TT *TENSOTECHNIQUE*

M26 Torque Transducer

M26 torque transducers with cylindrical shaft mounting. They measure torque within the range of nominal values from 5 Nm to 2 kNm. The max rotating speed is 20 000 rpm.

There are no slip rings in the construction. The rotor and the stator of the M26 do not have mechanical contact.

The M26 transducers are the generation of digital transducers, where the SG signal is converted into digital code and is transferred from the rotor to the stator by means of telemetry. This digital coded signal has high interference immunity, provides high accuracy of measurements and can be transmitted over significant distances without distortion and loss of information.

The optoelectronic sensor is built-in to control the speed measurements.

The M26 torque transducers measure static and dynamic varying torque from $-M_N$ to $+M_N$ (from counterclockwise (negative) torque to clockwise (positive) torque).

The M26 torque transducers can provide digital (USB2.0, RS232, RS485 (Modbus protocol), Ethernet), analogue (± 5 V, ± 10 V, 4 … 20 mA) and frequency (10 ± 5 kHz, 60 ± 30 kHz) output signals according to the custom requirements. They can be directly connected to a PC to monitor the measuring process and to save data. The special software is in the scope of supply.

Type-Survey

Type	Nominal toque M_N, Nm							Max. speed, rpm
M26-5…30	5	10	12	15	20	25	30	20 000
M26-50…120	40	50	60	80	100	120		16 000
M26-150…300	150	200	250	300				16 000
M26-400…1k	400	500	600	800	1 000			12 000
M26-1.2k…2k	1 200	1 500	2 000					12 000

M26 Stator. Dimensions in mm.

Rotor spin axis

"Ground"

4 x 20
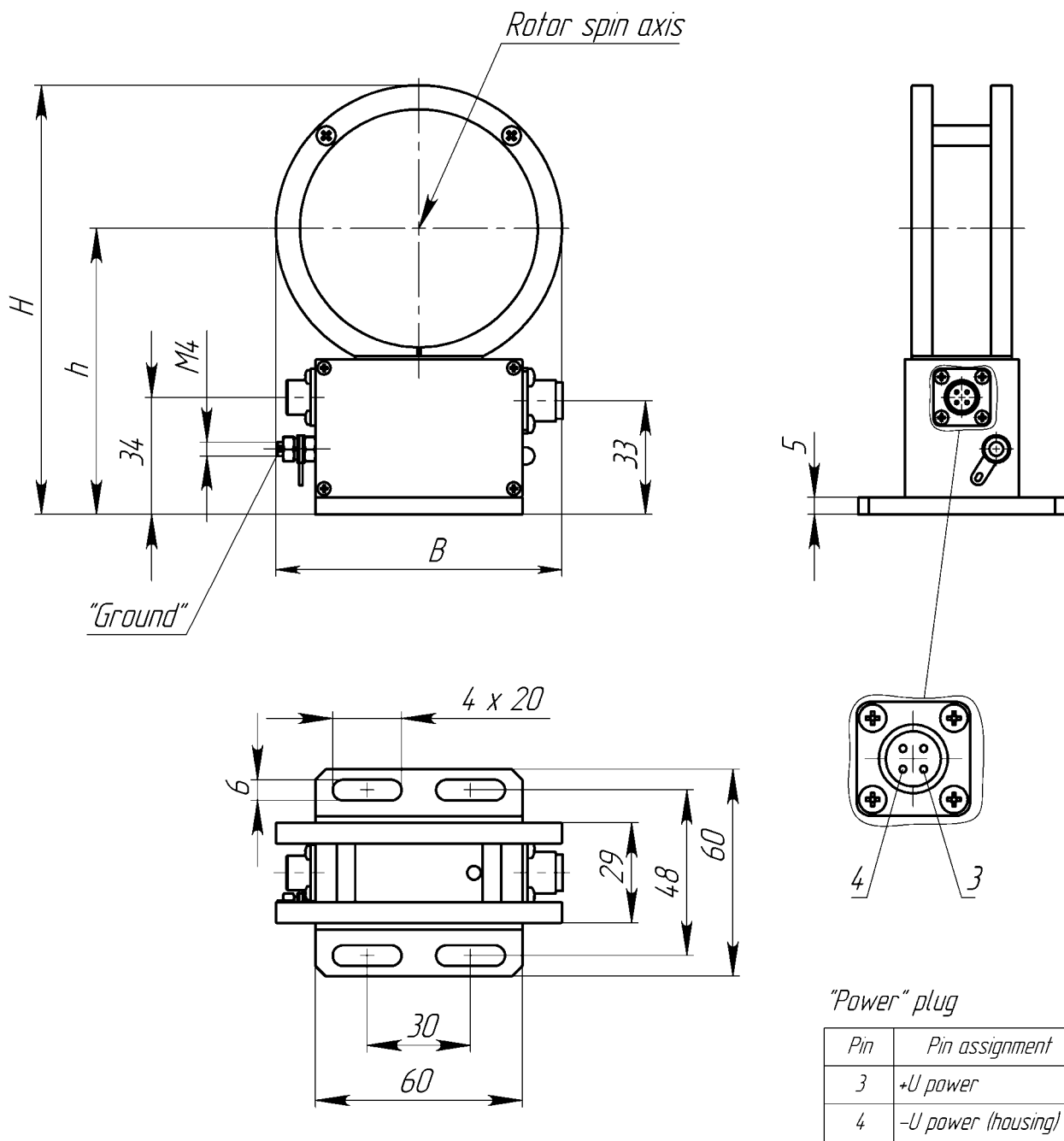
"Power" plug

Pin	Pin assignment
3	+U power
4	−U power (housing)

