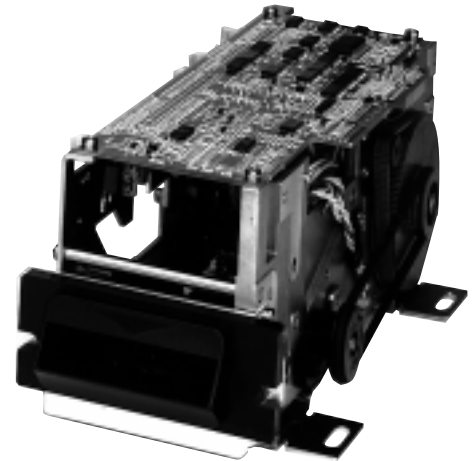


### Versatile Hybrid Reader/Writer Handles Both Magnetic and IC Cards

- Durable 4-wheel, 2-belt drive with roller accommodates discrepancies in card thickness to accept warped or bent cards
- Ideal for open systems
- Compact size and light weight allow easy installation in any terminal
- Software-driven read/write function allows recognition of any type of ISO track
- Three integrated chip station positions available (X, J, B)
- Adjustable to card thicknesses of 0.20 mm, 0.40 mm, and 0.76 mm (PET, paper, or PVC cards)
- HiCo write capability available



### Ordering Information

Magnetic Tracks Supported (R, R/W)					IC Contact	Shutter	Interface	Color	Part Number
1	2	3	Center	JIS II					
R/W	R/W	R/W	—	—	J-type(ISO) <sup>(See note 1)</sup>	Yes	TTL-compatible	Black	<b>3S4YR-MKW1JD</b>
R/W	R/W	R/W	—	—	X-type(ISO+CP8)	Yes	TTL-compatible	Black	<b>3S4YR-MKW1XD</b>
R/W	R/W	R/W	—	—	Upgradeable	Option	TTL-compatible	Black	<b>3S4YR-MKW1PC</b>
R/W	R/W	R/W	—	—	Upgradeable	Option	TTL-compatible	Black	<b>3S4YR-MKW1PCH</b> <sup>(See note 2)</sup>
R/W	R/W	R/W	—	—	Upgradeable	Yes	TTL-compatible	Black	<b>3S4YR-MKW1PD</b>
R/W	—	—	—	—	Upgradeable	Option	TTL-compatible	Black	<b>3S4YR-MKW3PC</b>
—	R/W	—	—	—	Upgradeable	Option	TTL-compatible	Black	<b>3S4YR-MKW4PC</b>
—	R/W	—	—	—	Upgradeable	Option	TTL-compatible	Black	<b>3S4YR-MKW4PCH</b> <sup>(See note 2)</sup>
—	R/W	—	—	—	Upgradeable	Yes	TTL-compatible	Black	<b>3S4YR-MKW4PD</b>
—	—	R/W	—	—	Upgradeable	Option	TTL-compatible	Black	<b>3S4YR-MKW5PC</b>
R/W	R/W	—	—	—	Upgradeable	Option	TTL-compatible	Black	<b>3S4YR-MKW6PC</b>
—	R/W	R/W	—	—	Upgradeable	Option	TTL-compatible	Black	<b>3S4YR-MKW7PC</b>
—	R/W	R/W	—	—	Upgradeable	Yes	TTL-compatible	Black	<b>3S4YR-MKW7PD</b>
R/W	R/W	R/W	—	—	Upgradeable	Option	RS-232C	Black	<b>3S4YR-MKFW1PC</b> <sup>(See note 3)</sup>
R/W	R/W	R/W	—	—	Upgradeable	Yes	RS-232C	Black	<b>3S4YR-MKFW1PD</b> <sup>(See note 3)</sup>
R/W	R/W	R/W	—	—	X-type(ISO+CP8)	Yes	RS-232C	Black	<b>3S4YR-MKFW1XD</b> <sup>(See note 3)</sup>
R/W	R/W	R/W	—	—	No	No	RS-232C	Black	<b>3S4YR-MKS1N</b>

Note 1: Consult the *IC-Card Basics* section of this catalog for IC contact descriptions.

2: MKW1PCH and MKW4PCH are capable of writing HiCo cards. All models can read HiCo cards.

3: RS-232C supports card control and magnetic reading/writing. IC support requires customer-designed interface board.

