FAST & ACCURATE FAULT DETECTION
CONVEYOR MONITORING SYSTEMS

Proto Control

TRIP INDICATOR- BELT WATCH PANEL

ADDRESSABLE SAFETY SWITCH TECHNOLOGY

SMART CONVEYOR MONITORING SYSTEMS

SALIENT FEATURES:

- Easy and instant location of operated safety switch
- Saves precious down time in locating the operated switch
- Multiple operated switch displayed by way of scrolling
- Specially developed for conveyor safety and maintenance monitoring in material handling industries.
- Concept of TRIP INDICATOR with PC interface facility is developed first time in India (even in world).
- Superior in terms of its essential features, user comfort, installation, and due to various versions available
- Can be easily adapted in running plants as no special cable is required
- Saves cable cost for upcoming plants
- Multiple type switches (Pull Cord Switch, Belt Sway switch, ZSS) can be wired in single loop and still you get separate contact O/P

CONVENTIONAL OPERATION OF SAFETY SWITCHES

Conventionally safety switches are installed at 30 Meter distance on a conveyor. If any of the installed safety switches is actuated, there was no provision for the exact identification of location and status of safety switch in control room. Operator has to rush at field for detection of safety switch to check and locate the actuated switch or any cable fault. In this process there were losses in production, time, & money.

SMART ADDRESSABLE WAY OF WIRING SAFETY SWITCHES

To make ordinary safety switch addressable, Protocontrol make Trip Indicator system is to be used. Trip Indicator Unit consists of :

- Display Unit (Trip Indicator or Master unit) located in control room
- Communication Cards: To be mounted in each safety switch

When any safety switch gets operated, conveyor will trip INSTANTLY and signal sent to the Trip Indicator from where TRIP relay O/P is generated. The operated switch number is displayed and communicated to PC/ PLC as per requirement.

TRIP INDICATOR UNIT MODELS:

Trip Indicator system is offered in different models as below
- Trip Indicator : TRA (Popular and economical model)
- Trip Indicator : TRS (Sophisticated model with added features)

TRA MODEL:

These models are auto addressable type and requires termination module at the end of loop for proper functioning. Auto addressing helps to place any communication card in any safety switch without individual addressing. TRA model is more popular due to its small size, low cost with extra essential features. Refer loop diagram shown in this catalogue for TRA. All safety switches NC contacts are connected in series with communication card mounted in each safety switch and to be connected as shown in diagram.

One common trip indicator unit for multiple loops / groups/ conveyors etc are also possible without hampering any safety or major functionality since individual loop operation is independent

Special essential features:

Following are the various possible essential features of Model TRA

- **HMI/ Keypad** facility makes the system fully smart.
- **Auto detection of type of safety switch:** This unique feature offerd by Protocontrol. With this facility Pull cord switch & Belt sway switch can be wired in single loop and you get separate contact O/P for Pull Cord Switch and Belt Sway Switch. This can save cable cost drastically.
- **Auto/Manual reset :** Key pad selectable function.
- **Indication of Cable fault with exact location :** Fault location for cable short orcable open both (available only with Protocontrol).
- **Analog output :** 4-20mA (Isolated)available with selectable resolution.
- **Very special HEX analog O/P :** Dual 4-20 mA O/P with resolution of 1mA can be available up to 256 switches & with 0.5 m A resolution up to 1024 switches per Trip Indicator.
- **Split facility :** With the help of split facility user can get separate relay/analog output for belt sway switch and pull cord switch which are wired in common loop. This facility can also be useful for different cascaded conveyors wired in common loop.
- **Specific Switch Bypass (password protected) facility :** For safety switch which is faulty / operated if user do not want to attend particular safety switch immediately then with Sr. authority permission user can bypass particular safety switches from control room without actual visit to site.
- **Absent detection :** Unique but essential feature. In all auto addressable type units, if some switches are removed from loop due to auto addressing initial assigned positions change. Therefore user gets wrong information about status operated switch number for all safety switches. This is major drawback for existing auto addressable systems in market. This drawback is removed in TRA model. User can teach the unit about these absent numbers in loop so that switch location number will remain same always.
- **Multiple types of switches in Single Loop :** ZSS (Zero speed switch) or other conveyor switches (like Chute block switch / tilt Switch) can be connected In same loop with pre auto assigned location number (saves cable cost)
- **Higher conveyor length :** No limitations for length of conveyor or number of switches. Standard model can work up to 8-10 Km. length with 2.5 Sq. mm cable. For still higher length separate versions are available.
- **Unit with LCD display :** Models with alpha numeric display information like conveyor Name, correct fault location information etc are also available.
- **Economical model for small conveyor :** For very small length conveyors extra economical models without key pad with only basic required features are also available.

