Ethernet [Modbus/TCP] Communication Converter

COM-JL [For FB100/FB400/FB900] Communication Data List

IMR01Y21-E3

This manual describes the communication data of the COM-JL. For the installation, the detail handling procedures and various function settings, please refer to the following separate manuals.

- COM-JL [For FB100/FB400/FB900] Installation Manual (IMR01Y05-E□): Attached to the product
- COM-JL [For FB100/FB400/FB900] Quick Instruction Manual (IMR01Y15-E□): Attached to the product
- COM-JL [For FB100/FB400/FB900] Instruction Manual (IMR01Y10-E□): Separate volumes (Download or sold separately)

The above manuals can be downloaded from our website:
URL: http://www.rkcinst.com/english/manual_load.htm

1. REFERENCE TO DATA MAP

(1) (2) (3) (4) (5) (6)

Name	Register address HEX	Register address DEC	Number of data	Attribute	Data range	Factory set value
Measured value (PV)	0000	0	31	RO	Input scale low to Input scale high	—
Current transformer 1 (CT1) input value monitor	0020	32	31	RO	CTL-6-P-N: 0.0 to 30.0A CTL-12-S56-10L-N: 0.0 to 100.0 A	—
Current transformer 2 (CT2) input value monitor	0040	64	31	RO		—

(1) Name: Name of communication data

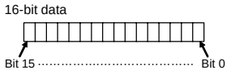
(2) Register address: The head address of each item (Vacant numbers become unused)
HEX: Hexadecimal
DEC: Decimal

(3) Number of data: Number of data points
The address in the register address column will be the head address, and the number of data items is indicated in this column.

(4) Attribute: RO: Read only data
(Host computer [Client] ← Controller [Server])
R/W: Read and Write data
(Host computer [Client] ↔ Controller [Server])

(5) Data range: Read or write range of communication data

Bit image of bit data is as follows.



(6) Factory set value: Factory set value of communication data

Reading data of unused setting items are factory set values. Unused setting items may not be written. To do so will not cause an error however and data will be rejected.

2. DATA MAP

The data map shows data which can be used for communication between the host computer [Client] and controller (FB100/400/900) [Server].

2.1 FB100/400/900 Communication Data

Name	Register address HEX	Register address DEC	Number of data	Attribute	Data range	Factory set value
Measured value (PV)	0000	0	31	RO	Input scale low to Input scale high	—
Current transformer 1 (CT1) input value monitor	0020	32	31	RO	CTL-6-P-N: 0.0 to 30.0A CTL-12-S56-10L-N: 0.0 to 100.0 A	—
Current transformer 2 (CT2) input value monitor	0040	64	31	RO		—
Set value (SV) monitor	0060	96	31	RO	Setting limiter low to Setting limiter high	—
Remote setting (RS) input value monitor	0080	128	31	RO	Setting limiter low to Setting limiter high	—
Burnout state monitor	00A0	160	31	RO	0: OFF 1: ON	—
Burnout state monitor of feedback resistance input	00C0	192	31	RO	0: OFF 1: ON	—
Event 1 state monitor	00E0	224	31	RO	0: OFF 1: ON	—
Event 2 state monitor	0100	256	31	RO		—
Event 3 state monitor	0120	288	31	RO		—
Event 4 state monitor	0140	320	31	RO		—
Heater break alarm 1 (HBA1) state monitor	0160	352	31	RO	0: OFF 1: ON	—
Heater break alarm 2 (HBA2) state monitor	0180	384	31	RO		—
Manipulated output value (MV1) monitor [heat-side]	01A0	416	31	RO	PID control or Heat/Cool PID control: −5.0 to +105.0 % Position proportioning control with feedback resistance (FBR) input: 0.0 to 100.0 %	—
Manipulated output value (MV2) monitor [cool-side]	01C0	448	31	RO	−5.0 to +105.0 %	—
Error code	01E0	480	31	RO	Bit data Bit 0: Adjustment data error Bit 1: Back-up error Bit 2: A/D conversion error Bit 3 to Bit 4: Unused Bit 5: Custom data error Bit 6: Unused Bit 7: Watchdog timer error Bit 8: Stack overflow Bit 9 to Bit 10: Unused Bit 11: Program error (busy) Bit 12 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 4095]	—
Digital input (DI) state monitor	0200	512	31	RO	Bit data Bit 0: DI1 Bit 4: DI5 Bit 1: DI2 Bit 5: DI6 [1] Bit 2: DI3 Bit 6: DI7 [1] Bit 3: DI4 Bit 7 to Bit 15: Unused Data 0: Open 1: Closed [Decimal number: 0 to 127]	—
Output state monitor	0220	544	31	RO	Bit data Bit 0: OUT1 Bit 4: DO3 [1] Bit 1: OUT2 Bit 5: DO4 [1] Bit 2: DO1 Bit 6 to Bit 15: Unused Bit 3: DO2 Data 0: OFF 1: ON [Decimal number: 0 to 63]	—
Operation mode state monitor	0240	576	31	RO	Bit data Bit 0: STOP Bit 1: RUN Bit 2: Manual mode [2] Bit 3: Remote mode [2] Bit 4 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 15]	—
Memory area soak time monitor	0260	608	31	RO	0 to 11999 seconds or 0 to 5999 minutes	—
Integrated operating time monitor	0280	640	31	RO	0 to 19999 hours	—
Holding peak value ambient temperature monitor	02A0	672	31	RO	−10.0 to +100.0 °C	—
Power feed forward input value monitor [1]	02C0	704	31	RO	0.0 to 160.0 % Display in the percentage of the load voltage (rated value).	—
Backup memory state monitor	02E0	736	31	RO	0: The content of the backup memory does not coincide with that of the RAM. 1: The content of the backup memory coincides with that of the RAM.	—
Unused	0300 ⋮ 03FF	768 ⋮ 1023	31 ⋮ 31	—	—	—

