USB Communication Converter

COM-K2 *Instruction Manual*

IMR01Z02-E2

Thank you for purchasing this RKC product. In order to achieve maximum performance and ensure proper operation of your new instrument, carefully read all the instructions in this manual. Please place the manual in a convenient location for easy reference.

CAUTION

- This is a Class A instrument. In a domestic environment, this instrument may cause radio interference, in which case the user may be required to take additional measures.
- All precautions described in this manual should be taken to avoid damage to the instrument or equipment.

NOTICE

- This manual assumes that the reader has a fundamental knowledge of the principles of electricity, process control, computer technology and communications.
- The figures, diagrams and numeric values used in this manual are only for explanation purpose.
- RKC is not responsible for any damage or injury that is caused as a result of using this instrument, instrument failure or indirect damage.
- RKC is not responsible for any damage and/or injury resulting from the use of instruments made by imitating this instrument.
- Periodic maintenance is required for safe and proper operation of this instrument. Some components have a limited service life, or characteristics that change over time.
- Every effort has been made to ensure accuracy of all information contained herein. RKC makes no warranty expressed or implied, with respect to the accuracy of the information. The information in this manual is subject to change without prior notice.
- No portion of this document may be reprinted, modified, copied, transmitted, digitized, stored, processed or retrieved through any mechanical, electronic, optical or other means without prior written approval from RKC.

1. PRODUCT CHECK

Before using this product, check each of the following:
- Model code
- Check that all of the accessories delivered are complete.
- Check that there are no scratch or breakage in external appearance (case, terminal, etc).

COM−K2−□

□: Loader communication cable (Optional)

N: None

1: W-BV-01 cable (1.5 m) for loader communication

3: W-BV-03 cable (1.5 m) for loader communication

4: W-BV-05 cable (1.5 m) for loader communication

Loader port shape

Accessories

USB cable (1 m)	1
Instruction Manual (IMR01Z02-E2)	1

📖 **The connector on the instrument side of the W-BV-05 cable is not USB-compatible. Do not connect this cable to any USB devices.**

📖 The USB device driver can be downloaded from the official RKC website: http://www.rkcinst.com/english/soft/index.asp

📖 If any of the products are missing, damaged, or if your manual is incomplete, please contact RKC sales office or the agent.

2. PARTS DESCRIPTION

USB connector

RS-485/RS-422A communication connector

Display lamp

Loader communication connector
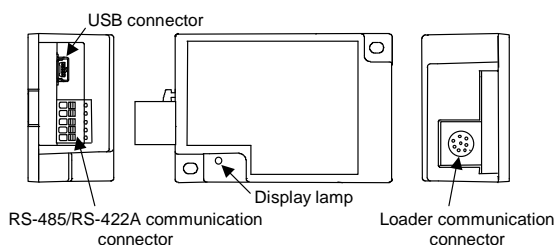
Display lamp

Loader power *	Communication state	Lamp state
Supply the power	Standby/during data receive	A orange lamp turns on
	During data send	A orange lamp is flashing
Power not supplied	Standby/during data receive	A green lamp turns on
	During data send	A green lamp is flashing

* The power is supplied from the loader communication connector of the controller (RKC product).

3. MOUNTING

■ Mounting Cautions

(1) Use this instrument within the following ambient temperature and ambient humidity.
- Allowable ambient temperature: −10 to +50 °C
- Allowable ambient humidity: 5 to 95 %RH
  (Absolute humidity: MAX. W. C 29.3 g/m^3 dry air at 101.3 kPa)

(2) Avoid the following when selecting the mounting location:
- Rapid changes in ambient temperature, which may cause condensation.
- Corrosive or inflammable gases.
- Direct vibration or shock to the mainframe.
- Water, oil, chemicals, vapor or steam splashes.
- Excessive induction noise, static electricity, magnetic fields or noise.
- Direct air flow from an air conditioner.
- Exposure to direct sunlight.
- Excessive heat accumulation.

(3) Mounting consideration
- Install the module 200 mm away from the main power line.
- Ensure at least 50 mm space on top and bottom of the control unit for maintenance and operating environment.
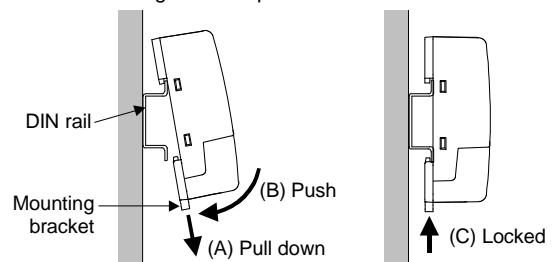
■ Dimensions

(Unit: mm)
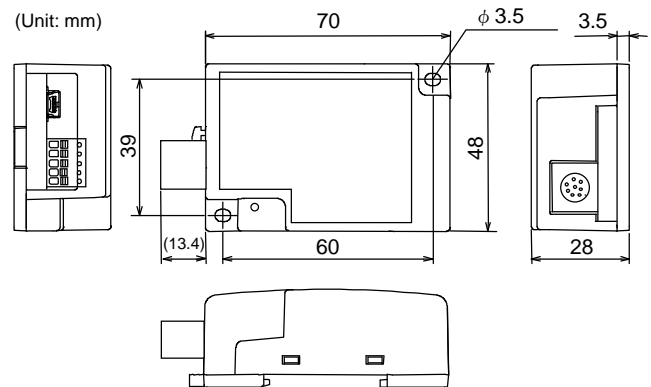
■ DIN rail Mounting

1. Pull down the mounting bracket at the bottom of the module (A). Attach the hooks on the top of the module to the DIN rail and push the lower section into place on the DIN rail (B).
2. Slide the mounting bracket up to secure the module to the DIN rail.