Other special Models/ units :

Following additional units are also available.

A) **TRA with Auto Detection of type of safety switch:** Type of safety switch will be automatically detected using special communication card.

B) **TRA with Phase looped communication**: In old plants existing conveyors are pre-wired /looped directly using phase voltage (230VAC or 110VAC) then changing loop voltage or mixing of 24 VDC communication signal is not possible due to use of multi core cables with phase voltage. Using or laying additional special cable just for using trip indication system may not be feasible. Special Modulation units are offered with which communication cards will be provided to work on 230VAc carrier signal and data is superimposed on this carrier with guaranteed performance Ask for more details whenever required.

C) **TRA with built in memory**: TRA unit with additional built in memory for fault logging like conveyor status, safety switch operation status required history for about last one month can be made available within this unit itself on per Hr/ per day basis.

D) **TRA unit for cascaded conveyors**: Safety switches of multiple conveyors are to be wired in common two core wire loop but you get separate outputs per conveyor for tripping. Max. up to 4 conveyors can be cascaded as per requirement. This feature is introduced to overcome drawbacks of existing auto addressable systems in market.

BASIC TRA MODELS: TRA 4F

1. Mounting & Size : Front Panel Mounting With 48 (H) X 96(W) size.
2. Max. Groups:
   a) 4 input 4 output.
   b) 4 input 8 outputs
   with external relay.
3. O/P : analog / digital / communication
   Widely used in Belt watch panels being very small size.

TRA 9W/9F

1. Mounting& Size :
   BackPanelMounting / Front Panel mounting. With 96 (H) X 96 (W) size.
2. Groups: 4 input & 4 output
3. O/P:Analog/digital/communicatin Widely used for Individual unit mounted near to each conveyor separately.

TRA 12 W

1. Mounting& Size :Back Panel
   Mounting Approx size 120 (H) X130 (W).
2. Max .Groups: 4 input & 8 o/p.
3. O/P:Analog & digital/communication Widely used when common unit to be used for more than one conveyors.

TRIP INDICATOR MODEL: TRS (SOPHISTICATED VERSION)

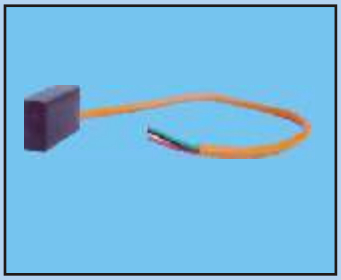
TRS models are having dedicated INDIVIDUAL ADDRESSING feature which make It very special. Each safety switch communication card is individually addressable with addressing facility provided within indication unit itself. one time programming at site with features like Auto Reset, Roll Call, Bypass, Individual Addressing, Binary O/P etc. TRS Models are available in all sizes similar to TRA.

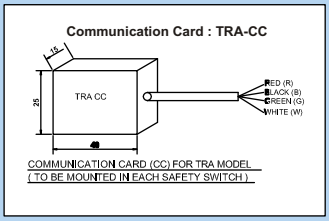
CC – 4W (SYSTEM WITHOUT TRIP INDICATOR)

Most economical which requires no control unit but only 4 wire loop with only communication cards and bestc suitable for PLC controlled very small conveyors .PLC unit require RS 485 Modbus RTU master protocol. PROTOCONTROL also can offer master PLC as an option.