[1] Unused on the FB100.
[2] During operation in Manual mode, the Manual mode of the Operation mode state monitor is set to the "1: ON" state and the Remote mode of the same monitor is se to the "0: OFF" state even if the parameter, Remote/Local transfer is set to "1: Remote mode."

Name	Register address HEX	Register address DEC	Number of data	Attribute	Data range	Factory set value
PID/AT transfer	0400	1024	31	R/W	0: PID control 1: Autotunig (AT) * * Automatically reverts to 0 after Autotuning ends.	0
Auto/Manual transfer	0420	1056	31	R/W	0: Auto mode 1: Manual mode	0
Remote/Local transfer	0440	1088	31	R/W	0: Local mode 1: Remote mode	0
RUN/STOP transfer	0460	1120	31	R/W	0: RUN (control start) 1: STOP (control stop)	0
Memory area transfer	0480	1152	31	R/W	1 to 8	1
Interlock release	04A0	1184	31	R/W	0: Interlock release (Execution/State) 1: Interlock state "1" is for monitoring the interlocked state. Under this condition, do not write "1."	0
Event 1 set value	04C0	1216	31	R/W	Deviation: −Input span to +Input span Process and set value: Input scale low to Input scale high Manipulated output value (MV1 or MV2): −5.0 to +105.0 %	50
Event 2 set value	04E0	1248	31	R/W		50
Event 3 set value	0500	1280	31	R/W		50
Event 4 set value	0520	1312	31	R/W		50
Control loop break alarm (LBA) time	0540	1344	31	R/W	0 to 7200 seconds (0: Unused)	480
LBA deadband	0560	1376	31	R/W	0 to Input span	0
Set value (SV)	0580	1408	31	R/W	Setting limiter low to Setting limiter high	TC/RTD inputs: 0 V/I inputs: 0.0
Proportional band [heat-side]	05A0	1440	31	R/W	TC/RTD inputs: 0 (0.0, 0.00) to Input span (Unit: °C [°F]) [1] Voltage (V)/Current (I) inputs: 0.0 to 1000.0 % of Input span (0, 0.0, 0.00: ON/OFF action)	TC/RTD inputs: 30 V/I inputs: 30.0
Integral time [heat-side]	05C0	1472	31	R/W	PID control or Heat/Cool PID control: 0 to 3600 seconds or 0.0 to 1999.9 seconds [2] (0, 0.0: PD action) [3] Position proportioning control: 1 to 3600 seconds or 0.1 to 1999.9 seconds [2]	240
Derivative time [heat-side]	05E0	1504	31	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds [2] (0, 0.0: PI action)	60
Control response parameter	0600	1536	31	R/W	0: Slow 1: Medium 2: Fast [When the P or PD action is selected, this setting becomes invalid.]	PID control, Position proportioning control: 0 Heat/Cool PID control: 2
Proportional band [cool-side]	0620	1568	31	R/W	TC/RTD inputs: 1 (0.1, 0.01) to Input span (Unit: °C [°F]) [1] Voltage (V)/Current (I) inputs: 0.1 to 1000.0 % of Input span	TC/RTD inputs: 30 V/I inputs: 30.0
Integral time [cool-side]	0640	1600	31	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds [2] (0, 0.0: PD action) [3]	240
Derivative time [cool-side]	0660	1632	31	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds [2] (0, 0.0: PI action)	60
Overlap/Deadband	0680	1664	31	R/W	TC/RTD inputs: −Input span to +Input span (Unit:°C [°F]) Voltage (V)/Current (I) inputs: −100.0 to +100.0 % of Input span Minus (−) setting results in Overlap. However, the overlapping range is within the proportional range.	0
Manual reset	06A0	1696	31	R/W	−100.0 to +100.0 %	0.0
Setting change rate limiter (up)	06C0	1728	31	R/W	0 to Input span/unit time * (0: Unused)	0
Setting change rate limiter (down)	06E0	1760	31	R/W	* Unit time: 60 seconds (factory set value)	0
Area soak time	0700	1792	31	R/W	0 to 11999 seconds or 0 to 5999 minutes	0:00
Link area number	0720	1824	31	R/W	0 to 8 (0: No link)	0
Heater break alarm 1 (HBA1) set value	0740	1856	31	R/W	CTL-6-P-N: 0.0 to 30.0 A (0.0: Unused) CTL-12-S56-10L-N: 0.0 to 100.0 A (0.0: Unused)	0.0
Heater break determination point 1	0760	1888	31	R/W	0.0 to 100.0 % of HBA1 set value (0.0: Heater break determination is invalid)	30.0
Heater melting determination point 1	0780	1920	31	R/W	0.0 to 100.0 % of HBA1 set value (0.0: Heater melting determination is invalid)	30.0
Heater break alarm 2 (HBA2) set value	07A0	1952	31	R/W	CTL-6-P-N: 0.0 to 30.0 A (0.0: Unused) CTL-12-S56-10L-N: 0.0 to 100.0 A (0.0: Unused)	0.0