DIN rail

Mounting bracket

(B) Push

(A) Pull down

(C) Locked

■ Panel Mounting

Mount COM-K directly on the panel with screws which are inserted in the mounting holes of the top and bottom mounting brackets.

Recommended tightening torque: 0.3 N·m (3 kgf·cm)

📖 The customer needs to provide the M3 size screws. Select the screw length that matches the mounting panel.
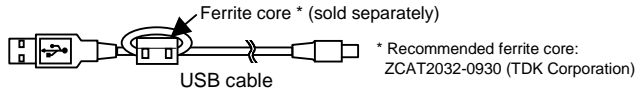
Mounting dimensions

(Unit: mm)

2-M3

RKC® **RKC INSTRUMENT INC.**
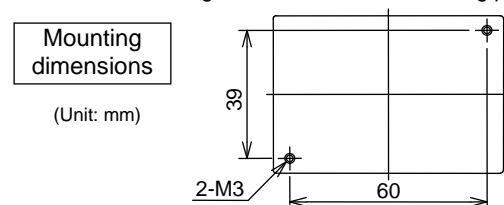
4. WIRING

> ⚠️ **WARNING**
>
> To prevent electric shock or instrument failure, turn off the power before connecting or disconnecting the instrument and peripheral equipment.
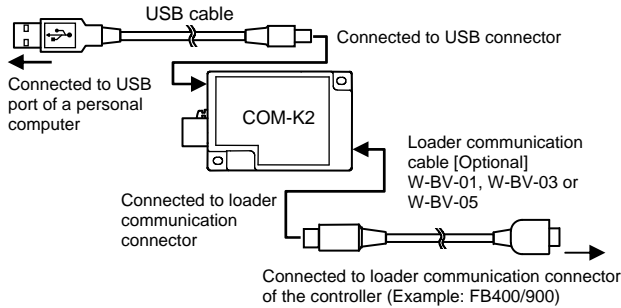
■ Wiring Cautions

- To avoid noise induction, keep communication signal wire away from instrument power line, load lines and power lines of other electric equipment.
- If the personal computer is easily affected by noise, use the ferrite core in the USB cable. For an installation position of a ferrite core, please refer to the following figure.

Ferrite core * (sold separately)
USB cable
* Recommended ferrite core: ZCAT2032-0930 (TDK Corporation)

■ Method to connect

(1) For loader communication

USB cable
Connected to USB connector
Connected to USB port of a personal computer
COM-K2
Loader communication cable [Optional] W-BV-01, W-BV-03 or W-BV-05
Connected to loader communication connector
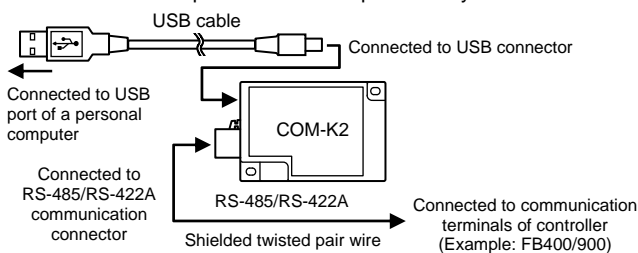Connected to loader communication connector of the controller (Example: FB400/900)

- W-BV-01 or W-BV-05 loader communication cable:
  COM-K2 can supply USB bus power to the controller whether or not it is powered on or off.
  (When connecting an RZ series controller, the controller must be powered on.)
  W-BV-01: COM-K2 starts supplying USB bus power to the controller two seconds after the cable is connected.
  W-BV-05: COM-K2 starts supplying USB bus power to the controller as soon as the cable is connected.
- W-BV-03 loader communication cable:
  Controller should be always ON to use with COM-K2.

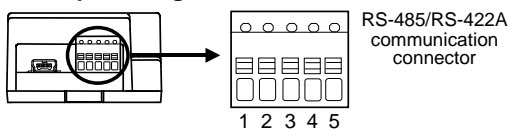Display of controller (RKC product) being powered by COM-K2:

FB series, RB series etc.	Displays "----" at the PV/SV monitor display.
PF900/901	Lights all State monitor lamps: RESET, RUN, FIX, MAN, HOLD, STEP.SET and PTN.END. Other displays and lamps are OFF.
FZ series	Displays "LoAd" at the PV monitor display. Displays "-----" at the SV monitor display.