■ **TYPICAL APPLICATIONS**

- Cash Dispensers
- Automatic Teller Machines (ATM)
- POS Terminals
- Credit Card Checkers
- ID Card Checkers
- Electronic Lock Systems
- Medical Patient Systems
- Health Control Systems

■ **ACCESSORIES**

Description	Part Number
IC Card on the front, lower position	<b>IC CONTACT J</b> (See note 1)
IC Card on the front, upper position	<b>IC CONTACT B</b> (See note 1)
IC Card on the front, upper and lower positions	<b>IC CONTACT X</b> (See note 1)
Shutter for MKW1PC, MKW1PCH, MKFW1PC	<b>SHUTTER MKD1</b>
Shutter for MKW3PC	<b>SHUTTER MK3</b>
Shutter for MKW4PC, MKW4PCH	<b>SHUTTER MK4</b>
Shutter for MKW5PC	<b>SHUTTER MK5</b>
Shutter for MKW6PC	<b>SHUTTER MK6</b>
Shutter for MKW7PC	<b>SHUTTER MK7</b>
MM Sensor Holder (MM sensor itself must be purchased from the manufacturer.)	<b>MM HOLDER</b>
Watermark Reader Head. Cannot be used to write track 1.	<b>WATERMARK HEAD</b> (See note 2)
Watermark Circuit Board. Cannot be used to write track 1.	<b>WATERMARK PCB</b> (See note 2)

Note 1: Consult your Omron sales representative for IC contact accessories. Special configurations can be supplied.

2: Watermark Reader Head and Watermark Circuit Board must be ordered together.

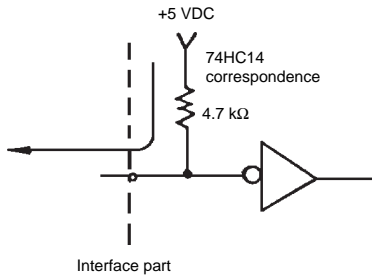
## Specifications

Part number	3S4YR-MKW, MKF, MKS	
Recommended card type	Magnetic card	ISO 7810-7813
	IC card	ISO 7816/1, 2
Recording method	FM decoding (F2F)	
Card feeding speed	20 cm/sec ± 10% (7.87 in/sec)	
Motor type	DC motor	
Service life (See note)	1,200,000 passes min.	
Operating power supply	Amplifier	24 VDC ± 10%
	Motor	24 VDC ± 10%
	Control logic	5 VDC ± 5%
Current consumption	Amplifier	260 mA max.
	Motor	1.7 A max.
	Control logic	330 mA max.
Mounting location	Anywhere not directly subject to water or rain	
Mounting orientation	Stripe top or stripe bottom	
Ambient temperature	Operation	-5° to 55°C (23° to 131°F)
	Storage	-25° to 70°C (-13° to 158°F)
Ambient humidity	Operation	45% to 85% RH without condensation
	Storage	30% to 90% RH
Vibration	10 to 55 Hz, 2 mm double amplitude, for 30 minutes in X, Y, and Z directions	
Shock	300 m/sec <sup>2</sup> (30 G) in each of X, Y, and Z directions	
Dimensions	With shutter	247L x 106W x 92H mm (9.72L x 4.17W x 3.62H in)
	Without shutter	222L x 98W x 92H mm (8.74L x 3.86W x 3.62H in)
Weight	Approx. 1.9 kg (4.2 lbs) when fully equipped	

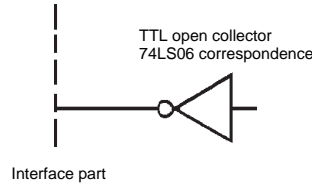
Note: One pass denotes one round trip.

# Engineering Data

## INPUT CIRCUIT DIAGRAM



## OUTPUT CIRCUIT DIAGRAM



## I/O INFORMATION

### 3S4YR-MKW Connector of Magnetic Card (CN1 Signal)

3M 3433-5302JL. Mate: 3M 3425-6550EL.