[1] Varies with the setting of the Decimal point position selection.
[2] Varies with the setting of the Integral/Derivative time decimal point position selection.
[3] When the heat-side or cool-side integral time is set to zero for Heat/Cool PID control, PD control will take place for both heat-side and cool-side.

Name	Register address HEX	Register address DEC	Number of data	Attribute	Data range	Factory set value
Heater break determination point 2	07C0	1984	31	R/W	0.0 to 100.0 % of HBA2 set value (0.0: Heater break determination is invalid)	30.0
Heater melting determination point 2	07E0	2016	31	R/W	0.0 to 100.0 % of HBA2 set value (0.0: Heater melting determination is invalid)	30.0
PV bias	0800	2048	31	R/W	−Input span to + Input span	0
PV digital filter	0820	2080	31	R/W	0.0 to 100.0 seconds (0.0: Unused)	0.0
PV ratio	0840	2112	31	R/W	0.500 to 1.500	1.000
PV low input cut-off	0860	2144	31	R/W	0.00 to 25.00 % of input span	0.00
RS bias	0880	2176	31	R/W	−Input span to + Input span	0
RS digital filter	08A0	2208	31	R/W	0.0 to 100.0 seconds (0.0: Unused)	0.0
RS ratio	08C0	2240	31	R/W	0.001 to 9.999	1.000
Proportional cycle time [heat-side]	08E0	2272	31	R/W	0.1 to 100.0 seconds M: Relay contact output V: Voltage pulse output T: Triac output D: Open collector output	M output: 20.0 V, T, D output: 2.0
Proportional cycle time [cool-side]	0900	2304	31	R/W		
Manual manipulated output value	0920	2336	31	R/W	PID control: Output limiter low [MV1] to Output limiter high [MV1] Heat/cool PID control: −Output limiter high [MV2] to +Output limiter high [MV1] (−105.0 to +105.0 %) Position proportioning control with feedback resistance (FBR) input: Output limiter low [MV1] to Output limiter high [MV1]	0.0
Set lock level	0940	2368	31	R/W	Bit data Bit 0: Lock only setting items other than SV and event set value (EV1 to EV4) Bit 1: Lock only event set value (EV1 to EV4) Bit 2: Lock only set value (SV) Bit 3 to Bit 15: Unused Data 0: Unlock 1: Lock [Decimal number: 0 to 7]	0
STOP display [a]	0960	2400	31	R/W	0: SToP is displayed on the PV display 1: SToP is displayed on the SV display	1
Bar graph display [a]	0980	2432	31	R/W	0: No display 4: Deviation value 1: MV 5: CT1 input value 2: PV 6: CT2 input value 3: SV monitor	1
Bar graph display resolution [a]	09A0	2464	31	R/W	1 to 100 digit/dot The resolution can be changed when the bar graph display was set to deviation value or CT input value.	100
Direct key 1 [a] [FB100] Direct key selection	09C0	2496	31	R/W	[FB100] 0: Unused 1: Used [FB400/900] 0: Unused 1: A/M transfer key (Type 1, Type 2)	1
Direct key 2 [a, b]	09E0	2528	31	R/W	0: Unused 1: MONI key (For type 1) or R/L transfer key (For type 2)	1
Direct key 3 [a, b]	0A00	2560	31	R/W	0: Unused 1: AREA key (For type 1) or RUN/STOP transfer key (For type 2)	1
Direct key type [a]	0A20	2592	31	R/W	[FB100] 1: Auto/Manual transfer 2: Monitor 3: Memory area transfer 4: Remote/Local transfer 5: RUN/STOP transfer [FB400/900] 1: Type 1 2: Type 2	1
Engineering mode For the data, see the **COM-JL [For FB100/FB400/FB900] Instruction Manual (IMR01Y10-E□)**.						
Startup tuning (ST)	1960	6496	31	R/W	0: Startup tuning (ST) unused 1: Execute once * 2: Execute always * Automatically reverts to 0 after Startup tuning (ST) ends.	0
Engineering mode For the data, see the **COM-JL [For FB100/FB400/FB900] Instruction Manual (IMR01Y10-E□)**.						
Automatic temperature rise learning	1A20	6688	31	R/W	0: Unused 1: Learning * * Automatically reverts to 0 after automatic temperature rise learning ends.	1
Engineering mode For the data, see the **COM-JL [For FB100/FB400/FB900] Instruction Manual (IMR01Y10-E□)**.						