BELT WATCH PANEL (BWP-TRA OR BWP-TRS)

PROTOCONTROL offers total turn key package for Trip Indicating system.The system with Instrumentation grade control panel with proper electrical accessories/ instrumentation grade wiring as per international standards are provided. For turn key package engineering / procurement/ support can be provided on project to project basis. Belt watch panel is convenient system for large number of conveyors & also can be very efficient and economical option. Belt watch panel will take single phase, power supply (230 V,50 Hz).However individual Trip Indicator units will be provided internal 24 V DC power source. Trip indicators will be mounted on the front/back c side inside panel. Required outputs will be made available in belt watch panel through proper termination/wiring etc as per international standards. Panel fabrication can be of PROTOCONTROL make as well as it can be offered as per other approved makes. Enclosure protect on grade can be provided as per the requirement.





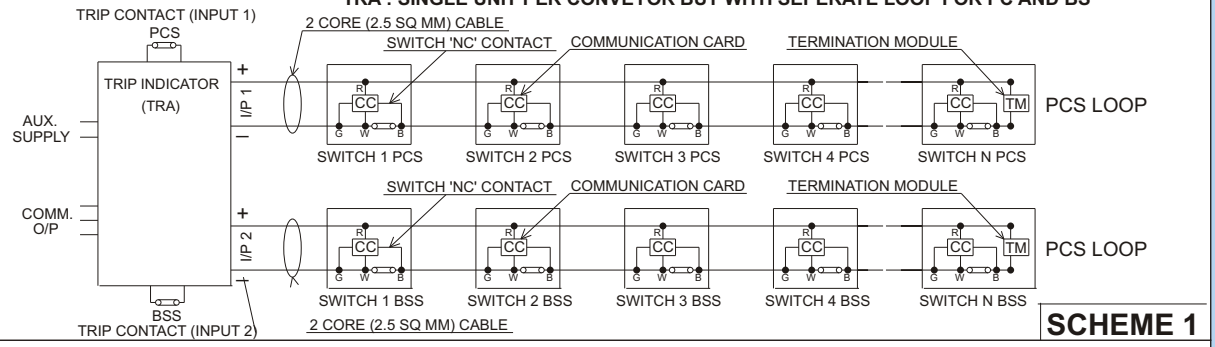
ADDITIONAL ACCESSORIES

We offer following accessories for additional functional requirement. Please consult factory.

- Power Supply for Lamp: 24VDC, 2 Amp to drive external lamp fitted on the switch.
- Dual power supply for lamp and Trip indicator
- Adaptor unit for additional fail safe tripping contact O/P
- Adaptor unit with additional separate isolated power supply for lamp .