Pin #	Signal	Input/Output	Pin #	Signal	Input/Output
1	+5 VDC	—	26	$\overline{S1}$	Output
2	+5 VDC	—	27	$\overline{S2}$	Output
3	0 V	—	28	$\overline{S3}$	Output
4	0 V	—	29	$\overline{S4}$	Output
5	P24V	—	30	$\overline{STW}$	Output
6	P24V	—	31	$\overline{RCP1}$	Output
7	P0V	—	32	$\overline{RDP1}$	Output
8	P0V	—	33	$\overline{RCP2}$	Output
9	$\overline{MFW}$	Input	34	$\overline{RDP2}$	Output
10	$\overline{MRV}$	Input	35	$\overline{RCP3}$	Output
11	$\overline{SOL1}$	Input	36	$\overline{RDP3}$	Output
12	—	—	37	$\overline{RCP4}$	Output
13	—	—	38	$\overline{RDP4}$	Output
14	—	—	39	$\overline{WCP1}$	Output
15	—	—	40	$\overline{WCP2}$	Output
16	—	—	41	$\overline{WDT1}$	Input
17	$\overline{WEN}$	Input	42	$\overline{CNT1}$	Input
18	—	—	43	$\overline{WDT2}$	Input
19	$\overline{RCPS}$	—	44	$\overline{CNT2}$	Input
20	$\overline{RDP5}$	—	45	$\overline{WDT3}$	Input
21	$\overline{SHD1}$	Output	46	$\overline{CNT3}$	Input
22	$\overline{WDV}$	Output	47	$\overline{WDT4}$	Input
23	$\overline{SHE}$	Output	48	$\overline{CNT4}$	Input
24	$\overline{WID}$	Output	49	+24 VDC	—
25	$\overline{S0}$	Output	50	+24 VDC	—

### 3S4YR-MKW Connector of IC Card (CN2 Signal)

3M 3408-5302JL. Mate: 3M 3452-6516EL.

Pin #	Signal	Input/Output	Pin #	Signal	Input/Output
1	IVCC	◆	9	IRS1	◆
2	IRST	◆	10	IRS2	◆
3	ICIO	◆	11	$\overline{IECO}$	Input
4	IGND	◆	12	—	—
5	—	—	13	$\overline{IMSL}$	Input
6	ICKL	◆	14	$\overline{ISOL}$	Input
7	IVCC	◆	15	+5 VDC	—
8	IVPP	◆	16	0 V	—

◆ = Direct IC Contact

■ I/O INFORMATION, continued

**3S4YR-MKF (RS-232C Adaptor)**

Modular Jack, Hirose TM3RA-88.  
Recommended mating connector: TM8P-88P.

Pin #	Signal	Input/Output	Pin #	Signal	Input/Output
1	DSR	Input	5	RTS	Output
2	Signal Ground	—	6	RXD	Input
3	DTR	Output	7	TXD	Output
4	CTS	Input	8	Frame Ground	—

**3S4YR-MKF (Power Connector)**

Molex 5046-04A. Recommended mating connector: Molex 5102-04 or 5050-04.

Pin #	Signal
1	X24V
2	XGND
3	GNB
4	+24V

**3S4YR-MKF (Chip Card Adaptor)**

HIF3FC-26PA-254DS (Hirose Electric Co. Japan)  
2.54 mm pitch, double row (Conforming to MIL-C-83503)  
Recommended mating connector: any type conforming to the MIL-C-83503.

Pin #	Signal	Input/Output	Pin #	Signal	Input/Output
1	X24V	—	14	ICI0	◆
2	NC	—	15	IRS1	◆
3	NC	—	16	$\overline{\text{IECO}}$	Output
4	+5V	—	17	IDI0	Input/Output
5	$\overline{\text{CENB}}$	Output	18	$\overline{\text{IRSTEN}}$	Output
6	0V	—	19	$\overline{\text{IATR}}$	Output
7	$\overline{\text{PDWN}}$	Output	20	$\overline{\text{X0R1}}$	Output
8	ICLK	◆	21	$\overline{\text{X0R2}}$	Output
9	$\overline{\text{IEMRG}}$	Input	22	$\overline{\text{X0R3}}$	Output
10	IVCC	◆	23	$\overline{\text{X0R4}}$	Output
11	IRST	◆	24	0V	—
12	IGND	◆	25	$\overline{\text{RESET}}$	Output
13	IVPP	◆	26	IRS2	◆

**3S4YR-MKS**

Connector: Hirose HDBB-25S.