Type	h	H	B
M26-5 … 30	67	93	80.1
M26-50 … 120	70.5	99.5	80.1
M26-150 … 300	73	104	80.1
M26-400 … 1k	83	124.5	83.2
M26-1.2k … 2k	87.5	134	93

M26 Rotor. Dimensions in mm.
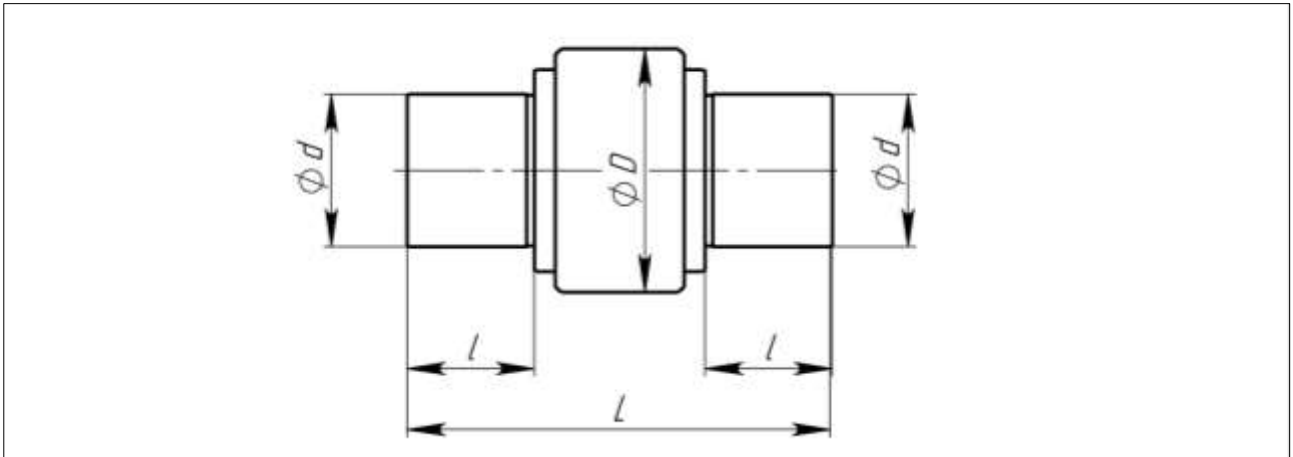
Type	l	Ød	L	ØD
M26-5 … 30	20	Ø15g6	74	35
M26-50 … 120	20	Ø20g6	74	40
M26-150 … 300	23	Ø24g6	80	45
M26-400 … 1k	33.5	Ø40g6	112	64
M26-1.2k … 2k	35	Ø50g6	115	74

Technical data

Nominal torque M_N and max. speed see table «Type-Survey».

Accuracy class		0.2
Deviation of the actual output signal at the nominal torque from the nominal value (including hysteresis and nonlinearity)	%	± 0.2
Temperature effect per 10 °C on the zero signal, related to the nominal output value	%	± 0.1
Nominal supply voltage	V (DC)	12 … 30
Power consumption	W	< 5
Measurement frequency range	Hz	0 … 1000 (- 1.5 dB)
Amplitude ripple (0 … 500 Hz)	dB	≤ 0.1
Frequency output (T23 decoder)		
Frequency output signal with positive nominal torque	kHz	15 (90)
Frequency output signal with negative nominal torque	kHz	5 (30)
Frequency output signal at torque = zero	kHz	10 (60)
Load resistance	kΩ	≥ 2
Output voltage	V	5 ± 1(symmetrical meander)
Input-output galvanic isolation		+
Analogue output (T24 decoder)		
Nominal output signal with positive (right-hand) nominal torque	V	+ 5 (+ 10)
Nominal output signal with negative (left-hand) nominal torque	V	- 5 (- 10)
Output signal at torque = zero	V	0
Load resistance	kΩ	≥ 10
Analogue output (T24/4 … 20 mA decoder)		
Output current	mA	4 … 20
Output current at loading = zero	mA	12
Output current at nominal positive loading	mA	20
Output current at nominal negative loading	mA	4
Load resistance	kΩ	≥ 100
Digital output (T45 decoder)		
Interface		USB 2.0
Data transfer rate (Full-Speed)	Mbit/sec	13
Sample rate	kSample	5.0
Input-output galvanic isolation		+
Digital output (T37 decoder)		
Interface		Ethernet
Data transfer rate	Mbit/sec	10; 100
Sample rate	kSample	5.0
Input-output galvanic isolation		+
Digital output (T46 decoder)		
Interface		RS485
Protocol		MODBUS RTU
Data transfer rate	baud	2 400 - 115 200
Parity check		+
Sample rate	kSample	5.0
Input-output galvanic isolation		+
Digital output (T42 decoder)		
Interface		RS232
Data transfer rate	baud	2 400 - 115 200
Parity check		+
Sample rate	kSample	5.0
Input-output galvanic isolation		+

| **Rotation speed measuring system**			
Accuracy (within 30 … 20 000 rpm)		%	± 0.1
Pulses per revolution depending on a decoder	T23, T24		1
	T23/3, T24/3		60, 120, 360, 480, 720 (optionally)
Min. detected speed		rpm	30
Amplitude of output pulse voltage with analogue (frequency) output		V	5 ± 1