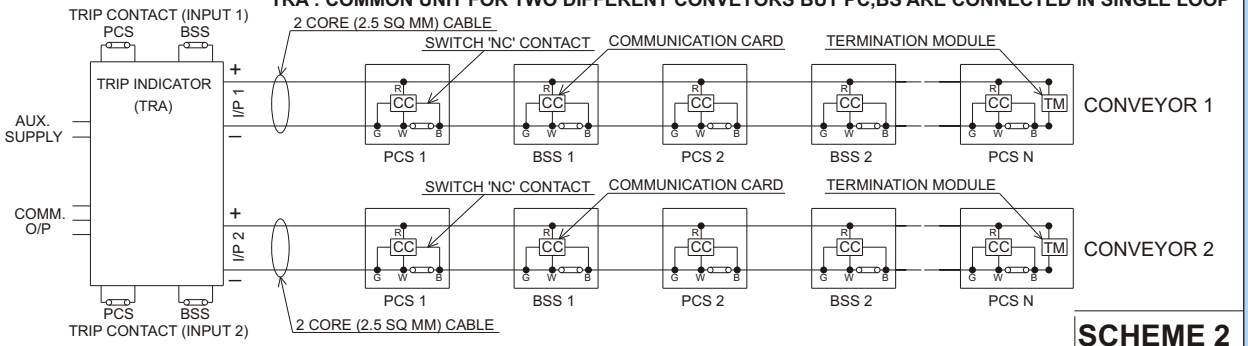
TYPICAL CONVEYOR SIDE LOOP CONNECTIONS

TRA : SINGLE UNIT PER CONVEYOR BUT WITH SEPERATE LOOP FOR PC AND BS



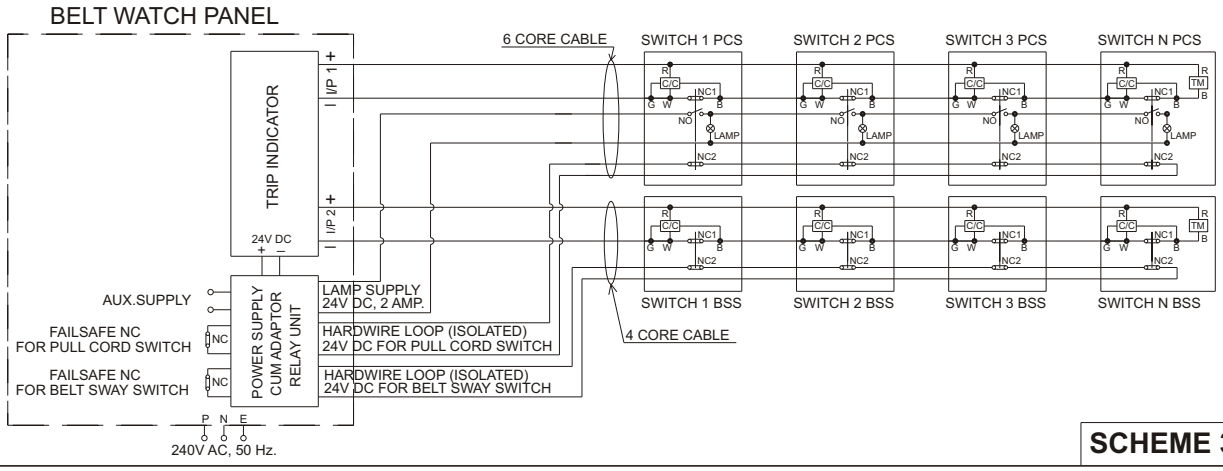
SCHEME 1

TRA : COMMON UNIT FOR TWO DIFFERENT CONVEYORS BUT PC,BS ARE CONNECTED IN SINGLE LOOP



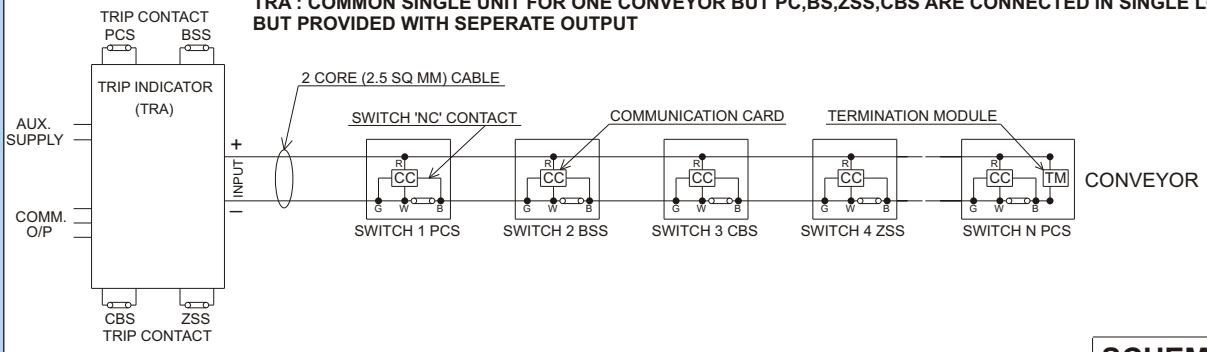
SCHEME 2

BWP : TRIP INDICATOR AND SWITCHES HAVING LOCAL LAMP INDICATION AND SEPERATE HARDWIRE TRIP



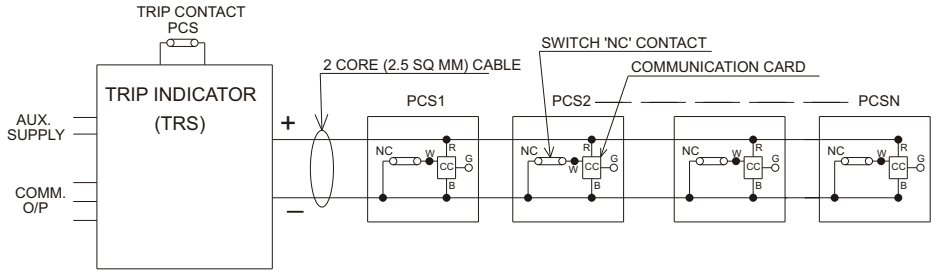
SCHEME 3

TRA : COMMON SINGLE UNIT FOR ONE CONVEYOR BUT PC,BS,ZSS,CBS ARE CONNECTED IN SINGLE LOOP BUT PROVIDED WITH SEPERATE OUTPUT



SCHEME 4

TRS : LOOP CONNECTION (SOPHISTICATED MODEL) WITH INDIVIDUAL ADDRESSING



NOTE :- 'G' WIRE OF COMMUNICATION CARD IS ONLY USED WHILE PROGRAMMING THE NUMBER IN COMMUNICATION CARD.