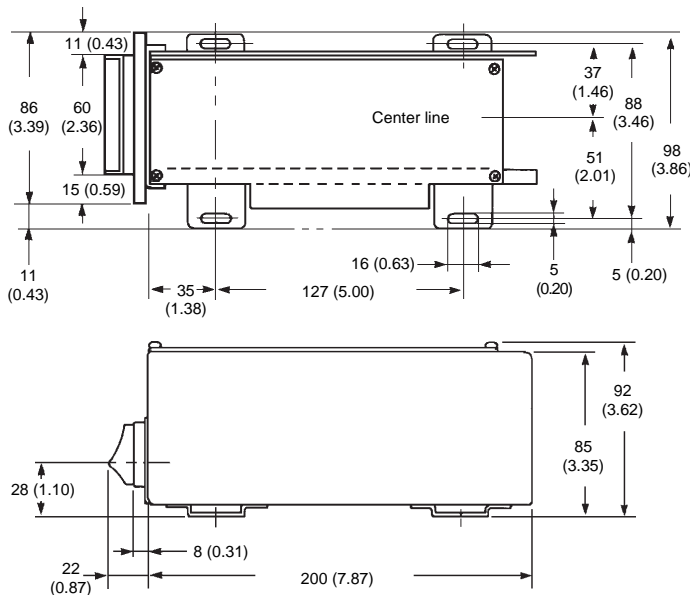
Pin #	Signal	Input/Output
1	FG	—
2	TXD	—
3	RXD	—
4	RTS	—
5	CTS	—
6	DSR	—
7	GND	—
20	DTR	—

◆ = Direct IC Contact

Dimensions

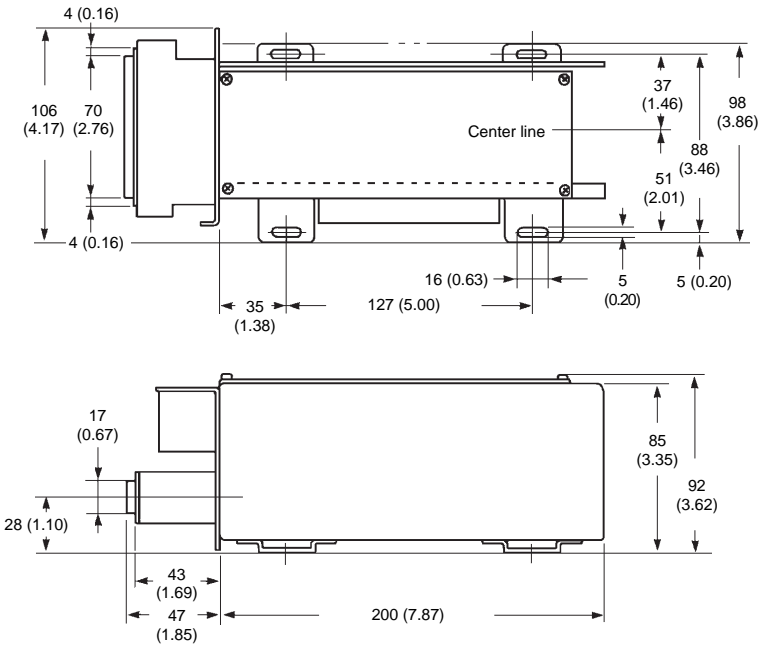
Unit: mm (inch)

■ 3S4YR-MKW WITHOUT SHUTTER



Stripe down shown.  
Can be mounted with stripe up.