Parameters of resistance to environment and mechanical exposures

Nominal temperature range	°C	+ 5 … + 50
Humidity	%	95 (35 °C)
Atmospheric pressure	kPa	84 … 106.7 (630 … 800 mm Hg)
Storage temperature range	°C	- 10 … + 70
Storage humidity	%	95 (+ 30 °C)
Vibration resistance: Frequency range Duration Acceleration	Hz h m/s^2	10 … 55 1 40
Impact resistance: Number of impacts Duration Acceleration	n ms m/s^2	1 000 10 400
Degree of protection		IP40

Limit torque, related to M_N

Type	Nominal toque M_N, Nm	Limit torque related to M_N, %
M26-5 … 30	5 10 12 15 20 25 30	150
M26-50 … 120	40 50 60 80 100 120	150
M26-150 … 300	150 200 250 300	150
M26-400 … 1k	400 500 600 800 1 000	150
M26-1.2k … 2k	1 200 1 500 2 000	150

Axial force, radial force and bending moment have to be reduced according to graph 1, if they act together, as they are interdependent. To prevent from excessive stress due to misalignment and thermal influences the transducer should be fitted between flexible couplings. We offer such flexible torsionally rigid couplings MB series
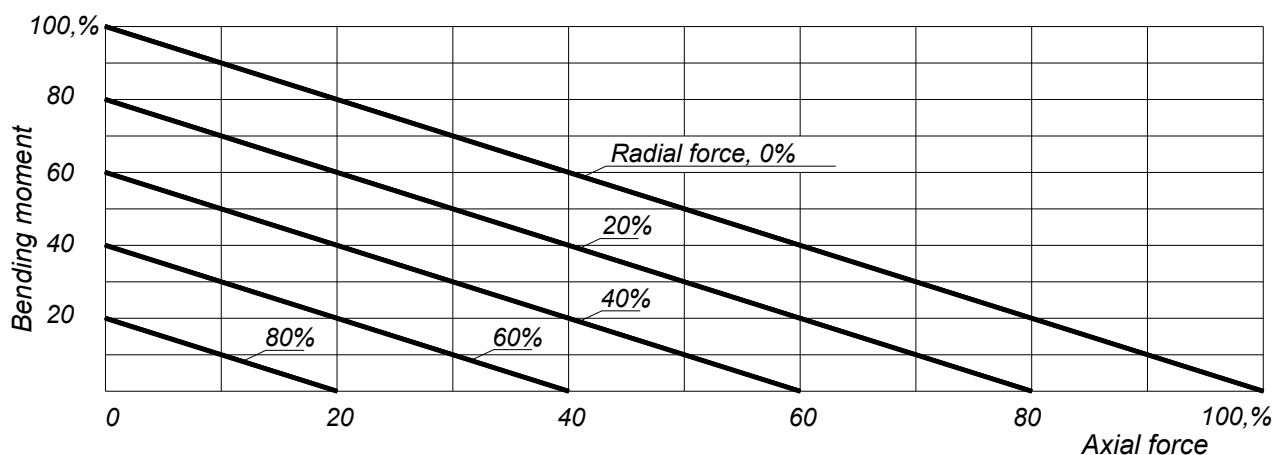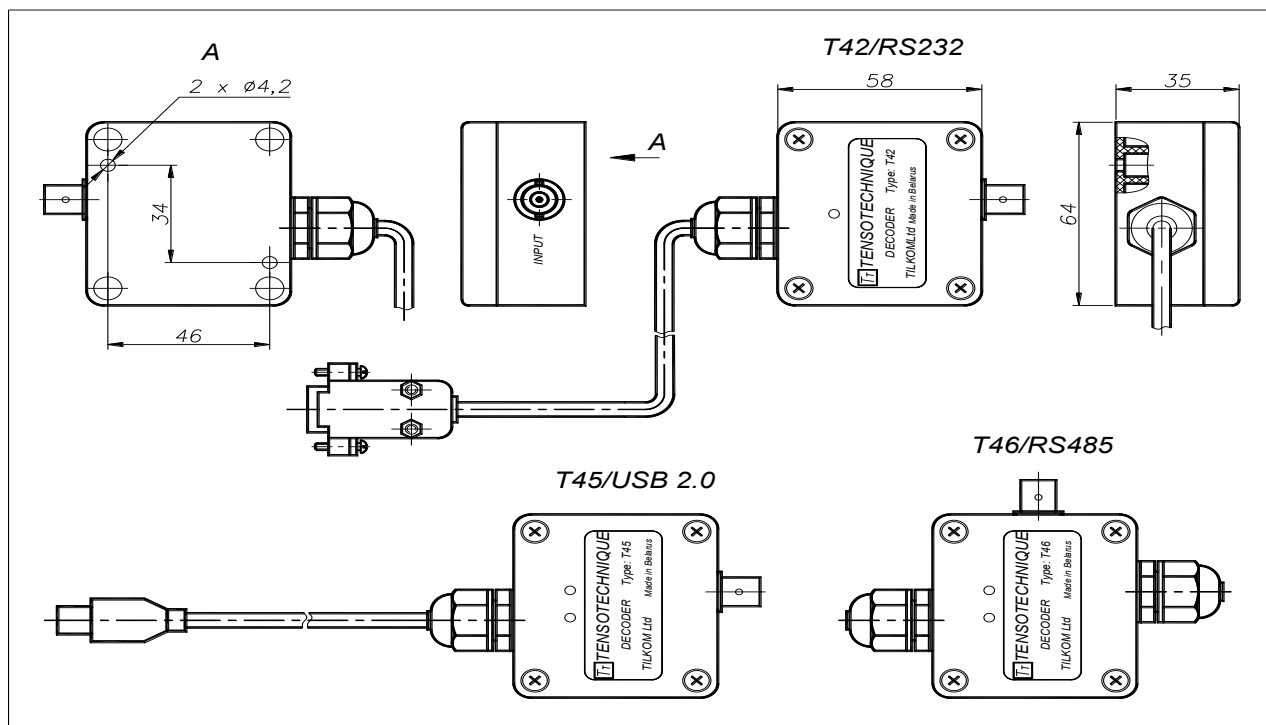