SCHEME 5

ORDERING PROFORMA

A)	**CONTROL UNIT**	TRA	TRA	TRA	TRA	TRA	TRA
B)	**SIZE AND MOUNTING**						
1	Back Panel Mounting /Small	9 W					
2	Front Panel Mounting 96 X 96		9 F				
3	Back Panel Mo0unting / Large			12 W			
4	48(H) X 96(W) Front Panel Mounting				4 F	4 F	
5	DIN Rail(Plastic Enclosure)						R

NOTE: Back Panel Mounting Enclosure Can be DIN Rail Mounted

C)	**SUPPLY VOLTAGE**						
1	24 V DC	24	24		24		24
2	90 - 270 V AC/DC	230	230	230		230	
D)	**NO. OF INPUT GROUPS**						
1	O1	1G	1G	1G	1G	1G	1G
2	O2	2G	2G	2G	2G	2G	2G
3	O3	3G	3G	3G		3G	
4	O4	4G	4G	4G		4G	

Note: 1) TRA4F-230-3G/4G will not be available with analog output.
2) For TRA 4F, In 2G models , individual /HEX analog output is possible

E)	**TYPE OF ANALOG OUTPUTS(4-20mA)**						
1	Analogue output	A4	A4	A4	A1/A2	A1/A2	A1/A2
2	Without Analogue Output	NA	NA	NA	NA	NA	NA
3	HEX Analog (Duel)	A2H	A2H	A2H	A2H	A2H	A2H
F)	**NO OF DIGITAL OUTPUTS**						
1	Digital (1C/O)	D4/D8	D4/D8	D4/D8	D2	D4	D2/D4
2	Open Collector (For BWP)	OC4/OC8	OC4/OC8	OC4/OC8	OC4/OC8	OC4/OC8	
3	No Out Put (Only indication)	ND	ND		ND	ND	
G)	**COMMUNICATION OUTPUT**						
1	RS 485 MODBUS RTU (Slave)	C	C	C	C	C	C
2	NO Communication Output	NC	NC	NC	NC	NC	NC

NOTE: For other Protocols additional Convertors can be offered

H)	**DISPLAY**						
1	LED Display	1	1	1	1	1	1
2	LCD Display	2	2	2	2	2	2
3	NO Display						3
I)	**MAX.NO. OF SWITCHES PER GROUP**						
1	25	25	25	25	25	25	10/25/50
2	50	50	50	50	50	50	
3	75	75	75	75	75	75	
4	100	100	100	100	100	100	
5	Above 100 (Pl specify length of conveyor and total no. of safety switches per loop)						

OTHER SPECIAL OPTIONS OF TRA (TO BE SPECIFIED ALONG WITH TRA i.e. TRA-SPL FOR SPLIT FUNCTION)

1	TRA with Modulating Unit	MU	MU	MU	MU	MU
2	TRA with Built In Memory	BIM	BIM	BIM	BIM	BIM
3	Auto Assign (Auto Teach)	AT	AT	AT	AT	AT
4	With short circuit location detection	SCD	SCD	SCD	SCD	SCD
5	Split facility in common loop	SPL	SPL	SPL	SPL	SPL

TypicaL Ordering Code: TRA - 4F - 24 - 2G - A2 - D2 - C - 1 - 25

NOTES:

1) For multiple group models, group wise maximum stations will remain same
2) Communication cards TRA-CC and termination models TRS-CC-TM are to be ordered separately. For Auto Asign / Auto Teach communication card type will be TRA-AT-CC,for TRA-MU, communication cards type will be TRA-MU-CC and termination modules will be TRA-MU-CC-TM
3) For long conveyors (above 3 Kms) single unit for single conveyor is preferred and recommended but not compulsory
4) For TRA-MU model modulation unit is to be ordered separately
5) For split O/P specify relay O/P and analogue O/P very clearly

