AMKASYN
Servo inverter KE/KW and KU
Optical isolation for
Pulse transmission

Version: 2004/09
Part-No.: 29628

About this documentation

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Use:

What has changed:

Version	Change	Subject	Letter symbol
2004/09			
2008/43		first Flare version	Bls

Further Documentation:

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- the software version
- the device setup and application
- the type of malfunction, suspected cause of failure
- the diagnostic messages (error messages)

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Content

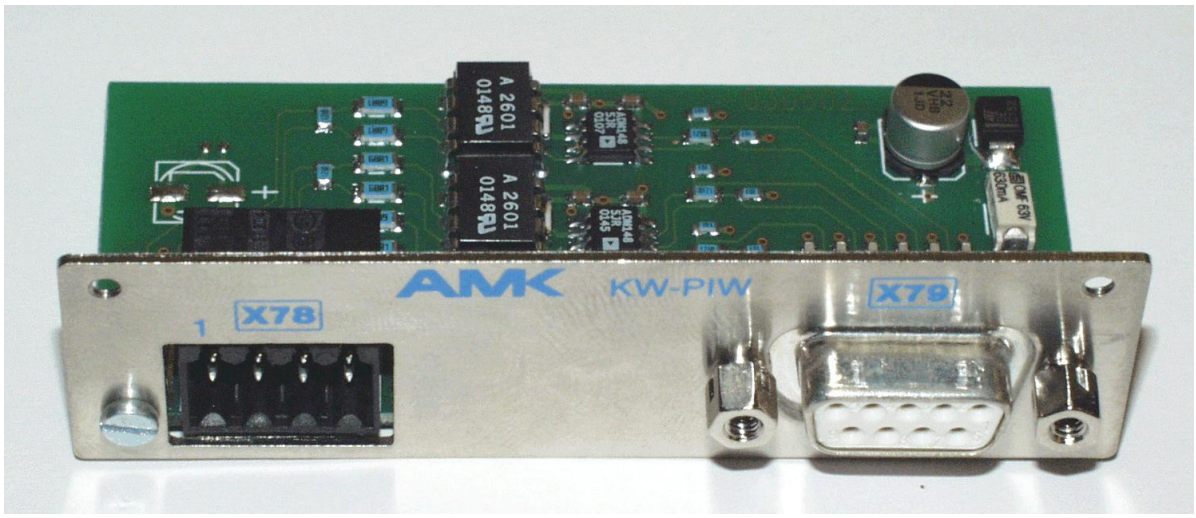
1 Option card KU- / KW-PIW „Optical isolation for pulse transmission“

For electrical isolation this option card is connected between the square wave pulse channel X132 on the KU / KW controller card and the selected square wave pulse receiver, e. g. a square wave input of another AMKASYN system or of a higher ranking controller.

The option card is only mechanically placed in the selected slot of the respective controller card. No internal connection to the associated controller card is required, therefore the option card KU- / KW-PIW can be installed in any free option slot on a KW / KU:

On KU as **KU-PIW**, order-No. O696 (on KU controller card in option slot 1)

On KW as **KW-PIW**, order no. O682 (on KW controller card in option slot 1 or 2)



picture name: ZCH_PIW_Reglerkarte

1.1 Brief description

The signals of the square wave channel X132 on the controller card are referred to GROUND. In many applications electrical isolation for square wave signals is required at the controller input of the signal receiver .

This optical isolation is provided by the option card “Optical isolation for pulse transmission”.

From X132 on the controller card the square wave pulses are fed to input X78 of option card “Optical isolation for pulse transmission” via an additional cable.

From the output (X79) the optically isolated signals then are led to a different AMKASYN system or a higher ranking controller.

A maximum of 2 AMKASYN square wave inputs may be connected to the output X79 of the option card (FAN OUT = 2, each AMKASYN square wave input is equipped with a 120 Ohm termination resistor).

If on external controllers no termination resistor is used on the square wave input a maximum of 10 inputs (line receivers according to RS422) may be connected to output X 79.