Scope of delivery

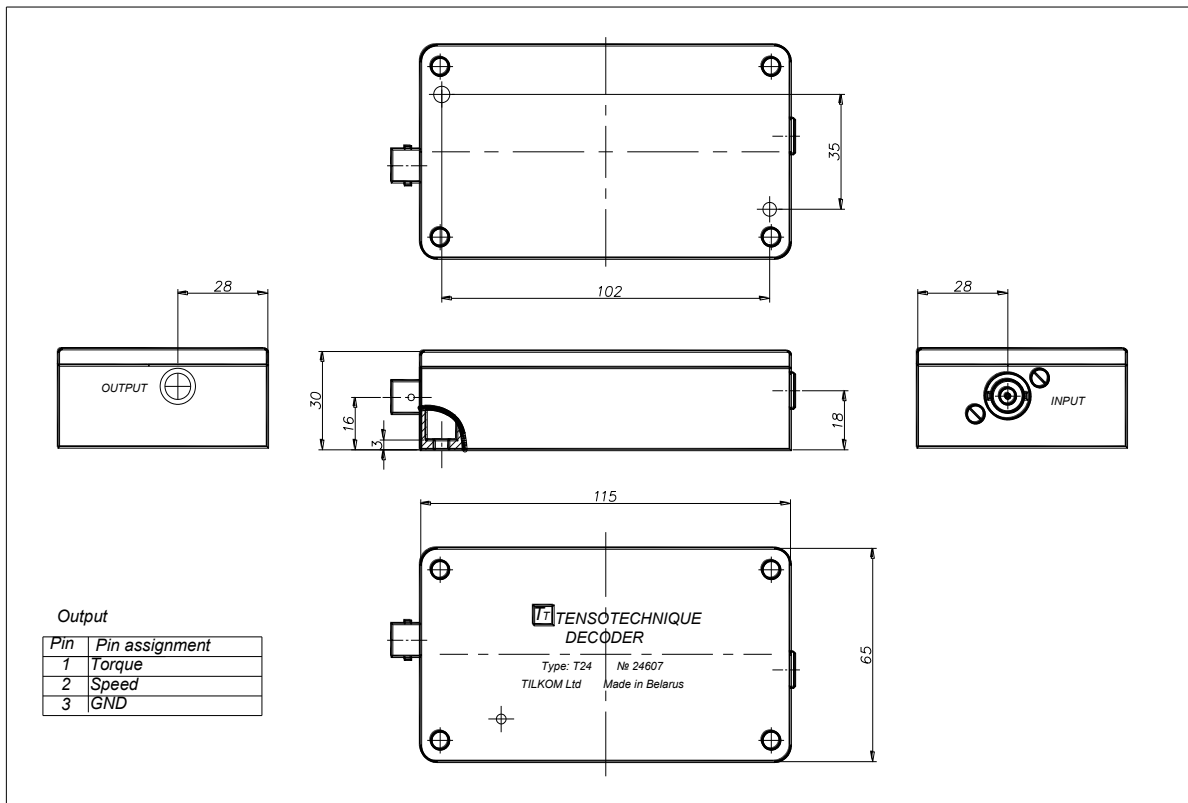|	
M26 torque transducer (rotor, stator)	1
Txx decoder	1
Output signal cable, 5 m long (optionally can be over in length)	1
Power supply connector PC4	1
"Transducer" Software for Windows XP,7, 8,10	1
Operating manual	1
Software user manual	1

Accessories (to be ordered separately and optionally)