[a] The attribute becomes RO (Only reading data is possible) during RUN (control).
[b] Unused on the FB100.

2.2 Memory Area Data

The register addresses, 2000H to 22BFH are used for checking and changing each set value belonging to the memory area.

Name	Register address		Number of data	Attribute	Data range	Factory set value
	HEX	DEC				
Setting memory area number	2000	8192	31	R/W	1 to 8	1
Event 1 set value	2020	8224	31	R/W	Deviation: −Input span to +Input span Process and set value: Input scale low to Input scale high Manipulated output value (MV1 or MV2): −5.0 to +105.0 %	50
Event 2 set value	2040	8256	31	R/W		50
Event 3 set value	2060	8288	31	R/W		50
Event 4 set value	2080	8320	31	R/W		50
Control loop break alarm (LBA) time	20A0	8352	31	R/W	0 to 7200 seconds (0: Unused)	480
LBA deadband	20C0	8384	31	R/W	0 to Input span	0
Set value (SV)	20E0	8416	31	R/W	Setting limiter low to Setting limiter high	TC/RTD inputs: 0 V/I inputs: 0.0
Proportional band [heat-side]	2100	8448	31	R/W	TC/RTD inputs: 0 (0.0, 0.00) to Input span (Unit: °C [°F]) [1] Voltage (V)/Current (I) inputs: 0.0 to 1000.0 % of Input span (0, 0.0, 0.00: ON/OFF action)	TC/RTD inputs: 30 V/I inputs: 30.0
Integral time [heat-side]	2120	8480	31	R/W	PID control or Heat/Cool PID control: 0 to 3600 seconds or 0.0 to 1999.9 seconds [2] (0, 0.0: PD action) [3] Position proportioning control: 1 to 3600 seconds or 0.1 to 1999.9 seconds [2]	240
Derivative time [heat-side]	2140	8512	31	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds [2] (0, 0.0: PI action)	60
Control response parameter	2160	8544	31	R/W	0: Slow 1: Medium 2: Fast [When the P or PD action is selected, this setting becomes invalid.]	PID control, Position proportioning control: 0 Heat/Cool PID control: 2
Proportional band [cool-side]	2180	8576	31	R/W	TC/RTD inputs: 1 to Input span, 0.1 to Input span or 0.01 to Input span (Unit: °C [°F]) [1] Voltage (V)/Current (I) inputs: 0.1 to 1000.0 % of Input span	TC/RTD inputs: 30 V/I inputs: 30.0
Integral time [cool-side]	21A0	8608	31	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds [2] (0, 0.0: PD action) [3]	240
Derivative time [cool-side]	21C0	8640	31	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds [2] (0, 0.0: PI action)	60
Overlap/Deadband	21E0	8672	31	R/W	TC/RTD inputs: −Input span to +Input span (Unit:°C [°F]) Voltage (V)/Current (I) inputs: −100.0 to +100.0 % of Input span Minus (−) setting results in Overlap. However, the overlapping range is within the proportional range.	0
Manual reset	2200	8704	31	R/W	−100.0 to +100.0 %	0.0
Setting change rate limiter (up)	2220	8736	31	R/W	0 to Input span/unit time * (0: Unused)	0
Setting change rate limiter (down)	2240	8768	31	R/W	* Unit time: 60 seconds (factory set value)	0
Area soak time	2260	8800	31	R/W	0 to 11999 seconds or 0 to 5999 minutes	0:00
Link area number	2280	8832	31	R/W	0 to 8 (0: No link)	0
Unused	22A0	8864	32	—	—	—