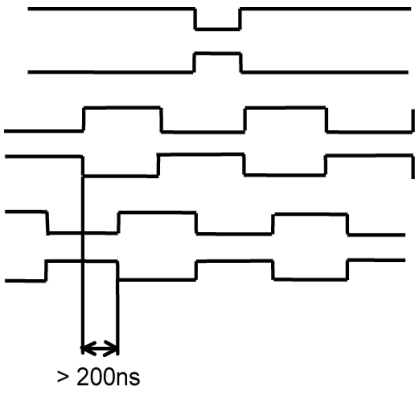
1.2 X78 Square wave pulse input (2 row, 4-pole male connector)

Connector pin assignment (view to the front plate):

Pin	B	A
4	GND	5P
3	IG2N	IG2I
2	IG1N	IG1I
1	IG0N	IG0I

Signal	Meaning
IG0I	Reference pulse 0 (inverted)
IG0N	Reference pulse 0 (not inverted)
IG1I	Pulse track 1 (inverted)
IG1N	Pulse track 1 (not inverted)
IG2I	Pulse track 2 (inverted)
IG2N	Pulse track 2 (not inverted)
GND	Reference potential
5P	+ 5 Volt

1.3 X79 Square wave pulse output (9-pole D-Sub, female)

D-Sub pin	Signal meaning (from X78)		Output signals
1	(IG0I) Reference pulse inverted*	Ua0-	 picture name: ZCH_PIW_Ausgangssignale
2	(IG0N) Ref. pulse not inverted*	Ua0	
3	(IG1I) Pulse track 1 inverted	Ua1-	
4	(IG1N) Pulse track 1 not inverted	Ua1	
5	(IG2I) Pulse track 2 inverted	Ua2-	
6	(IG2N) Pulse track 2 not inverted	Ua2	
7	External +5V input voltage	V+	
8	0V (external)	V-	
9	-	-	

Short circuit proof line drivers according to RS422 are used on the output of option card “Optical isolation for pulse transmission”.

The 5V supply voltage for the line drivers must be provided from external.

Output signal level:	U_{high}	>=	2V at $-I_{aHigh}$= 40mA
	U_{low}	<=	0,4V at I_{aLow}= 40mA
Output current:	$-I_{high}$	<=	40 mA
	I_{low}	<=	40 mA
Switching time:	Rise- time	<=	20 ns
	Drop-out time	<=	20 ns
External supply voltage:	5V / > 150 mA		
Maximum output frequency:	1 MHz		

The outputs are led to 9-pole D-SUB connector X79.
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.

1.4 KW / KU Parameter setting:

The square wave channel on the controller card can be used as a square wave pulse input (default) or a square wave pulse output.

☞ **Before changing from INPUT to OUTPUT make sure that the output (X79) is correctly connected to a square wave input!**

In ID32964 it is determined in which way the channel is used:

With ID32964 = 0 -> as a square wave input (default)

With ID32964 = x -> as a square wave output

(for „**x**“ refer to table „Signal sources“, **Code** “**x**”)

Signal sources:

Code “x”	Encoder type
2	T (Multiturn absolute encoder, RS485)
5	**I (Optical incremental encoder**
7	**S (Singleturn absolute encoder, RS485)**
8	R (Resolver)
A	E (Singleturn absolute encoder, EnDat)
	F (Multiturn absolute encoder, EnDat)

Via ID 32966 “IVH Multiplier” and ID 32967 “IVH Divider” the number of output pulses per turn can be set on the inverter.

Basis for the internal calculation is ID 32776 “Sine encoder periods” (per turn) of the appropriate motor encoder. For resolver the value in ID 32776 must be “128”.