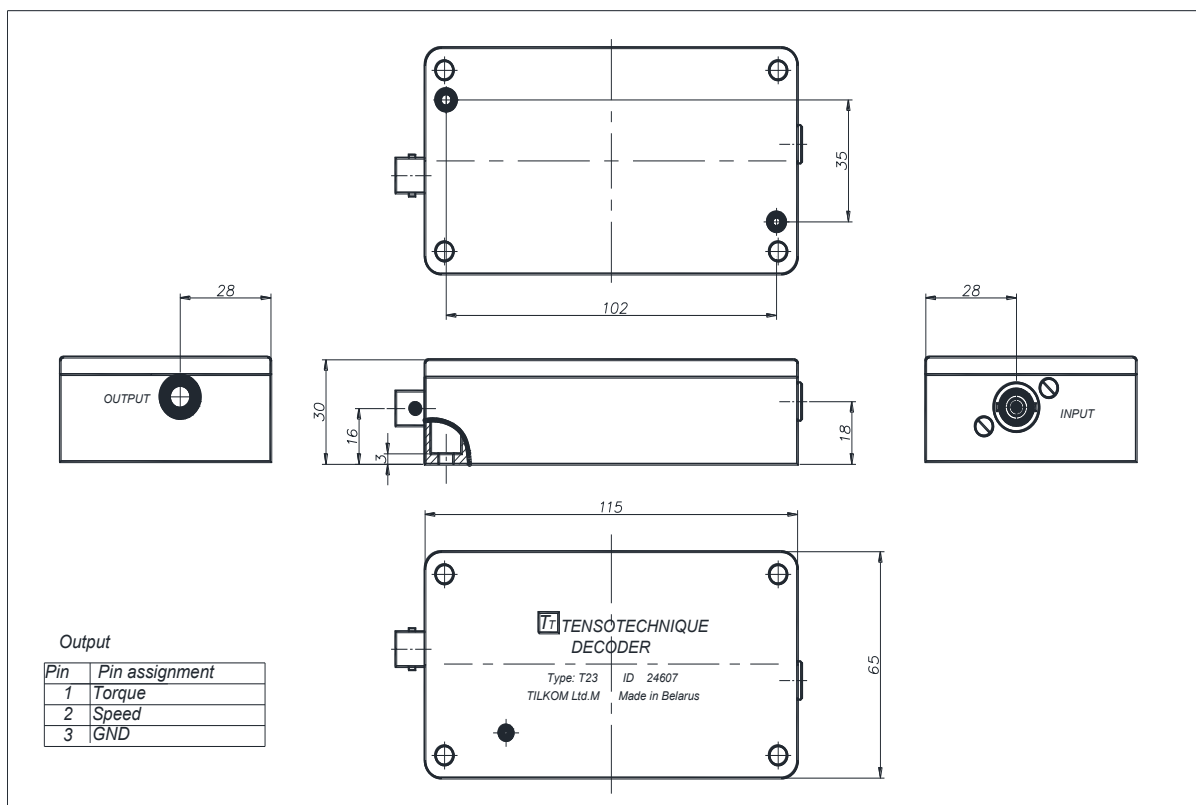|	
Flexible torsionally rigid couplings MB	2
T40 display unit	1
T41 display unit (plastic case)	1
T50 display unit (oversize unit for long distances 50 – 70 m)	1
T24 analogue decoder (output ($\pm$ 5 V; $\pm$ 10 V or 4 … 20 mA)	1
T23 frequency decoder (output 10 kHz $\pm$ 5 kHz or 60 kHz $\pm$ 30 kHz)	1
T45 digital decoder (output USB 2.0)	1
T42 digital decoder (output RS 232)	1
T46 digital decoder (output RS 485)	1
T37 digital decoder (output Ethernet)	1
AC/DC adapter 12 … 24 V	1

T42, T45, T46 digital decoders. Dimensions in mm.

T24 analogue decoder. Dimensions in mm.

28

102

35

30

16

3

18

28

OUTPUT

INPUT

115

Output

Pin	Pin assignment
1	Torque
2	Speed
3	GND

Tт TENSOTECHNIQUE
DECODER
Type: T24   № 24607
TILKOM Ltd   Made in Belarus

65

T23 frequency decoder. Dimensions in mm.

28

102

35

30

16

3

18

28

OUTPUT

INPUT

115

Output

Pin	Pin assignment
1	Torque
2	Speed
3	GND

Tт TENSOTECHNIQUE
DECODER
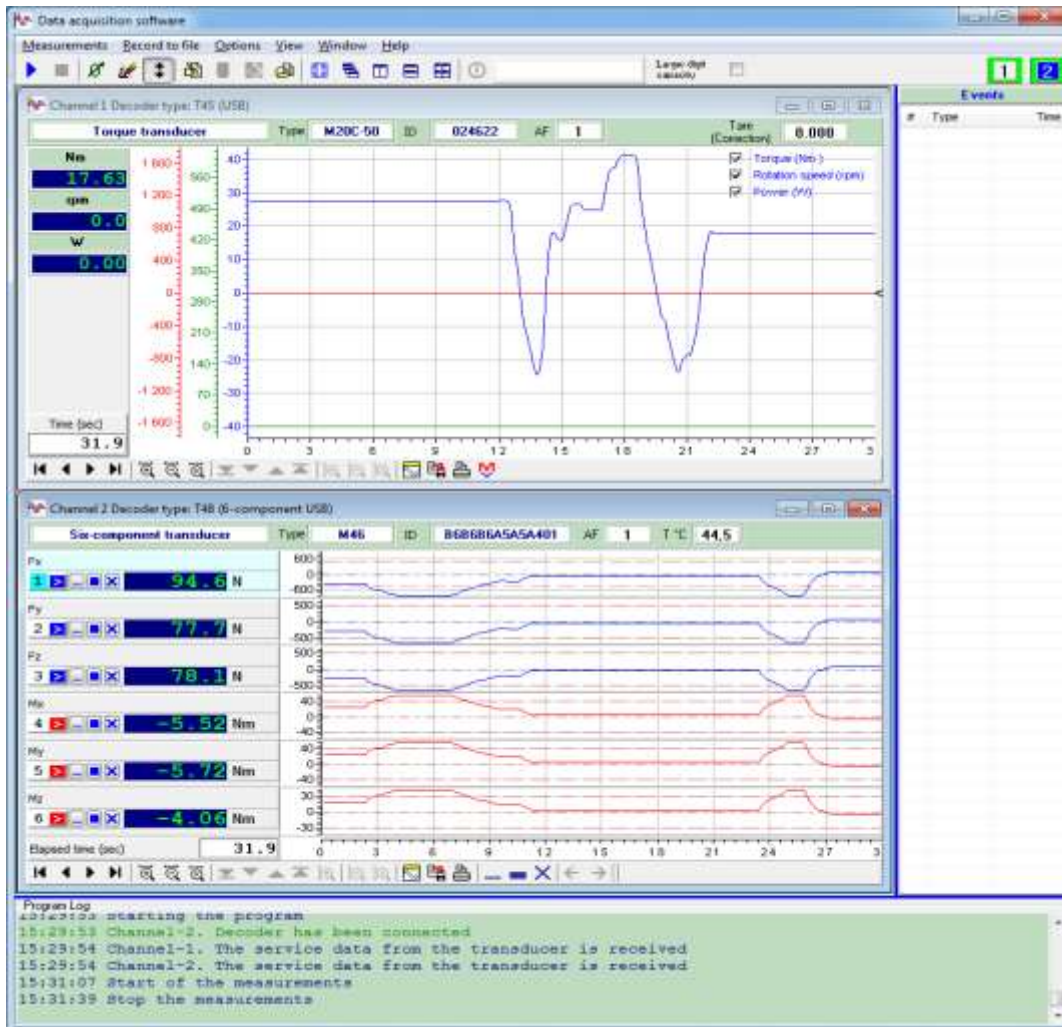*Type: T23   ID   24607*
TILKOM Ltd.M   Made in Belarus