Special Notes :

1. TRS models will be available in same size,supply, input , output etc. similar to TRA models however with standard TRS features
2. Special options as above above are not available in TRS model
3. TRS model is not available in Plastic Din Rail mounting enclosure
4. TRS 14 model (Back panel mounting type) is available in size 150(W) x 200(H)x150(D)
5. Binary O/P is available only in TRS model as other option
6. TRS 14 is old model and weill be absolute in future .
7. TRS model will be used with communication card TRS-CC
8. TRS-CC communication cards to be ordered separately

WHY YOU SHOULD INSIST FOR THESE FEATURES

Ask for this feature	Protocontrol TRA	Why this feature is provided
Is it with Key Pad?	☑	Makes this system fully Smart & addressable
Can you wire BS and PC in single loop but you get separate relay contact and Indication at Indicator?	☑	Reduce cabling cost nearly to half. Indicator recognize Type of safety switch & informs operated safety switch is PC/ BS or ZSS even in single loop.
Does allocated switch number remains same even after removing few switches from loop?	☑	Even if any switch is removed for maintenance the allotted number for other should not change
Is it auto addressable Type?	☑	Makes commissioning simple
Can you bypass particular switch from Indicator, keeping balance loop in circuit (with password entry for extra safety)?	☑	Increased safety as Pull Cord Loop always in circuit
Can your Indicator Detect SHORT / OPEN in loop WITH LOCATION? i.e. cable open between 8 & 9 or cable short between 44- 45?	☑	Indication of Cable Open and Cable Short fault with Location. Unique feature introduced first time in India.
Is your Indicator is having output (4- 20mA) with SELECTABLE RESOLUTION?	☑	Better resolution in 4-20 mA loop
Can 4-20 mA O/P be made suitable when number of switches in loop are more?	☑	HEX analog type output : 4-20 mA can be available with 1 mA resolution up to 256 safety switches. and with 0.5 mA resolution up to 1024 safety switches
Can your Indicator provide separate analog output even in common loop?	☑	We give separate analogue O/P in common loop as per operated switch number.
Is O/P can be Interfaced to PC ?	☑	Protocontrol offers RS 485 O/P withMODBUS. Other options like Profibus/ ethernet etc will be available using additional converters
Is your addressable type Indication System is really Smart ?	☑	Key pad enabled Trip Indication is Smart
Do you provide Absent Detection ?	☑	In conventional auto addressable system, if some switches are removed from loop, initial assigned number changes and user gets wrong information. Now, user can teach the unit about absent numbers in loop so that switch location number will remain same always.
Can you use single Trip Indicator for more than one conveyor ?	☑	Switches on multiple conveyor can be wired in single loop and further wired to indicator. You can program to get separate relay contact and indication per conveyor
Can you provide LCD alpha numeric display ?	☑	Models available with LCD alpha numeric display to indicate information like Conveyor Length, Fault location, Fault Information etc.
Do you offer basic and economical model for small conveyor ?	☑	Extra economical models without key pad but with basic features are available

Protocontrol developed TRA series to overcome drawbacks faced by ordinary Pull Cord Indication Systems. Trip Indicator TRA provides all features required by end user and makes this indicator really Smart. Trip Indicator series TRA is cost effective as well as technologically updated solution for your conveyor indication system.

PLEASE CALL OUR EXPERT FOR DETAILED DISCUSSION.
INFORM FOLLOWING DETAILS SO AS TO OFFER YOU SOLUTION

- Plant Layout and location of conveyor
- Length of each conveyor and switches on each conveyor
- Location of Trip Indicator Panel
- Required features like PC interface / 4-20 mA if required
- Scheme selected for wiring (please refer page 4)
- Make of existing switches
- How many core cable is going to field for wiring safety Switches.