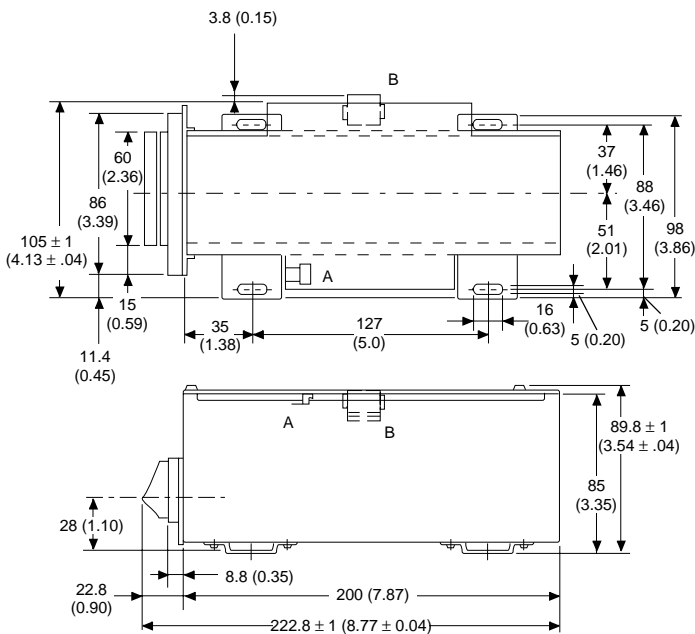
■ 3S4YR-MKW WITH SHUTTER



Stripe down shown.  
Can be mounted with  
stripe up.

Note: Unless otherwise specified, tolerance is  $\pm 0.3$ .

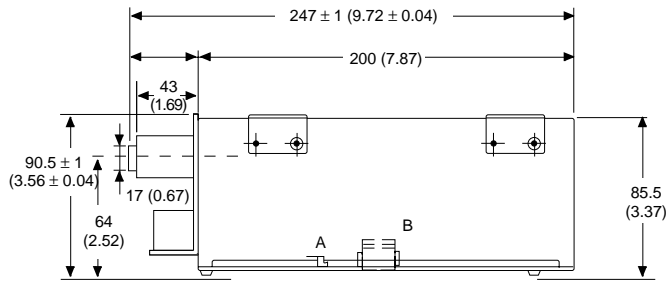
■ 3S4YR-MKF WITHOUT SHUTTER



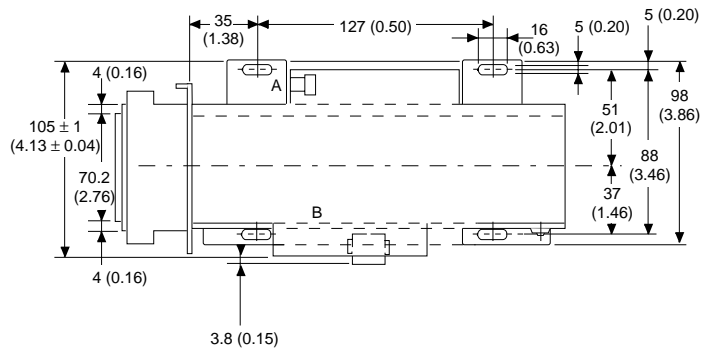
Stripe down shown.  
Can be mounted with  
stripe up.

Unit: mm (inch)

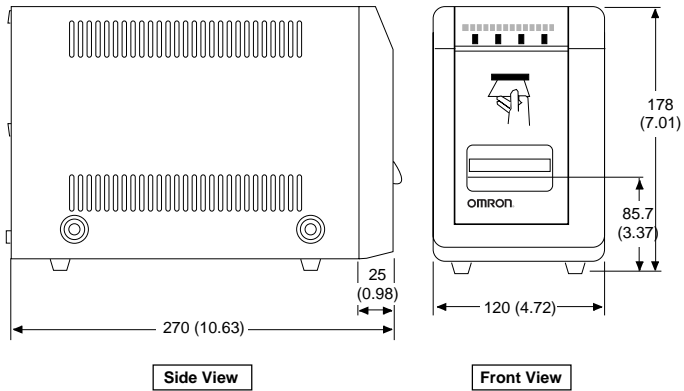
■ 3S4YR-MKF WITH SHUTTER



Stripe up shown.  
Can be mounted with stripe down.

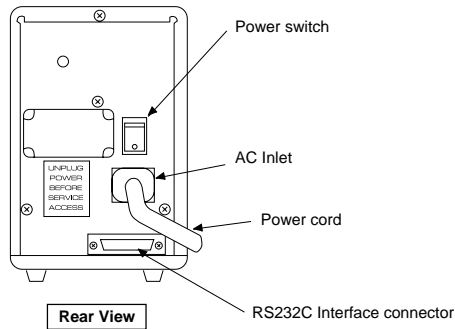


■ 3S4YR-MKS



Side View

Front View



Rear View



**OMRON ELECTRONICS, INC.**  
One East Commerce Drive  
Schaumburg, IL 60173  
**1-800-55-OMRON**

**OMRON CANADA, INC.**  
885 Milner Avenue  
Scarborough, Ontario M1B 5V8  
**416-286-6465**