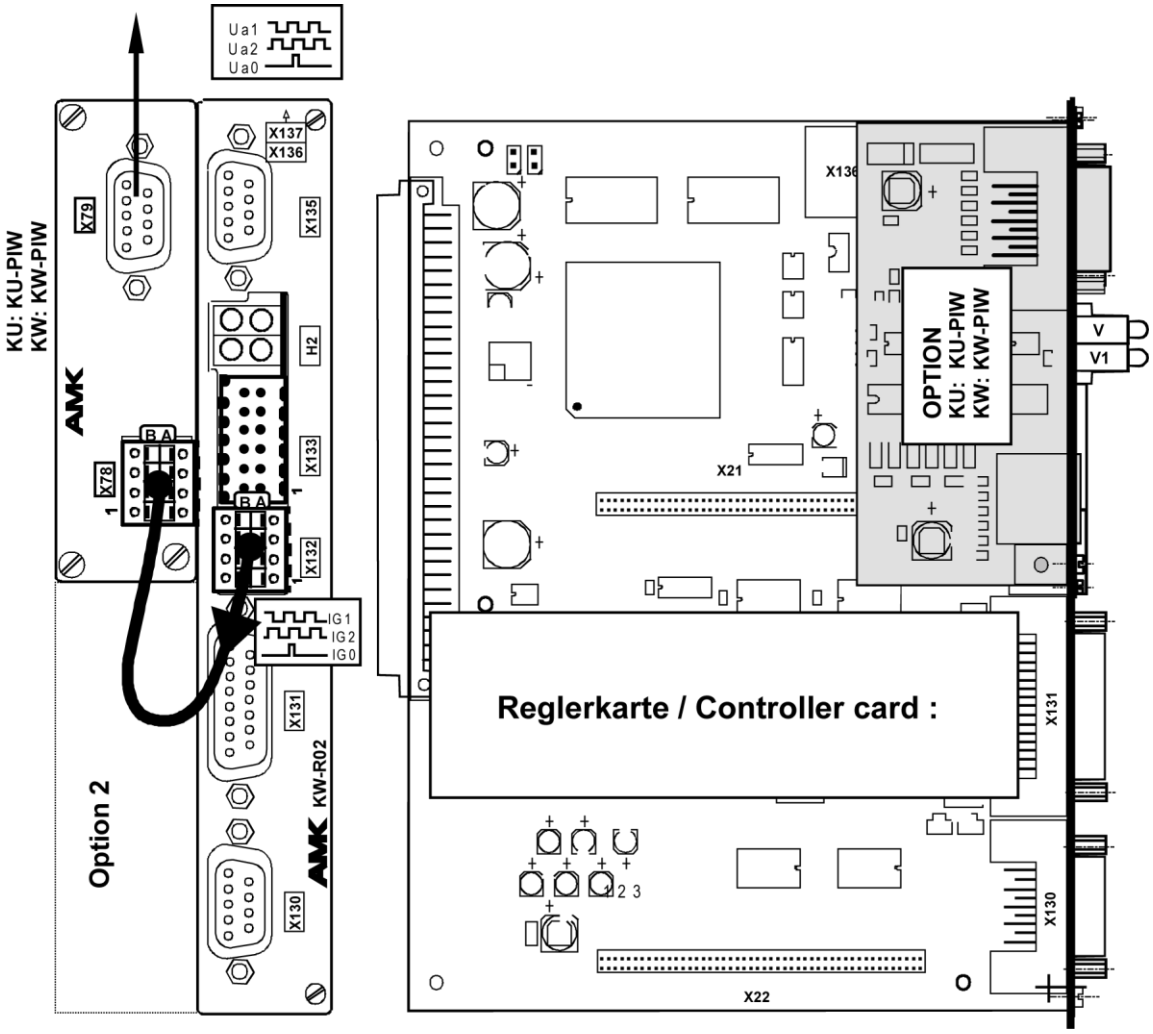
Number of output pulses / rev. = ID 32776 x ID 32966 / ID 32967

At the signal destination (receiver) the output pulses (2 square wave pulses in quadrature) are 4-fold evaluated.

1.5 Option card “Optical isolation for pulse transmission”:

Front view and component mounting diagram (on KU / KW controller card)

(KW-PIW installed in slot 1)



picture name: ZCH_Kx_r02_PIW

Optional:

Connection cable X132-X78, 100mm long (AMK part no. 46461), can be ordered from AMK. Different cable length on request.

1.6 Installation instructions for option card KU-PIW / KW-PIW

NOTICE

Electronic components could be destroyed through static discharge!

Therefore touching of the electrical connections on the card (e.g. option card, controller cards) must be avoided.

Steps to prevent:

Before handling the electronic component discharge yourself by touching PE.

The option card „Optical isolation for pulse transmission“ must be inserted in the appropriate slot on the KU / KW controller card.

1. Ensure that the AMKASYN system is disconnected from the power supply and that the DC BUS capacitors are discharged.
2. Remove blanking plate at the selected slot on the controller card by loosening the two captive screws and place the option card into the slot.
3. Tighten the captive screws at the front panel of the controller card and of the option card.
4. Connect output X132 on controller card to input X78 on option card via connection cable.

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