AMK AMKASYN

VARIABLE SPEED DRIVES

AMKASYN

Digital Drive Systems

Option Module AP-IF2
for feeding an external sensor signal into the encoder input (AZ/AW KU) as a reference pulse with additional pulse transmission

Important advice:
Touching of the electrical connections on the plug-in card must be avoided, otherwise electronic components could be destroyed through static discharge.

Take plug-in card directly out of packing and insert into the option slot in the AZ module without using force. Then secure with screw below the card grip.

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1 AP-IF2 Option module description

The option module AP-IF2 can be used for feeding an external trigger signal (e.g. from a sensor) into the encoder input (AZ / AW / KU) as a reference pulse.

The AP-IF2 board is installed on a PHOENIX UMB frame (dimensions: 68 mm x 77 mm/ 2.68” x 3.03”). The module is snap-mounted on a DIN rail in the electrical cabinet.

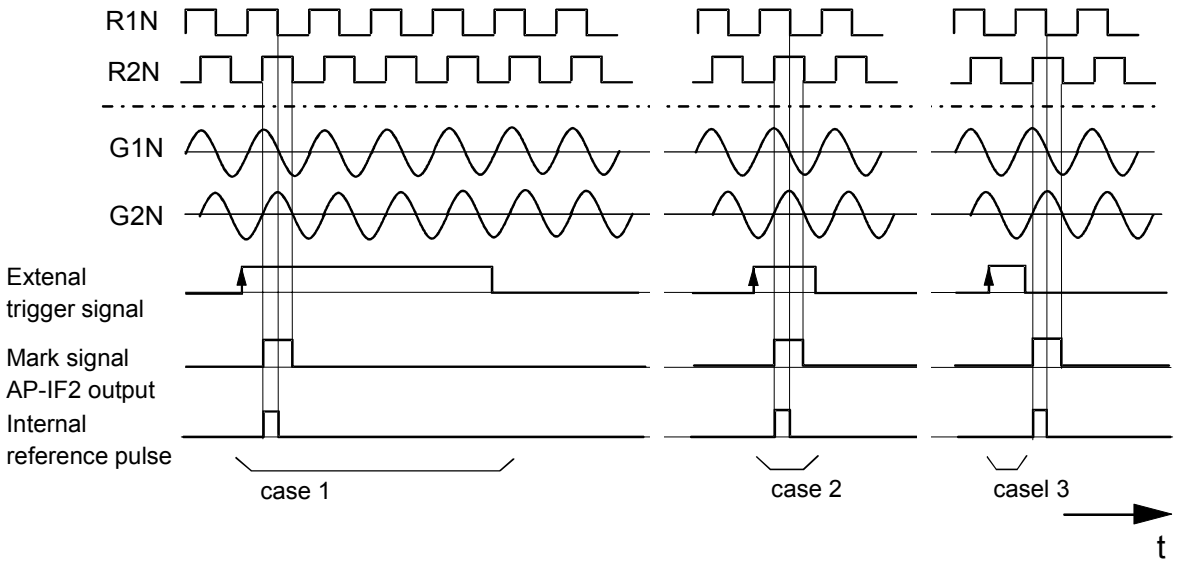
With option module AP-IF2 it is possible to feed a trigger signal from an external sensor exactly and accurately timed into the encoder input, replacing the regular encoder reference pulse. This is required for specific applications like

- Homing cycle with cam evaluation as internal reference pulse
- Register mark control
- “Flying cutter” etc.

Minimum pulse width of the external trigger signal must be ≥ 3 microseconds.
Only the positive edge of the trigger signal is evaluated each.

The sensor signal is optically isolated and the signal is conditioned for the differential input on the inverter. Simultaneously the internal reference pulse is synchronized with the encoder tracks 1 and 2 (see “Timing diagram”).

