products

sas (*can be any set of product names*)

## Written by Products

sas (*can be any set of product names*)

## Sections

This should contain internal links to parts of the file (if any).

- [HDU0](#): The Primary Header
- [HDU1](#): A Data Table

## HDU0: Empty Header

HDU0 contains no data and no relevant keyword information

p>**HDU Type**: IMAGE, **HDU Size**: 0 bytes

Header Table Caption for HDU0

KEY	Value	Type	Comment
SIMPLE	True		Standard FIT format
BITPIX	8		character data
NAXIS	0		number of array dimensions
EXTEND	True		

## HDU1: Primary Header and Data Table

This HDU contains the primary data table for the MaNGA DR15 - ALFALFA crossmatch

Header Table Caption for HDU1

XTENSION	BINTABLE	binary table extension
BITPIX	8	array data type
NAXIS	2	number of array dimensions
NAXIS1	79	length of dimension 1
NAXIS2	1021	length of dimension 2
PCOUNT	0	size of special data area
GCOUNT	1	number of groups
TFIELDS	17	number of columns

Required Data Table Columns

Name	Type	Units	Description
PLATEIFU	char[10]		plate-ifu of MaNGA observation
MANGAID	char[9]		MaNGA ID
OBJRA	float64	degrees	Right Ascension, J2000 (objra from DRPAI1 file)
OBJDEC	float64	degrees	Declination, J2000 (objdec from DRPAI1 file)
VOPT	int16	km/s	Optical velocity of MaNGA galaxy
RMS	float32	mJy	rms noise in signal free part of HI spectrum
LOGHILIM200KMS	float32	solar masses	For non-detections, the log of the HI mass limit (in solar masses) assuming a width of 200 km/s and $D = \text{vopt}/70$ Mpc/km/s
SNR	float32		Signal-to-noise ratio following Equation (4) in Haynes et al. (2018)
FHI	float32	Jy km/s	The integrated flux of the HI line
LOGMHI	float32	solar masses	Log of the HI mass (in solar masses) assuming $D = \text{vopt}/70$ Mpc/km/s
VHI	int16	km/s	Velocity centroid of the HI line detection
EV	float32	km/s	Error on vHI
WP20	int16	km/s	Width of the HI line measured at 20% of the peak on fits to the sides of the profile
WF50	int16	km/s	Width of the HI line measured at 50% of the peak on fits to the sides of the profile
SEP	float32	arcseconds	Angular separation between the HI source and the optical position of the MaNGA galaxy
DV	float32	km/s	Difference between the recession velocity of the HI source and the MaNGA galaxy measured using optical spectra
AGC	int32		ALFALFA AGC number for this HI source