65

Software

The Windows-based software for M26 transducer enables the acquisition of measurement data and its storage in a file. The measurements can be visualized on-line with digital indicators and x/y displays. A text file is provided for storage so that the measurement data can be read and processed by other programs.
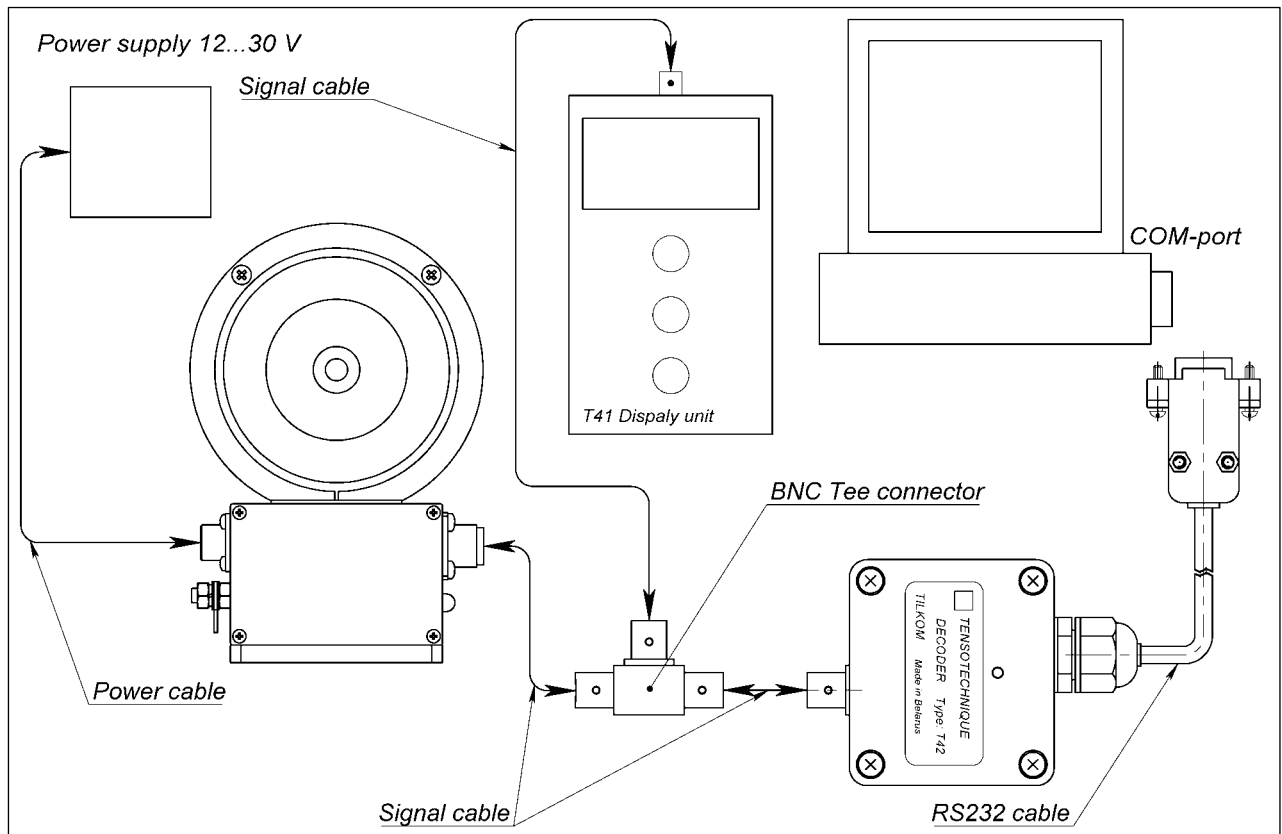
The software provides auto identification of type of transducer, serial number, measuring range.

