

Analogue Clocks of the *Alpermann+Velte* MTD System

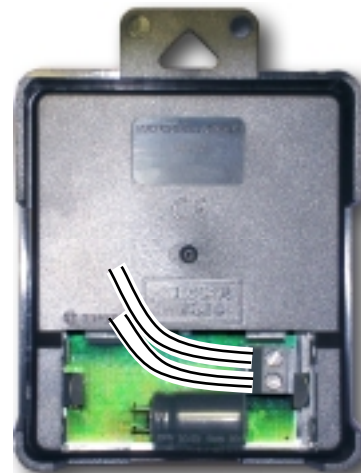
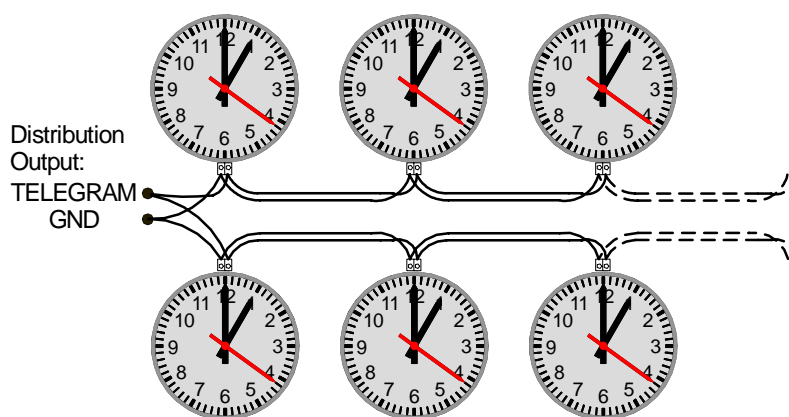
Analogue Clocks with a 2-Wire Interface Installation and Operating Manual



Analogue slave clocks of the Alpermann+Velte MTD system are available with various sizes and different designs. This manual describes all clocks which can be connected via a 2-wire interface to a RUBIDIUM distribution module (e.g. VD or VL). All clocks of this type are completely self-setting.

Installation

Power as well as the time will be supplied by the distribution module via two wires (e.g. of type J-Y(ST)Y). Connect the wires at the screwing posts located at the rear of the drive. You cannot damage the clock by a reverse polarity, because the wires are interchangeable. So you don't have to take care about connecting this wire to that screwing post. Analogue slave clocks with this 2-wire interface can be connected in parallel. Please notice the appropriate manual of the distribution unit for detailed information of the output stages.



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Initial Operation and Functional Description

The clocks receive power and time data via a 2-wire interface. The "TELEGRAM" output of a RUBIDIUM distribution module transmits the appropriate time telegram, i.e. negative going pulses each second. This signal line delivers power for the clocks as well. After receiving power the clocks execute a "hand detect" procedure. The hands will be adjusted first to the 12 o'clock position, next the hands will be rapidly moved to the correct time position. These initial procedures will take nine minutes at maximum, after that the clocks switch to normal time display.

Attention: Do not manually adjust the hands!

Controlled by a central clock unit (e.g. the RUBIDIUM GT module) the analogue slave clocks are able to automatically adjust to Daylight Saving Time changes.

Examples of applications:

<u>Using the RUBIDIUM VL module</u> Configuration of the VL module: VL Output – Pulse – Protocol = DCF invert. Connector OUT (RJ45): 1: (RS422/RS485) 4: GND 2: (RS422/RS485) 5: TELEGRAM 3: (LTC) 7: (RS232) 6: (LTC) 8: (VCC)	<u>Using the RUBIDIUM GT – VD system</u> Configuration of the GT module: Generate – Impulse Telegram – Inverse Polarity: not activated 2 Wire Mode: activated Connector OUT (DSUB9) at the VD module: 1: (RS485) 5: GND 2: (RS485/RS232) 6: (RS422) 3: (LTC) 7: (RS422) 4: (LTC) 8: TELEGRAM 9: (VCC)		
<u>Maximum cable length connecting to a RUBIDIUM VL or VD module</u> A maximum of 12 clocks can be connected to each output stage to guarantee a faultless operation over the whole specified temperature range. The following table shows standard values of maximum cable length calculated for a typical copper material:			
Cross section [mm ²]	0,205	0,324	0,519
	e.g. AWG24 solid bar	e.g. AWG22 solid bar	e.g. AWG20 solid bar
Length [m], 12 clocks	550	870	1400
Length [m], 10 clocks	660	1045	1680
Length [m], 6 clocks	1100	1740	2800

Technical Specifications

Operational voltage:	11 – 27 VDC
Maximum current consumption	
("hand detect" procedure after power-on):	10 mA
Operating temperature:	-10° to +60° C

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