Timing diagram:



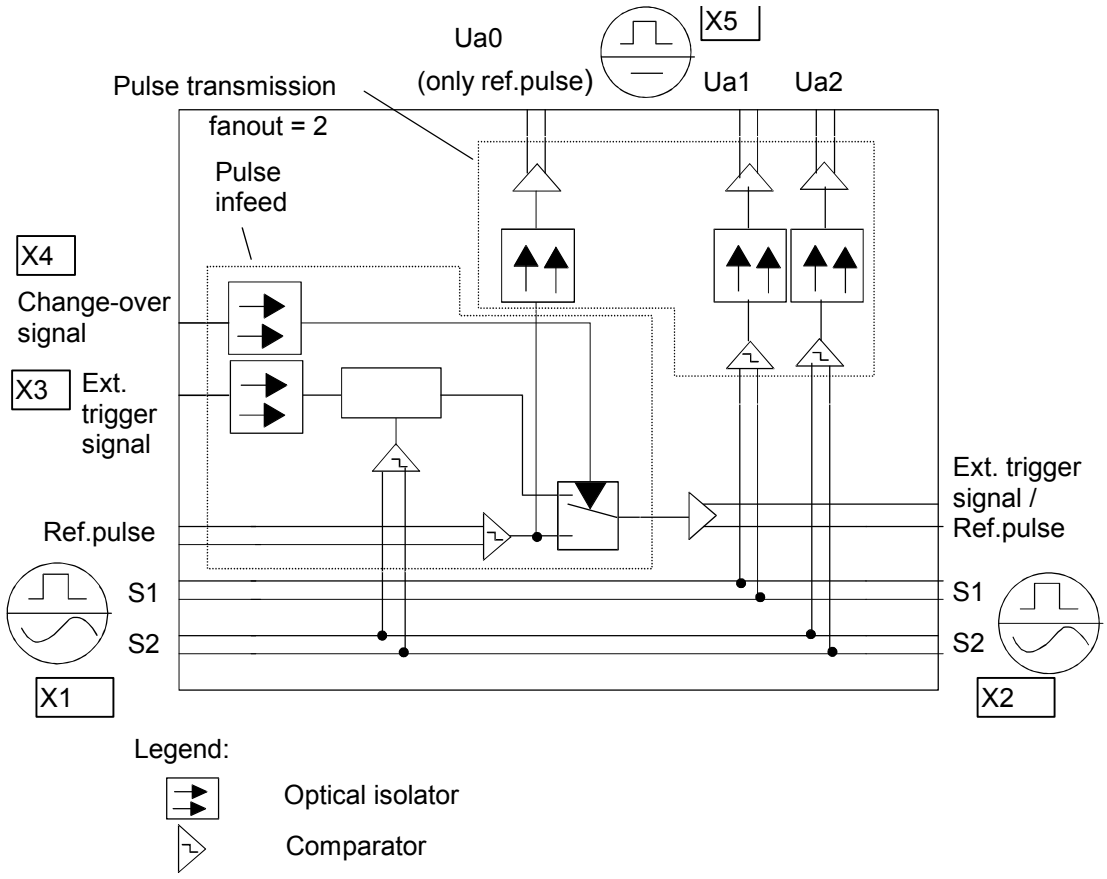
The external trigger signal or the encoder reference pulse can be output as the reference signal alternatively, selected via 24V binary input “Change-over”:

Open input:	External trigger signal
Input +24V:	Activate encoder reference pulse

Sine wave encoder signals **(only from I type ecoder)** or square wave signals can be fed through input X1 of the AP-IF2 module.

The AP-IF2 module additionally provides an optically isolated square wave output (X5) for pulse transmission with a fan-out of 2. **This is only available for square wave input signals.**

Block diagram:



2 AP-IF2 Interfaces

Interface	Designation	Connector
Pulse input	X1	9pole D-SUB (male)
Output: Square wave pulse transmission (amplified, fan-out= 2):	X5	9pole D-SUB (female)
Pulse output (connect through signals)	X2	9pole D-SUB (female)
24V input: External trigger signal	X3	2pole PHOENIX terminals
24V input: Activate encoder reference pulse	X4	2pole PHOENIX terminals
(Jumper for 180Ω termination resistors, not released yet!)	BR1, BR5, BR6	Wrap strip