(2) For RS-485/RS-422A communication

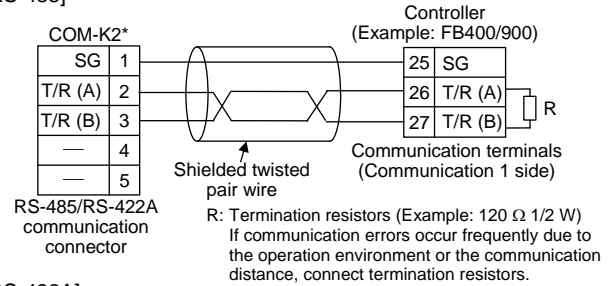The shielded twisted pair wire must be provided by the customer.

USB cable
Connected to USB connector
Connected to USB port of a personal computer
COM-K2
Connected to RS-485/RS-422A communication connector
RS-485/RS-422A
Shielded twisted pair wire
Connected to communication terminals of controller (Example: FB400/900)

● Connector pin configuration

RS-485/RS-422A communication connector
1 2 3 4 5

[RS-485]

Pin No.	Signal name	Symbol
1	Signal ground	SG
2	Send data/ Receive data	T/R (A)
3	Send data/ Receive data	T/R (B)
4 *	Unused	—
5 *	Unused	—

[RS-422A]

Pin No.	Signal name	Symbol
1	Signal ground	SG
2	Send data	T (A)
3	Send data	T (B)
4	Receive data	R (A)
5	Receive data	R (B)

* Do not connect wires to 4 and 5 pins. Malfunction may result.

● Connection diagram

[RS-485]

COM-K2*
SG	1
T/R (A)	2
T/R (B)	3
—	4
—	5
RS-485/RS-422A communication connector

Controller (Example: FB400/900)
25	SG
26	T/R (A)
27	T/R (B)
Communication terminals (Communication 1 side)
R

Shielded twisted pair wire

R: Termination resistors (Example: 120 Ω 1/2 W)
If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors.

[RS-422A]

COM-K2*
SG	1
T (A)	2
T (B)	3
R (A)	4
R (B)	5
RS-485/RS-422A communication connector

Controller (Example: FB400/900)
25	SG
26	T (A)
27	T (B)
28	R (A)
29	R (B)
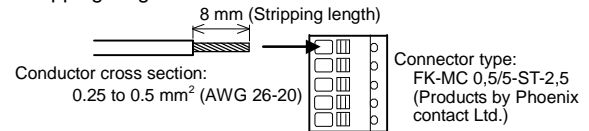Communication terminals (Communication 1 side)

Shielded twisted pair wire

* The termination resistor is built into the COM-K2.

● Attention in connector wiring

- The lead wires use the stranded wire.
- Use the stranded wire from size 0.25 to 0.5 mm^2 (AWG 26-20).
- Stripping length is as follows.

8 mm (Stripping length)

Conductor cross section: 0.25 to 0.5 mm^2 (AWG 26-20)

Connector type: FK-MC 0,5/5-ST-2,5 (Products by Phoenix contact Ltd.)

■ Installation of USB device driver

For installing the USB driver, refer to the following instruction manuals. The manuals can be downloaded from the official RKC website.

- Installation of USB driver for COM-K2 communication converter (IMT01D13-E□)
- USB Communication Converter COM-K2 USB Driver Installation Manual (IMT01D12-E□)

5. SPECIFICATIONS

USB function

Interface:	Based on USB Ver. 2.0
Communication speed:	Full speed (12 Mbps)
Connection:	Connected by universal USB cable (Mini-B connector)
Power source method:	Bus power (The power is supplied from the USB port on the personal computer side)
Compatible OS:	Windows XP */Windows Vista */Windows 7 */Windows 8 */Windows 8.1 *

*32-bit/64-bit

Communication function

Interface:	Based on RS-485, EIA standard / Based on RS-422A, EIA standard
Connection method:	2-wire system, half-duplex multi-drop connection (RS-485) / 4-wire system, half-duplex multi-drop connection (RS-422A)
Synchronous method:	Half-duplex start-stop synchronous type
Communication speed:	2400 bps, 4800 bps, 9600 bps, 19200 bps, 38400 bps
Data bit configuration:	Start bit: 1 / Data bit: 7 or 8 / Parity bit: Without, Odd or Even / Stop bit: 1 or 2
Protocol:	Protocol depends on application of the personal computer side
Number of connecting controllers	Maximum 31 controllers (RS-485, RS-422A)
Termination resistor:	Built-in termination resistor (120 Ω)

General specifications

Power supply voltage:	5 V DC ±5 % (Supplied by USB bus cable)
Current consumption:	150 mA max. (Loader communication) / 60 mA max. (RS-485/RS-422A communication)
Allowable ambient temperature range:	−10 to +50 °C
Allowable ambient humidity range:	5 to 95 %RH (Non condensing) Absolute humidity: MAX.W.C 29.3 g/m^3 dry air at 101.3 kPa
Weight:	Approx. 40 g (Instrument only)