[1] Varies with the setting of the Decimal point position selection.
[2] Varies with the setting of the Integral/Derivative time decimal point position selection.
[3] When the heat-side or cool-side integral time is set to zero for Heat/Cool PID control, PD control will take place for both heat-side and cool-side.

2.3 COM-JL Communication Data

The register addresses, FA00H (64000) or more are used for checking and changing each set value of the COM-JL.

: The value of this item should always be set to 0 (FB100/400/900).

♦: These items become valid by turning off the power of the COM-JL once, and then turning it on again after the settings are changed.

♣: This setting (factory set value: 32) causes each address to be shifted by 32 for each communication item in the FB100/400/900 Communication Data and Memory Area Data. **Therefore, exercise sufficient care if you change the setting as the data mappings will also change.**

Name	Register address		Number of data	Attribute	Data range	Factory set value
	HEX	DEC				
Unused	FA00 ⋮ FA07	64000 ⋮ 64007	1 ⋮ 1	—	—	—
COM-JL error code	FA08	64008	1	RO	Bit data Bit 0: Memory backup error Bit 1: RAM error Bit 2: Controller configuration error Bit 3: Unused Bit 4: Ethernet hardware error Bit 5 to Bit 15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 23]	—
Unused	FA09	64009	1	—	—	—
Number of connected controller in controller communication	FA0A	64010	1	RO	0 to 31	—
Number of connected channel in controller communication	FA0B	64011	1	RO	0 to 128	—
Action mode selection ♦	FA0C	64012	1	R/W	Bit data Bit 0: Address setting 0: Continuous setting 1: Free setting Bit 1 to Bit 15: Unused [Decimal number: 0 to 1]	Bit 0: 0 Bit 1 to 15: 0 [Decimal number: 0]
Number of connectable controller channels ♦ ♣	FA0D	64013	1	R/W	1 to 128	32
Transmmision wait time of controller communication	FA0E	64014	1	R/W	0 to 100 ms	0
Backup memory state monitor	FA0F	64015	1	RO	0: The content of the backup memory does not coincide with that of the RAM. 1: The content of the backup memory coincides with that of the RAM	—
Unused	FA10 ⋮ FA27	64016 ⋮ 64039	1 ⋮ 1	—	—	—
No. 1 Controller type	FA28	64040	1	R/W	0 to 65534 0: FB100/400/900	0
⋮						
No. 31 Controller type	FA46	64070	1	R/W	0 to 65534 0: FB100/400/900	0
Unused	FA47	64071	1	—	—	—
No. 1 Controller state	FA48	64072	1	RO	Bit data Bit 0: Presence or absence of controller Bit 1: Presence or absence of abnormal response Bit 2 to Bit 15: Unused Data 0: Absence 1: Presence [Decimal number: 0 to 3]	—
⋮						
No. 31 Controller state	FA66	64102	1	RO	Bit data Bit 0: Presence or absence of controller Bit 1: Presence or absence of abnormal response Bit 2 to Bit 15: Unused Data 0: Absence 1: Presence [Decimal number: 0 to 3]	—
Unused	FA67	64103	1	—	—	—
No. 1 Controller address	FA68	64104	1	R/W	1 to 99 0: There is no connection controller	1
⋮						
No. 31 Controller address	FA86	64134	1	R/W	1 to 99 0: There is no connection controller	31
Automatic acquisition of controller address	FA87	64135	1	R/W	0: Do not execute the automatic acquisition 1: Execute the automatic acquisition * * Automatically reverts to 0 after automatic acquisition ends.	0

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