FREQUENTLY ASKED QUESTIONS ABOUT SELECTION OF SWITCHES & WIRING OF TRIP INDICATOR & BELT WATCH PANEL

1. **Can any switch be made addressable?**
   Any switch having potential free contact O/P can be wired to Trip indicator

2. **Can my existing switches be used?**
   Any make Pull Cord and Belt Sway switches can be used, provided the switch have potential free contacts

3. **What is size of communication card? Can it be accommodated in my switch ?**
   Protocontrol communication card are very sleek and small. Can be fitted in compact enclosure.

4. **What happens if my switch gets filled with water and mud?**
   What happens if my operator keeps switch cover open in rainy season?
   Protocontrol communication cards are totally sealed. No effect of dust, dirt and water and even in immersion in water. Performance of Trip Indicator System will be unaffected even if switch is filled with water. Indicator will indicate correct locations of operated switch even switches are filled with water and dust .Please ask for specific model having this feature. In TRS model system will work without any problem while TRA model will indicate fault with location.

5. **Do I need additional indication(like lamp) of operated switch at field?**
   As you are going for advanced system of operated switch (Trip Indicator) which gives exact location of operated switch with many added advantage, you get every information in panel, you need not go for additional local indication. However if you still require, go for mechanical flag indication or switch with DC indicating lamp.

6. **What hardware is required if local indication of operated switch is required.**
   Select from two options.
   1. Switches with Local Mechanical Flag Indication
   2. Switches with LED lamp Indication. In case of local lamp indication, you have to lay additional two core cable for lamp supply.

7. **What care should I take when I select Local Lamp Indication?**
   The lamp supply is preferably be 24 VDC (24 V DC). This reduces damage due to interfacing of Trip Indicator supply wires with lamp supply wires in switch JB. If you go for 230 V AC supply lamp indication, the indicator system may malfunction if 230 VAC Lamp supply is mixed with trip indicator wires in rainy season and wrong termination by untrained operators. Many consultants as well as end users have norms which prevent different voltage wires getting terminated in single JB. If you want to go for additional local indication with lamp, go for 24 VDC lamp supply.

8. **Do I still insist for hard wire tripping?**
   Trip indicator provides relay contact for tripping the conveyor. No need for additional wiring of hardware contacts. This increases cost of two core additional cable required for hardware contact wiring. Trip indicator TRA is most advanced, reliable and fail safe product. In any fault condition the O/P relay status changes and conveyor is switches off. If you still insist for hard wire tripping, we recommend additional Adaptor unit. The adaptor unit gives 24 V DC supply and a DC relay is connected in series circuit. In case of switch operation, the relay drops. You can use relay contact of this relay for hardware tripping. As adaptor produces 24 V DC which goes in switch compartment, this reduces damage due to interfacing of Trip Indicator supply wires with hard wire trip wires in switch JB. If you go for 230 V AC supply for hard wire tripping circuit, the indicator system may malfunction if 230 VAC supply is mixed with trip indicator wires in rainy season and wrong termination by untrained operators This may damage Trip Indicator circuit. Many consultants as well as end users provide norms which prevent different voltage wires getting terminated in single JB.

9. **What precaution I take for selecting safety switch model?**
   As wiring of communication card is to be made in switch housing (JB), you go for switches with Terminal Strip (TS) or separate junction box (JB) (Refer catalogue for safety switches). Ensure that four terminals are available for wiring communication card.

10. **What are specifications of cable to be used for Trip Indicator System?**
    Any ordinary, 2.5 sq mm, copper, armored cable can be used for wiring.

11. **My conveyor is at remote place and cable theft is a major problem.**
    As current passing through cable is very small and voltage is also low (approx 24 VDC) still small cable, even flexible cable can also be used for small length conveyor. You get every feature as available with standard cable.

12. **What is maximum length of conveyor?**
    There is no limit for conveyor length (cable length) Standard Indicator will work up to 10 Km conveyor (cable length).

13. **How many switches can be wired in one loop?**
    There is no such limit that can be interfaced with one Indicator loop. please select suitable model.

14. **How many loops can be interfaced with single Trip Indicator?**
    Models with interfacing with four loops are available. That means if you make separate loop for belt sway and pull cord switch, you can wire two conveyors to this indicator.

15. **What if I require communication O/P other than MODBUS?**
    Suitable gateways will be offered.