Features: support up to 8 (eight) transducers simultaneously, mathematical computation of mechanical power, rotation speed and torque, measurement signal filter and signal averaging, zero shift adjustment, fast records, slow records, scaling of x-axis and y-axis, digital indicator of high resolution, real-time display of measured values, their storage and playback. The software has a function of recording data without averaging at the maximum speed of receiving data; this enables you to analyze the dynamic processes. The software is also available in English.
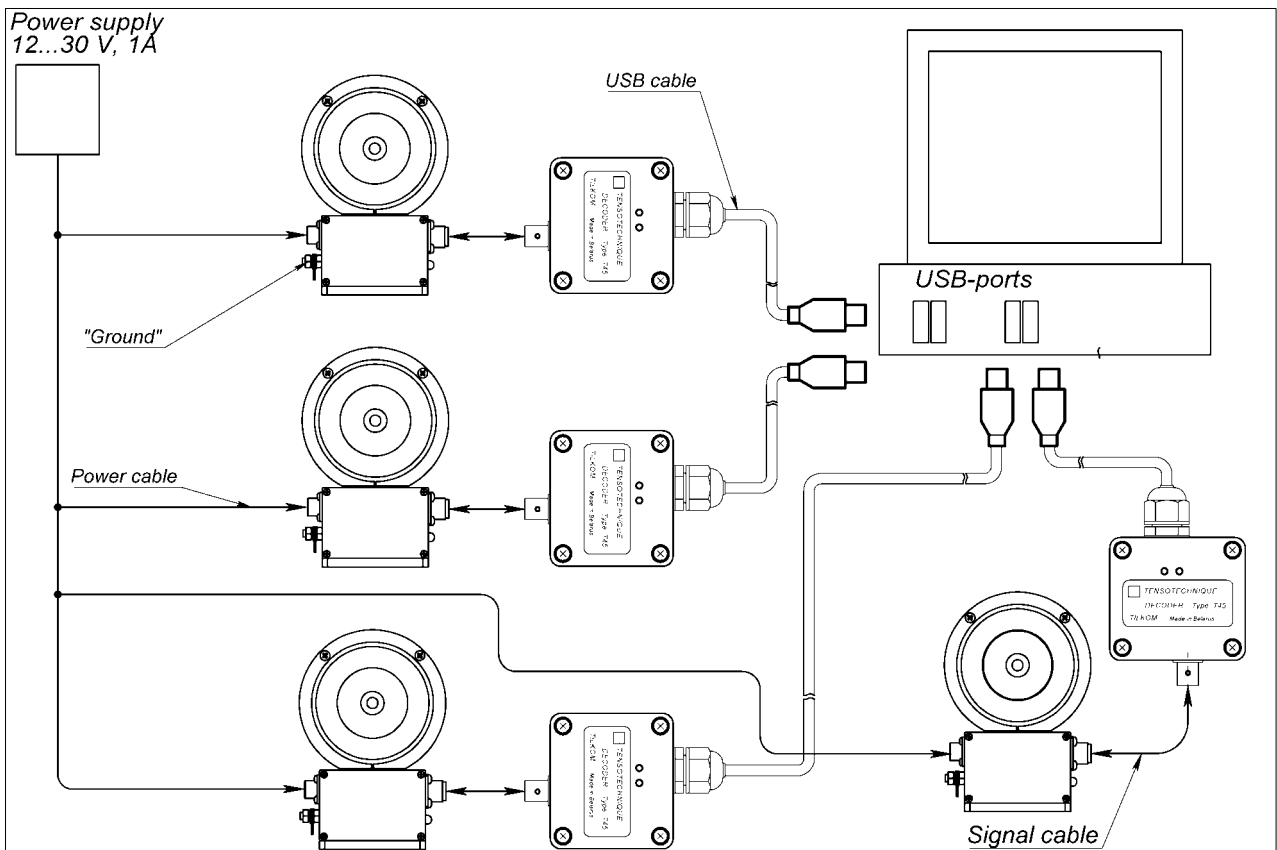
Electrical connections

1. Simultaneous use of a PC and the T40 (T41) display unit.

Power supply 12...30 V

Signal cable

COM-port

T41 Dispaly unit

BNC Tee connector

Power cable

Signal cable

RS232 cable

TENSOTECHNIQUE DECODER Type: T42 TILKOM Made in Belarus

2. Connection to USB-ports

Power supply
12...30 V, 1A

USB cable

"Ground"

Power cable

USB-ports

Signal cable

3. Connection to the T24 analogue decoder (± 5 V, ± 10 V or 4…20 mA)

Power supply
12...30 V, 1A

Power cable

TENSOTECHNIQUE
DECODER
Type: T24/5B
S/N 046004

Made in Belarus
TILKOM
07.2013

"Ground"

Signal cable
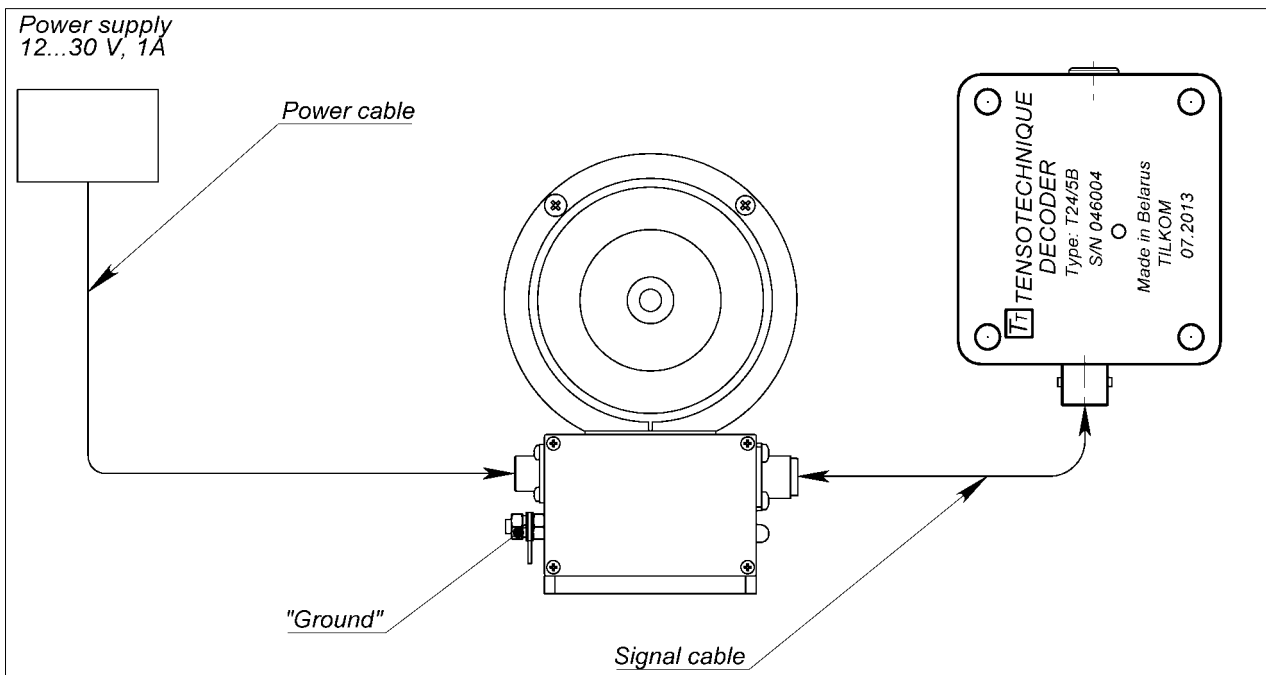
4. Connection to the T46 (RS485) decoder

