



Arb Rider Series Digital Option User Guide

Revision	Date	Object	Responsibilities
1.0	6/15/2018		Emitted by: EG
1.1	2/27/2018	Updated Mini SAS HD to 16 SMA cable name	
1.2	7/15/2018	Updated AT-DTTL8 name	Controlled by: EG
2.0	6/5/2023	Updated version for all AWGs	
2.1	7/28/2023	Updated list compatible connectors	Approved by: AT

Digital Option User Guide



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Dear customer,

the purpose of this manual is to describe the digital options, the digital outputs and the accessories related to them.

If you buy the digital option and the RIDER-MINI-SAS-HD item, you will receive a software licence key and 1 mini-SAS HD cable 1m long.

Be careful that, even if this cable has the same mechanical dimension of SFF-8644 standard, the electrical connection are customized, so **it's not possible to use standard mini-SAS HD cables** otherwise the unit will be **damaged**.

There are also two additional accessories available to be used with the digital outputs. These accessories are not included in the digital option and must be bought separately as the cable. The two accessories are:

- The AT-LVDS-SMA8 cable. This is a mini-SAS to SMA cable adapter. It allows to convert the 8 digital LVDS output of the mini-SAS connector into 16 SMA connectors (2 SMA per LVDS pair)
- The AT-DTLL8. This is a probe that can be connected to the mini-SAS HD cable provided with the dig license and it allows to convert LVDS output of the mini-SAS HD connector into LVTTTL standard signals.

The end of the mini-SAS HD cable provided with the digital options mechanically mates with standard mini-SAS HD connectors while the **electrical connection is different from the standard**.

If you need to connect the mini-SAS HD cable provided with the digital option to your custom electronic board you can use a standard mini-SAS HD connectors (e.g. Amphenol [10112626-101LF](#), Amphenol [10112632-101LF](#), Amphenol [10120666-101LF](#), TE Connectivity [2198484-1](#)) but you should take care of using the electrical connection shown below.

The connection of the AT-LVDS-SMA8 cable adapter (mini-SAS HD to 16 SMA adapter cable) are also described in the table below.

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Mini-SAS HD connector pinout

Mini-SAS HD connector	Assigned signal	AT-LVDS-SMA8 Mini SAS HD to 16 SMA cable (8 LVDS output)
A1	+12Vcc	NA
A2	+12Vcc	NA
A3	GND	SMA Ground
A4	DO7_P	DO 7_P
A5	DO7_N	DO 7_P
A6	GND	NA



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A7	DO0_P	DO 0_P
A8	DO0_N	DO 0_N
A9	GND	SMA Ground
B1	CS1 (RESERVED). Do not connect.	NA
B2	+12Vcc	NA
B3	GND	SMA Ground
B4	DO6_P	DO 6_P
B5	DO6_N	DO 6_N
B6	GND	SMA Ground
B7	DO1_P	DO 1_P
B8	DO1_N	DO 1_N
B9	GND	SMA Ground
C1	+5Vcc	NA
C2	+5Vcc	NA
C3	GND	SMA Ground
C4	D5_P	DO 5_P
C5	D5_N	DO 5_N
C6	GND	SMA Ground
C7	D2_P	DO 2_P
C8	D2_N	DO 2_N
C9	GND	SMA Ground
D1	SCL (RESERVED). Do not connect.	NA
D2	SDA (RESERVED). Do not connect.	NA
D3	GND	SMA Ground
D4	D4_P	DO 4_P
D5	D4_N	DO 4_N
D6	GND	SMA Ground
D7	D3_P	DO 3_P
D8	D3_N	DO 3_N
D9	GND	SMA Ground

1.1 AT-LVDS-SMA8



The AT-LVDS-SMA8 cable adapter converts from the Mini SAS HD connector located on the rear panel of the instrument to 16 SMA connectors. This cable ensures the best signal integrity and flexibility required for transmitting the high speed digital signals provided by the BNC AWG Series.

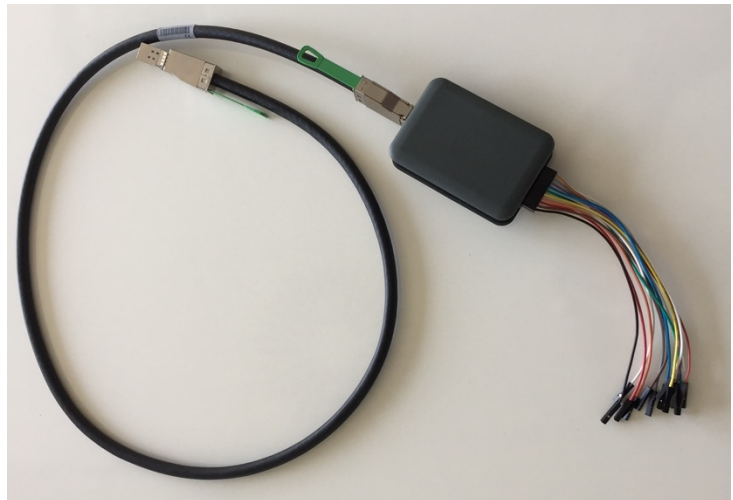
Output connector	SMA
Output type	LVDS
Number of SMA	16 (8 bits)
Cable type	Proprietary standard
Cable Length	1 meter

1.2 AT-DTTL8

The AT-DTTL8 is an 8bit LVDS to LVTTTL adapter that converts the LVDS differential signals provided by the mini-SAS HD digital connector to standard LVTTTL single ended signals. The probe provides the possibility to program by software the high level voltage of the TTL signals from 0.8V to 3.8V (into high impedance load).

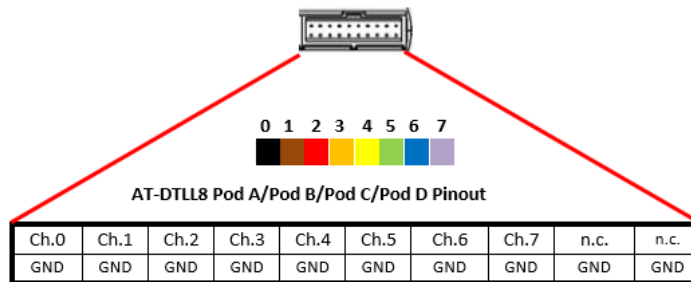
The AT-DTTL8 probe max bit rate is 125 Mbps @ 0.8V and 400 Mbps@3.8V.

Important Note: the 685-8CD-8DIG / 675-4C-1G-DIG8 / 670-4C-512M-DIG8 does not include the AT-DTTL8 and the RIDER-MINI-SAS-HD cable, that must be bought separately.



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Below the description of the TTL signal connector is provided.



Output connector	20 position 2.54 mm 2 Row IDC Header
Output electrical standard	LVTTTL
Output impedance	50 Ω nominal
Output voltage	0.8V to 3.8V programmable (same for all channels)
Maximum Update Rate	125 Mbps @ 0.8V and 400 Mbps @ 3.6V
Dimensions	W 52 mm – H 22 mm – D 76 mm
Input Connector	Proprietary standard
Cable Length	1 meter
Cable Type	Proprietary