2.1 X1 Pin assignment: Signal input

Pin No.	Signal	Description
1	G0I	Sine or square wave encoder signal: Ref. pulse inverted
2	G0N	Sine or square wave encoder signal: Ref. pulse not inverted
3	G1I	Sine or square wave encoder signal: Track 1 inverted
4	G1N	Sine or square wave encoder signal: Track 1 not inverted
5	G2I	Sine or square wave encoder signal: Track 2 inverted
6	G2N	Sine or square wave encoder signal: Track 2 not inverted
7	5P	+5V Power supply
8	GND	Signal Ground (ground reference)
9	PE	Protective earth connection through connector shell

2.2 X2 Pin assignment: Signal output (connect through signals)

Pin No..	Signal	Description
1	G0I	Reference pulse or external trigger signal inverted
2	G0N	Reference pulse or external trigger signal not inverted
3	G1I	Sine or square wave signal: Track 1 inverted
4	G1N	Sine or square wave signal: Track 1 not inverted
5	G2I	Sine or square wave signal: Track 2 inverted
6	G2N	Sine or square wave signal: Track 2 not inverted
7	5P	+5V Power supply
8	GND	Signal Ground (ground reference)
9	PE	Protective earth connection through connector shell

2.3 X5 Pin assignment: Square wave signal output (transmission)

Pin No.	Signal	Description
1	G0I	Square wave signal; reference pulse inverted
2	G0N	Square wave signal; reference pulse not inverted
3	G1I	Square wave signal; track 1 inverted
4	G1N	Square wave signal; track 1 not inverted
5	G2I	Square wave signal; track 2 inverted
6	G2N	Square wave signal; track 2 not inverted
7	5P	+5V Power supply
8	GND	Signal Ground (ground reference)
9	nc	-

PE is not connected

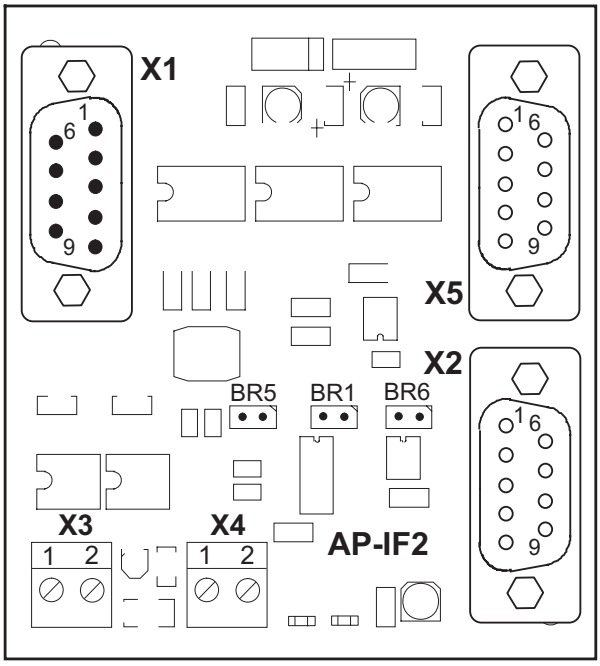
2.4 X3 Pin assignment: External trigger signal

Pin No.	Signal	Description
1	NK+	External trigger signal +24V
2	NK -	0V ext.

2.5 X4 Pin assignment: “Change-over” signal

Pin No.	Signal	Description
1	UM+	Activate encoder reference pulse +24V
2	UM -	0Vext.

