AMKASYN
Servo inverter AN/AZ/AW
Option card AW-IW1
Pulse transmission
(only for inverter modules AW xx/yy-3)

AMK

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Important advice:
Touching of the electrical connections on the card must be avoided, otherwise electronic components could be destroyed through static discharge.
Take card directly out of packing and install it in the assigned AW module.

1 AW Option card AW-IW1 „Pulse transmission"

(only for AW modules AW xx/yy-3 with AW-R02 controller card.)

The AW-IW1 card is used to transmit motor encoder signals (encoder type „A" or „I") to a higher ranking controller.
The sine-wave encoder signals are converted into square-wave pulses (two channels in quadrature and a reference pulse).
The output frequency can be multiplied by factors 1, 2, 5 or 10.
The square wave output can serve as actual position feedback for an external CNC or as MASTER pulses for a separate drive system in synchronous control.

The AW-IW1 outputs are optically isolated, short-circuit protected line drivers according to EIA standard RS422. The 5V-voltage for the output signals must be supplied by the customer.

Output signal level:	U_{high}	>=	2V at $-I_{aHigh}$	=	40mA
	U_{low}	<=	0,4V at I_{aLow}	=	40mA
Output load capability:	$-I_{high}$	<=	40 mA		
	I_{low}	<=	40 mA		
Switching times:	Rise time	<=	20 ns		
	Fall time	<=	20 ns		
External voltage supply:	5V / 150 mA				

Max. output frequency: 250 kHz.
With 10-fold evaluation the max. input frequency from motor encoder is limited to 25 kHz (max. input frequency without limitation: 100 kHz).
The minimum pulse-edge interval at 250 kHz is $\geq$ 500ns.

The outputs are led to a 9-pole D-SUB connector (X60). The mating connector is interlocked by 2 screws with UNC4-40 thread.

Under usage of shielded, twisted-pair cable, the maximum distance between inverter and follower electronics is limited to 100 m (325 ft). The cable shield has to be grounded (PE) at the receiver end through the metallized D-SUB shell.
(For pulse transmission within one AMKASYN system the shield must be grounded at both ends!)

1.1 Pulse transmission multiplier:

The required factor must be entered into ID 32890. Only the factors 1, 2, 5 or 10 are permitted. Other factors will generate an error during system booting.

1.2 Pin assignment X60 (female connector)

D-Sub-Pin	Signal designation		Output signals after multiplication
1	Reference pulse inverted	Ua0-	
2	Reference pulse	Ua0	
3	Channel 1 inverted	Ua1-	
4	Channel 1	Ua1	
5	Channel 2 inverted	Ua2-	
6	Channel 2	Ua2	
7	+5V external supply	V+	
8	Signal common 0V ext	V-	
9	-	-	>500ns

1.3 Connection and installation of the option card AW-IW1 in AW modules AW xx/yy-3 with controller card AW-R02

The AW-IW1 card must be installed on the controller card AW-R02:

1. Loosen the 2 captive screws of controller card AW-R02, unplug the controller card and put it on the packing foam plastic, component side up.
2. Unscrew the threaded bolts (including the lock washers) at the AW-IW1 D-SUB socket.
3. Carefully connect the AW-IW1 ribbon cable into socket X1 on the controller card AW-R02. Ensure that it is firmly connected.
4. Insert AW-IW1 card (component side down) into the D-SUB cut-out on the AW-R02 front panel.
5. Insert the complete AW-R02 subassembly back into the AW module slot. Ensure that it is firmly plugged in.
6. Fasten subassembly AW-R02 in the AW housing through the 2 captive screws.

With AW modules of the former design, the old option card AW-IW1 is equipped with a front panel, matched to the old AW module.
If one of these old AW modules must be replaced by a new AW module AW xx/yy-3, the old option card AW-IW1 can be adapted and then used together with the new AW module:

1. Loosen the captive screws at the AW-IW1 front panel. Carefully pull out the AW-IW1 card and hold it.
2. Disconnect the AW-IW1 ribbon cable at the AW mother board end.
3. Unscrew the threaded bolts (including the lock washers) at the AW-IW1 D-SUB socket and then remove the AW-IW1 front panel.
4. Installation of the AW-IW1 card into the new AW module according to the description above.

Notice: Bypacked to option card AW-IW1 is the frontplate of the old AW-IW1 version. It is only required in case of retrofitting option card AW-IW1 to an old AW module (former design without controller card).