Signal cable

TENSOTECHNIQUE
DECODER   Type: T46
TILKOM   Made in Belarus

Power supply 12...30V

Power cable

Bypass mode

Terminating mode
R ⩾ 100 Ohm

1 2 3 4 5 6
B ⊥ A B ⊥ A

1 2 3 4 5 6
B ⊥ A B ⊥ A

R denotes characteristic impedance

"Ground"
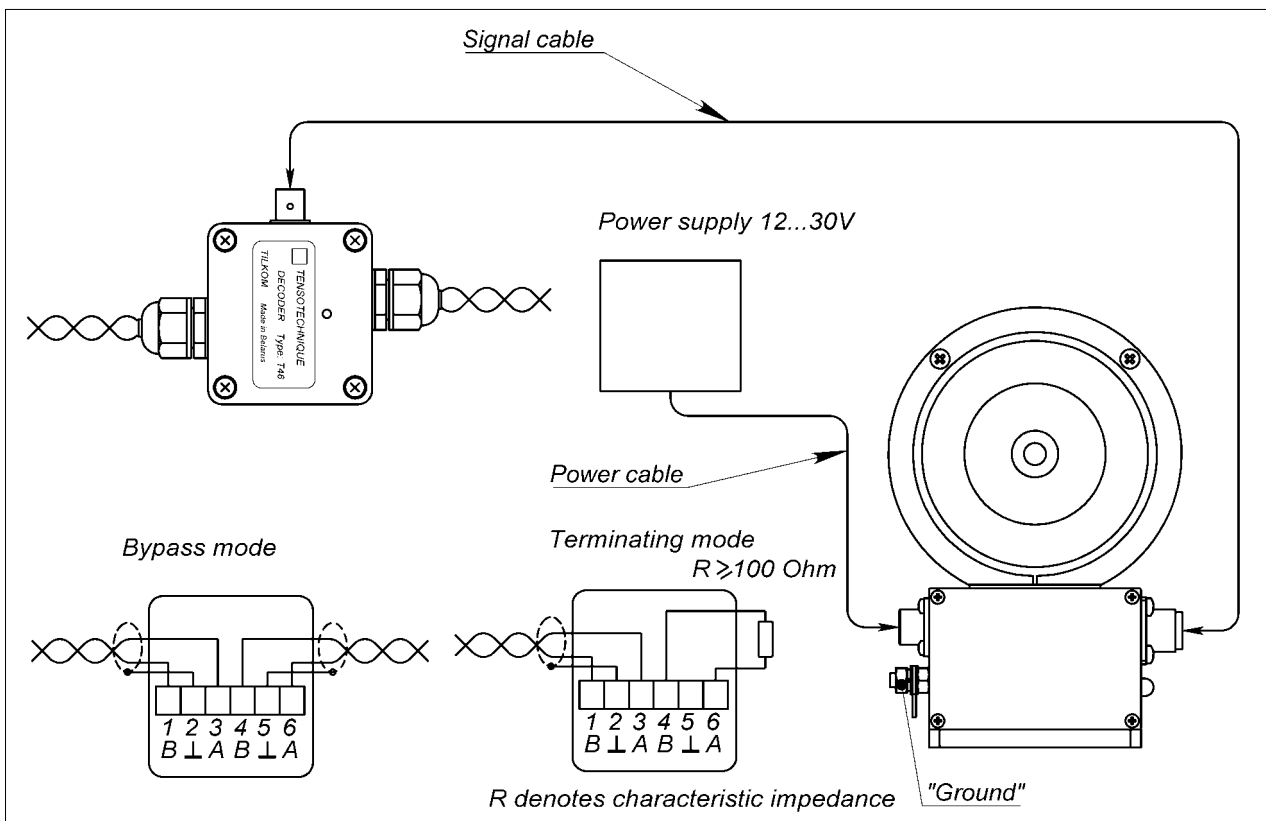
5. Connection to the T40 display unit

Power supply 12...30 V

Power cable

"Ground"

TENSOTECHNIQUE

▷ 0 ◁   FILTER   MODE

Input

T40 Display unit

Made in Belarus

Signal cable

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