3 Component mounting diagram

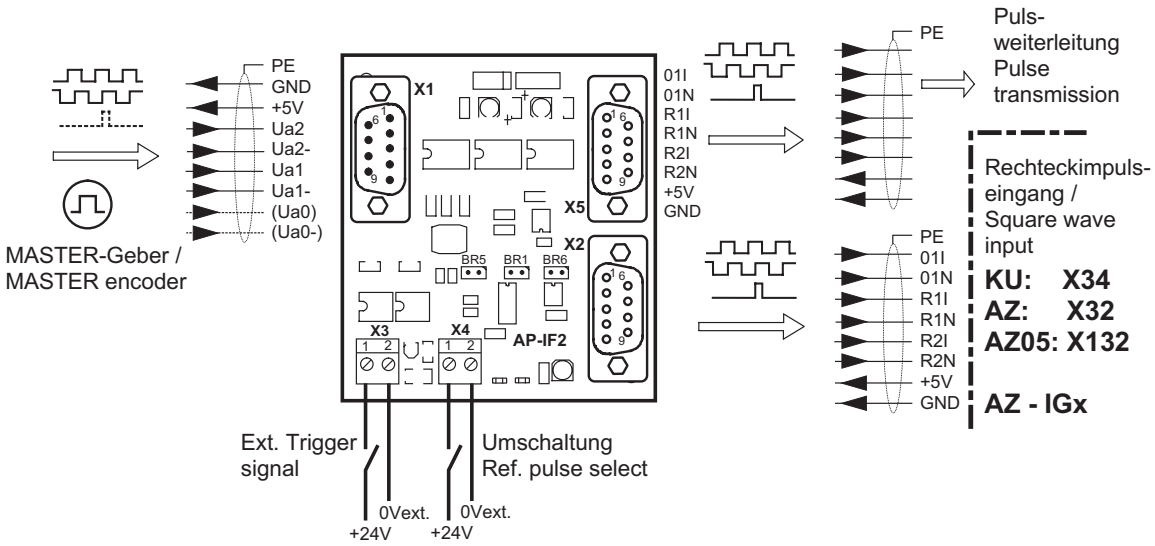


4 AP-IF2 Connections

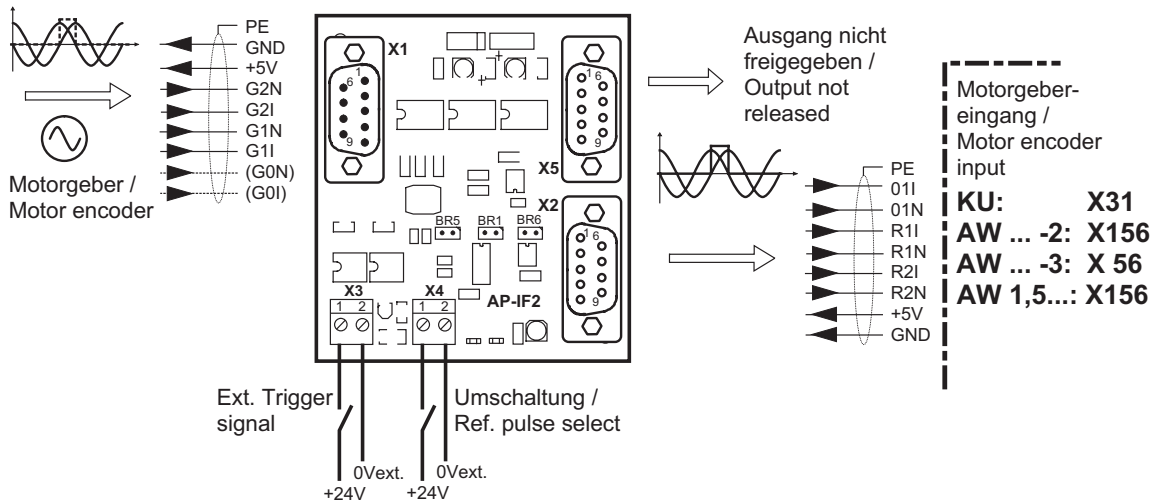
For signal input X1 a 9-pole D-SUB connector (male) is used.
For connection of a standard encoder cable for KU inverters a “Gender Changer” (D-SUB-9-changer) is required,

Twisted pair, shielded cables must be used for connection.
The length of the cable between the D-SUB connectors X2 / X5 and the inverter must not exceed 0,5 m / 1.64 ft !
The cable shield must be grounded double-ended.

AP - IF2 Anschlüsse für Rechtecksignale /
AP - IF2 connections for square wave signals



AP - IF2 Anschlüsse für Sinussignale /
AP - IF2 connections for sine wave signals



5 5V supply connection (5P)

The 5V supply for the AP.IF2 card must be applied through connector X2.
Inernally the 5V are connected throuh to connector X1. Connector X1 then provides the 5V supply for the square wave or sine wave encoder.

For pulse transmission via the AP-IF2 (fan-out = 2), the 5V supply for the optically isolated section of the amplifier must must come through connector X5.

Example:
Square wave pulses e.g. from a hand wheel are fed to 6 KU square wave inputs using two AP-IF2 cards.
Representation of the 5V supply for the different blocks.