1.4 Installation and connection of option card AW-IW1 in AW modules AW xx/yy-3 with controller card AW-R02:
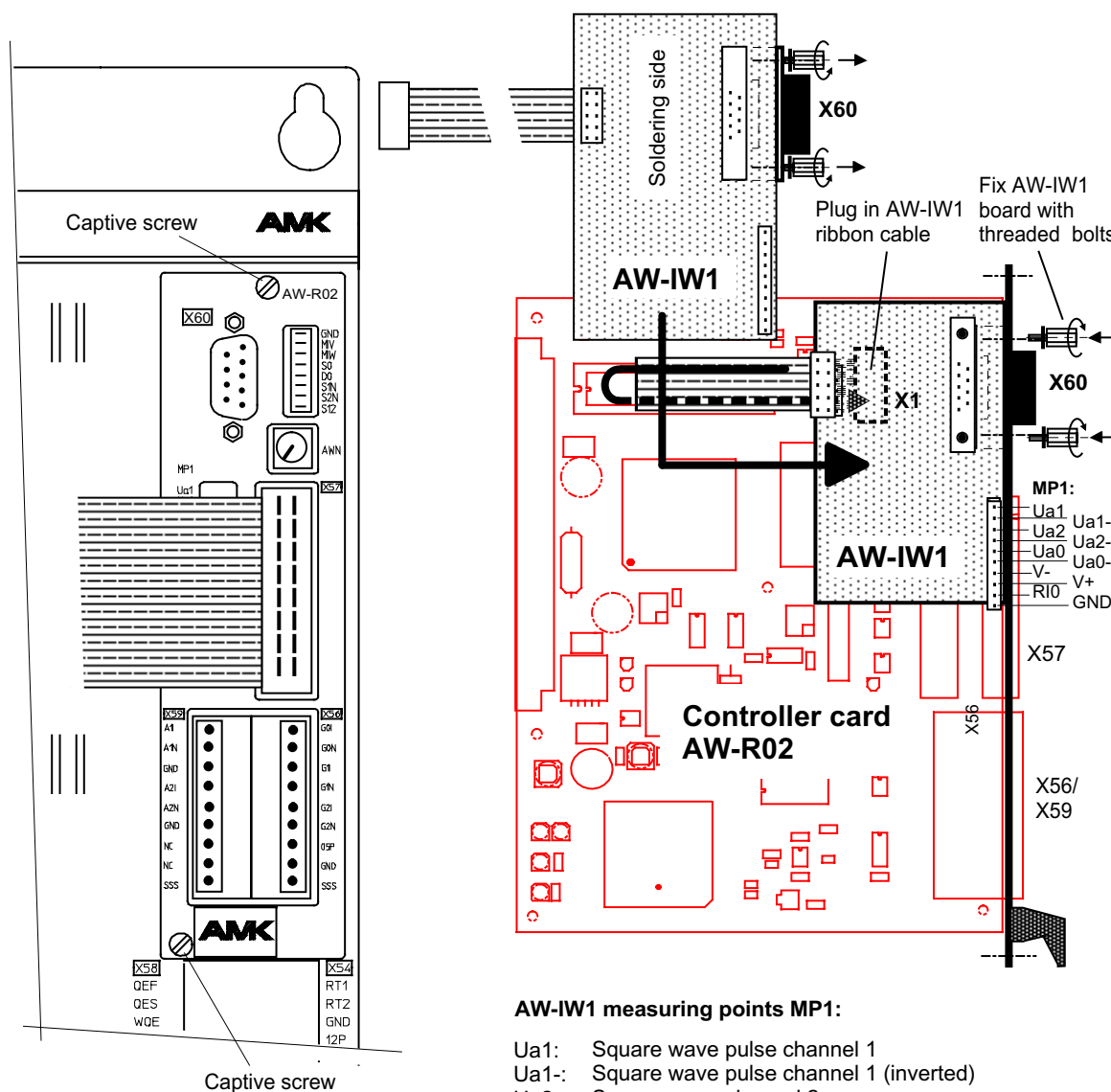
AW-IW1 measuring points MP1:

Ua1:	Square wave pulse channel 1
Ua1-:	Square wave pulse channel 1 (inverted)
Ua2:	Square wave channel 2
Ua2-:	Square wave channel 2 (inverted)
Ua0:	Internal reference pulse
Ua0-:	Internal reference pulse (inverted)
V-:	0V potential (external)
V+:	+5V supply input (external)
RI0:	Square wave encoder reference pulse
GND:	Internal reference potential GND