16. **Can I adjust parameter of Trip Indicator from PLC?**
    Yes. In digital communication O/P models (ex MODBUS O/P) you can do the same. The Trip Indicator will act as slave.

17. **What is delay in Tripping if Pull Cord Switch is operated? How much delay is there for indication of operated switch number?**
    It's instant. Relay contact will change instantly.

18. **What if I require delay in Tripping in Belt Sway Switch Loop?**
    You can incorporate delay in belt sway switch loop to avoid nuisance tripping.

19. **Can Protocontrol Communication cards will interface with other make Indicator or vice versa?**
    No. As we have our own factory developed protocol.

20. **What happens if any communication card is lost?**
    Straightway you can put another card in TRA model. It gets automatically numbered. In TRS (sophisticated) model you have to allot specific required number to new card.

21. **What is Belt Watch Panel?**
    Multiple conveyors can be monitored from single location. We house Trip Indicators for multiple conveyors in single panel. Same can be housed at respective MCC room.

22. **Can I bypass switch from loop at Indicator end?**
    Yes, But with password protection. You can bypass any switch from loop, keeping balance loop switches in circuit.

23. **Can monitoring of safety switches of entire plat is possible at single location ?**
    Yes. By using Trip Indicator and Belt Watch Panel this is possible. However we recommend belt watch panel to house in respective MCC room.

24. **What is scrolling?**
    When multiple switches are operated, Indicator indicates numbers by scroll.

25. **Is this system fail safe ?**
    Protocontrol make Trip Indicator System is failsafe. In any fault (loop open, card lost, indicator fail) the O/P relay is tripped off, and hence conveyor is switched off. Additional safety can be added by using adaptor unit.

26. **What Happens when loop is reset ?**
    When loop is reset (i.e all safety switches are in healthy i.e with NC) Trip indicator will reset within 1 Minutes. Approx. This is required to achieve status of each safety switches. This ensures safety operation of conveyors

FAQ : COMMERCIAL

1. **Is this system is proven, what is proven track record?**
   Protocontrol is pioneer in introducing this technology in India. We are the first to successfully demonstrate and install this system on long conveyor. We had successfully installed this system at Steel, Power and Material Handling Plants.
   Few names are:

- Jindal Iron and Steel Co Ltd.
- Steel Authority of India Ltd: Bhilai Steel Plant
- Essar Steel Ltd
- National Thermal Power Corporation Ltd
- NMDC Ltd
- Costal Gujarat Power Ltd
- ACC Ltd.

We are the first to successfully export and commission this system abroad.

2. **Do Protocontrol offers commissioning help?**
   We have fully trained commissioning persons who will support for installation on chargeable basis.

3. **How to justify the cost?**
   The Trip Indicator is economical and cost can be justified when you consider :

- Reduced downtime of conveyor : Instant indication of fault location
- Reduced Cabling cost and only two core cable is required
- Logging of faults at PLC is possible
- Instant indication of faults like cable open, cable short
- By taking varieties of field switches (Pull Cord Switch, Belt Sway Switch, Zero Speed Switch) can be wired in single loop and cable cost is reduced.
- Monitoring Safety switches of entire plant is possible at one location

OUR OTHER PRODUCTS

SAFETY SWITCHES FOR MATERIAL HANDLING PLANTS :

- Pull Cord Switch
- Belt Sway Switch
- Heavy Duty Limit Switch
- Zero Speed Switches
- Electronic Speed Switch with Extension Stand
- Speed Indicator Tachometers
- Belt Loading Monitor
- Belt Damage Detector
- Switches with PC Interface Facility
- Damaged Belt Detector / Belt Weir Monitor
- Material Flow Switch

LEVEL MANAGEMENT SOLUTIONS:

- Level Sensors for granules & powders
- Tilt Type Level Switch for coal and lime stone
- RF Capacitance Type Level Sensor
- Material Level Switch Tilt Switch
- Vibrating Fork Type Level Switch
- Vibrating Rod Type level switch
- Paddle Type Level Switch
- Chute Block Detector
- Boot Level Switch
- Stock Pile Level Detector

JUNCTION BOXES & ENCLOSURES

- Weather Proof Junction Boxes
- Flame Proof Junction Boxes
- Push Button Station
- Local Control Stations
- De-interlocking Switch

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